

2011 Quality Assurance Report

Bureau of Laboratories

Florida Department of Environmental Protection

Executive Summary

The Bureau of Laboratories supports DEP 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 DEP programs. The laboratory facility is nationally recognized as being state-of-the-art in terms of physical design and capabilities. The lab's Chemistry Section operates highly automated, state-of-the-art instrumentation to provide analyses for an array of chemical constituents in water, soil, sediment, waste and tissue samples. The Biology Section performs a variety of biological and microbiological analyses, including algal and macro-invertebrate taxonomic identifications. New methods development and testing are an important part of both sections' operations.

The lab's Quality Assurance (QA) activities are geared towards fostering an environment of continuous improvement based on customer feedback, performance testing, audits and corrective actions. The goals of the lab include improving laboratory operations, data quality and customer satisfaction. The lab participated in four external audits and one internal audit in 2011. The Biology Section has also conducted several audits of external laboratories. Both sections have participated in numerous round robins and performance testing (PT) studies, attended training workshops and provided training to DEP personnel.

I. Audits

The Bureau of Laboratories participated in four assessments by external bodies in 2011. The first was conducted by the Florida DOH, a TNI accreditation body on February 7–11, 2011. It is part of a recurring, biennial assessment conducted at the labs to maintain NELAC certification. The auditors examined detailed laboratory records for all the tests and procedures in Chemistry and Biology for which the laboratory is certified. The laboratory was evaluated favorably with a few minor deficiencies. The lab has provided satisfactory responses to all of the deficiencies noted during the audit.

The second assessment was conducted jointly by the South Florida Water Management District (SFWMD) and the U.S. Army Corps of Engineers (USACE) on April 19–20, 2011. The assessors audited samples analyzed by the lab for projects associated with the Comprehensive Everglades Restoration Plan (CERP). These included water samples analyzed for inorganic parameters mercury, methylmercury, total phosphorus and orthophosphate and water and sediments analyzed for organic parameters including chlorinated, organonitrogen and organophosphorus pesticides and urea herbicides. The laboratory was

evaluated favorably with a few minor deficiencies and has provided satisfactory responses to all the deficiencies noted during the audit.

The third assessment was conducted by EPA, Region 4 on the bureau's Particle Monitoring (PM 2.5) laboratory in August 2011. The PM 2.5 lab conducts gravimetric analysis on air filters that measure the concentration of fine particulates in air to check air quality compliance with the Clean Air Act. The laboratory was evaluated favorably with no significant deficiencies. The fourth assessment was a project data audit of dissolved oxygen field measurements and supporting laboratory analyses for color, chlorophyll and nutrients conducted by the Standards and Assessment Section in September, 2011. This audit examined 2010 study data generated by DEP in support of the Department's proposed revisions to the dissolved oxygen criterion for surface waters.

The Biology Section conducted a total of ten system audits on external laboratories that report biological data to the department. The laboratories audited by the section are listed in the appendix.

An internal system audit of the Chemistry and Biology sections was conducted by the lab QA officer in August and September 2011. A set of randomly selected samples from events in 2011 was first evaluated by a desktop review. This was followed by the examination of SOPs, sample custody forms, raw laboratory data, training records, laboratory records and final reports. Interviews were also conducted with supervisors and lab analysts concerning the records being examined. The scope of the audit included all tests and parameters in chemistry and biology for which the laboratory is certified.

II. Training and other Performance Measures

The lab participated in NELAC Performance Testing studies for chemistry and biology parameters twice (Spring and Fall) for all required analytes in water matrices. Chemistry parameters included tests for soil matrices as well. A couple of minor deviations were observed with no affect on accreditation status. The laboratory also participated in the USGS Round Robin Sample program twice with only minor deviations from expected results. The lab participated in the biannual Mercury in Hair round robin conducted by Health Canada and another round robin organized by Environment Canada for parameters of interest to the South Florida Water Management District. Both Chemistry and Biology participated in the Gulf of Mexico Alliance (GOMA) Round Robins in March and June of this year. Both sections also took part in the RAMP round robin for nutrients, chlorophyll, microbiological and inorganic parameters in October. The Biology section also participated in an annual Taxonomic round robin in the fall and two chlorophyll round robins in June and October. No significant QA or operational issues were noted from these tests.

Personnel from the Biology Section attended three QA training workshops devoted to the Stream Condition Index (SCI), Strategic Monitoring Plans (SMP) and QA training for water sampling and sondes. The first workshop was held in Gadsden County in April while the

remaining two were held in Tallahassee in May. The Biology section also provided SCI training to DEP personnel in Gadsden County in November.

The Biology Section also participated in a number of QA testing exercises throughout the year. They included testing for the Landscape Development Index (LDI), Stream Condition Index (SCI), Lake Vegetation Index (LVI) and Habitat Assessment. A detailed list of the QA exercises can be seen in the Appendix.

Performance reports were generated and reviewed monthly by laboratory supervisors throughout 2011. These were evaluated to ensure that laboratory performance meets acceptable standards. In addition, regular staff meetings were held to discuss operational concerns, work load and quality issues throughout the year. The bureau reviews and updates its laboratory QA manual on an annual basis. For the 2011 revision, the previously separate biology and chemistry manuals were combined one unified laboratory manual. The manual was also edited to conform to the TNI 2009 standard. Laboratory SOPs are also reviewed and updated on an annual basis.

The lab's intake lab, which is part of the Emergency Response Laboratory Network (ERLN) successfully conducted an MDL study on Chemical Warfare Agents (CWA) in real matrices this year. The intake lab is also participating in a Phase 3 study, evaluating the analysis of (ultra-dilute) CWAs in real matrices. The Laboratory Support Section (LSS) also developed an application to export ERLN lab data to an Electronic Data Deliverable (EDD) file that conforms to the requirements of EPA's WebEDR portal. All ERLN labs are required to submit data electronically to WebEDR.

The laboratory uses an automated data review tool, ADaPT (Automated Data Processing Tool) to report data electronically in the form of electronic data deliverables (EDDs) to its clients. The lab QA officer maintains the lab's ADaPT library against which lab data is checked prior to reporting. The QA officer is also a member of the ADaPT working group, an inter-division group of ADaPT users within DEP that meets monthly to establish policies and procedures for the maintenance and update of ADaPT and its libraries. The working group also discusses matters of mutual interest relating to the development of ADaPT and its more widespread adoption by programs within DEP.

III. Customer Feedback and Corrective Actions

The Bureau of Laboratories conducted an online customer satisfaction survey in May 2011. The survey was mailed to the lab's customers who numbered over a hundred people and included project managers, managers in DEP district offices around the state, field sampling personnel and others who interact frequently with laboratory staff. The results of the survey were generally favorable and several respondents complimented the lab and its staff on their professionalism, and the quality of the services delivered by the laboratory.

Customer feedback from the survey was used to implement several improvements in lab operations. Among them were modifications to the LIMS scheduler to better reflect the lab's

true capacity and thereby improve the planning of sampling events by our customers. The lab has also adopted a policy for conducting random checks of sampling kits to verify the accuracy of cooler contents against the list of supplies requested in the event RQ.

The lab's monthly performance reports were also modified to include event turn-around-time (TAT) data in addition to job TAT data to improve the lab manager's ability to track their performance. The Laboratory Support Section also helped modify the final reports that are sent to customers to include comprehensive QC information by batch, requested by some customers. These include results from method blanks, the accuracy of laboratory control samples, matrix spike accuracy and precision, and calibration verification recoveries.

The lab received a complaint from the South District (Ft. Myers) office concerning delays in shipments sent via Federal Express, the lab's preferred vendor/shipper for sample shipments. The matter was resolved when the lab recommended that the customer switch to an alternative shipper (UPS) for shipping samples to the lab. There are no further QA issues to report.

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Appendix

External Audits Conducted by the Biology Section

Audit Date	Laboratory	Location
5/11/2011	Flowers Laboratories	Altamonte Springs, FL
6/29/2011	Columbia Analytical Services	Jacksonville, FL
6/30/2011	Diversified Laboratories	Jacksonville, FL
7/13/2011	AEL	Gainesville, FL
7/26/2011	Flowers Laboratories	Madison, FL
8/09/2011	The Water Spigot	Panama City, FL
8/10/2011	UWF Wetlands Research Lab	Pensacola, FL
9/13/2011	Flowers Laboratories	Marathon, FL
9/14/2011	Florida Spectrum	Fort. Lauderdale, FL
9/14/2011	Flowers Laboratories	Port St. Lucie, FL
12/15/2011	JEA Bioassay Laboratories	Jacksonville, FL

QA Testing Exercises (Biology Section)

- Development and testing of a method for calculating Landscape Development Index (LDI); Pam Flores, Jen Weger, Cheryl Swanson, Liz Miller
- BioCriteria Stream Condition Index (SCI) Testing, October 27, 2010; Mike Heyn, Todd Risk, Blake Spencer, Jen Weger
- Stream Condition Index (SCI) Audit Testing, Nov 12, 2010; Pam Flores, Harris Walters
- Habitat Assessment Testing, March 23, 2011; Harris Walters
- Lake Vegetation Index (LVI) Testing, April 27, 2011; Pam Flores, Blake Spencer, Cheryl Swanson, Harris Walters, Jen Weger
- Lake Vegetation Index (LVI) Testing, June 2, 2011; Pam Flores, Blake Spencer, Harris Walters, Jon Woods