QUALITY ASSURANCE

REPORT TO MANAGEMENT

FISCAL YEAR 1994

April 27, 1995

INTRODUCTION

Quality Assurance (QA) is an integrated program of activities designed to ensure the reliability of scientific data. Key elements of a QA program are training, planning and technical assistance. Federal regulations require Ecology to implement a QA program for environmental data generated by or for the agency.

The Ecology Quality Assurance Management Plan (QAMP) was revised in December 1993. The QAMP designates the Manager of the EILS QA Section as the Ecology QA Officer. Program Managers are responsible for promoting the consistent application of QA principles to the planning and execution of projects that generate environmental data. They may designate QA Coordinators for their programs.

The QAMP also requires that the QA Officer prepare an annual report to management on the status of Ecology's QA program. This report is intended to meet that requirement for FY94 and describes training, planning and technical assistance efforts within Ecology programs which collect or use environmental data.

For each program, the report summarizes the type of environmental data collected or used, the use of QA project plans, training received and technical assistance provided by program staff. Finally, the program QA coordinators' plans and recommendations for improvements in QA practices are presented.

SUMMARY AND CONCLUSIONS

The following table summarizes the information for Ecology programs.

SUMMARY TABLE

Program	QA Project Plans Prepared	QA Training Received	Technical Assistance Provided
Air Quality	*	Yes	Yes
CP	No	Yes	Yes
EILS	Most	Yes	Yes
Shorelands	Yes	No	Yes
Water Quality	*	Yes	Yes
WQFA	Yes	No	Yes
Water Resources	No	No	Yes
Toxics Cleanup	No	Yes	Yes
Nuclear Waste	Most	Yes	Yes
HW&TR	No	Yes	No

* Generic plans are used for some projects. Individual QA project plans are not usually prepared.

CONCLUSIONS OF THE ECOLOGY QA OFFICER

The use of QA project plans by Ecology staff has increased significantly over the past five years and should continue to increase in FY95. There are still some projects being conducted by and for the agency which would benefit from the preparation and review of QA project plans before field work begins.

Most Ecology staff involved in the generation or use of environmental data received some QA training in FY94. Continued training, targeted to programmatic needs, should be offered for all such staff at least annually. In particular, training for those who provide technical assistance to other agency staff and to those outside the agency should be developed and presented.

Ecology staff are dedicated to providing technical assistance through enhanced cross-program coordination and agency outreach efforts. This is, perhaps, the single best way to promote the generation of useful data of adequate quality. Technical assistance efforts should continue and expand in the coming year.

AIR QUALITY PROGRAM

QA Coordinator/Contact: Stan Rauh

PROJECTS

Program staff manage the ambient air monitoring network and conduct source monitoring projects. Ambient monitoring data collection efforts focus on the criteria air pollutants which include particulate matter smaller than 10 microns (PM_{10}), total suspended particulates (TSP), lead (Pb), carbon monoxide (CO), sulfur dioxide (SO_2), and ozone (O_3). Ecology cooperates with local air pollution control authorities (LAPCA) to operate and maintain the air monitoring stations. Data are compared to air quality standards and violations are the basis for various warnings and actions. Additionally, meteorological and visibility monitoring is conducted throughout the state.

Air quality monitoring is federally regulated under 40 CFR 58, Appendix A. EPA publishes QA Handbooks which describe mandatory procedures used to maintain and document data quality. The QA unit reviews all criteria monitoring data and publishes quarterly and annual Data Quality Assessment Reports.

Source testing projects are contracted to the private sector and are reviewed by the Engineering and Technical Services Section.

QA PROJECT PLANS

The program operates under a comprehensive QA Program Plan. Individual QA project plans usually are not prepared.

TRAINING

New staff receive extensive training from experienced senior staff. Program staff receive annual training at EPA's Air Pollution Training Institute in conjunction with program QA staff and the University of Washington.

TECHNICAL ASSISTANCE

Program staff support LAPCA staff with classroom and field instruction and offer them the opportunity to attend EPA-sponsored training. They also provide assistance on the operation, maintenance, and sighting of air monitoring stations.

COMING ATTRACTIONS

SOPs for monitoring each pollutant are near completion and will be submitted to EPA next year.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Quality assurance activities for the monitoring network may be adversely affected as the network continues to grow if a staff position is lost in next year's budget reductions as planned.

Individual QA project plans should be prepared for projects not covered by the QA Program Plan.

CENTRAL PROGRAMS

QA Coordinator/Contact: Kathy Bragdon-Cook

PROJECTS

Sediment Management Unit staff review sediment chemistry data from 50-100 projects each year and maintain the SEDQUAL database which now contains data from over 500 projects. SEDQUAL data is being used to develop a list of contaminated sites in Puget Sound.

Spill response teams collect samples to help identify spilled material. Permit managers conduct inspections of industrial dischargers in which samples of plant influent and effluent are collected to verify compliance with permit requirements.

Policy and Planning Section staff review sampling and analysis plans and data reports submitted by industrial dischargers. Occasionally, they participate in sampling for the development of sediment impact zones.

QA PROJECT PLANS

QA project plans are not routinely prepared.

TRAINING

Sediment Management Unit staff developed detailed procedures for review of sediment chemistry data and provided training to program staff on the application of those procedures in June.

TECHNICAL ASSISTANCE

Technical assistance is provided to NPDES permitted dischargers and to contractors responsible for collecting sediment data.

COMING ATTRACTIONS

Guidance for preparation of QA project plans for NPDES inspections and for source control and cleanup projects is being developed.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

QA project plans for all data collection activities should be prepared and reviewed before field work begins.

ENVIRONMENTAL INVESTIGATIONS & LABORATORY SERVICES PROGRAM

QA Coordinator/Contact: Stewart Lombard

PROJECTS

EILS staff conduct the majority of the environmental sampling projects for the agency. Ambient Monitoring Section (AMS) staff conduct routine monitoring of the quality of surface and marine waters and sediments. Data are used to document conditions in aquatic environments and to select areas for intensive study.

Watershed Assessments Section (WAS) staff conduct intensive studies of surface waters and inspections of permitted dischargers in selected watersheds. Samples are typically analyzed for conventional pollutants and the data are used to develop and implement agency management strategies for water pollution control.

Toxics Investigations Section (TIS) staff conduct site-specific environmental studies. Investigations address surface water, ground water, marine and freshwater sediments, and compliance at permitted wastewater treatment facilities. Data are used to develop pollution control strategies and to support enforcement actions.

The Manchester Environmental Laboratory offers state-of-the-art analytical services and consultation for agency projects/activities.

The QA Section (QAS) administers the Environmental Laboratory Accreditation Program. QAS staff monitor the capabilities of labs which generate results reported to the agency. Accreditation involves review of the lab's QA documentation; periodic on-site audits of laboratory staff, facilities, equipment and records; and successful analysis of reference samples twice a year.

QAS staff also provide QA support to EILS staff and to other agency staff as time allows.

QA PROJECT PLANS

QA project plans for four of the nine projects conducted by AMS staff, for six projects conducted by WAS staff, and for six Class II inspections and seven of the ten new projects conducted by TIS staff were submitted to the QAS for review and comment.

LABORATORY QUALITY ASSURANCE

The laboratory maintains a QA Manual and the QA Facilities Plan, which is part of the agency QA Program Plan. Lab staff routinely analyze quality control (QC) samples and use the results to control and document data quality. They also analyze performance evaluation samples, review their data, and maintain over 200 analytical and administrative Standard Operating Procedures (SOPs) which include routine QA procedures used throughout the laboratory.

TRAINING

WAS staff received training in statistics, biological assessment, mixing zone dynamics, water quality modeling, and QA project planning.

TIS staff received training in environmental statistics, water quality and bioassessment sampling, ground water flow and contaminant transport modeling, and QA project plan preparation. A guidance document for preparing QA project plans in the TIS was prepared and adopted.

Laboratory staff received training in statistics and in QA in the environmental laboratory. Manufacturers and vendors provided training on operation and maintenance of analytical equipment.

TECHNICAL ASSISTANCE

AMS staff provided technical assistance to the WQFA program on eight grant projects. Training was provided to citizen volunteers participating in the Lake Water Quality Assessment project.

WAS staff provided technical assistance to seven Ecology programs on 60 different projects. The majority of these were conducted by local entities supported by Ecology grants. WAS staff provided field sampling training to several headquarters and regional staff. They also published guidance documents entitled Technical Guidance for Assessing the Quality of Aquatic Environments, Field Sampling and Measurement Protocols for the Watershed Assessments Section, and Stream Temperature Protocols.

TIS staff provided technical assistance to Ecology programs on 25 different projects and on two projects conducted outside the agency.

Laboratory staff provided analytical support to eight of the agency programs, conducting 542 analytical projects involving over 27,000 samples during FY94. They also assisted Ecology staff with preparation and review of QA project plans on request.

Laboratory staff provide documentation of quality control data associated with their analytical results. They also prepared a substantial revision of the 4th edition of the Lab Users Manual, which is used extensively by agency staff for project planning and as a reference on analytical methods.

QAS staff provided technical assistance, including review of QA project plans, to EILS staff on 26 projects, to other Ecology staff on 27 projects and on three projects conducted outside the agency. QAS staff provided training on QA planning to the WAS and TIS.

Over 1200 copies of Guidelines and Specifications for Preparing Quality Assurance Project Plans have been distributed to Ecology staff, to grant recipients, and to others reporting data to the agency since its first printing in 1991.

COMING ATTRACTIONS

Beginning in FY 1995, QA project plans will be prepared for all projects conducted by EILS staff. The plans will be submitted to Manchester Lab and the QA Section for review and comment.

WAS, QAS and Laboratory staff will provide training to Water Quality Program permit managers in September and October 1994. The combination lecture and field training will cover QA project plans, methods for sampling receiving water and submission of samples to the lab. The training will be offered at headquarters and each regional office.

Guidelines and Specifications for Preparing Quality Assurance Project Plans will be revised based on comments received from users.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

QA project plans should be reviewed and approved prior to the start of field work in all cases.

The time required for approval of QA project plans must be reduced to avoid delaying field work.

SHORELANDS & COASTAL ZONE MANAGEMENT PROGRAM

QA Coordinator/Contact: Tim Determan

PROJECTS

The shorelands program conducted one environmental data project and funded three others this year. These projects involve measurements of non-point source fecal coliform contamination of surface waters. The data are used to determine the impact of pollution on intertidal biota.

QA PROJECT PLANS

QA project plans were prepared for all four projects. The plan prepared by Shorelands was reviewed by EILS QA Section. The plans prepared by Jefferson County Conservation District, Kitsap Conservation District and the Nisqually Tribe were reviewed and approved by Shorelands staff.

TRAINING

Shorelands staff received no QA training this year.

TECHNICAL ASSISTANCE

One shorelands staff member spends about 20% of his time providing technical assistance on environmental data collection and analysis, including QA issues, to local government agencies.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Most grant recipients have difficulty using Guidelines and Specifications for Preparing Quality Assurance Project Plans. Tim Determan asked for assistance in preparing a more basic document for use by grant recipients, whose staff frequently do not have a strong scientific background.

WATER QUALITY PROGRAM

QA Coordinator/Contact: Randall Marshall & Cheryl Niemi

PROJECTS

Permit managers collect data on effluent and receiving water during inspections of facilities with NPDES, state and pre-treatment permits. The results are used to verify compliance or to develop permit limits.

Program staff review Discharge Monitoring Reports (DMRs) from permitted facilities and enter the data in the WPPLCS database. Federal regulations (40 CFR 136) include sampling and analytical methods and QA requirements. Permittee's are required to use an accredited lab for all DMR analyses.

QA PROJECT PLANS

QA project plans are not required for individual projects. The program has a generic QA project plan for Class II inspections of permitted facilities as a reference and for training purposes. The Inspection Manual recommends the preparation of a QA Project Plan according to the agency guidelines (Page 4-14).

The Permit Writer's Manual leaves the preparation of a QA project plan for sampling conducted by the permittee (self monitoring) at the discretion of the permit writer (Page XIII-23).

TRAINING

The program published an Inspection Manual and a Permit Writer's Manual in 1992. These are used to train permit managers.

TECHNICAL ASSISTANCE

Randall provides training to commercial labs on Whole Effluent Toxicity (WET) testing and electronic data transmission of WET data and has written a procedural manual for WET data assessment.

Two full time "roving operators" provide technical assistance to wastewater treatment plant operators.

COMING ATTRACTIONS

Melanie Lee is working on a manual for municipal storm water dischargers which will include recommendations for sampling, analytical, and QC procedures.

EILS program staff will provide permit managers with a general QA project plan for receiving water sampling projects as part of the training described on page 4. This document can be used as the basis for QA project plans for specific projects.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Program management should participate in staff training to promote better communication and coordination within the program.

Technical assistance to labs performing whole effluent testing should be increased to reduce amount of anomalous and invalid data and performance evaluation samples for whole effluent testing should be developed by Ecology, if possible.

QA project plans for all data collection activities should be prepared and reviewed before field work begins.

WATER QUALITY FINANCIAL ASSISTANCE PROGRAM

QA Coordinator/Contact: Allen Moore

PROJECTS

Program staff do not collect environmental data. They are responsible for administering grants to tribes and local governments. Some of these grants involve collection of data on surface water, ground water, storm water and/or freshwater sediments. The data may be used to develop pollution control strategies. They administer about 25 new grants which include water quality monitoring components each year.

QA PROJECT PLANS

Grant recipients are required to prepare QA project plans for all projects which generate environmental data. Program staff are responsible for reviewing and approving the plans.

TRAINING

Program staff have received training on QA principles and planning in previous years. They received no QA training in FY94.

TECHNICAL ASSISTANCE

Program staff routinely provide technical assistance to grant recipients. Two experience staff review and comment on QA project plans. In addition, the program funded 0.5 FTE in the EILS program for technical assistance and review of QA project plans (see EILS Technical Assistance section).

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Program staff would benefit from training in QA principles and in the skills required to provide technical assistance to grant recipients.

Data generated by grant recipients should be included in Ecology data bases when its quality is adequate and properly documented.

The process for approval of QA project plans needs to be shortened and policy on approval of plans prior to disbursal of funds should be documented.

The guidelines for preparing QA project plans (Ecology Document 91-16) are difficult for some grantees to use. More basic guidance is needed. Allen suggested that a Comment Card be included with the guidelines to solicit feedback from grantees. He also would like to develop three or four "generic" QA project plans for the routine projects in many grants. Also a QA "hotline" would be helpful to grant recipients.

QA support from the EILS program has raised the quality of data generated by grantees and funding to continue some level of support should be budgeted.

Water Resources Program

QA Coordinator/Contact: Mel Schaefer

PROJECTS

Program staff measure stream flow and the level of groundwater in wells and they conduct pump tests on wells. They use USGS methods for these measurements. Hydrogeologic data are also submitted by outside sources such as well drillers and this data is compiled within the program. Some QA criteria are applied to the data before they are entered into the program data bases.

QA PROJECT PLANS

Program staff do not do not prepare QA project plans for their field work.

TRAINING

Program staff received no QA training this year.

TECHNICAL ASSISTANCE

Program staff provide training for well drillers through an ongoing educational outreach program.

TOXICS CLEANUP PROGRAM

QA Coordinator/Contact: Steve Robb

PROJECTS

Program staff collect and analyze samples of soil, freshwater sediments, surface water, storm water and ground water in the course of Initial Investigations of potentially contaminated sites. The samples are analyzed at the Manchester Laboratory for any substances that poses a threat to human health or the environment. The data are used to prioritize contaminated sites.

Program staff administer grants to local health departments to conduct Site Hazard Assessments at contaminated sites. They provide oversight on sites being remediated by private parties, including observation of field sampling events. They also review work plans (e.g. for site remediation) prepared and data submitted by responsible parties for compliance with WAC 173-340, the Model Toxics Cleanup Act (MTCA).

Program staff also conduct assessments of marine and estuarine habitats.

Management of contaminated wastes is governed by the Federal Resource Conservation and Recovery Act (RCRA). Sampling and analytical QA requirements are included in the analytical methods manual (SW846) for RCRA projects and in MTCA.

QA PROJECT PLANS

QA project plans are not generally required. Site managers review sampling and analysis Plans (SAPs) prepared by consultants for Remedial Investigations/Feasibility Studies (RI/FS).

TRAINING

Program staff received training in groundwater monitoring and remedial technologies.

TECHNICAL ASSISTANCE

Program staff conduct workshops for local health departments on Site Hazard Assessment procedures and provide training for Ecology staff on determining compliance with cleanup standards, on statistics, on policy issues and on remedial technologies.

Guidance on determining compliance with cleanup standards which are below the detection limits of the measurement system was published.

COMING ATTRACTIONS

Guidance and possible rule changes for soil leaching are in preparation.

Guidance on Total Petroleum Hydrocarbon (TPH) methods for bioassays, soil leaching, and cleanup standards is in preparation.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Program staff need training in reviewing SAPs and site cleanup reports prepared by contractors.

Requests for technical assistance and support from HQ staff are increasing so HQ staff should not be cut.

Efforts toward greater consistency in interpretation and application of federal and state regulations must continue.

NUCLEAR WASTE PROGRAM

QA Coordinator/Contact: Jerry Yokel

PROJECTS

Program staff split samples collected by contractor personnel at the Hanford reservation and have them analyzed by independent laboratories. Surface water, groundwater, soil, sediment and effluent samples are analyzed for inorganic, organic and radiochemical contaminants as well as biotoxicity. Data from several hundred samples per year are compared with those from the Hanford contractor's laboratories to confirm their validity.

Activities are regulated by the Hanford Tri-party Agreement.

QA PROJECT PLANS

QA project plans for about 75% of the sampling events are prepared by the Hanford contractor and reviewed by program staff.

TRAINING

Program staff received training provided by senior staff.

TECHNICAL ASSISTANCE

Program staff provide on-site assistance and oversight to the Hanford contractor during sampling events.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

Additional training in QA principles and practices for program staff is recommended.

Additional staff with chemistry backgrounds could provide better oversight of environmental monitoring at the Hanford site.

HAZARDOUS WASTE & TOXICS REDUCTION PROGRAM

QA Coordinator/Contact: Susan Ridgley & Tyrone Thomas

PROJECTS

Program staff sample waste containers to identify and designate the contents. They also sample soil in waste storage areas to detect contamination due to waste storage practices for enforcement purposes. Soil samples are assayed for biotoxicity to rats and fish. Soil and ground water samples are collected in the course of the oversight of corrective action projects and of inspections of ground water monitoring systems.

Federal hazardous waste regulations (RCRA) drive the state Dangerous Waste Regulation (WAC 173-303) and require the use of the EPA's methods for characterizing waste (SW846). Corrective action projects are regulated under the Model Toxics Control Act.

QA PROJECT PLANS

QA project plans are not required for sampling projects conducted by program staff. Samples collected as part of corrective action projects and ground water monitoring inspections are split with program staff according to the plan for the specific project.

TRAINING

Program staff received training in hazardous materials sampling and ground water monitoring from EPA and a tour of the Manchester Laboratory.

TECHNICAL ASSISTANCE

Assistance provided by program staff to hazardous waste generators does not cover QA practices.

COMING ATTRACTIONS

Accreditation of laboratories for solid waste sampling and analytical methods is recommended in the Washington State Hazardous Waste Plan (Ecology Publication #92-05) and is under study.

RECOMMENDATIONS OF PROGRAM QA COORDINATOR

The method for polycyclic aromatic hydrocarbons (PAH) needs improvement and is under review by the Dangerous Waste Regulatory Reform Project.