



COMMONWEALTH OF PENNSYLVANIA

**ASSESSMENT AND LISTING METHODOLOGY
FOR INTEGRATED WATER QUALITY
MONITORING AND ASSESSMENT REPORTING**

**CLEAN WATER ACT
SECTIONS 305(b) / 303(D)
March 2009**

**PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL
PROTECTION**

Overview

The Department of Environmental Protection (DEP) has an ongoing program to assess the quality of waters in Pennsylvania and identify streams and other bodies of water that are not attaining designated and existing uses as “impaired.” Water quality standards are comprised of the uses (including antidegradation) that waters can support and goals established to protect those uses. Uses include aquatic life, water supply, recreation and fish consumption. The goals are numerical or narrative water quality criteria that express the in-stream levels of substances that must be achieved to support the uses. Periodic reports on the quality of waters in the Commonwealth are required under section 305(b) of the federal Clean Water Act.

Section 303(d) of the Act requires states to list all impaired waters not supporting uses even after appropriate and required water pollution control technologies have been applied. For example, a waterbody impacted by a point source discharge that is not complying with its effluent limits would not be listed on the 303(d) list. The Department would correct this water impairment by taking a compliance action against the discharger and listing it in Category 4b of the Integrated Report. If the waterbody still did not meet water quality standards after achieving compliance with its permit requirements, it would be included in Category 5 of the Integrated Report. This listing includes the reason for impairment, which may be one or more point sources (like industrial or sewage discharges), or non-point sources (like abandoned mine lands or agricultural runoff).

DEP’s assessment and listing methodology constitutes the “decision rules” the Department uses when assessing the quality of waters and identifying waterbodies that do not meet designated and existing uses. Table 1 lists and defines the sources and causes DEP uses to describe impairments. Problems associated with impacts to aquatic life use are identified primarily through stream biological community assessments. The Department identifies impacts to water supply by evaluating the chemical quality of raw (intake) water monitored by water purveyors and fish consumption uses by analyzing edible portions (fillets) of fish collected throughout the Commonwealth. Recreational use impairments are identified using bacteriological data.

All waterbody information is organized by United States Geological Survey (USGS) Hydrologic Unit Codes (HUCs) that delineate watersheds. Stream and station assessment information is georeferenced to the National Hydrography Dataset (NHD) 1/24,000 GIS stream layer. Stream assessments are referenced to NHD waterbody segments and sites by latitude and longitude. Prior to 2006, the SWP (State Water Plan) watershed was the primary organizational unit on the Department’s 1/24,000 GIS stream layer. In 2006, all data was transferred to the NHD GIS stream coverage. The primary organizational unit of the NHD is the HUC and it now supplants the SWP

Use of Monitoring Data

State water quality standards assign designated beneficial uses to waters and DEP measures a variety of physical, chemical, and biological water quality and habitat

indicators to determine if water uses are attained. The water quality indicators used by Pennsylvania for making use attainment decisions are interpreted within the context of the Commonwealth's Water Quality Standards (WQS). Other factors that influence the state's selection of indicators include: sampling effort, the cost of collecting and analyzing samples, the variability of the indicator in the environment, the level of precision desired by decision-makers, and the sampling frequency required to meet data quality objectives. Raw data is stored in the appropriate biological, chemical, or habitat data tables. All data can be geo-referenced to the NHD stream layer accurate to the 1/24,000 scale.

Chemical Data (*Reference attached Water Chemistry Evaluation Protocol*)

1) Water Quality Status

The Department uses chemical water quality data to identify bodies of water where anthropogenic pollutant loads cause violations of water quality standards. Since these decisions often rely on limited environmental data, they are subject to error. Recognizing this fact, DEP has adopted a statistical approach to these decisions, which aims to minimize decision errors. Decision error rates are related to the sample size, among other factors. Therefore, DEP's approach categorizes datasets based on the sample size. This chemical evaluation can be applied to DEP, Water Quality Network (WQN), as well as outside agency information.

- (1) For samples with less than eight observations ($n < 8$), DEP considers the potential for decision errors too high to use these data for impairment decisions. Water bodies with less than eight samples are listed as needing further evaluation and additional samples must be collected.
- (2) For samples with between eight and 23 observations ($8 \leq n \leq 23$), DEP uses a sequential decision process. First, these data are subject to a nonparametric confidence limit test, which is also known as the binomial method. If this test indicates impairment, the water is listed as impaired. If the nonparametric confidence limit test indicates attainment, the data are then subject to a second test. The second test involves a simple tally of the number of observations in violation of the water quality standard. This test is referred to here as the 10% rule and is based on previous guidance from the United States Environmental Protection Agency (EPA). If the 10% rule indicates impairment, the water body is listed as needing further evaluation. If the 10% rule indicates attainment the water is considered attaining its use.
- (3) For samples with more than 23 observations ($n \geq 24$), DEP uses a parametric confidence limit test, assuming the data meet certain distributional assumptions. If this test indicates attainment, the water body is considered attaining its use. If this test indicates impairment, the water body is considered impaired.

2) Water Quality Trends

The Pennsylvania Department of Environmental Protection (DEP) periodically conducts analyses of surface water quality trends in the Commonwealth. These analyses are based on chemical water quality data collected at a series of fixed water quality network (WQN) stations located throughout the Commonwealth. Trend analysis is a statistical technique used to determine if values of a random variable collected over some period of time generally increase or decrease (Helsel, D.R. and R.M. Hirsch. 1993. *Statistical Methods in Water Resources*. Elsevier, Amsterdam.).

Generally, DEP uses a nonparametric test of trend, known as the Seasonal Kendall test (Hirsch, R.M., J.R. Slack, and R.A. Smith. 1982. "Techniques of trend analysis for monthly water quality data" *Water Resources Research* 18: 107-121.), for these analyses primarily due to the multiple-station, multiple-variable nature of such investigations, which render detailed screening of datasets impractical. Furthermore, the Seasonal Kendall test accounts for seasonal variation, a characteristic exhibited by most water quality variables, thus improving the statistical power to detect trend.

Aquatic Life Use Data

The Department uses a variety of data collection and assessment procedures to determine if aquatic life uses are attained. The wadable flowing waters are divided into three sub-types in this Assessment Methodology. The current sub-types include freestone, limestone, and low gradient. The Department explored the possibility of a fourth sub-type for limestone-influenced streams. It was determined these streams could be adequately assessed using the freestone methods. Lake fisheries are assessed for aquatic life using weight of evidence and best professional judgment. Methods for assessing non-wadable streams are under review. Results of EPA's national great rivers survey and a fish sampling effort by DEP's Southwest Office in the large tributaries of the Ohio River should provide useful information.

The great majority of streams were assessed using the same biological standard and field technique regardless of the aquatic life use designation. The project was known as the Statewide Surface Water Assessment Program (SSWAP). The SSWAP methodologies were published in the 2006 Assessment Methodology. The program ended in 2006 so the protocol was removed in this 2007 version. Using a single truly rapid and consistent technique allowed the Department to census all streams in the state over the ten-year period 1996 to 2006. This census could not have been accomplished using more time consuming detailed field techniques.

Now that the census is completed, the protocol will be replaced by more detailed methods designed to evaluate various aquatic life uses. These detailed methods will have multiple biological benchmarks depending on the aquatic life use being evaluated. The methods will be used on both targeted and probabilistically selected sites.

The macroinvertebrate tolerance and trophic values used to calculate the biological metrics in the following protocols are found in Appendix B.

1) Wadeable Flowing Waters – Instream Comprehensive Evaluation Protocol

(Reference attached ICE Protocol)-

Aquatic life use attainment surveys assessments of Pennsylvania's wadeable streams and rivers (waters that do not exceed one meter in depth or one meter/second velocity) have been completed since 1996 using the DEP Statewide Surface Water Assessment Program (SSWAP) screening protocol since 1996. The first statewide assessment which was completed in 2006.

Beginning in 2005 the Instream Comprehensive Evaluation (ICE) protocol was implemented to replace the SSWAP screening protocol as Pennsylvania's statewide assessment method. The ICE assessment protocol consists of benthic macroinvertebrates collections using a semi-quantitative collection method, and habitat assessments that measure the ability of waterbodies to support aquatic life uses. In the broadest sense, the targeted population of waters characterized by this monitoring design are all wadeable, freestone, riffle/run flowing waters of Pennsylvania that were previously assessed using the SSWAP screening method. Probabilistic monitoring is conducted at 30 sites in 25 watershed units to determine the percentage of streams still attaining designated aquatic life use. Targeted monitoring is conducted on either attained or impaired segments to determine if changing conditions have resulted in the attainment of designated aquatic life use. Information collected includes Genus level macroinvertebrate sampling, habitat assessment, and local landuse data. Macroinvertebrates are collected using D-frame kick nets and the sample is returned to the lab for genus level identification. Impairment decisions are based on benchmark metric scores.

2) Wadable Flowing Waters - Limestone Streams *(Reference attached Limestone Stream Macroinvertebrate Protocol)*

The limestone protocol is used in spring fed, less than twenty square mile drainage, high alkalinity (> 150 mg/l) streams, with constant year round temperature. These streams are unique and well known to the public because of their productive fisheries. They are especially vulnerable because limestone springs frequently occur in intensively farmed valleys and their high volume and constant temperature make ideal locations for fish hatcheries. This method uses a modified version of the Rapid Bioassessment Level III protocol. A subsample of 300 organisms collected using two D-frame kicks are identified to genus. The taxa lists are analyzed using the multimetric approach and associated benchmark criteria. The final result is a determination of attainment or impairment of the limestone macroinvertebrate community.

3) Wadable Flowing Waters – Pool/Glide Streams *(Reference attached Multi-Habitat Macroinvertebrate Protocol)*

Pool/Glide streams are low gradient lacking the riffle habitat targeted by the other macroinvertebrate protocols. This necessitates use of collection methods effective in

deeper waters. The protocol calls for 10 net jabs over a 100-meter stream reach. The jabs target five habitat types sampled in proportion to their occurrence in the reach. A subsample of 200 organisms are identified to genus. A multimetric benchmark developed specifically for multi-habitat sampling is used to determine the streams attainment status.

4) Wadable Flowing Waters – Freestone Streams with Tiered Aquatic Life Uses *(Reference attached Freestone Macroinvertebrate Protocol)*

Riffle/run freestone and limestone influenced streams represent the majority of stream in the state. Six D-frame collections are made over a 100 meter stream reach and composited. A subsample of 200 organisms are identified to genus and a multimetric benchmark approach is applied to the resulting taxa list. This macroinvertebrate protocol incorporates Tiered Aquatic Life Uses (TALU) as well as impairment benchmarks. An upper benchmark defines the EV (Exceptional Value) and HQ (High Quality) streams. The lower benchmark defines the attainment status for CWF (Cold Water Fishes), WWF (Warm Water Fishes), and TSF (Trout Stocking Fishes). This is the Departments first macroinvertebrate protocol that incorporates TALU.

5) Wadable Flowing Waters – Freestone Streams, Summer Samples *(Reference attached Freestone Macroinvertebrate Protocol)*

The preferred macroinvertebrate sampling period is November thru May because the maturing insects are easier to capture and identify. Also, before summer many taxa reach their winged adult stage and leave the water to breed, lay eggs, and die. These taxa are represented only by eggs or small unidentifiable and hard to capture instars during the summer.

However, workloads dictate stream assessments must continue through the summer months. This multimetric benchmark protocol is designed to detect stream impairment through the summer. No attempt is made to define Tiered Aquatic Life Uses during the summer because important indicator taxa are missing for reasons just described.

This protocol is an interim protocol. It is based on an old collection method that samples less stream area than the newer protocols demand. The old method was used because development of a multimetric approach requires a large sample size. There were enough old but not enough new method samples to develop summer metrics. This situation will soon be rectified as the Department continues to build on the number of summer samples collected using the new method. Once there is an appropriate number to develop metrics, this old interim method will be replaced with the newer method based on the larger sample area.

6) Non-Wadeable Flowing Waters

Biological sampling in large non-wadable flowing waters is a cost and labor intensive endeavor. The Department is following the development of large river assessment

techniques by the three river basin commissions ORSANCO (Ohio River Sanitation Commission) on the Ohio, SRBC (Susquehanna River Basin Commission) on the Susquehanna, and DRBC (Delaware River basin Commission) on the Delaware River. Tributaries to the Potomac are in Pennsylvania but the mainstem Potomac is not, so any non-wadable protocols developed by ICPRB (Interstate Commission Potomac River Basic) will not apply in Pennsylvania. The Department will remain active in the non-wadable protocol development process undertaken by the river basin commissions and is an active partner with EPA in its Great Rivers Program. A fish sampling effort in the non-wadable tributaries to the Ohio River being conducted by the Southwest Field Office should provide useful information. Until a method is finalized, DEP will assist in field collections when possible and will review large river assessment results and include them in the Integrated List when appropriate.

4) Lakes -*(Reference attached-Aquatic Plant/ Macrophyte Coverage Procedure For Lake Assessments, Sampling Protocol for Lake Fisheries, and Lake Chemistry Sampling and Trophic Status Index)*

Aquatic life use attainability surveys of Pennsylvania's lakes are conducted through a variety of programs involving a number of agencies and/or groups including: the EPA, DEP, DCNR (Bureaus of State Parks and Forestry), County Conservation Districts (CCD), conservation groups, and consultants. Lakes are selected for aquatic life use attainment surveys based on a variety of factors including: DEP regional office priorities (NPDES permit issues, fish kills, etc.), public access, hydraulic residence time, input from State Parks and Forestry Bureaus, CCD concerns, and local citizen group interest. Generally, "significant lakes" of special interest to DEP regional offices are prioritized for assessment surveys. Pennsylvania's definition of a "significant lake" is a lake with public access and a hydraulic residence time of 14 days or more. In addition to significant lakes, surveys are also conducted on numerous public lakes with retention times of less than 14 days, and private lakes where citizens have an active interest in the health of their lake.

Physical/chemical data obtained from WQN sampling or TSI lake surveys are evaluated for anomalies and as indicators of lake designated use support or impairment. Water quality indicators, such as Chapter 93 WQ standards, trophic state indices (TSI), and nutrient content are evaluated. TSI indices are calculated on mean total phosphorus, secchi depth and chlorophyll a concentrations (year means) and compared with statewide average TSIs. TSIs above 65 indicate eutrophic conditions and possibly other problems, and at this threshold, the lake is evaluated at all levels (chemical, biological and physical) and if any necessary information is lacking, surveys are scheduled before listing. Biological assessments include aquatic macrophyte, fishery, and plankton survey information; not all biological information will be available on all lakes, but all public lakes will be targeted as needed. Aquatic macrophytes are assessed in each lake for underwater coverage and surface coverage to assess aquatic habitat and boating accessibility (an indicator of recreational use). Genus and or species are recorded, mapped and catalogued with special reference to non-native/invasive species. Fisheries data are examined for a number of parameters including species composition, fish community trophic structure (predator/prey

relationships), growth rates, recruitment, and recreational opportunities. Lake watershed land use/land cover data is examined for the presence of anthropogenic and natural (e.g., soil type) features that have the potential to substantially influence lake water quality.

Final determination on aquatic and recreational use of each lake is based upon professional staff review of all accumulated evidence. Thus, lakes that support a healthy fish community, yet experience short-duration, seasonal variations in dissolved oxygen for example, appear in category 4C of the 305(b) consolidated listing. Lakes listed under 4C do not require a TMDL.

Water Supply Use Data (Reference attached Water Chemistry Evaluation Protocol)

Potable Water Supply use attainment decisions are made based upon review of data collected through a voluntary source water sampling program implemented by water suppliers. Use attainment evaluations are conducted through the review of raw (intake) water quality data provided through self-monitoring efforts at drinking water facilities. Nitrite plus nitrate concentration in the raw water is used as the principal screening tool for potable water supply use attainment decisions. Nitrite plus nitrate data collected over extended periods of time are compared to potable water supply criteria outlined in Pennsylvania's Water Quality Standards regulations to determine use attainment status.

Waters currently used as sources of potable water supply have the highest priority for assessment. This practice recognizes existing use and also incorporates existing and readily available data into the assessment and reporting process by utilizing public water supplier source water monitoring. DEP generally considers a minimum of 24 samples collected over 12–24 months within the last five years to be a complete data set for chemical parameters like nitrite plus nitrate. However, smaller or larger data sets are considered depending on their representativeness and frequency and/or duration of sampling.

The nitrite plus nitrate data sets are analyzed using the methods outlined in the Chemistry Evaluations protocol. The applied statistical evaluation is dependent on sample size and a minimum of eight are required.

Fish Consumption Use Data (Reference attached Fish Tissue Sampling and Assessment Protocol)

The fish tissue sampling program is an interagency, cooperative effort between the Pennsylvania Departments of Environmental Protection, Health (DOH), and Agriculture (DOA) and the Pennsylvania Fish and Boat Commission (PFBC). Each year, potential fish tissue sampling locations are selected after consideration of the previous year's results and suggestions made by DEP Regional Biologists, PFBC Area Fisheries Managers (AFMs) and the Erie County Department of Health (ECDH). Target species usually

consist of waterbody-specific, recreationally important species that are commonly taken by anglers for consumption. Sampling efforts focus on the collection of legal-sized individuals, and in trout streams, collection efforts are geared toward wild or stocked-holdover fish.

Fish are collected, filleted in the field, frozen, and shipped to the laboratory where the tissue is prepared and analyzed for contaminants as outlined in Appendix E of the protocol. Laboratory results are evaluated and compared to current advisory triggers consisting of a mixture of risk assessment-based methods and U.S. Food and Drug Administration (FDA) Action Levels. Risk assessment methods form the basis for meal-specific advisories due to PCBs and mercury. Advisories for other compounds use FDA Action levels to issue Do Not Eat advice.

Once the advisories are agreed upon by the Interagency Fish Consumption Advisory Technical Workgroup, DEP determines the appropriate segment of the stream to list in the Integrated Report. First, the fish tissue sample collection site is located on a map, and major upstream and downstream landmarks (i.e., dams, roads, tributaries, other barriers) are identified and evaluated as segment boundaries. Barriers, such as dams, are preferred because they block fish movement. Other boundaries are selected to be relatively easy for fishermen to recognize. Once the segment is determined, the official advisory is sent to the PFBC for inclusion in the fishing regulations booklet for the next calendar year, and the segment is included in Category 5 of the Integrated Report.

Recreational Use Data (*Reference attached Bacteriological Sampling and Assessment Protocol*)

Recreational use attainment decisions for Pennsylvania's surface waters are made using bacteriological indicator data collected by government agencies (including the DEP, DCNR, the Pennsylvania DOH, and the USGS) and citizen/volunteer groups. In addition, information on aquatic macrophyte densities is considered in lakes. Fecal coliform bacteria are used as indicators of possible sewage contamination because they are commonly found in human and animal feces. Although fecal coliforms are generally not harmful themselves, they indicate the possible presence of pathogenic (disease causing) bacteria, viruses and protozoa that also live in human and animal digestive systems. Therefore, their presence in a waterbody suggests that pathogenic microorganisms may be present as well, and that water contact recreation such as swimming may be a health risk. The presence of dense growths of aquatic plants can impair recreational uses like boating, or water contact sports and may be indicative of excessive nutrient inputs.

Important recreational areas and aquatic life use-impaired waterbodies with obvious potential sources of bacteria, nutrients and/or sediments (e.g., municipal point sources, combined sewer overflows, and agricultural sources relating to manure application, livestock grazing, and animal feeding) are targeted for recreational use assessment. Sampling is conducted during the swimming season (May 1 through September 30) when the waterbody is most likely to be used for boating, or water contact sports. Nutrients can

effect recreational use support by fostering noxious algal blooms and plant growth. Recreational use attainment status is also determined by mapping the location and density of aquatic plant growth (lakes, ponds, and reservoirs only) and determining the impacts of those plants.

Recreational use attainment of a given waterbody is determined by comparing the geometric mean of the fecal coliform sampling groups (five consecutive samples collected from the waterbody) to Pennsylvania's numerical standards. These standards are a maximum geometric mean of 200 colony forming units per 100 milliliters (CFUs/100 ml) during the swimming season (May 1 through September 30) and 2000 CFUs during the off-season.

Beach closings are used as another method to determine recreational use attainment. E. coli data is collected from beaches on a weekly schedule during the bathing season. A beach closure is triggered when a single grab sample exceeds 235 cfus/mL. In order for a beach to meet recreational use attainment, no more than twice during a bathing season can 3 sets of consecutive grab samples, separated by 7 days, exceed 235 cfus/mL. Also, no more than twice during a bathing season can two running geometric means exceed 126 cfus/mL.

Outside Agency Data: Information Quantity, Quality, and Representativeness
(Reference attached Outside Agency Data and Quality Assurance Requirements)

Because of the significance attached to Category 5 of the Integrated Report, it is important that any determination of impairment 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. However, properly conducted, one-time biological surveys designed to assess support of designated aquatic life uses are generally acceptable because the biological community serves as an integrator of long-term stresses imposed on an aquatic system throughout an entire waterbody segment. Guidance on sampling methods, quality assurance, and data reporting protocols can be found in the protocol or obtained by contacting:

Pa DEP Citizen Volunteer Monitoring Coordinator
Bureau of Watershed Management
P.O. Box 8555
Harrisburg, PA 17105-8555
E-mail chesnyder@state.pa.us

Efforts continue to expand the bacteriological sampling through use of Citizen Volunteer Monitoring groups as well as cooperative efforts with outside agencies. A mailing to hundreds of potential data contributors is done prior to each biannual Integrated Report. This mailing list is updated continuously.

Distribution of Waterbodies into Use Attainment Categories

The water quality status of Pennsylvania's waters are summarized using a five-part categorization of waters according to their use attainment status. The categories represent varying levels of use attainment, ranging from Category 1, where all designated water uses are met, to Category 5, where impairment by pollutants requires a TMDL to correct. These category determinations are based on consideration of data and information consistent with the methods outlined in the preceding discussion title **Use of Monitoring Data**. Each DEP waterbody segment is placed in one of the following categories.

Category 1: Waters attaining all designated uses.

Category 2: Waters where some, but not all, designated uses are met. Attainment status of the remaining designated uses is unknown because data are insufficient to categorize a water consistent with the state's listing methodology.

Category 3: Waters for which there are insufficient or no data and information to determine if designated uses are met is inadequate.

Category 4: Waters impaired for one or more designated use but not needing a TMDL. States may place these waters in one of the following three subcategories:

- *Category 4A*: TMDL has been completed.
 - **Category 4B*: Expected to meet designated use(s) within a reasonable timeframe (3 years).
 - *Category 4C*: Not impaired by a pollutant.
- * Waters listed on 4B in this 2006 Report are under compliance agreements that outline the remedies and timelines. Waters with BMP or comprehensive remediation plans can also be placed in 4B though no such waters are listed in 2006. Reference EPA's 2006 Integrated List guidance document for the detailed list of information required by EPA to qualify.

Category 5: Waters impaired for one or more designated uses by any pollutant. Category 5 includes waters shown to be impaired as the result of biological assessments used to evaluate aquatic life use even if the specific pollutant is not known unless the State can demonstrate that non-pollutant stressors cause the impairment or that no pollutant(s) causes or contribute to the impairment. Category 5 constitutes the Section 303(d) list that EPA will approve or disapprove under the CWA. Where more than one pollutant is causing the impairment, the water remains in Category 5 until all pollutants are addressed

in a completed/EPA-approved TMDL or one of the delisting factors mentioned below is satisfied.

A list of sources and causes of pollution and their descriptions are found in Appendix A.

The Department maintains a publicly accessible Web site (eMapPa) that uses map displays to summarize the stream information listed in the five categories. Streams are displayed at the 1/24,000 scale on USGS 7.5 minute quadrangle maps. The user first locates the general area of interest by zooming and/or querying by county, municipality, or zip code. Once the user is zoomed to the specified area, the streams become visible. The user can then manually select a stream or stream segment or query by any number of locaters such as watershed, stream name or stream code. The summary information from the Integrated List then appears in tabular form in a popup window. This information is current as the GIS is updated nightly. The Web address is <http://www.emappa.dep.state.pa.us/emappa/viewer.htm>

Natural Conditions (*Reference attached Defining and Assessing Natural Conditions*)

In accordance with the provisions of Pennsylvania's Water Quality Standards, waters that have naturally occurring pollutant concentrations, or "natural quality," that prevent the attainment of an established water use will not appear on List 5, requiring a TMDL, if it can be demonstrated that anthropogenic sources do cause or contribute significantly to the water use non-attainment and the pollutant(s) of concern are generated by natural processes.

Natural quality is defined in §93.1 as "The water quality conditions that exist or that would reasonably be expected to exist in the absence of human related activity." In addition, the provisions of §93.4 state that less restrictive uses than those currently designated for particular waters listed in §93.9a-§93.9z may be adopted when it is demonstrated that the designated use is more restrictive than the existing use, the use cannot be attained by implementing effluent limits required under sections 301(b) and 306 of the Federal Clean Water Act or implementing cost-effective and reasonable BMPs for non-point source control and naturally occurring pollutant concentrations (natural quality) define the biotic community and uses.

Delisting Requirements

The fact that a water was previously included on the 303(d) List is not, by itself, positive evidence that it must remain on the list (in Category 5) until a TMDL is established and implemented. Waters generally remain in Category 5 until a TMDL is established unless it is documented that conditions that led to the initial listing have changed or that the basis for the initial listing was in error.

To “delist” waters, Pennsylvania has traditionally used a two-tiered approach. Waters impacted only by AMD (acid mine drainage) are easy to evaluate because the effects on the biota and substrate are obvious. An ICE survey (Instream Comprehensive Evaluation Protocol) is sufficient to justify an AMD delisting when the results indicate attainment. Other pollutants such as nutrients and toxics can be more problematic and more detailed evaluation is required. In these instances, a modified RBP level III equivalent survey or an intensive chemical sampling effort is required to delist. Finally, some delistings occur when the source of a pollutant is removed. Examples are the closing of a wastewater treatment facility, relocation of a discharge, or extending sewerage to previously unsewered areas.

All delisting requests are documented and submitted to EPA Region III for review and approval.

