Quality Management Plan

Agency Plan to Implement, Document, and Assess the Effectiveness of the Quality System Supporting Environmental Data Operations

September 2005

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Agency Plan to Implement, Document, and Assess the Effectiveness of the Quality System Supporting Environmental Data Operations

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Table of Contents

Abstract

This *Quality Management Plan* is the Washington State Department of Ecology "blueprint" for applying quality assurance and quality control to environmental programs. It defines the quality system for planning, implementing, and assessing the effectiveness of activities supporting environmental data operations.

Introduction

The goals of the Washington State Department of Ecology (Ecology) are to prevent pollution, clean up pollution, and support sustainable communities and natural resources. Ecology managers and staff depend on environmental data to make informed decisions related to these goals. Environmental data include results of chemical, physical, or biological measurements relating to the environment. Implementing a comprehensive *Quality Management Plan* is necessary to ensure that accurate environmental data are available to support those decisions. If inaccurate data are collected, faulty decisions may be made. Other problems that may arise from inaccurate data include wasted resources, legal liability, increased risks to health and the environment, inadequate understanding of the state of the environment, and loss of credibility.

Ecology is committed to developing sound quality assurance (QA) and quality control (QC) practices, and incorporating them into environmental studies and activities. These practices enable the staff to generate accurate data in a cost-effective manner.

The U.S. Environmental Protection Agency (EPA) requires Ecology to document its quality system in an approved *Quality Management Plan*. This requirement is communicated through several mechanisms including:

- 48 CFR Part 46, Federal Acquisition Regulations, for contractors
- 40 CFR Parts 30, 31, and 35 for assistance agreement recipients
- EPA Order 5360.1 CHG 1, which establishes a mandatory agency-wide quality system that applies to EPA, as well as all organizations performing work for EPA
- Other mechanisms, such as consent agreements in enforcement actions

Additionally, the *1994 Puget Sound Water Quality Management Plan* (revised, December 2000) has been adopted as the *Puget Sound Estuary Program Comprehensive Conservation and Management Plan* under the federal Clean Water Act. Element L-4 of the 1994 plan required Ecology to prepare a *Quality Management Plan* which should include requirements for QA Project Plans, training, and audits.

This *Quality Management Plan* has been prepared to meet EPA requirements, described in document QA/R-2, *EPA Requirements for Quality Management Plans*, March 2001. EPA requirements are based on the national consensus standard, ANSI/ASQ E4-2004, *Quality Systems for Environmental Data and Technology Programs – Requirements with Guidance for Use.*

This *Quality Management Plan* outlines the principles and practices that lead to effective planning and execution of environmental studies, and describes procedures for reporting QA/QC activities. It applies to all work performed by Ecology that involves acquiring environmental data generated from direct measurement activities or from existing data (i.e., collected from other sources, or compiled from computerized databases and information systems).

This document replaces Ecology's June 2000 *Quality Management Plan.*

Quality System Components

The quality system is a structured and documented management system that provides the framework for (1) planning, implementing, documenting, and assessing environmental data operations, and (2) carrying out required QA and QC activities.

The quality system encompasses both managerial and technical activities, and it requires the active participation of all employees.

The principal components of Ecology's quality system and the corresponding tools for implementing them include:

- Quality assurance policy (Ecology Executive Policy 1-21)
- Quality system documentation (*Quality Management Plan)*
- Periodic reviews and planning (*QA Report to Management* and Performance Plans)
- Training in QA and QC (Training Plans)
- Systematic planning of projects (Data Quality Objectives Process)
- Project-specific quality documentation (QA Project Plans)
- Project and data assessments (Data Verification/Validation and Data Quality Assessment)
- Management assessments (Quality Systems Assessments)

Other tools for implementing Ecology's quality system include:

- *Air Monitoring Quality Assurance Plan*
- *Manchester Environmental Laboratory, Laboratory Quality Assurance Manual*
- *Manchester Environmental Laboratory, Lab Users Manual*
- Field and laboratory Standard Operating Procedures (SOPs)
- *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*
- *Procedural Manual for the Environmental Laboratory Accreditation Program*

Quality assurance is primarily a managerial activity while quality control is primarily a technical activity, but there is no sharp division between these two functions.

1. Quality assurance is a system for assuring the reliability of measurement data and, as such, is sometimes considered to encompass quality control.

2. Quality control involves applying statistical procedures to evaluate and control the accuracy of measurement data.

Analytical quality control focuses on the control of analytical errors and uses charts for controlling the precision of analyses. Analytical quality assurance focuses on other aspects of the efficiency of analysis (e.g., control of sample handling and reports).

EPA's Quality System staff has prepared a series of requirements and guidance documents that should be referenced for details on implementing a quality system. These documents are available at the EPA Quality System website, www.epa.gov/quality/qa_docs.html

Management and Organization

The mission of Ecology is to protect, preserve, and enhance Washington's environment, and promote the wise management of our air, land, and water for the benefit of current and future generations.

Ecology's Executive Policy 1-21, *Establishing Quality Assurance*, was adopted on August 25, 1993 and revised on October 6, 1999. The policy applies to environmental data collection studies conducted or funded by Ecology. It is the responsibility of agency management to promote the consistent application of quality assurance and quality control principles to the planning and execution of these studies and activities. A copy of the policy is included as Appendix A.

It is the intent of the policy that (1) the quality of all environmental data be documented, (2) the data satisfy the requirements for their intended use, and (3) the data be legally defensible. The policy is implemented by Ecology managers and staff. Appropriate QA and QC practices are used in all phases of environmental studies and activities, from developing the initial plan through sampling, measurement, assessment, and use of the data. The QA/QC requirements should be commensurate with the importance of the work, available resources, unique needs of Ecology, and the consequences of potential decision errors.

Ecology's organization chart is included as Appendix B. The chart in Appendix C shows that the Quality Assurance Officer reports to both the Manager of the Environmental Assessment Program and the Deputy Director, and does not have any direct responsibility for sampling or analysis (i.e., data acquisition).

Ecology programs with responsibilities for environmental data are described in Appendix D. The following sections list the QA/QC roles, authorities, and responsibilities of the personnel involved in data quality assurance.

QA/QC Responsibilities

Senior Management

Senior managers are responsible and accountable for accomplishing the mission and conducting overall operations of Ecology. The resources necessary to implement the Ecology QA policy are identified and budgeted by the Program Managers. The Director is responsible for designating the QA Officer, and Program Managers are responsible for designating QA Coordinators. In addition, senior management is responsible for:

- Preparing and revising this *Quality Management Plan*. Preparation may be assigned to staff, with senior managers participating in and supporting the effort, and signing approval.
- Understanding fully the content of this plan and concurring with its implementation.

- Allocating resources to implement the QA policy and this plan.
- Ensuring that Ecology QA policy and this plan are implemented.
- Delegating responsibilities for implementing a quality system at appropriate levels of the organization.
- Building success measures into the quality system in order to know when it is working well.
- Assessing the adequacy of the quality system.
- Deciding whether to employ peer review in particular instances, in order to ensure that technical documents provide credible science and are reliable and readable.

Quality Assurance Officer

The QA Officer is responsible for:

- Providing technical support to agency programs, and working with the QA Coordinators to provide this support.
- Acting as the liaison between Ecology and other agencies on QA/QC matters.
- Informing management of QA/QC issues and problems.
- Assisting management, as requested, in preparing QA/QC documents, including this agency *Quality Management Plan.*
- Reviewing and approving QA Project Plans prepared by and for Ecology staff. QA Project Plans submitted to the EPA must be approved by the QA Officer. Approval means that the QA Officer agrees that the project plan reflects adequate planning and contains sufficient information to allow competent staff to acquire and document the quality of data necessary to meet the objectives of the project.
- Providing technical assistance to Ecology staff in implementing QA Project Plans and assessing the quality of the results obtained.
- Preparing and maintaining *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (*Ecology Publication No. 04-03-030, July 2004, www.ecy.wa.gov/biblio/0403030.html).
- Assisting Ecology staff with preparing documents involving the application of QA and QC principles.
- Coordinating training on QA and QC principles and practices to meet the needs of Ecology staff.
- Preparing a *QA Report to Management* every other year.

Quality Assurance Coordinators

Program QA Coordinators are responsible for:

- Acting as point of contact within their programs for data quality issues.
- Coordinating with the agency QA Officer to identify needs related to QA Project Plan preparation, SOP preparation and maintenance, and QA/QC training.
- Reviewing and approving QA Project Plans submitted by and for their program staff.
- Assisting project managers who review and approve QA Project Plans prepared within the program.
- Assisting project managers who oversee the preparation of QA Project Plans submitted to Ecology by responsible parties, contractors, and grant recipients.
- Providing technical assistance to program staff who implement QA Project Plans and assess the quality of the results obtained.
- Assisting with preparing and presenting QA/QC training for program staff.
- Assisting program staff and grant recipients in meeting QA/QC requirements.
- Providing information to the QA Officer for the *QA Report to Management*.

Additional responsibilities may be defined in program-specific QA plans. For example, the *Air Monitoring Quality Assurance Plan* specifies some responsibilities of the QA Coordinator for the Air Quality Program.

Project Managers and Project Leads

Ecology project managers and project leads have overall responsibility for (1) specific environmental studies and (2) activities conducted through grants or contracts. They are responsible for:

- Preparing QA Project Plans.
- Assisting contractors, grant recipients, and the regulated community with preparing QA Project Plans.
- Reviewing and approving QA Project Plans prepared by grant recipients and contractors.
- Implementing QA Project Plans.
- Assessing and reporting the quality of data, based on the quality objectives.

Field Staff

Ecology staff who collect samples or data in the field have a vital role in the success of the projects. They are responsible for:

- Understanding and following the QA Project Plan.
- Checking all equipment and supplies in advance of field operations.
- Ensuring that samples are properly collected, preserved, labeled, packaged, and shipped.
- Ensuring that all field data are carefully recorded and preserved according to the project plan.
- Following chain-of-custody procedures and Standard Operating Procedures (SOPs) when they are required.

Manchester Environmental Laboratory Director

Ecology's Manchester Laboratory Director is responsible for:

- Direction and oversight of QA/QC for the laboratory.
- Designating the laboratory QA Coordinator.
- Approving QA Project Plans that involve laboratory services.
- Participating in and approving the preparation and revision of the *Laboratory Quality Assurance Manual* and the *Lab Users Manual*.
- Ensuring that the laboratory participates in all required external system assessments and proficiency testing studies.
- Ensuring that the laboratory maintains accreditation for all parameters and methods used to produce environmental data.

Manchester Environmental Laboratory QA Coordinator

The QA Coordinator for Manchester Laboratory is responsible for:

- Reviewing QA Project Plans to ensure that the procedures specified for sampling and analysis are appropriate and that the number, type, and schedule of analyses required can be accommodated.
- Coordinating the preparation and revision of the *Laboratory Quality Assurance Manual* and the *Lab Users Manual*.

- Directing the preparation and maintenance of the administrative and technical Standard Operating Procedures (SOPs).
- Reviewing data produced by the laboratory for compliance with QA/QC requirements.
- Performing internal system and performance audits, to identify and correct problems affecting data quality.
- Coordinating the laboratory's participation in all external system and proficiency testing studies, including those required for accreditation.

Manchester Environmental Laboratory Staff

Laboratory staff provide analytical services, support services, and technical consultation, each of which includes QA responsibilities. Laboratory staff responsibilities include:

- Carefully following the administrative and technical SOPs.
- Analyzing samples according to methods specified in the QA Project Plans and documenting any necessary changes in the methods.
- Analyzing quality control samples according to guidance provided in their *Laboratory Quality Assurance Manual* and the QA Project Plans.
- Assuring that samples are analyzed within specified holding times, and providing complete and accurate data reports in a timely manner.
- Contributing to the preparation of the *Laboratory Quality Assurance Manual*, the *Lab Users Manual*, and SOPs in their area of expertise.
- Reviewing and verifying the results of analyses, including results from other laboratories when arrangements have been made for this service.
- Operating and maintaining the Laboratory Information Management System (LIMS).

Laboratory Accreditation Section

Laboratory Accreditation Section staff, located in Manchester, administer the Environmental Laboratory Accreditation Program according to the requirements specified in the Washington Administrative Code. Accreditation is granted to laboratories after assessing them to determine that they have a demonstrated capability to accurately analyze environmental samples. Details of the responsibilities for accrediting laboratories are given in the *Procedural Manual for the Environmental Laboratory Accreditation Program* (Ecology Publication No. 02-03-055, November 2002, www.ecy.wa.gov/biblio/0203055.html).

Dispute Resolution

Oversight responsibilities for QA/QC may result in disagreements between the oversight group and the program reviewed. Such disputes may occur in situations involving technical issues (e.g., assessments, audits, surveillance, data quality (usability) assessments) and management issues (e.g., *Quality Management Plan* reviews, management system reviews).

Disputes should be resolved at the lowest management level possible.

All parties should make every effort to resolve disputes through discussion and negotiation.

If the parties are unable to resolve the dispute, this dispute resolution process should be followed.

- The process begins when either disagreeing party declares an issue to be irresolvable and sends a memorandum to the other party invoking this dispute resolution process, defining the disputed issue, and presenting supporting arguments for the first party's position on the issue.

- Within 15 days, the second party must send a draft dispute resolution package to the first party. As soon as possible after this, the two parties, working together, must submit a dispute resolution package to management. This package would contain both parties' arguments, both parties' rebuttals, and any supporting materials.

- Management shall schedule a meeting for resolving the dispute within 15 days from receipt of the dispute resolution package, and notify both parties of this date. Both parties are invited to attend the resolution meeting to present arguments and answer questions. Management may get advice from a third party. The decision of management shall be binding on both parties.

Staff Qualifications and Training

The QA Officer and staff, supported by the QA Coordinators and other designated staff, are responsible for QA/QC training of Ecology personnel. Those responsible for training shall maintain competence in QA/QC principles and practices through (1) the literature, (2) training offered by outside sources, and (3) participating in relevant regional and national conferences.

Ecology staff shall have sufficient education and training in QA/QC practices to carry out their assigned responsibilities. Training is designed to raise the awareness of and competence in good QA/QC practices. Training is provided on subjects such as sampling, statistics, the data quality objectives process, preparing QA Project Plans, environmental measurements, and analytical quality control.

The QA Officer and staff identify and make use of resources from inside and outside of Ecology in providing training. Many Ecology staff have extensive experience in their areas of specialization that can be incorporated into the training.

Ecology programs may have unique requirements for QA and QC training, and program QA Coordinators help identify training needs. They arrange for training by using resources within their programs or by securing assistance from the QA Officer or external resources.

At the agency level, training resources are primarily directed toward “Core” requirements. Technical training is addressed program by program, on an as-needed basis.

Procuring Items and Services

The Purchasing Office, located in the Fiscal Section of Financial Services, is responsible for procuring all supplies, equipment, and services used by the agency statewide. Chapter 8 of the *Ecology Policy and Procedure Manual* includes the policies and procedures on purchasing/inventory/payables.

Ecology's Manchester Laboratory contracts with other laboratories to perform analyses that Manchester Laboratory is unable to perform. Such laboratories must be accredited by Ecology, in accordance with Ecology Policy 1-22. Analyses of samples are contracted in accordance with WAC 236.48 and RCW 43.19.1906 and as described in the memo "Office of State Procurement Specific Authority Delegated to Department of Ecology, July 1, 1990." Laboratory Standard Operating Procedures related to contracting include SOP 770003 "Purchasing Analytical Services", and SOP 770005, "Data Quality Validation." Data from analyses performed by contracted laboratories are reviewed by Manchester Laboratory to determine if the quality of data meets agency needs and complies with the contract requirements.

Documentation and Records

Chapter 10 of the *Ecology Policy and Procedure Manual* includes the policies and procedures on records/forms/public disclosure.

Two principal forms of quality system documentation are required by the ANSI/ASQ E4 standard: an agency *Quality Management Plan* and QA Project Plans.

Manchester Laboratory prepares a *Laboratory Quality Assurance Manual* and a *Lab Users Manual.*

Standard Operating Procedures are prepared for laboratory and field activities.

EPA QA requirements and QA guidance documents are used to supplement the information in Ecology publications when preparing quality system documents. These requirements and guidance documents can be found at EPA's Quality System website, www.epa.gov/quality/qa_docs.html.

Documents and records, including revisions, must be reviewed for conformance with the quality system requirements and be approved by authorized personnel for general use.

Computer Hardware and Software

The quality of hardware and software used in the agency is addressed in Information Services (IS) policies and procedures, which can be accessed through Ecology's Intranet. Policy 11-51, "Ensuring Appropriate Acquisition, Maintenance and Disposal of Information Technology" specifies that Ecology's purchasing policies and procedures require IS approval on all Information Technology (IT) hardware, software, services, and other computer-related purchases by the agency's designated IT signature authority. Additional policies on or related to the quality of computer hardware and software are posted under Information Services on Ecology's Intranet. Ecology complies with Washington State Department of Information Services (DIS) and Information Services Board (ISB) standards and policies.

Ecology participates in the State-EPA Information Management Workgroup (IMWG), and the Exchange Network Leadership Council (ENLC) (www.exchangenetwork.net). Data standard priorities are determined by the ENLC, and subject-matter workgroups are established to define common agreements on data representation, format, and definition. Data standards developed or work-in-progress can be found at: www.envdatastandards.net

Ecology has several representatives on the Environmental Sampling & Results (ESAR) workgroup (www.envdatastandards.net/content/article/detail/596) and uses the approved data standards to facilitate exchange of data.

Planning

Data quality assurance begins with careful planning. The goal and specific objectives for the environmental project are clearly defined, including how the data will be used. Then quality objectives, as well as qualitative and quantitative statements about the data needed to support decisions or regulatory actions, are developed. Finally, the methods to collect samples, make measurements, document data quality, and interpret and report results are selected or developed.

- A systematic planning process is recommended. Systematic planning is a process in which you identify the problem to be studied and/or the decision to be made, and then define the project's objectives, the type, quantity, and quality of information needed, the technical and QC activities, and the level of oversight that will ensure project criteria are satisfied. Additional information on systematic planning processes can be found in the following documents: *Guidance for the Data Quality Objectives Process* (EPA QA/G-4) and *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (*Ecology Publication No. 04-03-030, July 2004, www.ecy.wa.gov/biblio/0403030.html).

- Preparing a QA Project Plan helps ensure that the project manager follows a systematic planning process. The completed plan (1) facilitates communication among managers, field personnel, and laboratory personnel who implement the project, (2) promotes consistency in data collection activities, and (3) provides the basis for project reports.

- *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* provides the project manager with guidance for preparing QA Project Plans suited to Ecology projects. The guidelines, which follow and expand upon EPA Requirements and Guidance (EPA Documents QA/R-5 and QA/G-5), describe the elements to be considered for inclusion in a QA Project Plan.

- Project plans are developed in advance for emergency response situations. Templates are prepared for projects that are repetitive in nature, such as compliance inspections. For samples of opportunity, a QA Project Plan can be prepared after sampling, if necessary.

- Program-specific guidance documents are prepared, when needed, to address the unique QA requirements of Ecology programs.

Implementing Work Processes

The project manager oversees the implementation of QA Project Plans. Management is kept informed of the progress and any problems in implementation.

Standard Operating Procedures are prepared with the technical assistance provided by the QA Officer and the program and laboratory QA Coordinators. Guidance is provided in EPA QA/G-6, *Guidance for the Preparation of Standard Operating Procedures for Quality-Related Operations* as well as in documents prepared by the QA Officer and the QA Coordinators.

All relevant facilities, equipment, and services must be capable of producing environmental data of sufficient quality to meet project goals in a safe and efficient manner.

Manchester Laboratory is responsible for including appropriate QA and QC procedures along with the analyses of samples. These procedures are described in the *Laboratory Quality Assurance Manual*.

Manchester Laboratory also provides *a Lab Users Manual* to help coordinate field and lab operations.

The Laboratory Accreditation Section administers the Environmental Laboratory Accreditation Program.

Assessment and Response

The effectiveness of the quality system is continually evaluated. Available assessment tools include data quality assessments, peer reviews and technical reviews, proficiency testing studies, and technical systems audits. Technical audits and assessments (1) provide management with tools to determine whether data collection activities are implemented as planned, and (2) are the basis for taking action to correct any deficiencies that are identified.

The project manager is responsible for assuring that data quality (or usability) assessment is done for each project that involves environmental data. Data quality (or usability) assessment is a statistical and scientific analysis and evaluation of data to determine if data are of the right type, quality, and quantity to support their intended use. A recommended reference is EPA Document QA/G-9, *Guidance for Data Quality Assessment: Practical Methods for Data Analysis.*

Manchester Laboratory is responsible for reviewing the results of sample analyses to ensure that the quality control requirements, as stated in the *Laboratory Quality Assurance Manual* and the QA Project Plan, have been met. Corrective actions are taken when these requirements are not met.

As part of its accreditation requirement, Manchester Laboratory participates in proficiency testing and on-site assessments. Proficiency testing studies involve the analyses of unknown samples. On-site assessments correspond to assessments of the laboratory's managerial and technical capability by an outside assessor. Internal system assessments are also performed periodically.

The purposes of internal assessments include: (1) improving the quality systems and (2) providing valid feedback to management on the adequacy, implementation, and effectiveness of the quality system.

Prior to initiating internal assessments, management is responsible for identifying goals, choosing the assessors, defining acceptance criteria, determining the assessment procedures to be used, and approving check lists. Senior management shall assess (at least annually) the adequacy of the quality system.

The Laboratory Accreditation Section is responsible for performing on-site assessments and tracking the results of proficiency-testing studies from participating laboratories.

Reports of assessments are prepared and submitted to management. When the assessment findings identify conditions needing corrective action, management responds promptly and appropriately. Corrective actions are documented by the responsible persons in order to confirm the implementation and effectiveness of the response action. Senior management is responsible for addressing any disputes concerning the assessments.

The QA Officer keeps the Program Manager for the Environmental Assessment Program informed of QA accomplishments and any problems that arise. The QA Officer discusses any relevant QA issues or problems with the appropriate Program Manager and/or program QA Coordinator.

The QA Officer prepares a status report, *QA Report to Management*, every two years. This report contains, as a minimum, the following information:

- A description of QA/QC training received by Ecology staff
- A description of technical assistance and QA/QC support provided to Ecology staff
- Significant problems related to data quality and recommended corrective actions
- The accreditation status of the Manchester Environmental Laboratory
- A description of the status and needs of documented information on QA/QC
- A description of the status and needs of human resources to implement the Quality System
- A review of the Ecology *Quality Management Plan* to determine if the approved quality management practices continue to be both suitable and effective
- Other information specifically requested by management

Quality Improvement

The QA/QC responsibilities of management and staff are specified in the *Management and Organization* section of this document. Quality improvement requires the active participation of all employees. Continuous quality improvement is an integral part of the quality system.

Quality improvement is achieved by assessing the effectiveness of the processes for collection and use of environmental data, and by taking preventive and corrective actions to improve those processes.

A biennial *QA Report to Management* provides an assessment of the effectiveness of the quality system. Program and laboratory specific assessments evaluate the effectiveness of quality improvement activities. This helps ensure that conditions adverse to quality are:

- Prevented
- Identified promptly, including determining the nature and extent of the problem
- Corrected as soon as possible

All corrective actions will be documented and tracked until closure.

Appendix A

Ecology Executive Policy 1-21

Establishing Quality Assurance

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Executive Policy

Chapter 1: Executive Policy and Procedure ***Policy 1-21***

Resource Contact: Quality Assurance Officer *Effective*: August 25, 1993

References: Ecology Quality Management Plan *Revised*: October 6, 1999

Establishing Quality Assurance

Purpose: To ensure the consistent application of quality assurance principles to the planning and execution of all activities that acquire and use environmental measurement data.

Application: This policy applies to environmental data collection studies/activities conducted or funded by Ecology.

1. Establishing Definitions.

Quality Assurance (QA): The integrated program for assuring the reliability and quality of environmental data.

2. Quality Management Plan Provides Guidance.

This policy is the basis for QA management in Ecology and is the foundation for developing the Quality Management Plan. The plan describes the principles and practices that lead to effective planning and execution of environmental studies/activities that generate valid and useful data.

3. Assigning Quality Assurance Responsibilities.

The Director designates the agency's Quality Assurance Officer.

Program managers with responsibilities for environmental data designate a Quality Assurance Coordinator to provide QA support/oversight within their program.

4. QA Project Plans for Environmental Studies/Activities are Prepared, Reviewed, and Approved.

A Quality Assurance Project Plan is prepared for each environmental study/activity that acquires or uses environmental measurement data. The Quality Assurance Project Plan lists the objectives of the study/activity; identifies the data needed to achieve those objectives; and describes the sampling, measurement, quality control, and data assessment procedures needed to obtain the data. The size and complexity of the project plan will be cost effective and in proportion to the magnitude of the study per Ecology Document No. 91-16, "Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies."

Quality Assurance Project Plans are developed, reviewed, and approved as specified in the Quality Management Plan, before data collection begins.

5. Quality Assurance Staff Provide Technical Assistance and Training.

The Quality Assurance Officer and staff provide technical assistance with quality assurance matters and coordinate quality assurance training for Ecology personnel.

Approved: 

Tom Fitzsimmons
Director

Appendix B

Ecology Organization Chart

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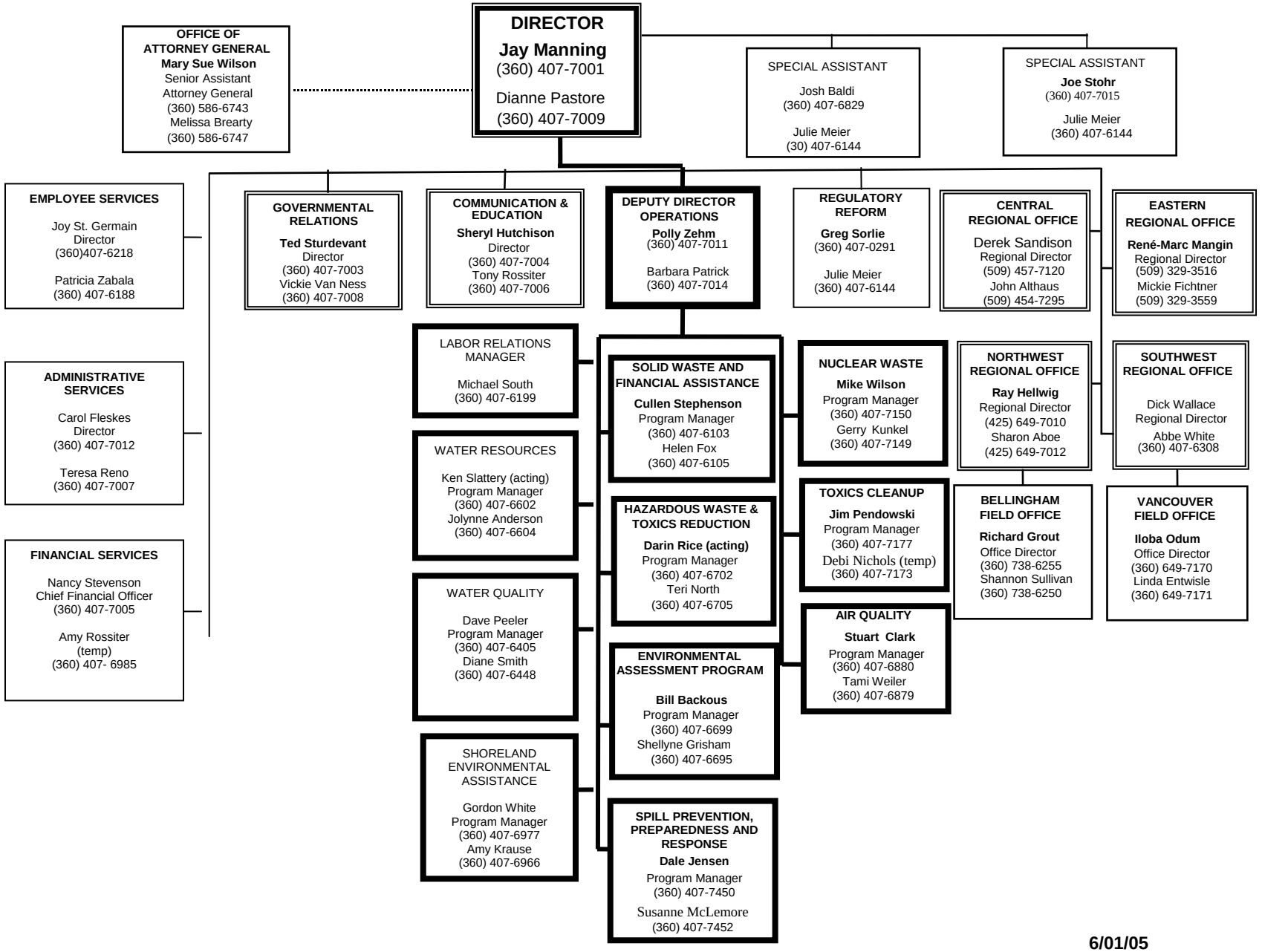
Washington State
Department of Ecology



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Appendix C

Ecology QA Management Structure

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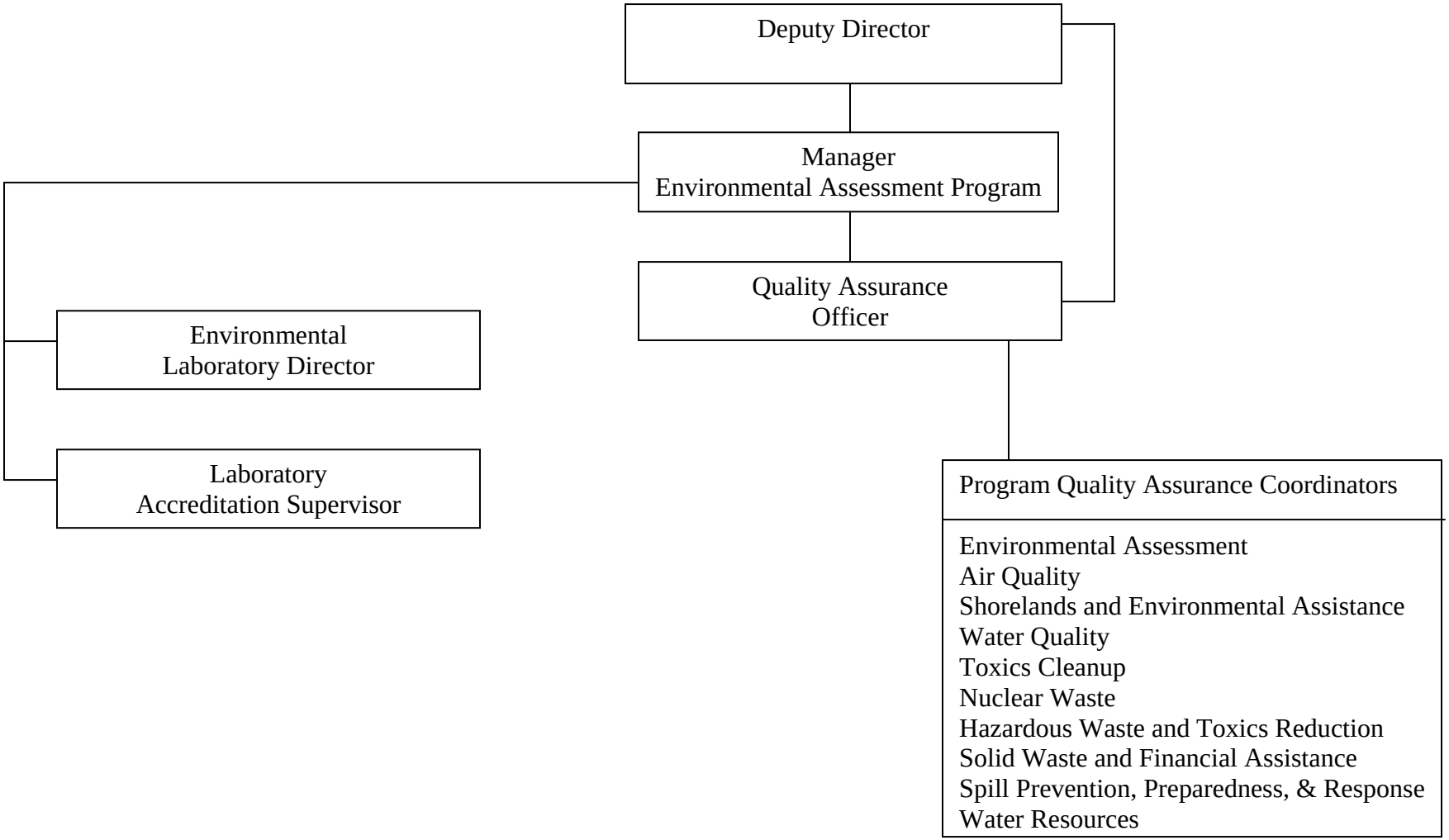
Department of Ecology: QA Management Structure



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Appendix D

Ecology Programs with Responsibilities for Environmental Data

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The following Department of Ecology programs are responsible for environmental data:

1. **Air Quality Program** is responsible for air pollution control activities including operation of the statewide air quality surveillance system. Other functions include development of emission inventories, modeling, meteorology, and smoke management. The *Air Monitoring Quality Assurance Plan* describes how Ecology ensures the quality of ambient atmospheric data. The Quality Assurance Unit provides QA oversight and data validation and reporting.

2. **Environmental Assessment Program** provides expertise in project design and management, environmental sampling, analytical services, data management, and quality assurance in support of other Ecology programs. Program staff conduct long-term baseline studies and cause-and-effect studies on surface waters, as well as investigations of toxic pollution and groundwater contamination. Ecology's environmental laboratory at Manchester performs physical, chemical, and biological measurements on all types of environmental samples. The Laboratory Accreditation Section at Manchester accredits laboratories that submit data to Ecology.

3. **Hazardous Waste and Toxics Reduction Program** administers the state program governing the generation, transportation, storage, and disposal of dangerous waste. Activities include sampling at hazardous waste sites. Toxics reduction activities include administering contracts for research in waste reduction and recycling, as well as assisting businesses in developing new methods for reducing the volume and changing the character of their wastes.

4. **Nuclear Waste Program**, under authority of the Hanford Federal Facility Agreement and Consent Order, and in cooperation with EPA and the U.S. Department of Energy, is responsible for the identification, management, and remediation of hazardous substances, including radionuclides and dangerous wastes, at the Hanford Site. The program administers state-mandated environmental regulations and works in association with EPA to implement federal regulations at non-Hanford, RCRA-permitted facilities.

   Activities include split sampling, laboratory audits, mixed waste laboratory contracting, data verification and validation, and participation in the Washington State Department of Health environmental radiation quality assurance task force laboratory intercomparison performance evaluation program.

5. **Shorelands and Environmental Assistance Program** provides support to local agencies developing watershed plans to control non-point pollution sources affecting shellfish growing areas, and funds enforcement activities related to agricultural sources.

   The program administers the Padilla Bay National Estuarine Research Reserve, the state wetlands management program, and several federal funding programs including Coastal Zone Management Grants and FEMA flood control grants.

6. **Solid Waste and Financial Assistance Program** provides oversight and technical support to local authorities who monitor and regulate solid waste management facilities; develops statewide solid waste management regulations; regulates major industries to ensure consistent and effective enforcement of air, water, and waste laws; coordinates litter control programs and operates a youth litter collection program; regulates biosolids management; promotes waste reduction, recycling, and waste utilization; provides financial assistance to local governments for cleanup of hazardous waste sites, implementation of solid waste and hazardous waste management programs, meth lab cleanup responsibilities, and litter cleanup projects; provides grants to citizen organizations whose communities are adversely impacted by hazardous waste sites.

7. **Spill Prevention, Preparedness and Response Program** (Spills Program) works with facilities and vessels to ensure that personnel are trained, equipment is available, and plans are in place to prevent spills and to respond appropriately to spills when they do occur. Program staff respond to all spills to ensure that they are cleaned up properly and to protect state resources. Samples are routinely collected to identify the source of spills and to assess environmental impacts from spills for Natural Resource Damage Assessments.

8. **Toxics Cleanup Program** oversees the control and cleanup of sites that pose a threat to public health or the environment. Cleanup activities are performed by the responsible parties or by a contractor under a federal or state mandate. The program also includes the Urban Bay Action Teams that focus on potential sources of pollution of sensitive bays and inlets.

9. **Water Quality Program** staff sample surface water and groundwater, and provide training for industries on wastewater management. Program staff also administer state and federal grants to local governments for water quality projects involving watershed and stormwater management, agricultural pollution abatement, and wastewater treatment and control facilities. Those projects may include environmental monitoring activities in fresh or marine surface water and in groundwater. Additional monitoring studies are provided as needed.

10. **Water Resources Program** administers groundwater management grants to local governments, monitors groundwater for seawater intrusion, and tracks groundwater levels as indicators of water supply and dam stability.