Minnesota Department of Natural Resources – Section of Fisheries

Checklist for Stream Habitat Improvement Projects

Checklist Objectives and Intent:

This checklist is intended for work with cooperative partners using Lessard-Sams Outdoor Heritage Council (LSOHC) funds to do instream habitat improvements on MNDNR administered lands. Additionally, this checklist could assist with smaller projects with these cooperative partners using LSOHC funds such as fencing, riparian vegetation management, etc. If this checklist were used for those smaller projects, many or some of the permits and procedures would not be required. This checklist is simply a tool to assist MNDNR Fisheries staff and cooperative partner project leaders through the process and to make this process consistent throughout MNDNR Fisheries Regions.

The checklist contains the following:
Deliverables – Pre-project
Deliverables – Design
Deliverables – Installation
Deliverables – Completion

Minnesota Department of Natural Resources – Section of Fisheries

Checklist for Stream Habitat Improvement Projects

Version 18, December 29, 2010 (For MNDNR internal and external use)

Check as completed	**Deliverables – Pre-project**	**Time Line (months)**
	Cooperative project partner will…	
✓	1) Schedule an appointment with the MNDNR Area Fisheries Supervisor in respective management area to inform of purpose and intent.	-24 +
	MNDNR Area Fisheries Supervisor will…	
	2) Advise cooperative project partner	
	a) Provide the cooperative partner with suggestions for habitat improvement work based on management plans and current MNDNR Fisheries Area Office management goals. If a specific project is already proposed, suggest management direction.	-24 +
	b) Check that the project is within MNDNR Area Fisheries Aquatic Management Area Easement or other public property that guarantees public access as required by LSOHC.	-24 +
	c) Check that cooperative partner has the appropriate information to continue (see Appendix A)	-24 +
	3) MNDNR Area Fisheries Supervisor must contact landowner (if applicable) to facilitate project with cooperative partner.	-9 +

Project stream: _____

Kittle number: _____

UTM's upstream boundary: _____

UTM's downstream boundary: _____

Cooperative Project Partner signature and date: _____

MNDNR Area Fisheries Supervisor signature and date: _____

Check as completed	**Deliverables – Design**	**Time Line (months)**
	Cooperative project partner will…	
	4) Provide pre-survey and design documentation (see Appendix B) to MNDNR Area Fisheries Supervisor and demonstrate that the criteria for trout stream management have been met and are compatible with other planned and applied practices (large trout management, brook trout management, wild trout management, etc.).	-6
	5) Draft specific habitat improvement project objective(s). Ex. *Rehabilitate/improve/increase degraded adult trout habitat and increase trout abundance/biomass.*	-6
	6) Create an adequate plan <u>with</u> the MNDNR Area Fisheries Supervisor (using Appendix C or something similar), <u>on site</u> to ensure that the project can be properly constructed.	-6
	7) Determine if an Environmental Assessment Worksheet (EAW) is required. The MNDNR Area Fisheries Supervisor can assist the cooperative project partner in this determination. This could require a change in design and therefore a change in the time table. (See Appendix D for details)	-6

Check as completed	**Deliverables – Design (continued)**	**Time Line (months)**
	8) Successfully apply for any required local permits such as county shoreland zone grading permits, floodplain fill, city grading permits, etc.	-6
	9) Successfully apply for State Historic Preservation Office review (SHPO) and Tribal Historic Preservation Office review (THPO) on projects that involve disturbing the soil. (Contact: MNDNR Forestry, Fish & Wildlife Archaeologist – Mike Magner, 218-327-4449 Ext 243, mike.magner@state.mn.us) a) Provide project information (GPS location in UTM's of upstream and downstream boundaries, copy of quad map (8.5" x 11") showing project location, project description including enough detail of all excavation and stock pile areas) to above contact. b) The MNDNR Forestry, Fish & Wildlife Archaeologist comments back to the cooperative partner within 3 months that the SHPO either reported that there are no historic properties that may be affected by the undertaking (review process ends) OR request that an archaeological review of the project corridor be completed. c) If an archaeological review is necessary, the cooperative partner will be notified by the MNDNR Forestry, Fish & Wildlife Archaeologist and the cooperative partner must contract with a cultural resource consultant to complete the archaeological review. d) Cooperative partner provides the results from the cultural resource consultant to the MNDNR Forestry, Fish & Wildlife Archaeologist. e) SHPO comments on the results of the review within 30 days. It is possible that these comments will include an expectation of additional archaeological investigations.	-6
	10) Submit a Minnesota Natural Heritage Information System Data Request Form (available at http://files.dnr.state.mn.us/eco/nhnrp/nhis_data_request.pdf). If you have questions, contact Lisa Joyal, 651-259-5109 or lisa.joyal@state.mn.us	-6
	11) Apply for Minnesota Pollution Control Agency (MPCA) General Stormwater Permit for Construction Activity (NPDES/SDS). (www.pca.state.mn.us/water/stormwater/stormwater-c.html). Contract with an environmental consulting firm if needed to complete this requirement. a) Training is required to write the stormwater pollution prevention plan, supervise construction site monitoring and maintenance of erosion control, and supervise installation of erosion control practices. b) Provide documentation of above training to MNDNR Area Fisheries Supervisor. c) Provide payment to MPCA ($400 application fee as of June 11, 2010).	-6
	12) Successfully apply for Minnesota DNR – Division of Ecological and Water Resources Protected Waters Permit (MNDNR Area Hydrologist) a) Wetland Conservation Act review is included here. If potential wetland impacts are identified, a Technical Evaluation Panel must be convened to determine if mitigation or changes to project design are required.	-6
	MNDNR Area Fisheries Supervisor will…	
	13) Approve design with intent to continue project proposal OR deny authorization to continue and provide explanation with suggestions on how to proceed.	-3

Cooperative Project Partner initials and date: _____

MNDNR Area Fisheries Supervisor initials and date: _____

Check as completed	**Deliverables - Installation**	**Time Line (months)**
	Cooperative partner will…	
	14) Verify to MNDNR Area Fisheries Supervisor regarding pre-construction conference with contractor and that the contractor has liability insurance.	-1/4
	15) Verify to MNDNR Area Fisheries Supervisor that cooperative partner has obtained the necessary permits.	-1/4
	16) Verify to MNDNR Area Fisheries Supervisor that on-site staking and layout was accomplished according to plans and specifications. Applicable layout notes will be provided to MNDNR Area Fisheries Supervisor.	-1/4
	17) Verify to MNDNR Area Fisheries Supervisor that the installation process and materials meet design and permit requirements (erosion control blanket containing monofilament mesh is not permitted).	-1/4
	18) Begin habitat improvement project (no later than August 1st, which will provide for the maximum vegetative cover on exposed soil before the first freeze and allow for any minor repairs before winter. Instream work on designated trout streams is not allowed after October 15th).	0

Cooperative Project Partner initials and date: _____

MNDNR Area Fisheries Supervisor initials and date: _____

Check as completed	**Deliverables - Completion**	**Time Line (months)**
	Cooperative partner will…	
	19) Meet on site with MNDNR Area Fisheries Supervisor and show that the installation meets MNDNR Area Fisheries Supervisor approval and is in compliance with permits. Provide post-survey materials and data (Appendix D) to MNDNR Area Fisheries Supervisor for inclusion in MNDNR database.	+1/4
	20) Terminate any required permits (Be aware of the constraints surrounding the NPDES permit).	+1/4
	21) Provide a completion report that describes what work was done, the amount of materials used, number and type of structures installed, and a list of volunteer names and volunteer hours, and total cost of the project. A blank completion report form is included below. (Contact: MNDNR Fisheries Program Consultant – John Hiebert, 651-259-5212, john.hiebert@state.mn.us)	+4

Cooperative Project Partner signature and date: _____

MNDNR Area Fisheries Supervisor signature and date: _____

Appendix A – Information necessary to successfully begin a Stream Habitat Improvement Project

Understand and follow this document:

1) MNDNR Operational Order 113
   http://files.dnr.state.mn.us/assistance/grants/habitat/heritage/oporder_113.pdf
2) MNDNR Operational Order 113 Division Fish & Wildlife Guidelines
   http://files.dnr.state.mn.us/areas/fisheries/lanesboro/oporder113_guidelines.pdf
   a. See specifically "III. Detailed Aquatic Activities, Category of Activity: Habitat Improvement and Shoreland Restoration" (pages 12-13). Other details within this document may apply.
3) MNDNR Operational Order 113 Division of Ecological Resources Guidelines
   http://files.dnr.state.mn.us/assistance/grants/habitat/lessard_sams/oporder113_eco.pdf
   a. This document is referenced in the Guidelines for MNDNR Division of Fish & Wildlife
   b. See specifically "Detailed Aquatic Activities, Category of Activity: Stream Restoration" (pages 25-26)

Source of funds should be determined before projects begin.

Each project will have one project supervisor/contact.

This section (Deliverables – Pre-project) must be checked off and signed before the MNDNR Commissioner will approve of the project for cooperative partners. [No longer the case…this was "required" for 2010 and 2011 LSOHC grant acquisitions. The LSOHC is fine with MNDNR Fisheries Supervisors approving and administering the projects.]

Appendix B – Pre-Project Survey Requirements for Habitat Improvement Projects

As stated in the MNDNR Fisheries Stream Survey Manual (2007), "Geomorphic data help us understand the processes and characteristics of stream systems, provide fish habitat information, facilitate stream comparisons within a watershed and between regions, and provide a common framework for communication." More work is needed to understand what effects habitat improvements have on fish populations (Steen and Wehrly 2005) and collecting this information will aid in this objective. Other values to the completion of this survey are:

- To aid in drafting habitat improvement design (pre-survey)
- To add to MNDNR stream files as information for full survey write-up, management plan updates, and/or database of regional long-term or status and trend monitoring
- To illustrate relative change from pre- and post-project to justify cost to grantor and constituency
- To make clear any geomorphological characteristics that could jeopardize the project and/or design
- To evaluate project design
- To confirm project objectives
- To use in "as-built" justification (post-survey)

The following are standardized survey methodologies and should be considered a minimum for habitat improvement project designs. Contract with a qualified environmental consulting firm if needed to complete this requirement. If additional information is needed to address a specific management question or objective, then collection of that information is also required (discuss with MNDNR Area Fisheries Supervisor).

Longitudinal Profile Survey – Required

The longitudinal profile should include the entire project area and extend to the first riffle upstream and downstream outside of the project area. If the project begins or ends at the boundary of an aquatic

management area (angling easement corridor), the longitudinal profile survey can begin at this boundary. Do not leave the easement corridor to complete this survey unless given permission by the landowner.

Collect elevations along the longitudinal profile at a sufficient number of points in the thalweg to accurately describe the shape, depth, and lengths of bed features along the profile (Figure 1). Bed features are those features that dictate the boundaries of mesohabitat types (e.g., pools, riffles, runs, and glides). At a minimum, take thalweg elevations at the top, middle, and bottom of each bed feature and be sure to include the deepest point in each pool. Collect water surface elevations at each thalweg elevation measurement. Bankfull elevations (described below) should also be included in the longitudinal profile.

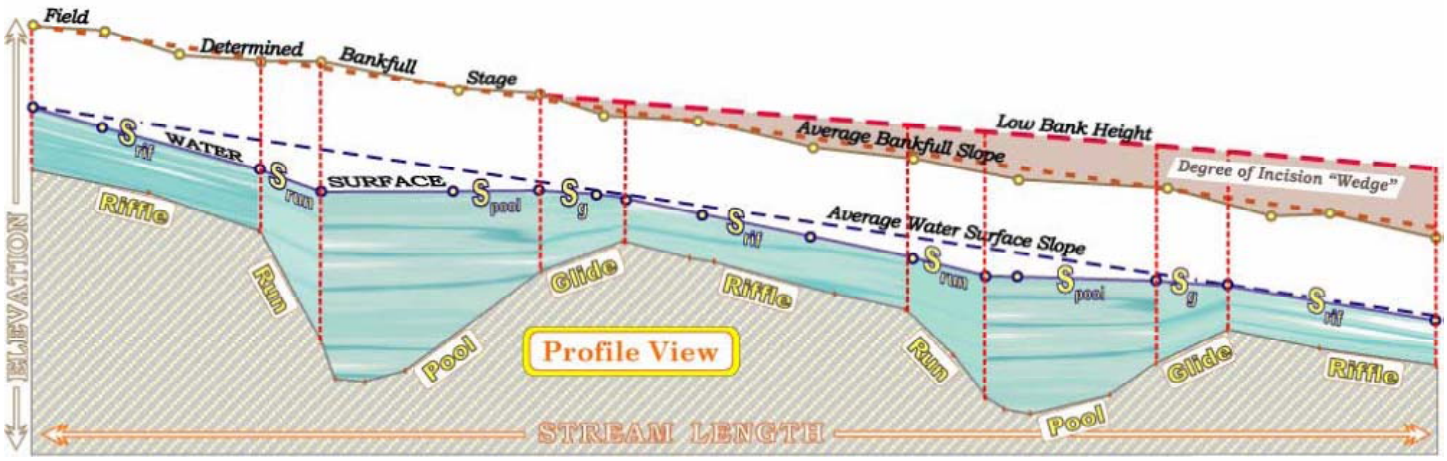

Figure 1. Longitudinal profile showing bed features and location of thalweg, water surface and bankfull elevations (© Wildland Hydrology, Rosgen 2006)

<u>Channel Cross-Section Survey</u> – Required

Channel cross-sections should be measured on a minimal of two or three riffles and two or three pools within the habitat improvement area. If riffles are not present in the area, position the cross section within a run.

Record the cross section location on the longitudinal profile. Lay the channel cross section perpendicular to the stream flow. Make sure that the cross sectional end points are far enough away from the stream bank to identify flood plain features. This is typically 40 to 50 feet from the wetted perimeter on either stream bank in southeast Minnesota streams but could be more than 1,000+ feet in some low gradient streams. If flood plain features are an excessive distance from the wetted stream perimeter it may be appropriate to identify these features via a topographical map. Measure elevations along the cross section to include any terraces on the stream banks, bankfull stage (see below), water edge, thalweg and water surface elevation.

Determining bankfull stage (bankfull height) is the water surface elevation at flows primarily responsible for channel formation (Dunne and Leopold 1978). It is typically the water height at which the stream channel begins to access its flood plain. Bankfull stage can only be determined in the field. Indicators of bankfull height or stage can be found in Harrelson et al. (1994) and are as follows:

- The height of depositional features (top of point bar),
- A change of vegetation (especially the lower limit of perennial species),
- A change in the size distribution of substrate or bank particles,
- A break in the slope of the stream bank,
- Stains on rocks,
- Root hairs exposed below an intact soil layer.

It is advised that the surveyors walk the project area prior to beginning the survey and mark indicators of bankfull with flagging so that they can be easily included in the longitudinal and cross sectional survey. Correct identification of bankfull is critical, as much of the analysis of stream stability and habitat quality is based on the analysis of this measurement. Most people tend to underestimate bankfull elevation as a lower terrace. These terraces are remnant bankfull features formed under different hydrologic conditions.

Pages 5-8 and 5-9 in Rosgen (1996) and USDA Forest Service (2005) reference CD provide additional direction for determining bankfull.

Because these cross sectional surveys will be conducted again post-project in the same locations, it would be wise to install temporary (or permanent) markers or stakes indicating there location.

Substrate Particle Composition at Channel Cross-Sections – Required

Stream channel substrate particle compositions are conducted using the Wolman pebble count procedure (1954). Methods are as follows:

- Begin at either side of the wetted perimeter of the stream
- Without looking, reach down to the substrate and pick up the first particle the tip of your finger touches
- Measure the width of the particle along the intermediate axis. The intermediate access is not the widest axis nor the shortest axis, rather the axis which is intermediate (see Figure 46, page 95 in Stream Survey Manual if necessary)
- Tally each measurement in the appropriate category on the Pebble Count Recording Sheet (attached)
- Be sure to indicate whether this is a riffle or pool substrate particle count on the data sheet
- Proceed across the cross section, measuring a total of no less than 100 individual substrate particles
- Conclude the count at the opposite end of the cross section you began within the wetted perimeter

Channel Geometry Measurements (Pattern) – Recommended

Measurements to determine channel geometry should be taken directly in the field. On occasion a relatively new aerial photograph can be used and measurements can be taken directly from this. Geometry is used to describe reach wide characteristics, so measurements should reflect an area larger than the habitat improvement project area (Figure 2).

Sinuosity (K) – Valley length (VL) measurements should be measured following the valley centerline, not simply following the stream meander centerline.

Sinuosity (K) = stream length (SL)/valley length (VL)

Meander length (L_m) – Meander length is the longitudinal distance between the apexes of two sequential meanders.

Radius of Curvature (R_c) - The radius of the circular arc portion of a meander, measured from a center point on the inside of the curve to the center of the channel. On compound bends there will be two R_c's, one in each corner.

Belt Width (W_{blt}) – Belt width is a measure of lateral containment of the channel within its valley. Measure the longest distance perpendicular to the valley slope from outside bend to outside bend.

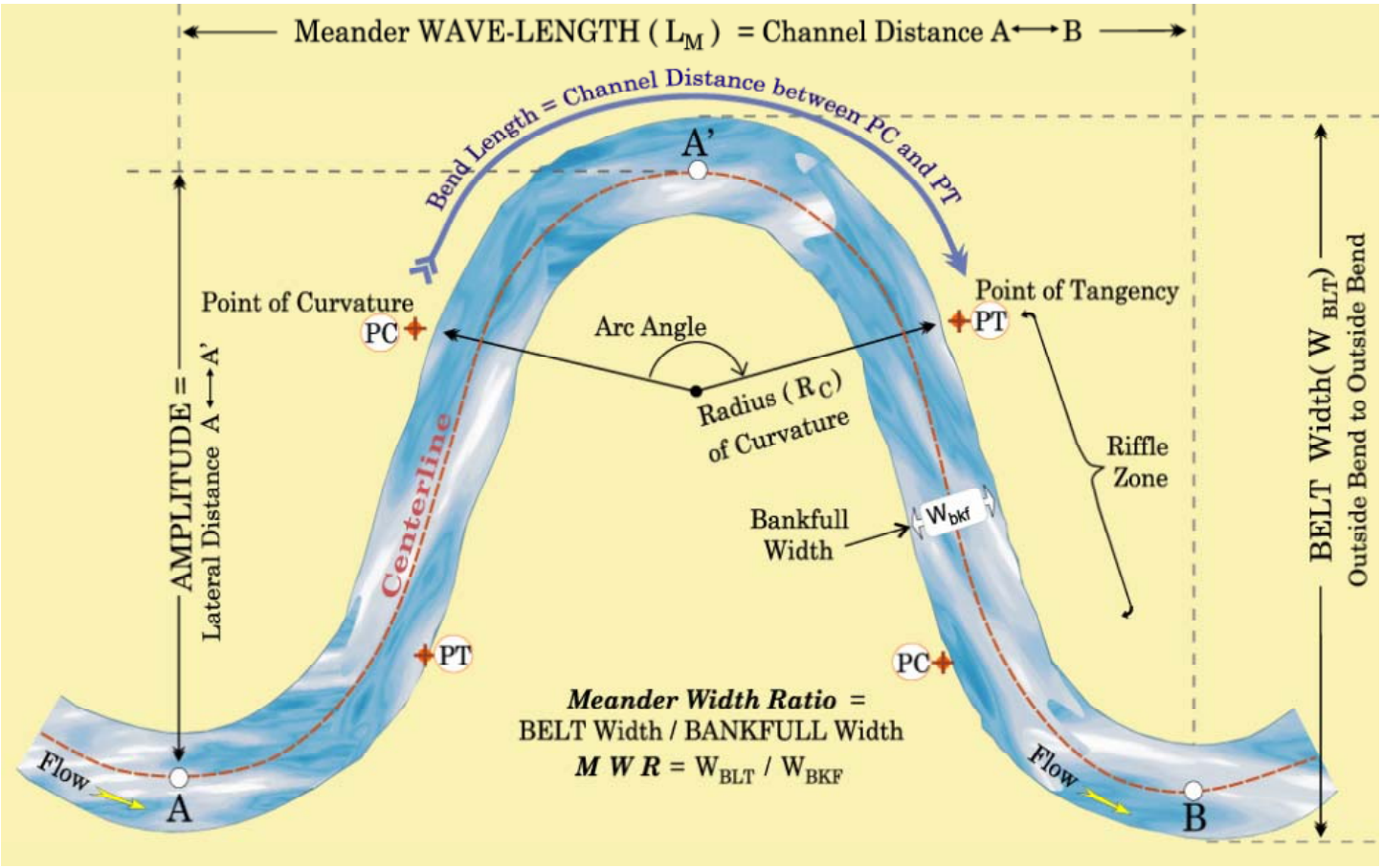

Figure 2. Channel geometry measurements (© Wildland Hydrology, Rosgen 2006).

Post-Project Survey Requirements for Habitat Improvement Projects

Repeat procedures for Pre-Project Survey above. Be sure to include cross-section surveys in the same locations as was completed in the Pre-Project Survey.

Appendix C – Habitat Improvement Summary Sheet

Habitat Improvement Plan Summary

Stream/project name:	Date:	Stream mile:

Upstream UTM's:	Downstream UTM's:	Length of project:

Bank	Side	Distance (ft)	Rock (yds)	HI Technique	Comments

Key

Location description	Rock type	Structure or Technique type	Structure or Technique type
LB – Left Descending Bank	BR – Breaker Rock	LS – Lunker structure	SS – Slope and Seed
RB – Right Descending Bank	CR – Cover Rock	SH – Sky hook	SC – Stream crossing
Both – Both Banks	SRR – Small Road Rock	RW – Rock weir	CN – Channel narrowing
POR – Point of Reference	RR – Rip Rap	RV – Rock vein	RSH – Rock sky hook
SC – Stream crossing	FR – Flat Rock	RD – Rock deflector	RLS – Rock Lunker structure
		RWD – Root wad	WD – Woody Debris

Appendix D – Determining the need for an Environmental Assessment Worksheet (EAW)

Minnesota Administrative Rules – 4410.1000 Projects Requiring an EAW

https://www.revisor.mn.gov/rules/?id=4410.1000

Minnesota Administrative Rules – 4410.4300 Mandatory EAW categories

https://www.revisor.mn.gov/rules/?id=4410.4300

Subp. 26. Stream diversion.
Subp. 27. Wetlands and public waters.

Other sources of information may be available through the MNDNR Fisheries Supervisor or the MNDNR Hydrologist.

Literature Cited and References

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Harrelson, C.C., C.L. Rawlins, and J.P. Potyondy. 1994. Stream channel reference sites: an illustrated guide to field techniques. Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station 61p.

Minnesota Department of Natural Resources. 2007. Fisheries Stream Survey Manual. Version 2.1, Special Publication No. 165.

Mossop, B., and M.J. Bradford. 2006. Using thalweg profiling to assess and monitor juvenile salmon (*Oncorhynchus* spp.) habitat in small streams. Can. J. Fish. Aquat. Sci. 63:1515-1525.

Rosgen, D.L. 1996. Applied River Morphology. Wildland Hydrology, Pagosa Springs, Colorado.

Steen, P.J., and K.Wehrly. 2005. History and Inventory of Stream Habitat Improvements for the State of Michigan. University of Michigan.

Thorn, W.C., and C.S. Anderson. 2001. Evaluating habitat quality from stream survey variables. Minnesota Department of Natural Resources, Fish Management Report 35.

USDA Forest Service. 2005. Guide to Identification of Bankfull Stage in the Northeastern United States. Gen. Tech. Rep. RMRS-GTR-133-CD. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado. 4 CD-ROM set. Sandy Verry, Author and Principal Technical Presenter.

Verry, E.S. 2005. The How and Why of Pebble Counts to Characterize Stream Channel Sediment. Ellen River Partners, Grand Rapids, Minnesota.

Whiteway, S.L., P.M.Biron, A. Zimmermann, O.Venter, and J.W.A. Grant. 2010. Do in-stream restoration structures enhance salmonid abundance? A meta-analysis. Can. J. Fish. Aquat. Sci. 67:831-841.

Wollman, M.G. 1954. A method of sampling coarse river-bed material. Transactions of the American Geophysical Union 35:951-956.

Cross-section Recording Sheet Minnesota DNR Page _____ of _____

Survey Date: Note: start cross section on river lieft, 0 point above floodprone.

Stream Name and Kittle No.: River mile:

Specific Reach Location: UTM Easting:

Crew Names: UTM Northing:

XSection ID (#) from Longitudinal Sheet:_______ Station Location on Longitudinal Profile:_______ Note: take HI from Longitudinal sheet when you get to the X section station.

Distance (ft)	BS (ft)	HI (ft)	FS (ft)	Elevation (ft)	Notes	Distance (ft)	BS (ft)	HI (ft)	FS (ft)	Elevation (ft)	Notes

Longitudinal Recording Sheet Minnesota DNR Page _____ of _____

Survey Date:

Stream Name and Kittle No: River Mile:

Specific Reach Location: UTM Easting:

Crew Name: UTM Northing:

Setup laser tripod on a high spot to see a long river reach including Xsec & upstream start of longitudinal	cross section	bed feature	check 1		Benchmark Elevation			HI minus FS equal		check 1		user defined			azimuth
					1st set 100 BM elev										
			increm't.	contin'us	Turning Points				FS bed	| depth | FS water	FS bankfull	FS	FS	FS	
notes	ID		distance	station	BS	HI	FS								AZ
2cnd record BS to BM >>>>	3rd calc. height instr: HI = BM+BS								4th record FS unless water surface is recorded as depth						5th rcd AZ from last pt

Pebble Count Recording Sheet Minnesota DNR Page _____ of _____

Survey Date:	
Stream Name and Kittle No.:	River mile:
Specific Reach Location:	UTM Easting:
Crew Name:	UTM Northing:

A reach is 2 meander wave lengths or 20 - 30 bkf widths	Bankfull elevation to bankfull elevation pebble counts							bed, bank, patch, etc.	
Pebble Count Options	Zigzag	Proportional transects Perpendicular to the bank 100 total					Classification	User defined	
dot-tally pattern, succession is 1 - 10	at least 100	%	%	%	%	100%	Riffle		
Material Size Range (mm)	Total Reach Count	Riffle Count	Run Count	Pool Count	Glide Count	Total Reach Count	at least 100 Count	Count	Count
silt/clay 0 - 0.062									
very fine sand 0.062 - 0.125									
fine sand 0.125 - 0.25									
medium sand 0.25 - 0.5									
coarse sand 0.5 - 1									
very coarse sand 1 - 2									
very fine gravel 2 - 4									
fine gravel 4 - 6									
fine gravel 6 - 8									
medium gravel 8 - 11									
medium gravel 11 - 16									
coarse gravel 16 - 22									
coarse gravel 22 - 32									
very coarse gravel 32 - 45									
very coarse gravel 45 - 64									
small cobble 64 - 90									
medium cobble 90 - 128									
large cobble 128 - 180									
very large cobble 180 - 256									
small boulder 256 - 362									
small boulder 362 - 512									
medium boulder 512 - 1024									
large boulder 1024 - 2048									
very large boulder 2048 - 4096									
total particle count:									
Note: Only particles are used in the pebble graph									
bedrock ----------									
clay hardpan ----------									
detritus/wood ----------									
artificial ----------									
Other material (above) are used **total count:**									
in the percentages(%sand, %gravel, %wood, etc.)									
Notes:									

Rev 04/09

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

Completion Report
(Habitat Development & Maintenance)

___ Development
___ Maintenance

Stream	Project	Project Number	Cooperative Partner		
Region	Area	County	Section	Township	Range
Upstream UTM		Downstream UTM			
Date Work Started	Date Work Completed	Contact person & phone number			

Instructions:

1) The Project Coordinator in charge of the work is responsible for the preparation of Completion Reports and the submission of four (4) copies to the MNDNR Area Fisheries Office.
2) The Regional Fisheries Manager and Area Fisheries Supervisor are responsible for the review, approval, and distribution.
3) Distribution of copies: original plus one (1) copy to the St. Paul Office, one (1) copy to be retained at the Regional Office, and one (1) copy returned to the Area Office.

FINAL PROJECT COSTS (based on field records only)

Source of Funds

Aid (LSOHC, TUDARE, etc.)				
				Total
Salaries - Labor				
Salaried - Supervision				
Equipment Rental				
Travel & Subsistence				
Materials & Supplies				
Work Agreement				
Contract				
Totals				

Completion Report (Habitat Development & Maintenance)
DESCRIPTION OF WORK ACCOMPLISHED (additional space provided on following pages)

Work Item (key codes on following pages)	Description of Development or Maintenance	Cost

Report completed by:

Name: **Title:** **Date:**

Approved by:

Name: **Title:** **Date:**

Approved by:

Name: **Title:** MNDNR Area Fisheries Supervisor **Date:**

Completion Report (Habitat Development & Maintenance)
DESCRIPTION OF WORK ACCOMPLISHED (Continued from previous page)

Work Item	Description of Development or Maintenance	Cost

Key Codes for Work Items

(See directive 3-202)
The following key codes require Minnesota Department of Natural Resources (MNDNR) approval and are required in any pre-project design planning. The work associated with many key codes are for MNDNR use only and this list should not be considered as acceptable for cooperative partner implementation without prior MNDNR approval.

1) Buildings
2) Dams, Dikes & Levees (permit required)
3) Canals, Channels or Ditches (permit required)
4) Bridges (permit required)
5) Roads & Trails
6) Telephone or Electric Lines
7) Fences
8) Public Use Facilities (MNDNR only)
9) Fishways, Screens & Barriers (MNDNR only)
10) A. Stream Improvements, B. Lake Improvements, C. Lake Rehabilitation
11) Signs & Boundary Markers (MNDNR only)
12) Planting Trees, Shrubs & Aquatics
13) Herbaceous Seeding
14) Thinning or Clearing
15) Noxious Vegetation Control
16) Population Control
17) Firebreaks (Method)
18) Fish or Wildlife Stocking
19) Crop Leasing
20) Rearing Ponds
21) Pothole Blasting & Dugouts
22) Fish Rescue Sites
23) Rough Fish Traps
24) Nesting Structures
25) Northern Pike Spawning Areas
26) Goose Management
27) Surveys & Inventories
28) Miscellaneous Cooperative Land Management Activities

Completion Report (Habitat Development & Maintenance)
DISCUSSION OF WORK ACCOMPLISHED (Objectives met, area of project benefits, etc.):