



STATE ENVIRONMENTAL LABORATORY SERVICES DIVISION

QUALITY  
ASSURANCE  
PLAN

SEUSD  
QAP

EFFECTIVE 10/2022 – 10/2023



# **QUALITY ASSURANCE PLAN**

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**DC # 9010-QSP01-R19-101222  
LabWare ID: QA\_MAN-002**

**STATE ENVIRONMENTAL LABORATORY  
SERVICES DIVISION**

**Effective Date:  
10/2022-10/2023**

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## **DOCUMENT DISTRIBUTION, AVAILABILITY, AND MANAGEMENT**

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To facilitate distribution and reduce paper waste, this QAP is available to State Environmental Laboratory Services Division (SELSD) staff in LabWare (SELSD's LIMS) and for Agency and customer review at <https://www.deq.ok.gov/divisions/sels/>.

### **Management of the SELSD Quality Assurance Plan (QAP)**

This document is maintained, revised, and distributed by the SELSD Quality Management System (QMS) with input from divisional management. QMS serves as the primary points of contact for this document. The QAP is scheduled for annual review and distribution, however, if the release date of the plan exceeds one year from the previously published effective date, the plan coverage is extended and valid until a newer revision is authorized. Each review will ensure the QAP reflects current practices and meets the requirements of applicable regulations, and accreditation and certification standards.

Approval of this document is indicated by signature of the QAP signatories located in **Appendix A**. It is mandatory that all SELSD staff read, understand, and implement all aspects of this QAP, including any supporting documents. Deviations from this QAP will be documented through the Process Improvement Plan (PIP), addressed later in section 6.

This QAP is proprietary and may not be altered in any way except by approval of the Division Director (DD) and the Quality Assurance Officer (QAO).

## **1 INTRODUCTION**

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### **THE AGENCY MISSION / VISION STATEMENTS**

The mission of the Oklahoma Department of Environmental Quality (OK DEQ) is to protect and improve public health and our environment.

The vision of OK DEQ is to lead the nation in fostering a healthy and sustainable future through effective and innovative environmental actions.

### **THE SELSD MISSION STATEMENT**

The mission of the State Environmental Laboratory Services Division is to effectively meet the roles and responsibilities required of the Oklahoma Principal State Laboratory. Generate analytical data of known and documented quality to protect public and environmental health in the State of Oklahoma. Serve as a technical resource for OK DEQ programs and staff, state, federal and tribal agencies, municipalities, students, and Oklahoma citizens through laboratory services, education, outreach, development of consensus standards and continued advancement of the environmental laboratory sector.

### **THE SELSD QUALITY POLICY**

The SELSD's mission is supported by employees' commitment to work together to produce analytical data of known and documented quality and technical services of the highest utility. This policy is accomplished by implementing the following quality objectives:

- Establish a Mission Statement, Quality Policy, Quality Objectives, and Ethical Practices that are supported by all levels of management and staff and remain relevant through regular review and revision.
- Continually understand, implement, maintain, document, and improve elements of the SELSD's QMS through the PIP and Management System Review (MSR) processes.
- Maintain conformance to requirements, regulations, procedures, and policies.
- Implement a division-wide training and competency program to ensure compliance with required program elements as defined by the applicable authority or standard.
- Provide a high level of customer service that meets the needs and requirements of our clients and stakeholders through effective and timely communication.
- Establish and maintain a Laboratory Accreditation Program (LAP) to ensure statewide analytical capacity that maintains impartiality and functions separately from the State Environmental Laboratory (SEL). This is to ensure that neither preferential nor discriminatory treatment is provided to any laboratories that make up the Oklahoma State Laboratory network.
- Maintain fiscal responsibility to our clients, stakeholders, and citizens to ensure fair value for services and utilization of resources.

## **1.1 PURPOSE, SCOPE, GOVERNANCE, AND OVERSITE**

### **1.1.1 Purpose**

This QAP serves to document the SELSD QMS and define the quality management policies and procedures, including technical and operational activities applicable to both the SEL and the LAP, which together form the SELSD.

### **1.1.2 Scope**

This document applies to accreditation, certification, and primacy activities and functions performed by employees of the SELSD and addresses the following matters:



- Requirements for the LAP as required by the TNI Environmental Laboratory 2016 Standard Volume 2.
- Requirements for Cryptosporidium analysis as required by the TNI Environmental Laboratory 2016 Standard Volume 1 and the First and Second Supplements to the EPA Manual for the Certification of Laboratories Analyzing Drinking Water (Fifth Edition).
- Requirements for the LAP as required by the EPA Manual for the Certification of Laboratories Analyzing Drinking Water (Fifth Edition).
- Requirements relevant to compliance sample analysis as required by the EPA Manual for the Certification of Laboratories Analyzing Drinking Water (Fifth Edition) and the First and Second Supplements to the EPA Manual for the Certification of Laboratories Analyzing Drinking Water (Fifth Edition).
- Established and published requirements of the National Radon Safety Board (NRSB).

This QAP has a companion document, **9010-QSP03**-Data Quality Manual (DQM), that addresses SELSD specific data quality procedures and objectives. The DQM contains a list of current analytical methods and matrixes in *Appendix C-Method and Analyte Information*. Full scope of certification and accreditation are available upon request.

SELSD staff participating under the authority of another division or agency, such as field staff assisting LPD staff with sample collection, are subject to that entity's technical, operational, and quality management system (however named) procedures, as identified by that entity.

### 1.1.3 Governance

According to Title 27A, Article IV of the Environmental Quality Code, §2-4-201 the SELSD is authorized to acquire, operate, and maintain laboratories to analyze samples to:

- Obtain factual data to support any order, permit, function, or program of the OK DEQ.
- Provide laboratory services for individuals, cities, towns, counties, tribes, state institutions and other state and federal agencies.
- Provide such services and perform such other analyses as is necessary to implement and enforce the programs and functions under the jurisdiction of the OK DEQ pursuant to this Code.

The Environmental Quality Board (EQB), through its association with the Water Quality Management Advisory Council (WQMAC) shall promulgate rules for laboratory services under this Code. The EQB shall follow the procedures required by the Administrative Procedures Act for promulgation of such rules.

According to Title 27A, Article IV of the Environmental Quality Code, §2-4-301; the SELSD is hereby designated as the administrative agency for national environmental laboratory accreditation programs and shall:

- Establish and administer the state water quality and environmental laboratory accreditation programs for laboratories which apply
- Issue, modify, renew, reinstate, revoke, or suspend the accreditation of a laboratory or deny a new or renewal accreditation application

Under §2-4-302, the EQB in association with the WQMAC shall promulgate rules for accreditation of privately and publicly owned laboratories for performance of environmental

analyses. The EQB may also promulgate rules which adopt standards of a national environmental laboratory accreditation program and the US EPA by reference.

Rulemaking is done on an as needed basis to comply with changing methods and accreditation standards and requirements. The SELSD DD is charged with oversight and coordination of all rule change activities.

#### **1.1.4 Oversight**

**1.1.4.1 LAP:** LAP staff will report directly to the DD. The DD has final decision making in the issuance of LAP certificates for participating laboratories. In the absence of the DD, this responsibility will fall to the LAP Manager. LAP staff will, upon request of the DD or AD, perform technical internal audits of SEL methodologies.

**1.1.4.2 SEL:** The AD will be primarily responsible for the personnel management and day to day technical and budgetary operations of the SEL. SEL technical staff will provide LAP with technical support, training, and assist in assessments where qualified and competent to do so.

**1.1.4.3 QMS:** QMS staff will report directly to the DD and will provide the following functions for both LAP and SEL: training tracking (including assessor observations), document review and control of technical and operational SOPs and WIDs, internal audits, customer feedback, and facilitating MSR activities. QMS staff will also assist LAP with assessments where qualified and competent to do so.

### **1.2 THE OK DEQ QMS**

This QAP serves as a companion document to the [OK DEQ Quality Management Plan](#) (QMP) which is written in compliance with [EPA QA/R-2](#) guidance and available on the OK DEQ J:Drive in the DEQ-QMP folder available to all staff. Major OK DEQ QMS policies are addressed in the QMP along with the agency mission statement, general goals, and general discussions outlining the processes used to identify various clients' Data Quality Objectives (DQOs).

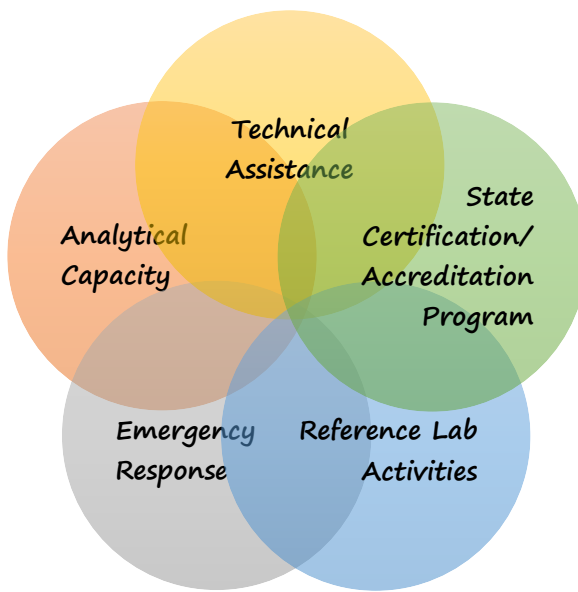
### **1.3 CERTIFICATION, ACCREDITATION, AND PROFESSIONAL PARTICIPATION**

#### **1.3.1 OK DEQ State Primacy Functions**

The OK DEQ is given primary enforcement responsibility and authority to administer the EPA's drinking water regulations within its borders. To receive and maintain primacy status, the State must have available laboratory facilities capable of performing analytical measurements for all federally mandated contaminants specified in the State Primary Drinking Water Regulations. The SELSD is designated and certified by EPA as the Oklahoma Principal State Laboratory (PSL). The LAP is authorized by EPA to certify public, municipal, industrial, and commercial laboratories for the State of Oklahoma. The SELSD, together with these certified laboratories, are considered the Principal State Laboratory System. This network ensures the scope of analytical capacity for Drinking Water compliance testing in the state.

This graphic represents the key functions of the PSL:





### 1.3.2 **Drinking Water Certification and Accreditation**

The SEL and LAP's recertifications occur every three years through the participation in on-site audits conducted by the US [EPA Region 6 Laboratory](#).

### 1.3.3 **The NELAC Institute (TNI)**

TNI was developed to support the National Environmental Laboratory Accreditation Program (NELAP). The TNI network is represented by federal, state, and private entities developing and implementing consensus standards for laboratory accreditation. Currently, the SELSD has received accreditation for Cryptosporidium and Giardia analysis by EPA Method 1623.1 and accreditation of the LAP program as a TNI Accreditation Body (AB). The SELSD also helps develop and implement consensus standards.

The SELSD is pending TNI accreditation for lithium analysis by EPA Method 200.7 and per- and polyfluoroalkyl substances (PFAS) analysis by EPA Methods 533 and 537.1. These three methods were added to SELSD's capacity in 2022 in order to participate in EPA's fifth Unregulated Contaminant Monitoring Rule (UCMR 5) starting January 2023.

### 1.3.4 **Environmental Response Laboratory Network (ERLN)**

ERLN is EPA's national network of laboratories that can be accessed as needed to support large scale environmental responses. The SEL is a member of the ERLN and participates in exercises coordinated by the ERLN. The SEL is also a member of the [Water Laboratory Alliance \(WLA\)](#), which is a component of the ERLN.

### 1.3.5 **Association of Public Health Laboratories (APHL)**

APHL represents state and local government health laboratories and works to strengthen laboratory systems serving the public's health in the US and globally. The SEL works with APHL to create and implement policy to protect public and environmental health.

## 1.4 **FEDERAL AND STATE PROGRAM SUPPORT**

The SELSD provides support for OK DEQ environmental programs as well as programs for other State agencies and Oklahoma tribes. Program support includes:

#### **1.4.1 Safe Drinking Water Act (SDWA)**

The SELSD implements operational, technical, and analytical procedures, including those relating to quality assurance, quality control, and emergency response to meet the requirements of all SDWA support and rule implementation. The individual federal Rules are listed below. Specific procedural implementation to support compliance to the Rules is documented in the individual Unit or Section procedures.

- [Chemical Contaminants Rule \(CCR\)](#)
- [Lead and Copper Rule \(LCR\)](#)
- [Radionuclides Rule](#)
- [Aircraft Drinking Water Rule \(ADWR\)](#)
- [Ground Water Rule \(GWR\)](#)
- [Stage 1 and Stage 2 Disinfectants and Disinfection Byproducts Rules \(DBPR\)](#)
- [Surface Water Treatment Rules \(SWTR\)](#)
- [Revised Total Coliform Rule and Total Coliform Rule \(TCR/RTCR\)](#)
- [Unregulated Contaminant Monitoring Rule \(UCMR\)](#)

#### **1.4.2 Clean Water Act (CWA)**

The SEL supports the [National Pollution Discharge Elimination System \(NPDES\)](#) by maintaining capacity for the methodologies required under the NPDES Program, as well as supporting OK DEQ complaints, fish kills, and special investigations through field assessments and collections, analysis, technical assistance, and collaborations with tribal, state, and federal agencies and entities.

#### **1.4.3 Resource Conservation and Recovery Act (RCRA)**

The SEL supports the Solid and Hazardous Waste Programs by implementing and maintaining capacity for methods that support solid and hazardous waste identification. The SEL also provides project planning, analytical and technical support, and customized reporting for these programs.

#### **1.4.4 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**

The SEL supports the CERCLA Program by implementing and maintaining capacity for methods that support hazardous waste identification. The SEL also provides project planning, analytical support, sampling support, technical assistance, and customized reporting.

#### **1.4.5 Clean Air Act**

The SEL supports the Clean Air Act through the collection and analysis of Mercury in Fish. The SEL performs biomonitoring that includes performing risk assessments and issuing fish consumption advisories.

#### **1.4.6 Harmful Algal Blooms (HAB)**

The SEL maintains analytical capacity to perform identification, enumeration, and toxin testing in response to HABs. The SEL performs sample collection, collaboration, risk assessment, and monitors ongoing HABs that threaten Public Water Supplies.

#### **1.4.7 Private Water**

The SEL provides technical and analytical assistance to the unregulated private water customers (homeowners, realtors, water vendors, other environmental laboratories, etc.) of Oklahoma. The service and testing are customized individually based on request, need, or SEL's knowledge of local conditions. Additionally, customers are provided the appropriate



collection materials and collection instructions per their test selection through on-line tutorials, FAQ's, and instructions. Direct technical assistance is done with customers after analysis to interpret data and provide risk assessment for potential health threats.

#### **1.4.8 Grant and Special Project Support**

The SEL implements operational, technical, and analytical procedures, including those relating to quality assurance, quality control, and public outreach to meet the requirements of special projects such as EPA's 3T's Program and National Rivers and Streams Assessment (NRSA).

#### **1.4.9 Natural Resource Damage Assessment (NRDA)**

The Natural Resource Damage Assessment and Restoration (NRDAR) program is a part of CERCLA (Superfund) and seeks to assess injury to natural resources due to the release of a hazardous substance, pursue damages against responsible parties, and restore injured resources as much as possible. SEL personnel serve as technical representatives for the State's natural resource trustee (OSEE) on 2 NRDA trustee councils: Tar Creek and Tulsa County Smelters. Representatives work with federal agencies and tribal governments to evaluate injury, build a case for damages, pursue compensation, and restore injured resources. At this point in their work the Tar Creek Council is mainly in the restoration phase and the Tulsa County Smelters Council is in the damage assessment phase.

## 2 ORGANIZATION AND STAFFING

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### 2.1 AGENCY PARTNERS

The following divisions work together to support the agency's mission:

- **Air Quality Division (AQD):**  
The AQD operates various programs to carry out OK DEQ's regulatory duties under state and federal law. The programs include air monitoring, air permits, emissions inventory, compliance and enforcement, lead-based paint, and rules and planning.
- **Water Quality Division (WQD):**  
The primary function of WQD is to maintain clean water for Oklahoma by regulating facilities that produce and distribute public drinking water and that treat, transport, store, and discharge wastewater. WQD is also responsible, in cooperation with other state agencies, for maintaining water quality standards in Oklahoma's lakes, rivers, and streams.
- **Land Protection Division (LPD):**  
The LPD inspects and permits hazardous waste and solid waste treatment, storage, and disposal facilities, permits and inspects certain underground injection wells, manages radioactive materials, restores contaminated land to safe and useful conditions, maintains the list of recyclers for the State, and assists facilities with compliance under Emergency Planning and Community Right to Know Act (EPCRA).
- **Environmental Complaints and Local Services (ECLS):**  
ECLS performs compliance inspections and provides technical assistance to DEQ permitted facilities. ECLS administers Oklahoma's on-site sewage treatment program. This includes soil tests, on-site system designs, inspection of system installations and regulatory oversight of certified installers, certified profilers and septage pumpers and transporters. ECLS responds to all citizen complaints regarding environmental pollution. ECLS also plays a significant role in disaster response and recovery for the State's water, sanitation, and waste disposal efforts.
- **Office of Communications and Education (OCE) & Office of Continuous Improvement (OCI):**  
OCE strives to provide and improve access between the agency and Oklahomans, local, state, and federal agencies, the regulated community, and media professionals. OCE leads educational and informative workshops across the state and supplies public speakers for civic groups and the regulated community. OCI promote OK DEQ programs and initiatives through the website and social media. OCI champions Strategic Planning and Lean projects throughout the Agency.
- **Administrative Services Division (ASD):**  
ASD provides support to the other divisions in form of procurement, payroll, human resources, records management, recruitment, building security, and building operations.
- **Office of Executive Director (OED):**  
OED provides executive leadership to the agency and legal counsel to the divisions.

### 2.2 SELSD ORGANIZATION AND REPRESENTATIVES

Contact information for key staff is listed below:

#### **SELSD Management and Administration**

Division Director	Jeff Franklin	Jeff.Franklin@deq.ok.gov
Assistant Director	Cody Danielson	Cody.Danielson@deq.ok.gov
SELSD Quality Assurance Officer	Karina Blanton	Karina.Blanton@deq.ok.gov



Environmental Projects Manager	Susan Mensik	Susan.Mensik@deq.ok.gov
SELSD Procurement Officer	Amber Atherton	Amber.Atherton@deq.ok.gov
SELSD Environmental Health & Safety Officer	Zach Huff	Zach.Huff@deq.ok.gov
<b>Laboratory Technical Management</b>		
GC/MS Section	Milton L. Campbell	Les.Campbell@deq.ok.gov
GC Section	Jennifer Baughn-Fennell	Jennifer.Baughn-Fennell@deq.ok.gov
Elemental Analysis Section	Greg Goode	Greg.Goode@deq.ok.gov
Environmental Microbiology Section	Candice Smith	Candice.Smith@deq.ok.gov
General Chemistry Section	Amanda Williams	Amanda.Williams@deq.ok.gov
<b>Field and Laboratory Customer Assistance</b>		
Laboratory Business & Customer Services Manager	Erin Vorderlandwehr	Erin.Vorderlandwehr@deq.ok.gov
• Field / Laboratory Customer Assistance Section	Jayme Jones	Jayme.Jones@deq.ok.gov
• Sample & Data Management Section	Hunter Nelson	Hunter.Nelson@deq.ok.gov
<b>Laboratory Accreditation</b>		
Laboratory Accreditation Program Manager	Vacant	

## 2.3 SELSD STAFF RESPONSIBILITIES

General OK DEQ employee qualifications by job classification are provided in Appendix C of the Agency QMP and on the OPM Job Family Index. Employee responsibilities are addressed in the OK DEQ Administrative Procedures Manual (APM) which is available to all staff at 292-DEQ Hub/Policies & Procedures Link/Employee Responsibilities. SELSD Management is responsible for ensuring that personnel, equipment, and facilities are competent in supporting the QMS and the generation of high-quality data and services. Other specific roles and responsibilities for SELSD staff are defined as follows:

### 2.3.1 All SELSD Staff

- Read and maintain compliance with the QAP and DQM.
- Follow all procedures relating to technical, operational, and administrative operations.
- Document deviations to procedures and participate in the PIP process when necessary.
- Participate and maintain compliance with the Ethics and Data Integrity Program.
- Maintain compliance with all applicable Programs and Standards, including TNI, ISO, EPA DW Certification, SDWA, CWA, RCRA, CERCLA, and State Statutes as applicable.

### 2.3.2 Division Director (DD)

- Agency Leadership
- SELSD Budget and Strategic Planning and Oversight, including MSR
- Manage LAP and QMS staff, program priorities, and operations
- Rulemaking
- Principal State Laboratory Activities
- Function as a deputy for the AD in the event of an extended absence.

### 2.3.3 Assistant Director (AD)

- Agency Leadership
- SELSD Budget and Strategic Planning and Oversight, including MSR

- Manage SEL Managers, laboratories, priorities, and operations
- Rulemaking
- Principal State Laboratory Activities
- Staff Development and Engagement
- Function as a deputy for the DD in the event of an extended absence.

#### **2.3.4 QAO**

- EPA Certification and TNI Accreditation
- QAP and DQM
- SELSD Training & Competence
- QMS Maintenance
- Principal State Laboratory Activities
- Divisional Representation

#### **2.3.5 QMS Specialist**

- Support Equipment Inventory, Calibration, and Tracking
- SEL and LAP Proficiency Testing Activities
- Process Improvement Program
- QMS Enhancement and Support
- SELSD Learning Administrator
- SEL Internal Audits and LAP Assessments
- Safety Program Support

#### **2.3.6 Environmental Projects Manager**

- National Resource Damage Assessment Trustee
- Water Quality Standards and Discharge Permit Advisor
- Subject Matter Expert for Chemical of Emerging Concern (CEC) and Unregulated Contaminants
- Agency and Divisional Delegate

#### **2.3.7 Laboratory Business and Customer Support Manager**

- Customer Services and Account Management
- Divisional Budgeting, Strategic Planning, and Rulemaking
- Succession Planning and Staff Development
- Virtual Infrastructure Maintenance and Enhancement
- Divisional and Agency Representation

#### **2.3.8 Sample and Data Management (SDM) Manager**

- Provide Leadership and Personnel Management
- Ensure Safe Working Conditions
- Business Operations
- LIMS Administration
- Special Projects Coordination and Oversight
- IT Resource and Asset Management
- Professional Development and Training
- Customer Relations

#### **2.3.9 Field and Laboratory Customer Assistance (FLCA) Manager**

- Provide Leadership and Personnel Management

- Ensure Safe Working Conditions
- Ensure Capacity to Provide Products and Services
- Ensure Delivery of Quality and Timely Products and Services

#### **2.3.10 Laboratory Technical Managers**

- Personnel Management
- Workload and Resource Management
- Technical Operations Management
- Divisional and Agency Representation
- Lean Advocate

#### **2.3.11 Laboratory Scientists**

- Method Performance and Program Support
- Quality Assurance, Quality Control and Records Maintenance
- Competency Maintenance/Expansion and Professional Development
- Instrument/Equipment Maintenance and Troubleshooting
- Inventory Control, Planning and Procurement
- Divisional and Agency Representation
- May function as a deputy for a Laboratory Technical Manager in the event of an extended absence.

#### **2.3.12 LAP Manager**

- LAP Permitting
- LAP Data Management
- Targeted Outreach
- Agency Primary TNI Member
- LAP Compliance
- Document and Rule Management
- SELSD QMS and Technical Support

#### **2.3.13 LAP Officer**

- Building Competence and Expertise
- Ensure Procedural Suitability and Compliance
- Ensure Certificate Issuance and Maintenance
- Information and Data Management
- Rulemaking
- TNI
- Perform SELSD Internal Audits

#### **2.3.14 LAP Assessor**

- Perform Assessments based on training and expertise
- Write and review assessment reports
- Perform technical review of LAP documents and information

### **2.4 SELSD TRAINING PROGRAM**

The SELSD has a documented training program. New OK DEQ employees are provided with New Employee Orientation, as well as optional training opportunities throughout the year that are relative to agency operations, personal development, and/or divisional cross-trainings. Upon hire, SELSD



personnel participate in basic divisional onboarding trainings that are determined and assigned by managers and QMS. These trainings are tracked on an onboarding checklist and are to be completed prior to staff performing their assignments unsupervised. Employees new to an analytical method must train under the guidance of an experienced analyst until the employee demonstrates capability and proficiency for the method. Employees are provided initial and on-going training to ensure that they are competent to execute the duties they are expected to perform. The demonstration of capability (DOC) process is further defined in **9000-QSP02**.

All SELSD management follow the Agency's Manager Training Requirements SOP which states that all managers are required to complete a minimum of 12 hours of approved supervisory training annually. New managers are required to complete 24 hours of approved manager training within the first 12 months of their appointment to a supervisory position. More details are provided in the Agency's SOP which is available to all staff at 292-DEQ Hub/Policies & Procedures Link/Manager Training Requirements.

All OK DEQ employees have access to Workday/Learning Application which is a statewide training/tracking system that allows OK DEQ staff access to a variety of training opportunities. SELSD has a designated Learning Administrator who can assist with the enrollment process. All OK DEQ staff also have unlimited access to optional online training opportunities through the LinkedIn Learning program provided by the Office of Management and Enterprise Services (OMES).

SELSD staff are required to notify QMS via an electronic SELSD Attendance Form when they have attended a training so that it can be added to the training tracker. **9000-QSL01**.

### **3 SAFETY**

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The SELSD expects all staff to embrace a strong safety-minded culture and consistently implement safe performance of work. To maintain a safe workplace, employees and guests are expected to apply good laboratory practice, training, and common sense while at work, onsite, or in the field. The ultimate responsibility and accountability for ensuring adequate protection of staff, the public, and the environment from the SELSD operations rests with management.

#### **3.1 SELSD SAFETY TEAM**

The Safety Team is comprised of an Environmental Health and Safety Officer and a group of SELSD staff representing all stakeholders that huddle to review current safety-related regulations and requirements, safety events, near-misses, complaints, safety training, and policy and procedure development. These meetings are open to all staff and the success of the team depends on the robust participation of the members. Under management sponsorship, the Safety Team uses consensus decision-making to develop the tools needed for the SELSD to successfully meet safety-related regulations and requirements and ensure the safety of all SELSD employees and visitors.

#### **3.2 LABORATORY SAFETY TRAINING AND EDUCATION**

Safety training is mandated for all new SELSD hires. Existing staff will be provided refresher training and continuing education periodically and as needed. Training materials include the following: written procedures, safety newsletters, power points, and quizzes.

#### **3.3 SAFETY DOCUMENTS**

Refer to these documents regarding laboratory safety information or request information from the SELSD Safety Team through the Outlook email group “SELS DEQ Safety Team.”

- The location of training materials, procedures, building evacuation plans, and contact numbers are found on TEAMS SELS → Safety Channel → Files.
- Safety Data Sheets (SDS) for specific chemical hazards must be readily accessible. Binders containing hard copy SDSs are found in the cabinets near the offices on the 9<sup>th</sup> floor, shelf outside the east offices on the 10<sup>th</sup> floor, and SDM. Staff are responsible to email any updated SDS for any new chemical entering the laboratory to The Safety Team. Electronic versions are also available in LabWare.
- Each divisional SOP should have a safety section tailored for activity-specific safety hazards.

#### **3.4 AGENCY SAFETY PROCEDURES**

The Agency’s safety procedures, responsibilities, and expectations are defined in documents available to all staff at 292-DEQ Hub/Agency Safety Tab. These procedures are also referenced in Safety Team documents.

## **4 PROCUREMENT OF SUPPLIES AND CONTRACTED SERVICES**

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SELSD will have and maintain the required equipment, supplies, and services to meet all mission critical functions, certification and accreditation requirements, as well as all contractual obligations.

### **4.1 OK DEQ PURCHASING PROCEDURES**

All acquisitions of OK DEQ shall be made in accordance with provisions of the following:

- Oklahoma Central Purchasing Act, Title 74 O.S § 85.1 et seq.
- OMES Central Purchasing Division Administrative Rules OAC 260:115.
- Provisions of the State Use Committee.
- Information Technology Accessibility Standards.
- Title 61 of Oklahoma Statutes which contains sections of law specific to acquisition of construction and construction-related services.
- OK DEQ's Internal Purchasing Procedures.

Although staff do initiate requisitions for supplies and services, the Laboratory Procurement Officer (LPO) is charged with ensuring all SELSD purchases comply with the requirements listed above. Also, with input from QMS and SELSD Management, the LPO manages SELSD purchasing procedures and associated WIDs. The Division Director or Assistant Division Director verifies need, assigns funding, and signs off on all SELSD purchases.

### **4.2 VERIFICATION OF MATERIALS**

For purposes of definition, materials in this context refer to a wide range of chemicals, standards, media, containers, consumables, and durables. Supplies are shipped to the OK DEQ Central Office. Once received, Shipping & Receiving (S&R) personnel verify package contents against the packing slip, stamp and sign the verified packing slip, and contact SELSD staff for pick up. In cases where shipments need cold storage, packages are immediately brought to the designated refrigerator/freezer in the SDM Section where a copy of the packing slip is left with the incoming items and a log is signed by S&R personnel to document custody transfer. Once SELSD staff take custody of the materials they go through the following steps:

- Verify that item was received as ordered (correct type, volume, quantity, and condition).
- Verify that a Certificate of Quality, Purity, Grade, or Traceability is provided, and that the supporting documentation meets suitability requirements for intended use. This information is made readily available.
- Verify the validity of any expiration dates associated with the materials. If the manufacturer does not provide an assigned expiration date, SELSD staff must do so.

Once materials have been identified as ready for use, the verifier will initial and date the bottle, box, bag, or other container. Additional verification may be required prior to utilization of these materials using approved test and raw material verification procedures.

### **4.3 VERIFICATION OF INSTRUMENTATION AND EQUIPMENT**

Instruments and equipment are purchased and placed into service based on the ability to meet performance-based criteria, regulatory and program requirements, as well as vendor specifications according to intended use. Major or highly technical instrumentation and equipment are typically installed and verified by the vendor or a third party. Some instrumentation and equipment are

supported through service maintenance contracts. Preventative and routine instrument and equipment maintenance schedules and procedures are maintained by management and addressed in method SOPs.

#### **4.4 *CONTRACTS FOR PROFESSIONAL SERVICES***

##### **4.4.1 Customer Contracts for Analytical Services**

Chain of Custody (COC) forms are considered a contract for services between the laboratory and its customers. The COC clearly indicates testing needs and requirements. The COC is signed at the time of physical custody transfer which then makes it a legally binding document and subject to all the testing requirements described in the QAP and DQM.

Project Planning Tool (PPT) forms are also considered a form of an intra-agency contract that is more formalized than a COC as it contains specific information related to project support. The PPT process is defined in the DQM and is typically completed in advance of any sample collections.

##### **4.4.2 Professional Services Contracts**

Inter-Agency Contracts can be established with other state, regional, national, and governmental entities. Contracts of this type are executed according to all applicable state regulations, and typically involve very specific expectations and a formal statement of work that defines data quality objectives, deliverables, turnaround times, pricing, and invoicing.

##### **4.4.3 Third-Party Assessors**

The conditions and expectations associated with the use of third-party assessors are described in detail in **7000-SOP02-Conducting Laboratory On-Site Assessments**. The formal professional services agreement appears as Attachment 2 of the SOP. However, a few points are worth noting for emphasis. LAP staff must approve all third-party contractors and deem them as qualified and competent to perform an OK DEQ LAP assessment. Although the contractor can work independently on their activities as part of the assessment team, decision-making will remain with the OK DEQ LAP.

##### **4.4.4 Service Maintenance Contracts**

Qualified technical personnel (vendor or third party) provide contracted maintenance and support for a variety of instrumentation and equipment within the normal scope of SELSD operations. These contracts are utilized in cases where a warranty may be in place, or the routine technical and corrective maintenance is beyond the scope or resources of SELSD technical staff. A list of contracts is maintained by the SELSD Procurement Officer in the Purchasing Tracking Log that is updated annually by fiscal year.

##### **4.4.5 Encumbered Contracts**

The SELSD routinely establishes annual agreements with material and supply vendors for recurring products, services, and trainings. These documents are not technically contracting but dedicated purchase orders that allow SELSD staff to obtain operational supplies at a reduced cost or improved efficiency. The use of state-wide contract vendors is recommended and are frequently utilized for many commonly used items.

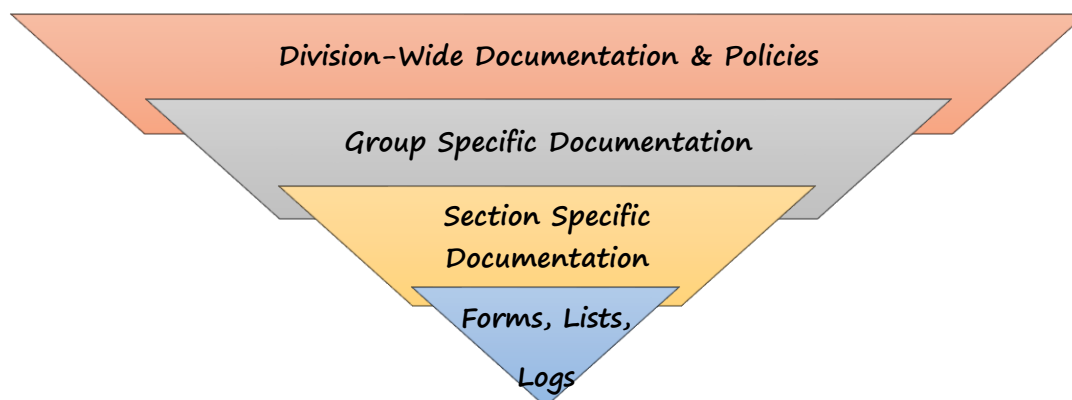


## 5 DOCUMENT CONTROL

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Documents include but are not limited to records, procedures, reference documents, and policies. The proper creation, maintenance, and control of documents is essential to supporting the QMS and vital to data defensibility.

The SELSD maintains a series of approved procedures and templates that provide instructions and guidance for the document control system. The SELSD document hierarchy illustrated below shows that documents in the lower levels of the pyramid are superseded by documents in higher levels. As documentation goes up in hierarchy, so does enforceability. Individual SOPs may contain additional information relating to record creation and storage that goes beyond the scope of this QAP.



The SELSD follows the Agency's Consolidated Records Disposition Schedule 94-09 which is available to all staff at 292-DEQ Hub/Central Records Tab/Records Disposition Schedule Link/DEQ Schedule 94-09 folder.

Migration is ongoing to manage SELSD documents in LabWare. QMS maintains a list of all documents, except records, in a master document tracker, **9750-QSL01**, until they are added to the LabWare Document Manager System. Once they are in LabWare, revisions, obsolescence, and archival will be tracked by the system. These processes are outlined in **9750-QSP02**-Quality Management System Documents, which is located on the SELS Teams site.

A separate document management system has been developed for LAP, **9750-WID18**, along with its own document tracker, **9750-QSL04**. The WID is located in LAP Teams/General channel/Document Control Folder while the tracker is located in QMS Teams/Document Management Docs channel. LAP records are managed in Edoctus with a goal of moving to OnBase in the future.

Until there is an Agency policy developed for the use of unique electronic signatures, the SELSD has implemented the following rules:

- All SELSD staff are allowed to use electronic signatures when appropriate or necessary.
- SELSD staff are only allowed to use their own personal electronic signatures, they are not to sign for or use anyone else's electronic signature under any circumstance.
- In rare, unavoidable instances, QMS may need to sign for other staff but must include a note/comment that addresses who signed for whom and why, and preferably the person should be present with QMS when this is done.

## 6 PROCESS IMPROVEMENT PLAN

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A Corrective Action (CA) Plan is a requirement under the *TNI Standard* (EL-V1M2-2016; Section 4.11) for NELAP accreditation as well as a requirement for Drinking Water Certification as defined in the *Manual for the Certification of Laboratories Analyzing Drinking Water* (EPA-815-R-05-004; 5<sup>th</sup> ED; Chapter III, Section 11.12). The SELSD has implemented **9300-QSP01**-Process Improvement Plan (PIP) to accomplish the goals of the CA requirement.

The PIP is a tool that is essential to the Division's QMS. The PIP is designed for use in conjunction with any activity performed under the scope of the SELSD QMS and that directly or indirectly impacts the quality of data generated by the SELSD. The PIP establishes a set of procedures to identify, correct, prevent, and monitor actual and potential deviations and deficiencies to prevent a reoccurrence of such events, as well as identify and document technical enhancements and improvements to Division-wide operations and services. The PIP is also used to document approved and permissible departures from policies and procedures. All SELSD staff must read and familiarize themselves with the PIP procedure and electronically sign the procedure coversheet in LabWare when requested.

## 7 AUDITS/ASSESSMENTS AND CUSTOMER FEEDBACK

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The SELSD implements and monitors activities for continual improvement of the QMS, including:

- Proficiency Testing studies, both single and double blind.
- External assessments, certifications, and accreditations.
- Internal audits and reviews.
- Customer feedback/complaints and public comment.

### 7.1 EXTERNAL AUDITS/ASSESSMENTS

#### 7.1.1 EPA Drinking Water Audit

EPA Region 6 conducts an inspection of the SELSD every three years to assess compliance and implementation of the [\*Manual for the Certification of Laboratories Analyzing Drinking Water\*](#) (EPA 815-R-05-004, January 2005). The SEL is assessed for drinking water compliance analysis. The LAP is assessed for the oversight of accreditation of drinking water laboratories.

#### 7.1.2 TNI Assessment

The SELSD maintains accreditation for the analysis of *Cryptosporidium* and *Giardia* by undergoing an evaluation by a TNI Accreditation Body (TNI AB) every two years to determine adherence to the 2016 TNI Standards for Laboratories. The scope of this assessment covers the portions of the Environmental Microbiology section relevant to *Crypto*/*Giardia* and the SELSD QMS. The SELSD is also pending TNI accreditation for lithium analysis by EPA Method 200.7 and per- and polyfluoroalkyl substances (PFAS) analysis by EPA Methods 533 and 537.1.

The LAP maintains recognition as a TNI AB by undergoing an evaluation by an outside TNI AB every two years to determine adherence to the 2016 TNI Standards for Accreditation Bodies. The scope of this assessment covers the LAP and TNI-relevant portions of the SELSD QMS.

#### 7.1.3 Agency Management System Review (MSR)

Compliance with the Agency QMP is assessed through an MSR and Technical Audit (TA), which is performed by the Agency QAO. One division is assessed annually on a rotational basis. A summary of findings is presented to the assessed Division's Director.

### 7.2 INTERNAL AUDITS

The SELSD 9400-QSP01-Internal Audit (IA) Program, is applicable to all aspects of divisional operations. The goal is to assess the QMS and its related components/procedures for compliance to regulatory requirements and standards and conformance to internal QMS documents. As a byproduct of the MSR, a rotational, annual audit schedule is created by QMS and management.

QMS staff, LAP staff, and other qualified and trained staff members may function as internal auditors for the Division. Designated auditors will not audit their own work. Audit findings are documented and forwarded to personnel involved in the audit as well as appropriate management. Steps are taken to address each finding and a documented response is required for critical findings. All corrective actions and improvements resulting from the audit are documented and reviewed for effectiveness within an adequate time frame. All documentation is to be done and tracked through

the use of a PIP. For reference purposes, PIP numbers associated to IAs are included on the IA log entries, **9400-QSL03**.

### **7.3 CUSTOMER FEEDBACK AND COMPLAINTS**

The SELSD's customer feedback and complaints process is defined in **9650-QSP01**-Customer Satisfaction and Support Procedure. This procedure addresses both positive and negative feedback, complaints about services, requests for mediation, and informal appeals. In some cases, PIP forms are used for tracking investigations relating to complaints.

The LAP utilizes the PIP process for tracking complaints and uses assessment surveys to identify areas of achievement and areas for improvement.

## **8 QUALITY MANAGEMENT SYSTEM AND PERFORMANCE REPORTING**

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### **8.1 MANAGEMENT SYSTEM REVIEW (MSR) AND PERFORMANCE REPORTING**

The MSR is performed annually to ensure the effectiveness of the management system. Specific topics to be included in the MSR include, policies/procedures, competency/training, laboratory capacity (methods/instrumentation/resources/partnerships), fees, customer feedback/complaints, audits/assessments, enhancements/PIPs, needs, certification/accreditation, field activities, and goals/action plans. The MSR is documented on the MSR Tool, **9755-QSF01**. All the reports listed below contribute to the MSR:

- EPA QA/Agency Annual Report including KPMs.
- Workload Metrics Evaluation Report.
- Office of the Secretary of Energy and Environment (OSEE)/EQB Report (annual) - includes Lead testing in schools/childcare facilities, small system assistance program, etc.
- Association of State Drinking Water Administrators (ASDWA) Report (quarterly).
- Complaints and Special Projects Report (quarterly).
- Small System Assistance Report (quarterly).
- Year to Year (Y2Y) Workload Report (monthly).
- Section QMS Report (monthly).
- Annual QMS Report.
- SELSD Request for Additional General Appropriation (as needed).
- Workload Report (weekly).

The data collected from these processes may also be used for other annual reports as needed. These reports are available upon a written request.

### **8.2 QC REPORTING**

Technical staff from each laboratory section will submit control charts for Drinking Water and non-Drinking Water methods to QMS upon request. At a minimum QMS will request LFB data for Drinking Water methods and LCS data for all other methods. These documents will undergo a documented review according to policy.



## **9 ETHICS AND DATA INTEGRITY**

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The **9600-QSP01**-SELSD Ethics and Data Integrity Program is applicable to every aspect of the Division's operations. All new SELSD staff are required to participate in Ethics and Data Integrity orientation while current employees must complete annual refresher trainings. The SELSD requires employees to sign a SELSD Ethics and Data Integrity Statement annually. A signed SELSD Ethics Statement indicates that the employee is aware of their obligations to data integrity and the consequences of any infractions to the Ethics and Data Integrity Program.

### **9.1 LAP AND ASSESSORS**

LAP personnel and qualified assessors assisting LAP must apply appropriate ethics and integrity during the assessment process. Additional training for assessors includes ethics related to performing an assessment and the need for non-discriminatory actions. Ethics training is also part of the TNI Basic Assessor course which covers the requirements in the TNI Volume 2 standard. All assessors must act impartially and declare any conflicts of interest for review as described in the following sections. .

### **9.2 CONFIDENTIALITY**

The Water Quality Management Advisory Council (WQMAC) and the Environmental Quality Board (EQB) oversee the activities of the SELSD. The committee is formed based on the State of Oklahoma requirements of interested stakeholders and declarations of conflicts of interest presented. Confidentiality is defined by state requirements with all information possibly open due to freedom of information requirements. Claims of confidentiality by any OK DEQ clients are addressed in Oklahoma Statute 252 Section 4-1-5(d). Typically, laboratory test results are released only to the customer identified on the sample submission documents unless otherwise required by law.

### **9.3 CONFLICTS OF INTEREST**

Conflict of interest guidelines are covered in the OK DEQ APM under Employee Responsibilities, which is available to all staff at [292-DEQ Hub/Policies & Procedures Link/Employee Responsibilities](#). This document requires that employees of the Agency avoid conduct that might cast suspicion on the objectivity of the employee. At hiring and on an annual frequency, employees shall complete a DEQ Disclosure Form if any conflicts of interest exist. Conflicts of interest between SEL and LAP are addressed in Section 1.1.4 above.

## 10 LABORATORY ACCREDITATION PROGRAM

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This chapter provides details regarding the LAP that are in addition to the program specific contents of the previous chapters of this document. The LAP executes business under the scope of the SELSD QMS; however, the LAP also operates under additional state, federal, and national rules and requirements. This program is a fee-based program operated within the legislative requirements of the State of Oklahoma and consists of three programs established in the Oklahoma Administrative Code (OAC) Title 252:

- Laboratory Accreditation (OAC 252:301)
- Field Laboratory Accreditation (OAC 252:302)
- TNI Laboratory Accreditation (OAC 252:307)

These programs address different classes of accreditation which each have associated categories of matrix/method/analyte combinations available for accreditation. Classes consist of Drinking Water and General water Quality under OAC 252:301, Field under OAC 252:302, and TNI Drinking Water and General Environmental under OAC 252:307. Full lists are available on the LAP website:

<https://www.deq.ok.gov/state-environmental-laboratory-services/laboratory-accreditation/>.

### 10.1 PROGRAM OPERATIONS

Laboratory accreditation is an integral part of the SELSD. The LAP ensures that accredited laboratories reporting data have a QMS in place to foster data of known and documented quality. The accreditation process may include an on-site or virtual inspection of the laboratory. Following the inspection of the laboratory, the LAP will issue a report that may require the laboratory to perform corrective actions. The LAP reviews the laboratory's submitted evidence and documentation of corrections to ensure compliance. After successful completion of the initial or interim assessment or of the renewal application, the LAP issues an accreditation certification to the laboratory. An example of the accreditation certificate LAP issues can be found in **Appendix C**. At no time is an assessor to provide consultancy to a laboratory that is seeking accreditation as this would constitute a conflict of interest. Assessors can however provide general technical assistance, but laboratories must be given the flexibility to meet the rules/requirements as best fits their organization.

PT analysis and reporting is a valuable tool of laboratory accreditation. The LAP provides information regarding PT details to accredited laboratories and interested parties via its website and through external resources, such as the TNI website for approved PT providers and available PT analytes. A guidance document can be found on the LAP website to explain the process used by LAP for reporting and handling PTs. If a laboratory or the LAP has a complaint about a PT provider, this is to be directed to the provider and is not handled through the LAP complaint procedure. Complaints about a PT provider are handled in accordance with the TNI Standard.

The proper usage of the Oklahoma State logo, OK DEQ logo, and TNI symbol is described in each of the relevant accreditation program rules. If these are used inappropriately, the OK DEQ may take legal action as needed to correct the issue.

### 10.2 SELSD ASSESSORS

Before an assessor is allowed to perform unsupervised assessments for the LAP, the assessor shall have performed a minimum number of assessments under the supervision of an assessor whose competence has been qualified by the LAP. Experienced assessors must be observed at least once prior to working independently as a fully qualified assessor. Inexperienced assessors must be observed on at least two assessments.

## APPENDIX A- QAP SIGNATORIES

### APPROVAL SIGNATURES

#### STATE ENVIRONMENTAL LABORATORY SERVICES DIVISION

*Jeff Franklin*

10-11-22

Signature

Date

*Division Director, Jeff Franklin*

*Cody Danielson*

10/11/22

Signature

Date

*Assistant Director/State Environmental Laboratory Manager, Cody Danielson*

*Karina Blanton*

10/12/22

Signature

Date

*Quality Assurance Officer, Karina Blanton*

*Susan Mensik*

10/11/22

Signature

Date

*Environmental Projects Manager, Susan Mensik*

#### STATE ENVIRONMENTAL LABORATORY

*Greg Goode*

10/11/22

Signature

Date

*Laboratory Technical Manager, Elemental Analysis Section, Greg Goode*

*Amanda Williams*

10/11/22

Signature

Date

*Laboratory Technical Manager, General Chemistry Section, Amanda Williams*

*Candice Smith*

10/11/2022

Signature

Date

*Laboratory Technical Manager, Environmental Microbiology Section, Candice Smith*

*Jennifer Baughn-Fennell*

10/11/2022

Signature

Date

*Laboratory Technical Manager, GC Organics Section, Jennifer Baughn-Fennell*

*Milton L. Campbell*

10/11/22

Signature

Date

*Laboratory Technical Manager, GC/MS Section, Milton L. Campbell*

#### FIELD & LABORATORY CUSTOMER ASSISTANCE

*Erin Vorderlandwehr*

10/11/22

Signature

Date

*Laboratory Business & Customer Support Manager, Erin Vorderlandwehr*

*Jayme G. Jones*

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**Signature**

*Field and Laboratory Customer Assistance Manager, Jayme Jones*

*C. Hunter Nelson*

---

**Signature**

*Sample and Data Management Manager, Hunter Nelson*

**LABORATORY ACCREDITATION PROGRAM**

N/A

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**Signature**

*Laboratory Accreditation Program Manager, Vacant*

10/11/22

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**Date**

10/11/22

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**Date**

N/A

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**Date**

## **APPENDIX B- ORGANIZATIONAL CHARTS**

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The Agency and SELSD organizational charts are currently under revision but can be provided upon request and will be included in the next revision of this QAP. If you have further questions, contact the SELSD at [selsquality@deq.ok.gov](mailto:selsquality@deq.ok.gov).



## APPENDIX C- EXAMPLE LAP ACCREDITATION CERTIFICATE

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### Oklahoma Department of Environmental Quality Laboratory Accreditation Program

State Laboratory ID: «Alias02»  
EPA ID: «Lab\_No»

Certificate #: «Certif\_No»

**«Lab\_Name»**

«Lab\_Street\_1»  
«Lab\_City», «Lab\_State» «Lab\_ZipCode»

has been accredited for the analysis of environmental samples for analytes listed on the attached Scope of Accreditation.

Continued accreditation is contingent upon successful on-going compliance with OAC 252:301 which was promulgated and adopted pursuant to the Oklahoma Environmental Quality Code (Code), 27A.O.S. § 2-4-101 *et seq.*  
Specific methods and analytes certified are cited on the laboratory's Scope of Accreditation.

The Scope of Accreditation, inspections reports and accreditation status are on file and may be obtained from:

Oklahoma DEQ, State Environmental Laboratory Services Division,  
Laboratory Accreditation Program,  
707 N Robinson, P.O. Box 1677, Oklahoma City, Oklahoma 73101-1677,  
(405) 702-1000, [www.deq.ok.gov](http://www.deq.ok.gov).

**ISSUED:** «Cert\_Issue\_Date»

**EXPIRES:** «Cert\_Exp\_Date»

---

Jeff Franklin, State Environmental Laboratory Services Division Director

**This certificate is valid proof of Accreditation only when associated with its Scope of Accreditation.**

## APPENDIX D- GLOSSARY AND ACRONYMS

Item	Acronym	Definition
Acceptance Criteria		Specific limits placed on the characteristic of an item, process, or service defined in requirements documents.
Acceptance Limit(s)	AL	See control limits.
Accreditation		The process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory. In the context of the National Environmental Laboratory Accreditation Program (NELAP), this process is a voluntary one.
Accreditation Body	AB	The territorial, state or federal agency having responsibility and accountability for environmental laboratory accreditation and which grants accreditation.
Accreditation Field of Proficiency Testing	FoPT	Fields of accreditation for which a laboratory is required to successfully analyze a PT sample in order to obtain or maintain accreditation.
Accrediting Authority	AA	The agency having responsibility and accountability for environmental laboratory accreditation and who grants accreditation, such as the EPA, other federal agencies, or an individual state.
Accuracy		The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.
Accuracy Limits		See Control Limits.
Ad-Hoc		The logging of a collected Sample in real time.
Administrative Procedures Manual	APM	
Air Quality Division	AQD	
Aliquot		A measured portion of a field sample, standard, or solution taken for sample preparation and/or analysis.
American Chemical Society	ACS	
American National Standards Institute	ANSI	
American Society for Testing and Materials	ASTM	
Analysis Date		The date of the introduction of the sample, standard, or blank into the analysis system.
Analyst		The designated individual who performs the "hands-on" analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality.
Analyst Review		Self-verification review performed by the analyst of record to verify that their sample and QC data have met all requirements of the method and the laboratory, as well as verification that the data is free from transcription and calculation errors prior to forwarding data for secondary/peer review. A level of review that occurs when an analyst initially interprets raw data produced by an analysis before any results are entered into the LIMS system. If data is sent directly from the instrument to the LIMS, this review may be performed after the data is in the LIMS.
Analyte/Compound		The substance or constituent being measured by the method. A variable, measurable property whose value is a determinant of the characteristics of a system, e.g. temperature, pressure, and density are parameters of the atmosphere.
Anions		Negatively charged ions. Anions commonly analyzed in drinking water samples include nitrate, nitrite, fluoride, chloride, and ortho-phosphorus.
Aquarius	AQ	The laboratory information database that is being phased out by the SELSD and replaced with the LIMS application, LabWare.

Item	Acronym	Definition
<b>Assessment</b>		The evaluation process used to measure or establish the performance, effectiveness, and conformance of an organization and/or its systems to defined criteria (to the standards and requirements of laboratory accreditation).
<b>Assigned Value</b>	AV	The gravimetric true concentration of an analyte in a sample to be analyzed or an appropriate reference value when necessary. Located on the PT provider's performance evaluation report for a participating laboratory.
<b>Atomic Absorption</b>	AA	
<b>Audit</b>		A systematic evaluation to determine the conformance to quantitative and qualitative specifications of some operational function or activity.
<b>Batch- A preparation batch</b>		Composed of one to 20 environmental samples of the same quality systems matrix, meeting the above-mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours.
<b>Batch- An analytical batch</b>		Composed of prepared environmental samples (extracts, digestates or concentrates) which are prepared and/or analyzed together as a group with the same process and personnel, using the same lot(s) of reagents.. An analytical batch can include prepared samples originating from various environmental matrices and can exceed 20 samples.
<b>Batch Review</b>		A review within the LIMS system when the results entered into the LIMS are compared to results observed and recorded on the paperwork (if applicable). This review checks for accuracy of results. Once complete, results are authorized at the test level allowing projects to be reviewed.
<b>Bias</b>		The system or persistent distortion of a measurement process, which causes errors in one direction (i.e., the expected sample measurement is different from the sample's true value).
<b>Blank</b>		A sample that has not been exposed to the analyzed sample stream in order to monitor contamination during sampling, transport, storage, or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results.
<b>Blank- Field Blank</b>	FB, FRB	A blank prepared in the field by filling a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. This can include trip blanks, rinsates, equipment blanks, etc.
<b>Blank- Equipment/Rinsate Blank</b>		A sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures.
<b>Blind Sample</b>		A sub-sample for analysis with a composition known to the submitter. The analyst/laboratory may know the identity of the sample but not its composition. It is used to test analyst or laboratory proficiency in the execution of the measurement process.
<b>Brownfields</b>		Abandoned, idle, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.
<b>Calibration</b>		A set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by the standards. In calibration of support equipment, the values realized by standards are established through the use of reference standards that are traceable to the International System of Units (SI). In calibration according to test methods, the values realized by the standards are typically established through the use of Reference Materials that are either purchased by the laboratory with a certificate of analysis or purity, or prepared by the laboratory using support equipment that has been calibrated or verified to meet specifications.

Item	Acronym	Definition
Calibration Blank	CCB	An aqueous solution as free of the measured analyte as possible. It is diluted with reagents in the same manner as the calibration standards and is used as the zero-base line in instrumental analyses. It is typically analyzed at the beginning of an analysis and often at intervals during the course of prolonged analysis to monitor for instrument drift.
Calibration Check Standard	CC, ICV, CCV	A standard that is analyzed before continuing analysis and sometimes during the continuing course of the analysis to ensure that an existing calibration is in control.
Calibration Curve		The mathematical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response.
Calibration Standards	CAL	A series of known standard solutions used by the analyst for calibration of the instrument (i.e., preparation of the analytical curve). The solutions may or may not be subjected to the preparation method but contain the same matrix (i.e., the same amount of reagents and/or preservatives) as the sample preparations to be analyzed.
Category		The classification of a drinking water contaminant under 40 CFR Part 141 Regulations for Public Water Systems.
Category - Non Regulated		Contaminants for which monitoring is not required.
Category - Regulated		An MCL contaminant for which monitoring is required.
Category - Unregulated		Contaminants for which monitoring is required but which currently have no MCL.
Cause		An occurrence that results in an outcome that negatively affects system quality
Certification		The process of testing and evaluation against specifications designed to document, verify, and recognize the competence of a person, organization, or other entity to perform a function or service, usually for a specified time.
Certification Officer	CO	
Chain of Custody Form	COC	Record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes: the number and types of containers; the mode of collection; collector; time of collection; preservation; and requested analyses.
Clean Water Act	CWA	The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States. This law gave EPA the authority to set effluent standards on an industry-by-industry basis (technology-based) and continued the requirements to set water quality standards for all contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the Act.
Code of Federal Regulations	CFR	
Cold Vapor Atomic Absorption	CVAA	
Colony Forming Units	CFU	
Complete		Data is complete when all information and actions relevant to the generation of the data are documented and included. Modifications and deviations must be documented and approved. Any potential negative impact to the quality of the data must be communicated to the data user. Deficiencies must be identified, documented, and data must be qualified accordingly. The percentage of samples available for decision making from the entire sample set. Many projects require that a percentage of the total number of submitted samples be completed.
Complete Sample		Samples that have been analyzed and all data has been entered into LabWare.
Comprehensive Environmental Response, Compensation and Liability Act	CERCLA	The enabling legislation in 42 U.S.C. 9601-9675 <i>et seq.</i> , as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9601 <i>et seq.</i> , to eliminate the health and environmental threats posed by hazardous waste sites.

Item	Acronym	Definition
<b>Conformance</b>		An affirmative indication or judgment that a product or service has met the requirements of the relevant specification, contract, or regulation; also, the state of meeting the requirements.
<b>Contaminant</b>		Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.
<b>Contamination</b>		Introduction into water, air, and soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use. A component of a sample or an extract that is not representative of the environmental source of the sample. Contamination may stem from other samples, sampling equipment, while in transit, from laboratory reagents laboratory environment, or analytical instruments.
<b>Continuing Calibration Blank</b>	CCB	See Calibration Blank.
<b>Continuing Calibration Check</b>	CCC	
<b>Continuing Calibration Verification</b>	CCV	A single parameter or multi-parameter standard solution prepared by the analyst and used to verify the stability of the instrument calibration with time, and the instrument performance during the analysis of samples. The CCV can be one of the calibration standards. See Calibration Check Standard.
<b>Contract Laboratory Program</b>	CLP	
<b>Contract Required Quantitation Limit</b>	CRQL	Minimum level of quantitation acceptable under a contract.
<b>Control Chart</b>		A visual representation of a component of data (typically LFB, MS/MSD RPB, and LRB) that incorporate limits (upper and lower control and warning limits) to observe analytical performance and trends.
<b>Control Limits</b>		A range within which specified measurement results must fall, usually accuracy and precision, to be compliant. Control limits may be mandatory, requiring corrective action if exceeded, or advisory.
<b>Correct</b>		The real-world construction of the actual activities performed during data generation and to accurately represent the environment from which the samples were taken.
<b>Corrective Action</b>	CA	Any measure taken to rectify conditions adverse to quality and, where possible, to preclude their recurrence.
<b>Corrective Action Report</b>	CAR	The format for documenting the action taken to eliminate the causes of an existing nonconformity, defect or other undesirable situation in order to correct a problem and prevent a future recurrence.
<b>Data Flag</b>		Standardized codes that relay information about the impacts or limitations affecting the quality of the data. Laboratory data qualification includes the application of information relative to rejections, non-conformances, deviations, or other discrepancies that impart a potential effect to the quality or usability of the data.
<b>Data Quality Objectives</b>	DQOs	Qualitative and quantitative statements derived from the outputs of the first six steps of the seven step systematic planning DQO process developed by EPA that clarify the study objective, define the most appropriate type of data to collect, determine the most appropriate conditions from which to collect the data, and specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision.
<b>Data Reduction</b>		The process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useable form.
<b>Defensible</b>		The ability to withstand any reasonable challenge related to the veracity or integrity of project and laboratory documents and derived data.
<b>Deficiency</b>		An unauthorized deviation from acceptable procedures or practices, or a defect in an item.
<b>Demonstration of Capability</b>	DOC	A procedure to establish the ability of the analyst to generate acceptable accuracy and precision.
<b>Department of Environmental Quality</b>	DEQ	Oklahoma DEQ, unless otherwise specified.

Item	Acronym	Definition
Detection Limit	DL	The lowest concentration of an analyte that can be detected. A measure of the capability of an analytical method to distinguish samples that do not contain a specific analyte from samples that contain low concentrations of the analyte; the lowest concentration or amount of the target analyte that can be determined to be different from the blank by a single measurement at a stated level of probability. DLs are analyte- and matrix-specific and may be laboratory-dependent. See Limit of Detection.
Deviation		An abnormality or a departure from what is required or expected.
Dilution Factor	DF	
Double Blind	DB	
Drinking Water	DW	A matrix designation used to indicate any aqueous sample that has been designated a potable or potential potable water source.
Dry Weight		The weight of a sample based on percent solids or percent moisture. The weight after drying in an oven.
Duplicate	Dup, D	A second aliquot of a sample that is treated the same as the original sample in order to determine the precision of the method, sometimes termed as replicate. Differs from field duplicate. See Laboratory duplicate.
Environmental Complaints and Local Services	ECLS	
Environmental Protection Agency	EPA	An agency of the federal government of the United States charged to regulate chemicals and protect human health by safeguarding the natural environment: air, water, and land.
Environmental Response Laboratory Network	ERLN	
Experimental Field of Proficiency Testing	Experimental FoPT	Analytes for which a laboratory is required to analyze a PT sample if they seek or maintain accreditation for the field of accreditation but for which successful analysis is not required in order to obtain or maintain accreditation.
Field Blank	FB	See Blank - Field Blank.
Field Measurement		The determination of physical, biological, or radiological properties, or chemical constituents; that are measured on-site, close in time and space to the matrices being sampled/measured, following accepted test methods. This testing is performed in the field outside of a fixed-laboratory or outside of an enclosed structure that meets the requirements of a mobile laboratory.
Field of Accreditation		The matrix, method/technology, and the analyte combinations for which the accreditation body offers accreditation.
Field of Proficiency Testing	FoPT	Those matrix, technology/method, and analyte combinations for which the accreditation body offers accreditation. Also, The specific analyte or analyte group, matrix, and technology/method evaluated by the analysis of the PT sample.
Field Quality Control	Field QC	Any quality control sample submitted from the field to the laboratory. Examples include, but are not limited to: field blanks, field duplicates, and field spikes.
Field Reagent Blank	FRB	See Blank - Field Blank.
Field Sample		A portion of material received for analyses that is contained in single or multiple containers and identified by a unique SEL sample number.
Finding		An assessment conclusion referenced to a laboratory accreditation standard and supported by objective evidence that identifies a deviation from a laboratory accreditation standard requirement.
Flag		See Data Flag.
Flow Injection Analysis	FIA	
Food Emergency Response Network	FERN	
Gas Chromatography	GC	



Item	Acronym	Definition
Gas Chromatography-Mass Spectrometry	GCMS	
Graded Approach		The process of basing the level of application of managerial controls applied to an item or work according to the intended use of the results and the degree of confidence needed in the quality of the results.
Guidance/Guideline		A suggested practice that is not mandatory, intended as an aid or example in complying with a standard or requirement.
Hazardous Waste	HW, HAZ	
Hold (Holding) Time	HT	The maximum time that a sample may be held (following collection and) prior to analysis and still be considered valid or not compromised (40 CFR Part 136). Differs from the EPA Superfund SOW definition, "the elapsed time expressed in days from the date of receipt of the sample by the Contractor (laboratory) until the date of its analysis, i.e. holding time = (sample analysis date-sample receipt date)".
Hydrochloric Acid	HCl	
In Progress		Samples that have some data entered, but have not yet been completed
Inductively Coupled Plasma	ICP	
Inductively Coupled Plasma Atomic Emission Spectroscopy	ICP-AES	A technique for the simultaneous or sequential multi-element determination of elements in solution. The basis of the method is the measurement of atomic emission by an optical spectroscopic technique. Characteristic atomic line emission spectra are produced by excitation of the sample in a radio frequency inductively coupled plasma.
Inductively Coupled Plasma Mass Spectrometry	ICP-MS	A technique for the multi-element determination of elements in solution. The basis of the technique is the detection of atomic ions produced by an ICP and sorted by mass/charge ratio.
Initial Calibration Blank	ICB	See Blanks.
Initial Calibration Check		ICC
Initial Calibration Verification	ICV	A solution that contains the analytes of interest in known concentrations; the solution is from the high standard, and is analyzed immediately after calibration. See Calibration Check Standard.
Initial Demonstration of Capability	IDC	The demonstration of capability that is performed prior to using a method, when there is a change that affects data quality, or if the method has not been in use for 12 months.
Initial Precision and Recovery	IPR	A QC process to establish initial control of the analytical system and demonstrate acceptable method performance (precision/recovery).
Instrument Blank	IB	A clean sample (e.g., distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination.
Instrument Detection Limit	IDL	The detection limit as associated specifically with an instrument. The lowest concentration that can be detected by an instrument. Determined as three times the standard deviation of the mean of the noise. In some programs, the LOD is equivalent to (or referred as) the MDL (Minimum Detection Limit).
Instrument Performance Check	IPC	A solution of method analytes used to verify the instrument performance periodically with respect to a defined set of method criteria. It is prepared from the same standard stock solutions used to prepare the calibrators and is matrix matched to the calibrators.
Inter-element Correction Check Sample	IEC	A solution of selected method analytes of higher concentrations used to determine or verify correction factors for known inter-element spectral interferences with respect to a defined set of ICP method criteria.
Interference Check Sample	ICS	A solution of selected method analytes of higher concentrations used to determine or verify correction factors for known inter-element spectral interferences with respect to a defined set of ICP method criteria.
Internal Audit	IA	A thorough, systematic, on-site qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a system.

Item	Acronym	Definition
Internal Standard	IS	A known amount of standard (usually a non-target element or compound) added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method.
Laboratory Control Sample	LCS	however named, such as laboratory fortified blank, spiked blank, or QC check sample- A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes and taken through all sample preparation and analytical steps of the procedure unless otherwise noted in a reference method. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.
Laboratory Duplicate		Aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently.
Laboratory Fortified Blank	LFB	An aliquot of the same solution as the reagent blank to which a volume of known concentration of the method analyte is added. The analyte recovery is calculated to assess if the method is in control and if the laboratory is capable of making accurate measurements. May also be equivalent to the LCS.
Laboratory Fortified Matrix	LFM	See Matrix Spike.
Laboratory Fortified Matrix Duplicate	LFMD	See Matrix Spike Duplicate.
Laboratory Information Management System	LIMS	A software system used in laboratories for the management of samples, laboratory users, instruments, standards and other laboratory functions.
Laboratory Performance Check		A solution of method analytes, surrogate compounds, and/or internal standards used to evaluate the performance of the instrument system with respect to a defined set of method criteria.
Laboratory Reagent Blank	LRB, RB	A sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps.
Laboratory Receipt Date		The date on which a sample is received at the SEL, as recorded on the shipper's Chain of Custody.
LabWare	LW	The LIMS utilized by SELSD.
Land Protection Division	LPD	
Limit(s) of Detection	LOD	The minimum result, which can be reliably discriminated from a blank with a predetermined confidence level. In some programs, the LOD is equivalent to (or referred to as) the MDL (Method Detection Limit).
Limit(s) of Quantitation	LOQ	The minimum concentration of an analyte or category of analytes in a specific matrix that can be identified and quantified above the method detection limit and within specified limits of precision and bias during routine analytical operating conditions. Also called the Practical Quantitation Limit (PQL).
Linear Dynamic Range	LDR	The concentration range over which the instrument response to an analyte is linear.
Linear Range Study	LRS	
Linearity		The measurement of a method's ability to obtain test results within a given range that are proportional to the concentration of analyte.
Lower Control Limit	LCL	
Lower Limit of Quantitation	LLOQ	
Lower Warning Limit	LWL	
Management System Review	MSR	The qualitative assessment of a data collection operation and/or organization(s) to establish whether the prevailing quality management structure, policies, practices, and procedures are adequate for ensuring that the type and quality of data needed are obtained.
Manual for the Certification of Laboratories Analyzing Drinking Water	MCLADW, 5th ED	

Item	Acronym	Definition
<b>Matrix</b>		The predominant material of which a sample to be analyzed is composed (the substrate of the test sample). For purposes of RCRA, a sample matrix is either water/ aqueous or soil/sediment.
<b>Matrix- Aqueous</b>	Aq, AQU	An aqueous sample excluded from the definition of the drinking water matrix or saline/estuarine matrix. Includes surface water, ground water effluents, and TCLP or other extracts.
<b>Matrix- Air</b>	AIR	Whole gas or vapor samples including those contained in flexible or rigid wall containers and the extracted concentrated analytes of interest from a gas or vapor that are collected with a sorbent tube, impinger solution, filter, or other device.
<b>Matrix- Chemical Waste</b>	CW	A product or by-product of an industrial process that results in a matrix not previously defined.
<b>Matrix- Drinking water</b>	DW, WS	Any aqueous sample that has been designated a potable or potential potable water source.
<b>Matrix Effect</b>		In general, the effect of particular matrix constituents.
<b>Matrix- Ground water</b>	GW	A sub-surface fresh water that may be designated as a potential potable water source (project dependent).
<b>Matrix- Hazardous waste</b>	HW, HAZ	By-product materials that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.
<b>Matrix- Liquid</b>	LIQ	An organic liquid with <15% settleable solids.
<b>Matrix- Saline/Estuarine</b>	SAL	Any aqueous sample from an ocean or estuary, or other saltwater source such as the Great Salt Lake.
<b>Matrix- Solid</b>	SOL	Includes soils, sediments, sludge, products and by-products of an industrial process with >15% settleable solids that results in a matrix not previously defined.
<b>Matrix Spike</b>	MS	A sample prepared, taken through all sample preparation and analytical steps of the procedure unless otherwise noted in a referenced method, by adding a known mass of target analyte to a specified amount of sample for which an independent test result of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.
<b>Matrix Spike Duplicate</b>	MSD	A replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.
<b>Matrix- Surface water</b>	SW	Water present above the substrate or soil surface (usually referring to natural water bodies such as lakes or streams).
<b>Matrix- Tissue</b>	BIO	Any sample of a biological origin such as fish flesh, shellfish, or plant material. Such samples shall be grouped according to origin.
<b>Matrix- Waste water</b>	WW	Spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. Usually referring to effluent from an industrial or municipal sewage treatment plant.
<b>Maximum Contaminant Level</b>	MCL	The maximum permissible level of a contaminant in water delivered to any user of a public system. MCLs are enforceable standards.
<b>Mean</b>		The value obtained by dividing the sum of several quantities by their number; an average.
<b>Measurement Quality Objectives</b>	MQOs	The desired sensitivity, range, precision, and bias of a measurement.
<b>Measurement System</b>		A test method, as implemented at a particular laboratory, and which includes the equipment used to perform the test and the operator(s).
<b>Median</b>		A value in an ordered set of values below and above which there is an equal number of values.
<b>Membrane Filter</b>	MF	
<b>Method</b>		A body of procedures and techniques for performing an activity (e.g., sampling, chemical analysis, quantification), systematically presented in the order in which they are to be executed.

Item	Acronym	Definition
Method Blank/Prep Blank	MB	A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.
Method Detection Limit	MDL	The minimum measured concentration of a substance (an analyte) that can be reported with 99% confidence that the analyte concentration is distinguishable from method blank results. In some programs, the LOD is equivalent to (or referred to as) the MDL (Minimum Detection Limit).
Method Reporting Limit	MRL	See Reporting Limit.
Micrograms per gram	µg/g, PPM	
Micrograms per kilograms	µg/kg, PPB	
Micrograms per Liter	µg/L, PPB	
Milligrams per kilograms	mg/kg, PPM	
Milligrams per Liter	mg/L, PPM	
Milliliter	mL	
Minimum Detectable Activity	MDA	The minimum sample (radio) activity that can be detected with a given degree of certainty. This activity is dependent on many different variables, which include counter background, counter efficiency, and sample count time.
Minimum Quantitation Limit	MQL	See Reporting Limit.
Most Probable Number	MPN	
Most Probable Value	MPV	The parameter specific inter laboratory median value used by the USGS to determine PT acceptance limits.
Narrative		The portion of the data package that includes laboratory, sample number identification, and descriptive documentation of any problems encountered in processing the samples.
National Animal Health Laboratory Network	NAHLN	
National Environmental Laboratory Accreditation Conference	NELAC	
National Environmental Laboratory Accreditation Program	NELAP	The purpose of the National Environmental Laboratory Accreditation Program is to establish and implement a program for the accreditation of environmental laboratories.
National Institute of Standards and Technology	NIST	An agency of the US Department of Commerce's Technology Administration that is working with EPA, States, NELAC, and other public and commercial entities to establish a system under which private sector companies and interested States can be accredited by NIST to provide NIST-traceable proficiency testing (PT) to those laboratories testing drinking water and wastewater.
National Lakes Association	NLA	
National Pollutant Discharge Elimination System	NPDES	A federal permit program that controls water pollution by regulating point sources that discharge pollutants into waters of the United States.
National Primary Drinking Water Regulations	NPDWR	
National Secondary Drinking Water Regulations	NSDWR	
Negative Control		Measures taken to ensure that a test, its components, or the environment do not cause undesired effects, or produce incorrect test results.
Negative Staining Control		A QC element designed to demonstrate the absence of contamination through the staining process.
Nitric Acid	HNO <sub>3</sub>	

Item	Acronym	Definition
Non-Potable Water	NPW	
Ongoing Demonstration of Capability	DOC	The demonstration of capability that is performed on an ongoing basis to indicate that the method is in control.
Ongoing Precision and Recovery	OPR	A QC process to establish ongoing control of the analytical system and demonstrate acceptable method performance (precision/recovery).
Parts per billion	PPB, µg/kg, µg/L	
Parts per million	PPM, mg/kg, mg/L, µg/g	
Peer Review		A secondary review of data performed by someone other than the analyst of record (a trained analyst, management, QAO) that includes verification that the data is free from transcription and calculation errors, that QC are acceptable, and that appropriate qualifiers or flags were applied to data with impacted data quality. After complete, results can be entered into the LIMS.
Percent (%) Difference	%D	
Percent (%) Moisture		The proportion of volatile liquids in a soil sample determined by drying an aliquot of the sample.
Percent (%) Recovery	%REC	
Percent (%) Relative Standard Deviation	%RSD	
Percent (%) Solids		The proportion of solid in a soil sample determined by drying an aliquot of the sample.
Polychlorinated Biphenyls	PCBs	
Positive Control		Measures taken to ensure that a test and/or its components are working properly and producing correct or expected results from positive test subjects.
Positive Staining Control		A QC element designed to demonstrate ongoing control of the staining process and performance of reagents and microscope.
Potable		Water suitable for drinking.
Practical Quantitation Limit	PQL	PQLs represent the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The PQL is generally 3-5 times the MDL and is usually the data-reporting limit for the listed method. See Limit of Quantitation
Precision		The degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms.
Precision Limits		See Control Limits. The SEL control limits for precision are calculated as the relative percent difference (RPD) or relative percent standard deviation (%RSD).
Pre-Log		The logging of a sample prior to collection.
Presence/Absence	P/A	
Preservation		Any conditions (refrigeration and/or reagents added at the time of sample collection or later) under which a sample must be kept in order to maintain the chemical and/or biological integrity of the sample.
Procedure		Specified way to carry out an activity or a process. Procedures can be documented or not.
Process Improvement Form		The form associated with the Process Improvement Plan in which potential negative events or deviations and the associated investigation and applied corrections are documented.
Process Improvement Plan	PIP	A procedural program utilized by the SELSD to document and track events that may impact data quality.
Proficiency Testing	PT	A means of evaluating a laboratory's performance under controlled conditions relative to a given set of criteria through analysis of unknown samples provided by an external source.

Item	Acronym	Definition
Proficiency Testing Oversight Body	PTOB	An organization that is approved to accredit and monitor the performance of proficiency testing providers.
Proficiency Testing Program		The aggregate of providing rigorously controlled and standardized environmental samples to a laboratory for analysis, reporting of results, statistical evaluation of the results and the collective demographics and results summary of all participating laboratories.
Proficiency Testing Provider	PT Provider	A person or organization accredited by NIST or the TNI-approved Proficiency Testing Provider Accreditor to prepare PT study samples and to conduct PT studies.
Proficiency Testing Provider Accreditor	PTPA	An organization that is approved by TNI to accredit and monitor the performance of proficiency testing providers.
Proficiency Testing Sample	PT Sample	A sample provided to the laboratory by an independent contractor for the purpose of demonstrating that the laboratory can successfully analyze the sample within specified acceptance limits using approved methodologies. The qualitative and quantitative composition of the reference material is unknown to the laboratory at the time of the analysis.
Proficiency Testing Study	PT Study	A single complete sequence of circulation of proficiency testing samples to all participants in a proficiency testing program.
Project		A sampling event including one or more individual samples.
Project Review		A comprehensive review within the LIMS system of all submitted sample information for a project. This level of review checks for completeness of information. Once complete, the sample level is authorized, projects are closed, and project reports are distributed to the customer.
PT Study Closing Date		The calendar date for which analytical results for a PT sample shall be received by the PT provider from the laboratory.
PT Study Opening Date		The calendar date that a PT sample is first made available to any laboratory by a PT provider.
Public Water System	PWS	A system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily a least 60 days out of the year
Quality Assurance	QA	An integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.
Quality Assurance Officer	QAO	
Quality Assurance Plan	QAP	
Quality Assurance Project Plan	QAPP	A formal document describing in comprehensive detail the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. The QA Project Plan components are divided into four classes: (1) Project Management, (2) Measurement/Data Acquisition, (3) Assessment/Oversight, and (4) Data Validation and Usability. Requirements for preparing QA Project Plans can be found in <i>EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5)</i> .
Quality Control	QC	The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality. The system of activities and checks used to ensure that measurement systems are maintained within prescribed limits, providing protection against "out of control" conditions and ensuring the results are of acceptable quality.
Quality Control Sample	QCS	A uncontaminated sample matrix spiked with known amounts of analytes from a source independent of the calibration standards.



Item	Acronym	Definition
Quality Management Plan	QMP	A document that describes a quality management system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, documenting, and assessing all activities conducted. For the SELSD this is comprised of the QAP and DQM together.
Quality Management System	QMS	A structured and documented framework of an organization for its planning, implementing, documenting, and assessing work performed and for carrying out required procedures and activities for ensuring satisfaction in its work processes, products, and services.
Quarterly Testing Sample	QT	A sample provided to the laboratory by an independent contractor for the purpose of demonstrating that the laboratory can successfully analyze the sample within specified acceptance limits using approved methodologies. The qualitative and quantitative composition of the reference material is known to the laboratory [management] at the time of the analysis.
Quick Turn PT	QT PT	See Supplemental Proficiency Testing Study.
Range		The interval between the upper and lower points of the linear line for which an unknown concentration of analyte can be predicted, or extrapolated, with suitable accuracy and precision from the equation associated with the line. For laboratory applications, the range is all of the values between the lowest calibration standard and the highest calibration standard.
Rapid Return PT	RR PT	See Supplemental Proficiency Testing Study.
Raw Data		Any original factual information from a measurement activity or study recorded in a laboratory notebook, worksheets, records, memoranda, notes, or exact copies thereof that are necessary for the reconstruction and evaluation of the report of the activity or study. Raw data may include photography, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments. If exact copies of raw data have been prepared (e.g., tapes which have been transcribed verbatim, data and verified accurate by signature), the exact copy or exact transcript may be submitted.
Reagent Blank	RB	See Laboratory Reagent Blank.
Reagent Water		The purity of this water must be equivalent to ASTM Type II reagent water of Specification D1193-77, "Standard Specification for Reagent Water".
Received Sample		Samples that have been turned in to the laboratory. The data for these samples has not yet been entered.
Reciprocity		The recognition/acceptance of one State's NELAC laboratory accreditation by another State.
Reference Material		A material or substance one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials.
Relative Percent (%) Difference	RPD	Measurement used to compare two values, the relative percent difference is based on the mean of the two values, and is reported as either an absolute or relative value, i.e., expressed as a positive or negative number or zero.
Relative Standard Deviation	RSD	
Repeatability		The degree of agreement between independent test results produced by the same analyst, using the same test method and equipment on random aliquots of the same sample within a short time period.
Replicate Analyses		The measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time interval. (
Reporting Limit	RL	The lowest concentration verified by the laboratory with an acceptable degree of precision and accuracy and typically the lowest calibration standard used for developing a calibration curve. The lowest concentration or amount of the target analyte required to be reported from a data collection project. Reporting limits are greater than detection limits and are usually not associated with a probability level. Also called the Minimum Reporting Limit/MRL



Item	Acronym	Definition
Reproducibility		The ability to duplicate results using the same raw data; instances in which the original data is used to regenerate the results.
Required Detection Limit	RDL	
Required Reporting Limit	RRL	
Requirement		A formal statement of a need and the expected manner in which it is to be met.
Resistance	R	
Resource Conservation and Recovery Act	RCRA	The enabling legislation under 42 USC 321 <i>et seq.</i> (1976), that gives EPA the authority to control hazardous waste from the “cradle-to-grave”, including its generation, transportation, treatment, storage, and disposal.
Root Cause		The initiating cause that leads to an outcome identified as nonconformity.
Safe Drinking Water Act	SDWA	The enabling legislation, 42 USC 300f <i>et seq.</i> (1974), (Public Law 93-523), that requires the EPA to protect the quality of drinking water in the U.S. by setting maximum allowable contaminant levels, monitoring, and enforcing violations.
Safety Data Sheets	SDS	
Sample		A portion of material to be analyzed that is contained in single or multiple containers and identified by a unique sample number.
Sample Number	SEL ID	A unique identification number designated by the SEL for each sample. The sample number documents information on that sample.
Sensitivity		The capability of a method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest.
Significant Figures	SigFigs	
Single Blind	SB	
Sodium Hydroxide	NaOH	
Spike		A known mass of target analyte added to a blank sample or sub-sample; used to determine recovery efficiency or for other quality control purposes.
Spiked Sample		See Matrix Spike.
Spiked Sample Duplicate		See Matrix Spike Duplicate.
Standard Deviation	s, SD	
Standard Methods	SM	
Standard Operating Procedures	SOP	A written document which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks.
Standardized Reference Material	SRM	A certified reference material produced by the U.S. National Institute of Standards and Technology or other equivalent organization and characterized for absolute content, independent of analytical method.
Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	
Superfund		The program operated under the legislative authority of the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) that fund and carryout USEPA removal and remedial activities at hazardous waste sites. These activities include establishing the National Priorities List (NPL), investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial activities.
Supplemental Proficiency Testing Study	Supplemental PT Study	A PT sample that may be from a lot previously released by a PT provider that meets the requirements for supplemental PT samples given in Volume 3 of the TNI Standard but that does not have a pre-determined opening date and closing date. (TNI) These are also known as Quick Turn PT or Rapid Return PT.
Surrogate		A substance with properties that mimic the analyte of interest. It is unlikely to be found in environment samples and is added to them for quality control purposes.

Item	Acronym	Definition
Target Analyte List	TAL	
Technical Review		A documented critical review of work that has been performed within the state of the art. The review is accomplished by one or more qualified reviewers who are independent of those who performed the work but are collectively equivalent in technical expertise to those who performed the original work. The review is an in-depth analysis and evaluation of documents, activities, material, data, or items that require technical verification or validation for applicability, correctness, adequacy, completeness, and assurance that established requirements have been satisfied.
Test Method		An adoption of a scientific technique for performing a specific measurement, as documented in a laboratory SOP or as published by a recognized authority.
Texas Natural Resources Conservation Commission	TNRCC	
The NELAC Institute	TNI	A 501(c)(3) non-profit organization whose mission is to foster the generation of environmental data of known and documented quality through an open, inclusive, and transparent process that is responsive to the needs of the community.
Time of Sample Receipt		The date and time which a sample is received at the SEL.
Tolerance Chart		A chart in which the plotted quality control data is assessed via a tolerance level (e.g. +/- 10% of a mean) based on the precision level judged acceptable to meet overall quality/data use requirements instead of a statistical acceptance criteria (e.g. +/- 3 sigma) (applies to radio bioassay laboratories).
Total Maximum Daily Load	TMDL	A numerical value that represents the highest amount of pollutant a surface water body can receive and still meet water quality standards.
Toxicity Characteristic Leachate Procedure	TCLP	
Traceability (Data)		The ability for the data user to follow the data throughout the lifecycle of that data from collection to reporting. This includes the ability to track access and possession of samples and data as well as changes occurring to them. Traceability is essentially the "paper-trail" (hard copy or electronic) that supports the data.
Traceability (Standards)		The documentation of consumables that require a stated degree of quality or purity, such as chemicals, reagents, standards, glassware, containers, media, etc., that were used during data generation. Includes documents such as NIST-traceability documentation, Certificate of Purity, Certificate of Quality.
Trip Blank	TB	An aliquot of reagent water or other blank matrix that is placed in a sample container in the laboratory and treated as a sample in all respects, including shipment to the sampling site, exposure to sampling site conditions, storage, preservation, and all analytical procedures to determine if method analytes or other interferences are present in the field environment. May also be referred to as Field Reagent Blank.
Turnaround Time	TAT	The time interval between the samples received in the laboratory to the time of reports released with verification.
Uncertainty		Lack or incompleteness of information. Quantitative uncertainty analysis attempts to analyze and describe the degree to which a calculated value may differ from the true value; it sometimes uses probability distributions. Uncertainty depends on the quality, quantity, and relevance of data and on the reliability and relevance of models and assumptions.
Underground Injection Control	UIC	Program under the SEWA that regulates the use of wells to pump fluids into the ground.
Underground Storage Tank Program	UST	In 1985, EPA created the Office of Underground Storage Tanks to carry out a Congressional mandate to develop and implement a regulatory program for underground storage tank (UST) systems.
United States Department of Agriculture	USDA	
United States Geological Survey	USGS	
Units		A unit of measurement expressing the concentration of a constituent in solution as the mass of solute per unit volume.

Item	Acronym	Definition
Un-received Sample		Pre-logged samples that have not yet been returned to the laboratory.
Upper Control Limit	UCL	
Upper Warning Limit	UWL	
Valid (Data)		Data that has been derived from methods that have been properly validated.
Validation (Method)		The process of demonstrating that an analytical method is suitable for its intended use and involves a variety of studies to evaluate method performance under defined conditions.
Variability		Observed difference attributable to heterogeneity or diversity in a population. Sources of variability are the results of natural random processes and stem from environmental differences among the elements of the population. Variability is not usually reducible by further measurement but can be better estimated by increasing sampling.
Variance (Statistical)		A measure or dispersion of a sample or population distribution.
Verification		Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled. In design and development, verification concerns the process of examining a result of a given activity to determine conformance to the stated requirements for that activity (EPA/240/R-02/008), i.e., the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, and/or contractual requirements.
Warning Limits		The inner limits set on a control chart. If the observed value falls between the warning and action limits, then it is taken as a signal that the analysis may require monitoring.
Water Pollution	WP	
Water Quality Criteria		Specific levels of water quality, which, if reached, are expected to render a body of water suitable for its designated use. The criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.
Water Quality Division	WQD	
Water Quality Standards		State-adopted and EPA-approved ambient standards for water bodies. Standards cover the use of the water body and water quality criteria that must be met to protect the designated use or uses.
Wet Weight		The weight of a sample aliquot including moisture (undried).
Workflow		An interactive guide to help one navigate through the LIMS based on the user's account.

## APPENDIX E- REFERENCED PROCEDURES AND DOCUMENTS

The following documents are part of the SELSD Quality Management System and are referenced within the text of this QAP. These documents are available upon request.

Name	Tracking Number	Category
SELSD Data Quality Manual	9010-QSP03	Quality Management System
Demonstration of Capability (DOC)	9000-QSP02	Training
Training Tracker	9000-QSL01	Training
Master Document Tracker	9750-QSL01	Document Control
Quality Management System Documents	9750-QSP02	Document Control
LAP Document Control	9750-WID18	Document Control
LAP Document Control Log	9750-QSL04	Document Control
MSR Tool	9755-QSF01	Management System Review
Process Improvement Plan	9300-QSP01	Process Improvements/ Corrective Actions
Internal Audit Program	9400-QSP01	Internal Audits
Internal Audit Tracking Log	9400-QSL03	Internal Audits
Customer Satisfaction and Support Procedure	9650-QSP01	Customer Support
Laboratory Ethics and Data Integrity Program	9600-QSP01	Ethics
LAP Conducting Laboratory On-Site Assessments	7000-SOP02	Laboratory Accreditation Program