FT 3000. AQUATIC HABITAT CHARACTERIZATION

See also the following sections:

- FA 1000 Administrative Procedures
- FC 1000 Cleaning/Decontamination Procedures
- FD 1000Documentation Procedures
- FM 1000 Field Planning and Mobilization
- FQ 1000 Field Quality Control Requirements
- FS 1000 General Sampling Procedures
- FT 1000 General Field Testing and Measurement
- LD 7000 Documentation of Biological Laboratory Procedures
- LQ 7000 Quality Control for Biological Community Analysis
- LT 7000 Determination of Biological Indices

1. INTRODUCTION AND SCOPE: The purpose behind habitat assessment is to collect key physical data components that can assist in interpreting biological community results. For example, if biological community health is impaired in a water body, is habitat disturbance or water quality degradation responsible?

FT 3001. *Physical/Chemical Characterization*

This sampling procedure requires specific training and demonstration of competency due to the expert judgment exercised during field sampling. It is recommended that individuals conducting this procedure train with DEP staff (via workshops and/or participating in field sampling) and pass a field performance test.

1. EQUIPMENT AND SUPPLIES

- Physical/Chemical Characterization Field Sheet (FD 9000-3)
- Stream/River Habitat Sketch Sheet (FD 9000-4) or site map
- Pencil and pen
- Watch or stopwatch
- Flow Meter (optional)
- D-frame dip net with U.S. No. 30 mesh and handle marked in 0.1-m increments
- Secchi disk with at least three meters of 0.2 m sections marked on its rope
- Tape measure (100 m)
- Flagging tape
- Camera (optional)
- GPS tool (optional)

- Multi-probe meter or separate pH, dissolved oxygen, temperature and conductivity meters

2. METHODS

2.1. Fill in the information requested at the top of the Physical/Chemical Characterization Field Sheet (FD 9000-3), including the STORET station number, sampling date, sampling location, field identification and receiving body of water. (Much of this information can be recorded prior to field sampling.) Record the time when the water quality samples are first taken or when the assessment begins. If available, use a GPS tool to identify the latitude and longitude of the sampling location and record them on FD 9000-3.

2.2. Measure and record values for standard water quality parameters, including temperature, pH, dissolved oxygen, specific conductance or salinity and Secchi depth (see FT 1000).

2.3. In streams or rivers, measure the 100 m length of the sampling area and mark the beginning, end and sections of appropriate length (usually 10 or 25 meters) with flagging tape.

2.4. For streams and rivers, start at the downstream end of the reach and draw a sketch of the site on the Stream/River Habitat Sketch Sheet (FD 9000-4). In your sketch, show the observable (by sight or touch) location and amount of each productive substrate type in the 100 m reach. Using the grid on the map form, count the number of grid spaces for each substrate type. Divide each of these substrate numbers by the total number of grid spaces contained within the site sketch. If you cannot observe portions of the system (e.g., due to dark color and depth), include only the number of grids where observations were possible as the denominator in this calculation. Record this percent coverage value for each substrate type. For lakes, divide the site map into twelve equal sections and note visual markers that may assist in distinguishing those sections. You can use a pencil to draw the sketch of the site. GPS coordinates and photographs of the sampling area are also useful tools for documenting habitat conditions and identifying station locations.

2.5. Observe and estimate the percentage of land-use types in the watershed that drain to the site, including all that potentially affect water quality. Examination of maps prior to field sampling is a necessary component of this determination. Record this information on FD 9000-3.

2.6. Rate the potential for erosion within the portion of the watershed that affects your site. Record this information on FD 9000-3.

2.7. "Local non-point-source pollution" refers to contamination introduced by stormwater runoff. Estimate this input and record this information on FD 9000-3.

2.8. When sampling a 100 m section of a river or stream, measure or estimate the width of the system, from shore to shore, at a "typical" transect representative of the site. A "typical" transect is where the width/depth profile is most representative of the stream. In most cases, this will not be in deep pools or bends. When sampling a lake, wetland or estuary, estimate the size of the system or the size of the sample area within the system. Record this information on FD 9000-3.

2.9. Take three measurements of water depth across this transect using the ruled dip net handle or ruled rope of the Secchi disk and record this information on FD 9000-3.

2.10. Take three measurements of water velocity (one at each of the locations where water depth was measured) using either a flow meter or the ruled dip net handle, watch/stopwatch, and a floating leaf or other object. For example, measure the length of time in seconds it takes for a submerged leaf or other detritus to travel 1 meter. Then, divide 1 by the number of seconds it took the leaf to travel the meter. Record this information on the data sheet. This procedure is relatively straightforward in streams and rivers. In lakes and wetlands, there is often no water velocity to measure, so note that on the form. However, if there is velocity (as in certain riverine wetlands or flow-through lakes), measure the velocity at three points across the system. In estuaries, the velocity will depend upon tidal cycle. Note the velocity during sampling and relate that to where it occurs in the tidal cycle.

2.11. Measure the vegetated riparian buffer zone width on each side of the stream or river or at the least buffered point of the lake, wetland, or estuary; this is the distance from the edge of the water to where clearing or other human activities begin. Record the distance for the least buffered side or point of the system on FD 9000-3. If the vegetated buffer zone width for the least buffered side or point is greater than 18 m, record ">18 m."

2.12. In a stream or river, indicate whether or not the area in the vicinity of the sampling station has been artificially channelized and to what extent the system has recovered.

2.13. Indicate the presence or absence of impoundments in the area of the sampling station that alter the natural flow regime or the movement of biota.

2.14. Where applicable, estimate and record the vertical distance from the current water level to the peak overflow level. Peak overflow level is indicated by debris hanging in bank, floodplain vegetation, or deposition of silt or soil. (When bank overflow is rare, a high water mark may not be apparent.) Add this distance to the current water depth (see section 2.9 above) to determine the distance of the high water mark above the streambed and record this value.

2.15. Check the box for the percentage range that best describes the degree of shading in the sampling area. This percentage should be an integration over the entire 100 m reach.

2.16. Note any odors associated with the bottom sediments and check the appropriate box. Note the presence or absence of oils in the sediment; for this step, and observe the extent of sheen on the water after the substrate has been disturbed. Finally, note any deposits in the area, including the degree of smothering by sand or silt.

2.17. Indicate the type of aquatic system being sampled. If the station is in a stream or river, indicate stream order.

2.18. Note the presence and types of any noticeable water odors and check the appropriate box. Note the term that best describes the relative coverage of any oil on the water surface.

2.19. Based on visual observation, check the term that best describes the amount of turbidity in the water before it was disturbed by sampling.

2.20. Check box for the term that best describes the color of the water, indicating whether the water is tannic, green, clear or other. (If "other" is checked, indicate what the color is.)

2.21. Describe the weather conditions during the time of sampling, particularly the relative amount of sunshine/cloud cover, temperature, and wind speed and direction. Record any other conditions/observations that are helpful in characterizing the site.

2.22. Estimate and record the relative abundances of the following: periphyton, fish, aquatic macrophytes and iron/sulfur bacteria.

2.23. Sign and date the form (FD 9000-3).

FT 3100. Stream and River Habitat Assessment

This sampling procedure requires specific training and a demonstration of competency due to the expert judgment exercised during field sampling. It is recommended that individuals conducting this procedure train with DEP staff (via workshops and/or participating in field sampling) AND complete the training requirements listed in FA 5720.

1. EQUIPMENT AND SUPPLIES

- Completed Physical/Chemical Characterization Field Sheet (FD 9000-3); see FT 3001, section 2
- Completed Stream/River Habitat Sketch Sheet (FD 9000-4); see FT 3001, section 2.4
- Stream/River Habitat Assessment Field Sheet (FD 9000-5)
- Pen
- D-frame dip net with U.S. No. 30 mesh and handle marked in 0.1-m increments

2. METHODS

2.1. Fill in the information requested at the top of the Stream/River Habitat Assessment Field Sheet (FD 9000-5), including the STORET station number, sampling date, sampling location, field identification and receiving body of water. Record the time of sampling as described in FT 3001, section 2.1.

2.2. Follow the criteria given on the data sheet within each category to determine the appropriate score for that category.

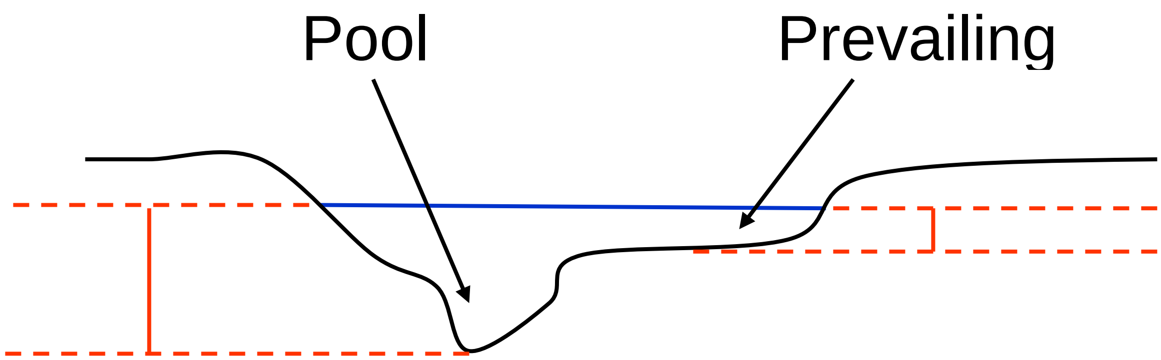
2.3. Score the **Substrate Diversity** by evaluating the number of different kinds of productive substrates present. Refer to the Stream/River Habitat Sketch Sheet (FD 9000-4) and the Physical/Chemical Characterization Field Sheet (FD 9000-3). The following substrates are considered productive: snags (woody debris or logs larger than thumb diameter); roots (less than thumb diameter, with finer roots usually being more productive); aquatic vegetation (in contact with the water); leaf packs/mats in association with flow (leaves must be partially decomposed to be better habitat; leaf mats at the bottom may be productive if sufficient oxygen is present, but anaerobic leaf mats are not considered productive habitat); rocky substrate (usually limestone outcrops with rock diameters greater than 5 cm). Once the number of substrates has been determined, assign a score for substrate diversity in the appropriate spot on the sheet. (Higher values indicate a better condition than lower values.) The quality of the substrates present should then be given consideration in the scoring process. For example, partially decomposed leaf packs and “old” snags are better than fresh substrates and should be given higher scores within the same category. A minimum occurrence of two square meters of a particular substrate in the reach is necessary to count that substrate as being “present.”

2.4. **Substrate Availability** is the relative spatial abundance of productive habitats present. Refer to the entry on FD 9000-3, as determined from FD 9000-4. A minimum occurrence of two square meters of a particular substrate in the reach is necessary to count that substrate as being “present.” Include only productive habitats in the mapping and scoring process. Score substrate availability on the data sheet based on the sum of the percentages of productive habitats in the stream reach.

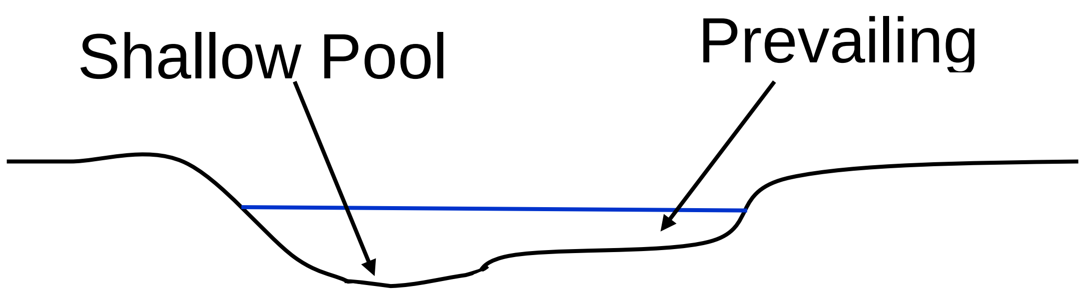
2.5. Using the ranges given on the data sheet, assign a **Water Velocity** score based on the maximum velocity observed at the typical cross-section of stream or river as determined on the physical/chemical form (FT 3001 section 2.10). Avoid areas immediately before or after snags or other material that restrict or enhance the velocity unless this is typical of the majority of the run. Note that in the majority of Florida streams, velocities over 1 m/s are considered unusually high, and should be included in the "poor" category. An exception to this policy would be in narrow or shallow areas of streams with natural limestone bottoms, where velocities approaching 1 m/s may be normal and, thus, would be scored in the "optimal" category.

2.6. The **Habitat Smothering** parameter is an assessment of sand and silt deposition onto what would otherwise be productive habitats. Scoring is a two-step process. Assign a habitat smothering score as determined by the following two steps:

2.6.1. First, determine (by referring to FD 9000-4) if adequate pools are present. For large, wide rivers it may be more appropriate to base the estimate on the actual amount of smothering on the habitats rather than the number of pools. A pool is defined as an area where the depth is at least 2 times the prevailing depth.



A natural system should have 1 to 2 pools every 12 times the width of the stream. For example, a 3 meter wide stream should have at least 1 pool every 36 meters or a total of 3-6 pools per 100 meter reach (100m/36m = 2.8 segments). If there are no pools; i.e., the stream depth is nearly the same throughout the 100m reach, assign a score in the "poor" category. If there are minimal (less than 1 pool every 12 times the width) or shallow pools (a shallow pool is any pool where the depth is much less than 2 times the prevailing depth), score the stream in the "marginal" category.



Pools should occur on the outside of curves in the stream and on the downstream side of large, woody debris. A score in the "suboptimal" or "optimal" categories should be assigned to a stream with adequate pools based on the percent smothering as described in 2.6.2 below.

2.6.2. Second, check for deposition of sand or silt on visible habitats. While a light dusting of sand or silt is normal, excessively thick coatings will reduce habitability of the substrate. Sand or silt smothering on visible habitats is indicated if either is present on a substrate in an amount greater than a light dusting (3-5 mm). Determine a percentage value for visible habitats that are not habitable due to sand and/or silt smothering.

2.7. Add the scores for the primary habitat components (see sections 2.3-2.6 above) and record this primary score on the form. The primary habitat components refer to in-stream features.

2.8. Observe whether or not the reach of stream or river in the sampling area is artificially channelized. Assign a score for **Artificial Channelization** using the following guide:

2.8.1. Poor- A highly altered system with ALL of the following; straightened stream channel, box-cut banks and a monotypic depth. Spoil banks or other indications of dredging may be visible.

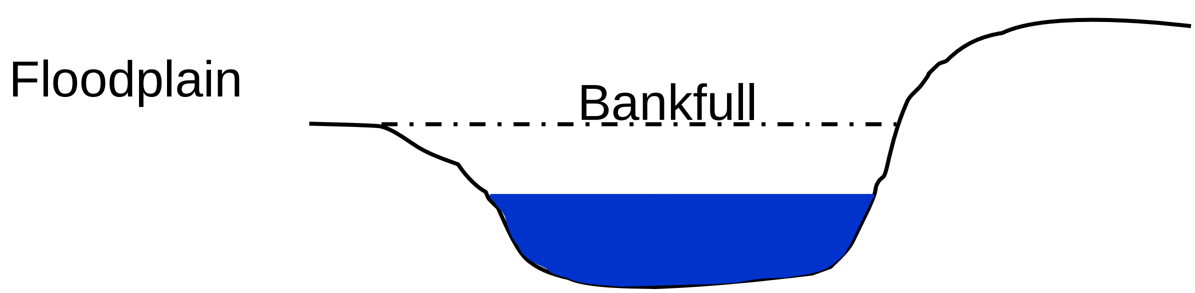
2.8.2. Marginal- An altered system with some sinuosity in stream channel, often developed within the old dredged area, OR some diversity in depth but no pools as defined in 2.6 above. Spoil banks may be visible.

2.8.3. Suboptimal- Good sinuosity has developed within and outside of the old channelized area AND the bottom has a diversity of depths approaching what's expected of a non-dredged system (1 to 2 pools every 12 times the width of the stream). Spoil banks may be visible, but have established vegetation growing on them.

2.8.4. Optimal- A system with good stream channel sinuosity AND a diversity of depths as defined in 2.6 above. No evidence of dredging or straightening.

2.9. Refer to FD 9000-4 for areas along the bank that have eroded or have the potential for bank sloughing. Score artificially stable banks such as concrete according to bank stability, not according to natural vs. artificial stability. Determine the extent of erosion potential for the site and assign a **Bank Stability** score for each bank (The "left bank" is on your left when you are looking upstream).

2.9.1. First, determine where "bankfull" is in relation to the height of each bank. Bankfull is defined as the stage at which channel maintenance is most effective and occurs on average every 1-2 years. For most natural Florida streams, bankfull is the height of the lowest bank, where the stream is connected to the floodplain.



Other indicators of bankfull (especially in larger systems) are the tops of point bars, staining and vegetation lines. If the substrate at bankfull is limestone, pipe clay or concrete, then automatically score the bank in the "optimal" category and skip 2.9.2 and 2.9.3 below. Ideally, bankfull should be greater than 60% of the bank height or above the woody root zone. If this is the case, the bank gets a "plus" for this subcomponent. Otherwise, bankfull is less than 60% of bank height and below the woody root zone and it should receive a "minus".

2.9.2. Second, determine the slope of the bank. The more gentle the slope the more stable the bank. Score a bank with a slope less than 60° with a plus for this subcomponent. A bank with a slope of greater than 60° warrants a minus.

2.9.3. Third, determine if bankfull is above or below the root zone. If bankfull is above the root zone and there are few raw or eroded areas, score this subcomponent a plus. Otherwise, score it a minus. Woody vegetation/roots are more stable than herbaceous and should be scored accordingly.

2.9.4. Lastly, count up the number of pluses from each subcomponent (a total of 3 possible) and score within each category as described below:

2.9.4.1. Poor- 0 pluses

2.9.4.2. Marginal- 1 plus

2.9.4.3. Suboptimal- 2 pluses

2.9.4.4. Optimal- 3 pluses

2.10. Assign a score for the **Riparian Buffer Zone Width** that best characterizes the width of vegetation on each side of the channel. This zone is measured from the edge of the stream bank to where clearing or other adverse human activity begins. Take into account the intensity of the disturbance and score accordingly. For example, a footpath that runs along one bank for 20 meters is much less intense than a paved road that runs along the same 20 meter stretch. A native vegetated buffer zone of greater than 18 m (approximately 60 feet) is currently considered optimal.

2.11. Identify the plants in the riparian zone, determining the extent of coverage and whether the vegetation is native or exotic. Look for these classes of plants: bottomland or mesic hardwoods, understory shrubs and non-woody macrophytes. Assign a **Riparian Zone Vegetation Quality** score based on the classes of plants present, the degree of bank vegetative cover, and how closely the plant community at the site approaches that expected of an undisturbed community in the region.

2.12. Add the scores for the secondary habitat components (see sections 2.8-2.11) and record this secondary score on the form. The secondary habitat components refer to morphological and riparian zone features.

2.13. Add the primary score (see section 2.7) and the secondary score (see section 2.12) to get the habitat assessment total score. Record the habitat assessment total score on the form.

2.14. Sign and date the form (FD 9000-5).

FT 3200. Lake Habitat Assessment

This sampling procedure requires specific training and a demonstration of competency due to the expert judgment exercised during field sampling. It is recommended that individuals conducting this procedure should train with DEP staff (via workshops and/or participating in field sampling) and pass a field performance test.

1. EQUIPMENT AND SUPPLIES

- Completed Physical/Chemical Characterization Field Sheet (FD 9000-3); see FT 3001, section 2
- Lake Habitat Assessment Field Sheet (FD 9000-6)
- Pen
- Identification keys for aquatic plants
- Lake map
- Frotus
- Petite Ponar or Ekman dredge
- Plastic bucket
- Water color standard (20 PCU) in a clear plastic or Teflon bottle
- Clear plastic or Teflon sample bottles (for water color comparisons)

2. METHODS

2.1. Before going into the field, obtain a map of the sampling lake, and divide the sampling area into 12 equal sections on the map. For lakes less than 1,000 acres, logically divide the lake into 12 sampling units. For lakes larger than 1,000 acres, also divide the lake into two to four major sampling divisions.

2.2. Before going into the field, fill in the information requested at the top of the Lake Habitat Assessment Field Sheet (FD 9000-6), including the STORET station number, sampling date, sampling location, field identification, county and lake size.

2.3. At the site, make a preliminary survey of the lake to become familiar with features of the shoreline and lake sections corresponding to the lake map. Mark features observed.

2.4. Check the box that most adequately describes the **Hydrology** (water residence time) of the system. Lakes characterized by long water residence times and no surface water inflow or outflow are isolated systems dominated by rain events and groundwater seepage. Lakes with some flow or moderate to long water residence times have some surface water inputs but rarely have surface water discharges. Flow-through lakes are characterized by short water residence times.

2.5. Mark the box that accurately describes the **Color** of the lake. Very clear and moderately colored lakes should be sampled for benthic macroinvertebrates (see FS 7460). Dark and extremely dark lakes require the visual vegetative survey method, not invertebrate sampling. Dark lakes are defined as having a color greater than 20 PCU; make a visual comparison using a 20 PCU standard and a sample of lake water.

2.6. Score the Secchi depth based on the depth at which the Secchi disk can first no longer be seen. Disk visible on bottom (VOB) gets a score of 20.

2.7. To score the **Vegetation Quality**, survey each section of the lake and identify the major submerged and emergent vegetation. Note the dominant species. Lakes with less than 5% aerial coverage of nuisance vegetation score in the optimal category. Lakes with 6%-20% nuisance vegetation or more than 50% of the surface covered with native, emergent macrophytes score in the suboptimal range. If the maximum depth of the “lake” is two meters or less and the macrophyte coverage is >50%, evaluate the site using wetland methods. The marginal category for this parameter is characterized by lakes with large masses (21%-40%) of nuisance macrophytes (*Hydrilla*, hyacinth, cattail, duckweed, etc.) or algal mats. Lakes rating in the poor category for this parameter have either >40% nuisance vegetation (macrophytes and/or algal mats) or few plants present indicating plant removal.

2.8. For the **Stormwater Inputs** category, assign an appropriate score based on how stormwater enters the lake. Sheet flow over an uncultivated vegetated buffer zone is considered optimal. Ditches, discharge pipes and streams are other sources for stormwater input. When scoring this parameter, consider best management practices (BMPs). For example, ditching with good BMPs (swales, retention areas, etc.) should score higher than ditching directly into the lake.

2.9. To determine **Bottom Substrate Quality**, use a Petite Ponar or Ekman dredge to collect bottom samples from at least four separate locations on the lake. Score the lake based on the predominant substrate. A substrate dominated by sand with small amounts of detritus and coarse particulate organic matter (CPOM) is considered optimal. Submerged aquatic vegetation (SAV) may be present as well. Higher percentages of CPOM, hard-packed sand, algae or nuisance macrophytes covering the bottom are lower quality substrates. Thick deposits of fine detritus or anaerobic mud/muck are considered to be in the poor category.

2.10. To determine **Lakeside Adverse Human Alterations**, visually observe the entire perimeter of the lake for human-made structures such as houses and roads. Less than 10% development of the shoreline is considered to be in the optimal category. The greater the percentage of development, the lower the score for this category.

2.11. Identify plants in the **Upland Buffer Zone**, determining the width of the vegetated zone, percentage of vegetated shoreline, and whether the vegetation is native or exotic. A buffer zone of >18 m is considered optimal.

2.12. To determine **Adverse Watershed Land Use**, score the potential effects from adverse human land uses based on a continuum of amounts, density and type as listed on the form.

2.13. Add the scores from each assessment parameter and record the sum. This value is the site's habitat assessment total score.

2.14. Sign and date the form (FD 9000-6).

FT 3300. Wetland Habitat Assessment, (Reserved)

FT 3400. Estuary Habitat Assessment, (Reserved)

Appendix FT 3000
Tables, Figures and Forms

Form FD 9000-3 Physical/Chemical Characterization Field Sheet

Form FD 9000-4 Stream/River Habitat Sketch Sheet

Form FD 9000-5 Stream/River Habitat Assessment Field Sheet

Form FD 9000-6 Lake Habitat Assessment Field Sheet

PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: ____________ SUBMITTING AGENCY NAME: ____________		STORET STATION NUMBER:	DATE (M/D/Y):	TIME	RECEIVING BODY OF WATER:
REMARKS:	COUNTY:	LOCATION:		FIELD ID/NAME:	

RIPARIAN ZONE/STREAM FEATURES

PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
☐	☐	☐	☐	☐	☐	☐	☐

LOCAL WATERSHED EROSION (check box): None ☐ Slight ☐ Moderate ☐ Heavy ☐

LOCAL WATERSHED NPS POLLUTION (check box): No evidence ☐ Slight ☐ Moderate potential ☐ Obvious sources ☐

WIDTH OF RIPARIAN VEGETATION (m)
On least buffered side:

LIST & MAP DOMINANT VEGETATION ON BACK

ARTIFICIALLY CHANNELIZED ☐ no ☐ recent, ☐ severe ☐ some recovery ☐ mostly recovered more sinuous

ARTIFICIALLY IMPOUNDED ☐ yes

HIGH WATER MARK: ☐ + ☐ = ☐
(m above present water level) (present depth in m) (m above bed)

TYPICAL WIDTH, DEPTH & VELOCITY

☐ m wide

☐ m/s ☐ m/s ☐ m/s

☐ m deep ☐ m deep ☐ m deep

TYPICAL VELOCITIES
7 secs = 0.14 m/s
6 secs = 0.17 m/s
5 secs = 0.20 m/s
4 secs = 0.25 m/s
3 secs = 0.33 m/s
2 secs = 0.50 m/s
1 sec = 1.0 m/s

CANOPY COVER % : OPEN: ☐ LIGHTLY SHADED (11-45%): ☐ MODERATELY SHADED (46-80%): ☐ HEAVILY SHADED: ☐

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ ANAEROBIC: ☐ OTHER: ☐ ____________

SEDIMENT OILS: ABSENT: ☐ SLIGHT: ☐ MODERATE: ☐ PROFUSE: ☐

SEDIMENT DEPOSITION: SLUDGE: ☐ SAND SMOTHERING: NONE SLIGHT MODERATE SEVERE SILT SMOTHERING: NONE SLIGHT MODERATE SEVERE OTHER: ____________

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)				SAND			
LEAF PACKS OF MATS				MUD/MUCK/SILT			
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
ROOTS				*DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION*			

WATER QUALITY	DEPTH (M):	TEMP. (°C):	pH (SU):	D.O. (MG/L):	COND. (UMHO/CM) OR SALINITY (PPT):			SECCHI (M):
TOP								
MID-DEPTH								
BOTTOM								

SYSTEM TYPE: STREAM: 1ST-2ND ORDER 3RD-4TH ORDER 5TH – 6TH ORDER 7TH ORDER OR GREATER LAKE: ☐ WETLAND: ☐ ESTUARY: ☐ OTHER: ☐ ______

WATER ODORS (CHECK BOX): NORMAL: ☐ SEWAGE: ☐ PETROLEUM: ☐ CHEMICAL: ☐ OTHER: ☐ ____________

WATER SURFACE OILS (CHECK BOX): NONE: ☐ SHEEN: ☐ GLOBS: ☐ SLICK: ☐

CLARITY (CHECK BOX): CLEAR: ☐ SLIGHTLY TURBID: ☐ TURBID: ☐ OPAQUE: ☐

COLOR (CHECK BOX): TANNIC: ☐ GREEN (ALGAE): ☐ CLEAR: ☐ OTHER: ☐ ____________________

WEATHER CONDITIONS/NOTES:

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIPHYTON	☐	☐	☐	☐
FISH	☐	☐	☐	☐
AQUATIC MACROPHYTES	☐	☐	☐	☐
IRON/SULFUR BACTERIA	☐	☐	☐	☐

SAMPLING TEAM:	SIGNATURE:	DATE:

Stream/River Habitat Sketch Sheet

Length of grid represents 100 m of stream (not linear meters).
(Horizontal scale is double vertical scale, draw proportionately).

100 m

90 m

80 m

70 m

Left

Bank

60 m

50 m

40 m

Left
Bank

30 m

20 m

10 m

0 m

Downstream

Substrates: Code key, draw proportionate habitat abundance.

☐ Snags

☐ Roots

☐ Leaf Packs (or mats)

☐ Macrophytes

☐ ________________

☐ ________________

☐ ________________

Velocity:

Note where velocity measures were taken.

Habitat Smothering:

Note areas (on map) where sand or silt is smothering substrates, limiting habitability.

Bank Stability:

Note areas (on map) with unstable, eroding banks.

Riparian Buffer Width:

Note areas (on map) where natural vegetation is altered or eliminated.

Plants observed/other notes:

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE:________ SUBMITTING AGENCY NAME:________		STORET STATION NUMBER:	DATE (MM/DD/YY):	RECEIVING BODY OF WATER:
REMARKS:	COUNTY:	LOCATION:		FIELD ID/NAME:

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components Substrate Diversity _____	Four or more productive habitats present [snags, tree roots, aquatic vegetation, leaf packs (partially decayed), rock] 20 19 18 17 16	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags) 15 14 13 12 11	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed 10 9 8 7 6	One or less productive habitat. Lack of habitat is obvious, substrates unstable or smothered 5 4 3 2 1
Substrate Availability _____	Greater than 30% productive habitat present at site 20 19 18 17 16	16% to 30% productive habitat, by aerial extent 15 14 13 12 11	6% to 15% productive habitat 10 9 8 7 6	Less than 5% productive habitat 5 4 3 2 1
Water Velocity ____	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec 20 19 18 17 16	Max. observed at typical transect: >0.1 to 0.25 m/sec 15 14 13 12 11	Max. observed at typical transect: 0.05 to 0.1 m/sec 10 9 8 7 6	Max. observed at typical transect: <0.05 m/sec; or spate occurring: > 1 m/sec 5 4 3 2 1
Habitat Smothering _____ - - - - - - - - - - - - - - - Primary Score _____	Adequate number of pools (1-2 per 12 times width) and <25% of habitats affected by sand or silt accumulation. 20 19 18 17 16	Adequate number of pools (1-2 per 12 times width) and >25% of habitats affected by sand or silt accumulation. 15 14 13 12 11	Does not have required number of pools (1-2 per 12 times width) and/or has shallow pools (<2 times prevailing depth). 10 9 8 7 6	Pools are absent. Most habitats affected by sand or silt accumulation. 5 4 3 2 1
Secondary Habitat Components Artificial Channelization ____	Good sinuosity. No evidence of dredging or artificial straight-ening. No spoil banks. Diversity of depths. 20 19 18 17 16	Good sinuosity within old chan-nelized area and a diversity of depths. Evidence of dredging in the past (>10 yrs) but mostly recovered. 15 14 13 12 11	Some sinuosity developed within channelized area. Some diversity of depth, but no pools (>2 times prevailing depth) present. 10 9 8 7 6	Straightened with spoil banks. Box-cut, monotypic depth with no pools. 5 4 3 2 1
Bank Stability Right Bank ____ Left Bank ____	Bankfull > 60% of bank height. Slope of bank ≤ 60º. Bankfull is within or above the root zone with few raw, eroded areas. 10 9	Only meets 2 of the 3 requirements for optimal bank stability. 8 7 6	Only meets 1 of the 3 requirements for optimal bank stability. 5 4	Bankfull < 60% of bank height. Slope of bank > 60º. Bankfull is below the root zone with raw, eroded areas. 3 2 1
Riparian Buffer Zone Width Right Bank ____ Left Bank ____	Width of vegetation greater than 18 m 10 9	Width of vegetation >12 to 18 m 8 7 6	Width of vegetation 6 to 12 m. human activities still close to system 5 4	Less than 6 m of buffer zone due to intensive human activities 3 2 1
Riparian Zone Vegetation Quality Right Bank ____ Left Bank ____ - - - - - - - - - - - - - - - - - Secondary Score ______	Over 80% of riparian surfaces consist of normal, expected plant community for given sunlight & habitat conditions (e.g., native plants, trees, understory shrubs, or non-woody macrophytes). Minimal disturbance. 10 9	>50% to 80% of riparian zone is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Some disruption in community observed. 8 7 6	25% to 50% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). Disruption obvious. 5 4	Less than 25% of riparian is undisturbed (normal, expected plant community for given sunlight & habitat conditions). 3 2 1

_______ **TOTAL SCORE**

Date:	Analyst:	Signature:

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION

Lake Habitat Assessment Field Sheet

STORET STATION NUMBER:	DATE (M/D/Y)	LAKE NAME	FIELD ID / NAME:
ECO-REGION:	COUNTY:	SAMPLING LOCATION/DESCRIPTION:	LAKE SIZE:

PARAMETER				
HYDROLOGY	No surface inflow or outflow present, very long water residence time, groundwater seepage dominates	Surface water inflow present, but flow is rare, moderate to long water residence time	Surface water inflow and outflow present (or outflow only), sometimes with visible flow, short water residence time	Impounded, hydrology of system artificially controlled
Color	Very clear, uncolored water (benthic sampling appropriate)	Water somewhat tannin stained (benthic sampling appropriate)	Dark, discolored water (water color 20 PCU or higher)	Visibility extremely reduced due to high color
	Optimal	Suboptimal	Marginal	Poor
Secchi	Secchi >3 m Secchi(m)	3, 2.6, 2.2, 1.8, 1.4	1.0, 0.9, 0.8, 0.7, 0.6	0.5, 0.4, 0.3, 0.2, 0.1
	Or VOB: 20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Vegetation Quality	Diverse, expected native vegetation (emergent or submersed), less than 5% nuisance taxa	Mostly expected native plants, but moderate growths (6%-20% of lake) of nuisance macrophytes, or more than 50% of lake covered with plants	Large masses (21%- 40%) of nuisance macrophytes (e.g., Hydrilla, hyacinth, cattail, etc.) or algal mats	Lake choked (>40%) with nuisance macrophytes (duck-weed, hyacinth, etc.) or algal mats, or few plants present at all (e.g., plants removed)
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Stormwater Inputs	Stormwater enters system via sheet flow over non-cultivated and/or natural vegetation	Some direct stormwater inputs (ditches, pipes, cultivated vegetation < 10%) but good BMPs in place	Moderate direct inputs of stormwater (ditches, pipes, cultivated vegetation 11%-50%) but few BMPs in place	Much direct input of stormwater (ditches, pipes, cultivated vegetation > 51%) and no or ineffective BMPs in place
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Bottom Substrate Quality	Diverse mixture of sand, detritus, with small amounts of CPOM/mud/muck. SAV may be present	Mixture of sand or clay and detritus with higher % CPOM/mud/muck content. SAV may be present	Moderate layer of CPOM/ mud/muck, or hardpacked sand only, or moderate algal growth (mats or Chara) on bottom	Thick deposits of CPOM, or fine detritus and anaerobic muck/mud/silt, or algal growth or nuisance plants (Hydrilla) cover bottom
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Lakeside Adverse Human Alternations	Very few man-made structures, roads, or other disturbance adjacent to lake (<10%)	Moderate disturbance visible (structures, roads or other), 10%-49% lakeside affected	Many structures, roads or other human disturbance visible (50%-70%) lakeside affected)	Highly developed or disturbed (>70% of lakeside affected)
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Upland Buffer Zone	Expected native vegetation between uplands and littoral zone, greater than 90% of shore with >18 m buffer	89%-51% of shoreline with >18m buffer or >75% with 10m to 18m buffer	50%-30% of shoreline with >18m buffer or 50%-74% with 10m to 18m buffer	< 29% of shoreline with >18m buffer
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1
Adverse Watershed Land Use	Score the potential effects from adverse human land uses, based on a continuum of amount and type, with least to most adverse as follows: Native vegetation, Silviculture, Pasture or Citrus, Low Density Residential, Row Crops, Commercial, High Density Residential, Urban, Industrial			
	20, 19, 18, 17, 16	15, 14, 13, 12, 11	10, 9, 8, 7, 6	5, 4, 3, 2, 1

TOTAL SCORE		COMMENTS:

ANALYSIS DATE:	ANALYST:	SIGNATURE: