

## **IV. Quality Management Program**

### **A. Introduction**

The Commonwealth of Virginia Department of Environmental Quality (VADEQ) is mandated by the state water control law to protect existing high quality state waters and to provide for the restoration of all other state waters. In accordance with this mandate, the VADEQ has established procedures for investigating, monitoring and scientifically evaluating water quality and water problems.

These procedures were initiated well before the advent of the Federal Clean Water Act (P.L.92-500 – ‘The Act’). With the promulgation of the Clean Water Act and subsequent funding, VA-DEQ’s water quality programs were expanded or modified to comply with the federal mandates of the Act.

DEQ’s Quality Management System is a program (QMP) designed to ensure that the Water Quality Monitoring Program produces data of known quality, that is acceptable water quality data for its intended uses. This objective is also referred to as Quality Assurance (QA). Implementation of the QMP includes the Quality Control (QC), of both field and analytical processes, designed to ensure that decisions made by the agency regarding the state’s water quality will be based upon sound professional principles and environmental data of known and acceptable quality.

### **B. Goals**

It is the intent of the Water Quality Monitoring (WQM) QA Policy to attain the following quality assurance goals:

- (a) The goal of the water quality monitoring program is to ensure that all environmental data generated by or for the agency and used to evaluate water quality, will be scientifically valid, defensible and of documented and adequate quality.
- (b) All water quality monitoring activities performed by or under contract for VADEQ will have approved quality assurance project plans prior to the start of data collection activities.
- (c) Communication on quality assurance issues and activities will be maintained among Central Office and Regional Office management, coordinators and staff.
- (d) Assessment will be performed to determine the effectiveness of the WQM program quality assurance system. Continued improvement in the quality management system will be emphasized.
- (e) Quality assurance processes will be accomplished in the most cost-effective manner possible without compromising data quality.

### **C. Policy**

It is the VA-DEQ WQM Program’s policy:

- (a) To ensure that data generators produce quality data, confirmed by providing easy access to all the necessary documentation and QA training.

- (b) Where applicable, to ensure that staff and external organizations generating WQM data follow the requirements outlined in the QMP, subsequent WQM policy, and standard operating procedures.
- (c) To require a QA project plan that describes the intended data uses, specific quality assurance activities, level of quality to be obtained, and data acceptance criteria for field, laboratory and data management activities.
- (d) To ensure that sufficient resources are allocated to guarantee that QA activities provide the desired level of quality.
- (e) To conduct annual technical system audits on monitoring and laboratory personnel and contractors, to ensure that they comply with the WQM quality management system requirements and to address any highlighted deficiencies in a timely manner.

#### **D. Quality Assurance Project Plan and Standard Operating Procedures**

It is the policy of VA-DEQ that Quality Assurance Project Plans (QAPPs) and Standard Operating procedures (SOPs) will be developed as project planning documents for all environmental data operations, and to ensure that no monitoring activities shall be started until a QAPP has been appropriately reviewed, approved and distributed to project personnel.

A QAPP shall be composed of standardized, recognizable elements covering the entire project, from planning through implementation and assessment. The project elements cover four general groups of information required in a QAPP, and which include: (1) project management, (2) data generation and acquisition, (3) assessment and oversight, and (4) data validation and usability.

A description of and the intent of each required element is contained in the document, “[EPA Requirements for Quality Assurance Project Plans](http://www.epa.gov/quality/qapps.html)” [QA/R-5 - <http://www.epa.gov/quality/qapps.html>]. A guidance document for QAPP planning and development is available as “[EPA Guidance for Quality Assurance Project Plans](http://www.epa.gov/quality/qapps.html)” [QA/G-5 - <http://www.epa.gov/quality/qapps.html>]. Both of these documents are used in the preparation of VA-DEQ’s QAPP. Each QAPP must also use a document control format that provides its version number and effective date.

The use of SOPs by VA-DEQ serves as one mechanism to ensure comparability across each project. SOPs must be incorporated, either in full or by reference, into a QAPP. SOPs detail the work processes that are conducted or followed within an organization to facilitate consistent conformance to technical and quality system requirements and to support data quality.

All QAPPs and SOPs need to be kept current and in a safe and secure location. It is the responsibility of the program managers to ensure that their applicable policies and procedures are current, and available for use by program staff to implement environmental data operations. Review of QAPPs and SOPs should be part of an annual review process. Those QAPPs and SOPs that are generated by DEQ are stored and maintained in the agency’s Comprehensive Environmental Data System (CEDS) database. The CEDS water quality data, including the QAPPs and SOPs, are backed up as follows:

1. A mirror copy of the CEDS Production (CEDSPROD) data is replicated daily to a reporting database (CEDSREPT).

2. Both the CEDSPROD and CEDSREPT databases are mirrored and stored on the DEQ Storage Area Network (SAN).
3. Daily, full backup images are made and sent to an offsite vendor for vault storage.
4. DEQ will restore the data from vault storage if the SAN becomes destroyed.

For Business Continuity purposes, plans were developed in 2004 to also have standby instances of both databases available on alternate data center equipment.

QAPPs are prepared using a systematic planning process, with the involvement and assistance of program management and quality assurance staff from all the participating organizations. All participating organizations, internal agency divisions, and the EPA (when applicable) are afforded the opportunity to review and comment on proposed QAPPs prior to their approval and implementation. Review comments, responses to comments, and revisions are documented and provided to reviewers.

QAPPs are always approved prior to the initiation of environmental work activities. QAPPs need to be reviewed by peers, and approved by program managers and assistant directors or divisional directors. Program managers are required to distribute copies of QAPPs to the people associated with the project.

It is the overall responsibility of the program managers to ensure that VA-DEQ field staffs properly implement the developed QAPPs, and that the implemented process defined in the QAPPs adequately supplies environmental data that is of the quality required for its intended use.

Each QAPP will be reviewed annually by its own program QA Officer and updated as needed. A panel consisting of monitoring staff and managers provides the updates, and the program manager must approve final drafts. It is the responsibility of each program QA Officer to ensure that the program policies and procedures are current, and any changes are communicated to the program staff to be implemented into their environmental data operations. SOPs that have not been recently updated to reflect changes in the field procedures or analytical requirements will be reviewed as part of the annual review process.

## **E. External Agencies and Organizations QC Criteria**

The VA-DEQ also coordinates the collection and use of environmentally related data from numerous government agencies, as well as contractual, academic and private organizations and trained volunteers. The QA/QC requirements for external organizations and for VA-DEQ are identical, in order for the data to be utilized for assessment purposes.

To ensure that the data are of necessary quality, all external sources producing monitoring data must prepare a monitoring QAPP. The plans must contain all the elements of a QAPP and be submitted to VA-DEQ prior to commencement of monitoring or analysis. The plans are reviewed for applicability and completeness, based on monitoring QA/QC requirements of VA-DEQ, and must be approved by the program managers.

The QA/QC requirements must meet the specifications of performance criteria for measuring quality. These specifications include the acceptance criteria for precision, bias, completeness, comparability, and representativeness, and should document the processes for data quality assessments – the validation / verification of results to achieve the desired quality.

## F. Sub-Program Project Plans

VA-DEQ has many monitoring activities. Whenever possible, a complete and approved project plan has been developed. However, some sub-programs are still in the development phase for their project plans. These plans will be made available upon their completion.

Refer to <http://www.deq.virginia.gov/Programs/Water/LawsRegulationsGuidance/Guidance.aspx>, and see especially the “[Water Quality Monitoring Consolidated Guidance Memorandum](#)” (Guidance No. 04-2005), for the most current approved versions. Currently, VA-DEQ has completed and has project plans directly available to the public for the following monitoring activities:

Chesapeake Bay Program (maintained by VA-DEQ Chesapeake Bay Monitoring Program personnel and available upon request):

- Mainstem Monitoring Program Project Plan
- Virginia Tributary Monitoring Program
- Virginia Non-Tidal Tributary Monitoring Program
- River Input Monitoring Program
- Near-shore Monitoring Program

National Coastal Assessment Monitoring Program

Virginia Ambient Water Quality Monitoring Program:

[WQM Quality Management Plan](#) [IV-d.pdf] (2010)

The most recently approved edition of DEQ’s WQM Quality Management Plan was submitted to EPA for review in December of 2010. Approval was received in October of 2011. Internal review and updates are continual.

[Ambient Water Quality Monitoring Quality Assurance Project Plan](#) [IV-e.pdf] (2010)  
[Standard Operating Procedures Manual](#) [IV-f.doc] (2010)

The most recently approved editions of DEQ’s WQM Quality Assurance Project Plan and Standard Operating Procedures Manual were submitted to EPA for review in December 2010. They were approved in October 2011. Internal review and updates of both documents are continual.

Citizen Volunteer Monitoring Program Project Plans

Additional QAPPs, for specific special studies and other projects, are available by direct request. A copy of the Special Study QAPP maybe requested directly from:

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For information specifically related to Quality Assurance of the Chesapeake Bay Program contact:

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For further information regarding DEQ's global statewide Quality Management Program including citizen and non-agency monitoring and QAPPs contact:

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