FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

JONATHAN P. STEVERSON
INTERIM SECRETARY

VIA EMAIL

June 12, 2015

Dana R. Denson
445 Old Geneva Road
Geneva, FL 32732
Email: ddenson@rcid.org

Re: Final Audit Report for Stream Condition Index Laboratory Audit of Dana Denson; OGC Case No. 15-0355.

Dear Mr. Denson:

Thank you for responding to the preliminary audit report for this Stream Condition Index (SCI) Laboratory Audit. The Florida Department of Environmental Protection (Department) has reviewed your response and determined that the proposed corrective actions are acceptable, and have been implemented. The indicated corrective actions will improve the quality assurance system for your freshwater invertebrate taxonomic identifications and SCI determinations.

Attached is the final audit report detailing the audit procedure and the Department's recommendation for usability of the data. The final audit report will also be posted on the Department's website at http://www.dep.state.fl.us/labs/cgi-bin/reports/search.asp. The details of the Department's review are provided in the audit findings tables. As noted in the report, the Department has determined that your invertebrate taxonomy analysis procedures meet the data quality objectives for SCI data, and the Department may use the data for refresher audit evaluation scoring for SCI sampler proficiency according to DEP SOP SCI 1300.

Under Chapter 120 of the Florida Statutes, you and any other person whose substantial interests are affected by the Department's agency action, may challenge the attached final audit report, including the corrective actions and the data usability analysis. The process to challenge any portion of this agency action is described below in the Notice of Rights section.

If you have any questions or concerns about this final audit report, please feel free to contact Nia Wellendorf at (850)245-8190 or Joy Jackson at (850)245-8074.

Notice of Rights

This action is final and effective on the date mailed (via e-mail) unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the Florida Statutes as provided below. If a sufficient petition for an administrative hearing is timely filed, this agency action becomes only proposed agency action, subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because an administrative hearing may result in the reversal or substantial modification of this action, the petitioner is advised not to proceed until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired. Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. The petitioner shall also mail a copy of the petition to Dana Denson at the address indicated above at the time of filing.

Under rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205, F.A.C.

In accordance with rules 28-106.111(2) and 62-110.106(3)(a), F.A.C., petitions for an administrative hearing by the petitioner must be filed within 21 days of receipt of this written notice. Petitions filed by any persons who were not entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 21 days of publication of the notice, if published, or within 21 days of receipt of the written notice, whichever occurs first. Under section 120.60(3) of the Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication.

The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the

name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301, F.A.C.. Under paragraphs 120.569(2)(c) and (d) of the Florida Statutes, a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

This determination constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the Florida Statutes, which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Thomas Frick, Director
Division of Environmental Assessment and Restoration
2600 Blair Stone Road
Tallahassee, FL 32399
Tel No.: (850) 245-7518

Attachments:
Final Audit Report

Copies furnished to:

David Scharr, CPH Engineering, Inc.
Stacey Cowley, DEP Office of General Counsel
File

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this determination, including all copies, was e-mailed before the close of business on June 16th, 2015, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(7)
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

Deborah Mergy 6/16/15

Clerk Date

Final Audit Report

Dana Denson

Stream Condition Index Laboratory Audit
OGC Case No. 15-0355

Aquatic Ecology and Quality Assurance Section
Water Quality Standards Program
Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
June 11, 2015

2600 Blair Stone Road, MS 6511
Tallahassee, Florida 32399-2400
www.dep.state.fl.us

STREAM CONDITION INDEX FINAL LAB AUDIT REPORT

Scope of Audit
Samplers or field organizations that submit Stream Condition Index (SCI) data to the Florida Department of Environmental Protection (Department or DEP) must pass an initial field audit and then pass a refresher audit every five years, pursuant to DEP Standard Operating Procedure (SOP) SCI 1300. The refresher audit requires the sampler or field organization to collect a SCI sample at a designated DEP SCI Benchmark Site and submit the sample to a laboratory for processing, following DEP SOP SCI 2000, which includes lab sample sorting, lab taxonomic identification, and calculation and reporting of the SCI score resulting from the sample analysis. The sampler or field organization demonstrates continuing proficiency (and is designated with a "pass" status in the DEP Bioassessment Registry) if the reported SCI score is no more than 19 points lower than the median SCI score for the Benchmark Site. A SCI result that is within the acceptance criteria established for the respective benchmark site provides assurance to the Department that both the sampler or field organization and the taxonomic lab are properly following the DEP SOP.

For this audit, one SCI sample was examined. The sample was collected on January 15, 2015 in Little Orange Creek by David Scharr of CPH Engineering and processed by Dana Denson. Some of the audit findings are unique to the individual SCI sample, while other findings and comments pertain to the overall laboratory protocols for the handling and processing of SCI samples.

Summary of Findings/Acceptance of Corrective Actions
A preliminary audit report was sent to Mr. Denson on May 21, 2015 outlining the initial findings. Mr. Denson responded to the preliminary report on May 26, 2015. The findings, Mr. Denson's responses, and the Department's comments are provided in Tables 1 and 2.

The Department found that Dana Denson's macroinvertebrate taxonomy lab procedures complied with DEP SOP SCI 2000 for sample sorting, taxonomic identification, and index calculation with only a few minor deficiencies, as noted below. Mr. Denson has provided acceptable responses to all of the listed findings, and the Department accepts the corrective actions to the deficiencies indicated in Table 2. Based on the results of this audit, the Department auditors have concluded that Dana Denson follows all appropriate Department SOPs for SCI sample analysis.

Data Usability Recommendation
Based on the results of this audit, the Aquatic Ecology and Quality Assurance Section has determined that the SCI data produced by Dana Denson meet the Department's data quality objectives, and recommends that the data may be used for refresher audit evaluation scoring for SCI sampling according to DEP SOP SCI 1300.

Records Evaluated
The following records (with file names) were submitted to the Department by Dana Denson on January 30, 2015, and were evaluated for this audit:

- Taxonomic keys most frequently used (*SCI documentation request*)
- Description of corrective actions (*SCI documentation request*)
- QC records for sorting for 2014 (*sorting efficiency DRD*)
- List of SCI samples analyzed in 2014 (*samples analyzed – DRD)*
- Sample sorting bench sheets (Little Orange Creek SCI – Rep #1 and Rep #2)

- Taxonomic identification bench sheets (*Little Orange Creek SCI – Rep #1* and *Rep #2),* taxonomic attributes for metrics, metric values and SCI score value (*SCI metric data and scores – Little Orange Creek*)
- List of verified taxa in reference collection (*RptBugLibraryVerification*)
- Quality Assurance(QA) records for taxonomic Quality Control (QC) for 2014 (*taxonomic QC records – DRD*)
- Collapsed taxa list and metric calculations (*complete taxa list and metric significance – Little Orange Creek)*
- *FDEP Little Orange Creek SCI Audit responses*
- *SCI-SampleProcess-GridTrayMethod*

Lab Quality System*:* Overall, Dana Denson conducts the QC measures as required by the DEP SCI SOP. The organisms found in the samples that were reviewed as part of this audit were represented in Dana Denson's reference collection and have been verified by outside experts.

Sample Processing, Sorting, and QC*:* Initially, the auditor could not determine whether Dana Denson properly following DEP SOPs for sub-sampling and sample homogenization as no sub-sampling information was provided. However, in response to the preliminary audit report, records were provided that demonstrated the proper homogenization protocols were followed. In his response, Mr. Denson acknowledged that there was a misunderstanding of the SOP in terms of the target number of individuals that resulted in a slightly inflated number of individuals. There were 161 and 163 individuals in Rep 1 and Rep 2, respectively, compared to the maximum (160) allowed. Mr. Denson indicated that corrections would be made immediately to achieve the target number in future samples. In addition, the auditor noted discrepancies between the linked records for the numbers of slide-mounted organisms listed on the whole sample bench sheet and the mounted bench sheet. Mr. Denson stated that greater care would be taken to avoid such discrepancies in the future. The auditor was not initially able to determine the rate at which sorting QC checks were performed from the information provided. In his response to the preliminary audit report, Mr. Denson indicated that all SCI sample replicates are re-sorted. The percent sorting efficiency results were not included in the information provided, but the DEP auditor determined the cumulative sorting efficiency was greater than the DEP SOP requirement of 95%.

Taxonomic Identification QC: Mr. Denson's taxonomic identification procedures and quality control evaluations meet DEP SOP requirements. The auditor was able to determine that the required number of samples were checked for taxonomic quality control and that they meet the DEP SOP required accuracy of 95% for correct identifications.

SCI Index Calculation: Mr. Denson correctly classified taxa according to their attributes, assigned the correct SCI Bioregion, and calculated the SCI metrics and final score correctly.

Corrective Actions
The findings listed in Table 1, indicate that Dana Denson has implemented corrective actions to ensure conformance with DEP SOP requirements for SCI data submitted to the Department, as listed in Table 2.

Table 1. Lab records audit checklist for SCI sample processing and data analysis for audit conducted on Dana Denson. Sample collected by Dave Scharr on 1/15/15 in Little Orange Creek.

PERFORMANCE MEASURE		PERFORMANCE ASSESSMENT	
		Assessment	**Remarks**
1. Lab quality system (SCI 2200)		***Refer to list of taxonomic keys and list of reference collection specimens to address the following requirements.***	
1.1	Lab maintains copies of appropriate taxonomic identification keys.	YES	Reviewed *SCI documentation request*.
1.2	Lab maintains taxonomic specimen collection.	YES	Reviewed *RptBugLibraryVerification.*
1.3	Taxa found in samples are represented in the reference collection.	YES	Reviewed *RptBugLibraryVerification* and *complete taxa list and metric significance – Little Orange Creek.*
1.4	Lab retains extramural experts to verify identifications.	YES	Reviewed *RptBugLibraryVerification*. A variety of experts have been used to verify identifications.
1.5	Specimens in collection are verified by extramural expert.	YES	Reviewed *RptBugLibraryVerification.*
1.6	Lab contains basic equipment necessary for sorting and taxonomic analysis (compound and dissecting microscopes, divided trays, #30 sieve) [applicable to lab visit audit only]	N/A	Auditor did not visit the lab; therefore, this element was not evaluated.
2. Sample sorting and identification process (SCI 2100)		***Refer to raw bench sheets to address the following requirements.***	
2.1	Sample homogenized and subdivided at prescribed levels; records indicate fractions of samples sorted and reflects that 2 or 3 trays were used (may only have 2 if insufficient material to warrant 3 trays)	YES	Reviewed *SCI-SampleProcess-GridTrayMethod*.
2.2	Two aliquots of 150 (±10) organisms picked from sample material.	NO	Reviewed *Little Orange Creek SCI – Rep #1 and #2.* The number of individuals for Rep #1 was 161, and the number of organisms for Rep #2 was 163.

2.3	The X qualifier is used if insufficient organisms are in the sample to obtain 2 replicates of 150. (only applicable if <300 organisms were in the sample)	N/A	Does not apply to these samples.
2.4	Analysts prepare slides and use a compound microscope for identification of appropriate groups when needed (typically worms, midges, mites)	YES	Reviewed *Little Orange Creek SCI – Rep #1 and #2.*
2.5	Individual taxon names and counts are recorded on bench sheet	YES	Reviewed *Little Orange Creek SCI – Rep #1 and #2.*
2.6	Slides clearly identified and linked to the sample vials and sample data sheets by unique sample ID and specimen ID	NO	Reviewed *Little Orange Creek SCI – Rep #1 and #2.* For Rep #1, there are 86 slide-mounted organisms listed under the "Whole sample" tab and 87 under the "Mounted ID"s tab. For Rep #2, the number of slide-mounted organisms on the "whole sample" tab is 96, but the number on the "Mounted ID"s" tab is 97, and there are 82 versus 83 *Rheotanytarsus exiguus* listed. Bench sheets designate a number for each slide-mounted organisms; however, the auditor did examine actual slides; therefore, this element was not fully evaluated.
2.7	Taxonomic bench sheet indicates when specimens are removed from sample vial for any reason (e.g., placed in reference collection or send to extramural expert).	YES	Reviewed *Little Orange Creek SCI – Rep #1 and #2.* This situation did not occur for these particular samples, but other comments on condition of organisms, etc. were noted.
2.8	Taxa collapsing routine conducted per SOP SCI 2100 section 4. Original and collapsed taxonomic lists maintained.	YES	Reviewed Little Orange Creek SCI - Rep #1 and Little Orange Creek SCI -Rep #2 and Complete taxa list and metric significance - Little Orange Creek.
2.9	Documentation available for items listed in SCI 2110	YES	Sample Log-in records were not requested or reviewed by the auditor. The number of slides and the individual organisms mounted were identified on the bench sheets. Neither the slides nor the information linking them to the original sample were requested by the auditor, therefore, linkage between slide labels and bench sheets was not verified for this audit.
3. Sample sorting QC (SCI 2210)		***Refer to sorting efficiency tracking records, corrective action protocol, list of analyzed samples, and raw bench sheets to address the following requirements.***	
3.1	Sorting efficiency check conducted for a minimum of 10% of aliquots per sample.	YES	Reviewed *sorting efficiency*. All SCI samples are re-sorted.
3.2	Sorting efficiency calculation conducted per SOP	NO	Reviewed *sorting efficiency*. Raw numbers were provided, but the efficiency was not calculated.

3.3	Sorting efficiency tracked for each analyst.	NO	Reviewed *sorting efficiency*. Raw numbers were provided, but the efficiency was not calculated or tracked.
3.4	Cumulative sorting efficiency 95% or greater for each analyst.	YES	Reviewed *sorting efficiency*. Raw numbers were provided, but the efficiency was not calculated. The auditor performed the calculations and found the cumulative sorting efficiency to be greater than 95%.
3.5	Precautionary measures taken when single-analyst cumulative sorting efficiency falls below 95%.	YES	Reviewed *SCI documentation request.*
3.6	Corrective action taken when single-analyst cumulative sorting efficiency falls below 90%.	YES	Reviewed *SCI documentation request.*
3.7	Documentation available for items listed in SCI 2211	NO	Reviewed *sorting efficiency*. Raw numbers were provided, but the efficiency was not calculated or tracked for each analyst.
4. Taxonomic identification QC (SCI 2220)		***Refer to taxonomic QC tracking records, corrective action protocol, list of analyzed samples, and raw bench sheets to address the following requirements.***	
4.1	For freshwater sampling, identify taxa to the lowest practical taxonomic level as listed in Table LT 7900-1 or SCI 2230.	YES	Reviewed *Little Orange Creek SCI – Rep #1 and #2.*
4.2	Quality control performed on 5% of samples (or SCI replicates), per LQ 7420 section 3.	YES	Reviewed *taxonomic QC – Dana R. Denson (DRD)* and *samples analyzed*. Current records indicate analyst performs a QC check on 7% of samples.
4.3	Taxonomic discrepancies associated with the QC check resolved through use of extramural expert when needed. (may only be able to evaluate this element if corrections were made on bench sheet)	N/A	Reviewed *taxonomic QC – DRD.* The samples that were reviewed as part of this audit were not among the QC'd samples so auditor was unable to determine how discrepancies were addressed.
4.4	The single-analyst cumulative correct identification rate is 95% of the total number of individual organisms and 95% of taxa identified in all samples or subsamples enumerated by the analyst (5% cumulative error rate over 12 months)	YES	Reviewed *taxonomic QC – DRD.*
4.5	Corrective action undertaken if single-analyst cumulative correct identification rate is < 95% of the total number of individual organisms or < 95% of taxa identified in all samples or subsamples enumerated by the analyst	YES	Reviewed *SCI documentation request* and *taxonomic QC – DRD.*
4.6	Documentation available for items listed in SCI 2221.	NO	Reviewed *SCI documentation request* and *taxonomic QC – DRD.* Records indicate the individual percent identification rate, but the cumulative rate was not calculated.

5. SCI Index calculation (SOP SCI 2100 section 5.)		*Refer to SCI metric and index calculation records to address the following requirements.*	
5.1	Taxa correctly labeled as long-lived, sensitive, and very tolerant per SOP SCI 2100 section 5.1-5.3	YES	Reviewed *Complete taxa list and metric significance - Little Orange Creek.*
5.2	Taxa correctly assigned to the following taxonomic groups, as required for metric calculations in SOP SCI 2100 section 5.4: Ephemeroptera, Trichoptera, Tanytarsini tribe	YES	Reviewed *Complete taxa list and metric significance - Little Orange Creek.*
5.3	Taxa correctly labeled as having a clinger or filter feeder habit, per Merritt and Cummins, An Introduction to the Aquatic Insects of North America (SOP SCI 2100 section 5.5)	YES	Reviewed *Complete taxa list and metric significance - Little Orange Creek.*
5.4	Sample correctly assigned to SCI region	YES	Reviewed *SCI metric data and scores – LOC.* Peninsula Region was used in conjunction with SCI_2012 equations.
5.5	Metrics and index calculated for each replicate following instructions in SOP SCI 2100 Table SCI 2100-1 and steps 1-6 following the table.	YES	Reviewed *SCI metric data and scores – LOC.*
5.6	Did this sample compare well with most recent Department samples at this site?	YES	Reviewed *Complete taxa list and metric significance - Little Orange Creek.* Taxonomy compares well overall with DEP samples. Taxa lists were very similar to samples collected by DEP staff.

Table 2. Audit findings and corrective actions for the SCI laboratory audit of Dana Denson conducted by the Florida Department of Environmental Protection Aquatic Ecology and Quality Assurance Section.

Finding number	SOP reference	Audit Finding	Dana Denson Response and/or Corrective Action	DEP Comments
1	SCI 2100 Section 3.1.2.14	No information was provided on the sub-sorting protocols.	Sub-sorting was done according to SCI 2100, Section 3.1.2.14. Documentation was attached to preliminary audit report response.	This corrective action is acceptable and considered complete.
2	SCI 2100 Section 3.1.2.9	The target number of individuals was exceeded for Rep #1 and Rep #2.	Technician was under the mistaken impression that the acceptable sorting exceedance of the 150-organism count was 10 percent (*i.e.* 15 individuals), rather than 10 individuals, in which case the 11 and 13-organism exceedances would have been allowable. Procedural change made 5/26/15.	This corrective action is acceptable and considered complete.
3	SCI 2100 Section 3.2.2.2	There was a discrepancy in the number of slide-mounted organisms listed under the "Whole sample" tab and the "Mounted ID"s tab.	Reason for difference in tallies is unknown. The individual slide-mounted tallies are the correct ones. Will compare tallies more carefully in the future.	This corrective action is acceptable and considered complete.
4	SCI 2210 Section 1.4 &1.5 Section 2 and 2.1	It is unclear from the records provided as to how frequently the sorting efficiency checks are conducted. Sorting efficiency was not calculated so auditor could not determine if it was being done correctly. Sorting efficiency was not calculated for each analyst. Documentation requirements not met because the cumulative rate was not calculated.	SCIs and Hester-Dendy samples are resorted 100% of the time. QC checks were performed by a fellow biologist for both subsamples. Cumulative sorting efficiency was 98.8%. Future samples will include this information.	This policy is acceptable. In addition to performing the protocols correctly, all listed elements must be clearly documented as directed in the appropriate section of the SCI SOP.