

## **4.0 CHEMICAL ANALYSIS**

### **4.1 Purpose**

Numerous groups and laboratories conduct CERP monitoring and assessment activities. Data must meet a minimum level of quality and completeness. Data must meet NELAC standards. Federal and state regulations pertinent to monitoring and laboratory analysis also need to be met, in addition to project-specific DQOs.

### **4.2 Scope**

This chapter of the QASR manual provides guidance on meeting.

- QA/QC requirements for laboratory analyses.

### **4.3 Basic Requirements**

- NELAC 2003 standards
- QASR

### **4.4 Federal Requirements and Regulations**

- Requirements for the Preparation of Sampling and Analysis Plans (USACE EM 200-1-3, 2/1/2001) – provides guidance for USACE contracted projects

### **4.5 State Requirements and Regulations**

- FDEP: Chapter 62-160, FAC
- Chapter 64E-1, Florida Department of Health (FDOH) Environmental Laboratory Certification Program (ELCP)

### **4.6 Laboratory's Responsibilities**

Laboratories are required to have a quality system to provide structure for planning, implementing, and assessing analytical work and QA/QC requirements in accordance with NELAC. Laboratories performing analyses for CERP projects are required to develop and maintain a laboratory Quality Manual (QM) documenting the quality systems in accordance with the provisions of NELAC 2003, Chapter 64E-1, FAC, Chapter 62-160, FAC, and this QASR manual. Laboratories must be legally responsible and have a defined organization to support and implement quality systems to ensure commitment to laboratory ethics and data integrity. Managerial staff should be responsible for laboratory operations, personnel management, and allocating resources.

All measurement and testing equipment that affect the accuracy or validity of test results shall be calibrated and/or verified prior to use according to NELAC requirements. The laboratory shall have established written equipment calibration and verification procedures prepared in accordance with manufacturer's specified calibration procedures, NELAC, and method requirements.

Each laboratory must have a program of calibration and verification for reference standards according to NELAC standards. In addition, the laboratory must have a written preventative maintenance procedure according to NELAC standards. The laboratory must have a training program to ensure that new personnel are properly trained on laboratory policies and procedures, and that all personnel are continually updated on changes in procedures according to NELAC standards.

Laboratories must have a list of approved analytical methods for which the laboratory is certified to meet the laboratory's QA objectives. Laboratories must be NELAP-accredited (primary or secondary) with the FDOH for a specific program, matrix, method, and analyte. Analytical methods must be approved per 40 CFR or be validated per Chapter 62-160, FAC requirements. The QAOT must approve the use of alternate or modified methods for CERP projects. The methods must be chosen to meet the data quality objectives.

Method Detection Limits (MDLs) must be matrix and analyte specific. Laboratories must maintain MDL determination and annual verification records as required by NELAC. NELAC requires that audits of internal laboratory systems be conducted annually by every laboratory to assess the laboratory's conformance with its quality system. The laboratory must have established procedures for conducting regular internal systems audits and correcting any deficiencies identified during an audit in accordance with NELAC. In addition, each laboratory must have a documented procedure for specific corrective actions in accordance with NELAP standards.

FDEP and EPA Maximum Contamination Levels are shown in **Appendix C1**. Surface Water Quality Classifications are shown in **Appendix C2**. Sediment Quality Assessment Guidelines are found at <http://www.dep.state.fl.us/water/monitoring/seds.htm>.