Florida DEP Laboratory QAPP Elements
2019

A. PROJECT MANAGEMENT

The Florida DEP Central Laboratory supports Department activities throughout the state and assists other local, state and federal agencies in environmental activities. In addition to laboratory analyses and technical consulting, the Bureau provides field sampling services to many Department programs. The Central Laboratory is in the Division of Environmental Assessment and Restoration. The laboratory is comprised of Chemistry and Biology laboratories and a Laboratory Support Section. Each section is managed by a Program Administrator who reports directly to the Bureau Chief. Organizational charts for the chemistry, biology and lab support sections are displayed in Figures 4.1, 4.2 and 4.3 in the Laboratory Quality Manual. The roles and responsibilities of key management personnel in the central laboratory who administer projects are outlined in section 4.2 of the Quality Manual. This document shall henceforth be referred to as the Lab QM. The Lab QM can be accessed at http://publicfiles.dep.state.fl.us/dear/labs/lab_qualitymanual_19.pdf

Procedures describing the review and acceptance of laboratory projects are documented in section 4.4 of the Lab QM. All contracts/projects are reviewed and accepted only if the requirements are clear and understood, and the laboratory has the capability and capacity to meet full customer expectations. The criteria used to review and accept projects are described in SOP LB-033, *Reviewing and Accepting Laboratory Projects*. Upon receiving a request from a client the FDEP Project Manager obtains specific project information. The information includes but is not limited to the project description (and purpose if needed), the analyses requested, data quality objectives, sample matrices, number/frequency of the samples and turnaround times.

If the FDEP Laboratory is able to accept the work then the FDEP Project Manager provides information in writing to the client, including a list of the analytical methods the FDEP Lab uses, NELAC certification, detection and quantitation limits and cost of analyses. A comprehensive list of methods, and their detection and quantitation limits can be found in Table 5.1 and Table 5.2 in the Lab QM. Sample preservation and hold times for analyzed in the lab are in accordance with 40 CFR, Part 136, Table II. Preservation techniques and holding times are also listed in Table 5.6 in the Lab QM.

Documentation control requirements include protocols for preparing Standard Operating Procedures and the archiving and retrieval of documents. SOP LB-001, *Protocol for the Preparation and Document Control of Standard Operating Procedures (SOPs), Forms, and External Documents* describes how SOPs and forms are created, revised, approved and archived. Record archiving procedures are found in SOP LB-013, *Archiving and Retrieving Laboratory Documents.* Archived records include raw laboratory data, laboratory notebooks, final reports, administrative files, personnel records, purchase requisitions and purchase orders. All lab records are archived for a minimum of five years.

B. DATA GENERATION AND ACQUISITION

The FDEP Chemistry Laboratory does not provide field sampling services. The laboratory does provide sample containers (sampling kits) to its customers on request. However, the FDEP Biology Laboratory provides field sampling services. They include the sampling of algae and benthic macro-invertebrates from surface waters and sediments, microbiology and toxicity bioassays from surface waters, effluents, leachates and sediments, and physical parameters of surface waters, effluents and leachates. The Biology Section follows the protocols described in the Department's Statewide SOP for Field Activities (DEP-SOP-001/01). All FDEP SOPs referenced in this document are available on the Department's Internet site, https://floridadep.gov/dear/quality-assurance/content/dep-sops.

Sampling equipment used by the biology section is listed in Table 5.5 in the Lab QM. Laboratory instrumentation utilized by the chemistry and biology sections are described in the lab's Internal SOPs. The handling of test samples received by the laboratory is documented in section 5.8 of the Lab QM. Further details are provided in SOP LB-016, *Sample Receipt and Entry into the DEP Laboratory Information Management System (LIMS)*. The SOP describes the bureau's sample acceptance policy, documenting the evidentiary chain of custody for samples received by the lab, and the storage and disposal of samples received by the lab. Quality assurance requirements for the testing of environmental samples are described in section 5.9 and Appendix B. These lab's quality systems requirements are derived from the 2016 TNI Standard, Volume 1, Module 4. Quality system requirements for microbiological testing are derived from the 2016 TNI Standard, Volume 1, Module 5, while those for toxicity testing are from the 2016 TNI Standard, Volume 1, Module 7.

Quality control requirements for the preparation and identification of invertebrate samples are documented in SOP IZ-13, *Invertebrate Taxonomic Identification Quality Control*. Algal QC requirements are documented in SOP AB-14, *Algal Identification Quality Control Procedures*.

A list of test methods and their sources is described in section 5.4 of the Lab QM. Protocols used for establishing Method Detection Limits (MDL) and Practical Quantitation Limits (PQL) for laboratory methods are also described in section 5.9. Section 5.5 and Appendix B of the Lab QM describes calibration requirements for methods employed by the lab. Test results are reported accurately, clearly and objectively and contain all method required information, reporting requirements of the TNI standards and the requirements of the State of Florida QA Rule, Chapter 62-160, FAC.

Sample turnaround times are specified by the sample priority assigned to samples in the Laboratory Information Management System (LIMS) scheduler. The LIMS software system for scheduling samples assesses the capacity and previously scheduled workload of the laboratory and warns the user whenever laboratory capacity for any work group may be exceeded. Additional details on using the LIMS scheduler can be found in SOP LB-018, *Using the LIMS Scheduler*.

Corrective actions for the chemistry section are described in the method SOPs. The requirements for equipment maintenance and testing are also described in the method SOPs. A list of method SOPs sorted by subsection or category can be found at the lab's website. Corrective actions and notification protocols for the biology section are listed in Table 4.1. Corrective actions are initiated based on either internal QC checks, data validation by a reviewing authority or performance audits. Outside sources such as performance evaluation studies, split samples as well as recommendations by the FDEP QA Officer may initiate corrective actions. See FDEP SOP LB-002, *Non- Conformance Reporting System*, for additional information on initiating corrective actions.

Laboratory supplies are procured from state approved vendors. A list of state approved suppliers for the purchase of supplies and services is maintained by the Florida Department of Management Services (DMS) at https://www.dms.myflorida.com/business_operations/state_purchasing/vendor_resources.

The laboratory maintains an inventory list of chemicals and supplies commonly used for analyses performed in the laboratory. See SOP LB-030, *Purchasing and Receiving Laboratory Chemicals and Supplies*. This SOP includes procedures ensuring the necessary quality of the purchase, checking that the proper quality was received and how the supplies are stored if needed to maintain their quality.

Sample results generated in the lab are imported into the LIMS as text files. Analytical instruments typically export text files which are then imported by the LIMS for processing. Analysts then perform QC calculations in the LIMS, after which the data is reviewed by analysts and their supervisors. The data review process is described in SOP LB-026, *Job Level Authorization Checklist* and SOP LB-025, *Event Level Authorization Process and Checklist*. After all the samples in an event are authorized, the LIMS generates a PDF of the final report that is mailed to clients. The LIMS also generates an Electronic Data Deliverable (EDD) that is reviewed by lab managers using the Florida Automated Data Processing Tool (FL ADaPT). A final EDD is then generated and posted at an FTP site accessible to lab clients. Procedures for transferring taxonomic data to the LIMS and the FDEP Statewide Biological Database (SBIO) are described in SOP BG- 03, *Taxonomic Results and Data Entry*.

C. ASSESSMENT AND OVERSIGHT

The Bureau of Laboratories participates in numerous external assessments on a periodic basis. Among them is a biennial assessment of the lab conducted by the Florida Department of Health (DOH), a NELAC Institute (TNI) accreditation body to maintain NELAC certification. In addition, audits are also conducted by the South Florida Water Management District (SFWMD) and the U.S. Army Corps of Engineers (USACE) every two years for samples analyzed by the lab and associated with the Comprehensive Everglades Restoration Plan (CERP).

The lab's QA officer also conducts an annual internal audit for all NELAC certified parameters in chemistry and biology. The QA officer uses NELAP audit checklists in conducting internal audits. The

checklists for quality systems, microbiology, toxicity testing, chemistry and chemistry technology can be accessed at the Florida DOH website. Additional details on internal audits and audit checklists are provided in section 4.14 of the Lab QM.

Deficiencies found in the course of internal or external audits are addressed by lab supervisors who issue corrective action reports to the lab QA officer. Deficiencies are generally expected to be addressed within 30-60 days from the receipt of the audit report. The laboratory QA officer verifies that the corrective actions have been implemented as described in the corrective actions report.

The lab's Biology section also performs external audits of contract laboratories that report microbiology data to DEP. The audits generally involve labs performing Fecal Coliform and Enterococci tests by approved Quanti-Tray and membrane filtration methods.

The lab's Chemistry and Biology sections participate in numerous Performance Testing (PT) studies every year to maintain NELAC certification. They include biannual NELAC PT studies for parameters in non-potable water and solids, microbiology and toxicity testing. In addition, the lab participates in USGS round robins for nutrients and metals in water. The lab QA officer conducts an annual management quality review at the end of each calendar year. Details are provided in section 4.15 of the Lab QM. The QA officer also prepares an annual QA report for the DEP secretary that details all QA activities conducted by the chemistry and biology labs in the course of the year.

D. DATA VALIDATION AND USABILITY

Data usability guidelines used by the labs are consistent with the department's guidelines for assessing data quality and usability. These are documented in SOP DEP-EA 001/07. Additional details are provided in Appendix B of the Lab QM. Data qualifiers used in reporting data conform to the department's QA Rule [FAC 62-160]. Data qualifier codes are listed in section 62- 160.700, Table 1 of the QA Rule. Procedures used for the validation of environmental test methods are described in section 5.4 and Appendix B of the Lab QM.

The labs utilizes an automated data processing tool, Florida ADaPT to check the usability and quality of data generated by the lab for internal and external customers. The tool generates Electronic Data Deliverables (EDD) that can be emailed to or downloaded by the lab's customers. The laboratory QA officer maintains the lab's method library used for checking the data prior to the generation of EDDs.