INTENSIVE BIOSURVEY:
HABITAT ASSESSMENT

Stream Name: _____

County: _____ **State:** _____

Investigators: _____

_____

_____

Site (description): _____

_____

_____

_____

Latitude: _____ **Longitude:** _____

Site or Map Number: _____

Date: _____ **Time:** _____

Weather in past 24 hours:

- ❑ Storm (heavy rain)
- ❑ Rain (steady rain)
- ❑ Showers (intermittent rain)
- ❑ Overcast
- ❑ Clear/Sunny

Weather now:

- ❑ Storm (heavy rain)
- ❑ Rain (steady rain)
- ❑ Showers (intermittent rain)
- ❑ Overcast
- ❑ Clear/Sunny

Sketch of site

On your sketch, note features that affect stream habitat, such as: riffles, runs, pools, ditches, wetlands, dams, riprap, outfalls, tributaries, landscape features, logging paths, vegetation, and roads.

GENERAL CHARACTERISTICS

1. Water appearance: Page 92

θ Clear θ Turbid θ Orange
θ Milky θ Dark brown θ Greenish
θ Foamy θ Oily sheen θ Other _____

2. Water odor: Page 92

θ Sewage θ Fishy θ None
θ Chlorine θ Rotten eggs θ Other

3. Water temperature: Page 92

_____ °C *or* _____ °F

4. Approximate width of stream channel: Page 93

_____ feet θ Measured θ Estimated

LOCAL LAND USE

(within about 1/4 mile of the site; adjacent and upstream)

5. Land uses in the local watershed can potentially have an impact on a stream. Check "1" if present, "2" if clearly having an impact on the stream. Page 93

1	2	**Residential**
θ	θ	Single-family housing
θ	θ	Multifamily housing
θ	θ	Lawns
θ	θ	Commercial/institutional

1	2	**Roads, etc**.
θ	θ	Paved roads or bridges
θ	θ	Unpaved roads

1	2	**Construction underway on:**
θ	θ	Housing development
θ	θ	Commercial development
θ	θ	Road bridge construction/repair

1	2	**Agricultural**
θ	θ	Grazing land
θ	θ	Feeding lots or animal holding areas
θ	θ	Cropland
θ	θ	Inactive agricultural land/fields

1	2	**Recreation**
θ	θ	Power boating
θ	θ	Golfing
θ	θ	Camping
θ	θ	Swimming/fishing/canoeing
θ	θ	Hiking/paths

1	2	**Other**
θ	θ	Mining or gravel pits
θ	θ	Logging
θ	θ	Industry
θ	θ	Oil and gas drilling
θ	θ	Trash dump
θ	θ	Landfills

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Attachment Sites for Macro-invertebrates Page 93	Well developed riffle and run; riffle is as wide as stream and length extends 2 times the width of stream; cobble predominate; boulders and gravel common	Riffle is as wide as stream but length is less than 2 times width; cobble less abundant; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is less than 2 times the stream width; gravel or large boulders and bedrock prevalent; some cobble present.	Riffles or run virtually nonexistent; large boulders and bedrock prevalent; cobble lacking.
SCORE ___	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness Page 93	Fine sediment surrounds and fills in 0-25% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in 25-50% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in 50-75% of the living spaces around and in between the gravel, cobble, and boulders.	Fine sediment surrounds and fills in more than 75% of the living spaces around and in between the gravel, cobble, and boulders.
SCORE ___	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Shelter for Fish Page 93	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 50% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 30-50% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in over 10-30% of the site.	Snags, submerged logs, undercut banks, cobble and large rocks, or other stable habitat are found in less than 10% of the site.
SCORE ___	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration Page 93	Stream straightening, dredging, artificial embankments, dams or bridge abutments absent or minimal; stream with meandering pattern	Some stream straightening, dredging, artificial embankments or dams present, usually in areas of bridge abutments; no evidence of recent channel alteration activity.	Artificial embankments present to some extent on both banks; and 40 to 80% of stream site straightened, dredged, or otherwise altered.	Banks shored with gabion or cement; over 80% of the stream site straightened and disrupted.
SCORE ___	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition Page 94	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition	Some new increase in bar formation, mostly from coarse gravel; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, coarse sand on old and new bars; 30-50% of the bottom affected; sediment deposits at stream obstructions and bends; moderate deposition in pools.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom affected; pools almost absent due to substantial sediment deposition.
SCORE ___	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
6. Stream Velocity and Depth Combinations Page 94	Slow (< 1 ft/s)/deep (> 1.5 ft); slow/shallow; fast/deep; fast/shallow combinations all present.	3 of the 4 velocity/depth combinations are present; fast current areas generally dominate.	Only 2 of the 4 velocity/depth combinations present. Score lower if fast current areas missing.	Dominated by 1 velocity/depth category (usually slow/shallow areas).
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Flow Status Page 94	Water reaches base of both lower banks and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; < 25% of channel substrate is exposed.	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Vegetative Protection (score each bank) Page 95 Note: determine left or right side by facing downstream	More than 90% of the streambank surfaces covered by natural vegetation, including trees, shrubs, or other plants; vegetative disruption, through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by natural vegetation, but one class of plants is not well-represented; some vegetative disruption evident; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; patches of bare soil or closely cropped vegetation common; less than one half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height.
SCORE ____ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ____ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Condition of Banks (score each bank) Page 95	Banks stable; no evidence of erosion or bank failure; little potential for future problems.	Moderately stable; infrequent, small areas of erosion mostly healed over.	Moderately unstable; up to 60% of banks in site have areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank collapse or failure; 60-100% of bank has erosional scars.
SCORE ____ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ____ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) Page 95	Width of riparian zone > 60 feet; no evidence of human activities (i.e., parking lots, roadbeds, clear cuts, mowed areas, or crops) within the riparian zone.	Width of riparian zone 35-60 feet.	Width of riparian zone 20-35 feet.	Width of riparian zone < 20 feet.
SCORE ____ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ____ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score ____

HABITAT ASSESSMENT FIELD DATA SHEET *MUDDY BOTTOM SAMPLING*

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
1. Shelter for Fish and Macro-invertebrates Page 99	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 50% of the site; logs/snags are old fall.	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 30-50% of the site; some old fall, but preponderance of new fall.	Snags, submerged logs, undercut banks, rubble or other stable habitat found over 10-30% of the site; appears unstable; some new fall	Snags, submerged logs, undercut banks, rubble or other stable habitat found over less than 10% of the site; no old or new fall
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization Page 100	Pools have mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Pools have mixture of soft sand, mud, or clay substrate; mud may be dominant; some root mats and submerged vegetation present.	Pools have all mud or clay or sand substrate, little or no root mat; no submerged vegetation.	Pools have hard pan clay or bedrock substrate; no root mat or vegetation.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability Page 100	Even mix of large-shallow, large deep, small-shallow, small-deep pools.	Majority of pools large deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Channel Alteration Page 100	Stream straightening, dredging, artificial embankments, dams or bridge abutments absent or minimal, stream with meandering pattern.	Some stream straightening, artificial embankments or dams present, usually in areas of bridge abutments; no evidence of recent channel alteration activity.	Artificial embankments present to some extent on both banks; and 40 to 80% of stream site straightened, dredged, or otherwise altered.	Banks shored with gabion or cement; over 80% of the stream site straightened and disrupted.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Sediment Deposition Page 100	Less than 20% of stream bottom affected by extensive sediment deposition; minor accumulation of fine and coarse material at snags and submerged vegetation; little or no enlargement of islands or point bars.	20-50% of stream bottom affected by extensive sediment deposition; moderate accumulation; substantial sediment movement only during major storm event; some new increase in bar formation.	50-80% of stream bottom affected by extensive sediment deposition; pools shallow, heavily silted; embankments may be present on both banks; frequent and substantial sediment movement during storm events.	Greater than 80% of stream bottom affected by extensive sediment deposition; Heavy deposits; mud, silt, and/or sand in braided or nonbraided channels; pools almost absent due to deposition.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Sinuosity Page 100	The bends in the stream would increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream would increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream would increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized.
SCORE ____	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Habitat Parameter	Category			
	Optimal	Suboptimal	Marginal	Poor
7. Channel Flow Status Page 100 SCORE ____	Water reaches base of both lower banks and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools 5 4 3 2 1 0
8. Bank Vegetative Protection Page 100 Note: determine left or right side by facing downstream SCORE ____(LB) SCORE ____(RB)	More than 90% of the streambank surfaces covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing, minimal or not evident; almost all plants allowed to grow naturally. Left Bank 10 9 Right Bank 10 9	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented; some vegetative disruption evident; more than one-half of the potential plant stubble height remaining. 8 7 6 8 7 6	50-70% of the streambank surfaces covered by vegetation; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. 5 4 3 5 4 3	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 2 inches or less in average stubble height. 2 1 0 2 1 0
9. Condition of Banks Page 100 SCORE ____(LB) SCORE ____(RB)	Banks stable; no evidence of erosion or bank failure; little potential for future problems. Left Bank 10 9 Right Bank 10 9	Moderately stable; infrequent, small areas of erosion mostly healed over. 9 7 6 8 7 6	Moderately unstable; up to 60% of banks in area have areas of erosion; high erosion potential during floods. 5 4 3 5 4 3	Unstable; many eroded areas, "raw" areas frequent along straight sections and bends; obvious bank collapse or failure, 60-100% of bank has erosional scars. 2 1 0 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) Page 100 SCORE (LB) SCORE ____(RB)	Width of riparian zone >50 feet; human activities (i.e. parking lots, roadbeds, clear cuts, lawns, or crops) have not affected riparian zone. Left Bank 10 9 Right Bank 10 9	Width of riparian zone 35-40 feet. 8 7 6 8 7 6	Width of riparian zone 20-35 feet. 5 4 3 5 4 3	Width of riparian zone < 20 feet. 2 1 0 2 1 0

Total Score ____

HABITAT ASSESSMENT GUIDE

Percent Similarity to Reference Score	Habitat Quality Category	General Attributes
> 90%	Excellent	Comparable to the best situation to be expected within an ecoregion. Excellent overall habitat structure conducive to supporting healthy biological community.
75-88%	Good	Habitat structure slightly impaired. Diverse instream habitat generally well-developed. Some degradation of riparian zone and banks. A small amount of channel alteration may be present.
60-73%	Fair	Loss of habitat compared to reference. Habitat is a major limiting factor to supporting a healthy biological community.
< 58%	Poor	Severe habitat alteration at all levels.

NOTE: If your score falls between ranges consider the site's habitat assessment results and chemical data, if available, in making your decision.

Overall Assessment:

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- ❑ Excellent
- ❑ Good
- ❑ Fair
- ❑ Poor

COMMENTS: