



Streamwalk Program

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SEGMENT SURVEY SHEET

Segment Code: _____ **Stream Name** _____

*****All observations are to be made while walking UPSTREAM.*****

Section A: General Characteristics

Name: _____ Time: _____
Phone: _____ Temperature: (Air) _____ °C (Water) _____ °C
Date: _____ Weather: _____
Past 48 hour weather conditions: _____

GPS Location (using UTM NAD83 Datum): START Waypoint # **18 T 5** _____
UTM **4** _____
FINISH Waypoint # **18 T 5** _____
UTM **4** _____

1. Describe location and extent of segment (i.e. from _____ to _____). Indicate any landmarks or roads that would help locate your segment:

2. Measure the depth and the width of the stream at four points along the segment. Record the values in the chart below. Then add the values and divide by 4 to find your averages.

Location	Depth (in feet)	Width (in feet)
Point 1		
Point 2		
Point 3		
Point 4		
	<i>Average</i>	<i>Average</i>

Average Stream Depth (from above) _____ ft.

Average Stream Width (from above) _____ ft.



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*******KEEP TRACK OF THE FOLLOWING DURING YOUR STREAMWALK*******

3. Estimate the number of: (talley as you do your streamwalk)

Small Ponds _____ Dams _____

Discharge Pipes (Estimate the size if possible) _____

Vehicle Crossings _____

4. Describe the existing land uses surrounding your segment (rate from 1-10 where 1=most and 10=least):

_____ High Density Residential (<50ft/du) *du = dwelling unit

_____ Medium Density Residential (50-200ft/du)

_____ Low Density Residential (>200ft/du)

_____ Recreational _____ Agriculture _____ Industrial

_____ Forest _____ Commercial _____ School

_____ Non-Residential Roads

5. Are there visible human activities taking place along the segment (as evidenced by litter, bike & hiking trails, roads, camping areas, etc.)?

If yes, describe activities: _____

If yes, is the area publicly or privately owned? _____

6. List and estimate the number of waterfowl on the segment (Wood Ducks, Mallards, Canada Geese, etc.): _____

.....
Streamwalk surveys developed by Westchester County from multiple sources including the Natural Resources Conservation Services (NRCS)
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Section B: Scoring Descriptions

WALK THE ENTIRE SEGMENT AND MAKE NOTES ON EACH CHARACTERISTIC IN THE SPACES PROVIDED. RATE EACH PARAMETER AFTER COMPLETING THE ENTIRE STREAMWALK ON YOUR SEGMENT.

*******Words in bold type can be found in the glossary*******

EACH ASSESSMENT ELEMENT CAN BE RATED WITH A VALUE OF 1 TO 10. RATE ONLY THOSE ELEMENTS APPROPRIATE TO THE STREAM SEGMENT YOU ARE ASSESSING. USE THE *SEGMENT SURVEY SCORE SHEET* TO RECORD THE SCORE THAT BEST FITS THE OBSERVATIONS YOU MAKE BASED ON THE NARRATIVE DESCRIPTIONS PROVIDED. UNLESS OTHERWISE DIRECTED, ASSIGN THE LOWEST SCORE THAT APPLIES.



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1. CHANNEL CONDITION

What to do: Evaluate if the channel is in it's 'natural' state, or if there has been some alteration.

What to look for: Signs of channelization or straightening of the stream may include an unnaturally straight section of the stream, high banks, berms, or lack of flow diversity (i.e. if an area only has one type of flow, such as **riffles** throughout the entire segment, no pools or slow moving sections). Drop structures, irrigation diversions, culverts, bridge abutments, and **riprap** also indicate changes to the stream channel.

Natural channel; no structures, dikes. No evidence of downcutting or excessive lateral cutting.	Evidence of past channel alteration, but with significant recovery of channel and banks.	Altered channel: <50% of the length having riprap and/or channelization . Excess aggradation ; braided channel. Structures present restrict flood plain width.	Channel is actively downcutting or widening. >50% of the reach with riprap or channelization. Structures prevent access to the flood plain .	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

NOTES: _____



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2. HYDROLOGY

What to do: Estimate the flooding frequency for your segment. You may know your segments flood habits just from your knowledge of your local stream.

What to look for: Evidence of flooding includes high water marks (such as water lines on trees or structures located in the buffer), sediment deposits or stream debris on stream banks or within the **floodplain**.

<p>Flooding every 1.5 to 2 years. No evidence of dams, dikes or other structures limiting the stream's access to the flood plain. Channel is not incised.</p>	<p>Flooding occurs only once every 3 to 5 years; limited channel incision.</p>	<p>Flooding occurs only once every 6 to 10 years; channel deeply incised.</p>	<p>No flooding; channel deeply incised or structures prevent access to flood plain or dam operations prevent flood flows.</p>	<p>Can not evaluate OR Not applicable</p>
10	7	3	1	N/A

Score _____

NOTES: _____



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3. RIPARIAN ZONE

What to do: Examine both sides of the stream and note where vegetation does and does not exist.

What to look for: Compare the width of the **riparian** zone to the **active channel width**. A common problem is lack of shrubs and understory trees. Another common problem is lack of regeneration (presence of only mature vegetation and lack of seedlings).

Natural Vegetation extends at least two active channel widths on each side. (i.e. if stream is 2 ft. wide, the natural vegetation is 4 ft. wide on each bank.)	Natural vegetation extends one active channel width on each side. OR If less than one width, covers entire flood plain .	Natural vegetation extends half of the active channel width on each side.	Natural vegetation extends a third of the active channel width on each side.	Natural vegetation less than a third of the active channel width on each side. OR Lack of regeneration	Can not evaluate OR Not applicable
10	8	5	3	1	N/A

Score _____

NOTES: _____



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4. BANK STABILITY

What to do: Estimate the size or area of the bank affected by erosion relative to the total bank area in your segment.

What to look for: Signs of erosion include unvegetated stretches, exposed tree roots, or scalloped edges. Evidence of construction, vehicular, or animal paths near banks suggests conditions that may lead to the collapse of banks. This may be hard to evaluate during high water.

Banks are stable; banks are low (at elevation of active flood plain): outside bends that are eroding are 33% or more protected with roots that extend to the base-flow	Moderately stable; banks are low (At elevation of active flood plain): less than 33% of eroding surface area of banks in outside bends is protected by roots that extend to the base-flow elevation.	Moderately unstable; banks may be low, but typically are high (flooding occurs 1 year out of 5 or less frequently): outside bends are actively eroding (overhanging vegetation at top of bank, some mature trees falling into stream, some slope failures apparent).	Unstable; banks may be low, but typically are high; some straight reaches and inside edges of bends are actively eroding as well as outside bends (overhanging vegetation at top of bare bank, numerous mature trees falling into stream, numerous slope failures apparent).	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

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5. WATER APPEARANCE

What to do: Evaluate the clarity of the water.

What to look for: The deeper an object in the water can be seen, the lower the amount of **turbidity**. Use the depth that objects are visible only if the stream is deep enough to evaluate turbidity using this approach. If the water is clear, but only 1 foot deep, do not rate as if an object became obscured at a depth of 1 foot. This measure should be taken after a stream has had the chance to “settle” after a storm event.

Very clear or clear but tea-colored; objects visible at depth 3 to 6 ft. No oil sheen on surface; no noticeable film on submerged objects or rocks.	Occasionally cloudy, especially after storm event, but clears rapidly; objects visible at depth 1.5 to 3 ft.; may have slightly green color; no oil sheen on water surface.	Considerable cloudiness most of the time; objects visible to depth 0.5 to 1.5 ft.; slow sections may appear pea-green; bottom rocks or submerged objects covered with heavy green or olive-green film. OR Moderate odor of ammonia or rotten eggs	Very turbid or muddy appearance most of the time; objects visible to depth <0.5 ft; slow moving water may be bright green; other obvious water pollutants; floating algal mats, surface scum, sheen or heavy coat of foam on surface; OR Strong odor of chemicals, oil, sewage, other pollutants.	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

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6. NUTRIENT ENRICHMENT

What to do: Evaluate the amount of aquatic vegetation present.

What to look for: Some aquatic vegetation is normal and indicates a healthy stream. Excess nutrients cause excess growth of algae and aquatic plants, which can create a greenish color to the water. Clear water and a diverse aquatic plant community without dense plant populations are optimal for this characteristic.

Clear water along entire segment; diverse aquatic plant community includes low quantities of many species of aquatic plants; little algal growth present.	Fairly clear or slightly greenish water along entire segment; moderate algal growth on stream substrates.	Greenish water along entire segment; overabundance of lush green aquatic plants; abundant algal growth, especially during warmer months.	Pea green, gray, or brown water along entire reach; dense stands of aquatic plants clog stream; severe algal blooms create thick algal mats in stream.	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

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7. BARRIERS TO FISH MOVEMENT

What to do: Look for barriers within the stream segment that potentially can block fish passage through the segment.

What to look for: Some barriers are natural, such as waterfalls and boulder dams. Note the presence of human developed barriers, their size and whether provisions have been made for fish passage. Beaver dams generally do pose a problem for fish migration. Also look for structures that may not involve a drop, but still present a hydraulic barrier. Small culverts or large ones with insufficient water depth and slopes may cause high water velocities that prevent fish passage.

No barriers	Seasonal low water levels inhibit movement within the stream segment.	Drop structures, culverts, dams, or diversions (<1 ft. drop) within the stream segment.	Drop structures, culverts, dams, or diversions (>1 ft. drop) within 3 miles of the segment.	Drop structures, culverts, dams, or diversions (>1 foot drop) anywhere within the stream.	Can not evaluate OR Not applicable
10	8	5	3	1	N/A

Score _____

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8. INSTREAM FISH COVER

What to do: Observe the number of different habitat and cover types within a representative section of your segment. Each type must be present in appreciable amounts to score.

Habitat Types to look for: Logs/large woody debris, deep pools, overhanging vegetation, boulders/**cobble**, riffles, undercut banks, thick root mats, dense beds of emergent/floating leaf vegetation, isolated/backwater pools, other: _____

Greater than 7 habitat types available.	6 to 7 habitat types available.	4 to 5 habitat types available.	2 to 3 habitat types available.	None to 1 habitat types available.	Can not evaluate OR Not applicable
10	8	5	3	1	N/A

Score _____

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9. POOLS

What to do: Look for deep and shallow pools existing within your stream segment.

What to look for: Pool diversity and abundance are estimated based on walking the stream or probing from the streambank with a stick. You should find deep pools on the outside of meander bends. In shallow, clear streams a visual inspection may provide an accurate estimate. In deep streams or streams with low visibility, this assessment characteristic may be difficult to determine and should not be scored.

Deep and shallow pools abundant; greater than 30% of the pool bottom is obscure due to depth, or the pools are at least 5 feet deep.	Pools present, but not abundant; from 10 to 30% of the pool bottom is obscure due to depth, or the pools are at least 3 feet deep.	Pools present, but shallow; from 5 to 10% of the pool bottom is obscure due to depth, or the pools are less than 3 feet deep.	Pools absent, or the entire bottom is visible.	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

NOTES: _____



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10. INSECT/INVERTEBRATE HABITAT

What to do: Observe the number of different types of habitat and cover within a representative section of your segment. Each cover type must be present in appreciable amounts to score.

Habitat Types to look for: Fine woody debris, submerged logs, undercut banks, cobble, boulders, coarse **gravel**, other: _____

At least 5 types of habitat available. Habitat is at a stage to allow full insect colonization (woody debris and logs not freshly fallen).	3 to 4 types of habitat. Some potential habitat exists, such as overhanging trees, which will provide habitat, but have not yet entered the stream.	1 to 2 types of habitat. The substrate is often disturbed, covered, or removed by high stream velocities and scour or by sediment deposition.	None to 1 type of habitat.	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

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11. CANOPY COVER (if applicable)

What to do: Try to estimate how much of the river’s corridor has tree canopy (cover). Do not assess this element if the **active channel width** is greater than 50 feet. Do not assess this element if woody vegetation is naturally absent (e.g. wet meadow).

What to look for: Estimate areas with no shade, poor shade, and shade. The relative amount of shade is estimated by assuming that the sun is directly overhead and the vegetation is in full leaf-out condition.

The stream corridor has >60% canopy cover.	Average width of canopy cover is between 40 - 60%.	Average width of canopy covers between 30 and 40% of the stream channel.	Tree canopy covers <30% of the stream corridor.	Can not evaluate OR Not applicable
10	7	3	1	N/A

Score _____

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12. EMBEDDEDNESS

What to do: Do not assess this element unless **riffles** are present or they are a natural feature that should be present. This characteristic should be used only in **riffle** areas and in streams where this is a natural feature. Estimate what percent of bottom particles are buried in sediment in the **riffle** areas.

What to look for: The measure is the depth to which objects are buried in the sediment. This is made by picking up particles of **gravel** or **cobble** with your fingertip at the fine sediment layer. Test for complete burial of a streambed by probing with a stick.

Gravel or cobble particles are less than 20% embedded.	Gravel or cobble particles are 20 to 30% embedded.	Gravel or cobble particles are 30 to 40% embedded.	Gravel or cobble particles are greater than 40% embedded.	Stream bottom is completely embedded.	Can not evaluate OR Not applicable
10	8	5	3	1	N/A

Score _____

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SEGMENT SURVEY SHEET

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Please transfer the scores recorded onto the Segment Survey Score Sheet provided in your packet.
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1. Did you walk this whole section of the stream? YES_____ NO_____
2. Would you be interested in doing more hands-on testing on your segment? (for example: chemical analysis or looking for macroinvertebrates (stream insects))? YES_____ NO_____
3. Other comments/concerns: _____

