

**Category 4b Demonstration for Pathogen
Impaired Tributaries to Puget Sound in Kitsap County, Washington**

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ABSTRACT

Section 303(d) of the Clean Water Act (CWA) and the US Environmental Protection Agency's (USEPA's) supporting regulations in 40 CFR Part 130.7 require states to develop lists of waterbodies impaired by a pollutant and needing a Total Maximum Daily Load (TMDL) (i.e., the Section 303(d) list) and to prepare a TMDL for each waterbody/pollutant combination. USEPA's regulations also recognize that other pollution control requirements may obviate the need for a TMDL. These alternatives to TMDLs are commonly referred to as Category 4b waters as described in USEPA's Integrated Reporting Guidance for Sections 303(d), 305(b), and 314 of the CWA.

The Washington Department of Ecology (Ecology) 2008 Integrated Report has placed 14 pathogen (fecal coliform) impaired creeks that flow to Puget Sound in Category 4b. The foundation of Ecology's Category 4b demonstration for these waters is Kitsap County's Pollution Identification and Correction (PIC) program. The PIC program monitors, identifies and controls non-point sources of pollution, focusing on failing septic and non-point source animal wastes. BMPs used by the PIC program to improve water quality include county rules and regulations to properly operate and maintain on-site septic systems in the watersheds. The county is actively engaged in on-site system education, dye testing of suspect systems, and enforcement of the county rules and regulations governing on-site sewage systems. In addition, the Kitsap Conservation District (a non-regulatory agency) assists small farm owners and owners of livestock to implement BMPs for animal waste management and farm pollution control. When a regulatory approach is needed, however, the county enforces its regulations for handling and disposal of annual manure and pet waste. In 2003, the PIC program was recognized with a Local Hero Award by Washington's governor for its efforts to preserve, protect, and sustain Puget Sound. Ecology expects that the county's PIC program will result in attainment of the fecal coliform water quality standard for these waters by 2012.

This paper presents Ecology's demonstration for assigning these waters to Category 4b according to USEPA's Category 4b guidance, lessons learned in developing the restoration strategy, and potential challenges for maintaining these waters in Category 4b for future 303(d) reporting cycles.

KEYWORDS

TMDL, alternative, Category 4b, impairment, fecal coliform, nonpoint source

INTRODUCTION

Section 303(d) of the Clean Water Act (CWA) and the U.S. Environmental Protection Agency's (USEPA) 1992 supporting regulations (see 40 CFR 130.7) require states, territories, and authorized tribes (herein referred to as states) to develop lists of waters impaired or threatened by pollutants (i.e., Section 303(d) list) and to develop Total Maximum Daily Loads (TMDLs) for these waters. Since the 1990s, States and USEPA have produced more than 39,000 TMDLs. And, based on the current status of States' Section 303(d) lists, more than 70,000 TMDLs remain to be completed (USEPA, 2009).

USEPA's supporting regulations also recognize that alternative pollution control requirements may obviate the need for a TMDL. Specifically, impaired waters are not required to be included on a State's Section 303(d) list if technology-based effluent limitations required by the CWA, more stringent effluent limitations required by state, local, or federal authority, or "[o]ther pollution control requirements (e.g., best management practices) required by local, [s]tate or [f]ederal authority" are stringent enough to implement applicable water quality standards (see 40 CFR 130.7(b)(1)). These alternatives to TMDLs are commonly referred to as "Category 4b" waters, as described in USEPA's Integrated Reporting Guidance (IRG) for Sections 303(d), 305(b), and 314 of the CWA (USEPA, 2005 and 2006).

Beginning with the 2002 reporting cycle, USEPA's IRG recommends that States use the following five reporting "categories" to report on the water quality status of all waters in their State:

- Category 1: All designated uses (DU) are supported, no use is threatened;
- Category 2: Available data and/or information indicate that some, but not all of the DUs are supported;
- Category 3: There is insufficient available data and/or information to make a DU support determination;
- Category 4: Available data and/or information indicate that at least one DU is not being supported or is threatened, but a TMDL is not needed;
- Category 5: Available data and/or information indicate that at least one DU is not being supported or is threatened, and a TMDL is needed.

As the above categories show, waters assigned to Category 4 and 5 are impaired or threatened; however, waters assigned to Category 5 represent waters on a State's Section 303(d) list. Similar to Category 5, waters in Category 4 are also impaired or threatened; however, other conditions exist that no longer require them to be included on a State's Section 303(d) list. These conditions, which are referred to as subcategories of Category 4 in USEPA's IRG are described below:

- Category 4a: TMDL has been completed;

- Category 4b: TMDL is not needed because other pollution control requirements are expected to result in the attainment of an applicable WQSs in a reasonable period of time;
- Category 4c: The non-attainment of any applicable WQS for the waterbody is the result of pollution and is not caused by a pollutant. Examples of circumstances where an impaired segment may be placed in Category 4c include waterbodies impaired solely due to lack of adequate flow or to stream channelization.

According to USEPA's IR guidance, EPA will evaluate on a case-by-case basis a State's decisions to exclude certain segment/pollutant combinations from Category 5 (the Section 303(d) list) based on the Category 4b alternative. The IRG indicates that States should provide in their Section 303(d) list submission a rationale that supports their conclusion that there are "other pollution control requirements" stringent enough to achieve applicable water quality standards within a reasonable period of time.

Although USEPA's Category 4b guidance was initiated over eight years ago for the 2002 reporting cycle, Category 4b is not a widely used alternative to developing TMDLs for impaired and threatened waters. A 2006 survey (based primarily on States' USEPA-approved 2006 303(d) lists) showed that 267 impaired waters had been successfully assigned to Category 4b in 15 States (Monschein and Mann, 2007). A more recent survey (based primarily on States' USEPA-approved 2008 303(d) list) showed that more than 400 impaired waters have been successfully assigned to Category 4b (Monschein and Reems, 2009). Despite this increase in use of Category 4b, TMDLs (over 39,000 nationally) continue to be the primary means to address impaired and threatened waters in States' Section 303(d) programs.

Several options to advance the appropriate use of Category 4b have been suggested. In a March 2008 letter to USEPA's Assistant Administrator for Water, the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) highlighted State-developed options for reducing the workload burden for States associated with their biennial development and submission of Section 303(d) lists/Integrated Reports (IR). Among ASIWPCA's options was a suggestion to identify Category 4b demonstrations that have been successfully vetted through the Section 303(d) list development and review process, including those that involve more than National Pollutant Discharge Elimination System (NPDES) permits. Sharing of model Category 4b demonstrations was also identified as a means to advance the appropriate use of Category 4b in Monschein and Mann (2007).

As an example of the appropriate use of Category 4b for nonpoint source pollution, this paper describes a Category 4b demonstration in Washington that has been successfully vetted through the Section 303(d) list/IR development and review process according to USEPA's guidance for the 2008 IR reporting cycle. Specifically, this paper summarizes the Washington Department of Ecology's Category 4b demonstration for 14 pathogen (fecal coliform) impaired creeks in Kitsap County, Washington. This paper also presents the methods used to evaluate the appropriateness of assigning these impaired waters to Category 4b, as well as lessons learned in developing the Category 4b demonstration and potential challenges for maintaining these waters in Category 4b for future Section 303(d) list/IR reporting cycles.

METHODS

The State and USEPA evaluated the appropriateness of assigning these impaired waters to Category 4b based on USEPA's IRG for the 2008 reporting cycle (USEPA, 2006). USEPA's IRG indicates that States should provide in their Section 303(d) list submission a rationale that supports their conclusion that there are "other pollution control requirements" stringent enough to achieve applicable water quality standards within a reasonable period of time. Specifically, USEPA requests that States address the following six elements in their Category 4b demonstrations:

1. Identification of segment and statement of problem causing the impairment
2. Description of the pollution controls and how they will achieve WQS, including a description of the "requirements" under which the controls will be implemented
3. An estimate or projection of the time when WQS will be met
4. Schedule for implementing pollution controls
5. Monitoring plan to track effectiveness of pollution controls
6. Commitment to revise pollution controls, as necessary

RESULTS

A summary of the Category 4b rationale for the 14 creeks impaired by nonpoint source fecal coliform pollution in Kitsap County, Washington, is provided below. Additional details are available in Washington's complete Category 4b rationale for these waters (www.ecy.wa.gov/programs/wq/303d/wqassescat4b.html).

1. Identification of segment and statement of problem causing the impairment

The Category 4b demonstration addresses 33 fecal coliform impaired assessment units in 14 creeks (Dogfish, Gamble, Gorst, Martha John, Burley, Bear, Pudy, Kinman, Enetai, Lofall, Daniels, Kitsap, Indianola, Jumpoff Joe) located in Kitsap County, on the Olympic Peninsula, west of Seattle (see Figure). All of the identified segments are located in small streams that eventually drain to marine waters in Puget Sound.

Figure – Location of Kitsap County (in red), Washington



Source: http://en.wikipedia.org/wiki/Kitsap_County,_Washington

The 14 creeks were identified as impaired for not meeting one or both of Washington's designated uses for water contact recreation .

- Extraordinary Primary Contact Recreation. Washington's fecal coliform bacteria standard for these waters has two parts. Fecal coliform organism levels shall not exceed a geometric mean value of 50 colonies/100mL, with not more than 10% of all samples (or any single sample when less than 10 sample points exist) exceeding 100 colonies/100 mL; or
- Primary contact recreation. Washington's standard for fecal coliform for these waters has two parts. Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10% of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

Many of the marine waters are also listed on Washington's 303(d) list for fecal coliform, causing them to be designated as restricted or prohibited for shellfish harvest by the Washington State Department of Health. The county's goal is to remove all sources of fecal coliform pollution from these watersheds and to keep all streams in compliance through its on-going monitoring program.

Kitsap County is a rapidly suburbanizing area on the Olympic Peninsula. It was formerly farmland and still has many small farms that keep livestock. Several small communities were built before the state adopted on-site septic regulations. Kitsap Health District determined that the fecal coliform contamination was coming from multiple sources, including failing on-site septic systems, poor livestock management, and manure runoff.

2. Description of pollution controls and how they will achieve water quality standards

In 1993, the Kitsap County Board of Commissioners adopted Ordinance 156-1993, establishing the Kitsap County Surface and Stormwater Management Program (KCSSWM). The goals of the program are to:

- Protect public health and natural resources.
- Minimize institutional costs.
- Obtain support for the program from other municipalities, tribal governments, and county residents.
- Meet state and federal regulatory requirements.
- Provide a permanent funding source to address nonpoint source pollution.

The county's intent is to meet Washington's numeric criteria for fecal coliform by eliminating anthropogenic sources and to stay in compliance in the future through an on-going monitoring and correction program.

Surface and Stormwater Management Program (SSWM) fees are assessed on properties in the unincorporated area of Kitsap County. Fees appear on annual property tax billings. The 2008 budget for the SSWM was \$5.6 million.

Funds are shared by the Kitsap County Public Works Department, which oversees the entire program; the Kitsap County Health District, which performs water quality monitoring, pollution identification and control, and wellhead protection programs; the Kitsap County Department of Community Development, which uses the funds for watershed planning; and the Kitsap Conservation District, which helps with agricultural landowner technical assistance, education, and source control.

The Pollution Identification and Correction (PIC) Program uses water quality monitoring data to identify priority water bodies for clean up. The primary focus of the monitoring program is to assess long-term pollution trends associated with human sewage and animal waste from nonpoint sources. Health district staff sample water quality monthly at approximately 95 stations on 54 streams and bimonthly at 67 marine stations. Field equipment measures turbidity, dissolved oxygen, pH, and temperature. Fecal coliform samples are analyzed by an Ecology accredited laboratory. Data are used to identify areas in need of pollution control and to evaluate the effectiveness of the correction program. Additional information about Kitsap County's PIC program is available at the following address:
www.kitsapcountyhealth.com/environmenta_health/water_quality/pic.htm.

Clean up projects are designed to address the causes and sources of bacterial water pollution in specific geographic areas that the trend monitoring program has identified. SSWM provides funding for PIC projects. The goals of each PIC project are to:

- Protect public health.
- Protect shellfish resources.
- Preserve, protect, and restore surface water quality.

The best management practices (BMPs) being used to improve water quality include a requirement to properly operate and maintain on-site septic systems. The Health District is actively engaged in on-site system education, dye testing of suspect systems, and enforcement of Kitsap County Board of Health Ordinance 2008-11, *On-Site Sewage System and General Sewage Sanitation Regulations*, which requires proper design, installation, repair, operation and maintenance of on-site septic systems.

Several enforceable pollution controls will ensure that compliance with water quality standards is achieved.

- Kitsap County Ordinance 156-1993, establishing the Surface and Stormwater Management Program, which created an on-going, stable source of funding.
- Kitsap County Board of Health Ordinance 2008-11, *On-Site Sewage System and General Sewage Sanitation Regulations*, which requires proper design, installation, repair, operation and maintenance of on-site septic systems.
- Kitsap County Board of Health Ordinance 2004-2, *Solid Waste Regulations*, which regulate handling and disposal of animal manure and pet waste (animal waste violations are enforced by the Health District under this ordinance).

3. Estimate or projection of the time when WQS will be met

Ecology expects some of the streams to be meeting the fecal coliform water quality standard by 2010, and all of them by 2012.

4. Schedule for implementing pollution controls

Pollution controls are being implemented now, and maintenance will continue into the future.

5. Monitoring plan to track effectiveness of pollution controls

The county's on-going monitoring program is tracking effectiveness of the pollution controls, and results from several years of data are already showing water quality improvement. The monitoring data also show when new problems appear, and these are addressed as soon as they are found. Because of the recurring nature of fecal coliform pollution, Ecology expects monitoring data to fluctuate somewhat. Therefore, Ecology believes on-going programs such as the PIC program are exactly what is needed to solve nonpoint pollution problems and to minimize the recurrence of those problems.

6. Commitment to revise pollution controls, as necessary

Ecology will continue to work with Kitsap County to ensure that the PIC program continues and that water quality in these creeks continues to improve. Ecology fully expects the program to achieve compliance with water quality standards. However, if it does not, Ecology will work with Kitsap County to determine other controls that could be used to achieve compliance.

DISCUSSION

Lessons learned in developing the Category 4b demonstration and potential challenges for maintaining these waters in Category 4b for future 303(d) reporting cycles are described below.

Lessons learned in developing the Category 4b demonstration

Washington Department of Ecology has been approached by groups and agencies interested in their watersheds being assigned to Category 4b, rather than following the more traditional TMDL process, but has been very selective in choosing Category 4b candidates. In the case of the Kitsap County PIC Program, Ecology identified it as a good candidate because of the proactive work the county was doing to clean up and prevent bacteria contamination.

In Kitsap County, Ecology observed progress towards achieving water quality standards was being made quickly, and decided that expending additional resources on TMDL development may slow down the work that was already underway. Once Ecology decided to support placing the Kitsap watersheds into Category 4b, Ecology worked closely with Kitsap Health District staff to develop the 4b rationale required by EPA.

Ecology's 4b rationales were not complete when they issued the 2008 draft list, resulting in numerous comments related directly to incomplete rationales. Ecology has decided that for all future lists, the 4b rationales will be completed and available for public review when the draft list is issued.

The high bar that Washington has established for Category 4b waters gives USEPA Region 10 confidence in the State's 4b decisions. Ecology and USEPA Region 10 staff work together cooperatively to identify potential 4b waters, and to develop rationales that are consistent with USEPA guidance. In the Department of Ecology, the 303(d) staff and TMDL staff are in the same work group. At USEPA Region 10, TMDL staff are involved in 4b decisions. These strong connections between the 303(d) and TMDL programs work well for both agencies.

Potential challenges for maintaining these waters in Category 4b for future 303(d) reporting cycles

Ecology expects few challenges in maintaining these waters in Category 4b. Kitsap County has a stable fund base for the PIC Program and intends to fund it in perpetuity. Also, Ecology expects to begin moving some of the Kitsap County waters to Category 1 fairly soon.

There have been no requests from the general public to require more stringent controls for Washington's Category 4b listings. This may happen at some point if the waters do not continue to improve. In this case, however, Washington's listing policy requires that waters not showing improvement be moved back to Category 5. Ecology would therefore move these waterbodies back to Category 5 before receiving public comments about the lack of improvement.

For the Kitsap PIC Program, the county health district does all the monitoring and provides the data during the listing assessment process, so state budget issues are unlikely to affect the evaluation of progress. However, PIC does use some state grant money in addition to the funds it raises through property taxes, and there is some possibility that grant funds will decrease, which could slow down PIC progress. Ecology did offer federal stimulus money to address failing septic systems in one of the Kitsap watersheds.

CONCLUSIONS

In Washington, Ecology does not use Category 4b as an up-front "tool" to improve water quality. Rather, 4b listings document active efforts to get to clean water that Washington believes will be successful without a TMDL. When Washington is approached by groups that are interested in trying a "straight to implementation" approach, rather than going through the more traditional TMDL approach, existing 4b rationales are used to illustrate Washington's expectations for Category 4b waterbodies. Washington's ultimate goal is to move waterbodies to Category 1, not simply to move waterbodies out of Category 5. Because Washington sets a fairly high bar for putting waters into Category 4b, Washington is sometimes in a position of telling a group that Category 4b is not appropriate because one or more of the 4b requirements cannot be met with their efforts. Washington encourages these groups to implement their planned efforts while the

water is still on Category 5, and the waters will be moved to a different category when water quality improvements are documented.

Washington is not interested in moving waters from Category 5 to Category 4b or even to Category 4a unless those moves are truly steps toward clean water. If this distinction is not made, one can lose sight of the real goal of getting to clean water.

So, in Washington, Ecology uses Category 4b with a combination of hope and caution. For Washington, it's not about the categories, it's about the water.

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