

DEP Form 9000-35 Stream Condition Index Training and Evaluation Checklist and Event Log

One copy of this form FD 9000-35, Stream Condition Index Training Checklist and Event Log, will be completed for each trainee. The trainee or the trainee's supervisor may retain the document. The trainee will be required to provide this document as proof of completion of these training requirements.

By signing here, the Trainee and Supervisor attest to the completion of ALL competencies outlined in this form.

Sign off: _____ / _____ / _____ / _____
Trainee Name (print) *Trainee signature* *Signoff Date* *Supervisor Signature*

Signature and Initial Log (Name, initials and signatures are used to verify authenticity)

<i>Training Role</i>	<i>Name Printed</i>	<i>Initials</i>	<i>Signature</i>
Trainee	_____	/ _____ /	_____
Trainer	_____	/ _____ /	_____
Trainer	_____	/ _____ /	_____
Trainer	_____	/ _____ /	_____
Trainer	_____	/ _____ /	_____
Trainer	_____	/ _____ /	_____
Evaluator	_____	/ _____ /	_____

Introduction

This sampling procedure requires specific training and a demonstration of competency due to the expert judgment exercised during field sampling. It is required that individuals conducting this procedure train with qualified staff (who have passed the FDEP Stream Condition Index audit) and successfully obtain all required training and evaluation signatures.

In an effort to establish standardization and consistency, individuals performing the training are required to adhere to the competencies and principles detailed in this document. Following these training protocols will encourage the establishment of an equal foundation among samplers performing the Stream Condition Index.

Order of Events for Stream Condition Index Training and Evaluation

1. First, trainers and the trainee, over the course of training at nine unique sites, will follow the training items described below in the **Training and Evaluation Activities** Section, and initial once each training item has been completed. Each of the nine training events (and any additional events) should be recorded in the **Training and Evaluation Event Log**.
2. Second, in a separate evaluation event at a tenth site, the trainee will convey and/or demonstrate to the evaluator, mastery of each of the items in the **Training and Evaluation Activities** Section, and initial each item once complete competency is demonstrated. The evaluation event also should be recorded in the **Training and Evaluation Event Log**.
3. Third, the trainee will contact FDEP to request the online test of SCI concepts and field audit. Passing the online test and the field audit are the required proficiency criteria for samplers who wish to submit SCI data to FDEP. **See SCI 1300 Proficiency Criteria** for details of the first-time audit protocol.

Important Notes

1. Items in the **Training and Evaluation Activities** Section do not need to be completed in any particular order, nor do all items need to be completed in a single event.
2. Each training or evaluation event should be identified in the **Training Event Log**, regardless of whether a competency was completed or not.
3. The **evaluator is NOT the DEP auditor**, but rather a qualified trainer performing a “mock audit” for the trainee to ensure that the trainee has the skills required for the audit process.
4. The same individual may be both a **trainer** and an **evaluator**.
5. This procedure also should be followed by individuals wishing to conduct Bio-Recon sampling (BRN 1100). Once the training and evaluating portions are complete, the trainer should contact FDEP for an audit.
6. Two sites on the same waterbody may be considered unique and count toward the required nine sites, if the stretches are markedly different in character (e.g. different habitats present, degree of channelization or alteration, riparian areas).
7. Logistics and required skills associated with sampling from a boat are significantly different from sampling via wading. It is strongly recommended that trainees who plan to sample large rivers or other nonwadeable systems by boat, train by sampling from a boat, at multiple sites.

Training and Evaluation Activities

The trainer will discuss, convey, instruct and demonstrate (where applicable) each of the following items, over the course of training events at the nine required sites (see #16). Once training for an item is completed to satisfaction, the trainer will initial the item. The trainee will also initial in the appropriate area to signify the item was presented to them and they have received an understanding and competency. The trainee will then convey and/or demonstrate to the evaluator, in a separate required evaluation event, the mastery of each of the following items. Once mastery of an item is demonstrated by the trainee, the evaluator will initial and date the item. Following the successful completion of the evaluation event, the trainee should contact FDEP to arrange to take the SCI online test and upon passing the online test, arrange for an initial SCI field audit.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

1. Identify the required SOPs, forms, and supporting references.

- a. FT 3000 Aquatic Habitat Characterization
- b. SCI 1000 Stream Condition Index Methods
- c. BRN 1000 Biological Reconnaissance Field Method
- d. "Sampling and Use of the Stream Condition Index (SCI) for Assessing Flowing Waters: A Primer", FDEP, Standards and Assessment Section, DEP-SAS-001/11
- e. Obtains the documentation required for the sampling.
 - i. Access the DEP SOP webpage for example SOP Forms Listing
 - ii. Print out the form FD 9000-3, Physical/Chemical Characterization Field Sheet (or another means of capturing documentation required in FD 5311).
 - iii. Print out the form FD 9000-4 Stream/River Habitat Sketch Sheet (or another means of capturing documentation required in FD 5311).
 - iv. Print out the form FD 9000-5 the Stream/River Habitat Assessment Field Sheet.

Trainer / Trainee / Evaluator / Signoff Date
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2. Discuss circumstances when the SCI should be postponed

- a. List the normal stream factors to consider for the determination of representative sampling as continuous water flow of at least 0.05 m/sec, availability of substrate and accessibility for sampling.
- b. Determines if the stream flow has remained continuous and has not been intermittent or stagnant, with at least 0.05 m/sec velocity for the past month (except Minimum Flow and Level studies, see SCI Primer).
- c. Does not sample if velocity has not been at least 0.05 m/sec velocity for 28 days.
- d. Determines stream height either from recent rainfall data or from gauging stations. Does not sample if dry conditions occur. Waits 6 months (180 days) after the stream returns to normal flow to sample unless site specific information indicates that the macroinvertebrate community recovers sooner (dependent on study objectives).
- e. Demonstrates an understanding of when the SCI should be postponed. If flood conditions occur (>0.5 meter above normal), waits 28 days until the water recedes, normal flow returns and/or the habitats become accessible. Organisms are not destroyed, but their normal habitats are not accessible due to high water.
- f. If water levels are ≤ 0.5 meter above normal, samples habitats at the normal stream shoreline, not the flooded shoreline.
- g. Sampling for SCI is not used for Ecoregion 76, the Southern Florida Coastal Plain, where few natural streams exist and where the SCI is not calibrated.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

3. Measure and mark the 100-meter reach.

Trainer / Trainee / Evaluator / Signoff Date

4. Complete habitat sketch per FT 3001.

____/____/____/____

5. Complete Physical/Chemical Characterization per FT 3001

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

6. Perform a habitat assessment and record information on Form FD 9000-5.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

7. Discuss the productive habitat substrates and the conditions that make them productive. _____ / _____ / _____ / _____
- a. Productive means the habitat is currently or can sustain invertebrate populations.
 - b. Must be in contact with the water.
 - c. Minimum of 2 square meters in the entire reach to be counted as present.
 - d. Do not count smothered portions of habitats.
 - e. Identify the major habitats to include snags, leaf packs/mats, roots, aquatic macrophytes, rock/rubble.
 - f. List the characteristics for productive snag habitat.
 - i. Count only woody debris, not herbaceous.
 - ii. Count only snags greater than thumb size.
 - iii. Count portion of wood directly in contact with water, not out of water or smothered.
 - iv. Preferentially, sample only in the normal, continuous stream flow.
 - v. Count old snags as more productive than young snags.
 - vi. Avoid new snags.
 - vii. Look for snag bark that is malleable with lots of crooks and crannies.
 - g. List the characteristics for productive leaf material substrate.
 - i. Count only leaf litter that is in contact with water.
 - ii. Sample leaf packs and leaf mats only in the normal, continuous stream flow.
 - iii. Define a leaf pack as leaves packed up against an obstruction at surface or in water.
 - iv. Define a leaf mat as piles of leaf material on the stream bottom.
 - v. Generally leaf packs are better than leaf mats due to higher flow and dissolved oxygen.
 - vi. Count leaf packs/mats as productive only if partially decayed.
 - vii. Sample only the top 2 cm of leaf mats as a productive aerobic habitat.
 - viii. Describe anaerobic versus aerobic conditions.
 - ix. Do not count anaerobic (no oxygen) leaf litter.
 - x. State that leaf material such as pine needles or cypress needles is not considered productive.
 - h. List the characteristics for productive roots.
 - i. Count only roots less than thumb size in diameter, with small diameter, fibrous roots considered the best habitat.
 - ii. Count roots only in contact with the water.
 - iii. Count only if in the normal, continuous stream flow.
 - iv. Indicate that finer roots are more productive.
 - v. Count woody, adventitious roots hanging into the water.
 - vi. Do not count the herbaceous roots of aquatic macrophytes or roots from herbaceous vegetation overhanging the water. These are instead counted as aquatic macrophytes.
 - vii. Silt being present is fine as long as it isn't excessive to the point where the roots are clumped together or the root material is not visible.
 - viii. Do not count undercut banks as a productive substrate if productive roots are not present.
 - i. List the characteristics for productive aquatic macrophytes.
 - i. Count only aquatic vegetation in contact with water.
 - ii. Count only aquatic vegetation in normal, continuous flow.
 - iii. Do not count non-aquatic macrophytes that are temporarily inundated.
 - j. List the characteristics for productive rock/rubble habitat.
 - i. Count rocky outcrops or rocks in contact with the water.
 - ii. Count rocks only in the normal, continuous stream flow.
 - iii. Count only if greater than 5 cm of productive surface.
 - iv. Indicate rougher surfaces as more productive than smooth surfaces.
 - v. State concrete is considered a rock if weathered and present for a long time.
 - vi. Do not count asphalt (possibly toxic) or pipe clay (not stable) as productive substrates.
 - k. Identify minor habitats as sand, muck, silt, mud.

8. Identify that older rather than younger substrates are preferred because the older ones allow time for organism communities to develop and flourish. _____ / _____ / _____ / _____

9. Flow must be considered when assessing the productivity of habitat. Habitats _____ / _____ / _____ / _____
in good flow should be sampled over habitats in lesser flow.

10. Identify that the SCI consist of a total of 20 sweeps.
A sweep is defined as the width of the dip net (0.3 meter) by 0.5 meter.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

11. Apportion the 20 sweeps based on number of productive habitats in the reach. _____/_____/_____/_____
a. In 1 productive habitat, perform 10 sweeps in the major productive habitat and 10 sweeps in the minor.
b. In 2 productive habitats, perform 7 sweeps in the major productive habitats and 6 sweeps in the minor.
c. In 3 productive habitats, perform 5 sweeps in the major productive habitats and 5 sweeps in the minor.
d. In 4 productive habitats, perform 4 sweeps in the major productive habitats and 4 sweeps in the minor.
e. In 5 productive habitats, perform 3 sweeps in the major productive habitats and 5 sweeps in the minor.
f. Generally, sweeps in the minor habitat should be performed in sand or sand/muck areas with good flow.
g. If less than 2 square meters of a snag, leaf matter, roots, macrophytes or rock is in the stream reach and was not counted as an available, "major" habitat; perform as many sweeps as possible and count as "minor" sweeps.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

12. Demonstrate ability to capture invertebrates during sweep, including proper agitation of substrates.
a. Disturb, agitate or dislodge organisms from substrates by using hands, brush or other tool.
b. Position the dip net as closely to and no more than 0.5 m downstream of the substrate in order to capture organisms. In low velocity areas, create a current into the net while agitating the substrate.
c. Complete at least 3 passes with net over the sample area.
d. If possible, submerge fine roots and removable snags into net, then agitate and scrub.
e. For large removable snags, position net to capture organism when removing snag from water.
f. When sampling a leaf pack, place all material into dip net.
g. For large removable snags, position net to capture organisms when removing snag from water.
h. In heavily vegetated areas, place the net at the base of the vegetation and dislodge organisms using your hand.
i. If there is not enough substrate at one location to complete a full sweep, go to the same substrate at an alternative location to complete the sweep. These partial sweeps are combined to complete the full sweep.
j. Once collected, pull dip net up and wash water through to dislodge silt, etc.
k. When discarding large pieces of substrate from the dip net, individually scrub each piece before discarding.
l. Visibly inspect collected materials for organisms.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

13. Sample only productive portions of habitats, do not dilute sample with unproductive detritus.
a. Collect only top 2 cm of leaf mats, sand, silt, mud or muck.
b. Sample only in the normal flow of the stream.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

14. Sample an area equal to 1 dip net wide and 0.5 meters long.
a. Use the width of the dip net and the marked dip net handle or other measuring device to determine sampling area.
b. For thick, 3-dimensional habitats such as roots and leaf packs, visually spread out the substrate to a thickness of 2 cm.
c. Completely sweep the 0.5 meter sample area within 0.1 meters during each pass.

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

15. Transfer material to jug and preserve.
a. Once collected, pull dip net up and wash water through to dislodge silt, etc.
b. When discarding large pieces of substrate from the dip net, individually scrub each piece before discarding.
c. Visibly inspect collected materials for organisms.
d. Transfer sample into 4 liter wide mouth jug without losing any organisms (e.g. put jug in net, invert then dump net into jug).
e. Wash down/transfer from dip net to jug using a squirt bottle, turkey baster, etc.
f. Preserve with 10% buffered formalin, 1:10 dilution, or non-formalin based fixative that penetrates and stabilizes tissue without compromising analytical capability (e.g. NOTOXhisto®). Either add 1 part buffered formalin to 9 parts site water or fill the whole jug with already mixed 10% formalin solution (or non-formalin based fixative as described above).

Trainer / Trainee / Evaluator / Signoff Date
____/____/____/____

- Trainer / Trainee / Evaluator / Signoff Date
 16. Trainer will observe and critique trainee for items 2-15 above at a minimum of ____ / ____ / ____ / ____
 nine separate unique training sites; include at least three good (minimally disturbed)
 sites, and three poor (disturbed or altered) sites.
- Trainer / Trainee / Evaluator / Signoff Date
 17. Trainee will convey and/or demonstrate to the evaluator mastery of items ____ / ____ / ____ / ____
 2-15 above, at a separate evaluation event, at a tenth unique site.

Training and Evaluation Event Log

Trainer or evaluator should initial and date the entry, as applicable.

Write a brief description of the training or evaluation. Describe the site name, habitats swept, etc.

(Unnumbered rows are for additional training events beyond the required nine, or additional evaluation events beyond the required one)

	Trainer Initials	Date	Training Event Description
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	Evaluator Initials	Date	Evaluation Event Description
1.			