

# Framework for Establishing Evaluated Water Quality Assessments

## Tennessee Division of Water Resources

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### Introduction

A committee within the Division of Water Resources was created in 2015 to explore ways to slow or reverse the trend in water quality assessments towards the “two color map.” The two color map is a projection of a possible outcome in which most waterbodies in Tennessee are assessed as either “impaired” or “not assessed,” thus producing a map with only two colors, gray and red.

In the initial meeting of the committee, it was the consensus of the group that in order to reverse the two color map trend, a combination of techniques would have to be employed, including but not limited to: new technology, maximizing partnerships, and increasing sampling efficiency. It is equally apparent the creation of new staff positions dedicated to monitoring is unlikely at present.

An additional opportunity discussed was the enhanced use of “evaluated” assessments. Evaluated assessments would be based on information sources other than recently collected benthic or chemical data. Evaluated assessments have always been used to some degree, but in recent years, they have fallen into increased disfavor due to the possibility that the agency might be sued over the ramifications of assessment conclusions.

The committee agreed that if the role of evaluated assessments was to be increased, guidance would need to be developed to assist this process, especially if these new techniques would be employed in the Group 3 watershed reassessments. This document is intended as a beginning of the development of this guidance.

This document is designed to not only assist the assessment process, but to also guide the development of the annual monitoring workplan. An additional goal of this document is to provide information that can be included in the Consolidated Assessment and Listing Methodology (CALM) document we have committed to develop for EPA in 2016.

## Philosophical Tenants of this Guidance and Proposed Process

- As a science agency, our credibility and professional ethics must be maintained at a high level and our decision processes must be above reproach. This proposal for expanded use of evaluated assessments is neither intended, nor should it be used, for the purpose of biasing Tennessee’s water quality assessments in the direction of “fully supporting” waters. We should be as equally apt to use evaluation techniques to identify impaired waters as fully supporting ones.
- Recent physical, chemical, or biological survey results are not the only form of data available to inform the assessment process. While recent stream sample data are the ideal, there are other valid information sources, such as GIS analysis of land use, recent aerial photographs, models, self-monitoring reports, compliance inspection results, and overflow reports. Stream assessment decisions are based on multiple sources of evidence and the agency must weigh all available information to arrive at a conclusion.
- An important part of our scientific credibility as an agency is consistency. Once statewide guidance has been developed, it must be followed at every step of the assessment process. All methodologies evolve, but changes to this process must be preceded by a change in the guidance.
- Both field office and central office staff have critical roles and water quality assessments in Tennessee are created in partnership. Field Office staff have undisputed expertise in local conditions that form the basis of assessments. Central Office staff have the equally important task of ensuring that the assessment decision process is comprehensive, defensible, consistent throughout the state, and compliant with existing laws and regulations.
- Evaluated information can only be used in a limited set of circumstances (and for a limited amount of time in many cases) for fish and aquatic life assessments and an even more limited set of circumstances for recreational use assessments. The Domestic Water Supply use can only be assessed by using recent data. As we have done historically, assessment of the uses of irrigation and livestock and wildlife watering can be done with evaluated information, but only if either fish and aquatic use and/or recreation are also being assessed.

- Monitoring resources are not unlimited. The guidance will help us maximize the possibility of assessing waterbodies with data other than recent chemical or benthic surveys.

### **Evaluated Assessments Automatically Considered “Fully Supporting”**

Waterbodies fully contained within the Great Smoky Mountains National Park:

- Can be assessed as “fully supporting” for fish and aquatic life provided they have not been recently altered and are at elevations below 5,000 feet. (At elevations above 5,000 feet, acidification due to atmospheric deposition may occur.)
- Can be assessed as “fully supporting” for recreation provided they do not contain herds of mammals (such as horse stables or congregations of elk), campgrounds, or permitted discharges.
- When developing the draft monitoring workplan, waterbodies that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified but may be compiled into a group for convenience. A brief rationale for not monitoring these waterbodies should be provided (e.g. no stables, less than 5000 feet in elevation, no private inholdings or campgrounds, etc.)

Waterbodies fully contained within Designated Wilderness Areas within the Cherokee National Forest:

- Can be assessed as “fully supporting” for fish and aquatic life provided they are at elevations below 5,000 feet.
- Can be assessed as “fully supporting” for recreation. (Assumes no herds of mammals.)
- When developing the draft monitoring workplan, waterbodies that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified but may be compiled into a group for convenience. A brief rationale for not monitoring these waterbodies should be provided.

#### Other Waterbodies fully contained within the Cherokee National Forest:

- Can be assessed as “fully supporting” for fish and aquatic life provided they have not been recently altered (including logging or mining), do not have significant private inholdings, and are at elevations below 5,000 feet.
- Can be assessed as “fully supporting” for recreation provided they do not contain potential sources of pathogens such as private inholdings of land, herds of mammals, permitted discharges, or developed campgrounds.
- When developing the draft monitoring workplan, waterbodies that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified but may be compiled into a group for convenience. A brief rationale for not monitoring these waterbodies should be provided.

#### Waterbodies within the Big South Fork National River and Recreational Area:

- Can be assessed as “fully supporting” for fish and aquatic life provided they are fully contained within the park, have not been altered, have no public inholdings of land, and no history of mining.
- Can be assessed as “fully supporting” for recreation provided they are fully contained within the park, have no herds of mammals or campgrounds, and have no public inholdings of land.
- When developing the draft monitoring workplan, waterbodies that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified, but may be compiled into a group for convenience. A brief rationale for not monitoring these waterbodies should be provided.

#### Other Waterbodies:

- Small tributaries to waterbodies with data collected during the most recent watershed cycle can be assessed as “fully supporting” for fish and aquatic life or recreation provided it is the consensus judgement of assessment staff that the conditions in these waterbodies mirror those in the downstream water, that the distance between the

monitoring station and the tributary is not too extreme and both waterbodies are within the same ecoregion. In most cases, the waterbodies in this type scenario will be included within the same waterbody segment.

- When developing the draft monitoring workplan, these waterbodies should not be proposed as candidates for evaluation, because their subsequent assessment is dependent on the results of nearby recent benthic or chemical data.

### **Evaluated Assessments Considered “Fully Supporting Based On Factors Other Than Recent Chemical or Benthic Data.”**

- Wadeable streams that scored either 36 or greater (or 26 or greater in Ecoregion 73a) on a SQSH or a 15 on a biorecon in the previous assessment cycle can be assessed as “Fully Supporting Based On Factors Other Than Recent Data” provided that it is the consensus judgement of assessment staff based on site visits, or other knowledge/data sources that the conditions in these streams have not changed. Stream assessed under this category can miss having data collected for one assessment cycle, but not for two.
- When developing the draft monitoring workplan, streams that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified. A brief rationale for not monitoring these streams should be provided which explains the basis for the belief that conditions have not changed (e.g. site visits). However, conditions should be presumed to have changed if the stream has a large watershed (>50 square miles), is being rapidly developed, is in an urbanized area, or an area with intensive agriculture.

### **Limitations Placed on the Category “Fully Supporting Based On Factors Other Than Recent Chemical or Benthic Data.”**

- This evaluation process is limited to the fish and aquatic life use, except as allowed in previous sections dealing with National Parks and Wilderness Areas.
- Waterbodies evaluated under this category will be differentiated from “fully supporting” (assessments based on recent data) and will be given a different color on assessment maps.

- Evaluated waterbodies cannot be expanded to incorporate more miles than the original assessment based on recent chemical or benthic data.
- Evaluated fully supporting assessments should not be used to establish the existence of available parameters for antidegradation purposes in NPDES permitting. These assessments should be only be used for antidegradation purposes by the Natural Resources Unit after careful consultation with knowledgeable Field Office staff.

### **Evaluated Assessments Considered “Not Supporting Based on Factors Other Than Recent Benthic Survey Data”**

- Consistent with existing guidance, streams impacted due to flow or habitat alteration due to upstream impoundments, channelization, culverting, or hard armoring do not require new data be collected each cycle if the condition is still present. (A habitat assessment might be recommended in some situations.)
- Unassessed streams that are channelized or concrete lined can be presumed to be habitat impaired, especially if they are tributaries to habitat-impaired streams with recent data.
- Streams that scored either 20 or less (or 12 or less in Ecoregion 73a) on a SQSH, or a 5 or less on a biorecon in the previous assessment cycle can be assessed as “Not Supporting Based On Factors Other Than Recent Data” provided that it is the consensus judgement of assessment staff that the (1) conditions in these streams have not changed and (2) that it is not possible the previous low scores were due to natural conditions such as prolonged dryness, or beaver activity. Stream assessed under this category can miss having data collected for one assessment cycle, but not for two.
- When developing the draft monitoring workplan, waterbodies that are proposed as candidates to be evaluated rather than monitored because they fall under this category should be specifically identified. A brief rationale for not monitoring these waterbodies should be provided (e.g. hard armoring, upstream impoundment) that includes an explanation of why staff feel that conditions have not changed.

### **Evaluated Assessments Considered “Not Supporting Based on Factors Other Than Recent Chemical or Pathogen Survey Data”**

- Waterbodies may be assessed as impacted by chemical parameters even in the absence of stream data if effluent quality data from dischargers indicate that at that volume and concentration of parameters, the discharge would cause the stream at critical flows to violate water quality standards. An example of this might be ammonia permit violations from a sewage treatment plant.
- Waterbodies may be assessed as impacted by pathogens based on factors other than recent in-stream data if in the professional judgement of the assessment staff, there is a high likelihood that the water quality standard is being violated. This type evidence might include the presence of sludge banks, failing animal waste lagoons, chronically inadequate treatment at domestic wastewater plants, and collection system overflow reports.
- Streams or lakes with legacy chemicals should be assessed as impacted for the recreational use if a fishing advisory is present, even if recent tissue data are not available. Parameters identified as impaired should be the ones upon which the advisory is based.

### **Limitations Placed on the Category “Evaluated Impaired Based On Factors Other Than Recent Chemical, Bacteriological, or Benthic Data.”**

- Generally, in the absence of data, waterbodies previously assessed as impacted must remain assessed as impacted. However, possible exceptions might be the moving of a discharge or bypass point from a stream or the closing of a dairy that was the only pathogen source within a watershed. These situations will be considered on a case by case basis.

Waterbodies evaluated as impacted by chemical parameters or pathogens one cycle must be a high priority future sampling location.