FLORIDA DEPARTMENT OF Environmental Protection

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Tallahassee, FL 32399-2400

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Secretary

VIA EMAIL
Read receipt requested

May 11, 2023

Matthew Foti
Eurofins Environmental Testing, Orlando
481 Newburyport Avenue
Altamonte Springs, FL 32701
Email: matthew.foti@et.eurofinsus.com

Re: Final Audit Report for Chlorophyll Laboratory Records Audit

Dear Mr. Foti:

Thank you for responding to the preliminary audit report for the Chlorophyll Laboratory Records Audit of ENCO Laboratory, DOH ID E83182 (ENCO). The Florida Department of Environmental Protection (department or DEP) has reviewed your response to the proposed corrective actions. Given the closure of ENCO, the findings in this audit will serve to inform existing data usability decisions and future laboratory practices in general.

Attached is the final audit report detailing the audit procedure, audit findings, and the department's audit conclusions. This final audit report will 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 concludes that the laboratory procedures and laboratory documentation used by ENCO did not meet quality control (QC) criteria required by the ENCO Quality Manual and laboratory SOPs, Chapter 62-160, Florida Administrative Code (F.A.C.), The NELAC Institute (TNI) 2016 standards, and the relevant methods. Because the ENCO Orlando location is permanently closed, it was not possible to implement corrective actions to improve the laboratory's quality system. Several significant findings in the audit were deemed critical for data usability for the Impaired Waters Rule, 62-303, F.A.C., and other DEP uses. The deficiencies involve extract absorption ratios outside the range specified by the method, inappropriate cuvette pathlength, poor extract clarity, inconsistent documentation to calculate holding times, undefined vacuum and centrifuge speeds, persistent freezer temperature failures, unknown method reporting limit determination, and unknown instrument maintenance. All audited samples were affected by five or more QC issues that may have affected results.

Caution should be taken for use of chlorophyll data for samples with analysis dates of February 26, 2019 through December 13, 2021 and results shall be considered estimated values.

NOTE: The audit evaluated the indicated data for the use(s) described in the final audit report. The usability of the audited data for other purposes or the usability of data produced by the audited organization for other analytes or other date ranges must be determined separately according to applicable requirements in Rule 62-160.670, F.A.C.

Under Chapter 120 of the Florida Statutes, ENCO, 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 Jessica Patronis at 850-245-8980 or Sarah Noble at 850-245-8533.

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 Eurofins 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

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
Nijole Wellendorf, DEP Water Quality Standards Program
Jessica Mostyn, DEP Watershed Assessment Section
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 May 11, 2023 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

May 11, 2023
Date

Final Audit Report
ENCO Laboratory
DOH ID E83182
Chlorophyll a Laboratory Records Audit
Conducted January 6, 2023

Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration
May 11, 2023

Introduction

The Florida Department of Environmental Protection's (DEP or department) Division of Environmental Assessment and Restoration (DEAR) requested a laboratory records audit of Environmental Conservation Laboratories, Inc. (ENCO) to inform its use of chlorophyll *a* data for Impaired Waters Rule (62-303, Florida Administrative Code (F.A.C.)) assessments and permitted discharge studies. The Aquatic Ecology and Quality Assurance section (AEQAS) conducted the audit in accordance with Rules 62-160.650 and 62-160.670, F.A.C. The purpose of this audit was to verify that ENCO is complying with the quality assurance (QA) requirements of the QA Rule, Chapter 62-160, F.A.C., and correctly implementing approved analytical methods, including acceptable quality control, and maintaining adequate laboratory documentation.

This final audit report lists the procedural and documentary deficiencies, as determined by the department auditors, responses from the audited party, and the department's response to the corrective actions proposed by the laboratory.

Audit Description

AEQAS staff requested analytical and quality control records for samples representing the laboratory's spectrophotometric analysis of chlorophyll using Standard Methods, 10200 H. AEQAS audited 30 samples submitted to DEP from February 19, 2019 – December 6, 2021 (Table 1). Records were requested from ENCO on October 31, 2022 and received on December 7, 2022. AEQAS auditors reviewed sample records across the audited time period including the laboratory's certification information, Quality Manuals and ENCO lab SOPs revisions 3-6, sample chain of custody documents, check in logs, analytical runs, instrument test reports, lab quality assurance and quality control documentation, and laboratory reports. The AEQAS auditing team met over video conference with ENCO's laboratory Manager, Lori Mangrum, for an audit overview and introductory meeting on January 6, 2023. Ms. Mangrum explained that this ENCO laboratory, located at 10775 Central Port Drive, Orlando, Florida, 32824-7009, under DOH ID E83182, was purchased by Eurofins and is permanently closed as of November 1, 2022. On January 9, 2023, Ms. Mangrum informed auditors that she would transfer communication for the audit to Matthew Foti, former Director of Operations/ENCO-Orlando Lab Manager. Further correspondence was conducted via email. Additional records pertaining to the audited samples were requested from ENCO on January 9 and received January 20, 2023. The ENCO Quality Manuals and laboratory SOPs from the audited time period, Chapter 62-160, F.A.C., The NELAC Institute (TNI) 2016 standards, and Standard Methods 10200 H provided the criteria for the audit and all findings. Personnel involved in the audit were Jessica Patronis, Sarah Noble, Ethan Wickline and Jackie Krebs from AEQAS. Lori Mangrum and Matthew Foti were the main contacts for ENCO.

Preliminary Audit Report and Implementation of Corrective Actions

A preliminary audit report of findings and deficiencies was sent to Matthew Foti on March 3, 2023. Deficient policies, practices, or records that did not comply with evaluation criteria for lab analysis are identified in Table 2, which includes the department's required or recommended corrective actions for each finding. Mr. Foti responded to the preliminary report on March 25, 2023. Because the laboratory is permanently closed and its certification relinquished, Mr. Foti

did not implement corrective actions for the audit findings. By email, Mr. Foti explained that all equipment, policies, and procedures from the ENCO Orlando laboratory were discontinued. Some ENCO personnel were transferred to Eurofins Altamonte. Additionally, Mr. Foti reviewed the Eurofins laboratory SOPs to incorporate the findings from this audit into the June 15, 2023 revision of the SOP.

Table 3 contains audit findings related to the upload of data to the Water Information Network (WIN) database. These findings apply to the organizations who uploaded the data to WIN and do not apply to the ENCO laboratory itself. To resolve these findings, AEQAS corresponded with the following ENCO customers; Nutter and Associates (Tony Greco and Alan Moore) and Frydenborg Ecologic (Beck Frydenborg). The organizations reviewed the results and made corrections to data in WIN as appropriate.

Audit Conclusions

Based on the findings from this audit, DEP has determined that the laboratory procedures and laboratory documentation used by ENCO do not meet the department's minimum quality assurance standards. Because the ENCO Orlando location is permanently closed, it was not possible to implement corrective actions to improve the laboratory's quality system. The findings in this audit serve to inform existing data usability decisions and future laboratory practices in general. Several significant findings in the audit were deemed critical for data usability for the Impaired Waters Rule, 62-303, F.A.C., and other DEP uses. The deficiencies involve extract absorption ratios outside the range specified by the method, inappropriate cuvette pathlength, poor extract clarity, inconsistent documentation to calculate holding times, undefined vacuum and centrifuge speeds, persistent freezer temperature failures, unknown method reporting limit determination and unknown instrument maintenance. All audited samples were affected by five or more QC issues that may have affected results. Caution should be taken for use of chlorophyll data for samples with analysis dates of February 26, 2019 through December 13, 2021 and results shall be considered estimated values.

NOTE: The audit evaluated the indicated data for the use(s) described in this report. The usability of the audited data for other purposes or the usability of data produced by the audited organization for other analytes or other date ranges must be determined separately according to applicable requirements in Rule 62-160.670, F.A.C.

Table 1. List of audited chlorophyll a – corrected sample results analyzed using Standard Methods 10200 H.1 for the chlorophyll a laboratory records audit of ENCO conducted by DEP, January 6, 2023.

Sample ID	Collection Date, Time	Monitoring Location	Organization ID
AC01198-05	2/19/2019 11:00	Upper Perdido Bay Station 5	21FLNUTT
AC01198-03	2/19/2019 13:25	Upper Perdido Bay Station 3	21FLNUTT
AC03940-01	5/23/2019 8:20	Upper Perdido Bay Station 3	21FLNUTT
AC03940-02	5/23/2019 8:40	Upper Perdido Bay Station 1	21FLNUTT
AC03940-04	5/23/2019 9:05	Upper Perdido Bay Station 5	21FLNUTT
AC05988-08	8/21/2019 8:40	Upper Perdido Bay Station 5	21FLNUTT
AC05988-07	8/21/2019 9:05	Upper Perdido Bay Station 4	21FLNUTT
AC05988-05	8/21/2019 10:00	Upper Perdido Bay Station 1	21FLNUTT
AC08683-04	12/10/2019 10:00	Upper Perdido Bay Station 4	21FLNUTT
AC08683-02	12/10/2019 10:45	Upper Perdido Bay Station 2	21FLNUTT
AD01112-04	2/17/2020 11:00	Upper Perdido Bay Station 4	21FLNUTT
AD01112-02	2/17/2020 11:20	Upper Perdido Bay Station 2	21FLNUTT
AD01112-01	2/17/2020 11:40	Upper Perdido Bay Station 1	21FLNUTT
AD01112-03	2/17/2020 13:30	Upper Perdido Bay Station 3	21FLNUTT
AD03456-04	5/27/2020 9:20	Upper Perdido Bay Station 1	21FLNUTT
AD05248-07	8/12/2020 8:40	Upper Perdido Bay Station 5	21FLNUTT
AD05248-06	8/12/2020 9:10	Upper Perdido Bay Station 4	21FLNUTT
AD05248-04	8/12/2020 9:30	Upper Perdido Bay Station 2	21FLNUTT
AD08388-02	12/9/2020 9:30	Upper Perdido Bay Station 2	21FLNUTT
AD08388-05	12/9/2020 14:30	Upper Perdido Bay Station 3	21FLNUTT
AE02344-03	3/23/2021 9:05	SHAW BRANCH TST	21FLFRYD
AE02344-04	3/23/2021 9:20	SANDERS BRANCH TST	21FLFRYD
AE02344-01	3/23/2021 11:15	DEER MOSS CREEK CON	21FLFRYD
AE04265-02	5/8/2021 8:10	DEER MOSS CREEK TST	21FLFRYD
AE04265-03	5/8/2021 8:47	SHAW BRANCH TST	21FLFRYD
AE04265-01	5/8/2021 9:13	DEER MOSS CREEK CON	21FLFRYD
AE07196-04	9/2/2021 8:48	SANDERS BRANCH TST	21FLFRYD
AE09621-02	12/6/2021 7:25	DEER MOSS CREEK TST	21FLFRYD
AE09621-04	12/6/2021 8:20	SANDERS BRANCH TST	21FLFRYD
AE09621-01	12/6/2021 9:20	DEER MOSS CREEK CON	21FLFRYD

[1] Method: Standard Methods for the Examination of Water and Wastewater, Online Edition, 10200 H. Chlorophyll, Spectrophotometric Determination of Chlorophyll (2011).

Table 2. Audit findings for the chlorophyll a laboratory records audit of ENCO conducted by DEP, January 6, 2023.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
1.	SM 10200H, 1.; ENCO SOP WETS-087 and NC WW/GW LC Policy	Sample pH check is not documented upon sample receipt.	AC01198-05, AC01198-03, AC03940-01, AC03940-02, AC03940-04, AC05988-08, AC05988-07, AC05988-05, AC08683-04, AC08683-02, AD01112-01, AD01112-02, AD01112-03, AD01112-04	**Required:** Check and document sample pH upon sample receipt. Add a field to the preparation sheet to document the pH value. Filters taken from water with pH<6 must be processed promptly after filtration.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
2.	2016 TNI V1M4 1.6 and V1M2 4.13.3 f) xviii; ENCO Policy QA-4	There is no description of corrective actions in the ENCO Lab SOP or Quality Manual when analysts do not pass Initial Demonstration of Capability (IDOC) or continuing demonstrations of analyst precision.	All samples	**Required:** Describe in the lab SOP corrective actions taken when analysts do not pass Initial Demonstration of Capability (IDOC) or continuing demonstrations of analyst precision.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
3.	2016 TNI V1M2 5.6.4.2; Rule 62-160.340 (1) (a) and (1) (c), F.A.C.	Documentation related to the lab lot ID for filters was not retained for sample ID AD03456-04. Where reagent logs for filters were retained, there was not enough information recorded to trace filters back to the manufacturer.	AC08683-04, AC08683-02, AD03456-04, AD05248, AD08388, AE02344, AE04265, AE07196, AE09621	**Required:** Document and retain records for filter log-in information including filter pore size, manufacturer and manufacturer lot numbers.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
4.	Rule 62-160.340 (1) (a), (c) and (2) (b) 6., F.A.C.; 2016 TNI V1M2 4.13.2.1 and 4.13.3 b); ENCO QSM section 12.2	Prep log information including hand-written dates and times for the filtration and extraction process was not retained. Auditors were unable to verify where or when sample filters and extracts were held between filtration and analysis.	AC01198-05, AC01198-03, AC03940-01, AC03940-02, AC03940-04	**Required:** Retain records for a minimum of 5 years, including all information needed to reconstruct analysis.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
5.	Rule 62-160.400 (1) F.A.C.; Rule 62-160.700 Table 1 F.A.C.; 2016 TNI V1M2 4.13.3. a)	There are 2 filtration dates/times on the analysis run; one matches the lab report and the other does not (5/25/2019 10:28 SR). It is not documented which samples in batch 9E28021 were filtered on which date. Using the 5/25 date/time of	AC03940-01, AC03940-02, AC03940-04	**Required:** Determine which filtration time is correct. Qualify sample results that did not meet the filtration holding time with a Q and reissue amended lab report.	ENCO Laboratory personnel are no longer available for consultation and verification. This is presumably a typographical error as anything filtered out of hold would have been qualified.	Because ENCO is unable to follow up with the corrective action, the need for a Q qualifier is inconclusive and results may or may not be affected by hold time exceedance.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
		filtration results in samples being out of 48-hour hold.				
6.	2016 TNI V1M2 3.1 and 4.13.3 a); SM10200H. 1. b. 1), ENCO SOP section 11.1 and 14.4; DEP SOP Table FS 1000-5	Filtration times on the analytical run are the same for all samples in the batch. Filtration time for the batch does not always reflect the same sample in the batch (e.g. first or last sample filtered). Auditors were unable to determine the order samples were filtered in the batch based on the times and dates recorded on the prep log. Hold time may have been exceeded for batches where the filtration time did not reflect the last sample filtered. Additionally, for batches where the sample receipt date on the COC is after the recorded filtration date/time, auditors were unable to	All samples; Receipt time discrepancy: AD03456-04, AE09621, AD05248	**Required:** Filter samples in the batch within 48 hours of collection. Determine which sample in the batch will be used for the batch filtration date/time and add this information to the lab SOP. Auditors recommend using the filtration date/time of the last sample filtered in the batch as the filtration time assigned to the batch on the analytical run log. Add this information to the lab SOP. Determine the discrepancy between sample receipt time on	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. Because ENCO is unable to follow up with the discrepancies, it is inconclusive whether holding time was exceeded for the samples. Results may or may not need a Q qualifier.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
		determine whether samples were out of hold.		the chain of custody and filtration time. Qualify samples that were filtered beyond 48 hours after sample collection.		
7.	SM 10200 C. 2.; EPA 446.0; WETS-087 Rev 5 and 6 section 14.4	ENCO SOPs written before effective date April 27, 2020 did not include a low vacuum requirement during filtration. As Standard methods instructs, "apply a vacuum of <50 kPa (<25 mm Hg) to the filter until about 0.5 cm of sample remains. Break vacuum, then apply low vacuum (about 12 kPa, 2 to 3 mm Hg) to remove remaining water." EPA method 446.0 explains that Filtration pressures higher than 20 kPa may damage cells and result in loss of chlorophyll.	AC01198-05, AC01198-03, AC03940-01, AC03940-02, AC03940-04, AC05988-08, AC05988-07, AC05988-05, AC08683-04, AC08683-02, AD01112-04, AD01112-02, AD01112-01, AD01112-03	**Required:** Determine whether sample results analyzed prior to 4/27/20 were impacted by filtration vacuum procedures. Qualify erroneous data with a J and associated comment.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. Filtration vacuum procedural errors may have resulted in a loss of chlorophyll for samples analyzed prior to 4/27/20 (when the SOP was updated). Since ENCO is unable to follow up on this issue to determine if samples should

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
						have been qualified, these results may be considered estimated values.
8.	SM10200H. 1.b.1); DEP SOP Table FS1000-5	ENCO lab SOP is not specific about when to add the magnesium carbonate solution. From FS1000-5 Table: "Add magnesium carbonate to the filter while the last of the sample passes through the filter."	All samples	**Required:** Add specific instruction to lab SOP.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
9.	EPA 446.0 11.1.3	ENCO lab SOP does not have an upper limit for steeping time.	All samples	**Recommended:** Establish a maximum steeping time and add this information to the lab SOP. For reference, EPA 446.0 requires a maximum steeping time of 24 hours.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
10.	SM 10200H. b. 4)	ENCO lab SOP does not indicate centrifuging extract at 500 g or 3000 rpm followed by decanting the clarified extract into a 15 mL centrifuge tube as required by Standard Methods.	All samples	**Required:** Update the current lab SOP to indicate centrifuge speed and centrifuge tube size required by Standard Methods.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
11.	TNI V1M2 5.5.13.1 a) i.; DEP SOP Table FS 1000-5, ENCO SOP WETS-087 Rev. 5 and 6 section 11.3	Freezer logs showed that freezer ID ORL-CS-014 frequently failed temperature checks. While the rechecks usually passed, this pattern of failures suggests the freezer was unable to maintain proper temperatures for filter storage. The temperature requirement was listed as <-10 degrees Celsius in the temperature monitoring logbook. This is greater than the required temperature of -20°C for storage of filters. Lab SOP does not specify the -20°C requirement for freezing	All samples	**Required:** Store frozen filters at -20°C. Determine the cause of frequent temperature check failures and perform maintenance on the freezer and/or remove malfunctioning freezer from service.	This freezer has been removed. This equipment is no longer in service.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. ENCO was unable to follow up on the cause of frequent temperature check failures. It is inconclusive whether improper filter storage

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
		filters in SOPs before Rev. 5.				affected sample results.
12.	EPA 446.0 7.8 and 9.3.1	The ENCO lab SOP does not specify the order in which filters are extracted in a batch.	All samples	**Recommended:** Add the order specific samples in a batch are extracted to the lab SOP. The blank should be the last filter extracted in the batch.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.
13.	SM 10200 H, section 2. b.; 2016 TNI V1M2 5.9.2 and 5.9.3 a) viii and c)	Absorption ratio 664b:665a was outside the range specified in Standard Methods which states that mixtures of chlorophyll *a* and pheophytin should have an absorption ratio between 1.0 and 1.7. Having absorption ratios outside the range indicates the potential for problems with analyst accuracy	AC01198-03, AC08683-04, AC08683-02, AD01112-01, AD01112-02, AD01112-03, AD01112-04, AD08388-05, AE02344-03, AE02344-04, AE02344-01, AE04265-02, AE04265-03,	**Required:** Implement a process for second-level review of absorbance readings from analytical runs and resulting calculations for chlorophyll. Add this process to the laboratory SOP. Monitor 664b:665a ratio and determine the cause	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
		performing the acidification step.	AE07196-04, AE09621-04, AE09621-01	of out-of-range absorption ratios. Qualify erroneous data with a J and associated comment and reissue affected lab reports.		ENCO was unable to follow up to determine the cause of out-of-range absorption ratios. Affected results may be considered estimated values.
14.	SM 10200 H, section 2. b.; 2016 TNI V1M2 5.9.2 and 5.9.3 a) viii and c)	The absorbance 664 before acidification is less than the appropriate range of 0.1 and 1.0 AU as specified in Standard Methods. The method states absorbances below this range indicate a dilute extract and the sample should have a cuvette with a longer path than the 1 cm used.	All samples	**Required:** Evaluate absorbance readings to determine the appropriate path length for the sample cuvette. Add this procedure to the lab SOP. Qualify erroneous data with a J and associated comment and reissue affected lab reports.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. ENCO was unable to follow up to determine the cause of out-of-range absorption ratios. Affected results may be considered estimated values.

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
15.	SM 10200 H 1. b. 4) and 2. b.; EPA 446.0; 2016 TNI V1M2 5.9.2 and 5.9.3 a) viii and c)	Absorption at 750 nm before acidification is greater than or equal to 0.005 AU, indicating a poorly clarified extract solution which should have been re-centrifuged (or filtered) according to EPA 446.0. This is not discussed in detail in SM10200H.	AC01198-05, AC01198-03, AC08683-04, AD01112-03, AD03456-04, AD05248-07, AD05248-06, AD05248-04, AD08388-02, AD08388-05, AE07196-04, AE09621-02, AE09621-04, AE09621-01	**Recommended:** Determine and explain the cause of poorly clarified extracts. Develop a procedure for evaluating 750 nm readings for extract clarity during analysis and a process for treating sample extracts that are not sufficiently clarified. Document the procedures in the lab SOP. Qualify erroneous data with a J and associated comment.	ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. Although evaluation of a specific absorption reading at 750 nm is not specified in Standard Methods, monitoring extract turbidity is an important step in the analytical procedure that could impact sample results.
16.	TNI V1M4 1.5.2 Rule 62-160.120 (16); Rule 62-160.340 (3) (c);	It is unknown how the laboratory derived the Method Reporting Limit (MRL) for chlorophyll.	All samples	**Required:** Explain how the MRL is determined for chlorophyll. Provide records for this for the audited period. Add specifics for chlorophyll	Unable to locate documentation for MRL derivation. ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
				MRL determination to the lab SOP.	are no longer in service. All ENCO certification has been relinquished.	were entered into the latest draft for implementation on 6/15/23. ENCO was unable to provide any records or explanation about how the MRL was determined for chlorophyll. An inappropriate MRL may affect data interpretation and usability of low-level chlorophyll results.
17.	Rule 62-160.340 (2) (e); 2016 TNI V1M2 5.4.6 and 5.5	Laboratory instrument calibration records were very old (2013) in relation to the audited samples and lab SOP indicates that calibration with a standard is not performed for chlorophyll analysis. It is unclear how the function of the spectrophotometer is checked for the audited period.	All samples	**Required:** Describe how the instrument is calibrated, verified, and maintained, or how instrument performance checks are conducted and add this information to the lab SOP. **Recommended:** Purchase a commercially available standard for chlorophyll to calibrate or use as an instrument	Unable to locate documentation for instrument calibration. ENCO was acquired by Eurofins 10/22. ENCO was subsequently closed. ENCO methods/sops are no longer in service. All ENCO certification has been relinquished.	Eurofins laboratory compared their SOPs to the audit findings. Where Eurofins lab SOPs did not currently address the findings, changes were entered into the latest draft for implementation on 6/15/23. ENCO was unable to provide any records of

Finding #	Requirement Reference	Finding	Sample(s) Affected[1]	Recommended or Required Corrective Action	Laboratory Response and Implementation Date	AEQAS Response
				performance verification standard.		instrument maintenance after 2013. Lack of instrument checks may have affected accuracy of results for the audited period.

[1] Finding applies to all audited samples in a batch where only the batch ID is indicated.

Table 3. Audit findings related to the upload of data to the Water Information Network (WIN) database for the chlorophyll *a* laboratory records audit of ENCO conducted by DEP, January 6, 2023. These findings apply to the organization who uploaded the data to WIN. The ENCO laboratory did not upload data to the WIN database.

Finding #	Requirement Reference	Finding	Sample(s) Affected	Recommended or Required Corrective Action	Organization Response and Implementation Date	AEQAS Response
1.	TNI V1M2 4.13.3 a) and f) xiii.	MDL and PQL reported in WIN (0.1 and 0.2 µg/L, respectively) do not match those reported on the Lab Report (0.5 µg/L). Samples AE02344-03 and AE02344-01 should both be "U" qualified in WIN.	AE02344-03, AE02344-04, AE02344-01	**Required:** Ensure appropriate MDL and PQL values associated with the analytical result are uploaded to WIN. Correct the MDL and PQL in WIN. Implement a process for verifying data are correctly uploaded to WIN.	**Org ID 21FLFRYD -** Thank you, the MDLs and U qualified data have been corrected and uploaded to WIN. An additional staff member will proof read these entries in the future. **Implementation date**: 5/1/2023	Acceptable
2.	TNI V1M2 4.13.3 a) and f) xiii.	Sample values reported to WIN do not match the Lab Report. The sample results were switched for these samples.	AE02344-03, AE02344-04	**Required:** Ensure appropriate analytical result is uploaded to WIN. Correct the results in WIN. Implement a process for verifying data are correctly uploaded to WIN.	**Org ID 21FLFRYD -** Thank you, the values have been corrected and uploaded to WIN. An additional staff member will proof read these entries in the future. **Implementation date**: 5/1/2023	Acceptable

Finding #	Requirement Reference	Finding	Sample(s) Affected	Recommended or Required Corrective Action	Organization Response and Implementation Date	AEQAS Response
3.	TNI V1M2 4.13.3 a) and f) xiii.	For batch AE04265, the sampling date reported to WIN (5/8/2021) does not match the sampling date on the Chain of Custody and the Lab Report (5/18/2021). For batch AE02344, the analysis time reported to WIN (13:23) does not match the analysis time on the Lab Report (13:52).	AE04265-01, AE04265-02, AE04265-03, AE02344-03, AE02344-04, AE02344-01	**Required:** Ensure appropriate date associated with the analytical result is uploaded to WIN. Correct the dates in WIN. Implement a process for verifying data are correctly uploaded to WIN.	**Org ID 21FLFRYD -** The dates and times have been corrected as appropriate and uploaded to WIN. An additional staff member will proof read these entries in the future. **Implementation date**: 5/1/2023	Acceptable
4.	TNI V1M2 4.13.3 a) and f) xiii.	Site IDs do not match between Chain of Custody, Lab Report and WIN database. For sample ID AE017196-04, the site ID reported to WIN and listed on the Chain of Custody is SWA-4. This does not match the site ID listed on the Lab Report, SWD-4. For sample ID AE09621-01, the site ID reported to WIN is SWB-1. This does not match the site ID listed on the Chain of Custody and Lab Report, SWD-1.	AE07196-04, AE09621-01, AE09621-02, AD03456-04, AD08388-02, AD08388-05	**Required:** Ensure appropriate Site ID associated with the analytical result is uploaded to WIN. Correct the Site IDs in WIN. Implement a process for verifying data are correctly uploaded to WIN. If a site has two names, one for compliance and another for reporting in WIN, include both names on the Chain of Custody.	**Org ID 21FLFRYD –** For sample IDs AE07196-04, AE09621-01, and AE09621-02 The correct site IDs were already uploaded to WIN. There were typos in the data sheet, which led to typos on the C of C. The data sheet has now been corrected. An additional staff member will proof read new data sheets in the future. **Implementation date**: 5/1/2023 **Org ID 21FLNUTT** – For sample ID AD03456-04, the Site ID is correct in WIN, but the Lab ID is	Acceptable

Finding #	Requirement Reference	Finding	Sample(s) Affected	Recommended or Required Corrective Action	Organization Response and Implementation Date	AEQAS Response
		For sample ID AE09621-02, the site ID reported to WIN is SWD-2. This does not match the site ID listed on the Chain of Custody and Lab Report, SWB-2. For sample ID AD03456-04, the site ID reported to WIN is PB01. This does not match the site ID listed on the Chain of Custody and Lab Report, SWR-01. For sample ID AD08388-02, the site ID reported to WIN is PB02. The site ID listed on the COC and Lab Report is PB02S. For sample ID, AD08338-05, the site ID reported to WIN is PB03. The site ID listed on the COC and Lab Report is PB03S.			incorrect. Lab ID for this sample result was corrected in WIN to AD03456-05. Additionally, the next sample listed on the lab report has the same error in WIN: AD03456-05 in WIN was corrected to AD03456-06. **Implementation date**: 4/27/2023 For sample ID AD08388-02 and -05, the "S" on the COC and the lab reports is simply to denote a normal surface water sample at that location versus a sample at depth and is not part of the site ID. Site names in WIN are correct and no correction is needed.	

Finding #	Requirement Reference	Finding	Sample(s) Affected	Recommended or Required Corrective Action	Organization Response and Implementation Date	AEQAS Response
5.	Rule 62-160.340 (7), F.A.C.; Rule 62-160.700 Table 1, F.A.C.	Qualifier codes do not match between Lab Report and WIN database. Sample ID AD08388-05 is qualified with a "V" on the Lab Report. The qualifier was not included with the result in WIN. Sample IDs AE04265-01 through -03 have a Q qualifier in WIN, but no qualifier on the Lab Report.	AD08388-05, AE04265-01, AE04265-02, AE04265-03	**Required:** Ensure appropriate qualifier code associated with the analytical result is uploaded to WIN. Correct the qualifier codes in WIN. Implement a process for verifying data are correctly uploaded to WIN.	**Org ID 21FLNUTT** – a "V" qualifier that was in the lab report did not make it to the WIN database. The "V" qualifier was added to the result in WIN on 4/27/2023. **Org ID 21FLFRYD –** The Q code has been removed and the data uploaded to WIN. An additional staff member will proof read data entries in the future. **Implementation date**: 5/1/2023	Acceptable

References:

Department of Environmental Protection, 2008. Quality Assurance (QA Rules). Chapter 62-160, Florida Administrative Code (F.A.C.).

The NELAC Institute (TNI). 2016 TNI Standard, EL-V1-ISO-2016-Rev2.0, Volume 1, Management and Technical Requirements for Laboratories Performing Environmental Analysis, Module 4, Management Requirements.

Standard Methods Committee of the American Public Health Association, American Water Works Association, and Water Environment Federation, 2011. 10200 plankton In: Standard Methods For the Examination of Water and Wastewater. Lipps WC, Baxter TE, Braun-Howland E, editors. Washington DC: APHA Press. DOI: 10.2105/SMWW.2882.207