

MODULE 4. REFERENCES AND LINKS

This module contains a great deal of information you may wish to explore and use depending on your project needs. Each reference includes a title followed by a brief description. Most of the descriptions are supplemented by information presented in the form of attached "PDF" documents. When available, website links are also provided.

Note that some of the references and links do not directly support development of QA Project Plans for water quality monitoring programs. This supplemental information was provided in an attempt to help create a library of Quality Assurance and technical references which may be of value in the future. Included are QA Project Plan documents designed to support specific types of tribal environmental programs (e.g., pesticides, Brownfields, etc.), as well as QA and/or technical information designed for various types of monitoring activities (e.g., macroinvertebrate or other biological monitoring, fish advisories, groundwater monitoring, etc.).

The references provided below are divided into 7 categories:

- **Requirements/Specifications** - Presents the two national EPA documents outlining the "requirements" for providing quality-related plans for individuals/organizations conducting work for EPA and/or with EPA funding. One document is for Quality Management Plans (provided for informational purposes and not the focus of this current tool), and the other is for QA Project Plans (the actual starting point for the development of this current QAPP development tool).
- **Primary Guidance** - Provides key national EPA documents with "guidance" designed to support the development of QA Project Plans and to complement the QA Project Plan "requirements" document included under the heading listed above.
- **Secondary Guidance** - Includes additional national "guidance" documents that may support you in planning and developing specific sections of your QA Project Plan.
- **Supplemental Technical Information** - Includes supplemental technical information from various sources to support various types of environmental projects.
- **Analytical References** - Provides information related to selection of appropriate analytical QC, test methods, and analytical methods. Includes links to various websites with additional analytical methods for various applications.
- **Other Tools** - Provides a regional beginners' QA Project Plan development training tool, some example data review documentation forms, a conversion program for units and measures, and some helpful hints for EXCEL spreadsheets.
- **Organizational Website Links** - Supplies links to the organizations/departments of many of the individuals on the workgroup designing this CD-ROM QA Project Plan development tool, additional QA and/or technical information, as well as a way to contact the associated QA management in these organizations/departments.

Requirements/Specifications –

1. EPA QA/R-2, *EPA Requirements for Quality Management Plans* (EPA/240/B-01/002, March 2001 – The Quality Management Plan (QMP) documents how an organization will plan, implement, and assess the effectiveness of its quality assurance and quality control operations applied to environmental programs. EPA QA/R-2 provides development and content requirements for QMPs for organizations that receive funding from EPA. Section 3.8 ties the requirements for defining a process for developing, reviewing, approving, implementing, and revising QA Project Plans under the general outline of the QMP. (Note: This current CD-ROM QA Project Plan development tool does not address the topic of QMPs. Please check with your Regional QA Manager concerning your region’s requirements for needing QMPs for your organization.) Website: www.epa.gov/quality/qa_docs.html (Find under “Specifications for Non-EPA Organizations” heading.)
2. EPA QA/R-5, *EPA Requirements for Quality Assurance Project Plans* (EPA/240/B-01/003, March 2001) – The Quality Assurance Project Plan (QAPP) documents the type and quality of data needed to support environmental decisions, and describes the methods for collecting and assessing those data. EPA QA/R-5 provides content “requirements” for QA Project Plan for activities conducted by or funded by EPA. Additional supporting “guidance” for addressing these requirements is provided in the documents listed below under the “Primary Guidance” heading. Website: www.epa.gov/quality/qa_docs.html (Find under “Specifications for Non-EPA Organizations” heading.)

Primary Guidance –

1. EPA QA/G-5, *Guidance for Quality Assurance Project Plans* (EPA/240/R-02/009, December 2002) – The document provides guidance on developing Quality Assurance Project Plans that meet EPA specifications outlined in EPA QA/R-5. Note: This version replaces the original document issued in February 1998 (EPA/600/R-98/018). Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
2. *The Volunteer Monitor’s Guide to Quality Assurance Project Plans* (EPA 841-B-96-003, September 1996) – The document provides guidance on developing QA Project Plans that meet EPA specifications outlined in EPA QA/R-5, as well as provides an abbreviated QAPP template. Specifically focused on projects designed to monitor basic water quality parameters in streams, rivers, lakes, wetlands, etc. Website: www.epa.gov/owow/monitoring/vol.html (Find as first reference under “Methods” heading.)
3. *Generic Quality Assurance Project Plan Guidance for Programs Using Community Level Biological Assessment in Wadable Streams and Rivers* (EPA/841/B-95/004, July 1995) – The document provides guidance on developing QA Project Plans that meet EPA specifications outlined in EPA QA/R-5. Uses biological terminology and examples to

facilitate use by biologists and others who may not be familiar with terminology and approaches typical of guidance for chemical/physical monitoring and laboratory analysis. Website: www.epa.gov/bioindicators/html/qapp.html (Links directly to the document.)

Secondary Guidance –

1. EPA QA/G-4, *Guidance for the Data Quality Objectives Process* (EPA/600/R-96/055, August 2000) – Provides guidance on the Data Quality Objectives Process, a systematic planning process for environmental data collection. Note: This version replaces the original issued in September 1994.
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
2. EPA QA/G-4HW, *Data Quality Objectives Process for Hazardous Waste Site Investigations* (EPA/600/R-00/007, January 2000) – Provides guidance on applying the Data Quality Objectives process to hazardous waste site investigations.
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
3. EPA QA/G-6, *Guidance for Preparing Standard Operating Procedures* (EPA/240/B-01/004, March 2001) – Provides guidance on the development and documentation of Standard Operating Procedures. Note: This version replaces the original document issued in November 1995 (EPA/600/R-96/027).
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
4. EPA QA/G-7, *Guidance on Technical Audits and Related Assessments* (EPA/600/R-99/080, January 2000) – Provides guidance to help organizations plan, conduct, evaluate, and document technical assessments.
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
5. EPA QA/G-8, *Guidance on Environmental Data Verification and Validation* (EPA/240/R-02/004, November 2002) – Provide guidance to help organizations conduct data verification and validation activities.
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
6. EPA QA/G-9, *Guidance for Data Quality Assessment: Practical Methods for Data Analysis* (EPA/600/R-96/084, July 2000) – Provides guidance on a statistically-based method to evaluate the extent to which data can be used for a specific purpose. The QA00 version replaces all earlier versions of this guidance.
Website: www.epa.gov/quality/qa_docs.html (Find under “General Guidance” heading.)
7. *Quality Assurance Guidance for Conducting Brownfields Assessments* (EPA 540-R-98-038, September 1998) – Describes the key principles and best practices for QA/QC for Brownfields site assessments. Includes a description of a QA Project Plan and template forms necessary to prepare one.
Website: www.epa.gov/swerosps/bf/tools/tti_assess_cleanup.htm#qa (Find under “Quality Assurance heading.)

8. [*Guidance for Quality Assurance Project Plan Development for EPA-Funded Cooperative Agreements with State and Tribal Agencies for the Conduct of FIFRA Pesticide Programs*](#) (December 15, 2000) – Provides guidance for QA Project Plan development for activities conducted by state and tribal agencies under a Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) cooperative agreement grant. Covers five areas under which most FIFRA programs operate - use/misuse investigations, formulation testing, worker health & safety, groundwater monitoring, and special projects. Website: www.epa.gov/region9/qa/fieldsamp.html (Find as fourth listing under “Quality Assurance Guidance” header.)

Supplemental Technical Information –

1. [*California Stream Bioassessment Procedure*](#) prepared by California Department of Fish & Game Aquatic Bioassessment Laboratory/Water Pollution Control Laboratory (December 2003) – Provides standardized protocol for assessing biological and physical/habitat conditions of wadeable streams in California. Website: www.dfg.ca.gov/cabw/csbp_2003.pdf (Links directly to the document. Additional technical information of interest is also available at: www.dfg.ca.gov/cabw/)
2. [*Statistical Methods in Water Resources*](#) (as found in: *Techniques of Water-Resources Investigations of the United States Geological Survey, Book 4 - Hydrologic Analysis and Interpretation, Chapter A3*) (June 1991) – Reflects U.S Geological Survey (USGS) attempt to teach statistical methods appropriate for analysis of water resources data. Not a stand-alone text on statistics or a text on statistical hydrology. Website: <http://water.usgs.gov/pubs/twri/twri4a3/> (Links directly to the document.)
3. [*National Recommended Water Quality Criteria: 2004*](#) (updates EPA-822-R-02-047, November 2002) – Provides compilation of EPA’s national recommended water quality criteria for 158 pollutants developed pursuant to Section 304(a) of the Clean Water Act. Criteria are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Website: www.epa.gov/waterscience/criteria/wqcriteria.html (Links directly to the criteria table.)

Additional information available at following website: www.epa.gov/OST/standards

4. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Third Edition
[*Volume 1. Fish Sampling and Analysis*](#) (EPA-823-B-00-007, November 2000) – Provides information on sampling strategies for a contaminant monitoring program. Includes guidance related to: selection of target fish; selection of chemicals as target analytes; development of human health screening values; sample collection procedures including sample processing, preservation, and shipping; and data reporting and analysis.
[*Volume 2. Risk Assessment and Fish Consumption Limits*](#) (EPA-823-B-00-008,

November 2000) – Provides guidance on development of appropriate meal sizes and consumption rates for target analytes that bioaccumulate in fish tissues. Includes discussion of risk assessment methods used to derive consumption limits and methods to modify limits for local conditions.

Website: www.epa.gov/waterscience/fish/guidance.html (Links directly to the document.)

5. *USGS/Water Resources-Office of Water Quality, National Field Manual for the Collection of Water-Quality Data, Book 9, Handbook for Water-Resources Investigations* prepared by United States Geological Survey (last updated August 2005) – Provides a wealth of information compiled by U.S. Geological Survey (USGS) to assist in the management of water resources; to collect data that accurately describes physical, chemical, and biological attributes of water systems; and to achieve consistency in the scientific methods and procedures used, to document those methods and procedures, and to maintain technical expertise.

Website: <http://water.usgs.gov/owq/FieldManual/> (Links directly to the document.)

Due to the large size of this document, no associated PDF File was provided on the CD-ROM. Instead, the document may be accessed at the website listed, or a hard copy may be obtained from:

USGS Branch of Information Services
Box 25286
Federal Center
Denver, CO 80225
or
telephone: 1-888-ASK-USGS
facsimile: 303-202-4693

(Note: The hard copies are not likely to include all the latest revisions or additions which are maintained in the electronic version. New “hard” copies of chapters will only be printed and available for distribution when major revisions are made.)

6. *USGS/Water Supply Paper 2175. Measurement and Computation of Stream Flow* prepared by United States Geological Survey (last updated September 2005) – Provides U.S. Geological Survey (USGS) compilation of state-of-the-art standardized stream-gaging procedures intended for use as a training guide and reference text.
Volume 1: Measurement of Stage and Discharge – Provides information related to selection of gaging-station sites, measurement of stage, and measurement of discharge.
Volume 2: Computation of Discharge – Provided information related to computation of the stage-discharge relation, computation of daily-discharge records, and presentation and publication of stream-gaging data.
Website: <http://pubs.usgs.gov/wsp/wsp2175/> (last electronic update of site was 9/1/05, last printed 1983)

Due to the large size of this document, no associated PDF File was provided on the CD-ROM. Instead, the document may be accessed at the website listed, or a hard copy may be obtained from:

USGS Branch of Information Services
Box 25286
Federal Center
Denver, CO 80225
or
telephone: 1-888-ASK-USGS
facsimile: 303-202-4693

(Note: The hard copies are not likely to include all the latest revisions or additions which are maintained in the electronic version. New “hard” copies of chapters will only be printed and available for distribution when major revisions are made.)

7. *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Invertebrates, and Fish*; Second Edition, USEPA Office of Water 4503F (EPA 841-B-99-002, July 1999) – Provides basic aquatic life data for water quality management purposes such as problem screening, site ranking, and trend monitoring. May be useful as a framework for monitoring programs.
Website: www.epa.gov/owow/monitoring/rbp (Links directly to the document.)

Due to the large size of this document, no associated PDF File was provided on the CD-ROM. Instead, the document may be accessed at the website listed, or a hard copy may be obtained from:

U.S. Environmental Protection Agency
Office of Wetlands, Oceans, and Watersheds
Volunteer Monitoring (4503F)
401 M. Street, SW
Washington, DC 20460

8. *Volunteer Stream Monitoring: A Methods Manual*, USEPA, Office of Water 4503F (EPA 841-B-97-003, November 1997) – Provides methods for organizations wanting to launch a new stream monitoring program or enhance an existing one.
Website: www.epa.gov/volunteer/stream/stream.pdf (Links directly to the document.)
9. *Volunteer Lake Monitoring: A Methods Manual*, USEPA, Office of Water 4503F (EPA440-4-91-002, 1991) – Provides methods for organizations wanting to launch a new monitoring program to assess important lake conditions or enhance an existing one.
Website: www.epa.gov/volunteer/lake/lakevolman.pdf (Links directly to the document.)
10. *Methods for Biological Sampling and Analysis of Maine’s River and Streams*, S.P. Davies & L. Tsomides, Maine Department of Environmental Protection (MDEP) (DEP

LW0387-B2002, revised August 2002) – Describes field, laboratory, and data preparation methods required by the MDEP to collect and analyze benthic macroinvertebrate samples.

Website: www.state.me.us/dep/blwq/docmonitoring/biomonitoring/material.htm (Scroll down to first reference which includes text and associated Appendix A as separate documents.)

11. *Water on the Web* – (Website only) Serves as resource of scientific information about freshwater ecology and ways of monitoring pollution in rivers and lakes. Presents collaboration of information from industries, agencies, and schools. Also includes educational resources with downloadable powerpoint presentations for use in schools. Website: <http://www.waterontheweb.org/under/index.html>

Due to the large amount of information available, no associated PDF File was provided on the CD-ROM. The website did not provide a direct link to acquire information via mail; however it stated that more information on the Water on the Web Program can be obtained via email from Dr. Bruce Munson at bmunson@d.umn.edu.

12. *Vermont Department of Environmental Conservation (VTDEC) Geomorphic Assessment* – (Website only) Serves as a resource of scientific information on geomorphology of streams and rivers related specifically to the northeast US. Includes many downloadable publications. Website: http://www.vtwaterquality.org/rivers/htm/rv_geoassess.htm

Due to the large amount of information available, no associated PDF File was provided on the CD-ROM. Additional information may be obtained from:

Vermont Department of Environmental Conservation
Water Quality Division
103 South Main Street, Building 10 North
Waterbury, VT 05671
or
telephone: 802-241-3770 or 802-241-3777

13. *Watershed Analysis and Management (WAM) Guide for Tribes*, USEPA OWOW and AIEO, September 2000 – (Website only) Provides comprehensive methodology to address Tribal and State watershed management issues. Serves as resource describing the types of information necessary to compile when addressing problems in a watershed.

Website: www.epa.gov/owow/watershed/wacademy/wam/

No associated PDF File was provided on the website. However, the website identified that additional information can be obtained from:

U.S. Environmental Protection Agency
Office of Wetlands, Oceans, and Watersheds (4503T)

1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
or
telephone: 202-566-1155

Analytical References –

1. *Handbook for Analytical Quality Control in Water and Wastewater Laboratories* prepared by Environmental Monitoring and Support Laboratory, EPA ORD, Cincinnati, OH (EPA-600/4-79-019, March 1979) – Provides information concerned primarily with quality control (QC) for chemical and biological tests and measurements. Also includes discussion of QC aspects of sampling, microbiology, biology, radiochemistry, and safety as they relate to water and wastewater pollution control.
Website: Not available

2. 40 CFR Chapter 1, (1 July 2003); Subchapter D - Water Programs:
(Note: 2004 version is not yet available.)

Part 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants
Website: http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr136_03.html

Part 141.23 - Inorganic Chemical Sampling and Analytical Requirements
Website: http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr141_03.html

Part 141.24 - Organic Chemicals, Sampling and Analytical Requirements
Website: http://www.access.gpo.gov/nara/cfr/waisidx_03/40cfr141_03.html

3. Other Analytical Information Available on the Internet
Nationwide Information on National Environmental Laboratory Accreditation Conference (NELAC) and Program (NELAP) Accredited Labs
Website: <http://www.epa.gov/nerlesd1/land-sci/nelac/index.html>

Index to EPA Test Methods, April 2003 revised edition (compiled by EPA-New England)
- Provides a list of all EPA Analytical Methods (by method number and analyte), a few words describing each method, and a source where the method can be obtained. This information may be very useful to assist you in selecting a test method.
Website: <http://www.epa.gov/region1/info/testmethods/pdfs/testmeth.pdf>

Analytical Methods Developed by the Office of Groundwater and Drinking Water - Provides list of methods and links, as well as links to complete method texts.
Website: <http://www.epa.gov/safewater/methods/sourcalt.html>

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods - Serves as Office of Solid Waste's compendium of analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations. Functions primarily as a guidance document setting forth acceptable, although not required,

methods for the regulated and regulatory communities to use in responding to RCRA-related sampling and analysis requirements.

Website: <http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>

Water Science Analytical Methods - Provides laboratory analytical methods that are used by industries and municipalities to analyze the chemical and biological components of wastewater, drinking water, sediment, and other environmental samples that are required by regulations under the authority of the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA). Almost all of these methods are published as regulations at Title 40 of the Code of Federal Regulations (CFR).

Website: <http://www.epa.gov/ost/methods/>

National Environmental Methods Index - Includes index for multi-media methods by method number & analyte (including the water methods in 500 series) and brief descriptions of methods. Also provides background to compare and contrast the performance and relative cost of analytical, test, and sampling methods for environmental monitoring,

Website: www.nemi.gov

Other Tools –

1. US EPA-New England: *Beginner's Guide to Preparing Quality Assurance Project Plans for Environmental Projects* – Provides web-based QAPP training for grantees and other first time QAPP preparers. Consists of two-part powerpoint presentation: Part 1 - Answers some frequently asked questions about QAPPs; Part 2 - Describes QA/QC and project information to include in a QAPP.
Website: www.epa.gov/ne/lab/qa/training.html (Links directly to the training module and associated powerpoint presentation.)
2. 29 Palms Laboratory, Coachella, CA: *Data Verification and Validation Form* - Provides an example standard operating procedure and associated checklist to document the process for examining the generation of analytical results from sample collection through data reporting.
Website: Not available.
3. EPA-New England: *Data Evaluation/Documentation Form, Mercury in Fish Tissue, 1999* - Provides an example checklist developed to document the process for evaluating data generated from the analysis of fish tissue for mercury for a specific project's sample preparation and analytical methods.
Website: Not available.
4. *Computer Run Tool for Converting Units*
Website: Not available.
5. *Introduction to Excel Spreadsheets*
Website: Not available.

Organizational Website Links –

1. EPA New England/Region 1 Quality Assurance:
<http://www.epa.gov/ne/lab/qa/index.html> and
<http://www.epa.gov/region1/lab/qa/qualsys.html>
2. EPA Region 3 - Environmental Science Center, Quality Assurance Team:
<http://www.epa.gov/region3/esc/QA/qateam.htm>
3. EPA Region 7 Quality Assurance
<http://www.epa.gov/region07/qa/index.htm>
4. EPA Region 9 Quality Assurance
<http://www.epa.gov/region9/qa/index.html>
5. EPA Region 10 Quality Assurance
<http://yosemite.epa.gov/R10/OEA.NSF/> (and click on “Quality Assurance” block)
6. EPA Tribal Air Monitoring Support Center, Northern Arizona University - Institute for Tribal Environmental Professionals
<http://www4.nau.edu/itep/>
7. 29 Palms of Mission Indians
<http://www.tepa29.org/> (and click on “Tribal EPA” block)