



|                                  |             |              |                    |
|----------------------------------|-------------|--------------|--------------------|
| Downstream Longitudinal Gradient | Method Used | Distance (m) | Elevation Rise (°) |
|----------------------------------|-------------|--------------|--------------------|

Downstream Site Length      # of Downstream Features      Photo #      Photo Name

**Downstream Features**

|      |      |                                       |          |          |                   |               |                        |                  |                  |                   |              |                      |                       |                     |
|------|------|---------------------------------------|----------|----------|-------------------|---------------|------------------------|------------------|------------------|-------------------|--------------|----------------------|-----------------------|---------------------|
| Type | Flow | Sediment Transport (Adjacent Valley ) | Sediment | Width MT | Feature Width (m) | BF Depth (mm) | Entrenchment Width (m) | Perched Ht. (mm) | Jumping Ht. (mm) | Feature Roughness | Feature Veg. | Riparian Vegetation  |                       |                     |
|      |      |                                       |          |          |                   |               |                        |                  |                  |                   |              | 0 - 1.5 m Left Right | 1.5 - 10 m Left Right | 10 -30 m Left Right |

**Upstream Flow Measures** (Record either Hydraulic Head or Volume or Distance)

|                  |            |                     |   |   |            |   |   |              |   |   |            |   |   |   |
|------------------|------------|---------------------|---|---|------------|---|---|--------------|---|---|------------|---|---|---|
| Wetted Width (m) | Depth (mm) | Hydraulic Head (mm) |   |   | Volume (L) |   |   | Distance (m) |   |   | Time (sec) |   |   |   |
| 1                | 2          | 3                   | 1 | 2 | 3          | 1 | 2 | 3            | 1 | 2 | 3          | 1 | 2 | 3 |

| Upstream and Downstream Site Features  | Category Value | Comments |
|--|----------------|----------|
| Major Nutrient Sources Upstream        |                |          |
| Potential Contaminant Sources Upstream |                |          |
| Channel Hardening                      |                |          |
| Dredging or Straightening              |                |          |
| Barriers and/or Dams in Proximity      |                |          |
| Online Ponds Upstream                  |                |          |
| Springs or Seeps at the Site           |                |          |
| Evidence of Channel Scouring/Erosion   |                |          |
| BMPs or Restoration Activities         |                |          |

**Channel Connectivity (to downstream)**

Connected      **Connected:** A surface water flow connection is apparent from the donating feature, to the downstream watercourse with existing or potential overland flow.

Unconnected      **Unconnected:** A water flow feature that is not connected to the drainage network except by groundwater infiltration. These features drain to kettle wetlands or ponds, etc that have no outlet to the drainage network except via groundwater.

**Site Feature Categories**

1. Ongoing and active
2. Historical evidence
3. No evidence, but reported
4. No evidence
5. Unknown

Comments

Crew      Recorder

Crew Leader (initial and last name)

## FEATURE TYPE

### 1-DEFINED NATURAL CHANNEL

Channel banks and sorted substrates are visible; there is no evidence that the drainage feature has been historically dredged or straightened.

### 2-CHANNELIZED OR CONSTRAINED

Channel banks and sorted substrates are visible and there is evidence that the stream has been historically dredged or straightened. In some instances the channel is constrained by filling, such that access to the flood-plain is no longer available

### 3-MULTI-THREAD

Multiple channels for one flow source; multi thread channels are subdivided at low-water stages by multiple midstream bars of sand or gravel. At high water, many or all bars are submerged.

### 4 - NO DEFINED FEATURE

A topography with no identifiable depression to convey water and no facultative wetland species are present. Water is transported through overland or sheet flow.

### 5-TILED

An outlet from a buried stream or tile drain is visible. There may be a defined channel downstream of the outlet caused by scouring.

### 6-WETLAND

Feature with sustained water storage function. Lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. Obligate wetland species will be dominant (e.g. cattails). Includes beaver ponds.

### 7-SWALE

A shallow trough-like depression that carries water flow during rainstorms or snowmelt and has ill-defined banks. Water conveyance is the primary function for the purposes of this definition. Flow not sufficiently sustained to cause substrate sorting or prevent instream vegetation from establishing, and water storage not sustained to promote obligate wetland vegetation (e.g. cattails). Bed will contain facultative wetland plants (e.g. reed canary grass).

### 8-ROADSIDE DITCH

A watercourse that conveys roadside and other impervious cover drainage that has been directed to run parallel with a roadway.

### 9-POND OUTLET

Flow is from the outlet of an on or offline, irrigation, storm- water or other pond. Indicate the type of pond present in the comments field.

## GRADIENT/SLOPE METHOD

- |                    |                |
|--------------------|----------------|
| 1-Visual           | 4-Survey Level |
| 2-Clinometer (Deg) | 5-LIDAR        |
| 3-Laser Level      | 6-Other        |

## FLOW CONDITIONS

### (1) NO SURFACE WATER

The feature is dry.

### (2) STANDING WATER

The feature has standing water, but there is no visible flow. Channel often alternating between standing water and dry.

### (3) INTERSTITIAL FLOW

Flow is observed in the pavement layer of substrates only.

### (4) SURFACE FLOW-MINIMAL

There is flow within the HOF that is estimated to be less than 0.5 litres per second

### (5) SURFACE FLOW-SUBSTANTIAL\*

There is flow within the HOF that is estimated to be more than 0.5 litres per second.

\*If Class 5 is selected, record [Flow Measures](#)

## SEDIMENT DEPOSITION

### (1) NONE

No evidence of sediment deposition

### (2) MINIMAL

An average of <5mm of new sediment deposits

### (3) MODERATE

An average of 5 - 30mm of new sediment deposits

### (4) SUBSTANTIAL

An average of 31 - 80mm of new sediment deposits

### (5) EXTENSIVE

An average of >80mm of new sediment deposits

## WIDTH MEASUREMENT METHOD

### (1) CANNOT MEASURE

No definitive boundaries (e.g., defined banks, vegetation, soil)

### (2) BANKFULL

Defined channel, measured at top of bank, ideally from one crossover

### (3) MEAN WIDTH

Average Width of feature

### (4) ESTIMATED

Defined feature but estimated visually

### (5) GSI

### (6) Measured & GIS

A combination of field measurement for bankfull and GIS for feature width

## FEATURE ROUGHNESS

### (1) MINIMAL

Less than 10% of the areal coverage of the channel substrates contains materials that diffuse flows

### (2) MODERATE

10-40% of the areal coverage of the channel substrates contains materials that diffuse flows.

### (3) HIGH

40-60% of the areal coverage of the channel substrates contains materials that diffuse flows.

### (4) EXTREME

More than 60% of the areal coverage of the channel substrates contains materials that diffuse flows.

## RIPARIAN VEGETATION

### (1) NONE

Over 75% of the surface area within the 30 m wide buffers of each side of the HOF has no vegetation; includes hard surfaces such as roads and buildings

### (2) LAWN

Grasses that are not allowed to reach a mature state due to mowing

### (3) CROPPED LAND

Planted or tilled in preparation for planting of agricultural crops; plants typically arranged in rows (due to machine planting); may be subject to periodic tillage

### (4) MEADOW

Less than 25% tree/shrub cover; characterized by grasses, forbs and sedges

### (5) SCRUBLAND

More than 25% and less than 60% trees and shrubs interspersed with grasses and forbs (a transitional area between meadow and forest, with trees generally less than 10 cm in diameter at breast height)

### (6) WETLAND

Dominated by water tolerant wetland plants including rushes, and water tolerant trees or shrubs.

### (7) FOREST

More than 60% of the canopy is covered by the crowns of trees

## EQUIPMENT CHECKLIST:

- |                         |                  |
|-------------------------|------------------|
| -Field Sheets           | - Clinometer     |
| -Safety Vests / Pylons  | - Compass        |
| -Pencils                | - YSI Meter      |
| -One Wood Meter Stick   | - GPS Unit       |
| -One Metal Meter Stick  | - Measuring Tape |
| -Camera (Extra Battery) |                  |

## SEDIMENT TRANSPORT

ADJACENT: Soil transport/movement from adjacent lands into feature

VALLEY: All areas that are below the tablelands

### 1-NONE

No evidence of sediment transport

### 2-RILL

A narrow and shallow incision into soil resulting from erosion by overland flow or surface runoff that has been focused into a 'thin thread' by the soil surface texture of roughness. Generally, rills are less than 0.2 m deep.

### 3 - RILLS/GULLY

### 4-GULLY

A landform created by running water eroding sharply into soil, typically on a hillside. Gullies have steep sides and either U or V shaped valleys. They are greater than 0.2 m deep, but can be metres to tens of metres in depth and width. When the gully formation is in process, the water flow rate can be substantial, which causes the significant deep cutting action into soil and lack of vegetation growth.

### 5-TILE OUTLET SCOUR

Tile outlet drains to a stream and erosive force is sufficiently concentrated to cause bank and/or bed erosion immediately downstream of or around a pipe outlet. Sediment deposits found within the HOF can be directly linked to this source of sediment

### 6-SHEET EROSION

Soil particles are detached and transported as a result of raindrop impacts or by water flowing overland without the formation of rills and gullies. Often this is the precursor of the more obvious rill erosion. Typically associated with tillage on long gradual slopes and low rates of water infiltration

### 7-INSTREAM BANK EROSION

Flows or livestock access have generated sediment from within the channel itself that is now available for transport downstream (e.g., bank slumping).

### 8-OTHER