Appendix E. Stream Management Data Dictionary Guide

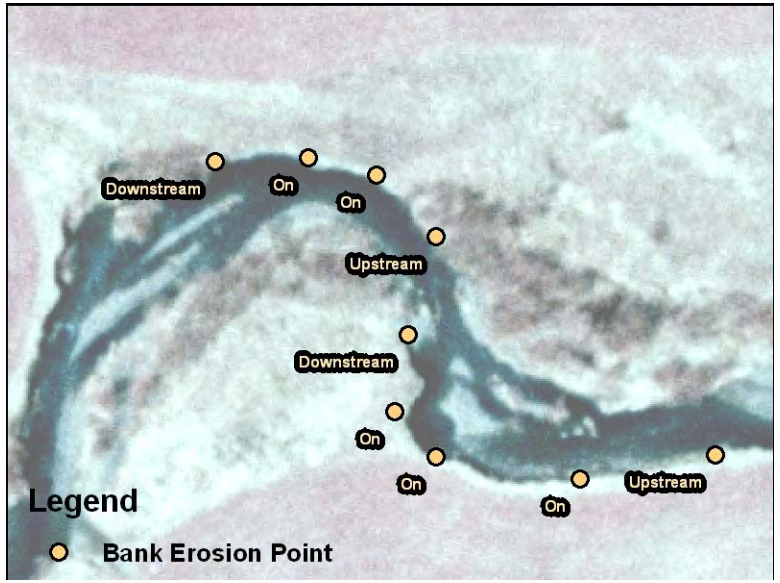
Updated 5/3/06
Based on 04/17/06 Data Dictionary

This guide serves as a reference for use with the NYC DEP Stream Management data dictionary and provides descriptions for each layer and many of the fields within the dictionary. The data dictionary is a critical component of the NYC DEP Stream Data Management Project which is an effort to improve stream related data collection , processing, analysis, storage and retrieval. The data dictionary was designed for use with Pathfinder Office database software and Trimble Geo XT data collectors and the ArcGIS extension developed by NYC DEP and PAR Government Technologies, Inc in cooperation with Greene County and Delaware County Soil and Water Conservation District.

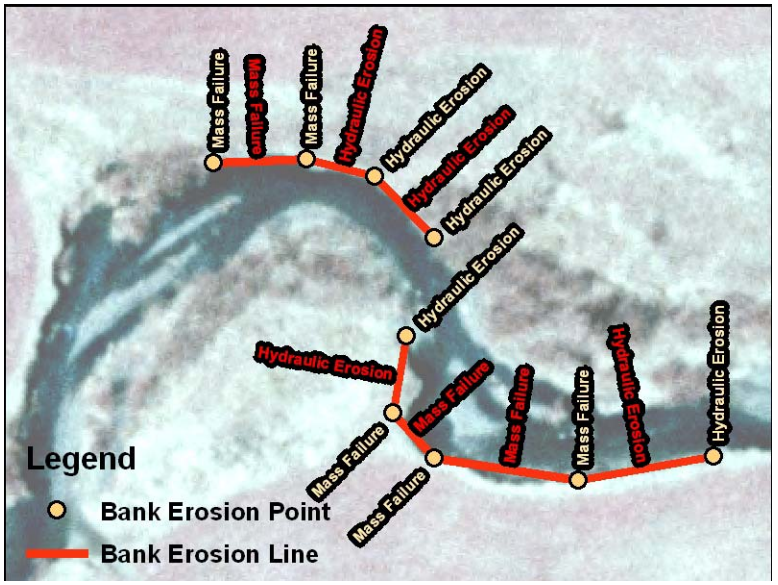
This guide has been created as part of an effort to improve the consistency of the stream related data collected by County and DEP Stream Management Programs. All post-processed files will be integrated into a common geodatabase. Changes in the names of features or attributes or the addition of features to the data dictionary will not be accepted by the geodatabase. Users are requested to submit any proposed changes to the dictionary with DEP Stream Management Program Data Manager and other County Stream Managers and not make changes on their own.

General Notes:

Collecting Points versus Lines: In many cases, linear features can be collected as points and later converted to lines after importation into a GIS. GPS'd point features typically have a greater accuracy than lines. Also, physical barriers, such a swift current, deep water, or a high bank often prevent the users from walking the line in the field. With this in mind, tools have been developed to convert field data collected as a series of points into lines. The point feature contains an attribute entitled "point" with the options of upstream, downstream and on. To collect a series of points to be later converted to a line feature, use the "upstream" point, then the "on" and then the "downstream" option of the point attribute. You can collect a series of "on" points if the feature is long or curved. Once processed, the length of the feature can be calculated using in ArcGIS.



The Stream Analyst extension contains a point to line conversion tool to aid with transferring attributes from points to a line. Although the point to line transfer tool will transfer attributes for a point, the user may need to resolve discrepancies between the attributes for two points. For instance if the upstream end of an eroding bank is the result of hydraulic erosion, but the bottom an example of mass failure, then it would be best to either choose one type in the field, or break the bank into two separate line segments. Consistency in field practices, such as starting and stopping features when attributes change can facilitate rapid data integration in the office. The collection of points using offsets is supported by Trimble and also greatly assists in the collection of points when the location cannot be easily occupied. See the GPS Survey Notes below for directions on taking offsets.



Photos and Descriptions:
All GPS Layers have a Description and a Photo field. The photo field is to be used to aide in the capture of photos in the field. Users should enter the photo number in this field. Where multiple photos are taken, a comma should be used to separate the photo numbers, ie. 001, 002,. The "Notes" field is available for additional comments or information to be used in further definition of the feature. (Examples)

In all references to left or right banks, the surveyor is assumed to be looking downstream.

GPS Surveying Notes:
Use of Offsets: GPS operator is advised to use an azimuth compass and tape or laser range finder to accurately record offsets when the surveyor is unable to occupy the feature location. Readings should be to the nearest 3 ft (yard) and degree. Care should be taken to accurately read the compass; minor errors in angle readings can result in significant position discrepancy.

Repeat function: Trimble Geoexplorer Models GeoXT are equipped with a repeat feature function which allows the surveyor to take consecutive shots of banks and the same feature type without having to re-enter the features attributes. This is especially useful with long eroding banks or other multiple point features which will later be converted to lines. If you are using the repeat function, be sure to update or clear the "Notes" field on any subsequent points.

Timely Data Download: Always download, post process and bring your field data into the geodatabase as quickly as possible. Typically you and your crew will retain familiarity with the data needed for efficient conversion for only about a week.

Know your Data Dictionary: This guide is only an introductory document. It is necessary to allow your crew a couple of days in the field to get familiar with the data dictionary before you can expect to improve your team's efficiency. Always check your field data in the geodatabase and perform tests of the various conversion tasks such as converting points to lines to get a clear understanding of proper field collection techniques.

Stream Management Data Dictionary Feature Index

Features

Bank Erosion (Point, Line)
Data Dictionary Layer(s): Bank_P, Bank_L
Use Notes: This feature is used to collect information on all eroding banks. Sources of fine suspended sediment, such as glacial lake clays beds can also be mapped with the Fine_Sed feature. If a failing bank contains such material both the Bank_P or Bank_L and Fine_Sed features should be used. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool.

Attribute Fields	Description Options	Survey Notes
Point	Upstream, Downstream , Middle, On	This defines the location of a point on the eroding bank, ie. the upstream end, downstream end or a point on or along the bank (ie. the mid point, a vertex or a location where the bank character changes). For instance, changes in bank height can be captured using the "on" option, Middle should be used for short banks and the length must be noted under Length_Ft
Location	Left Bank, Right Bank, Across, In, Left Bed, Right Bed, on Center Bar	Is the eroding bank on the left bank or the right bank of the stream?
Height_Ft		This is the change in elevation from the toe of the bank (even if it is below the water surface) to the top of the unstable section. See the diagram under BEHI. This height is *not* the length of the exposure (slope distance).
Length_Ft		This is the length of the eroding bank and should only be used where the bank is very short (under 25 ft.) and where the surveyor expects to acquire only one point.
Fail_Gen	Hydraulic Erosion, Mass Failure, Surficial, Unknown, Multiple	See definitions below.
Fail_Spec	Fluvial Entrainment, Rotational Slip, Planar/Slab, Rills/Gullies, Shallow Sliding, Piping, Cantilever, Combination, Other	See definitions and diagram below.
Active	True, False, Unknown	Is there evidence of recent erosion? Indicators include bare

		soil, a lack of vegetation, tailings at the bottom of the bank or in the stream.
Stratified	True, False	Are there distinct layers of different sized material in the bank? Ie. A till layer over a clay layer.
Slope	Bank angle expressed in degrees	See illustration 2 under the BEHI feature
Material	Clay, Silt, Sand, Gravel, Cobbles, Bedrock, Mixed Till, Boulder	Dominant material in the bank (don't look at the bank toe). Additional notes can be included in the description field.
Vegetation	Barren, Grass/Sedge, Shrub, Tree, Roots/Woody, Shrub/Tree, Grass/Shrub, Grass/Tree	Is there vegetation on the bank, re-establishing on the bank, or roots in the bank?
WoodBuf_Ft		If there is a woody vegetation buffer above the point on the bank, how wide is it? Approximate measurement is recorded in feet.
Land_Class	Wetland, Forest, Agriculture, Parks/Recreation, Residential, Commercial, Transportation, Utility, Old Field	What is the predominant land use above the eroding bank within 2 bank full widths of the bank.
Undercut	True, False	Is the bank undercut
UndercutFt		Measure the depth of the undercut using a folding ruler. Record the measurements in feet and 10ths of foot, ie. 1.6 feet
Proposed	BEHI, Topo, Photo	Are additional surveys recommended?

Bank Erosion Glossary

General Erosion Types

Hydraulic Erosion – Material is removed or scoured by water flowing across the surface of a bank. Undercutting of banks is an example of hydraulic erosion

Mass Failure – The collapse and slumping of large chunks of bank material in single events. This would include all forms of failure shown in illustration 1 below.

Surficial – Loss of bank material caused by surface flows entering the channel from upland sources. Includes sheet, rill and gully erosion.

Specific Erosion Types

1. Fluvial Entrainment – The suspension and transport of bank materials by running water

2. Rotational Slip – See figure (e and f) in illustration 1

3. Planar/Slab – See figure (b and c) in illustration 1
4. Rills/Gullies – Erosion on the bank surface caused by water running off the exposed soil surface into small channels and then larger incised channels
5. Shallow Sliding – See figure (a) in illustration 1
6. Piping – A type of bank failure associated with ground water flow through coarse layers of material in a stream bank. The flow causes material within the layer or above the layer to erode into the stream
*7. Cantilev*er – See figures (g and h) in illustration 1Combination – enter the numeric code (1-7) for each type present in the notes field.
8. Other

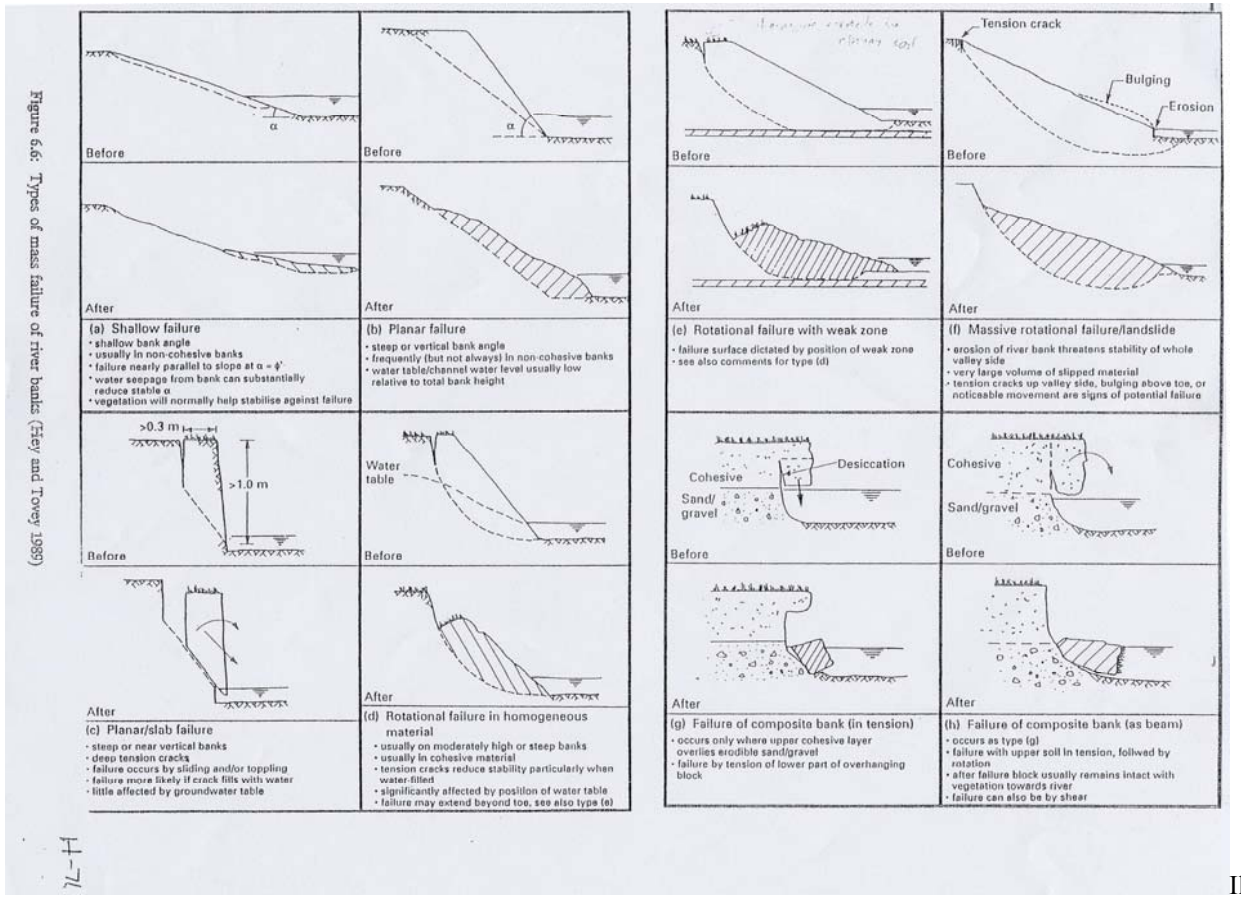


Illustration 1. Types of Mass Failure

BEHI (Point)
Data Dictionary Layer(s): BEHI
Use Notes: This layer is used identify the location and could be used to capture information gathered from a Bank Erosion Hazard Index survey. Sites where a future BEHI survey is recommended should be identified in the Bank Erosion feature. The BEHI survey protocol as described by D. Rosgen should be followed when taking measurements. While the data dictionary provides attributes to capture the entire set of BEHI variables, information from field forms, PocketRivermorph, or total station surveys can be integrated with the basic point information (id, data and location) within the geodatabase.

Attribute Fields	Description Options	Survey Note
BEHI_ID		Identification number
BEHI_Date		Date of BEHI survey, Month/Day/Year
Location	Left Bank, Right Bank	
BkFl_HtFt	Bankfull Height Ft	See illustration 2
Bk_Ht_Ft	Bank Height Ft	See illustration 2
RootDpthFt	Root Depth Ft	See illustration 2
pctRootDen	Root Density %	See illustration 2
Bank_Angle	degrees	See illustration 2
pctCover	Surface Protection	Percentage of surface covered by vegetation or other
BkankLngth	Bank Length Ft	Length of the eroding bank
BankMatrl		Size material
Bank_Strat		See glossary
Strat_Sev	1,2,3,4,5	One lowest, five highest

BEHI Glossary:
BEHI – Bank Erosion Hazard Index, as developed by D. Rosgen 1996, is a descriptor of bank condition and can be used to predict erosion potential.
Bankfull Height – For BEHI the bankfull height is the difference in elevation from the deepest point in the channel at the toe of the bank to the bankfull elevation (B in diagram 1)
Bank Height – Total height of the bank (A in illustration 2
Root Dpth Ft – Depth of roots from the top of the bank (C in illustration)
pctRootDen – Estimate of volume filled by roots
pctCover – Estimate of surface covered by vegetation
Bank Length – This can be estimated or taken from the bank erosion feature in the GIS

Reach Length – This can be acquired from the GIS
BankMatrl – Bedrock, Boulders, Cobble, Gravel, Sand, Silt/Clay
Bank_Strat - Presence, extent, sequence and position of stratification relative to bankful elevation
Strat_Sev – rating

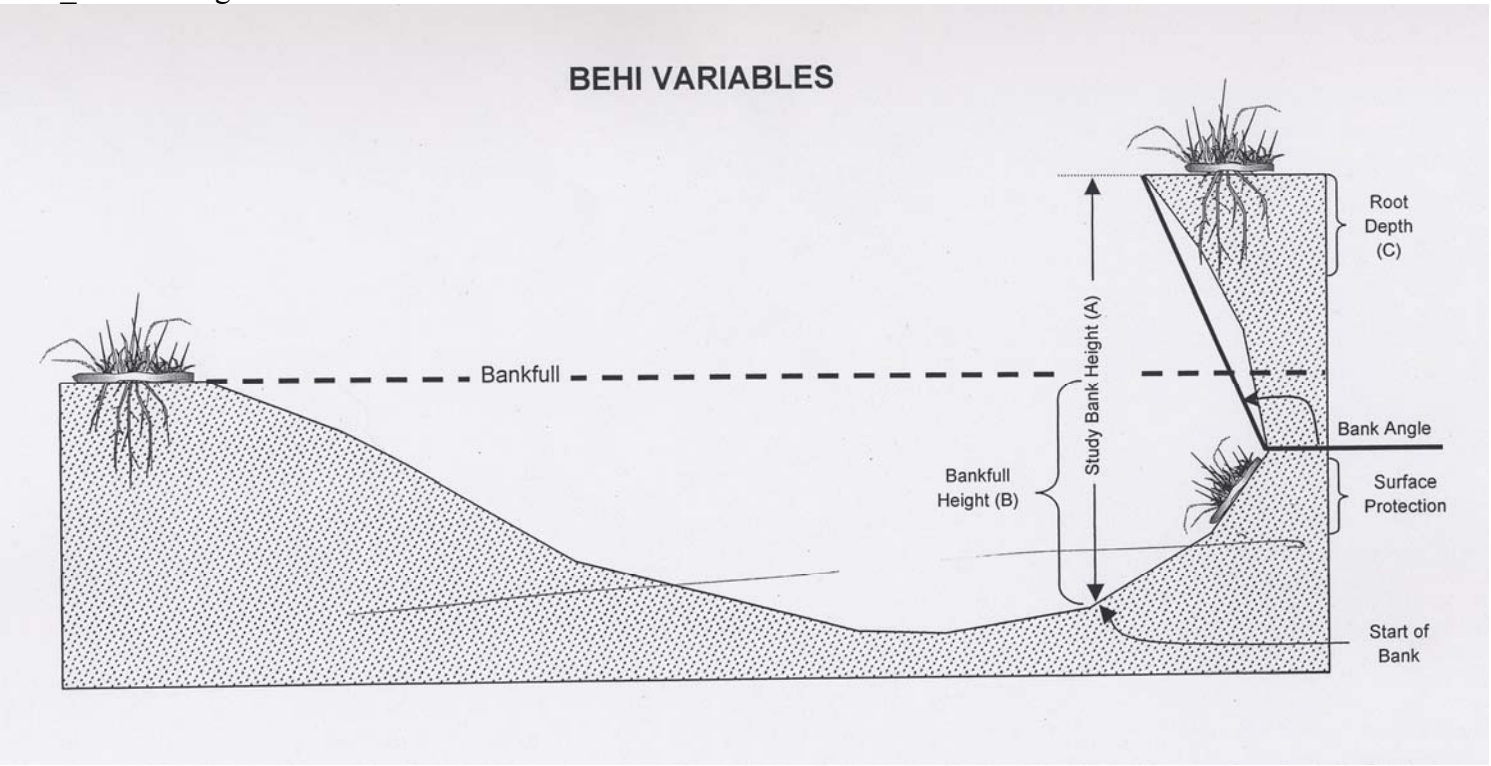


Illustration 2. BEHI Variables from Rosgen

Berm **(Point, Line)**
Data Dictionary Layer(s): Berm_P, Berm_L
Use Notes: Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute Fields	Description Options	Survey Notes
Point	Upstream,Downstream, On	This defines the location of point on the eroding bank, ie. the upstream end, a point on the bank, or the downstream end. Changes in berm characteristics can be captured using the "on" option
Location	LB, RB	Is it on the left or the right bank?
Avg Ht_Ft	Average Height (ft.)	Height of the top of the berm above the surrounding floodplain. Height should be measured as the change in elevation, not slope distance.
Avg Wid_Ft	Average Width (ft.)	As measured at the base of the berm in feet.
Vegetation	None, Grass/Sedge, Shrub, Roots/Woody	Is there vegetation on the berm?
Activity	True, False	Is this an actively maintained berm?
Material	Boulder, Stone, Log, Concrete, Sheet Piling, Bedrock, Earthen, Other	From what you can detect, what is the principal material used to construct the berm?

Berm Glossary:
Berm – a manmade structure constructed to confine flood flows.

Best Management Practice (Point,Line)
Data Dictionary Layer(s): BMP_P, BMP_L
Use Notes: Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	
Location	Left Bank, Right Bank, Across, In, Thalweg	
BMP_Type	Vane, Cross Vane, Weir, Root Wad, Fascine, VRSS, Live Stakes, Live Crib, Joint Planting, Coconut Roll, Tree Seedling, Hydroseeded, Other	See definitions below
Material	Rock, Log , Plant, Other	
FunctCond	Good, Fair, Poor, Not Functional	Good – flows directed away from bank, no signs of bank stress, pool depth adequate but not excessive Fair – some bank or bed scour, flow may not be moving through the proper point on the structure, possibly some aggradation in the pool. Poor – significant bed or bank scour, aggradation, or flow is misdirected or beginning to move around the structure. Not Functional – structure is not redirecting flow away from the bank or protecting the bed, in fact excessive scour may be causing the channel to migrate.
StructCond	New, Good, Fair, Poor, Failed	New – the structure is new and has not experienced a bankfull event Good – the structure has experienced bankfull events and still appears much the same as when constructed. Fair – the structure has deteriorated and may be missing stones, may have gaps, settled or rotated materials, failed support plantings, may show evidence of the scour or aggradation. Poor – the structure is crumbling, slumping, covered with sediment,

		scoured out, show evidence of the significant likelihood that failure can be expected in the near future. Failed – the structure has been significantly damaged. Ie. it has been washed away, buried, or no longer flows
Length_Ft		Required when "middle" is selected on the point option

Vane – Rock or wood structures that protrude from either streambank but do not extend entirely across a channel. They deflect flows away from the bank, and dissipate energy in downstream scour pools created by water flowing over the vane.
Cross Vane – see Weir
Weir – Log, boulder, or quarrystone structures placed across the channel and keyed into the streambank to control grade, dissipate energy, create pool habitat, control bed erosion.
Root Wad – a tree root mass keyed into the bank with boulders or quarrystone to provide energy dissipation, and create habitat.
Fascine – Long bundles of woody branches partially buried to provide as a means of establishing rows of regeneration for bank and floodplain protection
VRSS – Vegetated Reinforces Slope Stabilization, a bioengineering practice which combines brush layering and geotextile materials to secure soil in layers on steep, high embankments
Live Cribbing – the use of vigorously sprouting woody materials stacked and backfilled to produce a living bank protection structure.
Live Staking – use of woody cuttings partially buried along a bank or floodplain for the purpose of establishing new trees or shrubs
Joint Planting – live staking or potted plant material planted in the cracks or interspaces of riprap or stacked rock walls for the purpose of providing long term bank stability and improved habitat.

Bridge **(Point)**
Data Dictionary Layer(s): **XBridge**
Use Notes:

Attribute Fields	Description Options	Survey Notes
Owner	Private, County, State, Town, Village	
Bridge_ID		Id number is commonly displayed on the abutment under the bridge deck
Road_Name		Name of road
SpanNormFt		Span from abutment to abutment
SpanEffect		Span that actually conveys the flow (see diagram)
Ht_Ft		Average height from bottom of deck to the stream bed
Funct	Conveying, Contributing	Does the bridge cross the main stem (conveying) or a tributary (contributing)
FunctCond	Good, Fair, Poor, Not Functioning	
StructCond	New, Good, Fair, Poor, Failed	
Piers		Number of Piers supporting the bridge
Encroch_Rt		Number of Ft. encroachment of the right abutment on the right floodplain
Encroch_Lf		Number of Ft. encroachment of the left abutment on the left bank

Bridge Glossary:
SpanEffect – the effective portion of the span (length of opening) of the bridge which discounts portions of the span where the direction of the flow conflicts or impeded by the abutments or piers of the bridge.

Control (Point, Line)
Data Dictionary Layer(s): Cntrl_P, Cntrl_L
Use Notes: Beaver dams are not considered grade control and are entered under the Obstruction feature. Stream BMPs constructed by DEP or partnering agencies should also be documented under BMP. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute Fields	Description Options	Survey Notes
Point	Upstream, Downstream, Middle, On	
Location	Across, Left Bed, Right Bed, Left Bank, Right Bank, All	If more than one type exists, ie. left bed and left bank, establish two separate points, one bed-grade control, a second as bank-planform control..
Ctrl_Type	Grade, Planform, Both	
Material	Boulder, Stone, Log, Concrete, Sheet Piling, Bedrock, Other	"Boulder" would pertain to a substantial natural control whereas "stone" refers to a man-made structure that acts as a control.
Func_Cond	Good, Fair, Poor, Not Functioning	Relevant for man-made structures (check dams, weirs, deflectors) Good – flows directed as intended by the structure Fair – some excessive bank or bed scour, flow may not be moving through the proper point on the structure, possibly some aggradation in the pool. Poor – significant bed or bank scour, aggradation, or flow is misdirected or beginning to move around the structure. Not Functioning – structure is not controlling the flow. The channel is beginning to migrate or headcut.
Struc_Cond	New, Good, Fair, Poor, Failed	Relevant for man-made structures (check dams, weirs, deflectors) New – the structure is new and has not experienced a bankfull event Good – the structure has experienced bankfull events and still appears much the same as when constructed. Fair – the structure has deteriorated and may be missing stones, may have gaps, settled or rotated materials, failed support plantings, may show evidence of the scour or aggradation. Poor – the structure is crumbling,

Length_Ft.		For use only with point “middle” option where the length of the control is less than 25 ft long

Grade Control Glossary:

Crossing (Point)
Data Dictionary Layer(s): Crossing
Use Notes: The point should be taken in the thalweg.

Attribute field	Description Options	Survey Notes
CrossType	Agricultural, Forestry, Recreational, Other	This feature is use to locate fords along the stream

Culvert **(Point)**

Data Dictionary Layer(s): XCulvert

Use Notes: Use this feature to locate and describe structures of passing stream flow and stormflow in natural channels and swales. Streams and tributaries that must pass the flow under a road or pathway. Use " piped outfall" to locate and describe structures for point source contribution or stormflow from developed areas to the system (contributions from parking areas, roadway ditches, barnyards, homes or businesses)

Attribute field	Description Options	Survey Notes
Owner	Private, County, State, Town, Village, Unknown	
Road_Name		
Culv_Type	Round, Pipe Arch, Box	
Material	Corrugated Metal, Smooth Steel, Plastic, Concrete, Other	
Funct	Conveying, Contributing	Is the pipe for water entering from a tributary or does the culvert convey the stream (ie. A road is passing over the stream)
FunctCond	Good, Fair, Poor, Not Functioning	Good – flows received and directed as intended by the structure Fair – some excessive bank or bed scour, flow may not be moving through the proper point on the structure, possibly some aggradation above or degradation below. Poor – significant bed or bank scour above or below, aggradation above or below, or flow is misdirected or beginning to move around or under the structure. Possibly undersized, constrains fish migration Not Functioning – structure is not controlling the flow. The channel is routed around the culvert
StructCond	New, Good, Fair, Poor, Failed	New – the structure is new and may not have experienced a flood event Good – the structure has experienced bankfull events and still appears much the same as when constructed. Fair – the culvert has deteriorated and may be corroded, slightly crushed, erosion of headwall or may show evidence of the scour or aggradation. Poor – the structure is crumbling or collapsing etc. Failed – blown out, crushed, collapsed
Rise_Ft		Height of the Culvert pipe (inside diameter measured to the 10^{th} foot)
Span_Ft		Width of the culvert pipe

Depositional Feature(Point)
Data Dictionary Layer(s): Dep_Feat
Use Notes: Use this feature to locate bars. Locate the approximate center of the bar and estimate its length, width.and principal particle size. Use the sed_sample feature to locate the position of bar samples. Use notes to further describe the types of materials present.

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, Middle, On	
Location	Left Bed, Right Bed, Center, Thalweg, All	This defines the location of bar with respect to the channel. "All" represents across the entire channel.
Dep_Type	Transverse Bar, Point Bar, Center Bar, Side Bar, Delta Bar, Full Channel, Other	See definitions and illustration below
Material	Clay, Silt, Sand, Gravel, Cobble, Boulder, Stratified, Bi-Modal	
Vegetated	Grass/Sedge, Woody, Grass/Shrub, None	
Length_Ft	Feet	Length of the bar in feet
Width_Ft	Feet	Width of the bar in feet

Depositional Feature Glossary:
Transverse Bar- (Diagonal Bar) figure B5
Point Bar – Figure B1
Center Bar – (Mid Channel Bar) figure B3
Side Bar – figure B4

Delta Bar – figure B8
Full Channel Bar – a depositional feature that crosses the entire channel perpendicular to flow where the flow is not directed toward a particular bank.
Bi-Model – a distribution of material size classes that consists principally of two classes.

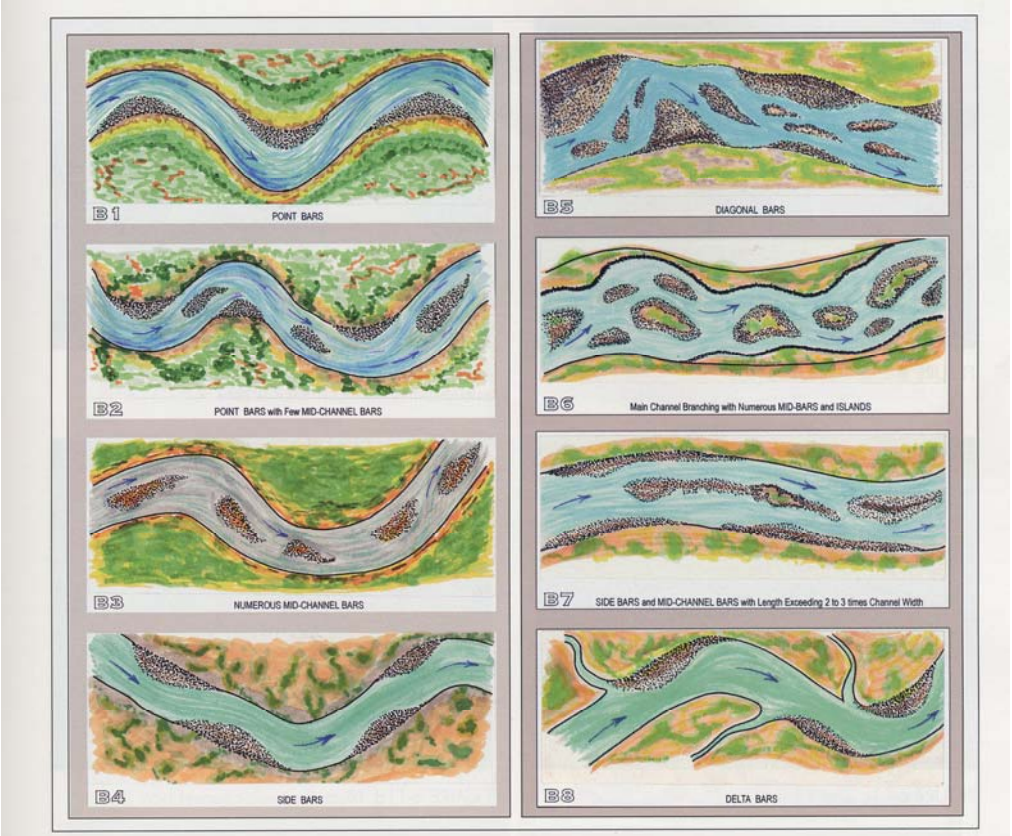


FIGURE 6-10. Illustrations of various depositional features as modified from Galay et al. (1973).

Dump **(Point)**
Data Dictionary Layer(s): **Dump**
Use Notes:

Attribute field	Description Options	Survey Notes
Location	Floodplain Left, Floodplain Right, In, Other	This defines the location of the dump. Floodplain left, Floodplain right or in the channel
Material	Yard Waste, Wood, Glass, Metal, Mixed, C&D	What is the principle material contained in the dump? Metal includes appliances and vehicles or parts.
Hazardous	True, False	Could the release of the material pose a threat to humans or wildlife or the environment in general?
Active	True, False	Has material been added to the dump within the past few years?
Fld_Hazard	True, False	Could this material be mobilized during a flood?

Dump Glossary:
C&D – Construction debris
Yard Waste – lawn and garden clippings, leaf piles, and piles of cut branches
Metal – including appliances, car frames or parts, unidentifiable pieces of metal
Wood – scrap or discarded wood or wooden objects such as boards or furniture

Fine Sediment Source (Point)
Data Dictionary Layer(s): Fine_Sed
Use Notes: This feature should be collected where the assessment team encounters clay or other fine sediment exposures along a stream bank or as part of the stream bed. Observations of exposed clay that might indicate local geologic instability away from the channel, but that might influence the stream and its waters can also be located using this feature. This feature is collected in addition to Bank Erosion (Bank_Er) and BEHI

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, Middle, On	This defines the location of point on the exposure, ie. the upstream end, a point on the exposure, or the downstream end. Changes in exposure characteristics can be captured using the "on" option
Location	LB,RB,In Channel, Both, All	LB – left bank, RB – right bank. Both signifies both bed and bank exposures. If there is a left and a right bank exposure, collect two separate points.
Geol_Type	Lacustrine Clay, Glacial Till, Mixed, Alluvial, Other, Uncertain	
Source	Bed, Bank, Both, Other	
Length_Ft	Feet	Length of exposure along bank
Width_Ft	Feet	Width of exposure across bed
Height_Ft	Feet	Height of exposure on bank

Fine Sediment Glossary:
Lacustrine Clay – Refering to clay beds deposited at the bottom of glacial lakes. These clays typically are dense red clays that contain little gravel or cobble, and are easily suspended in water.
Glacial Till –Glacial drift composed of an unconsolidated, heterogeneous mixture of clay, sand, gravel, cobbles, and boulders
Mixed – A clay exposure that includes both lacustrine clay beds and glacial till deposits with a high clay component.
Alluvial – a sediment source that has previously been moved by water

Floodplain Indicator (Point)
Data Dictionary Layer(s): Fld_Ind
Use Notes:

Attribute field	Description Options	Survey Notes
Ind_Type	HWM, Bankfull, Terrace, Other	HWM - High water marks. For HWM indicate the date of the event in the notes field. Bankfull indicator, Terrace slope break
Location	RB, LB	
Elev_Ft		Datum for the elevation should be recorded in the notes field…ie, recent survey, height above ?
ID		Should be used for bankfull indicator or HWM flags are numbered
TerraceDst		Distance of base of terrace from top of streambank
TerraceHt		Height of top of terrace from base of terrace

Floodplain Indicator Glossary:
High Water Mark – an indicator of the maximum stage of a recent flood event as typically evidenced by a band of accumulated debris (grasses, leaves, twigs, or other light material).
Bankfull – used to indicate the location where bankfull indicators are readily identifiable or bankfull flags have been placed
Terrace – used to indicate the base of terraces especially where recent channel degradation processes have created a series of terraces.

Gage (Point)
Data Dictionary Layer(s): Gage
Use Notes: For Continuous gages, the GPS point for the gage should be taken at the stream where the inlet pipe enters the water. Staff plate and crest stage gages are GPSed at the location of the measuring device.
Fields

Attribute field	Description Options	Survey Notes
Location	Left Bank, Right Bank, In	
Gage_ID		USGS gage eight digit ID
Gage_Type	Staff Plate, Continuous, Crest Stage, Unknown	See glossary
Active	True, False	

Land Cover (Point)
Data Dictionary Layer(s): LandCovP
Use Notes: To be used for field veritication of supervised land cover classification. Users are refered to riparian land cover mapping protocol and classification schema developed by NYC DEP SMP and GCSWCD, DCSWCD. The relationship of level I classes to level II classes are

Attribute field	Level I Class	Level II Class
	Bare Soil"	Cobble Construction Spoils Exposed Bank Gravel Mine Junkyard Landfill/dump Roadcut, cliff/slope Bedrock
	Herbaceous	Mowed Lawn Mowed Lawn w/ Trees Mowed Roadside Pastureland Wet Meadow Shallow Emrgnt Marsh Sparse Vegetation Success Old Field Cropland
	Shrubland	Brushy Cleared Land Evrgrn Shrubland Shrub/Shrub Wetland Success Shrubland

Land Cover	**(Point) continued**	
	Decid Clsd Tr Canopy	Clsd N Hrd Clsd Floodplain Frst Clsd Decid Frst Wet Clsd Success N Hrd
	Decid Opn Tr Canopy	Opn N Hrd Opn Floodplain Frst Opn Decid Frst Wet Opn Success N Hrd
	Evrgrn Clsd Tr Canopy	Clsd Hem FrstClsd Clsd White Pine Frst Clsd Evrgrn Frst Wet
	Evrgrn Opn Tr Canopy	Opn Hem Frst Opn White Pine Frst Opn Evrgrn Frst Wet
	Mixed Clsd Tr Canopy	Clsd Hem-N Hrd Clsd Pine-N Hrd Clsd Sprc-N Hrd Clsd Mixed Frst Wet
	Mixed Opn Tr Canopy	Opn Hem-N Hrd Opn Pine-N Hrd Opn Sprc-N Hrd Opn Mixed Frst Wet
	Unpaved Road	Unpaved road Railroad Path
	Impervious Surface	Paved Other Rooftop
	Revetment	Riprap Concrete Other

Land Cover (Point) continued

	Water	Backwater Slough Farm Pnd/Ag Pnd Farm Pnd/ArtfclPnd Ind Cooling Pnd Natural Pnd Reservoir/Artfcl Sewage Treatment Pnd Tributary Beaver Impoundment Ephemeral Pnd/Pool
Location	Left Bank, Right Bank	

Land Cover Glossary:
Ag-Agricultural
Artfcl – Artifical
Clsd-Closed
Decid-Deciduous
Evrgrn-Evergreen
Frst-Forest
Hem-Hemlock
Hrd-Hardwood
N-Northern
Pnd-Pond
Sprc-Spruce
Success-Successional
Wet-Wetland

Large Woody Debris (Point
Data Dictionary Layer(s): LWD_P

Use Notes: This feature is used to capture piles of large woody debris on the floodplain that are not a significant obstacle to flows. Woody debris that is and obstacle should be captured under the Obstacle feature.

Attribute field	Description Options	Survey Notes
Point	Upstream, On, Downstream	Is this the upstream limit, a point along the reach, or the downstream limit
Location	Right Bank, Left Bank	

Monitoring Site (Point, Line)
Data Dictionary Layer(s): MntrSite
Use Notes: For use by assessment or research survey teams to delineate the extent of known or proposed monitoring locations. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute field	Description Options	Survey Notes
Point	Upstream, On, Downstream	Is this the upstream limit, a point along the reach, or the downstream limit
Location	Right Bank, Left Bank, Thalweg	
TypeMntr	Geomorphic Survey, Fisheries Survey, Macroinvert Survey, Sed transport survey, BEHI, Water Quality, Vegetation, Biota, Habitat	
SurveyType	Treatment, Control, Reference	
Status	Existing, Proposed	
Name/Id		Text field for identifying an existing site's name or id, ie. Broadstreet Hollow Reference reach…

Monitoring Point (Point)

Data Dictionary Layer(s): MntrPnt
Use Notes: For use by research or monitoring survey teams to identify location of specific instruments

Attribute field	Description Options	Survey Notes
Location	Right Bank, Left Bank, Left Bed, Right Bed, Thalweg	
InstType	Scour chain, bank pin, other	
Feature	Riffle, run, pool, glide	
Status	Existing, Proposed	
Id		Text field for identifying an existing site's name or id, ie. Broadstreet Hollow Reference reach…

Montgomery and Buffington Classification (Point)
Data Dictionary Layer(s): ClassM_B
Use Notes: For use by assessment survey teams to identify the location of stream feature types based on Montgomery and Buffington's Classification system. (See reference)

Attribute field	Description Options	Survey Notes
Location	Right Bank, Left Bank, In	
MB_Type	Colluvial, Bedrock, Cascade, Step-Pool, Pool-Riffle, Dune–Ripple, Regime, Braided	

Montgomery and Buffington Classification Glossary,

Management Practice (Point)
Data Dictionary Layer(s): MgtPract
Use Notes: Used to indicated general location of where stream management practices have been implemented

Fields

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	
Location	Left Bank, Right Bank, Across, In, N/A	
TypePract	Channel Restoration, Bank Stabilization, Aquatic Habitat Str, Clay Removal, LWD Management, Berm Removal, Flood Control, Rip Veg Restoration, Invasive Sp Mgmt, Infrastruct.Setback, Stormwater Mgmt, Land Acquisition, Other	See definitions below

Miscellaneous (Point, Line, Area)
Data Dictionary Layer(s): Misc_P, Misc_L, Misc_A
Use Notes: Used for non specific features or features unaddressed by other data dictionary features
Fields

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	
Location	Left Bank, Right Bank, Across, In, N/A	
Notes		
Photo		

Obstruction (Point)
Data Dictionary Layer(s): Obstruct
Use Notes: For multiple effects enter the principle effects in the notes field.

Attribute field	Description Options	Survey Notes
Location	LB,RB,Across,In	Across – the obstruction blocks the entire channel In – the obstruction may be only partially blocking the channel
Obstr_Type	Log, Tree, Woody Debris, Trash, Beaver Dam, Other, Multiple	Log – cut or broken off tree stem Tree – a whole or mostly whole tree that is fallen into the waterway. Its roots may or may not be still embedded in the bank Woody debris – a consolidation of woody material Trash – mixed debris from human sources

EffectUpt	Erosion, Deposition, Backwater, Scour, Reroute, Grade Control, Multiple, None	
EffectDown	Erosion, Deposition, Backwater, Scour, Reroute, Grade Control, Multiple, None	
Impact	Site, Reach, None, Unknown	
LengthFt		

Photo Point (Point)
Data Dictionary Layer(s): Photo_P,
Use Notes: Used for non specific photo points features or photo points of features unaddressed by other data dictionary features.

Attribute field	Description Options	Survey Notes
Location	Left Bank, Right Bank, Across, In, N/A	
Notes		
Sub_locate	Left Bank, Right Bank, In, Across	The subject is located on the leftbank, right bank, in stream or streaches across the stream
Photodirct	Upstream, Downstream, Across, N/A	Direction of the photo relative to the stream flow
Azimuth	Azimuth degrees (360)	Azimuth direction of the subject from the point where the photo is taken
Photo		

Piped Outfall (Point)
Data Dictionary Layer(s): PipedOut
Use Notes:

Attribute field	Description Options	Survey Notes
Size	2",4", 6", 8", 10" 12", 15", 18", 21", 24", 30", 36", 42", 48", 54", 60", 66", 72", 84", 96", 102", 108", other	Pipe diameter in inches
Location	LB, RB	Does the outfall enter from the left or right bank?
Material	Corrugated Metal, Smooth Steel, Plastic, Concrete, Other	What is the material of the pipe
Flow	Perennial, Ephemeral, Intermittent, Unknown	Is the flow year round (perennial) or seasonal/regulated (ephemeral)?
OutProtect	Good, Fair, Poor, Absent, Not Functional	Good – manmade structure or natural land form adequate for conveying flow without significant scour. Fair – structure provides some protection but scour is occurring. Poor – structure provides little protection and scour threatens water quality, bank stability or the pipe. Maintenance needed. Absent – no natural or man-made protection present and it is badly needed.
Outfall_Ft		Change in elevation between the bottom of the pipe and the water surface?
Headwall	True, False	Is there a headwall at the outlet of the pipe?
Owner	Private, Municipal, Undetermined	

Revetment (Point, Line)
Data Dictionary Layer(s): Revet_P, Revet_L
Use Notes: When using points to map revetment along a bank, survey both a start and end point. If the Revet_Type changes mid-way along a protected bank, survey a point at the end the initial feature, then use the repeat function to start a new feature with the new Revet_Type selected. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	This defines the location of point on the revetment, ie. the upstream end, downstream end or a point on or along the revetment (ie. the mid point, or a vertex).
Location	LB, RB	Is the revetment on the left bank or the right bank of the stream.
Revet_Type	Gabion Basket, Rip-Rap, Sheet Piling, Log Cribbing, Stacked Rock, Sloped Stone, Concrete/Poured, Concrete/Slab, Bio-Engineering, Other	
HeightFt		Height in feet
Func_Cond	Good, Fair, Poor, Not Functioning	Good – flows are not disturbing the bank Fair – some bank scour Poor – significant bank scour Not Functioning – structure is not protecting the bank or the stream alignment/elevation has changed and abandoned or buried the revetment.
Struc_Cond	New, Good, Fair, Poor, Failed	New – the structure is new and has not experienced a bankfull event Good – the structure has experienced bankfull events and still appears much the same as when constructed. Fair – the structure has deteriorated and may be missing stones, may have gaps, settled or rotated materials, failed support plantings, may show evidence of the scour or aggradation.

		Poor – the structure is crumbling, slumping, covered with sediment, scoured out, show evidence of the significant likelihood that failure can be expected in the near future. Failed – the structure has been significantly damaged. Ie. it has been washed away, buried, or no longer protects the bank.
BankKeyed	True, False, Unknown	Is the revetment tied back into the bank?
ScourProt	True, False, Unknown	Is the toe protected from scour?

Riparian Vegetation (Point, Line)
Data Dictionary Layer(s): RipVeg_P, RipVeg_L
Use Notes: This feature provides information on the location of existing or proposed conservation plantings, invasive plant communities and the location of possible sources of planting material. Also see Land Cover (LandCov_P) for a point feature for documenting land cover in association with riparian corridor land cover/vegetation mapping. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	This defines the extent of the vegetation on the bank, ie. the upstream end, downstream end or a point on or along the community (ie. the mid point, a vertex or a location along the community boundary).
Location	LB, RB	Is the vegetation being described located on the left bank or the right bank of the stream?
Plant_Site	Existing, Proposed, NA	Has the vegetation at this location been planted as part of a conservation effort. Could it be a site that would support additional vegetation as part of an effort to protect property, or improve habitat or water quality
Material	Willow, Sedge, , Other	Willow, Sedge and Alder can be noted where there is a possible source of planting material

Invasive	Alder, Knotweed, Multiflora Rose, Barberry, Loosestrife	Knotweed, Multiflora Rose, Barberry and Loosestrife should be mapped as individual points for small colonies or as a series of points to be joined as a line to represent a continuous community
Mow_Crop	True, False	Is the site mowed or cropped to the edge of the stream or nearly so? (ie. buffer is nearly absent due to practice)
Bank_length		For use with invasive feature. For small colonies that are best collected as points, provide an estimate of the colony width or the length of bank covered by the colony. If the colony occupies more than 100 ft of bank, collect the feature as a series of points that will be connected in the office. Can also be used to estimate bank lengths effected by mowing or cropping

Riparian Vegetation Glossary:

Road **(Point, Line)**
Data Dictionary Layer(s): Road_P, Road_L
Use Notes: This feature should be captured where a road or trail either crosses the stream or may impact the stream and its floodplain. Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute Fields	Description options	Survey Notes
Location	Left bank, Right bank	
Position	Centerline, Edge, Ditch, Guiderail	Feature of the road that is being captured
Material	Paved, Gravel, Vegetation, Dirt, Other	
Road_Use	Auto, RR, Trail, Recreation Vehicles, Ag Use, Forestry, Other	Principle use
Owner	State, County, Town, Private, Federal	
Road_Name		Fill in the name

Road Glossary:
RR – working or abandoned railroad right of way – not including a rail trail. For rail trail see trail.
Trail – a path or improved route including a rail trail typically not used by motorized recreational vehicles
Recreational vehicle – trails used by recreational vehicles…atvs, snowmobiles, etc.
Ag. Use – farm road or tracks traveled by heavy equipment
Forestry – logging trails or roads including those that have not been used recently

Rosgen Level 1 Classification (Point)
Data Dictionary Layer(s): RosgenL1
Use Notes: This feature is captured in the field when the surveyor encounters what is believed to be a change in the Rosgen Classification Stream Type. **The point should be taken in the thalweg**, **preferably at a feature break.** This can be used to verify office based classification or add additional breaks at the time of a walkover.

Attribute Fields	Description options	Survey Notes
ClassAbove	Aa+-G,Undetermined	What is the likely classification of the upstream reach?
ClassBelow	Aa-G,Undetermined	What is the likely classification of the reach below this point?
Reference	True,False	Is this possibly a reference reach (at first glance, does it have indicators that suggest it might be stable?)

Rosgen Level 1 Class Glossary:

Sediment Sample Location (Point)
Data Dictionary Layer(s): SedSample
Use Notes: This feature is captured at the location of sediment samples such as a bar sample or pebble count

Attribute Fields	Description options	Survey Notes
Samp_Type	Bulk, Pebble	
Sample_Locat	Bed, Bar, Bank, Other	
Number		Id number
D84_Est		This is estimated
D50_Est		This is estimated

Stream Feature **(Point, Line)**
Data Dictionary Layer(s): **SFeat_P, SFeat_L**
Use Notes: This feature can be used to create stream alignments and define the breaks in features along the stream. **The point should be taken in the thalweg**, **preferably at a feature break.** Due to accuracy and accessibility issues it is preferable to collect this feature as a point in the field. It is also understood that the final database repository for this feature will be the associated line feature created in the office using a combination of heads-up digitizing and utilization of the point-to-line attribute transfer tool

Attribute field	Description Options	Survey Notes
Point	Upstream, Downstream, On, Middle	This defines the location of point on the stream feature, ie. the upstream start, downstream end or a point on or along the stream feature (ie. the mid point, or a vertex).
Location	Thalweg, Right, Left, On Center Bar	Is the location where the point is being taken. Normally this should be "Thalweg", but in the case of a divergence or convergence it might "On Center Bar".
Feat_Type	Riffle, Run, Pool, Glide, Step, Step Pool Sequence, Scour, Headcut, Cascade, Divergence, Convergence, Other	Taken at the top of the feature. See Stream Feature Glossary
Reference	True, False	Could this be a reference reach? This is only to indicate where a future reference reach survey might be undertaken.
Channel	Main, Secondary, Other	Is the point you are taking located on the main channel or a secondary channel?
SC_Type	Flood Chute, Avulsion, Backwater Area, Other, Side Channel	Secondary Channel Type. This attribute is used in combination with the Channel attribute. It provides more detail about the type of secondary channel.
Change_Ft		Elevation change between the top and bottom of a feature. Especially used for headcut
LengthFt		Required only if using middle under location
Flow	Perennial, Intermittent, Subsurface, Unknown	Is the channel flowing? Can be used to capture areas of subsurface flow

Stream Feature Glossary:

Riffle – The steeper section of a stream between two pools where the thalweg crosses from one side of the stream to the other. Water depth is shallower than pools, velocities are greater, and bed material size is greater than the pool material.

Run - the transition from the riffle to the pool typified by an increase in slope at the head of the run and by a reduction in velocity and an increase in depth at the end of the run. This runs are not differentiated from riffles and pools, then they should be included as part of the riffle. The run is the steepest section of the stream.

Pool – the deeper section of the stream typically located at meander bends where material sizes are smaller and velocities are lower. Bed slope through the pool are at first negative (downward) and then positive the bed rises upto the glide and then returns to a negative slope at the head of the riffle. The water surface through the pool is nearly flat.

Glide – the outlet of a pool where the stream bed slopes up out of the pool and crests before returning to the downward slope in the riffle. The limits of this feature are difficult to properly identify and should be confirmed by an experienced team member. In general, it is the location where water appears to be pouring out of the pool and into the riffle. There may be a break in slope between the pool and the beginning of the glide and then another break between the end of the glide and the beginning of the pool. If glides are not differentiated from pools and riffles, then they should be included as part of the pool.

Step – a single short drop between pools

Step Pool Sequence – a feature of high gradient streams where riffles are absent and water flows over a series short drops or "steps" interspaced with pools.

Headcut – a significant drop in elevation along the channel profile that appears to be migrating upstream. Below the feature there may be evidence of channel bottom scour, an entrenched condition, or bank exposure beginning immediately below the drop. There also may be evidence of the formation of a terrace below the headcut.

Cascade –

Divergence – location where a secondary channel splits off from the main channel

Convergence – location where a secondary channel rejoins the main channel or another secondary channel.

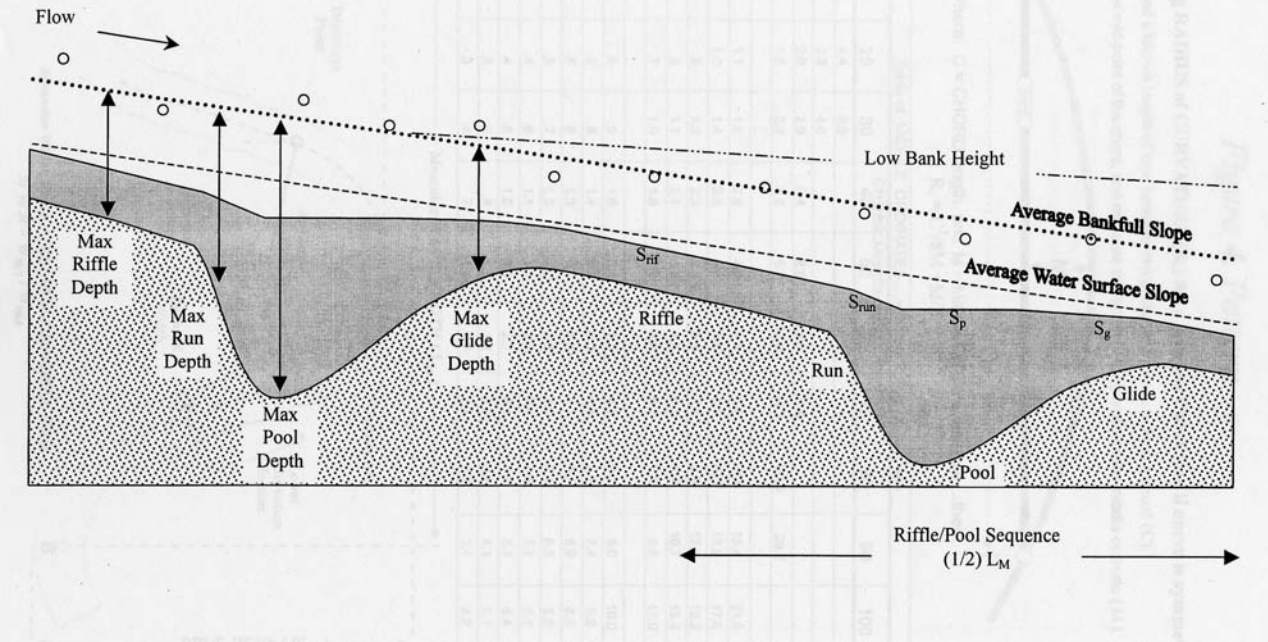
Flood Chute -

Avulsion -

Backwater Area –

Side Channel –

Figure 3. Longitudinal Profile



Survey Control (Point)
Data Dictionary Layer(s): SurvCont
Use Notes: For use in capturing the general location of all survey control. The Cont_Type attribute "Xsection" should be used to identify the location of cross section bank pins. . If a cross section has a vertex –in the case of a bifurcated channel -, an additional point with the same attribute information should be taken at the vertex . This is not for establishing specific coordinates for high level professional survey, but could be used to identify the approximate location of high level survey control benchmarks. For cross sections, the points will be used to establish a cross section line in the geodatabase using the point to line conversion tool. Use the notes field to record the appearance of the marker (ie. 2" capped rebar with orange flagging.)

Attribute field	Description Options	Survey Notes
Cont_Type	USGS Marker, DOT Marker, County Marker, BEHI, Erosion, Survey Station, Xsection, DEC Marker, Profile, Topo, Other	Erosion includes bank pins and scour chains. Xsection includes the bank pin or other permanent monuments demarcating the cross section.
Location	LB, RB	
Elevation		Elevation as recorded on the marker or assumed from the survey
XS_Type	Reference, Classification, Monitoring, Other	Purpose of the cross section
ID		

Tributary (Point)
Data Dictionary Layer(s): Trib
Use Notes:
Fields

Attribute field	Description Options	Survey Notes
Location	LB, RB	Does the tributary enter on the left or right bank?
Trib_Type	River, Stream, Spring Seep, Other	
Flow	Perennial, Ephemeral, Intermittent, Unknown	
Name		If unnamed tributary is significant, enter "unknown"

Utility **(Point)**
Data Dictionary Layer(s): **Utility**
Use Notes:

Attribute field	Description Options	Survey Notes
Util_Type	Pole, Well, Phone, Sewer, Water, Cable, Gas, Hydrant, Multiple	
Util_ID		If the pole has a id number
Owner	Public, Private, Unknown	
Orient	Parallel, Perpendicular	Does the utility line run approximately parallel or across (perpendicular to the stream

Utility Glossary:

Subject Index