

# Recommendations for Improving Water Quality Assessment and Total Maximum Daily Load Programs in Washington State

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## Accomplishments and Opportunities 2014 – 2020



Image Credit: Seattle Magazine

Produced by:  
The Interagency Team  
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The Interagency Project Team is comprised of City, County, and State Agency stormwater professionals in Washington State. The team was formed in 2012 with the goal of improving State Water Quality Assessment and Total Maximum Daily Load programs for better water quality outcomes.

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## Acknowledgements

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The Interagency Team (Team) partnered with representatives from Brown and Caldwell, and continues to work with the Washington State Department of Ecology, and Region 10 of the Environmental Protection Agency, who are committed to working with the Team to make improvements to State Water Quality Assessment (WQA) and Total Maximum Daily Load (TMDL) programs.

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## **List of Abbreviations**

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BMP – Best Management Practice

CWA – Clean Water Act

Ecology – Washington State Department of Ecology

EAP – Ecology's Environmental Assessment Program

EIM – Ecology's Environmental Information Management System

EPA – Environmental Protection Agency – Region 10

GIS – Geographic Information Systems

LA – Load Allocation

MOS – Margin of Safety

Partnership – Ecology's Water Quality Partnership

QAPP – Quality Assurance Project Plan

QA/QC - Quality Assurance/Quality Control

SOP – Standard Operating Procedures

Team – Interagency Team

TMDL – Total Maximum Daily Load

WLA – Wasteload Allocation

WQA – Water Quality Assessment

WQP – Water Quality Policy 1-11

## Executive Summary and Background

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The Interagency Team (Team) is comprised of City, County, and State Agency stormwater professionals in Washington State. The Team was formed in 2012 with the goal of improving State Water Quality Assessment (WQA) and Total Maximum Daily Load (TMDL) programs.

With the assistance of Brown and Caldwell, in 2013 the Team evaluated WQA and TMDL programs in Washington State in comparison to five other states to identify potential program improvements. Findings and recommendations are contained in Recommendations for Improving Water Quality Assessment and Total Maximum Daily Load Programs in Washington State, Brown and Caldwell (2014).

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*This report documents accomplishments, lessons learned, and opportunities to advance improvements to Washington State WQA and TMDL programs.*

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Since that time, the Team has worked with the Washington State Department of Ecology (Ecology) and Region 10 of the U.S. Environmental Protection Agency (EPA) to refine and implement priority recommendations. The Washington Stormwater Center hosts a webpage for the Interagency Team, providing access to the Team's comment letters and recommendations mentioned throughout as delivered to Ecology and EPA.

<https://www.wastormwatercenter.org/interagency>

This report documents accomplishments, lessons learned, and opportunities to advance improvements to Washington State WQA and TMDL programs. This report will be updated such that new and existing Team members can reference work and outcomes.

In February of 2015, the Team met with representatives of Ecology and EPA to discuss how best to proceed working through the Team's recommendations. The discussion included a review of each recommendation and exploring an organizational framework for guiding and overseeing the effort.

High level outcomes of the Feb 2015 meeting included:

- maintaining a structure of communication from the Team to the most appropriate Ecology and/or EPA contact with no formation of an oversight committee or intra-agency website to facilitate communication between the Team, EPA and Ecology
- the Team, EPA, and Ecology were to independently identify which recommendations they considered a priority then compare the results and establish an interim work plan



- the Team and EPA identified recommendation-specific tasks, drafted priorities along with task-specific meeting agendas and desired outcomes,
- formed sub-groups based upon each task - Ecology and EPA managers identified appropriate staff based upon topic
- holding task-specific Team meetings – one Team member likely responsible for summarizing and distributing notes/outcomes to Team.

This initial meeting established working relationships, channels of communication, generated priorities and set into motion a series of meetings to advance recommendations.

What follows is a summary of each recommendation, accomplishments, and opportunities to advance each through coordination with Ecology and EPA.

## Recommendation Goals, Accomplishments, Lessons Learned and Opportunities

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### Recommendation 1: Establish a multi-stakeholder Standing Committee to improve coordination and engagement with the regulated community

**Recommendation 1 Goal:** Establish a multi-stakeholder Standing Committee to guide the development, revisions, and implementation of the WQA and TMDL programs. The first task of the Standing Committee would be to guide implementation of this report's recommendations. Establishing this committee adheres to EPA's CWA 303(d) Vision and Goal Statement (2013) by helping Ecology improve transparency, increase technical understanding, and gain public support of the program.

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*[T]he Team was successful in establishing channels of communication with Ecology and EPA managers and regional staff who were willing to meet, discuss ideas, and advance recommendations.*

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**Recommendation 1 Accomplishments:** With commitments from Ecology and EPA, the Team accomplished this goal. Although no formal committee was established, the Team was successful in establishing channels of communication with Ecology and EPA managers and regional staff who were willing to meet, discuss ideas, and advance recommendations.

This was exemplified through a joint Team and Ecology presentation on Improving WQA and TMDL programs at a November 2014 Municipal Stormwater Conference. A copy of this presentation is available upon request.

**Recommendation 1 Lessons Learned:** Early on, the Team was encouraged to submit recommendation-specific meeting agendas to Ecology with tasks and desired outcomes. This was effective to a point, but the Team learned that a mix of proactive and reactive opportunities to advance recommendations are necessary. For example, as Ecology updates policies or plans, the Team finds alignment with recommendations and often submits comments. Proactive recommendation advancement can be a useful strategy when Ecology has interest and resources available.

**Recommendation 1 Opportunities:** Improvements to WQA and TMDL programs touch various Ecology programs and levels of staff. As a result, the Team works strategically with Ecology Headquarters and regional office staff. When change to public policy is involved, Ecology invites other stakeholders to the table. The Team is currently exploring use of Ecology's Water Quality Partnership (Partnership) meetings to promote understanding of the IAT's recommendations within Ecology higher level staff and other stakeholders. The Team also has the opportunity to present to the Northwest-Chapter of the American Public Works Association.

## **Recommendation 2: Implement existing regulatory authority related to unpermitted and nonpoint sources**

**Recommendation 2 Goal:** Utilize existing legal authority (WAC 173-201-510 and [RCW 90.48.080](#)) to control unpermitted and nonpoint sources and ensure that load allocations (LAs) and wasteload allocations (WLAs) are equitable. In addition, Washington State should increase state funding for nonpoint source control and develop mechanisms to track/account for actions taken by nonpoint sources (e.g., stream shading, fencing cattle from streams, etc.). These actions should improve accountability, tracking, and enforcement of nonpoint source controls and help ensure that all sources are fairly addressed.

**Recommendation 2 Accomplishments:** In November 2015, the Team met with Ecology to discuss opportunities to advance this recommendation. That conversation resulted in several opportunities and desired outcomes, first of which was a coordinated effort to describe the existing legal and regulatory authority to control unpermitted and nonpoint sources of pollution used in each jurisdiction. This was done with the goal of having Ecology and other state natural resource agencies complete the same task and allow for a baseline understanding of the variety of compliance mechanisms in place. Progress in conducting this gap analysis stalled around the time Ecology launched an effort to develop a voluntary agricultural BMP guidance plan. In our September 2020 meeting with Ecology's new Water Quality Program manager, we reiterated the importance of having the state agencies complete this task.

**Recommendation 2 Lessons Learned:** Non-point pollution challenges are broad. Following and engaging in those actions being advanced by Ecology is key. Ecology expressed an interest in understanding the efficacy of agricultural best management practices (BMPs) as a starting point for building a case to focus resources on improving pollution prevention from nonpoint source runoff, and this approach superseded efforts by Ecology to collaborate with the Team on Recommendation 2.

**Recommendation 2 Opportunities:** The November 2015 Team and Ecology meeting summary outlines several opportunities to advance this recommendation. Ecology emphasized having the Team present non-point source success stories at Washington State legislative hearings to increase support for Ecology and stakeholder non-point pollution programs. Team members have, on several occasions, expressed an interest in the development of voluntary agricultural BMP guidance. To date, there has never been a formal invitation to participate, but the Team, on one occasion in 2018, has been provided with a project update. The Team is optimistic that other opportunities to advocate for improved accountability, tracking, and enforcement of nonpoint source control BMPs may be realized through participation in the Puget Sound Nutrient Forum.

## **Recommendations 3a, 3b, 3c, 3d, and 3e: Refine water quality standards and water quality assessment methodologies**

**Recommendation 3a Goal:** Use *E. coli* as the indicator bacteria. Revise the state water quality standards (WAC 173-201) to use *E. coli* as the indicator bacteria instead of fecal coliform.

**Recommendation 3a Accomplishments:** Participation in Water Quality Policy (WQP) 1-11 workshops between November 2016 and March 2017 and comment letters to Ecology requesting this change to state water quality standards played a role in updates to WAC 173-201A and WQP 1-11, where *E. coli* is replacing Fecal Coliform as the freshwater indicator.

**Recommendation 3a Lessons Learned:** Consistent and collective messaging on this topic helped gain support for this change.

**Recommendation 3a Opportunities:** Implementation of changes to state water quality standards WAC 173-201A and WQP 1-11 have implications for how water bodies are listed as impaired and de-listed. Efficacy of these changes will be tested as future WQAs and efforts to de-list waterbodies for bacteria occur.

**Recommendation 3b Goal:** Revise statewide listings to reflect current water quality conditions. Review and refresh all statewide listings from previous cycles. Remove outdated listings and produce a 303(d)-list reflective of current water quality conditions, which will help ensure that TMDL resources are targeted where they are needed.

**Recommendation 3b Accomplishments:** The Team was successful in highlighting and refining this recommendation in comment letters, during 2016 – 2017 WQP 1-11 workshops, and in a follow-up meeting with Ecology and EPA. In Ecology's summary of WQP 1-11 workshops, they committed to looking at pre-2001 data through the lens of the revised (2018) WQP 1 –11. Ecology also indicated that the newly developed WQA tool would automate review of data dating back to 2006. They indicated that records back to 2001 need manual review. Ecology mentioned this might be a barrier to completion. The 2019 -2021 Ecology and EPA Environmental Performance Partnership Agreement identifies a re-assessment of data back to 2006 using new WQP analysis methods as a priority.

**Recommendation 3b Lessons Learned:** The Team learned that the volume of data submitted to Ecology during WQAs has increased significantly since the advent and use of Ecology's Environmental Information Management (EIM) system. The volume of data to assess became a barrier to efficient and comprehensive WQAs, resulting in Ecology's development of an automated water quality assessment tool.

**Recommendation 3b Opportunities:** The Team will review the latest (2018) WQA, due in 2020, to determine if Ecology revised statewide listings based upon a review of data back to 2001 or 2006.

**Recommendation 3c Goal:** Improve transparency and completeness of methodology for water body de-listing

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*Through participation in 2016-2017 WQP 1-11 workshops, and March 2018 comment on draft WQP 1-11, the Team saw some additional transparency and completeness for water body de-listing through the final 2018 WQP 1-11.*

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**Recommendation 3c Accomplishments:** Through participation in 2016-2017 WQP 1-11 workshops, and March 2018 comment on draft WQP 1-11, the Team saw some additional transparency and completeness for water body de-listing through the final 2018 WQP 1-11. However, concerns specifically around methods for de-listing from Categories 4a and 4b to Category 1 remained. As a result, the Team decided to develop a de-listing flow chart based upon language in WQP1-11 and direct experience. The Team then worked with Ecology regional TMDL leads to confirm and/or fill gaps in understanding.

**Recommendation 3c Lessons Learned:** De-listing is a complicated, non-linear process. There are several parameter-dependent pathways to de-list and a variety of opinions about the administrative process, analytical methods, and/or evidence of best management practices supportive of de-listing. Requesting that Ecology headquarters detail parameter specific de-listing processes in WQP1-11 was not successful. Working directly with regional TMDL leads to document a high-level de-listing process, which also identifies gaps in understanding, has been instrumental in starting dialogue and developing a common understanding between stakeholders and Ecology regional offices.

**Recommendation 3c Opportunities:** Through the pursuit of an approved regional TMDL alternative program, Kitsap County started to streamline the Category 4b to 1 de-listing process. King County is planning a similar approach to gaining 4b status for waterbodies and may pilot test the de-listing flow chart using the Category 4a to 1 process. It's anticipated that opportunities to improve the transparency and documentation of the de-listing process will be realized more fully through the consistent and repetitive practice of following the de-listing flow chart.

As the de-listing flow chart is utilized and perhaps further improved, the Team anticipates it will serve as a resource to surface water resource managers attempting to de-list waterbodies. De-listing success stories serve goal 1G of Ecology and EPA's 2019 – 2021 performance partnership agreement.

**Recommendation 3d Goal:** Define a critical condition or period of application for the WQA of each water body-parameter combination.

**Recommendation 3d Accomplishments:** Although this recommendation dropped off the list of priorities in January 2015, the Team continued to document and refine the recommendation through the process for updating WQP 1-11. In their summary of 2016-2017 water quality policy workshops, Ecology committed to including more detail around critical periods where a TMDL exists. This included adding a definition for critical periods and adding clarity around collection and analysis of bacteria data.

**Recommendation 3d Lessons Learned:** Consistent and collective messaging on this topic helped gain more mutual understanding and added clarity. However, Ecology refrains from development of parameter and waterbody specific critical periods in WQP 1-11 because they are established during development of TMDLs.

**Recommendation 3d Opportunities:** Invariably, differences in the way Ecology staff develop critical periods in TMDLs will exist on a parameter by parameter and either regional or personal basis. Awareness of and action on this issue will assist in gaining consistency of parameter-based critical periods during TMDL development.

**Recommendation 3e Goal:** Re-evaluate the potential benefits of the binomial probability distribution function in water quality assessments. Prepare a companion document describing potential type I and type II errors associated with the binomial distribution method of data analysis.

**Recommendation 3e Accomplishments:** Requests for Ecology to conduct this evaluation resulted in their development of a detailed binomial probability distribution analysis document. As a result, WQP 1-11 now incorporates a form of this analysis through a hypergeometric mean test for pH, dissolved oxygen, and temperature, which increases statistical confidence in WQA listing decisions.

**Recommendation 3e Lessons Learned:** Although Ecology incorporated the use of a hypergeometric mean test for pH, dissolved oxygen, and temperature, WQP 1-11 still allows the use of two single sample results with a pronounced deviations from standards for making Category 5 listing decisions, which may defeat the purpose of the hypergeometric mean test and perpetuate historic errors in decision making.

**Recommendation 3e Opportunities:** The Team should consider reviewing the latest (2018) WQA to determine if new Category 5 listings for pH, dissolved oxygen and temperature have been based upon two single sample excursions of the standard and if so, identify how “pronounced” the excursions were.

## **Recommendations 4a and 4b: Improve and employ consistent process for collecting, assessing, and utilizing credible data in WQA and TMDL development**

The Team attempted to further these goals collectively so the accomplishments, lessons learned, and opportunities are combined.

**Recommendation 4a Goal:** Standardize and improve transparency of WQA and TMDL development methodologies to be consistent with current and applicable EPA water quality related regulations, policy, and guidance. This helps to ensure that third-party and Ecology-conducted monitoring efforts provide scientifically credible data of known quality, enough quantity, and appropriate for the intended use.

**Recommendation 4b Goal:** Clearly define and apply appropriate quality assurance/quality control (QA/QC) levels for WQAs and TMDL development. Establish minimum QA/QC requirements for the WQA and TMDL programs that include data quality objectives and resulting assessment criteria, with accompanying use qualifiers. This establishes data comparability and representativeness. To maximize water quality benefits, the WQA and TMDL procedures must reduce uncertainty, establish appropriate water quality objectives, and focus improvement efforts on key causes of water quality impairment for each water body.

**Recommendations 4a and 4b Accomplishments:** The Team provided preliminary scoping level comments on WQP 1-11 to Ecology in March 2016 (prior to Ecology’s WQP public workshops). The Team encouraged Ecology to include WQP Chapter 2 in the policy update effort (instead of Chapter 1 only) due to the interconnectedness of the policy content and implications (Chapter 2 was not opened for updates).

In May 2017, the Team initiated a discussion with Ecology and EPA to discuss WQP 1-11 public workshops and the Team report in relation to Recommendation 4, in summary:

To provide insight to the discussion, the EPA provided a general summary of the WQA process: Step 1) Assemble – pull together all existing information; Step 2) Evaluate – determine if it is credible for use; and Step 3) Assess – compare data deemed credible for use with water quality standards. The Team believes important details about Step 2 are missing from WQP 1-11, and Step 3 lacks transparency, predictability and repeatability. The Team also identified Section 3 of the state’s Administrative Procedures Act, as applicable to the WQA because it is a “significant agency action” used to implement state rule (WAC 173-201A) and that it was the legislatures intent that Ecology be transparent, use scientifically credible information in conducting policy making functions, and that those sources of information be reviewed.

In August 2017, the Team requested a copy of the policy or internal guidance that specifically addresses the evaluation of data (Step 2 of the WQA process), per the RCW. Ecology indicated there was not a separate policy; that this portion of the RCW is addressed throughout WQP 1-11 and the data submittal process (largely undocumented). Ecology explained that the data submittal process includes back and forth between Ecology EIM staff and data submitters, and use of a new automated database technology that was coded based on input from technical staff who work with the criteria, dozens of SOPs. Therefore, while Ecology doesn't have a specific policy documenting the "evaluate" process, they believe existing policy and systems are consistent with the RCW. The Team is generally concerned that the lack of documentation for a complex set of procedures leads to inconsistent implementation, particularly by new Ecology staff.

As a result of ongoing coordination, Ecology decided a Water Quality Partnership meeting was not the venue or audience for such a discussion and suggested an invite-only meeting in which appropriate staff (EAP and EIM) would be present (tribal representatives were also invited by Ecology). A "data quality demo" meeting was held in November 2017, in which EIM staff demonstrated their process for evaluating submitted data for use in the WQA. The demo didn't reveal the "evaluate" details the Team was interested in (demo focused on data submittal and automated procedures within EIM), however it did help the Team understand Ecology's process generally and formulate some specific recommendations for EIM.

Some process details learned from the data quality demo:

- A subset of the 79 Access queries run on data submitted to EIM were provided for IAT review. The IAT found that hold times are evaluated, which likely constitutes an evaluation of specific criteria, however none of the other queries appear to evaluate data credibility using specific criteria. These Access queries are not part of evaluating data for the purposes of the WQA.
- The new (but not yet used) water quality assessment tool within EIM was identified as including 68 queries run on data. Many of the queries may contain or constitute "specific criteria" used to evaluate the credibility of data and meet the intent of the credible data act.

The Team acknowledged Ecology's improvements to WQP 1-11 Chapter 1 in the published draft and provided public comment on the draft in March 2018. The Team reviewed the final draft and confirmed additional improvements made to address, at least partially, many of the Team comments. In April 2020, the Team provided public



comments on Ecology's WQP 1-11 2020 revision intended to specifically address the WQS bacteria indicator change.

The scope of these recommendations has led to accomplishments, such as;

- WQP 1-11 Chapter 1 public workshops and update.
- The Team developed and presented a Credible Data Proposal for discussion.
- The Team raised concerns about the Soos Creek TMDL stressor ID process presented by Ecology at a stakeholder meeting in March 2017. The Team stated procedures to ensure the credibility of Benthic Index of Biotic Integrity (B-IBI) data should also be developed.
- The Sediment Cleanup User's Manual (SCUM II) and WSDOT's Data Validation Guidance were used as general examples of the specific criteria the Team sees as needed for the WQA and TMDL programs.

**Recommendations 4a and 4b Lessons Learned:** The broad and ambitious scope of goals for Recommendations 4a and 4b present challenges to rapid progress. Furthering these recommendations requires interdisciplinary knowledge including pollutant-specific technical expertise, a solid understanding of the regulatory framework, and the procedures (often undocumented) in place for work completed by different agencies, programs, and stakeholders. Ecology also faces numerous challenges (e.g., staff

turnover, funding, EIM database limitations, different perspectives) surrounding these recommendations. There appears to be general support of these recommendations within Ecology's EAP, which updated their programmatic QAPP for Water Quality Impairment Studies in 2017.

Ecology's WQP 1-11 is not intended to cover TMDL development, so many of the Team's TMDL related WQP 1-11 comments were not addressed. Ecology's TMDL development continues to be a mostly undocumented process that can vary within Ecology's regional offices and headquarters (see Recommendations 7, 8, 9). EPA guidance continues to provide the best insight into appropriate TMDL procedures.

There was discussion about the WQA and whether Ecology must "use all data" or are required to evaluate data before using it (per [40 CFR 130.7](#)). Ecology stated

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*Furthering these recommendations requires interdisciplinary knowledge including pollutant-specific technical expertise, a solid understanding of the regulatory framework, and the procedures (often undocumented) in place for work completed by different agencies, programs, and stakeholders*

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they follow the Credible Data Law ([RCW 90.48](#)) and its requirements for data quality when developing the WQA. This is an ongoing barrier to goals of Recommendations 4a and b.

The production of credible data is supported by use of Standard Operating Procedures for sample collection. Ecology requested the list of 16 Standard Operating Procedures (SOPs) that the Stormwater Work Group identified (several years previously) as still needing to be developed. Ecology staff believed they had already incorporated many of the requested criteria elements into policy but had not published it yet. Ecology requested that continued dialogue on WQA issues dovetail with Partnership meetings, and requested meetings be topic based so appropriate Ecology staff could prepare and be present. The Team identified Recommendation 4 as a timely topic for a Partnership meeting. In preparation, the Team requested a copy of the credible data policy required by [RCW 90.48.585\(3\)](#) which describes how Ecology “evaluates” data from EIM using “specific criteria” to determine data credibility. Ecology identified WQP 1-11 as the appropriate document. However, as stated in the Team’s preliminary WQP comments from March 2016, the Team does not believe the WQP contains specific criteria (the purpose of the Team’s Credible Data Proposal was to provide recommendations). As a result of correspondence with Ecology and EPA, the Team anticipated a difference of opinion on what “evaluate” and “specific criteria” mean to Ecology, EPA, and the regulated community. This difference and its resolution are key to achieving goals of Recommendations 4a and b.

**Recommendation 4a and 4b Opportunities:** To ensure a consistent process for collecting, assessing, and utilizing credible data in WQA and TMDL development, the Team has identified the following opportunities:

- Suggestions for EIM improvements can be submitted to Ecology on a continual basis
- The development of SOPs may be the best opportunity to work towards implementation of Recommendation 4 and the documentation of specific criteria.
- Progress on Recommendation 3c (de-listing) also supports this recommendation, since Ecology’s data quality expectations are high for de-listing purposes.
- Working directly with Ecology’s regional TMDL Leads continues to present the best opportunity for process improvement; however, this region-by-region approach will not necessarily achieve statewide consistency.
- Revisiting Ecology’s interpretation of what it means to “evaluate” data using “specific criteria” may prove beneficial.

- Ecology stated the list of Access queries used in EIM is not considered exhaustive, and Ecology is amenable to adding additional queries to his list, based on IAT recommendations.
- IAT may request the set of queries used in the new WQA tool in EIM.
- Ecology does not validate data in EIM as they assume this is done by the submitter/lab. Ecology implied, through a citation from the Credible Data Act, that the “evaluation” of data is not only Ecology’s job, providing justification for ECY’s allowed “user” assignment of QA levels and acceptance of these data for the WQA. The IAT may wish to follow up to better understand the reference to the RCW and position on user certification. The IAT understands that data submitters don’t actually “certify” under penalty of law (but this function may be added to EIM) and [RCW 90.48.570](#) assigns the “state” the responsibility of assembling and evaluating all existing and readily available data.

## **Recommendation 5: Refine and/or add water quality assessment categories to improve clarity and aid in defining priority water bodies**

**Recommendation 5 Goal:** Expand existing classification categories for water bodies, which would prevent the development of TMDLs where insufficient data exist or where specific causes of water quality impairment remain uncertain. Subcategories could reflect water bodies where non-attainment occurs due to natural or background conditions. Some suggested categories were included in the Report.

**Recommendation 5 Accomplishments:** None to date.

**Recommendation 5 Lessons Learned:** The Team recommended Ecology add a WQA Category for old and/or non-representative data in our preliminary scoping level WQP 1-11 comments (March 2016). This idea was discussed during the 2016-2017 WQP workshops but not accepted by Ecology.

The GIS data layer that external organizations can download from Ecology currently includes TMDL alternative efforts in WQA Category 4a (TMDL). This has caused practitioner confusion about various requirements and the regulatory impact of developing efforts. Several conversations with Ecology staff have led the Team to believe Ecology is open to new WQA Categories, such as a “5-alt” Category to separate TMDL alternative efforts (not removed from 303(d) list) from formal TMDLs, however no formal action has occurred.

**Recommendation 5 Opportunities:** Provide public comment during the 2020 WQA public comment period suggesting Ecology formally add a 5-alternative or similar Category to separate various TMDL alternative approaches [e.g., Alternative Restoration Plans, Straight-to-Implementation, approved Pollution Control Program (4b approach)] from formal TMDLs.

## **Recommendations 6a and 6b: Update the current biological assessment and listing methodology**

The Team attempted to further these goals collectively so the accomplishments, lessons learned, and opportunities are combined.

**Recommendation 6a Goal:** Employ a public process to help define the methodology and QA/QC protocols utilized for biologic monitoring efforts.

**Recommendation 6b Goal:** Require stressor identification before listing determinations are made for biological data.

**Recommendations 6a and 6b Accomplishments:** Ecology's WQP 1-11 workshops and public comment process related to its' update provided opportunities to help define the methodology and QA/QC protocols utilized for biological monitoring efforts. As a result, the Team was successful in:

- having EPA and Ecology host a June 25, 2015 presentation and discussion of bioassessment in Washington State's proposed 2014 WQA
- providing comment to EPA on the 2014 bioassessment presentation
- getting Ecology to develop a document providing rationale for the 2014 WQA submittal to EPA regarding bioassessment thresholds
- Ecology hosting a November 2016 webinar on bioassessment in Washington
- submitting comment on Ecology's bioassessment threshold alternatives in March 2017
- submitting March 2018 comments to Ecology on use of bioassessment in WQP 1-11
- having Ecology exclude the use of periphyton in biological assessments
- having Ecology remove the use of trends analysis from WQP 1-11 to support listing decisions due to lack of specificity
- getting Ecology to include thresholds in WQP 1-11 for the number of benthic macroinvertebrate organisms preferred to count as a valid sample and trigger an evaluation of usability
- having Ecology define a sample site's National Hydrography Dataset reach scale minimum and maximum gradient, necessary for use in the WQA
- gaining clarity around Ecology and EPA's position that stressor identification studies are not needed to support Category 5 bioassessment listings.

**Recommendation 6a and 6b Lessons Learned:** The use of bioassessment in the WQA and TMDL development in Washington State began in 2004, at a time when the scientific community had little understanding of reasons for degraded benthic macroinvertebrate communities. At the same time, Ecology and EPA lacked regulatory clarity for its use for these purposes. As a result, the method for assessment biological data was to place waters displaying degradation of their macroinvertebrate communities into Category 2 (waters of concern). In June of 2006, Ecology revised WQP 1-11 to include greater detail on the numeric index thresholds for determining WQA Categories and maintained that waters showing degradation should remain in Category 2 until identification of pollutants or human disturbance were demonstrated. However, during public review, EPA stated that biological index scores showing degradation should be placed in Category 5, the 303(d) list of impaired waters. These regulatory decisions were made without providing the public reasonable assurance that numeric criteria and assessment were based upon credible data and methods or that WQP 1-11 and the WQA were based upon controlling laws. For example, documentation such as Quality Assurance Monitoring Plans used to determine the credibility of bioassessment data used for the 2004 WQA are lacking. Neither *Ecology's 2015 Benthic Macroinvertebrate Thresholds document* or WQP 1-11 adequately describe quality control procedures necessary to verify the credibility of data to comply with relevant law, regulation, and guidance, including Revised Code of Washington [RCW 90.48.570-585](#), USEPA's 2002 Information Quality Guidelines developed in response to the Federal [Office of Management and Budgets' 2002 Guidelines for Ensuring and Maximizing the Quality Objectivity, Utility and Integrity of Information Disseminated by Federal Agencies](#), or the [USEPA's 2005 Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303\(d\), 305\(b\) and 314 of the Clean Water Act](#).

Water Quality Policy 1-11 provides that because state water quality standards do not contain numeric biocriteria limits that listings of impairment for bioassessment are to be based upon an application of narrative standards. However, bioassessment listings have been based upon numeric criteria of unclear origin. In taking such action, Ecology appears to have established a water quality standard or rule, as defined by the Revised Code of Washington [RCW 34.05.010\(16\)](#), outside of rulemaking. Doing so is in direct conflict with law, including [RCW 35.05](#) and [40 Code of Federal Regulations parts 25, 130, 131](#).

Nonetheless, Category 5 listings were and continue to be generated, which carries regulatory implications for stormwater permittees and their ratepayers. The Team continues to be concerned that Category 5 bioassessment listings may trigger stressor identification studies, TMDLs, and stormwater permit requirements.

**Recommendation 6a and 6b Opportunities:** While the Team has been successful at engaging EPA and Ecology and bringing about several improvements to WQP 1-11, several opportunities remain which would further define the methodology and QA/QC protocols utilized for biologic monitoring efforts. These include:

- evaluating WQA Category listings for bioassessment to determine whether data supporting the listings are only extracted from EIM, not the Puget Sound Stream Benthos website, per the policy improvements in the 2018 WQP 1-11
- evaluating WQA Category listings for bioassessment to determine whether credible data have been used
- continuing to ask that Ecology document the legal basis and rationale for establishing numeric criteria outside the rule-making process
- asking Ecology to address ongoing inconsistencies between WQP 1-11, *EPA's 2006 guidance for WQAs*, and Ecology's guidance for stressor identification,
- reviewing all of Ecology's responses to Team bioassessment comments on WQP 1-11 to determine whether responses were adequate or to consider re-engaging them on any outstanding issues
- asking Ecology and EPA to more clearly document the regulatory linkages between stressor identification studies informing the basis for TMDL development and stormwater permitting.

## **Recommendation 7: Define TMDL prioritization methodology, timelines and process for public improvement**

**Recommendation 7 Goal:** Establish an explicit and transparent TMDL prioritization process and make it publicly available. The process should result in early engagement and involvement with stakeholders in TMDL prioritization. The prioritization should identify any water bodies where straight-to-implementation programs appear appropriate, as well as water bodies where TMDL development requires collection of additional data.

**Recommendation 7 Accomplishments:** Based on Team public comments and letter to Ecology and EPA identifying areas of the 1997 TMDL Memorandum of Understanding that align with this recommendation, a TMDL prioritization section was added to the 2018 WQP 1-11. While prioritization methodology details remain sparse, Ecology did commit to holding an annual TMDL prioritization public meeting for stakeholders. Ecology requested public comments after the first annual TMDL prioritization webinar and based on feedback received from a Team member, Ecology developed a TMDL Listserv for stakeholders in 2019.

**Recommendation 7 Lessons Learned:** Ecology's annual TMDL prioritization webinar and Listserv have not fulfilled the intent of this recommendation. The webinar may improve public outreach expectations for some stakeholders but does not provide insight into how/why Ecology prioritizes efforts so practitioners can prepare accordingly (e.g., planning, funding, staffing etc.). While the Team agrees some variation within the TMDL

prioritization process is appropriate based on watershed/regional factors, the methodology aspects that lend themselves to more standardization continue to vary between staff and regions. The Team's perspective is there are efficiencies to be gained when a regulated entity can focus on one pollutant (as a priority), because it takes time and money to build an effective program response for each pollutant. Ecology HQ does not appear to see statewide standardization of TMDL

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prioritization methodology as a priority. An examination of Federal law around prioritization of TMDLs simply requires that States prioritize based upon the severity of the pollution and designated use for a waterbody. It does not require states to have a standardized prioritization process. Without explicit support from Ecology headquarters for statewide standardization, we will be challenged to achieve our goal.



**Recommendation 7 Opportunities:** Participate in Ecology’s annual TMDL prioritization webinar, Partnership meetings, and continue to provide public comment as needed. In our September 2020 meeting with Ecology’s new Water Quality Program manager, we reiterated the importance and value of engaging local stakeholder and soliciting local knowledge in setting TMDL development priorities.

## **Recommendation 8a, 8b, 8c, 8d, and 8e: Define TMDL development methodology**

**Recommendation 8a Goal:** Require a project definition report or project plan at the beginning of the TMDL development effort. The project definition report or project plan should summarize: (1) alternatives considered related to development of the TMDL (with input from stakeholders prior to development of the TMDL); and (2) credible modeling approaches and selection principals.

**Recommendation 8a Accomplishments:** Ecology's EAP programmatic QAPP for Water Quality Impairment Studies was updated in March 2017. Ecology's southwest region continues to develop a TMDL template for use statewide.

**Recommendation 8a Lessons Learned:** TMDL development continues to vary regionally, from basic terminology to how allocations are assigned to point and non-point sources.

**Recommendation 8a Opportunities:** Working directly with Ecology regional TMDL Leads has proven to be the most effective approach to furthering this recommendation, however this region-by-region approach will not necessarily achieve statewide consistency. Ecology's HQ staff appear to accept the variation within Ecology's mostly undocumented TMDL development process.

**Recommendation 8b Goal:** Confirm designated use and applicability of WQS early in the TMDL development process. Review WQS (specific for aquatic life conditions) to ensure appropriate water quality targets for the water body.

**Recommendation 8b Accomplishments:** None to date in part because the Team placed a lower priority on this recommendation.

**Recommendation 8b Challenges/Lessons Learned:** None to date in part because the Team placed a lower priority on this recommendation.

**Recommendation 8b Opportunities:** Participation in regional TMDL development stakeholder meetings.

**Recommendation 8c Goal:** Develop specific guidelines for determination of the margin of safety (MOS). The guidelines should describe when to use an implicit MOS rather than an explicit MOS. The process for determining an MOS should include a sensitivity analysis based on ranges of key input values for each parameter, rather than an arbitrary selection of the MOS.

**Recommendation 8c Accomplishments:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 8c Challenges/Lessons Learned:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 8c Opportunities:** Participation in regional TMDL development stakeholder meetings to continue to advocate for these specific guidelines.

**Recommendation 8d Goal:** Assign LAs by specific known nonpoint sources, in conjunction with Recommendations 2 and 9c. Calculation of LAs should occur based on an equitable division among nonpoint sources.

**Recommendation 8d Accomplishments:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 8d Challenges/Lessons Learned:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 8d Opportunities:** Participation in regional TMDL development stakeholder meetings and Partnership meetings to continue to advocate for this goal.

**Recommendation 8e Goal:** Reject the use of non-pollutants as surrogates. Use surrogate parameters that have a direct causal relationship with a measured impairment (i.e., total phosphorus as a surrogate for dissolved oxygen).

**Recommendation 8e Accomplishments:** Several Team members submitted Clarks Creek and Soos Creek TMDL public comments that communicated concerns related to this recommendation.

**Recommendation 8e Challenges/Lessons Learned:** In recent years, Ecology has not aggressively pushed the non-pollutant surrogate approach after the regulated community raised assurance and implementation questions.

**Recommendation 8e Opportunities:** Participate in Soos Creek TMDL development stakeholder meetings and Puget Sound Partnership vital signs work related to B-IBI to advocate for this goal.

## **Recommendations 9a, 9b, 9c, and 9d: Develop consistent TMDL implementation expectations**

**Recommendation 9a Goal:** Develop standardized best management practice (BMP) performance measures (programmatic and structural) to use in defining waste load allocations and implementation efforts. This would help ensure standardized and transparent TMDL compliance requirements in subsequent NPDES stormwater permits.

**Recommendation 9a Accomplishments:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9a Lessons Learned:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9a Opportunities:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9b Goal:** Develop TMDLs that allow flexibility via adaptive management. This approach could be used for complex TMDLs where uncertainty is high or when allocations do not appear attainable with current tools or BMPs.

**Recommendation 9b Accomplishments:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9b Lessons Learned:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9b Opportunities:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9c Goal:** Implement TMDLs in a manner that ensures proportional distribution of WLAs or LAs to all major contributing sources, in conjunction with Recommendation 2.

**Recommendation 9c Accomplishments:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9c Lessons Learned:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9c Opportunities:** None to date, in part because the Team placed a lower priority on this recommendation.

**Recommendation 9d Goal:** Finalize framework for water quality trading and offsets.

**Recommendation 9d Accomplishments:** Ecology invited speakers from other states with experience in water quality trading efforts to present at the Puget Sound Nutrient Forum stakeholder meetings. The EPA updated their guidance in 2019 to clarify and encourage water quality trading.

**Recommendation 9d Lessons Learned:** Ecology appears interested in pursuing a water quality trading effort for nutrients in the Puget Sound, however no formal approach has been identified. Ecology has described Bubble WLAs (used in North Fork Palouse TMDL) as a water quality trading approach, however the regulatory use and compliance expectations of bubble WLAs remain unclear and undocumented.

**Recommendation 9d Opportunities:** Participate in Puget Sound Nutrient Forum or Partnership meetings to advocate for this goal.

## References

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## Interagency Team Framework and Operating Principle

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### New Member Orientation and Commitments

As new private or public agencies become interested in team efforts, a template email is sent along with the recommendation tracking sheet. These items are available on the Team's SharePoint site. The template informs interested parties of the Brown and Caldwell report (2014), Team membership commitments, our priorities, and what it means to contribute at either a tracking, participate, or lead a recommendation level.

New members are encouraged to read the Brown and Caldwell report and then gauge their interest and ability to commit. Should an interested party wish to become a member, they are added to the Team's email distribution list, invited to quarterly team meetings, and provided a link to our SharePoint site.

### Recommendation Priorities and Lead, Participate, and Track Functions

On an annual basis, or as needed, the Team identifies priority recommendations, leads or co-leads, and levels of participation for each recommendation. Recommendations are assigned either a priority 1, 2, or 3 with 1 being the highest priority. Next, each member identifies their desired level of participation for each recommendation. Participation levels and expectations are as follows:

#### Lead or Co-lead:

- Lead recommendation progress and work with Team, Ecology, and EPA to achieve goals
- Has autonomy to drive decision-making without consensus
- Draft agenda for discussions with desired goal and tasks
- Set up and lead meetings with Team members, Ecology, and EPA
- Update working documents and summarize meeting notes for distribution and review
- Provide whole Team status report and quarterly meetings

#### Participate:

- Assist with or review working documents, agenda, tasks, and desired goals
- Participate in meetings with lead(s), Ecology, and EPA
- Primary review/comment on interim working documents, agendas. etc.
- Assist with task implementation and achieving desired goals

#### Track:

- Review near final documents, agenda's etc. for tone and consistency, prior to delivery to Ecology and/or EPA. Not expected to provide substantial comment – if major questions/concerns arise, contact a lead or co-lead
- Track progress – allowing opportunity to participate or lead/co-lead

#### Quarterly Meetings and Communication

All Team members are invited to participate in quarterly Team meetings, either in person or remotely through call-in or video conference options. Beginning in 2020, Team members agreed to share responsibility with Leads for drafting meeting agendas, leading, and summarizing meetings for Team review and distribution.

#### Outreach Strategy

From time to time, the Team discusses how best to promote our work and draw interest from other parties. In 2020, the Team agreed there is ongoing value in promoting our work through municipal stormwater permit coordinators groups, the Washington Stormwater Center, and the local chapter of the American Public Works Association. While we do not actively recruit new members, we “passively advertise” our work welcoming interested jurisdictions to join the Team.

#### SharePoint (Its Use, Content, and Contacts)

The Team uses an Office 365 SharePoint site hosted by King County to store Team documents. Documents related to project management, recommendation progress, and working drafts of comment letters are typical items stored on the site. It allows for Team members to post, download, and/or work in documents simultaneously.

#### Project Charter

Over time, the Team has discussed development of project charter. Project charters typically contain team structure, commitments, goals, scope, work plan and schedule, deliverables, a communications plan, and in many cases, signatories. A draft project charter was developed in 2014.

Given that the Team's progress and deliverables require agility and are highly dependent upon Ecology and EPA availability and commitment, it was determined that a project charter was not practical. Instead, the Team relies upon annual workplans, tracking of recommendation progress, and status reports such as this to document progress and outcomes.