



APPENDIX G

Outside Agency Data and Quality Assurance Requirements

EXISTING AND READILY AVAILABLE DATA MINIMAL DATA REQUIREMENTS

This is a summary of the process that the Department uses in its evaluation of outside data and information submitted for consideration in the development of the Water Quality Assessment 305(b) Report and 303(d) list of impaired waters. The Department will consider all data submissions from outside agencies in its decision-making process. Data that meets the minimal data requirements provided in this document may be used in the listing process and will be incorporated into the Department's 305(b) database. Data not meeting the requirements may be helpful for other purposes such as public education targeting waters for further study, or assisting in collecting information for TMDLs.

Section 305(b) of the Clean Water Act requires states, territories, tribes and interstate commission to assess the health of their waters and the extent to which water quality standards and the basic goals of the Clean Water Act are being met. The goals of the Clean Water Act are to achieve and maintain water quality that provides for healthy communities of fish and shellfish and that allows for recreation in and on the water. States collect data and information that allow them to characterize whether water quality meets these and other uses for their waters, which are expressed in water quality standards that each state sets. Water quality standards for all Pennsylvania surface waters can be found in Chapter 93 - Water Quality Standards and Chapter 16 - Water Quality Toxics Management Strategy (PA Code - Title 25. Environmental Protection).

In order for the Department to use data in the 305(b)/303(d) process, it must be of a documented quality. The Department will screen all outside sources of data for the following minimal requirements:

1. Written documentation of the protocols used in sampling and analysis describing quality assurance and quality control measures in the form of a Monitoring Study Design or Quality Assurance Project Plan.
2. Location and extent of the waterbody,

The Department recognizes that there are groups and organizations that do not currently have established sampling and analysis protocols, Monitoring Study Designs, or Quality Assurance Project Plans. Groups or individuals that would like to begin monitoring with the goal of having their data utilized by the Department in the 305(b)/ 303(d) process, are encouraged to contact the Department's Citizens' Volunteer Monitoring Program (CVMP) for assistance. The CVMP has published a handbook for volunteer monitors: "[Designing Your Monitoring Program – A Technical Handbook for Community-Based Monitoring in Pennsylvania.](#)" Those groups without established QA/QC plans are also encouraged to review the handbook. A copy of this document can be obtained by contacting:

Ms Cheryl Snyder
Citizens' Volunteer Monitoring Coordinator
Bureau of Watershed Management
P.O. Box 8555
Harrisburg, PA 17105-8555

Telephone (717) 772-5640
E-mail chesnyder@state.pa.us

Groups may also contact the Consortium for Scientific Assistance to Watersheds (CSAW) to obtain a list of service providers available to assist groups with monitoring study designs and QA/QC guidance. Access the website: <http://pa.water.usgs.gov/csaw>.

Documentation of a Water Quality Standard Violation:

For any given waterbody in the Commonwealth, the applicable water quality standard (as found in Chapter 93 - Water Quality Standards and Chapter 16 - Water Quality Toxics Management Strategy <PA Code - Title 25. Environmental Protection>) is comprised of the designated uses and numeric and/or narrative criteria established to protect those uses. Documented evidence of a use impairment or criterion violation constitutes a violation of the applicable water quality standard. Because of the significance attached to 303(d)-listed waters, it is important that any determination of a water quality standard violation be based on scientifically sound methods and data. Assessments based on the comparison of numeric criteria with long-term water quality data typically meet this principle. Chemical assessments based on single, one-time grab samples generally do not. Single, one-time biological surveys conducted to assess support of designated aquatic life uses are generally acceptable because the biology is a long-term indicator of water quality. Sufficient evidence must be presented for both chemical and biological data to indicate that the assessment reflects the conditions throughout the entire waterbody segment and not simply a single site.

In reviewing data submitted by outside sources, the Department will use the following guidelines to determine if criteria are being violated and/or uses are being impaired.

Note: The following referenced protocols are contained in the “Assessment and Listing Methodology”. The methodology is available on the Department’s website at www.depweb.state.pa.us/watersupply/cwp. Select ‘Water’ in the top menu bar, then ‘Water Quality’ in the drop down menu, and finally scroll to the Assessment Methodology selection. Due to the large number of pages the methodology will not be available in hardcopy.

Chemical Data – The accepted statistical methods for determining impairment are found in the “Chemical Statistical Assessments” protocol.

Data age	Data must be less than 5 years old, unless it can be demonstrated that data is representative of current conditions.
Chemical Parameters	Only those chemical parameters for which a criterion has been established can be considered. Applicable water quality criteria vary depending on the waterbody being considered. Criteria for all waterbodies in the Commonwealth can be found in Chapters 93 - Water Quality Standards and 16 - Water Quality Toxics Management Strategy of the Department’s Rules and Regulations (PA Code - Title 25. Environmental Protection)
Minimum number of sampling sites	See the discussion “Location of Waterbody” for more details.
Sampling duration and frequency	To avoid the problems associated with serial correlation of time series data, sample collections must be at least two weeks apart and collected over a period of one to two years.
Minimum number of samples required for data to be considered representative of actual conditions	A minimum of 24 samples for each site is required.
Required analysis to determine if samples document impairment of water use	To be performed by DEP staff using procedures outlined in the Chemical Statistical Assessments protocol found in the Assessment and Listing Methodology.

Bacteriological Data : The accepted statistical methods for determining impairment are found in the “Bacteria Sampling Protocol”

Data age	Data must be less than 5 years old, unless it can be demonstrated that data is representative of current conditions.
Minimum number of sampling sites	See the discussion “Location of Waterbody” for more details.
Sampling duration and frequency	No more than one sample per day. A minimum of 5 samples collected on different days over a period of 30 days and spanning at least 14 days constitutes one monthly sampling group.
Minimum number of samples required for data to be considered representative of actual conditions.	Two monthly sampling groups collected at least one month apart during the recreation season (May 1-September 30).
Required analysis to determine if samples document impairment of water use	To be performed by DEP staff using procedures outlined in the <u>Bacteria Sampling Protocol</u> in the current Assessment and Listing Methodology

Macroinvertebrate/Fish Data

In 2007, the Department phased out its Family level macroinvertebrate screening protocol in favor of Genus level protocols. Family level surveys can still be used for public education, targeting waters for further study, or assisting in collecting information for TMDLs.

Genus level identification is required for 303(d)/305(b) listing purposes. The current macroinvertebrate protocols found in the Assessment Methodology include Index of Biological Integrity for Wadable Freestone Streams In Pennsylvania, Summer 2 D-Frame 100-Organism Bioassessment Protocol, Limestone Stream Macroinvertebrate Sampling Protocol, and Pennsylvania DEP Multihabitat Stream Assessment Protocol.

Data age	Data must be less than 5 years old, unless it can be demonstrated that data is representative of current conditions.
Minimum number of sampling sites	See the discussion “Location of Waterbody” for more details.
Sampling duration	Single one-time grab samples are acceptable.
Acceptable data	Macroinvertebrates must be identified to the lowest practical taxonomic level (generally to genus, except for snails, worms, clams, and midges. Fishes must be identified to species.
Quality assurance for macroinvertebrate identification.	Persons with adequate knowledge and training in aquatic biology must identify the macroinvertebrates.
Required analysis to determine if samples document impairment of water use	To be performed by DEP staff using procedures outlined in the protocols listed above.

Location of Waterbody:

It is imperative that all data and information submitted to DEP for consideration in the 305(b)/ 303(d) process include sufficient information regarding the location and extent of water quality limited segments. The Department requires that information submitted include copies of the appropriate USGS 7.5’ topographic quadrangles with impaired segments clearly highlighted. For assessments that document impairments to entire basins, identifying the location of the mouth of the major stream is sufficient. In this latter case, all segments upstream of the mouth will be assigned the same impaired or attained status.

The Department defines a stream segment as the portion of a stream between an upstream tributary and the next downstream tributary. Assessments may consist of one or multiple segments. For headwater sections, the first segment extends from the source to the first tributary. The Department uses USGS 7.5 minute quadrangle maps (1:24,000 scale) to identify tributaries and the resulting stream segments. The rationale for

segmenting streams is that tributaries can deliver pollution loads and/or dilution water in quantities sufficient to affect the water quality of the receiving stream. Some tributaries have a flow so small in relation to the mainstem that they are not a factor in the overall quality of the mainstem. There is no need to place sampling sites around these tributaries.

After identifying a stream segment for study, sampling locations should be situated so they reflect the quality of all waters upstream to the next sampling point. Normally, a minimum of two sites would be required to assess the quality of a stream segment. One site should be located just above the upstream tributary to measure the water quality entering the stream segment (background water quality) and another site just above the downstream tributary to measure the water quality as it flows out of the segment. The existing out-flow water quality should reflect the cumulative impacts of all land-uses that can potentially affect the water quality of that bracketed segment. Occasionally, some upper basin stream segments may have uniform land-use with little or no point or nonpoint sources. In these cases, only one lower downstream sample location may adequately reflect upstream basin water quality.

Outside sources of data and information that fail to adequately delineate a stream segment, cannot be used in the 305(b)/303(d) process. It is imperative that submitted information clearly identifies the extent of the waterbody segment(s) to which the data applies.

Quality Assurance/Quality Control:

All reports and data submitted to the Department must be accompanied by either a written study design completed in accordance with DEP's "Designing Your Monitoring Program – A Technical Handbook for Community-Based Monitoring in Pennsylvania", a written quality assurance project plan completed in accordance with EPA's "The Volunteer Monitors Guide to Quality Assurance Project Plans" or a standard QA/QC protocol. A quality assurance plan should be adhered to that includes external checks such as split sample analysis by DEP certified labs.

Chemical and Bacteriological Data

Guidance for QA/QC and monitoring of chemical and bacteriological data collection is available in PA DEP's "Designing Your Monitoring Program – A Technical Handbook For Community-Based Monitoring in Pennsylvania" or EPA's The Volunteer Monitor's Guide to Quality Assurance Project Plans, EPA 841-B-96-003. The DEP guidance can be found at www.dep.state.pa.us, direct link-volunteer monitoring. The EPA guidance can be found at <http://www.epa.gov/OWOW/monitoring/volunteer/qappcovr.htm>.

Biological Data

Macroinvertebrate data must be collected in accordance with one of the appropriate protocols:-Index of Biological Integrity for Wadable Freestone Streams In Pennsylvania, Summer 2 D-Frame 100-Organism Bioassessment Protocol, Limestone Stream Macroinvertebrate Sampling Protocol, or Pennsylvania DEP Multihabitat Stream Assessment Protocol.

Other methods using macroinvertebrates identified to the lowest practical taxonomic level (generally to genus, except for snails, worms, clams, and midges) may be consider if collected using accepted peer reviewed methods. But it is highly recommended one of the Assessment Methodology protocols be used.

Currently the Department does not have an established fish protocol. Studies which identify fish to species and use accepted peer reviewed methods will be considered for use in 303(d)/305(b) listings.