FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

VIA EMAIL
Read receipt requested

December 19, 2022

Shanda McGraw, Project Administrator
EcoAnalysts, Inc.
1420 S. Blaine St., Suite 14
Moscow, ID 83843
Email: smcgraw@ecoanalysts.com

Re: Final Audit Report for Stream Condition Index Laboratory Records Audit of EcoAnalysts, Inc.

Dear Ms. McGraw:

Thank you for responding to the preliminary audit report for this Stream Condition Index (SCI) Laboratory Records Audit. The Florida Department of Environmental Protection (department) has reviewed your response and determined that the taxonomic data produced by EcoAnalysts, Inc. meet the department's data quality objectives upon implementation of corrective actions from this audit.

Attached is the final audit report detailing the audit procedure, details of the department's review, and the department's recommendation for usability of the data. The final audit report will also be posted on the department's website at https://floridadep.gov/dear/florida-dep-laboratory/content/fdep-biological-and-audit-report-search. As noted in the report, the department's Aquatic Ecology and Quality Assurance Section has determined that your invertebrate taxonomy analysis procedures after implementing corrective actions from this audit meet the data quality objectives for SCI data for the sample types covered in this audit, and recommends that the data may be used for DEP related purposes and in support of the scope of projects covered in this audit. The usability of the audited data for other purposes must be determined separately according to applicable requirements in Rule 62-160.670, Florida Administrative Code (F.A.C).

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 Sarah Noble at (850) 245-8533 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 EcoAnalysts, Inc., 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 agency action 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

David Whiting, Deputy Director
Division of Environmental Assessment and Restoration
2600 Blair Stone Road
Tallahassee, FL 32399
Tel No.: (850) 245-8191

Attachments:
Final Audit Report

Copies furnished to:

Kenneth Hayman, DEP Office of General Counsel
Jessica Mostyn, DEP Watershed Assessment Section
File

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this agency action, including all copies, was e-mailed before the close of business on Dec. 19, , 2022, 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.

Clerk 12/19/2022
Date

Final Audit Report

EcoAnalysts, Inc.

Stream Condition Index Laboratory Records Audit

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

December 2022

STREAM CONDITION INDEX LABORATORY RECORDS AUDIT REPORT

Scope of Audit

In 2019, EcoAnalysts, Inc. processed and identified a number of Stream Condition Index (SCI) samples for Brown and Caldwell and the resulting data were submitted to the Florida Department of Environmental Protection (DEP or department) for waterbody assessment per 62-303, Florida Administrative Code (F.A.C.), the Impaired Waters Rule. The DEP Aquatic Ecology and Quality Assurance Section (AEQAS) initiated a records audit of the EcoAnalysts SCI laboratory to ensure their processes adhered to DEP standard operating procedure (SOP) SCI 2000, which is applicable to SCI sample processing and comprised the criteria for this audit. This audit assesses items that can be evaluated via laboratory records provided by EcoAnalysts and covers the scope of samples that EcoAnalysts processed for DEP-related projects in 2019.

On May 5, 2022 DEP auditors requested records for three samples collected by Brown and Caldwell in November 2019, one from Hurrah Creek and two from the South Prong Alafia River from EcoAnalyst Project Administrator, Shanda McGraw. Most of the requested records were received on May 27, 2022 and upon request, additional records were provided on August 11, September 12 and October 6, 2022. Table 1 lists the samples that were reviewed as part of this audit, including the dates of collection, requesting client, and individual samplers. EcoAnalysts' staff sorted and identified the samples to the lowest practical level; however, the client did not request EcoAnalysts calculate individual metric or final SCI scores and thus these elements were not included in this audit.

Records Evaluated:

- List of the taxonomic keys most often consulted in the lab (DEP requested a minimum of the ten most relied upon; online references are acceptable if regularly consulted)
- List of taxa in the lab's specimen reference collection, including extramural verifying taxonomists' names
- Sorting efficiency tracking records for employees associated with requested samples
- Taxonomic quality control tracking records for employees associated with requested samples
- Brief description of lab protocols for precautionary and corrective measures taken if sorting efficiency or taxonomic QC results fail to meet the required targets
- All raw bench sheets and taxa lists associated with requested samples

Table 1. Stream Condition Index samples reviewed as part of this audit.

Station Name	Sample Date	Client	Samplers
Hurrah Ck @ CR 672	11/20/2019	Brown and Caldwell	Eesa Ali, Dan Hammond
SPAR @ Bethlehem Rd	11/20/2019	Brown and Caldwell	Eesa Ali, Dan Hammond
SPAR @ Thatcher Rd	11/20/2019	Brown and Caldwell	Eesa Ali, Dan Hammond

Summary of Findings/Acceptance of Corrective Actions

A preliminary audit report was sent to EcoAnalysts on September 15, 2022. Additional email correspondence occurred between DEP and EcoAnalysts prior to their submittal of their final responses on October 6, 2022, which included the list of specimens verified by external entities (Table 2). DEP found EcoAnalysts responses and proposed corrective actions acceptable and their procedures follow DEP SOP SCI 2000, as discussed below.

Lab Quality System:

EcoAnalysts maintains copies of pertinent taxonomic identification keys for specimens encountered in the samples processed as part of this audit. They have an extremely detailed and well-organized reference collection that contains 1-2 individuals of all the taxa represented in the samples processed as part of this audit. All specimens appear to have been identified by internal taxonomists and DEP SOPs require the use of extramural experts to verify reference collection specimens as an independent confirmation of an organization's identifications. From the initial information submitted, it did not appear that external verifications were performed. Upon request, EcoAnalyst supplied a list on October 6, 2022, of externally verified specimens and the associated verifiers ("Florida List of Externally Verified SCI Reference Collection Specimens – 2019"). Of the 65 unique taxa encountered in the three SCI samples reviewed as part of this audit, 8 were not externally verified according to the list provided. One of the 8 taxa that had not been verified externally was a mayfly, *Labiobaetis dardanum*, that is not known to occur in Florida. DEP notified EcoAnalysts on November 18, 2022, and a response was received on December 7, 2022, stating that although the single specimen was returned to the client and could not be verified, they agreed it was most likely *L. epphipiatus* given that the two species are very similar. DEP encourages EcoAnalysts to continue to add to their externally verified collection until they have complete coverage and to use Florida-specific taxonomic keys where appropriate.

EcoAnalysts offer their clients a project-specific reference collection. For the three samples included in this audit, 78 individuals were removed and placed in a reference collection. All organisms placed in the reference collection were verified by a second taxonomist.

Sample Sorting and Identification Process:

Overall, EcoAnalysts is properly following DEP SOPs for sample sorting and identification with a few exceptions. Documentation was available for most items listed in SCI 2110 except for those noted below and in Table 2.

Sample Sorting QC:

According to a description of their QA-QC protocols for Florida SCI samples, following the initial sort, a senior sorting technician checks every subsampled aliquot. If the initial sort falls below the minimum 95% efficacy, the senior technician re-sorts the aliquot in order to recover at least 95% of the organisms. After all checks are performed, the senior technician provides feedback to original sorter on which organisms were missed.

EcoAnalysts' sample sorting protocols appear thorough, but the derivation of sorting efficiencies could not be confirmed from the information provided. As an example, in the "Sort QC Results" file the cumulative sorting efficiency for S. Little was reported as 93.7% but this rate could not be verified as the individual sorting efficiencies were not reported for the analyst. This is below the

minimum required proficiency so according to their protocols each of the aliquots were re-checked. Additionally, for five of the six replicates, the initial check was also below the target, resulting in an additional check. The second set of QC checks all passed the 95% required minimum. EcoAnalysts reported the overall percent recovered as 100% for each subsample even though, according to their records, values ranged from 96.5% - 100%. As part of their protocols, QC checks are continued until 100% accuracy is achieved.

Taxonomic Identification QC:

According to a description of their QC for the identification of SCI samples, immediately following initial identifications, every individual reference collection organism is checked by a senior taxonomist separately from the whole-sample re-identification to ensure all taxa are being accurately identified. If there is a discrepancy, discussions follow both the reference collection verifications and the whole-sample re-identifications before data sets are finalized.

For samples reviewed as a part of this audit, there were a few occasions when specimens were not identified to lowest practical taxonomic level, but in these cases, there was a note indicating the specimen was in poor condition and/or fragmented.

EcoAnalysts processed five samples for Brown and Caldwell between 2016-2021. DEP requested records of the three most current samples, however, the taxonomy QC check was performed on one of the samples not included in this audit. In order to review the entire identification QC protocols, DEP requested the taxa lists and sample information associated with this additional sample and was supplied the records by EcoAnalysts.

Given the small number of samples processed for DEP-related projects on an annual basis, there was only one taxonomic QC check performed during the audit period and thus a cumulative identification rate could not be calculated. The percent similarity was 99% for the single sample QC check. EcoAnalysts performs percent similarity checks for "General," "Chironomidae," and "Oligochaete" taxa separately, and while the Taxonomy ID QC Percent Similarity form was not included for Oligochaetes, DEP was able to find this information on the "Reference Collection QC" form page 2 of 2 in the "Florida BMI Lab Paperwork" submission that showed the Percent Correct ID rate as 100.0%. Also, QC checks were performed on significantly fewer individuals than in the original samples, which appears to be because many of the specimens were removed and placed in the reference collection prior to the QC check. As a result, the overall number of taxa and individuals were reduced in the QC check compared to the original sample. As noted earlier, all specimens placed in the reference collection are verified by a second analyst; however, performing the QC check in this manner may not give an accurate assessment of the correct identification rate for an individual analyst or for a given sample.

Taxonomy QC records from 2013 were originally sent in error and prior to discovering this, the DEP auditor noted that the taxonomy QC reports do not indicate how discrepancies are resolved nor could the auditor confirm that the resolutions were reflected in the final taxa lists submitted to the client. This observation was also discussed in the 2015 audit and EcoAnalysts indicated that would retain such records for DEP sampling in the future (Finding number 4.3, 4.6). For example, for the General Taxonomy ID QC for the Central Tributary (12/5/2013), the original taxonomist (J. Pfeiffer) recorded 33-*Hemerodromia* sp. and 2-*Nigronia serricornis* and the QC taxonomist (B. LaVoie) recorded 31-*Hemerodromia* sp. and 1-*Nigronia serricornis*. This is reported as a difference of 3 individuals with a percent similarity of 98.16%, but there is no notation whether the 3 individuals were missing from the QC check or were counted as different

taxa in the original sample. In response to the above comment, EcoAnalysts submitted a narrative description of how counting discrepancies were resolved for the DEP sample that was QC'd but not selected as part of this audit and noted that errors had been addressed in the QC report.

Metric and Index Calculation:

EcoAnalysts was not requested to calculate the SCI metrics or final score for these samples; therefore, this information was not reviewed as part of this audit. Collapsing is a necessary step prior to metric calculation but was not performed because it was not requested by the client.

Data Usability Recommendation

Based on the results of this audit, AEQAS has determined that the taxonomic data produced by EcoAnalysts, Inc. meets the department's data quality objectives with the corrective actions noted in the text and Table 2. DEP recommends that the data may be used for DEP related purposes upon the full acceptance and implementation of the required corrective actions. The usability of audited data for other purposes must be determined separately according to applicable requirements in Rule 62-160.670, F.A.C.

Table 2. Audit findings of deficiency and/or requests for additional information for the Laboratory Records Audit of selected SCI sample data produced by EcoAnalysts.

SOP Reference	Sample ID	Audit Finding	Recommended or Required Corrective Action(s)	EcoAnalysts Response	Corrective Action and Implementation Date	DEP Comments
SCI 2200 Section 2	All samples	There is no indication that extramural experts have been retained or used for the verification of identifications.	**Required:** Retain outside experts with specific training in macroinvertebrate taxonomy to verify identifications. Supply a current list of externally verified specimens and associated verifiers.	Submitted file, "Florida-List of EcoAnalysts SCI Reference Collection Specimens – Brown and Caldwell 2019".	The document submitted showed 88% of the specimens had been externally verified. One of the 8 specimens that had not been verified was *Labiobaetis dardanum* which is not known from Florida and illustrates the value of having specimens externally verified. Submitted 12/7/2022.	The corrective action is acceptable.
SCI 2210 Section 1.3-1.4 and SCI 2211	All samples	Individual sample sorting efficiencies were not provided. The total number of organisms and the number of QC organisms were not noted in the Sorting Efficiency Records. The cumulative % efficiency should be derived from the individual sample sorting efficiencies and enough information should be provided for verification of calculations. Clarify whether "%Efficacy 1" is the sorting rate for the initial sorter or the QC Sorter. If this is for the QC sorter, please provide rates for initial sorter so individual sample sorting and cumulative rates can be verified.	**Required:** Record the total number of organisms found in the subsample and the total number found in all QC checks.	Submitted file, "Florida-EcoAnalysts SCO Taxonomy Re-ID Actions Narrative."	The file, "Florida-EcoAnalysts SCI Taxonomy Re-ID Actions Narrative" described in detail how discrepancies related to the DEP QC sample were resolved. There were minor counting errors that were resolved between the original and QC taxonomists. These revisions have been made to the required QC reports. Submitted 10/6/2022.	The corrective action is acceptable.

SOP Reference	Sample ID	Audit Finding	Recommended or Required Corrective Action(s)	EcoAnalysts Response	Corrective Action and Implementation Date	DEP Comments
SCI 2221 Section 1.1 and 1.2	All samples	Percent similarity was provided based on the individuals remaining after specimens were removed and placed in the reference collection. The error rate for the number of organisms and number of taxa should be provided and based upon the entire sample.	**Required:** Record analyst cumulative ID rate for both total taxa and total number of organisms identified for the entire sample.	The file, "Florida-EcoAnalysts SCO Taxonomy Re-ID Actions Narrative" described in detail how discrepancies related to the DEP samples were resolved.	There was only one sample QC'd for this client and thus there are no cumulative rates to report. Submitted 10/6/2022.	No corrective actions needed.
SCI 2221 Section 1.1 and 1.2	All samples	No Oligochaetes were noted in the ID QC check.	**Recommended:** Indicate on a Taxonomy ID QC Percent Similarity form when a component of a typical SCI sample is missing (*i.e.* Chironomidae, General, and Oligochaeta) or please supply the Oligochaete Mounting Bench Sheet and ID QC information. DEP requests this be shown on the Taxonomy ID QC Percent Similarity forms as was done for General and Chironomidae to more readily determine that a QC check was performed for Oligochaetes.	See "6. Florida BMI Lab Paperwork."	Oligochaetes were verified as part of the Reference Collection process and logged in on a separate form in the "6. Florida BMI Lab Paperwork – Reference Collection QC for Oligochaete," Submitted 10/6/2022.	The corrective action is acceptable.
SCI 2220 Section 3.5 and 2221 Section 1.10	All samples	Taxonomy QC reports do not indicate how discrepancies are resolved. Resolutions were not reflected in the final taxa lists.	**Required:** Record all taxonomic discrepancies and comments associated with the QC check.	Submitted file, "Florida-EcoAnalysts SCO Taxonomy Re-ID Actions Narrative."	The file, "Florida-EcoAnalysts SCI Taxonomy Re-ID Actions Narrative" described in detail how discrepancies related to the DEP samples were resolved. There were	The corrective action is acceptable.

SOP Reference	Sample ID	Audit Finding	Recommended or Required Corrective Action(s)	EcoAnalysts Response	Corrective Action and Implementation Date	DEP Comments
					minor counting errors that were resolved between the original and QC taxonomists. These revisions have been made to the required QC reports. Submitted 10/6/2022.	
SCI 2100 Section 3.3.2.4	SPAR@ Thatcher Road (7948.4-4)	The mayfly *Labiobaetis dardanum* was identified in the SPAR @ Thatcher Road sample. This taxon has not been previously identified in Florida.	**Required:** Verify that all specimens have been previously identified in Florida or if a range-extension is suspected, send the specimen to an external expert or a DEP taxonomist for verification. Otherwise, the range of all specimens should be verified in the appropriate literature.	The specimen had been returned to the client, but EcoAnalysts' taxonomists agreed it was most likely *L. epphipiatus* as it is very similar to *L. dardanum*. They will notify the client that the specimen should be left at the genus level given the uncertainty.	Continue to add to the externally verified reference collection and use Florida-specific literature and taxonomic keys for DEP-related samples. Submitted 12/7/2022.	The corrective action is acceptable.