Oregon Department of Environmental Quality

Quality Management Plan

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State of Oregon
DEQ Department of Environmental Quality

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1 Introduction

Oregon's history of environmental regulation dates to 1938 as a product of a 1938 citizen initiative known as the “Water Purification and Prevention of Pollution Bill”. As a result, the State Board of Health created a division called the Oregon State Sanitary Authority. In 1969, the Oregon Legislative Assembly established the Department of Environmental Quality (DEQ) as an independent state agency and dissolved the State Sanitary Authority.

DEQ’s mission is to be a leader in restoring, maintaining and enhancing the quality of Oregon's air, water and land. To achieve our mission, staff developed and adopted a shared vision of the DEQ we want to be. We are implementing the vision, which states that our strength is our people, a highly trained, motivated workforce; that we base our work on good science; listen to and engage Oregonians to solve environmental problems; communicate proactively and effectively; and carry out our regulatory mission by enforcing the law fairly and consistently.

DEQ fulfills this mission by engaging in many activities such as: monitoring and assessing environmental conditions; establishing policies and rules; issuing permits; oversight of clean-up of contamination; enforcing environmental laws; and educating businesses and citizens to encourage pollution prevention. Inherent to these activities is a commitment to produce quality products through quality work.

Communicating and implementing quality within DEQ is the primary function of the agency's quality program. The policies, objectives, principals, authority, responsibility and implementation of the Quality program (QP) are described in this quality management plan.

1.1 Scope of the Quality Management Plan (QMP)

The agency is committed to quality in all its operations, and the QP fully encompasses all DEQ activities and involves the collaboration and involvement of staff and management, at all levels, from across the agency. The QMP describes a quality system for DEQ activities involving environmental information, environmental information operations and environmental technologies as defined in Appendix A and relevant support activities that DEQ performs to support federally funded programs. However, we recommend that staff extend the principals outlined within the QMP to other operations as good business practices.

For the purposes of this document, unless specifically referencing a federal or state agency document, the term “policy” is defined as a high-level overall plan embracing general goals and acceptable procedures.

1.2 Benefits of the DEQ Quality program

DEQ conducts extensive environmental information collection and monitoring activities, supported by a broad range of staff who collect, manage and make informed decisions.

Environmental information is generated internally from within DEQ, as well as externally from citizens, businesses, industries and other interested parties with interests in Oregon's environmental quality. Quality data and information constitute the foundation for informed decision-making. The purpose of the QP is to provide a framework for DEQ to use to ensure quality in environmental information and information. The primary benefits of a well-documented QP include:

- Transparency in decision making
- Scientific data integrity
- Justifiable resource expenditures
- Effective resource management
- Defensible products and decisions
- Continual process improvement
- A healthier, cleaner Oregon
- A secondary benefit of a documented QP is that it meets federal requirements mandated by the U.S. Environmental Protection Agency

1.3 Quality Management Plan Development, Review, and Approval

DEQ has a single quality management plan that describes the overall quality program. The QMP must be reviewed annually for content and suitability and revised if necessary. The QMP may remain valid for up to five years before it expires and must be revised, reapproved, and reissued, in accordance with EPA's Quality Management Plan Standard and the Performance Partnership Agreement between DEQ and EPA. The responsibility for documented reviews and revisions of the QMP belong to the agency quality assurance officer (AQAO). If the AQAO is unavailable, a quality assurance officer in the Laboratory and Environmental Assessment Division (LEAD) may be assigned the responsibility. Portions of the QMP may be developed by individuals with appropriate experience and/or expertise within the agency. Representatives from each DEQ division and program provide a technical review of the QMP following each revision to ensure it addresses their need and concerns. The AQAO submits the finished document to the Leadership Team (LT) for concurrence. Signature by the LT and DEQ director represents endorsement and adoption of the QMP by the agency. The AQAO will then submit the DEQ-approved document to the EPA Region 10 Quality Assurance Office for final approval. The approved QMP is posted to DEQ's 0intranet site and is accessible to all DEQ staff. Copies can be requested directly from the AQAO. The most recently approved document supersedes earlier versions. With EPA's approval of the QMP, DEQ holds authority delegated by EPA to implement its own quality system and to approve QA requirements for agency environmental projects, such as quality assurance project plans.

1.4 Quality Management Plan Structure and Intended Use

This document has three parts. Part one (Sections 2 and 3) provides an overview of the DEQ QP. Section 2 focuses on the QP's structure within the agency, and its scope and application within the larger framework of environmental monitoring and data collection within the State of Oregon. Described within this section are the roles, lines of authority, and responsibilities of staff and management that support the QP. Section 3 describes the “tools” or physical documents and products of the QP. Collectively, these tools define quality within DEQ at the policy, organization, program and project levels. Moreover, the QP tools document quality within DEQ's environmental operations, and serve as the collective history and memory of the agency.

Part two of the QMP (Sections 4 through 7) draws together varied state and agency functions such as personnel qualifications and training (Section 4), procurement of items and services (Section 5), documents and records (Section 6), and computer hardware and software (Section 7). Although the scope of the QMP has limited applicability to these areas, the practices discussed in sections 4 through 7 highlight how these elements support the quality program.

Finally, the third part of the QMP (Sections 8 through 11) covers QP processes and procedures that apply to project specific activities related to environmental work, such as planning (Section 8), implementing work processes (Section 9), assessment and response (Section 10), and quality improvement (Section 11).

2 Management and Organization

The DEQ QP is a framework of procedures, practices and tools used for planning, implementing and assessing the environmental work performed by (or for) DEQ in a systematic and organized manner. At the most fundamental level, guaranteeing quality in work and decisions is the goal and responsibility of everyone within DEQ. The DEQ QP defines specific roles, lines of authority, lines of communication and responsibilities of individuals and groups within the agency. Defining these relationships within DEQ is crucial to ensuring that individual and collective efforts within the agency result in products and outcomes with a high degree of excellence. Furthermore, a defined QP minimizes misunderstandings, provides a system for resolving conflict, and provides credibility to the agency as a whole. This section opens with the DEQ quality management commitment, and then describes the scope and application of that commitment within the agency's larger structure.

2.1 DEQ’s Quality Management Commitment

As part of its mission to work cooperatively with Oregonians for a healthy, sustainable environment, DEQ is committed to creating products and making decisions based on information with known and acceptable quality. Quality management practices are grounded within the context of DEQ's environmental monitoring and assessment needs, or other activities that rely on or produce environmental information for use by or for the agency. DEQ implements quality management practices to document and ensure that all environmental information generated, stored, reported or used by DEQ is of known and adequate quality to fulfill the needs

of the primary data user. Data quality objectives help produce data that is accurate, precise, complete, representative, comparable, and when required, legally defensible. This applies to data generated both within DEQ through the direct efforts of agency personnel, and data that is generated externally from regulated activities, contracts, inter-agency agreements, grants and/or cooperative agreements.

The specific objectives of the DEQ QP are to:

- Ensure that the intended use(s) of the data and level of data quality needed for any specific purpose will be established through a planning process prior to the start of data collection activities
- Ensure that environmental information generated and used by DEQ will be of known and documented quality
- Ensure that DEQ activities meet or exceed any quality management requirements mandated through state or federal regulations, or any other contractual agreements
- Establish a standard set of quality guidelines to be followed by all environmental programs and divisions
- Ensure that quality management practices are implemented in external procurements or service-agreements (e.g. contracts) that result in environmental information reported to the agency
- Define a support system for measuring and rating the quality of agency environmental information
- Provide quality management and direction for data collection, assessment and management activities
- Assess and report to senior management on the adequacy of the DEQ QP
- Document the QP in a QMP

2.2 DEQ Organizational Structure

All functional groups or individuals within the Office of the Director, the regions, or the divisions that produce or use environmental information are part of the QP. (See Figure 1 Organizational structure of the Oregon Department of Environmental Quality)

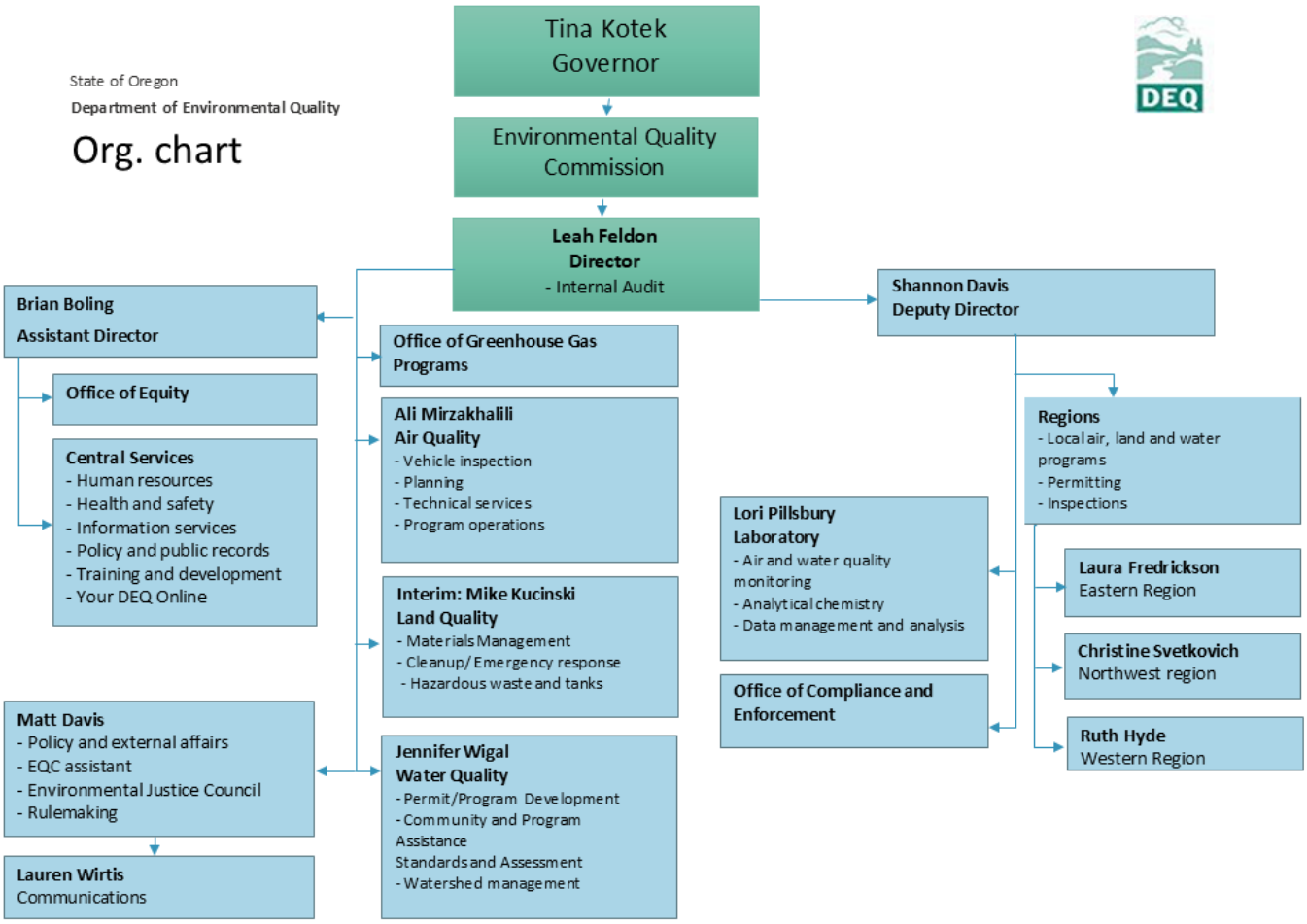

Figure 1: DEQ Organizational chart.

2.2.1 Office of the Director/Deputy Director

The agency director is appointed by and accountable to the Environmental Quality Commission, a five-member panel appointed by the governor for four-year terms, serving as DEQ's policy and rulemaking board. The Office of the Director includes the director, the deputy director, the assistant director, their executive support staff, as well as the Office of Policy and External Relations, Office of Compliance and Enforcement, Central Services, and the Office of Climate Programs. DEQ's Leadership Team includes the agency director & deputy director, division & regional administrators, and managers from Policy and External Relations, Office of Communications and Outreach, & Central Services. The agency quality assurance officer position leads the agency's quality program and has a direct line of communication to the deputy director.

The Office of the Director provides directional oversight of the environmental information collection and usage of each division and region. The Office of the Director/Deputy Director has oversight and authority over the following specific quality management components:

- Oversees DEQ's activities through the LT
- Initiates environmental compliance and enforcement actions
- Member of Internal Audit Advisory Committee
- Approves DEQ's QMP

2.2.2 Regional Divisions

There are three regional divisions in DEQ (Eastern, Northwestern and Western). DEQ's regions provide service for DEQ multi-media programs locally, inform and implement policy, ensure compliance and engage interested parties. Regional responsibilities include:

- Delivering permitting (e.g. domestic wastewater treatment facilities, stationary air sources, injection systems, etc.)
- Conducting inspections (e.g. stationary air sources, domestic and industrial water treatment facilities, municipal and hazardous waste disposal sites, septic system installations)
- Conducting compliance determinations
- Providing technical assistance
- Providing cleanup oversight (investigating spill complaints, and remedial action sites)
- Regional interested party and legislator relationships
- Implementing rules, permits and programs
- Implementing regional process improvements
- Initiating sampling to verify compliance or to enforce laws and regulations.

DEQ's Eastern Region encompasses 18 counties of Central and Eastern Oregon (Baker, Crook, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler) and has regional offices in The Dalles, Pendleton, Bend and Klamath Falls. DEQ's Northwest Region encompasses the six northwest counties of Oregon (Clackamas, Clatsop, Columbia, Multnomah, Tillamook, and Washington) and has an office in Portland. DEQ's Western Region encompasses 12 counties (Benton, Coos, Curry, Douglas, Jackson, Josephine, Lane, Lincoln, Linn, Marion, Polk and Yamhill) and has regional offices in Coos Bay, Eugene, Medford and Salem. Western Region staff issue permits regulating water discharges, air emissions and hazardous and solid waste disposal. They also conduct a range of activities to clean up and protect Oregon's environment and support community involvement in environmental protection.

2.2.3 Central Services Division

The Central Services Division provides shared support functions agency wide. These support functions include human resources, budget and finance, business systems, information

technology, health and safety, and policy and organizational development. As with the Office of the Director, the Central Services division does not play a direct role in the environmental information collection and usage but is instrumental in directly supporting the activities of the other divisions and regions. Responsibilities of the Central Services Division include:

Expertise in HR, training, health and safety, IT, business systems, financial services

- Standardizing best practices and processes in CS areas of expertise
- Delivery of CS services
- Budget process
- Meeting targets for quality and timeliness of service to CS customers
- Developing agency-wide policies
- Organizational development
- Project management
- Internal communications
- Coordinates and ensures compliance with Department of Administrative Services (DAS)

2.2.4 Air Quality Division (AQD)

The DEQ Air Quality Division's mission is to preserve and enhance Oregon's air quality to support healthy, clean air for all Oregonians. AQD protects Oregon's air through program planning development and guidance, industrial source control, major new source review, coordination of permit and plan review programs, data analysis and reporting, and regulation. Responsibilities include:

- Enforce state environmental regulations and the federal Clean Air Act
- Develop and implement air pollution reduction strategies
- Provide education and technical assistance to interested groups
- Interpret scientific data
- Vehicle Inspection Program
- Air Program Operations
- Establish science-based standards
- Manage EPA Performance Partnership Agreement
- Develop environmental policies
- Create sustainability strategies (materials management, toxics reduction, green chemistry, climate change)
- Air Technical Services
- Air Planning

Some of the specific activities conducted by AQD that are within the scope of the QP include:

- Managing the state's ambient, asbestos, toxics, stationary, area and mobile source programs
- Managing federal grants and contract fund processes

- Permitting to stationary point sources
- Coordinating source self-monitoring activities
- Estimating air pollution emissions and evaluating their impacts
- Modeling air quality dispersion
- Developing and managing electronic data storage systems

The Air Quality Division coordinates with five Air Quality sections in the regional offices, and the Air Quality Monitoring Section at the Laboratory and Environmental Assessment Division.

2.2.5 Water Quality Division (WQD)

The Water Quality Division's mission is to protect and improve Oregon's water quality. Protecting Oregon's rivers, lakes, streams and groundwater keeps these waters safe for a multitude of beneficial uses such as drinking water, fish habitat, recreation and irrigation. This is accomplished by developing and implementing water quality standards and clean water plans, regulating sewage treatment systems and industrial dischargers, collecting and evaluating water quality data, providing grants and technical assistance to reduce non-point pollution sources, and providing loans to communities to build treatment facilities. Responsibilities include:

- Establish water quality standards for Oregon's surface water and groundwater resources
- Issue permits and inspecting wastewater systems to control waste discharges to the state's surface water and groundwater
- Provide technical assistance to cities, industries and watershed councils
- Provide scientific data to users
- Assist local governments and landowners to obtain financing for water quality improvement projects
- Oversee Surface Water Management

Some of the specific activities conducted by WQD that are within the scope of the QP include:

- Setting water quality standards to protect "beneficial uses" such as recreation, fish habitat, drinking water supplies, and aesthetics
- Regulating municipal wastewater sewage treatment plants and industrial dischargers through permits
- Addressing non-point sources of pollution where wastes or contaminants can be conveyed to surface or ground water under Section 319 of the Clean Water Act
- Determining Total Maximum Daily Loads (TMDLs) on water quality limited streams

The Water Quality Division coordinates with Water Quality sections in three regions, and the Water Quality Monitoring Section at DEQ's Laboratory and Environmental Assessment Division.

2.2.6 Land Quality Division (LQD)

The Department of Environmental Quality Land Quality Division is responsible for the agency's efforts in waste reduction and management, spill preparedness and response, environmental

assessment and cleanup, and underground storage tank compliance and cleanup. Responsibilities include:

- Implement programs for solid- and hazardous waste management and underground storage tanks
- Issue permits to hazardous waste facilities, underground storage tanks locations, and solid waste landfills
- Assist businesses ~~to help~~ with pollution prevention and compliance strategies
- Regulate and provide technical assistance for businesses that produce hazardous waste, and help these businesses plan for and reduce the amount of waste generated
- Implement Oregon's Opportunity to Recycle Act and other state laws pertaining to recycling and waste reduction
- Oversee responses to spills of oil and hazardous substances
- Assess sites impacted by hazardous substances
- Oversee site cleanups by responsible parties, and manage the Voluntary Cleanup and Site Response programs
- Clean up sites where the responsible party is unknown, unable or unwilling to pay (orphan sites)

Some of the specific activities conducted by the Land Quality Division that are within the scope of the QP include:

- Conducting preliminary assessments, remedial investigations and feasibility studies, investigations, clean-up activities and remedial actions at sites impacted by hazardous substances
- Administering activities associated with the disposition of state Superfund monies
- Collecting environmental samples
- Managing contracts to collect samples
- Analyzing and interpreting data
- Managing state contract funds and cost recovery programs
- Overseeing external environmental monitoring and measurement activities
- Managing the tanks and hazardous waste programs, including hazardous waste disposal, hazardous waste generator tracking, underground storage tanks, toxics use reduction, landfills, resource recovery and waste reduction
- Overseeing self-monitoring and measurement activities

2.2.7 Laboratory and Environmental Assessment Division (LEAD)

LEAD is composed of the Organic Laboratory, Inorganic Laboratory, Water Quality Monitoring Section, Air Quality Monitoring Section, Resource Assessment & Technical Services, Operations, and Administration. Quality assurance activities fall under the Administration team. Major duties of the LEAD division include:

- Conduct air and water monitoring programs to assess environmental status and trends

- Collect air samples for analysis and monitoring air pollutant concentrations
- Collect water samples from rivers, lakes and streams, as well as groundwater and solid and hazardous waste sites
- Monitor living organisms in water bodies around the state as measurements of overall stream health
- Identify and quantify inorganic and organic analytes in air, water, waste, soil, sediment, and animal tissue
- Coordinate with the Oregon Environmental Laboratory Accreditation Program (ORELAP)

Some of the specific activities conducted by LEAD that are within the scope of the QP include:

- Providing Quality Assurance functions for the laboratory, DEQ programs and DEQ as an agency,
- Providing technical and analytical support for the collection and analysis of environmental samples
- Processing, analyzing, reporting, and recommending suitable uses for environmental information across all programs
- Providing state-wide support to DEQ divisional and regional offices, external monitoring groups and analytical laboratories

2.3 Quality program Structure and Responsibilities

Since quality is everyone’s responsibility, the resources of the entire agency build and support the DEQ QP. The AQAO holds overall responsibility for the development, implementation, and maintenance of the QP. This includes managing the day-to-day operations of the QP.

Anyone can communicate QP concerns of the program to the Leadership Team (LT) through the AQAO.

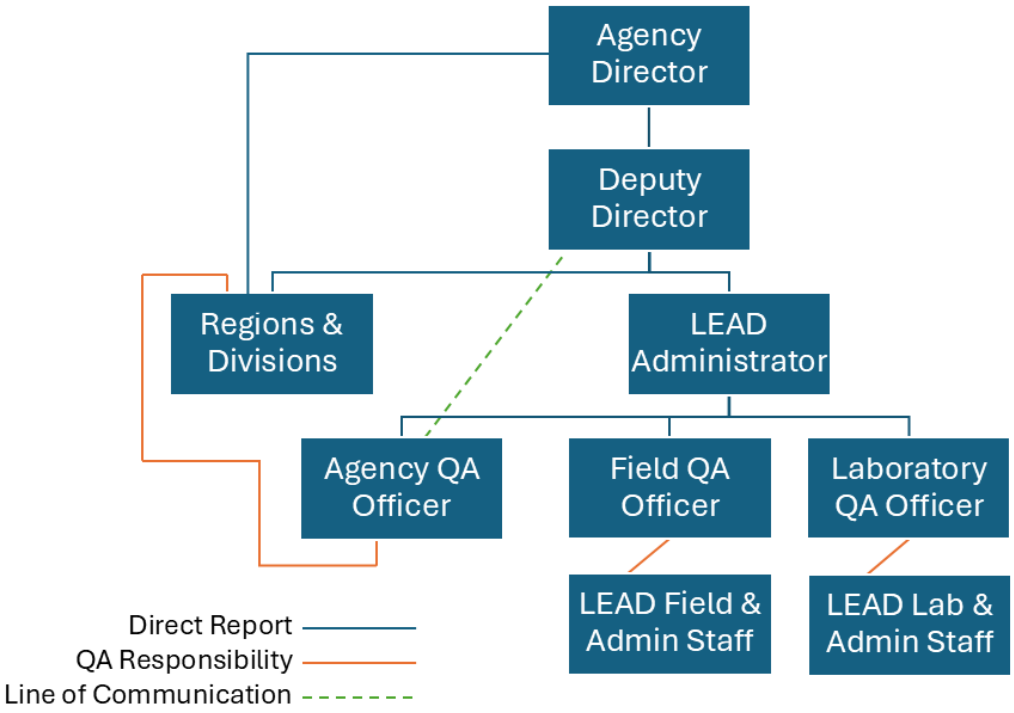

Figure 2: Organizational structure of the DEQ QP.

At the core of the DEQ quality program are the quality assurance officers, who coordinate with their respective programs. The AQAO can report to the Leadership Team through the deputy director.

2.3.1 Senior Management

Responsibility for following the strategic direction and accomplishing the mission of DEQ as well as the successful implementation of the QP, resides with senior management. The LT identifies and budgets resources necessary to implement the QP. Consequently, senior management recognizes and endorses the QP and the roles of the QAOs. Moreover, the director and deputy director, with the LT, issue/endorse policies and procedures in support of the QP and oversee its implementation agency-wide. Meetings between Senior Management representatives and the AQAO facilitate communication between the QP staff and LT.

2.3.2 Agency Quality Assurance Officer

The AQAO oversees the day-to-day operations of the QP for the entire Agency. This position is completely independent of operations and has a direct line of communication to the deputy director. By developing a comprehensive QP strategy and ensuring uniform application to

environmental information collection and analysis activities in the agency. Furthermore, the AQAO is responsible for providing QP information to senior management and soliciting endorsement of QP policies and practices from the Leadership Team. Management responsibilities of the AQAO include:

- Acting as primary contact for QP issues within the agency, with authority to conduct independent oversight of the QP
- Documenting and updating the QP in the QMP
- Soliciting the endorsement of QP procedures and practices from senior management
- Facilitating development of and approving quality assurance project plans and sampling and analysis plans
- Reviewing the implementation of QAPPs and providing guidance on evaluating the adequacy of the data generated, based upon identified data needs
- Identifying, negotiating, and responding to specific QP deficiencies identified through system and technical audits
- Arbitrating QP problems and disputes
- Responding to requests for guidance and technical assistance
- Informing senior management, regional managers, and QA coordinators of new legislation and/or regulations which impact QP activities
- Conducting and participating in system and performance audits of environmental monitoring programs
- Conducting and participating in internal audits of other agency activities as determined by the internal audit advisory committee.
- Acting as a liaison between DEQ and other state and federal agencies on QP matters
- Coordinating with writers and recipients of grant monies to ensure that appropriate QP requirements are implemented
- Coordinating the training of staff on QP principals
- Communicating the status of the QP to senior management through the participation in the quarterly measure reviews and quarterly meetings with the deputy director.

2.3.3 Quality Assurance Officer Designee

To provide support across the agency during the development or review of QAPPs and SAPs, there may arise a need to appoint QA officer designees in a region, division, or program to assist in the QA review and approval of these plans. The AQAO provides training to the designees on reviewing QAPPs and SAPs from a QA perspective prior to appointing them as designated QA signatories. The designee uses a checklist as an aid in these QA plan reviews. If needed, the AQAO may also request assistance from the designees in internal agency project assessments within the scope of their expertise.

2.3.4 Project Managers

Project managers assume responsibility for individual environmental studies or activities. They are active in the development of QAPPs and coordinate activities throughout the life of a project.

The project manager is not a QA officer and does not approve or sign documents as a QA officer. Similarly, the QA officer is not a project manager and cannot approve or sign documents for operations. Specific responsibilities include:

- Assembling project teams and preparing QAPPs
- Defining project data quality objectives
- Assisting contractors, grant recipients, and the regulated community with the preparation of QAPPs
- Reviewing and approving QAPPs prepared and submitted by external grant recipients and contractors
- Implementing project activities as described in the QAPPs
- Reporting data quality issues back to the project team
- Initiating technical system assessments and/or less formal onsite observations as required or needed
- Assessing and reporting on data quality, based upon the project's DQOs

2.3.5 Project and Support Staff

Analytical, technical, and support staff across DEQ play crucial roles in the QP. For the purposes of the QMP, project and support staff include those that have the responsibility for calculating/generating, assembling, and ensuring the quality of environmental information on a day-to-day basis. Specific staff responsibilities include:

- Verifying analytical data used by the agency
- Providing support and data interpretation to end users
- Data modeling
- Following the policies and procedures of the QP as described in the QMP
- Developing and revising Standard Operating Procedures (however named)
- Following project plans as specified in QAPPs
- Completing tasks in a timely manner
- Conducting all duties with professional integrity

2.3.6 LEAD QA Roles and Responsibilities

LEAD is responsible for planning, collecting, analyzing, reporting, verifying, validating, storing, and providing access to large quantities of environmental information. The policies and practices of LEAD directly affect the overall DEQ QP.

2.3.6.1 Field Quality Assurance Officer

The DEQ field quality assurance officer (FQAO) reports directly to the LEAD administrator and has the responsibility and authority to:

- Facilitate the development and approval of air and water quality program DEQ documents including, but not limited to, standard operating procedures (SOPs), quality

assurance project plans (QAPPs), and sampling and analysis plans (SAPs) related to field work
- Assure that AQ/WQ quality assurance project plans are established and effectively implemented for each project as applicable
- Audit monitoring and sampling equipment in the field
- Identify quality problems and initiate action which results in solutions
- Submit quality assurance data to DEQ and EPA databases
- Stop work when that work is not meeting DEQ's quality requirements

2.3.6.2 Laboratory Quality Assurance Officer

The DEQ Laboratory Quality Assurance Officer (LQAO) reports directly to the LEAD administrator and has the responsibility and authority to:

- Facilitate the development and approval of DEQ documents including, but not limited to, standard operating procedures (SOPs), related to laboratory and administrative work
- Ensure that TNI standards are implemented at the DEQ laboratory
- Audit laboratory activities and ensure corrective action procedures are followed when data quality criteria are not met
- Serve as the ORELAP Quality Assurance Officer
- Monitoring proficiency testing performance of the laboratory
- Review and update of LEAD Quality Manual
- Identify quality problems and initiate action which results in solutions
- Stop work when that work is not meeting DEQ's quality requirements

2.3.6.3 Laboratory Quality Assurance Team

The Laboratory Quality Assurance Team is headed up by the field & laboratory QAOs and includes the section QA chemists and the section managers. QAOs hold monthly meetings with each section to review the status of SOPs, corrective actions, proficiency testing results, audit findings and any other pertinent QA topics that apply to their work. QAOs are responsible for developing, reviewing, revising, adapting, and assessing LEAD's internal quality systems - which may include almost all facets of data quality from project planning to data archiving. Specific responsibilities of the Laboratory Quality Assurance Team include:

- Preparing and revising LEAD Quality Manual
- Directing the preparation and maintenance of the Laboratory's administrative and technical standard operating procedures
- Performing internal quality program assessments and technical system assessments
- Review outcome-based management quality system performance indicators and identify areas for improvement
- Review open corrective actions and data corrections to keep them active until final resolution

- Establishing policies and procedures within the Laboratory that are consistent with and support the QP and agency's mission

2.3.7 ORELAP Program

The ORELAP accredits laboratories to the current version of The NELAC Institute (TNI) Standard. ORELAP is administered by the Oregon Health Authority (OHA) and directed by DEQ, OHA, and the Oregon Department of Agriculture. ORELAP is important to the DEQ QP and the DEQ mission because laboratory accreditation provides confidence in environmental information used to support agency decisions. LEAD coordinates closely with ORELAP on environmental analysis issues, and other agency programs may consult with ORELAP. The DEQ laboratory QAO serves as the ORELAP program's QAO. The DEQ laboratory may also provide cross-training for ORELAP assessors and may provide laboratory staff to assist with assessments.

2.3.8 Non-DEQ Organizations

DEQ cannot define the roles and responsibilities of non-DEQ organizations beyond those specified in Federal or State Regulations, or in individual contractual agreements. Prior to entering into a contract with an organization that provides sampling or analytical activities for the agency, DEQ has a rigorous request for proposal process to ensure the competency of sampling and analytical organizations. Only laboratories accredited by a nationally recognized accreditation program are eligible to contract directly with the agency (unless no accreditation is available). DEQ project managers have the responsibility for ensuring that external agreements specify all relevant QP requirements. Moreover, the project manager should ensure outside customers and contractors submit all relevant quality documentation (e.g., QAPPs, SOPs, QA/QC data, etc.) in a timely manner to DEQ for review. As appropriate, the project manager may schedule technical and system audits of non-DEQ organizations to verify adherence contractual requirements and conformance to the QP-standards. These activities must be kept consistent with EPA's Policy to Assure the Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Assistance Agreements (FEM-2012-02, or current version).

3 Quality System Components

The DEQ quality program is a structured and documented system that provides a basic framework for ensuring that data the agency uses to support the agency's environmental programs and decisions is of the appropriate type and quality. The basic framework of the QP encompasses management, administrative, and technical activities pertinent to the planning, implementing, assessing, and improving of quality management activities within the agency. Communicating the goals of the QP and providing educational resources are as much a part of the QP as documenting activities, planning projects, and making system improvements. The focus of this Section is to describe specific "tools" and requirements that build the DEQ QP.

Sections 8 through 11 describe the processes and procedures for how to use many of these tools.

3.1 Conceptual Model of the DEQ Quality program

The DEQ QP is composed of three tiers of components. Policies and Standards form the first tier, and include federal regulations, EPA policies, and the DEQ strategic plan. Organization level components are the second tier and include the QMP, training, and reviews. Project level components round out the third tier and include QAPPs and other project level documents and assessments. The remainder of this section describes the individual "tools" (summarized in Table 1) associated with three tiers of components.

Table 1: Summary of the primary tools that support the DEQ Quality System

	Tool	Purpose	Responsible Party	Reviewer/ Approval
Policies and Standards	DEQ Strategic Directions	Describes the purposes and goals of DEQ	DEQ Director	LT
	Federal policies: • 2 CFR 1500.12 • 48 CFR Part 46 • 40 CFR Part 35 • EPA Environmental Information Quality Policy (CIO 2105.4, or current version) • EPA Policy to Assure the Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Assistance Agreements Policy (FEM-2012-02 or current version)	Describes the need for and mandates a QP for recipients of federal funds. Establishes QA requirements for recipients of federal contracts. The FEM policy outlines the assurance of competency of organizations generating environmental measurement data under agency-funded assistance agreements.	Federal	Federal
Organization/Prog	Quality Management Plan (QMP)	Documents DEQ's Quality Systems	AQAO	LT, AQAO and EPA
	Quality program assessments (QPAs)	Evaluates the effectiveness of the DEQ QP	AQAO and EPA	EPA
	Annual QP Review	Yearly summary with senior management on the status of DEQ's QP	AQAO	LT

	Tool	Purpose	Responsible Party	Reviewer/ Approval
	Staff Training	Keeps DEQ personnel up to date with QS policies, procedures, and requirements	AQAO	AQAO
	Various Support Resources	Additional resources designed to support the agency's QS	Various	Various
Project	Quality Assurance Project Plan (QAPP)	Describes all the technical and quality aspects of specific projects	Project Manager	Project Manager and AQAO or designee. Project manager and AQAO must be separate roles.
	Sampling and Analysis Plan (SAP)	Describes the sampling and analytical details within the context of a parent QAPP	Project Manager or designated Field Manager	Project Manager or AQAO or designee
	Data Quality Objectives (DQOs)	Part of the QAPP that specifically describes the data quality specifications for a project	Project Manager	Project Manager and AQAO or designee
	Standard Operating Procedures (SOPs)	Provides detailed instructions of routine activities	Individual directly responsible for the activity	Technical Reviewer and/or Section Manager and QAO (for LEAD SOPs)
	Technical Assessments	Evaluates and documents the implementation and effectiveness of the QAPP	Project Manager, QAO	QAO or designee
	Data Processing, Verification, and Validation	Process of determining if the data meets the QAPP collection specifications	Project Staff	Project Manager
	Data Quality Assessment (DQA)	Determines the quality of data sets for decision-making or meeting the intended data use	Project Staff	Project Manager
Other QS	LEAD Laboratory Quality Manual (LQM)	Describes the DEQ Laboratory's quality system policies and procedures	LQAO	LQAO and LMT
	Field Sampling Reference Guide (FSRG)	Provides guidance for planning field activities	FQAO	FQAO

	Tool	Purpose	Responsible Party	Reviewer/ Approval
	DEQ Guidance: Data Validation and Qualification	Provides guidance on data qualification and data usability	AQAO	AQAO
	Watershed Assessment Mode of Operations Manual	Describes the processes and procedures used during water quality field activities	Lab WQM Manager	FQAO and Lab WQM Manager
	Quality Assurance Guidelines-NPDES and WPCF Self-Monitoring Laboratories	Provides guidance to NPDES and WPCF permit holders collecting and submitting monitoring data to the agency	AQAO	AQAO and NPDES Program Manager
	Program-Specific Quality Assurance Policies	Documents any QA policies specific to Programs within the agency that are not otherwise discussed.	Program Managers	QAO and DA Possibly EPA

3.2 Policy Components

Policy, federal regulations and conformance standards are the blueprints of the DEQ QP. The DEQ QP is a critical tool for achieving excellence throughout the agency. Additionally, DEQ's QP also satisfies EPA's requirement (to DEQ as a recipient of federal funds) to implement a documented and comprehensive quality program:

- 2 CFR 1500.12 – Quality assurance applies to all assistance agreements that involve environmentally related data operations, including environmental information collection, production or use.
- 48 CFR Part 46 – Quality Assurance requires the compliance with higher-level quality standards in solicitations and contracts for complex or critical items.
- 40 CFR Part 35 – State and Local Assistance outlines quality system requirements in a number of places. Some of the more significant references include 35.260: “The Regional Administrator will not award section 106 funds to any State which does not monitor and compile, analyze, and report water quality data as described in section 106(e)(1) of the Clean Water Act.” Quality system requirements also extend to state-lead co-operative agreements under CERCLA as specified in paragraph 6055.
- EPA’s Environmental Information Quality Policy (Order CIO 2105.4, or current version) establishes requirements for a mandatory agency-wide quality system that applies to EPA, as well as all organizations (i.e., DEQ) performing work for EPA (e.g. State governments receiving financial assistance under the authority of 40 CFR 31 and 35).
- EPA Policy to Assure the Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Assistance Agreements Policy (FEM-2012-02, or current version): “This document establishes the U.S. Environmental Protection Agency’s (U.S. EPA’s or the Agency’s) policy requiring organizations generating or using environmental information under certain Agency-funded assistance agreements to

submit documentation of their competency prior to award of the agreement or if that is not practicable prior to beginning any work involving the generation or use of environmental information under the agreement. This includes organizations performing environmental sampling, field measurements, and/or laboratory analyses under Agency-funded agreements." (from the EPA FEM Policy, EPA Directive number FEM-2012-02).

- Additional federal regulations and mechanisms, such as consent agreements in enforcement actions, may also require a documented quality system.

EPA has also mandated the form and structure of the QP to meet minimum requirements as described in EPA's Environmental Information Quality Policy, which is consistent with a set of national conformance standards. DEQ has adapted these requirements to meet the specific conditions and agency goals, and these requirements are the blueprint used to build DEQ's QP.

3.3 Organization/Program

The organizational and programmatic elements of the QP are at foundation of DEQ's day-to-day environmental activities. Although the QP, as documented in the QMP, largely addresses activities associated with the collection and use of environmental information and information, these tools may be adapted to other agency goals, priorities, and activities. The key programmatic components of the DEQ QP include:

3.3.1 Quality Management Plan

The QMP is a written document describing the QP. It outlines the authorities, policies, and tools that are specific to ensuring excellence in DEQ's operations and, ultimately, products and decisions.

3.3.2 Quality program assessments (QPAs)

QPAs are management tools used to assess, refine, and improve DEQ's QP across the agency and within an agency program. DEQ may internally initiate QPAs (see Section 10.2), or EPA may initiate a QPA. DEQ participates in QPAs initiated by the EPA Region 10 QA Management Office (or as requested by EPA program management) and in National Performance Audit Programs when they are made available. Such evaluations provide objective assessments of the resources, commitments to, and implementation of the DEQ QP. These audits are scheduled through the AQAO and conducted according to protocols published in standard reference documents (e.g., EPA Guidance on Assessing Quality Systems, EPA QA/G-3. March 2003, or current version).

3.3.3 DEQ QP Review

The Leadership Team evaluates the overall health of DEQ activities on an on-going basis during regular meetings. The agency also reports on key performance measures (KPMs) to the legislature to evaluate the effectiveness of the agency's programs. The agency's chief internal

auditor, as well as auditors from the Oregon Secretary of State's office, perform audits of DEQ programs to advise on needed improvements and identify gaps in training or resources. All these processes may touch on the agency QP and be used to improve quality assurance at the DEQ.

3.3.4 QP Training

DEQ personnel receive QP training as needed, to ensure that the staff has the necessary skills, knowledge, and proficiency to meet the quality requirements of their jobs.

3.3.5 Miscellaneous Support Elements

Additional organizational support elements to the QP may include various technical and non-technical resources. The support elements strengthen and support the agency's QP as a whole and include such things as record management systems, computer/software systems, data query tools, etc. Some of these miscellaneous support elements are discussed in Sections 4 through 7.

3.4 Project Components and the Project Life Cycle

The real structure and shape of the DEQ QP arises from project level activities. Projects generate the environmental information that we use to create products and make decisions. Because environmental project work plays such a prominent role in DEQ's operations, project-level tools are available to ensure excellence in the data and information derived from individual project activities.

The goal of the QP at the project level is to:

- Provide the appropriate quality management tools to the project manager and project staff
- Ensure that operations result in data of the appropriate type, quantity, and quality to satisfy the project needs
- Satisfy DEQ's environmental purpose to preserve, protect, and enhance the environment to the benefit of all Oregonians.

A generic three-step life cycle characterizes projects as following: (1) planning; (2) implementation and oversight; and (3) assessment and improvement. The life of the project begins with the identification of a specific need. Subject to resource availability, the program identifies a project manager to initiate a systematic planning process to define project needs and how to meet them. Project staff documents the results of this process in a plan that describes the project, the data collection activities, and assessment activities in detail. The project plan is finalized, approved, and acts as the roadmap for all activities that occur during the implementation phase of the project. Program or LEAD staff verify the data and validate information gathered during the project against the project's objectives for quality. The project manager may adjust the project and require more data acquisition efforts to fulfill the project's

objectives. At the end of the appropriate data collection activities, program or LEAD staff assess the quality of the data using pre-defined methods and assign a data quality level. If the data is of sufficient quality, we use the data to test the project's original hypothesis and determine if the initial project need has been satisfied.

3.4.1 Data Quality Objectives

Project planning occurs systematically through the Data Quality Objectives (DQO) Process. EPA has developed a formalized DQO process, and this process is DEQ's preferred process for planning environmental projects. The use of a systematic approach to designing data collection activities results in a series of qualitative and quantitative statements (or performance criteria) that define the project objectives, define types of data, and specify tolerance limits for decision errors. The project manager documents the results of the DQO process, and this forms the heart of the Quality Assurance Project Plan. EPA's Guidance on Systematic Planning Using the Data Quality Objectives Process, (QA/G-4 February 2006, or current version) details the DQO process.

3.4.2 Quality Assurance Project Plans

The Quality Assurance Project Plan (QAPP) is the single-most important QP tool at the project level and is consequently required for all environmental information collection and generation activities at DEQ. The QAPP summarizes the DQOs of the project and integrates all technical and quality aspects, including planning, implementation, and assessment, into a single document. The primary purpose of a QAPP is to systematically document project activities and provide a roadmap to the type and quality of environmental information needed for a specific decision or use. The QAPP documents all activities that will take place during the project. This documentation includes field and laboratory activities, data verification & validation, data storage & retrieval, data assessment, and project evaluation & process improvement. QAPPs must be written for all DEQ projects involving environmental information regardless of whether data is generated directly by DEQ or submitted to the agency through the efforts of contractors, third parties, or partners.

DEQ's requirements for QAPPs are equivalent to those required by EPA's Quality Assurance Project Plan Standard (CIO 2105-S-02.1, or current version). A number of specific elements must be present in the QAPP. Each of these elements addresses one of four major aspects of the project: (1) project management; (2) implementation; (3) assessment and oversight; and (4) review and usability. The specific QAPP elements are:

Project Management and Information/Data Quality Objectives:

- Title page
- Approval page
- Table of contents, document format, and document control
- Project purpose, problem definition, and background
- Project task description

- Information/data quality objectives and performance/acceptance criteria
- Distribution list
- Project organization
- Project quality assurance manager independence
- Project organization chart and communications
- Personnel training/certification
- Documents and records

Implementing Environmental Information Operations:

- Identification of project environmental information operations
- Methods for environmental information acquisition
- Integrity of environmental information
- Quality control
- Instruments/equipment calibration, testing, inspection, and maintenance
- Inspection/acceptance of supplies and services
- Environmental information management

Assessment, Response Action and Oversight:

- Assessments and response actions
- Oversight and reports to management

Environmental Information Review and Usability Determination:

- Environmental information review
- Useability determination

All DEQ QAPPs are reviewed and approved by a QAO or his/her designee. Individual project managers are responsible for ensuring that QAPPs are developed prior to the start of any data collection activities and that project operations are implemented as documented. The project manager is also responsible for maintaining copies of the approved QAPPs. However, printed and electronic (preferably in PDF format) copies of all approved QAPPs should be submitted to the QAO, who will maintain a QP-library (Section 5). See Section 8 for a discussion of the details of the QAPP approval process.

3.4.3 Sampling and Analysis Plans

For many projects, the project or program managers create generic QAPPs to cover routine monitoring activities (e.g., routine ambient water monitoring, routine landfill monitoring, etc.) or

fundamental program objectives (UST, Brownfields, etc.). For these projects, the activity lead or contracting organization may write Sampling and Analysis Plans (SAPs) to document site-specific monitoring activities and requirements. SAPs must reference the parent QAPP and may not make substantial changes to the DQOs established in the parent document. Data generated from projects led by external or secondary sources must have an accompanying approved QAPP and where applicable, approved SAPs.

With few exceptions, SAPs are acceptable only to document changes in sampling location and monitoring data. If additions or deletions to the monitoring require an alteration to the DQOs, the activity lead or contracting organization must write a new QAPP. Individuals that have been identified in the QAPP can approve the SAPs. The individual(s) responsible for SAP approval must ensure that all QAPP requirements have been satisfied in the SAP. Electronic copies of approved SAPs are sent to the QAO for filing in the QP library.

There may be small, isolated projects (e.g. legal investigations, complaints, etc.) and the standard laboratory QA/QC activities apply where project lead may use a SAP to document the sampling and analysis efforts.

Hazardous waste inspectors use a *RCRA Site Specific Inspection Plans* for sampling events that occur during their inspections. These are an abbreviated SAP that fall under the umbrella program QAPP and define the specific parameters to be tested.

3.4.4 Standard Operating Procedures

Most projects utilize standard procedures that do not change from study to study. The various programs document these routine tasks in SOPs. Some of the DEQ programs utilize IMDs or guidance documents as their documentation of procedures. SOPs provide a complete and detailed description of each data generating or processing operation in such a manner as to allow a qualified and trained person to trace the operation in a reproducible, stepwise manner, through the entire sampling, analysis, data-handling, or other operation, unsupervised. SOPs must be consistent with current EPA and/or state regulations, and in instances where suitable federal or state guidance is lacking, with accepted professional practices and standards.

SOPs should be prepared for all routine administrative (e.g., data entry, procurement) and technical (e.g., sampling, analysis, assessment) operations. Advantages of SOPs include:

- Providing a tool for training staff
- Simplifying repeated references of a single procedure for many projects
- Providing a record of the performance of all tasks and their results
- Explaining the cause for missing data
- Demonstrating the validation of data at each step of recording, calculation, or transcription

Staff must write up technical SOPs even in instances when they are using published reference methods (unless they follow a method completely). Because of differences in operating

conditions, equipment, and requirements, it is the responsibility of each region or program to prepare and maintain their own technical and administrative SOPs. The QAO must approve technical SOPs. All staff can obtain templates and guidelines for writing SOPs directly from the QAO or by downloading from Q-Net. Section 9 discusses the processes and procedures for writing, updating, and approving SOPs.

3.4.5 Technical System Assessments

TSAs are systematic and objective examinations of projects to determine:

- Whether environmental information collection activities and related results comply with the project's QAPP
- Whether the procedures defined by the QAPP are implemented effectively
- Whether project activities are sufficient and adequate to meet the data quality goals defined in QAPP's

Program staff or QAOs will conduct TSAs of specific agency projects on an as-needed basis, when required by project specifications, and/or as a corrective action to identified problems. We use the findings from technical assessments to identify practical solutions to complicating issues and improve future operations rather than to affix blame for poor data or project outcomes.

Internal Assessments - The project manager generally plans and implements TSAs of internal DEQ operations with assistance from the QAO or QA designees as needed. We typically conduct self- assessments unless the QAPP or other regulatory requirements specifically dictate the use of external auditors. TSA auditors will be technically competent and qualified to perform their duties by virtue of education, training, and/or experience. The authority and independence of the auditors shall be defined prior to start of any auditing activities.

External Assessments - DEQ may, at its discretion, as specified in the QAPP, or as required by statute or other contract, conduct assessments of external organizations providing data to DEQ. The project manager or their designee will schedule project-specific TSAs and DEQ personnel perform them. Qualified staff from DEQ’s LEAD performs TSAs of laboratories usually through ORELAP. The ORELAP includes assessors from the DHS public health laboratory and DEQ. DEQ may contract with third party assessors to assist with TSAs on an as-needed basis. Any accrediting authority approved by the National Environmental Laboratory Accreditation Program (NELAP) may also perform technical assessments and grant primary accreditation to environmental laboratories. However, in most cases, ORELAP grants accredited laboratories secondary accreditation with the ORELAP.

3.4.6 Data Processing, Verification, and Validation

Data processing, verification, and validation are project-level quality management tools used to determine if data has been collected or generated as specified in the QAPP/SAP with respect to compliance, correctness, consistency, and completeness. In addition, DEQ uses these tools to assess the technical usability of the data with respect to the planned objectives or intention of

the project. Although these tools are really processes, project-specific measurement criteria for data processing, verification, and validation should be determined during project planning and documented in the QAPP.

Data processing includes data entry, validation, transfer, and storage. The QAPP should describe specific procedures used to maintain the integrity of the data records as well as any project specific data storage/transmittal requirements. This process includes data formats and standards for the transfer of data to external data users and systems. Specific data processing activities may include:

- Collection: For both manual data and computerized data acquisition systems, internal quality control (QC) checks shall be developed and implemented to avoid errors in the data collection process.
- Transfers: Data transfer steps shall be minimized and procedures established to ensure that the data is free from errors and is not lost during transfer.
- Storage: At each stage of data processing, procedures shall be established to ensure that data integrity and security are maintained. QAPPs shall indicate how specified types of data will be stored with respect to format, media, conditions, location, retention time, and access.
- Reduction: Data reduction includes any process that changes either the form of expression, the numerical value of data results, or the quantity of data. This includes validation, verification, and statistical or mathematical analysis of the data. Reduction is distinct from data transfer in that it entails a change in the dimensionality of the data set. Procedures for verifying the validity of the reduction processes shall be described in the project-specific QAPP.

Data Verification refers to the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements. It focuses on determining that the data have met the measurement requirements. Verification evaluates the data for basic elements such as sampling the correct sites, analyzing all parameters, etc. Data verification is not concerned with evaluating or assessing the quality of the data set.

Data Validation is the process of substantiating that data have met the performance criteria (data quality objectives) specified in the QAPP. During data validation, the reviewer applies data qualifiers and assigns data quality levels to the data set against fundamental QA/QC criteria to provide guidance to the end user as to general quality and potential usability of the data. The results of data validation are tied with the data elements and included in the project files, final reports, and any QA status reports. DEQ's guidance document titled Data Validation and Qualification (DEQ09-LAB-0006-QAG) defines the quality of the data, following data verification and validation as a Data Quality Level. The qualitative definitions for this rating scheme remain constant across projects, but the specific quantitative criteria for individual data points and/or analytes may vary based upon the specific data quality objectives described in the QAPP.

EPA's Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (OSWER No. 9200.1-85, EPA 540-R-08-005, January 2009, or current version) describes labeling of data reported to EPA to indicate the level of validation performed on the data. DEQ will incorporate the requirements of this document into DEQ practices as these requirements are incorporated into EPA contracts during a renewal cycle.

3.4.7 Data Quality Assessment

Data quality assessment (DQA) refers to the scientific and statistical assessment of data to determine if a data set is of the right type, quality, and quantity to achieve the objectives of a project. Data at this stage of the project lifecycle has been verified, validated, and assigned a data quality level. Although the individual data elements have been determined to meet specific criteria, the DQA process addresses the fundamental question of the relationship between the quality of the data and its intended use. Although it generally occurs well into a project, the groundwork for the DQA process is established during project planning and is documented in the QAPP. For example, project managers should make the choice of statistical tests before any data collection has occurred. The early documentation of the assessment process means that this quality management tool has been planned and is ready for use after data collection, processing, verification, and validation. The use and assessment of data of unknown or undocumented quality should only be used if the project manager can technically justify its inclusion for the specific case.

DQA poses and answers two fundamental questions:

- Is the quality of a given data set of appropriate quality as to support making a decision (or estimate) with the desired level or confidence?
- If future similar projects applied the same data collection strategy, would the resulting data support the same intended use of data with the desired level or confidence?

The data user's immediate need is generally to answer a question or decide a course of action. Following the DQA process can increase the reliability of, and confidence in decisions. Assessing these immediate needs using the DQA process will results in one of two determinations:

- The data satisfies the objectives of the QAPP and can be confidently used to make an informed decision
- The uncertainty of the data is such that it does not satisfy the intended use of the data, and a reliable decision cannot be made

DQA can also help determine the applicability of the methods used in the current project to future projects. Through DQA, we can use the results of the one study to improve future projects by improving the type, quality, and quantity of the collected data, thereby resulting in more reliable and higher quality data.

Fundamentally, DQA is a statistical process. Since all measurement processes are subject to error, environmental information measurements provide estimates of some true value. Consequently, confidence in any given data set must be determined through a rigorous evaluation of the data using statistical methods. Although you can apply many methods to the DQA process, a five-step process, outlined by EPA's Guidance for Data Quality Assessment, Practical Methods for Data Analysis (EPA QA/G-9, QA00 update, July 2000, or current version) provides a good starting point:

- Review the data quality objectives and sampling design
- Conduct a preliminary data review
- Apply a statistical test
- Verify the assumption of the statistical test
- Draw conclusions from the data.

Strict adherence to this DQA process is not practical; DQA should be iterative in nature so that the process is constantly improved and adapted to meet project and data needs. The underlying goal of the DQA is to understand and instill confidence in the data set, leading to informed decision making.

A detailed discussion of the DQA process is beyond the scope of this document. Investigators are encouraged to familiarize themselves with the EPA process and apply sound statistical principals to their own DQA. Numerous resources are available within DEQ to support DQA, including written guidance documents, peer-reviewed literature, and staff expertise. Those conducting DQA should carefully select generally accepted statistical methods within their particular program.

3.4.8 LEAD Quality Manual

DEQ LEAD produces, reviews, maintains, and stores a substantial quantity of data in support of agency projects. The LEAD Quality Manual (DEQ91-LAB-0006-LQM) defines and describes LEAD's quality systems. Although LEAD plays a broad role within DEQ's data collection processes (ranging from project planning, sample collection, sample analysis, data verification and validation, and data storage), this document is primarily concerned with the analytical functions within the laboratory. The LQM describes in detail the structure of the program and its commitment to data quality. The LQM establishes LEAD's sample acceptance policy, which specifies the supporting information (meta-data) that must accompany all samples submitted to the DEQ laboratory for processing.

LEAD also processes large amounts of data that have been collected by third parties and submitted to DEQ for use. Data from outside sources must also meet the minimum data acceptance standards. Among other things, the LQM describes quality assurance/quality control requirements, analytical requirements, and analytical specifications for services contracted to third party laboratories. One can obtain copies of the LQM directly from LEAD or from Q-Net.

3.4.9 Field Sampling Reference Guide

The Field Sampling Reference Guide (FSRG, DEQ86-LAB-0002-QAG) was specifically written to provide individuals both within DEQ and outside to the agency with technical information to help them collect and submit environmental samples for laboratory analyses. The FSRG is primarily concerned with the collection of water, waste, and soil samples, but you may be able to apply the field practices described to other environmental media, such as air and tissue. The FSRG describes the types and quantity of quality control samples that should be included during routine field operations. The FSRG contains useful information for individuals preparing QAPPs such as listings of analytical methods, preservation requirements, and sample holding times.

3.4.10 Water Quality Monitoring Mode of Operations Manual

The Water Quality Monitoring Mode of Operations Manual: Field Collection Methods (DEQ03-LAB-0036-SOP) documents the detailed instructions on the DEQ methods and procedures used for water and biological monitoring activities. It can be obtained directly from LEAD.

3.4.11 Quality Assurance Guidelines—NPDES and WPCF Self-Monitoring Laboratories

General Quality Assurance requirements for National Pollution Discharge Elimination Systems (NPDES) and Water Pollution Control Facilities (WPCF) self-monitoring laboratories that submit data to DEQ in support of their environmental monitoring programs are described in the DEQ Guidance for Self Monitoring Laboratories (NPDES and WPCF) (DEQ09-LAB-0071-QAG). This document outlines DEQ's requirements for the development of quality assurance manuals, facilities and equipment, analytical procedures, SOPs, and data handling and reporting. The document also addresses requirements for specific analyses common to these self-monitoring laboratories. It can be obtained directly from LEAD.

3.4.12 Program Specific Quality Assurance Policies

Individual programs within the agency are encouraged to develop QA policies specific to their needs and requirements. These documents should describe quality management requirements and needs specific to supporting data quality in individual programs. The QAO should review and approve specific plans and policy statements prior to adoption. The programs should submit electronic copies to the QAO to be added in the QP-filing system.

4 Employee Qualifications and Training

Although employee qualifications and training are not directly managed under the QP, they are major support elements of the QP. Technical staff at DEQ must meet established minimum qualification standards prior to the time of recruitment by the Oregon Department of

Administrative Services, Human Resources Division. These minimum qualification standards are incorporated into position requirements to ensure that employees have the appropriate education, experience, skills, and/or certifications/licenses to fulfill the necessary job functions. Furthermore, DEQ encourages employees to further their education and training in both job-related fields and in career development. A wide variety of educational opportunities are available and DEQ provides financial assistance for both job-related and career development training.

QP training is a critical element in the DEQ QP. Even the most sophisticated QP will fail if employees are not trained on how to use the system. The QAOs will coordinate Staff QP and QA training.

4.1 DEQ-Supported Training

DEQ supports both job-related training and career-development training for agency staff. Job-related training is training that is determined to be necessary or helpful to job completion or improving job performance and assisting the program achieve its goals. Career development training is training necessary to obtain or improve skills to aid in preparation for a job promotion or change within DEQ. Details on DEQ-supported training can be obtained from the DEQ Human Resources training coordinator.

4.2 General Training Records

DEQ uses Workday (DAS training database) to maintain and track training records for all staff. These training records serve a number of purposes:

- They allow DEQ to track required training for staff (HAZWOPER, First Aid, etc.)
- They allow DEQ to monitor how much training is provided to staff to ensure compliance with State policy 50.045.01 Employee Development and Implementation of Oregon Benchmarks for Workplace Development
- They provide a way for employees to track training they have received. This record can be useful for completing job application, supporting qualification during an interview, or documenting professional development for performance appraisals.

The types of events recorded in the database are:

- Workshops, courses, or seminars that are provided on a recurring basis (e.g., college courses, courses offered through training providers such as Padgett Thomas, Careertrack, etc.)
- Annual professional conferences
- Internal training such as policy training, customer service training, etc.
- In-house contracted training such as first aid, HAZWOPER, etc.

4.3 Training and Qualifications of Quality program Employees

DEQ shall ensure that all employees performing tasks and functions related to data quality are professionals that have appropriate education, training, and experience to perform satisfactorily. DEQ staff who are associated with the QP have responsibilities that include items such as those listed below:

- Working effectively with program managers
- Keeping current on applicable federal and state regulations and guidelines for environmental monitoring and measurements; with related QA requirements
- Effectively meeting and dealing with the general public, industry representatives, and officials of Federal, State, and local agencies

Staff maintain and update their expertise by active review of literature, attendance at job-related short-courses, workshops, seminars, and professional meetings. Management encourages active membership in appropriate professional organizations.

4.4 QP Training for DEQ Personnel

DEQ staff shall have sufficient education and training in QP practices to effectively carry out their responsibilities and support the agency's quality systems. Guidance documents and specific topic training are tools used to accomplish this. QP training is designed to raise the awareness and competency in strong QP practices. Specific QP training topics include QMP/QP overview, document control/records management, analytical quality control, data usability, chain of custody, QAPP writing, and DQO development. Training needs are monitored and identified by DEQ managers and QAOs and is provided on an as needed basis at the request of agency management or staff.

The QAOs, and other designated staff, are responsible for the training of DEQ employees on QP issues. We may use internal and external resources to provide appropriate training. The program or regional manager should identify QP training needs that are specific or unique to different programs, divisions, or regions and schedule training events with the QAO.

4.5 QP Training of Contractors and External Data Providers

It is the responsibility of the project managers to ensure that all contractors and staff providing environmental related data to DEQ have the appropriate QP knowledge and training to meet project requirements. This includes incorporating minimum requirements for knowledge and training in extramural agreements. The program is responsible to evaluate the qualifications and training of employees used by contractors, or other sources providing environmental information to the agency as part of system audits, and appropriate improvements

recommended. The ORELAP will coordinate QP support and training of laboratories. The QAOs, or regional program staff, may periodically provide quality system training seminars to contractors and external data providers as determined necessary.

4.6 Scientific Integrity Policy

DEQ and its employees are required to uphold the standards established by the EPA Scientific Integrity Policy. EPA's policy sets the expectation that all employees:

- Ensure that the Agency's scientific work is of the highest quality, free from political interference or personal motivations
- Represent his/her own work fairly and accurately
- Appropriately characterize, convey, and acknowledge the intellectual contributions of others
- Avoid conflicts of interest and ensure impartiality
- Be cognizant of and understand the specific programmatic statutes that guide their work
- Welcome differing views and opinions on scientific and technical matters as a legitimate and necessary part of the scientific process
- Accept the affirmative responsibility to report any breach of this Scientific Integrity Policy

DEQ employees uphold these standards in their work, and the agency engages in policies, tools, and training that ensure these standards are met. The Central Services Division (CSD) maintains the DEQ Ethics Policy and the DEQ Disclosure by Public Employees (Whistleblowing) policy to ensure ethical standards and protections are documented. The DEQ laboratory is accredited by NELAP and certified by EPA to ensure the quality of its scientific work. DEQ uses the Speak Up online tool to allow anyone to log reports about ethical issues. All DEQ employees receive an agency-provided ethics training. DEQ laboratory employees also receive a laboratory ethics and data integrity training annually.

5 Procurement of Items and Services

The Oregon Department of Administrative Services and DEQ procurement section establish procurement rules, policies and procedures independently from the QP. However, ensuring the quality of items and services is an important element in the QP. Although others establish procurement policies, project personnel bear the responsibility for verifying that products, services, and contracts meet any quality requirements specified in the QAPP.

5.1 General Procurement Rules

Laws, rules and policies establish the procurement practices of all State of Oregon agencies. Oregon Revised Statutes 279 (a) (b) & (c) are devoted to public purchasing and governs all public procurements in the state. The statutes and rules governing State of Oregon purchasing practices may be found at the following internet addresses:

Oregon Revised Statutes:

- ORS 279a - https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors279A.html
- ORS 279b - https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors279B.html
- ORS 279c - https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2013ors279C.html

Oregon Administrative Rules:

- OAR 125-246 - http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_125/125_246.html
- OAR 125-247 - http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_125/125_247.html
- OAR 125-248 - http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_125/125_248.html

Oregon Administrative Rules (DOJ):

- OAR 137-045 - http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_137/137_045.html

5.2 DEQ Procurement Policies

DEQ has purchasing policies and procedures that follow the state's laws and rules. DEQ's CSD provides oversight of procurement activities to all agency programs to ensure compliance with the appropriate statutes, rules, and policies. CSD works collaboratively with program technical staff to ensure procurement documents are accurate, complete, and clearly describe the item or service needed and the technical requirements, including any quality documentation, of the product or service. CSD reviews all applicable responses to solicitations for goods and trade services to ensure the documents satisfy the solicitation requirements. DEQ program staff are responsible for reviewing and approving solicitation responses for evidence of supplier's capability to satisfy DEQ and EPA quality system requirements.

DEQ program staff are responsible for ensuring that all required quality documentation (e.g., QMP, QAPPs, SOPs, QA/QC data, etc.) are received with the product or service, and that the documentation satisfies all quality-related specifications. Program and project staff are also responsible for ensuring that any procured items and/or services received are of acceptable quality and satisfy project requirements or contractual obligations.

Laboratories contracted with DEQ must be TNI accredited for all methods performed under contract if accreditation is available. DEQ uses a rigorous RFP process to vet all engineering/consulting firms under contract for services that include sampling or analysis activities to ensure their competency to perform the work prior to the award of the contract.

6 Documents and Records

Records management is an agency-wide priority. The agency adheres to Oregon Public Records law, federal, and state rules. Ensuring that documents and records are managed, maintained accurately, and are accessible is an agency commitment. Documents and records are valuable resources with purposes that extend far beyond any immediate operational needs. Maintaining and managing records in a responsible manner supports DEQ's QP and strategic direction in many ways, including:

- Improved public access to information
- Evidence of DEQ activities
- Safeguarding vital information
- Promoting cross-communication within the DEQ
- Protecting the agency's legal and financial obligations
- Providing a record for public accountability
- Supporting long-term administrative and program planning
- Supporting management decision making
- Controlling the growth of materials taking up valuable office space
- Reducing operating costs
- Maintaining a historical record of DEQ activities
- Providing guidance to ensure that DEQ continues to operate in an effective and efficient manner

6.1 Document and Record Management

Documents produced by DEQ are public property and will be managed according to all applicable federal/state laws and regulations. OAR 166-005-0000 summarizes the OR State's records management policy: It is the policy of the State of Oregon to assure the preservation of records essential to meet the needs of the state, its political subdivisions, and its citizens, and to assure the prompt destruction of records without continuing value.

DEQ is committed to managing records through a management system that promotes the agency requirement to provide public access to records except as otherwise prohibited by ORS 192.501 to 192.505. Records management is a system that includes planning, controlling, directing, organizing, training, and promoting the creation, use, maintenance, and disposition of public records. Agency records management policy may change in accordance with state/federal laws and regulations.

6.2 Controlled Documents and Records

ORS 192 states that public records may exist regardless of the format or storage media they are held in. The format or storage medium includes but is not limited to paper, film, microfilm, sound recordings, video recordings, magnetic tape and disk, and optical disk. The agency official copy of a record is the copy that the agency designates as the record to maintain for retention purposes. Additionally, under the EPA definition, official documents and records that should be managed include "…any final product related to administration, management, enforcement, regulation or other agency function and all documentation necessary to support that document, the decision trail leading up to it and the actions that result from it." A comprehensive centralized document management system that includes all DEQ documents within the scope of this definition exceeds current DEQ resources. Consequently, we manage QP documents and records in a manner that is commensurate with its role within DEQ operations. In general, we manage documents and records that directly support the QP at the agency level. This includes the QP tools identified in Section 3.

The policies of the overseeing program or division describe the management of documents and records that directly support program or division initiatives. Each program or division should define its specific document management rules in a document management plan (however named). Documents managed at this level may include: project related files; blue prints; design documents, including specification, drawing, calculation, and data sheets; analytical reports; standard operating procedures; work plans; assessment results and findings; calculations; calibration data; data usability results; field logbooks; inspection results; instrument test data; materials testing results; personnel qualifications; sampling and analytical QC data; sampling and analytical data; and technical and readiness review results. Under this decentralized approach to document management, each program or division is responsible for managing and maintaining its document management system. The exact filing systems and security procedures employed are the responsibility of the individual offices. This scaled approach to document management provides each functional group within the agency with the flexibility to tailor their document management system to meet their individual needs.

Documents and records that staff do not need to maintain include personal papers (i.e. private papers related solely to an individual's affairs) and duplicate records. Duplicate records may be extra copies of articles, periodicals, reports, documents, studies, vendor catalogs, and similar materials that staff use for convenience, but are not part of any official file. Preliminary draft documents and that have been reviewed and contain substantive changes are retained as supporting documentation. The drafts are filed with the associated record for the length of the retention period. Where successive drafts of lengthy documents are prepared, we retain only those portions of the drafts that contain substantive modifications.

6.3 QP Document and Record Management System

The document and record management system described in the remainder of this section is concerned with and designed to support the core QP tools described in Section 2. Although the

exact processes or procedures associated with a document or record may differ, all of the core QP tools follow a similar three-stage cycle: (1) document creation; (2) active maintenance; and (3) disposition. Document and record management plays a role in maintaining document integrity during each of these phases.

As of the writing of this plan, DEQ is in the process of transitioning to using the Oregon Record Management Solution (ORMS). ORMS is a statewide program that provides information management tools, training and support for public entities in Oregon. Developed to help government better manage information and records in the public trust, ORMS is the first of its kind in the nation. All public entities in Oregon can take part in ORMS through a statewide master services agreement.

Document creation is an iterative process of writing, review, and revision that ensures document quality. The exact requirements and processes for creating a document will vary by document type. The document author should consult any guidance documents or templates that may be available for the document/record they are creating. At some point during the document creation process, the document author obtains a document control ID from their appointed publication team member. Document control numbers are not typically assigned until the document is close to being or is completed. This is in order to prevent “orphan” IDs for documents that were intended to be completed but were not. The document control ID uniquely identifies the document and provides the following information: (1) the year the document was written; (2) the responsible authority; (3) a sequential number; and (4) the document type (#4 is not assigned for most web published documents). All of the QP tools listed in Section 2 must receive a unique document control ID. The document control ID remains with the document throughout the document's life and uniquely identifies the document through any revisions or changes that may occur. Documents or records that are subject to regular revision (e.g., QMP, SOPs) should also be initially assigned a revision number of 1.0. Documents that are not subject to revisions (e.g., Annual QP Report) do not need to receive a revision number. Furthermore, the document/record should be reviewed before being approved or adopted. Finally, the document/record should be approved by all the required authorities and submitted in printed and electronic forms to the QAO to be included in the QP filing system (Section 6.4).

Active maintenance of some “final” documents is an on-going process. The QAO or program sections must review and revise many of the documents identified in Section 3 on a regular schedule to ensure that the document remains current and up to date. The reviewer should record all document reviews to demonstrate the review was performed. A Controlled Document Review form (DEQ08-LAB-0076-FORM) that may be used for this purpose is available on Q-Net. If the document does not require any revisions, the document reviewer submits the form to the QAO, who will then attach it to the original document. If the document requires changes, the reviewer and QAO identify and document the revisions in two ways: (1) updating the document's version number and (2) identifying significant changes in the document's “Revision History” (see Section 9.2). The revised document and the review form are returned to the QAO, who will file it in the QP filing system.

Document disposition requirements are dictated by the Oregon Secretary of State, Archives Division. The archives division grants Oregon state agencies the authority to destroy certain public records under OAR 166-300 (state agency general records retention schedule). The Archives Division also maintains a special agency retention schedule that addresses the disposition requirements for records specific to DEQ. agency records destruction also adheres to specific federal/state regulations and other contractual obligations. Responsibility for complying with disposition requirements lies with the agency records management coordinator and the controlling region/division/program within the agency.

6.4 QP Filing System

The QAOs maintain a filing system for QP-related documentation. The QAOs file and identify all documents by a Document Control ID. Whenever practicable, we maintain QP documents and records in both printed and electronic formats. Document owner submits printed versions of documents with signatures to the QAO, who maintains them in a controlled-access location. In addition, the document owner should submit electronic copies of QP documents and records to the QAO for electronic filing. QP documents are currently filed through MediaLab, a cloud-based document control system.

Note: though it is recommended that all QP documents be submitted to the QAO, some project or operational related documents and records are still maintained by the agency office in charge of oversight for that project or operation.

DEQ manages and retains public records according to the retention schedule.

Table 2: QP Documents and Records managed at the agency level
All of these documents are filed and maintained by the QAO in a QP filing system

Document	Document Type Abbreviation	Review/Revision Schedule	Disposition Schedule
Quality Management Plan	QMP	1/5 years	Per agency record retention schedule
Quality Assurance Guidelines	QAG	3 years	Per agency record retention schedule
Annual Quality System Reports (LEAD)	QPR	N/A	Per agency record retention schedule
QP Training Records	N/A	N/A	Per agency record retention schedule
Program Specific Quality Management Policies	N/A	5 years	Per agency record retention schedule
Quality Assurance Project Plans	QAPP	1/5 years	Per agency record retention schedule
Sampling and Analysis Plans	SAP	N/A	Per agency record retention schedule

Document	Document Type Abbreviation	Review/Revision Schedule	Disposition Schedule
Standard Operating Procedures	SOP	3 years	Per agency record retention schedule
Technical System Assessment Reports	TSA	N/A	Per agency record retention schedule
LEAD Quality Manual	LQM	1 year	Per agency record retention schedule
Field Sampling Reference Guide	QAG	3 years	Per agency record retention schedule
Watershed Assessment Mode of Operations Manual	SOP	3 years	Per agency record retention schedule
Quality Assurance Guidelines-NPDES and WPCF Self-Monitoring Laboratories	QAG	5 years	Per agency record retention schedule

7 Computer Hardware and Software Management

Data quality derives not only from effective planning, field, laboratory, and analytical processes, but also from the electronic systems that store and transmit data, and the IT governance used to manage the data. Consequently, the support, development, and maintenance of DEQ's computer hardware and software systems are a high priority. Moreover, providing accessibility to environmental information and information is a key element in meeting DEQ's strategic directive of involving Oregonians in environmental protection.

DEQ's Information Services section is primarily concerned with planning, implementing, and maintaining the agency's hardware and software systems. Each region/division also has a local area network administrator who works directly with the local systems in individual offices and departments. The Information Services section controls all system back-up and security processes.

The Software Development and Integration section develops software and electronic applications for agency use. Individual regions/divisions/programs perform limited system development for specialized functions and tasks. For example, LEAD has IT staff that facilitates the development and maintenance of electronic systems specific to the management of data produced or managed by the Laboratory.

In addition, the Enterprise Projects section is primarily concerned with planning, implementing, and maintaining the agency’s enterprise IT projects. The project managers, business analysts and technical resources work together to develop, standardize, and utilize project management best practices to improve project effectiveness and efficiency.

7.1 Computer Hardware and Software Systems

A wide-area network (WAN) that permits the direct sharing of electronic information connects DEQ's offices. An agency email system facilitates electronic communication within and outside the network. The WAN also provides individual workstations with internet access, and the agency intranet (Q-Net) and Share Point sites allows for the effective sharing of information though centrally accessed locations. The DEQ internet site (DEQ-Online http://www.oregon.gov/deq/Pages/index.aspx) provides a mechanism to disseminate public information and data electronically. Microsoft Teams is used for instant messaging, real-time collaboration and communication, meetings, file and app sharing.

DEQ has adopted an agency-wide computer and software standard for all employee workstations and end user devices that facilitate the transfer of electronic data and information within the organization. The hardware and software standard was developed and it is maintained by the Information Services team. They follow a documented set of procedures, which describes the process for proposing, adopting, and making changes to the workstation standard and end user electronic devices. Staff use the "IT ServiceDesk" to request exceptions to the adopted standards as well as make hardware requests. IT staff and teams develop and/or implement major new systems according to agency-wide priorities. Additional policy information, hardware and software information, and IT resources are available to agency employees on the DEQ intranet at: http://deqsps/sections/it/default.aspx

7.2 IT Governance

DEQ has a mature IT governance system in place. The main IT governing body is DAITM: DEQ Agency-Wide Information Technology Management Committee. The DAITM purpose is to ensure DEQ optimizes and leverages information technology investments to maximize value and minimize risk for DEQ while assuring the effective and efficient delivery of world class IT services. DAITM has a cross functional representation with eight voting members. The CIO is the chair of DAITM. There are two sub-committees that support DAITM in IT governance: DAITM Tactical Sub-committee and the Information Governance Council.

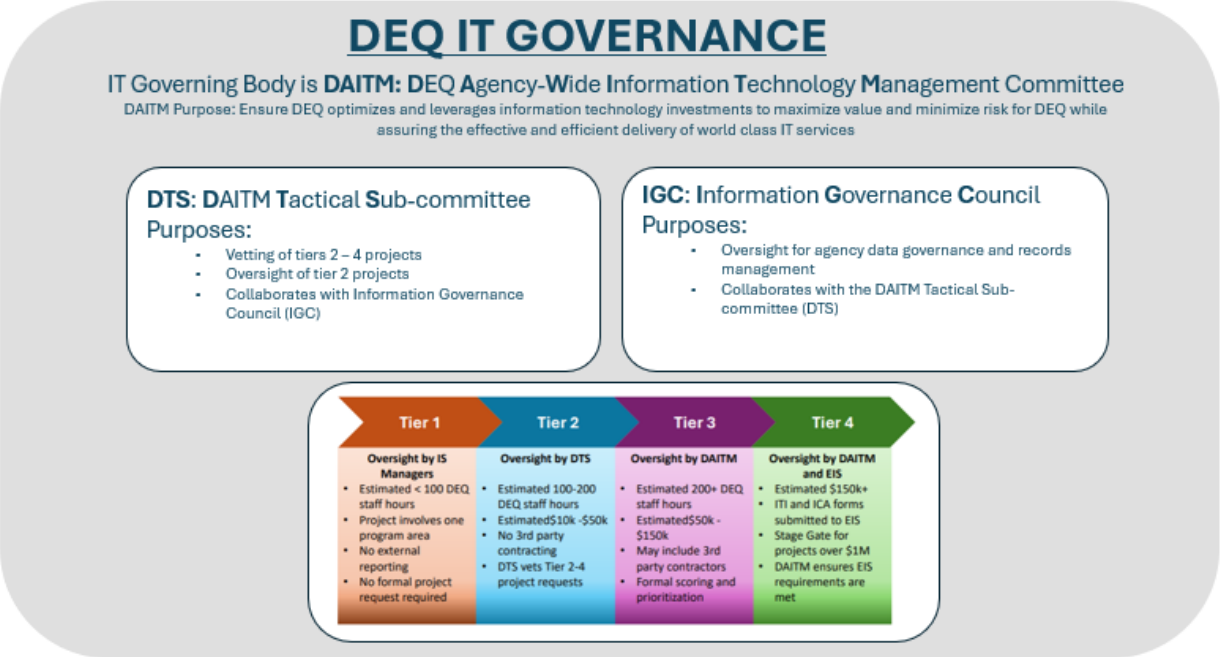

Figure 3: Diagram of DEQ IT Governance Structure

Information Services solutions within the agency are centralized with IT projects falling within four tiers. The oversight of each IT project depends upon the tier. Information Services solutions include custom software and vendor solutions. Software development is performed on a common platform, and using common tools selected by the agency. Developer guidance, such as coding and documentation standards and project management processes are published in various guidance documents for development staff. The Information Services uses a formal project management methodology for software development projects, including specific testing and acceptance criteria published in the project plan. Each project may have a designated program executive sponsor, program lead, project lead, and other team members as appropriate. An early step in the process defines the scope and requirements for the project or product, which the project lead validates throughout the process, and is subject to formal change control. For each application, a single person is responsible for software maintenance. A parallel identical infrastructure is used for testing, and user testing; approval is required prior to placement of any new systems in production. Written policies, guidelines, and a web-based platform for versioning control are used for maintenance of source code and implementation in the production environment.

7.3 Assessing User Requirements and System Performance

Each program or functional area is assigned a Business Systems Analyst responsible for relaying changes in requirements to Information Services staff. A developer is assigned to analyze requirements. For requests that go beyond routine maintenance, a project proposal is

created for the agency planning process. During this project, the proposal is evaluated using the IT governance processes. The project is documented through the project management process, and finally, is tested thoroughly in a test environment prior to moving to production.

7.4 Ensuring Electronic Data Meets Standards and Requirements

Environmental information produced and used by DEQ is currently distributed across many electronic data systems (See Table 3 below). Establishing a common set of data standards, standardizing these systems, and making them accessible are some of the primary goals of the DEQ Advisory IT Managers group (DAITM). Promoting good information management throughout the agency and incorporating these practices within our IT systems are common goals of both DAITM and the QP.

During any IT system development process (whether internal or external), the requirements, including business rules surrounding a process, are captured in a development plan. These requirements are then used to validate the data systems prior to implementation. All modeling and analytical tools are peer reviewed by appropriate program staff, and then formally adopted by management. For each data system, a data steward is assigned to provide accountability for the content of the system.

Table 3: Summary of IT Applications used by DEQ for maintaining environmental information

APP ID	Application Name	Program	Functions
GEO Loc	Geographic Location	Agency	Holds shared locational data for several applications.
LIT	Location Improvement Tool	Agency	Mapping tool used by many applications to determine location of a facility or other item of interest.
ACES	Agency Wide Compliance and Enforcement System	Agency/Enforcement	Tracks information about permitted entities regarding inspections and enforcement actions.
AQI	Air Quality Index	AQ	Records the Air Pollution Health Indicators
CEM	Central Entities Management	Agency	Allows a user to search for DEQ regulated or permitted facilities and sites by using multiple criteria.
	Air Quality Laboratory Information Management System	LEAD	Tracks and stores Air Quality particulate data produced by the Laboratory.

APP ID	Application Name	Program	Functions
Element™	Laboratory Information Management System	LEAD	Tracks and stores analytical data produced by the LEAD.
BWM	Ballast Water Management Database System	LQ	Tracks qualifying voyage arrivals for commercial vessels, pre-arrived reporting compliance and ballast water management data parameters, and vessel inspection and enforcement action information.
E-Cycles	Electronic Recycling	LQ	Tracks Electronics Manufacturers and Electronics recycling locations
SWIMS	Solid Waste Information Management System	LQ	Tracks recycling data by wasteshed. Calculates Recycling Recovery Rates.
QCAT	DEQ Cost Accounting Tool	CSD	QCAT is a tool designed to help staff efficiently look up cost accounting numbers linked to their work. These numbers are then added to Workday for accurate time entry, streamlining the process of recording and managing work-related costs.
SPEAKUP	SpeakUp	CSD	SPEAK UP is a tool that enables DEQ employees to file workplace complaints through an internal form, while also offering a separate form for the public to submit Title VI complaints. This dual-form system supports both internal and public grievance reporting processes.
ADU	AQ Document Upload	AQ	ADU (AQ Document Upload) is a tool that facilitates the public's submission of various annual reporting documents. It streamlines document management for annual compliance and reporting processes.
AQ Permit Online	AQ Permit Online	AQ	AQ Permit Online is a tool that offers both public and internal users access to TRAACS AQ data. It provides data visibility through onscreen displays and downloadable reports, ensuring easy access to air quality permit information.
Bank Deposits	Bank Deposits	AM	MS Access application that records OST batch payments for miscellaneous fees received via US Bank Lock Boxes, ACH Payments, and Checks. It streamlines the tracking and processing of various payment types for accurate financial reporting.

APP ID	Application Name	Program	Functions
ADDR	Agency Contact Database	AM	ADDR (Agency Wide Contact Database) maintains program contact cross-references, contact details, and mailing address information. It includes database-stored procedures that program applications can use to update the 'interested parties' contact information efficiently.
CARS	Capital Assets Reporting System	AM	CARS (Capital Assets Reporting System) manages the tracking of technology assets' acquisition and physical locations, including computers, peripherals, servers, and phones. It is overseen by IT Operations to ensure accurate asset management and reporting.
Cashier 1	Cashier 1	AM	MS Access application that records OST batch payments for miscellaneous fees received via US Bank Lock Boxes, ACH Payments, and Checks. It streamlines the tracking and processing of various payment types for accurate financial reporting.
Cashier 2	Cashier 2	AM	MS Access application that records OST batch payments for miscellaneous fees received via US Bank Lock Boxes, ACH Payments, and Checks. It streamlines the tracking and processing of various payment types for accurate financial reporting.
OFRS	Oregon Fuels Reporting System	AQ	The Oregon Fuels Reporting System (ORFS), also referred to as the Low Carbon Fuels System, is a comprehensive web-based tool that supports the Clean Fuels Program. It serves multiple functions, including enabling regulated parties and credit generators to submit quarterly progress reports, which calculate deficits and generate credits as part of compliance tracking. Additionally, ORFS facilitates the submission of annual compliance reports by regulated parties, ensuring adherence to clean fuel standards. The tool also allows regulated parties and credit generators to transact credits through buying and selling, supporting a market-based approach to low-carbon fuel adoption. Furthermore, it offers alternative fuel producers the ability to register new fuel pathways, encouraging innovation and expanded participation in the state’s clean energy initiatives.

APP ID	Application Name	Program	Functions
CRIS	Cost Recovery Information System	AM	CRIS (Cost Recovery Information System) is a tool designed to calculate cost recovery fees for services provided by DEQ as part of regulatory and enforcement activities. It automates the invoicing process by sending out invoices to the regulated community, ensuring accurate and timely fee collection for work performed by the agency.
QITN	DEQ Interface Transaction Network	AM	QITN (DEQ Interface Transfer Network) is a tool that manages the daily manipulation and transmission of data for the Statewide Financial Management Application (SFMA) to DAS. It collects data from various MS Access finance tools, formats it, and creates a DAT file ready for transfer to SFMA.
GHG Archive	GHG Archive (GHG Online Reporting - EZ Filer)	AQ	The GHG Archive, formerly known as EZ-Filer, is a tool that enables external sources to report combustion-related Greenhouse Gas Emissions data. This reported data is integrated into TRAACS, supporting accurate tracking and analysis of greenhouse gas emissions for regulatory and compliance purposes.
Heat Smart	Heat Smart	AQ	Heat Smart is a public web application designed for users to submit information related to the disposal of uncertified residential stoves. It streamlines the reporting process, ensuring compliance with regulatory standards for proper stove disposal.
HDD	Heavy Duty Diesel	VIP	HDD (Heavy Duty Diesel Retrofit Application) is an external web application that enables HDD owners to manage the retrofit certification process. Users can register, claim a VIN, complete the retrofit application, upload necessary documents, and submit the application to obtain certification. Additionally, they can invite, assign, or unassign secondary owners to manage the claimed VINs, providing flexible and efficient oversight of retrofit compliance.
HRIS	Human Resources Information System	AM	HRIS (Human Resources Information System) manages and maintains both historical and current HR data for agency staff. The database is regularly updated through a scheduled job that downloads data from the Workday API feed, ensuring accurate and up-to-date employee information.

APP ID	Application Name	Program	Functions
WQIR	WQ Integrated Reports	WQ	WQ Integrated Reports is a web application that enables the public to access and search historical drinking water integrated reports data, spanning over five reporting cycles. It provides a user-friendly platform for reviewing water quality trends and compliance.
QMR	Outcome-Based Measures	AM	QMR (Outcome-Based Measures Reporting Tool) is designed to record, review, and report on quarterly outcome-based measures. It supports decision-making during quarterly meetings by providing visual data representation through graphs, making it easier to assess progress and outcomes effectively.
PRC	Public Rules Commenting	AM	Public Rules Commenting is a web interface that enables users to review and provide feedback on DEQ's proposed rules. It offers detailed information about each rule’s purpose, necessity, potential fiscal impact, and hearing schedules, while allowing the public to comment on specific parts of the rule. Notice documents and proposed rules are posted on the DEQ website for transparency and engagement.
SPOTS	SPOTS Card Management	AM	SPOTS Card Management is an internal tool used by the budget department to manage SPOTS cards and related cardholder information. It tracks the cards issued, records cardholder data, and includes a training component that monitors cyclical training requirements, sending notifications when training is due.
SFMS	State Financial Management System	AM	SFMS (State Financial Management System) is a DEQ-specific database that stores Accounting Event, Agency Profiles, and General Ledger data from the SFMA R*STARS Mainframe system. It extracts financial data from the State SFMS DataMart, aiding in agency reporting, decision-making, budgeting, and Cost Recovery program invoicing. The tool features ETL processes (using SSIS packages) to load data into the DEQ database, generates SSRS reports for various financial teams, and provides a desktop application for report creation. SFMA serves as the statewide accounting system for processing agency transactions.

APP ID	Application Name	Program	Functions
DEQ Too	DEQ Too	VIP	DEQ Too is a website that helps Oregon residents locate gas stations and repair shops offering vehicle emissions testing. After the emissions test, users can visit the DEQ Too webpage to review their results and purchase the required certification.
VIPB	VIP Boundary & Address Matching	VIP	VIP Boundary & Address Matching determines if a vehicle is registered within a DEQ emissions testing boundary. The app also allows for adjustments based on a vehicle's proximity to the boundary, enabling edits to clarify whether it falls within or outside the emissions testing area.
YDO	Your DEQ Online	All	Online license, permit, and certification platform for DEQ staff, public, and regulated community

8 Planning

Good data quality begins with careful planning. Project planning is a structured process that brings together all project participants to identify the project's goals, objectives, methodologies, and assessment criteria. At the beginning of any project, the project manager clearly defines the goals and specific objectives of the data generation process and identifies specific end data uses. Once the data needs are clearly understood, project staff develop specific data quality objectives for the project. These objectives include the qualitative and quantitative requirements needed to support the project, and the specific decisions or regulatory actions the agency takes. After the project staff have established the data quality objectives, they can make sample collection and measurement decisions, specify data formats, and establish the evaluation criteria.

8.1 Environmental Project Planning Process

Assuring that quality data results from a project begins with early planning. Project planning at DEQ uses a team-based approach that draws together many interests and participants (both internal and external to the agency) to define the project's framework before actual work begins. Although the exact planning details will vary from project to project, the program should follow a standard planning process before beginning any project work to ensure that they meet and fulfill their requirements.

After a program has identified a project need and assigned a project manager, the project manager should notify the QAO or QA designee that they are developing a project plan. The

project manager should then assemble a project team and begin defining the scope of the project. The assembled project team should include representatives from all programs, divisions, offices, and agencies that will be involved in the project. Moreover, participants commonly active at the end of a project (e.g., data management specialists, legal representatives, etc.) should also be involved in the initial planning process. Bringing together a team that represents all project interests and viewpoints helps ensure that they clearly define and understand the project's goals and objectives. Moreover, bringing together all players early in the project life cycle establishes lines of communication between all team members that helps alleviate miscommunication and disputes that may arise later in the project.

One of the primary objectives of the project planning team is to define the project's data quality objectives DEQ does not mandate that any specific planning method must be followed, thereby giving the project manager the flexibility to address any unique project requirements or considerations; however, the planning method must be scientifically based and use approaches that are widely accepted within the professional environmental community. Following a systematic approach to designing data collection activities results in a series of qualitative and quantitative statements (or performance criteria) which define the project objectives, define types of data, and specify tolerance limits for decision errors. The products of this process—the DQOs—are the fundamental project measurement criteria. All DEQ projects that generate environmental information must be defined and documented in a Quality Assurance Project Plan (QAPP), following the guidelines and formats defined in the QAPP guidance documents discussed in Section 3.4.2. (Staff can obtain QAPP templates and guidance can from the QAO or from Q-Net.). The QAPP represents the culmination of the project planning process and ensures that data collection activities proceed in a systematic and defined manner such that the resulting data are of known quality and integrity, meet the needs of the data users, and are generated and processed in an efficient and cost-effective manner.

The project team must submit the developed QAPP to the QAO for final approval, although the QAO may designate a QAPP-reviewer. The QAPP reviewer should complete a QAPP- review checklist, to document that they have addressed all required planning elements prior to the start of data collection activities. The checklist is available on Q-Net. If all QAPP and planning requirements have been fulfilled, the QAO signs the QAPP, retains a copy with the QAPP-checklist for the QP-file, and returns the original to the project manager. The project manager should submit an electronic version of the approved QAPP in a write-protected PDF format to the QAO. The QAO includes the electronic version in the QP-filing system. However, if the QAPP-reviewer determines that all QAPP and project-planning requirements have not been satisfied, the reviewer returns the QAPP to the project manager with a memo explaining the issues to be resolved. The project manager should revise the QAPP and re-submitted to the QAO for approval.

8.2 QAPP Addenda

Unforeseen issues may arise during the life of a project. Changes in the DQOs, sampling and analysis plans, data validation/verification, and/or data assessment must be documented in

writing and approved by the QAO (or designee). All project addenda must be included with the official project file and submitted to the QAO to be filed in the QP-filing system.

8.3 Generic QAPPs and SAPs

Generic QAPPs for emergency or response situations should be developed in advance where possible. Repetitive or routine data collection activities, such as compliance inspections or ambient monitoring events, should also be documented in a QAPP that broadly defines the project DQOs, data collection activities, and assessment processes. Generic QAPPs must be written, reviewed, and approved following the same procedures as those employed for project-specific QAPPs. Generic QAPPs should be reviewed and updated triennially. Specific sampling and analytical requirements under generic QAPPs must be documented in Sampling and Analysis Plans (SAPs). The individual(s) responsible for approving the SAPs for specific projects should be clearly identified in the QAPP. Electronic and printed copies of SAPs should also be submitted to the QAO for filing in the QP-filing system. Templates and guidelines for SAPs can be obtained directly from the QAO or downloaded from Q-Net.

8.4 External QAPPs and Data

DEQ routinely receives and makes decisions based upon data collected by and/or submitted to the agency by contractors or external interested parties (e.g., consultants, private laboratories, industry, volunteer monitoring groups, etc.). Although DEQ-staff may not have direct responsibility for collecting and analyzing environmental samples and data, DEQ has the responsibility for assessing the quality of the data it receives and uses for decision-making processes. Consequently, contractors and external interested parties play an important role in Oregon's environmental quality. As is appropriate with the level of involvement, contractors and external interested parties should be involved in project planning and understand the role(s) they will play in the project. These groups and individuals must demonstrate commitment to the DQOs defined in the QAPP. In many cases, the external interested parties will be required to submit a QAPP, QMP, and/or other quality-related documentation for DEQ approval prior to their beginning work on a project. Requirements for QAPPs, SAPs, and other quality documentation should be specified in applicable extramural agreements.

QAPPs submitted to DEQ from external data generators must be reviewed using the same process as that described for DEQ-written QAPPs, including completion of the QAPP-review checklist. As in the case of internal-QAPPs, a QAO or their designee is responsible for signing and approving external QAPPs. Physical copies and where possible electronic copies, of approved external QAPPs should be submitted to the QAO and filed in the QP-filing system.

Prior to accepting or using any data from external sources for project-related purposes, the DEQ project manager (and Project Team) must clearly define the criteria that they will use to assess the quality of that data. Project specific QAPPs should clearly specify any methods that DEQ will use to assess the data (e.g., statistical methods), any required quality control elements, and any contractor certifications (e.g., ORELAP accreditation) which must be satisfied to accept data

from external sources. These requirements apply to all data sources (e.g., federal databases, published data, etc.) as well as data collected by contractors or external interested parties, unless specifically excluded by State or Federal rules or specific exclusions identified in the QAPP.

8.5 Roles and Responsibilities

Communication, commitment, and involvement are all critical elements to creating a successful project planning team. All the key players should be involved with the designing and scoping the project from the very start of the process.

The project manager takes the leadership role in the project planning process and his/her skills and commitment to the project contribute to the overall success. The project manager should identify the key team members, encourage fair and honest dialog, and ensure that all team members are well informed throughout the project life cycle. Moreover, the project manager should see that each team member understands his/her role within the scope of the project.

Individual team members have an obligation to actively participate in the planning process. They should understand what role they will play in the planning and life of the project and be committed to the project's success. Team members should make a firm commitment to fair and honest communication and encourage cooperation and respect among the team members.

9 Implementation of Work Processes

Project Planning and developing a QAPP are critical to ensuring that we generate quality data from project activities. However, data quality also derives from the work processes utilized during the data collection and analysis phases of the project. Therefore, defining uniform and standardized work processes also plays a major role in data quality.

Although the project manager holds the overall responsibility for ensuring that we complete project work as stated in the QAPP, Project Staff carry the responsibility for guaranteeing that their work processes are consistent with DEQ and industry standards. The development and use of SOPs helps to establish consistency in work processes.

9.1 Standard Operating Procedures

SOPs document routine activities by establishing a uniform set of instructions. Because routine work processes are subject to variability between individuals and available resources (e.g., equipment, time, etc.), SOPs establish a uniform and accepted protocol for carrying out activities. Moreover, since work processes are also subject to change with updated equipment and new information, staff must review SOPs to ensure they are current and/or updated to

reflect current practices on a triennial (3 year) schedule by those individuals responsible for conducting the work. Because multiple individuals may be involved in the same activities (e.g., sample collection), writing, reviewing, approving, and promulgating new procedures is a critical QP function.

9.2 SOP Writing and Approval Process

Standard operating procedures document the details of routine work activities so individual(s) most closely responsible for the activity should write them. SOPs generally fall within one of two categories—technical or administrative. Some examples of technical SOPs include instructions on the operation of analytical instrumentation; directions on environmental sampling; data assessment; data modeling; risk assessment; or auditing equipment operation. Examples of administrative SOPs might include QAPP review procedures; auditing work processes (internal assessments); document control procedures; validating data packages. Although published procedures or reference methods may be available for a given activity, DEQ staff should write SOPs that specifically address how we complete those work processes within the framework of DEQ operations. Staff can obtain guidance documents and templates for writing SOPs, for both technical and administrative activities, from the QAO or they can download the information directly from Q-Net. Currently, LEAD staff use MediaLab as a document control system to manage these documents.

The actual process of writing a SOP should be collaborative in nature; the primary author should contact other individuals within the agency performing similar tasks. SOPs must receive a technical review by an individual with experience or knowledge of the procedure because these documents should describe work activities in sufficient detail that an untrained, but technically competent, individual should be able to complete the task without assistance. The technical reviewer ensures that the document accurately describes the work process and is consistent with any DEQ, state, federal, or industry standards. In addition to technical review, it is advisable that the SOP be “tested” by someone other than the primary author before being finalized. A number of SOPs may also require a quality assurance (QA) review (e.g., analytical laboratory SOPs) to verify that all required quality control (QC) elements were incorporated into the work process. SOPs with wide-ranging latitude (e.g., field sampling activities that are conducted by many individuals from multiple offices) or effectively establish DEQ policy should also receive Executive review. The executive reviewer must have the authority to ensure that the work processes can and will be communicated to staff and are uniformly applied across DEQ operations. The author and each of the reviewers should sign the finalized SOP to signify that the process has been adopted. In addition, each SOP should have an implementation date that clearly specifies when those specific work processes were effective.

9.3 SOP Maintenance

Work processes are subject to change on a regular basis as policies, equipment, needs, or other work factors change. Therefore, we schedule to review and update the majority of SOPs on a triennial (three-year) cycle, or as major process changes occur. The main exception would

be procedures that fall under the Safe Drinking Water Act, which requires annual review. SOP reviews should be documented using a Document Review Form (see Section 6.3), which is maintained with the original document. When changes to a work process are required, the SOP reviewer must document those changes in the SOP's “Revision History” section (for details, see the SOP Guidance document – DEQ04-LAB-0001-SOP). The levels of review for updated SOPs should be the same as the original document. SOPs that staff have reviewed but do not require revision do not require any secondary review.

9.4 SOP Distribution and Storage

SOPs are QP-related documents and should follow the document and record policies discussed in Section 6. Like other QP-related documents, staff should send printed and electronic copies of SOPs to the QAO to be included in the QP-filing system. Currently, SOPs are stored in MediaLab.

9.5 Work Process Assessment

It is the project manager’s responsibility for QAPP or SAP preparation and to ensuring that staff follow the project plan. However, the project manager may choose to delegate responsibility for some portions of the work processes to those individuals most directly responsible with carrying out or completing a given task. For example, the project manager may delegate the responsibility for ensuring that stream sampling occurs as prescribed in the QAPP to the Water Quality Monitoring manager at LEAD. In addition to delegating authority, the project manager may initiate or request technical audits or inspections of the work processes at any given time (Section 10). The project manager or QA officer may conduct audits routinely or initiate them for cause. The project manager should document all project audits and include the audit results in the project file.

10 Assessment and Response

Assessing and responding to weaknesses in DEQ's environmental information collection activities is an on-going process designed to ensure that the QP is flexible and responsive to changing needs. Because quality management activities occur at a number of levels within the agency, assessment and response must also occur at these various levels.

10.1 Quality program assessments (QPAs)

Quality program assessments assess the effectiveness of the DEQ QP and are conducted internally and/or externally on a routine basis. These QPAs evaluate whether the QP functions as documented in DEQ’s quality management plan and related documentation (i.e., QAPPs, SAPs, etc.). They also assess the technical and management activities associated with implementing the system as well as reviewing the roles, authorities, and responsibilities of the individuals within DEQ implementing the QP.

DEQ participates in an external quality program assessment initiated by EPA Region 10 in an agreed upon time frame. The EPA assessment team reviews DEQ's quality documentation, interviews management and staff and evaluates data collection activities in selected programs during these audits. These audits are scheduled and coordinated through the QAO and reported to senior management in a draft findings report. The report includes a summary of the audit team's findings and recommended corrective actions. The EPA finalizes the draft report after they receive the corrective action response from DEQ. The DEQ QAO is then responsible for overseeing and evaluating the implementation of the corrective actions. EPA may at its discretion, and at least one year after submission of the corrective action report, conduct follow-up assessments on DEQ's implementation of the corrective actions.

10.2 Internal Assessments

In addition to the EPA QPA, the DEQ QAO will periodically (annually is the goal) conduct internal assessments on the effective implementation of the QP within individual programs and divisions. These assessments may focus on specific quality management practices or on the implementation of the QMP. Like the EPA-initiated quality program assessment, an internal quality program assessment will focus on the quality management controls integrated into the program or division's operations. The QAO will coordinate internal assessments through the appropriate DA or QA designee as well as the Internal Audit Advisory Committee, and an assessment team assembled by the QAO will conduct the review. The assessment team may consist of both DEQ and non-DEQ personnel (the assessment team may also be a single individual). All team members will be qualified to conduct the assessment and will follow an assessment protocol agreed upon between the QAO and DA or applicable manager. Following any internal assessment, the QAO will submit a written findings report to the DA and applicable manager within 30 days of completion of the assessment and assist the program and division in developing a corrective action strategy. The QAO provides a summary of the internal assessments performed during the year to the Internal Audit Advisory Committee as part of annual management review of the QP.

10.3 Technical System Assessments

EPA and the DEQ QAO may also periodically evaluate the actual data collection and handling activities within individual programs, divisions, or projects. TSAs evaluate the actual data collection activities and may include (but are not limited to) such activities and records as: field and analytical procedures; calibration records; quality assurance/quality control (QA/QC) records; SOPs, data assessment results, and personnel qualifications. The QAO can schedule TSAs, or senior management may request them through the QAO. The QAO and the appropriate DA, or project manager will establish the format of the TSA. The QAO (or other assessor) will document all TSAs in a report that will indicate the format and findings of the TSA. Internal TSAs are designed to improve data collection activities within DEQ, and the QAO will assist the audited group in developing appropriate corrective actions.

10.4 Project Assessment

The project manager should assess projects on an on-going basis. Routine project level assessment (e.g., quality control sampling) should be outlined in individual QAPPs. The project manager or his/her designee is also responsible for assessing the work performance of any contractors or third parties performing work for the agency. Technical or system audits of subcontractors/third party data providers may be initiated at the discretion of the project manager routinely or “for-cause” (i.e., in response to specific concerns of activities violating data quality or other contractual obligations). The project manager will record any audits of third parties and establish the auditing procedures prior to conducting the audit. The project manager should include results of any project assessments or audits with the project file.

10.5 DEQ Laboratory Assessments

The Laboratory's Quality Assurance Team is responsible for ensuring that the assessment and response of laboratory activities, including sampling, analysis, data validation, reporting, and assessment, occur on a regular basis. The LQAT reviews, revises, and adopts changes to the primary Laboratory QA documents. Moreover, the LQAT conducts periodic TSAs on laboratory functions, including sampling, analysis, data reporting, data verification and validation, and data assessment. In addition, the laboratory analytical staff participates at least twice annually in analyzing unknown performance evaluation samples. The Laboratory participates in additional performance evaluation, round robin, or other studies as required for program or project needs. The Laboratory QAO provides copies of the results of any technical audits and performance evaluations studies to the LQAT, LEAD DA, and the agency QAO.

10.6 ORELAP

The ORELAP generally conducts the assessments of external laboratories. State rules dictate laboratory assessments under ORELAP for drinking water and the assessments follow standards established by the National Environmental Laboratory Accreditation Program (NELAP). Staff can obtain details on the ORELAP program by contacting the DEQ Laboratory, the ORELAP administrator.

10.7 Data Assessment

Section 3.4.7 discusses data assessments.

10.8 Corrective Action and Response

The QAO (or other assessor) will submit all findings from an internal assessments or TSAs to the appropriate management authority within 30 days from the completion of the assessment. (Note: Findings from a project or program TSA performed by EPA must be submitted to the QAO as well). In addition to describing significant findings, the report will summarize when, how,

where, and who was involved with the audit/assessment. The program shall develop a response to any deficiencies identified in the report in a corrective action report to the auditing authority (EPA or QAO) in a period agreed upon by both parties. The corrective action report will include an implementation schedule to correct any deficiencies as well as identify the individual(s) responsible for documenting and overseeing that the program makes the changes in a timely fashion. The auditing team may request additional documentation clearly demonstrating compliance, and may at its discretion, conduct follow-up visits to verify that the agreed upon corrective actions have been implemented. (Note: Programs must submit corrective actions in response to a TSA or QPA performed by EPA to the agency QA Officer.)

DEQ and the auditing authority will agree on corrective action reports and responses for assessments of DEQ conducted by external authorities. Corrective action reports and responses resulting from DEQ assessments of contractors or third parties will be agreed upon before the audit is made.

11 Quality Improvement

Environmental systems are complex, dynamic systems that are inherently uncertain. Moreover, the management of environmental systems is riddled with challenges as advances in knowledge and changing social values further contribute to uncertainty. Quality improvement attempts to address these elements of uncertainty by providing a mechanism for adapting to change and creating flexible management systems that minimize the impacts of change and uncertainty. Consequently, quality improvement operates at two fundamental levels: (1) at the data collection level where the interest is in improving the data collection activities; and (2) at the management level where the concern is with building a stronger quality program. The fundamental approach to quality improvement at both levels uses similar processes.

11.1 Quality Improvement Process

The framework for quality improvement activities is series of six steps: (1) problem assessment; (2) design; (3) implementation; (4) monitoring; (5) evaluation; and (6) adjustment. Problem assessment defines the scope of the issue, assembles available information, identifies weaknesses, and explores possible outcomes from various decisions. During the design phase, specific management and monitoring actions are defined that will provide reliable information to feedback into the process. Implementation places the plan into practice. Monitoring collects actual data that will be used to measure progress against specific performance objectives. Evaluation takes the actual results and compares them against the predicted outcomes identified in the problem assessment phase. Finally, practices, objectives, and models are adjusted to reflect the increased understanding resulting from the process. The results of the entire process are then fed back into the problem assessment phase, thereby initiating another iteration of the process.

11.2 Quality Improvement at DEQ and Responsibilities

Quality improvement within the DEQ QP is an on-going process that is a natural consequence of a shared vision, a commitment to environmental stewardship, and the agency's responsibility to Oregonians.

DEQ uses internal and external auditing, program management team meetings, and the quarterly outcome-based management measure review to identify areas that need improvement. Once identified, there are various process improvement tools at our disposal: Formal breakthrough or problem-solving projects or smaller focus groups. Regardless of the mechanism, the basic steps are essentially the same. For example, the formal problems solving processes have seven steps that are conceptually the same as the six steps discussed above: (1) Agree on the problem, (2) Map the current process, (3) Uncover and prove root causes (4) Develop solutions and implementation plan (5) Implement the fix, (6) Hold the gain, (7) Reflect and learn.

The steps of the quality improvement process simply provide a framework for adapting to changes and uncertainties within DEQ's operations. The exact processes and the level of detail associated with the quality improvement process depend on the scale of the problem at hand and the degree of uncertainty associated with the problem. The tools, processes, and procedures of the DEQ QP are enmeshed in the quality improvement process. The challenge is learning to use these resources effectively to address uncertainty and move towards DEQ's strategic objectives.

The AQAO and other quality assurance staff at DEQ are available to help facilitate the use of QP tools in improving data collection operations and reducing uncertainty in decision-making. The AQAO provides training on the effective use of QP tools and helps develop strategies and practices that will feed into the quality improvement framework. DEQ management is responsible for ensuring that staff use the QP tools and that any issues or deficiencies identified during audits or assessments are documented, addressed and corrected. Staff has the responsibility to follow all quality-related guidelines in their work processes (i.e., SOPs), communicate any problems or concerns to management in a timely manner, and conduct all work in a professional and ethical manner.

Addressing quality improvement from a structured and managed approach yields a number of positive benefits to DEQ, some of which are:

- Establishing better methods for achieving goals;
- Identifying key gaps in knowledge;
- Improving our understanding of environmental processes and the methods used for measuring and assessing them;
- Encouraging innovation in environmental problem solving;
- Building upon past information to advance agency goals; and
- Documenting and communicating decisions, actions, and outcomes to others so that institutional knowledge in retained rather than lost.

11.3 Communication and Quality Improvement

Good communication is the single greatest tool available to DEQ staff to ensure quality in their work and within their workplace. Much of the quality improvement process and the QP as a whole rely on strategies to improve communication between employees, between staff and management, between divisions, programs, and offices, and between all interested parties. A commitment to good communication is a commitment to quality.

DEQ staff will resolve any disputes about technical or management issues amongst the project or program team. If the issues cannot be resolved among team staff, successively higher levels of management will be consulted to help resolve the issue. If any DEQ employee believes their concerns are not being addressed appropriately through this process, DEQ uses the Speak Up tool to allow employees to submit their concerns electronically for consideration by senior agency management.

12 Revision History

Table 4: QMP Revision History

Revision	Date	Changes	Editor
DEQ03-LAB-0006-QMP Rev 5.0	10/15/2009		SCH
DEQ15-HQ-0014-QMP Rev 1.0	07/01/2015	Renumbered to reflect that this is an agency wide document and not a lab document. Revised throughout to reflect organizational restructure. Incorporated references to outcome-based management and process improvement practices, EPA competency policy, EPA quality policy. Revised throughout to reduce passive voice sentence usage.	SCH
DEQ15-HQ-0014-QMP Rev 2.0	06/08/2020	Revised throughout to reflect organizational change back to Division and Region hierarchy. 2.3 Updates to roles & responsibilities. 6.3 Added information on ORMS	SLK
DEQ15-HQ-0014-QMP Rev 3.0	05/15/2025	Updated to new agency style guide and template. Removed unneeded figures and inserted new figures. Updates to tables. Removed mention of outcome-based management, which is on hold. Updates to document to reflect changes to the QAPP standard and QMP standard, and the revised EPA Environmental Information Policy. Added section for Scientific Integrity. Consolidated LEAD organization structure.	TJB

Appendix A: Definitions

DEQ-Online – The publicly accessible DEQ internet site that we use to share information both within and outside the agency (http://www.oregon.gov/DEQ/pages/index.aspx)

Document - Any compilation of information that describes, defines, specifies, reports, certifies, requires, or provides data or results pertaining to environmental programs.

Environmental information - Any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology. For EPA, environmental information includes information collected directly from measurements, produced from models, and compiled from other sources such as databases or literature.

Environmental Information Operations – A collective term for work performed to collect, produce, evaluate, or use environmental information and the design, construction, operation, or application of environmental technology.

Environmental Technology - An all-encompassing term for systems, devices and their components applicable to both hardware and methods or techniques that measure and/or remove pollutants or contaminants and/or prevent them from entering the environment.

Management Activities – system-wide activities needed to implement an organization's quality system.

MediaLab – Cloud-based quality management software used by the LEAD for document control, nonconforming event, and PT management.

Primary Data Use – The original use of intention for which the data was collected.

Project – an organized set of activities within a program.

Q-Net – The DEQ intranet that is used share information internally within the agency https://sps.deq.state.or.us/SitePages/Home.aspx

Quality – degree of excellence. Specifically used in a context specifying expectation of high excellence in product.

Quality Assurance, QA – a system of management and oversight activities to ensure that a process, item, or service is of the type and quality needed by the user; it deals with setting policy and running an administrative system of management controls that cover planning, implementation, and review of data collection activities and the use of data in decision making.

Quality Assurance Project Plan, QAPP – a document that describes 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.

Quality Control, QC – an overall system of technical activities that measures the performance of a process, item, or service against defined standards to verify that the performance meets the stated requirements.

Quality Improvement – a structured process designed to facilitate management changes to improve quality program operation and reduce uncertainty

Quality Management Plan, QMP – a document that describes and quality program in terms of the organization 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.

Quality program, QP – the means by which an organization manages its quality aspects in a systematic, organized manner, and provides a framework for planning, implementing, and assessing work performed by an organization.

Quality program assessment – a systematic and objective examination of an organization's or program's quality programs to determine whether operations adhere to established policies and standards.

Record - a completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, and other data recording media.

Secondary Data Use – The use and application of data originally collected for another purpose to support the needs of a project.

Standard Operating Procedure, SOP – a set of written instructions that document a routine or repetitive activity.

Technical Activities – project-specific activities needed to successfully implement an individual project.

Technical System Assessment – a systematic and objective examination of a specific program or project to determine whether environmental information collection activities and related results comply with the project's QAPP and other planning documents.

Appendix B: Acronyms

Acronym	Meaning	Acronym	Meaning
AQ	Air Quality Programs	LQAT	Laboratory Quality Assurance Team
AQAO	Agency Quality Assurance Officer	LQM	LEAD Quality Manual
CLP	Contract Laboratory Program (EPA)	LT	Leadership Team

Acronym	Meaning	Acronym	Meaning
CSD	Central Services Division	MOMs	Watershed Assessment Mode of Operations Manual
DA	Division Administrator	NELAP	National Environmental Laboratory Accreditation Program
DAS	Oregon Department of Administrative Services	NPDES	National Pollution Discharge Elimination System
DEQ	Oregon Department of Environmental Quality	NWR	Northwest Region
DHS	Oregon Department of Human Services	OCE	Office of Compliance and Enforcement
DOJ	Oregon Department of Justice	ODA	Oregon Department of Agriculture
DQA	Data Quality Assessment	ORELAP	Oregon Environmental Laboratory Accreditation Program
DQO	Data Quality Objective	PT	Proficiency Test(ing)
EPA	U.S. Environmental Protection Agency	QA	Quality Assurance
EQC	Environmental Quality Commission	QAO	Quality Assurance Officer
ER	Eastern Region	QAPP	Quality Assurance Project Plan
FSRG	Field Sampling Reference Guide	QC	Quality Control
FQAO	Field Quality Assurance Officer	QMP	Quality Management Plan
IM	Information Management	QMR	Quality Management Review
IMAC	Information Management Advisory Council	QP	Quality program
IMAP	Information Management Assessment Program	SOP	Standard Operating Procedure
IT	Information Technology	TSA	Technical Systems Assessment
KPM	Key Performance Measure	WAN	Wide Area Network

Acronym	Meaning	Acronym	Meaning
LAN	Local Area Network	WPCF	Water Pollution Control Facility
LEAD	Laboratory and Environmental Assessment Division	WQ	Water Quality Programs
LIMS	Laboratory Information Management System	WQM	Water Quality Monitoring
LQ	Land Quality Programs	WR	Western Region
LQAO	Laboratory Quality Assurance Officer		