DEPARTMENT OF
ECOLOGY
State of Washington

Final Regulatory Analyses

Including the:
Final Cost-Benefit Analysis
Least-Burdensome Alternative Analysis
Administrative Procedure Act Determinations
Regulatory Fairness Act Compliance

Chapter 173-201A WAC
Water Quality Standards for Surface Waters of the State of Washington

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Water Quality Standards for Surface Waters of the State of Washington

by

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Executive Summary

This report presents the determinations made by the Washington State Department of Ecology (Ecology) as required under chapters 34.05 RCW and 19.85 RCW, for amendments to the Water Quality Standards for Surface Waters of the State of Washington rule (chapter 173-201A WAC; the "rule"). This includes the:

- Final Cost-Benefit Analysis (CBA)
- Least-Burdensome Alternative Analysis (LBA)
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

The Washington Administrative Procedure Act (APA; RCW 34.05.328(1)(d)) requires Ecology to evaluate significant legislative rules to "determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented."

The APA also requires Ecology to "determine, after considering alternative versions of the rule…that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives" of the governing and authorizing statutes (RCW 34.05.328(1)(d)).

The APA also requires Ecology to make several other determinations (RCW 34.05.328(1)(a) – (c) and (f) – (h)) about the rule, including authorization, need, context, and coordination.

The Washington Regulatory Fairness Act (RFA; Chapter 19.85 RCW) requires Ecology to evaluate the relative impact of rules that impose costs on businesses in an industry. It compares the relative compliance costs to small businesses to the largest businesses affected.

Costs

Assuming weekly E. coli testing at fresh water dischargers, the amendments would result between an annual cost-savings of approximately $92 thousand, and annual cost increase of $79 thousand, compared to baseline testing for fecal coliform. This translates to a 20-year present value of between a cost-savings of $1.4 million, and a cost increase of $1.2 million.

Assuming weekly enterococcus testing at marine water dischargers, the amendments would result in annual cost increases of between $142 thousand and $240 thousand, compared to baseline testing for fecal coliform. This translates to a 20-year present value cost of between $2.2 million and $3.6 million.

While future Environmental Protection Agency (EPA) approval of the rule is not technically part of the baseline, it is arguable that if we assume approval is a necessity, a reasonable baseline for comparison could also be the alternative indicator and criteria recommended by EPA. If the baseline was limited to criteria acceptable to EPA, it would mean comparing the amendments to using enterococcus for fresh waters (the only other option that would receive EPA approval) and enterococcus for marine waters (the only option recommended by EPA).

Under this scenario and using the same assumptions as in the primary calculation, the amendments would result in:

- An annual cost-savings of between $302 thousand and $735 thousand, with equivalent 20-year cost-savings of between $4.6 million and $11.2 million for fresh water sampling.
- No difference between the adopted use of enterococcus for marine water, and the baseline. This would result in no cost or benefit of this amendment.

We **do not** expect the amendments to result in:

- Treatment costs beyond potential minor adjustments or optimization of existing practices.
- Treatment costs to dischargers with Total Maximum Daily Loads (TMDLs), or those with technology-based limits.

Benefits

Both E. coli and enterococcus are more highly correlated with illness than fecal coliform. Using a more accurate indicator of illness risk reduces potential costs for both dischargers and the public, while better protecting public health. This is because a more accurate bacterial indicator is less likely to result in limits and unnecessary application of treatment technologies. It is also less likely to restrict public access, but still maintains protection of public health.

The most recent fact sheet on chlorine disinfection available from the EPA lists example annualized capital and operations and maintenance costs of between $488 thousand and $532 thousand, with example incremental supply costs of nearly $2 thousand for a 2 thousand pound container of chlorine gas, and per-pound estimates of $4 per pound of sodium hypochlorite, and $2 per pound of calcium hypochlorite.

A 2013 study found that Puget Sound tourism and recreation generate annual revenues of over $5 billion. This accounts for activities such as shellfish harvesting, as well as water contact recreational activities such as boating and swimming. The same study notes that the way water quality-based restrictions are communicated to the public affects whether recreational users forego beach use and recreation entirely or ignore advisories.

Other studies have found recreational values for beach use of:

- Between approximately $14 and $90 per trip on recreation at beaches in southern California.
- Net economic losses of nearly $2 thousand to $50 thousand per beach closure day at Michigan beaches.
- Perceived limitations to recreational use of fresh and marine waters impact nearby property values.

Consistent protection of all the states waters, including those that may be local or low-cost access to populations with greater likelihood of:

- Subsistence or diet-augmenting fishing.
- Tribal fishing.
- Having low incomes.
- Identifying as members of minority or limited-English groups.

Consistent and continuous regulations across the state and international border will make requirements more clear and may reduce the costs of compliance.

Improved clarity in requirements for averaging data for compliance and other purposes, matched to sampling frequency and availability.

Conclusion
Ecology concludes, based on reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the rule amendments, that the benefits of the rule amendments are greater than the costs.

Least-Burdensome Alternative
After considering alternatives to the rule's contents, as well as the goals and objectives of the authorizing statute, Ecology determined that the rule represents the least-burdensome alternative of possible rule contents meeting these goals and objectives.

Regulatory Fairness Act Compliance
We conclude that the rule amendments are likely to have disproportionate impacts on small businesses, and therefore Ecology must include elements in the rule amendments to mitigate this disproportion, as far as is legal and feasible.

Under low-end cost assumptions, the Washington State economy, beginning in 2021, could experience between a net loss of one full time employee (FTE) equivalent, to a net gain of 2.5 FTEs. This range depends on the distribution of costs across relevant NAICS codes transferring costs to environmental labs.

Under high-end cost assumptions, the Washington State economy, beginning in 2021, could experience between a net loss of 1.6 FTE equivalent, to a net gain of 3.8 FTEs. This range depends on the distribution of costs across relevant NAICS codes transferring costs to environmental labs.

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Chapter 1: Background and Introduction

1.1 Introduction

This report presents the determinations made by the Washington State Department of Ecology (Ecology) as required under chapters 34.05 RCW and 19.85 RCW, for amendments to the Water Quality Standards for Surface Waters of the State of Washington rule (chapter 173-201A WAC; the "rule"). This includes the:

- Final Cost-Benefit Analysis (CBA)
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The Washington Administrative Procedure Act (APA; RCW 34.05.328(1)(d)) requires Ecology to evaluate significant legislative rules to "determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented." Chapters 1 – 5 of this document describe that determination.

The APA also requires Ecology to "determine, after considering alternative versions of the rule…that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives" of the governing and authorizing statutes (RCW 34.05.328(1)(d)). Chapter 6 of this document describes that determination.

The APA also requires Ecology to make several other determinations (RCW 34.05.328(1)(a) – (c) and (f) – (h)) about the rule, including authorization, need, context, and coordination. Appendix A provides the documentation for these determinations.

The Washington Regulatory Fairness Act (RFA; Chapter 19.85 RCW) requires Ecology to evaluate the relative impact of rules that impose costs on businesses in an industry. It compares the relative compliance costs to small businesses to the largest businesses affected. Chapter 7 documents that analysis, when applicable.

1.1.1 Rule and program introduction

In 2012, the Environmental Protection Agency (EPA) revised the national recommended recreational water quality criteria. The recommendations include the latest science, which quantifies the link between illness and fecal contamination in recreational waters. The recommended criteria are based on two bacterial indicators of fecal contamination, E. coli and enterococci.

Washington's existing bacterial indicator for contact recreation, fecal coliform, was removed from EPA's recommendations in 1986. This method of determining compliance with water quality standards is outdated. EPA has instructed states that still rely on fecal coliform as an

indicator to revise their recreational use criteria and align them with the current national recommendations.

This rulemaking was intended to improve the water quality standards by:

- Including new science to protect recreational uses of state waters.
- Establishing indicators that are better correlated with illness and can more accurately determine the presence of human-caused fecal pollution.
- Aligning Washington's recreational use categories with EPA recommendations.
- Providing improved location information to allow the public to better understand which water quality criteria apply in their local waters.

1.1.2 History of Washington recreational use criteria

Before the EPA, the Department of Interior (DOI) released water quality standard recommendations under the Federal Water Pollution Control Act (as amended in 1965). Within the recommendations for recreational use criteria, the DOI recommended that "water quality criteria be set for potential and future water uses as well as the present intended use and uses (USDOI, 1968)." Furthermore, the DOI recommended that to meet goals of the established Federal Water Pollution Control Act, "water quality standards must be adequate to protect and upgrade water quality in the face of population and industrial growth, urbanization, and technological change. In accordance with the provisions of the Act, it is anticipated that after the initial setting of standards, periodic review and revision will be required to take into account changing technology of waste production and waste removal and advances in knowledge of water quality requirements developed through research (USDOI, 1968)." The DOI recommended fecal coliform at 200 CFU per 100 mL for recreational use criteria in the 1968 water quality standards guidance document for interstate waters.

In a 1976 revision to Washington's water quality standards, a paper discussing changing bacteria standards noted it was "desirable to have the fecal coliform level as low as possible to have the safest level of water to accommodate swimming and shellfish harvest." In setting bacterial standards, Ecology based their decisions in large part on what levels of fecal coliform bacteria were being attained in waters. An Ecology investigation found that:

- Class AA (i.e. extraordinary contact use) and A (i.e. primary contact use) fresh waters were <50 CFU/100 mL fecal coliform 76.3% of the time;
- Class B (i.e. secondary contact use) fresh waters were under 200/100 mL 73.7% of the time; and lakes greater than 20 acres had less than 10/100 mL 92.3% of the time.
- Class AA and A marine waters were less than 14/100 mL 76.3% of the time; and
- Class B and C marine waters were less than 50/100 mL 60.4% of the time.

Ecology believed it was appropriate to set standards not being met in all waters. This was based on the assumption water quality would improve because of improvements in wastewater discharge technology, and more advanced wastewater treatment techniques would be used in the future. No scientific basis was provided for more stringent recreational use classes and

associated criteria than those that EPA recommended. Washington continues to use fecal coliform as its indicator bacteria for recreational use criteria.

1.1.3 EPA Recommendations

The 2012 EPA recommendations for recreational use criteria are detailed in Table 1. Enterococci and E. coli are recommended bacterial indicators for fresh water, while only enterococci is recommended for marine waters. Two sets of numeric criteria are available for each indicator with an associated geometric mean (GM) and statistical threshold value (STV).

Table 1: 2012 EPA recommendations for recreational use criteria for primary contact recreation.

CRITERIA ELEMENTS	Recommendation 1 Illness Rate: 36/1,000 recreational users			Recommendation 2 Illness Rate 32/1,000 recreational users	
Indicator	GM (CFU/100 mL)	STV (CFU/100 mL)		GM (CFU/100 mL)	STV (CFU/100 mL)
Enterococci (fresh & marine)	35	130	**OR**	30	110
E. coli (fresh)	126	410		100	320

Magnitude and Duration: The waterbody GM should not be greater than the selected GM magnitude in any 30-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 30-day interval.

1.2 Summary of the rule amendments

The rule amendments make the following changes:

- Changing definitions:
  - Ambient Water Quality (added).
  - E. Coli (revised)
  - Effluent (added).
  - Extraordinary primary contact (removed).
  - Secondary contact recreation (removed).

- Revising standards for fresh water sampling:
  - Removing extraordinary primary contact and secondary contact recreation uses.
  - Replacing fecal coliform as the fresh water contact recreation bacterial indicator with Escherichia coli (E. coli) after December 31, 2020.
  - Requiring a minimum of three samples to calculate a geometric mean; samples must be within a 30 day period for permit compliance or 90 days for all other monitoring data.
- Revising standards for marine water sampling:

    - Removing secondary contact recreation use.
    - Adding enterococcus as an additional marine water recreation contact bacterial indicator and removing fecal coliform as an indicator after December 31, 2020.
    - Requiring a minimum of three samples to calculate a geometric mean; samples must be within a 30 day period for permit compliance or 90 days for all other monitoring data.
- Other changes without material impact to requirements:
    - Table revisions reflecting adopted changes above, including use designations.
    - Clarifying that most probable number (MPN) is a unit of measure for bacterial indicators in the recreational criteria in addition to colony forming units (CFU).
    - Clarifying units for measurable change for protection higher than the standards.
    - Housekeeping including updated web address

1.3 Reasons for the rule amendments

1.3.1 Changing definitions

The additional definitions Ecology is adopting reflect terms that have been added in this amended rule. The definitions we are removing are no longer needed because of other amendments to the rule.

1.3.2 Revising standards for fresh waters

Reasons for removing extraordinary primary and secondary contact:

- EPA will not accept numeric criteria less than what they recommend for primary contact uses (i.e. secondary use) and don't provide protection for full immersion in water.
- There is no scientific basis for numeric values associated with extraordinary primary contact.
- Continuity between recreational use classes for fresh and marine waters.
- Consistency with neighboring states.
- There are environmental justice concerns regarding locations of, and access to, secondary contact waters. Developing criteria for the primary use class uniformly provides equal protection for all waters.

Reasons for replacing fecal coliform as the fresh water contact recreation bacterial indicator with E. coli after December 31, 2020:

- There is a higher correlation between E. coli and illness.
- Similar analytical methods for fecal coliform and E. coli are available.
- Labs need more time to become accredited for E. coli analytical methods.

- Better protection of downstream uses, including shellfish harvesting for which the bacterial indicator is fecal coliform (not a recreational use criteria covered by this rulemaking). E. coli is a subset of fecal coliform.
- Consistency with neighboring states.
- Potential for inflated fecal coliform counts due to presence of Klebsiella bacteria arising from non-fecal matter such as organic matter related to paper products.
- Ability to manage E. coli with the same treatment technologies used for fecal coliform.

Reasons for requiring a minimum of three samples to calculate a geometric mean:

- Sample values must be averaged within a 30 day period for permit compliance or 90 days for all other monitoring data.
- Need for clearer sample averaging period.
- EPA recommends that the geometric mean averaging periods should be less than 30 days regardless of sample size.
- Consistency with neighboring states.
- Varying ability to have sufficient samples for the averaging period. For permit compliance, permittees are required to sample regularly (at least weekly), and have sufficient samples for calculating a geometric mean, but ambient monitoring programs that sample less frequently may not have an adequate sample size within the EPA recommended 30-day averaging period.
- EPA has permitted averaging periods greater than 30 days for ambient monitoring given that EPA epidemiological studies had exposure periods up to 90 days and only minor differences in geometric means of sample data were observed between 30 and 90 day averaging periods.

1.3.3 Revising standards for marine waters

Reasons for removing secondary contact:

- EPA does not accept numeric criteria less than what they recommend for primary contact uses (i.e. secondary use) and doesn't provide protection for full immersion in water.
- Continuity between recreational use classes for fresh and marine waters.
- Consistency with neighboring states.
- There are environmental justice concerns regarding locations of, and access to, secondary contact waters. Developing criteria for the primary use class universally provides equal protection for all waters.

Reasons for replacing fecal coliform as the marine water contact recreation bacterial indicator with enterococcus after December 31, 2020:

- EPA's recommendation of only enterococcus for marine waters.

- Higher correlation between enterococcus and illness.
- Origination in separate families of bacteria, reducing likelihood of confounding bacteria counts.
- Labs need more time to become accredited for enterococcus analytical methods.
- Consistency with neighboring states.
- Potential for inflated fecal coliform counts due to presence of Klebsiella bacteria arising from non-fecal matter such as organic matter related to paper products.
- Ability to manage enterococcus with the same or similar treatment technologies used for fecal coliform.
- Survival rates of enterococcus are more similar to pathogens that cause disease.

Setting a minimum of three samples for calculating a geometric mean is motivated by consideration of various facility abilities to have sufficient samples to compare monitoring data to the geometric mean recreational criteria.

The averaging period duration for samples must be within a 30 day period for permit compliance or 90 days for all other monitoring data is motivated by consideration of:

- EPA's recommendation that geometric mean averaging periods should be less than 30 days regardless of sample size.
- Consistency with neighboring states.
- Varying ability to have sufficient samples for the averaging period. For permit compliance, permittees are required to sample regularly (at least weekly), and have sufficient samples for calculating a geometric mean, but ambient monitoring programs that sample less frequently may not have an adequate sample size within the EPA recommended 30-day averaging period.
- EPA has permitted averaging periods greater than 30 days for ambient monitoring given that EPA epidemiological studies had exposure periods up to 90 days and only minor differences in geometric means of sample data were observed between 30 and 90 day averaging periods.

1.3.4 Other changes without material impact to requirements

Clarifying that MPN bacteria counts as well as CFU may be used, is motivated by being explicit that either MPN or CFU units may result from EPA approved methods to measure bacterial indicators.

Other changes were made to:

- Improve clarity in the rule's requirements.
- Update tables to reflect use changes above and correct typos.

1.4 Document organization

The remainder of this document is organized in the following chapters:

- Baseline and the rule amendments (Chapter 2): Description and comparison of the baseline (what would occur in the absence of the rule amendments) and the adopted changes to rule requirements.
- Likely costs of the rule amendments (Chapter 3): Analysis of the types and sizes of costs we expect impacted entities to incur as a result of the rule amendments.
- Likely benefits of the rule amendments (Chapter 4): Analysis of the types and size of benefits we expect to result from the rule amendments.
- Cost-benefit comparison and conclusions (Chapter 5): Discussion of the complete implications of the CBA.
- Least-Burdensome Alternative Analysis (Chapter 6): Analysis of considered alternatives to the contents of the rule amendments.
- Regulatory Fairness Act Compliance (Chapter 7, when applicable): Comparison of compliance costs to small and large businesses; mitigation; impact on jobs.
- RCW 34.05.328 determinations not discussed in Chapter 5 or 6 (Appendix A)

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Chapter 2: Baseline and the Rule Amendments

2.1 Introduction

We analyzed the impacts of the rule amendments relative to the existing rule, within the context of all existing requirements (federal and state laws and rules). This context for comparison is called the baseline, and reflects the most likely regulatory circumstances that entities would face if the amended rule were not adopted. It is discussed in Section 2.2, below.

2.2 Baseline

The baseline for our analyses generally consists of existing rules and laws, and their requirements. This is what allows us to make a consistent comparison between the state of the world with and without the rule amendments.

For this rulemaking, the baseline includes:

- The existing rule, WAC 173-201A.
- RCW 90.48 Water Pollution Control.

2.3 Rule amendments

The rule amendments make the following changes:

- Changing definitions:
    - Ambient Water Quality (added).
    - E. coli (revised)
    - Effluent (added).
    - Extraordinary primary contact (removed).
    - Secondary contact recreation (removed).

- Revising standards for fresh waters:
    - Removing Extraordinary Primary Contact and Secondary Contact recreation uses.
    - Replacing fecal coliform as the fresh water contact recreation bacterial indicator with Escherichia coli (E. coli) after December 31, 2020.
    - Requiring a minimum of 3 samples to calculate a geometric mean; samples must be within 30 day period for permit compliance or 90 days for all other monitoring data.
- Revising standards for marine waters:
    - Removing Secondary Contact recreation use.
    - Replacing fecal coliform as the marine water recreation contact bacterial indicator with enterococcus after December 31, 2020.
    - Requiring a minimum of three samples to calculate a geometric mean; samples must be within a 30 day period for permit compliance or 90 days for all other monitoring data.

- Other changes without material impact to requirements:
    - Table changes reflecting adopted changes above, including use designations.
    - Clarifying that MPN is a unit of measure for bacterial indicators in the recreational criteria in addition to CFU.
    - Clarifying units for measurable change for protection higher than the standards.
    - Housekeeping including updated web address

2.3.1 Changing definitions

Baseline

Defines E. coli in terms of physical attributes, growth temperature, and being ortho-nitrophenyl-B-D-galactopyranoside (ONPG) positive and Methylumbelliferyl glucuronide (MUG) positive.

Defines extraordinary primary contact and secondary contact recreation:

- “Extraordinary primary contact" means waters providing extraordinary protection against waterborne disease or that serve as tributaries to extraordinary quality shellfish harvesting areas.
- "Secondary contact recreation" means activities where a person's water contact would be limited (e.g., wading or fishing) to the extent that bacterial infections of eyes, ears, respiratory or digestive systems, or urogenital areas would normally be avoided.

Adopted

Changes E. coli definition to read, “a bacterium in the family Enterobacteriaceae names Escherichia coli and is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.”

Removes extraordinary primary contact and secondary contact recreation. Adds definitions of ambient water quality and effluent:

- "Ambient water quality" refers to the conditions and properties of a surface water of the state as determined by the results of water samples, measurements, or observations.
- “Effluent” refers to the discharge of chemical, physical, biological, or other constituents from point sources into surface waters.

Expected impact

Amendments to definitions are not expected to have an impact on their own, beyond improved clarity. Where they are used in other rule amendments, below, they contribute to the impact of those amendments.

The change to the definition of E. coli is not expected to have an impact. During the public comment period, commenters expressed concern that the baseline definition could be misunderstood. The baseline definition was specific to a laboratory method for detecting bacteria under specific growing conditions. Commenters were concerned that

the method-specific definition may imply that other EPA-approved laboratory methods may not be allowable for compliance monitoring. The revised definition maintains an accurate definition of E. coli but is not limited to a specific laboratory model.

2.3.2 Revising standards for fresh waters

Baseline

- Fecal coliform is the recreational bacterial indicator.
- Extraordinary primary contact (50 CFU; 100 STV), primary contact (100 CFU; 200 STV), and secondary contact (200 CFU; 400 STV) recreational uses are designated.
- Averaging periods should not exceed 12 months. Language includes: "It is preferable to average by season and include five or more data collection events within each period. The period of averaging should not exceed 12 months. [Averaging periods longer than 30 days are] not permitted when such averaging would skew the data set so as to mask noncompliance periods."
- Alternative bacterial indicator criteria may be established for locations with bacterial sources potentially confounded by the presence of other organic matter.

Adopted

- Primary contact is the only designated use for recreation.
- After December 31, 2020, fecal coliform is replaced with E. coli as the fresh water contact bacterial indicator, with an allowable equivalent illness rate of 32 illnesses per one thousand recreational users, reflected in a geometric mean of 100 CFU (320 STV).
- A minimum of 3 samples is required to calculate a geometric mean; samples must be within 30 day period for permit compliance or 90 days for all other monitoring data.

Expected impact

The combined rule amendments are likely to result in impacts to the cost of sample analysis for a different parameter being phased in at rule adoption and then required beginning in 2021. Dischargers that must meet water quality limits for downstream uses may have to analyze samples for two parameters. Downstream shellfish harvesting-based effluent limits will continue to be based on fecal coliform and recreational uses in fresh water would be based on E. coli. However, because of the similar treatment technologies for fecal coliform and E. coli, we do not expect impacts to treatment costs beyond potential minor adjustments to existing practices.

Dischargers to waterbodies with established Total Maximum Daily Loads (TMDLs) are not expected to have their wasteload allocations change under the amendments, as implementation will not change established TMDLs.

Dischargers with fecal coliform technology-based limits are not expected to have their limits affected by the amendments. Revisions to these limits may be addressed in a future rulemaking.

In Washington, six fresh water dischargers currently reporting bacteria levels are located on waterbodies that would change use designation from secondary to primary contact use recreation.[1] These dischargers currently:

- Have technology-based limits that would not change under the rule amendments, or
- Do not have a water quality-based effluent limit for bacteria, but would continue to sample (they are included in the impact above regarding sampling) and use best management practices (BMPs).

We, therefore, do not expect impacts to these dischargers.

While initially it may appear that health costs could be associated with elimination of the extraordinary primary use designation, we do not expect costs to arise from this amendment. There is a high degree of uncertainty associated with the level of protection of the fecal coliform indicator, whereas the uncertainty associated with E. coli would be significantly reduced under the amendments, given that E. coli has a high correlation with illness.

We expect the rule amendments to result in better accuracy of bacterial indicators as related to illness risk. Using a more accurate indicator of illness risk reduces potential costs for both dischargers and the public. This is because a more accurate bacterial indicator is less likely to result in effluent limits and additional application of treatment technologies, or restrict public access to water for recreational purposes.

While we do not expect impacts to existing dischargers on waterbodies changing from secondary use to primary use under the amendments, there is a benefit to setting protections for those and other waters at the same preventative level as other waters of the state. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor for the adopted amendments.

Dischargers on waterbodies shared with neighboring states or across international borders, as well as dischargers with multiple locations under the same company, would benefit from consistent methods and requirements across the northwest. States surrounding Washington and the majority of western states have adopted E. coli as the bacterial indicator for fresh water. This continuity provides a potential benefit of clarity and reduced compliance effort.

Establishing a 30-day averaging period for permit compliance, as well as a 90-day averaging period for all other monitoring data, is likely to create a benefit of clarity and consistency, as compared to the baseline. The baseline language is vague, and may result in additional time determining appropriate compliance behavior, as well as potential

[1] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS) database. Accessed 05/02/2018.

unnecessary expenditure testing or treating water while working with Ecology staff to determine the best method or structure under which to comply.

Environmental labs are not directly covered by this rule, and our regulatory analyses do not include indirect costs such as the results of increased demand for E. coli analysis in place of fecal coliform analysis. We acknowledge, however, this shift in demand could cause short-term increases in the price of E. coli analysis and a future need for more labs to become accredited for more types of analyses. Since E. coli is a subset of fecal coliform bacteria, and some labs are already accredited for this analysis, we do not expect a short-term shortage of available accredited labs or displaced demand to labs farther away than those dischargers already use. The two-year transition period allowed under the amendments allows more time for labs to become accredited for new bacterial indicators before compliance requirements for the updated recreational criteria are active.

2.3.3 Revising standards for marine waters

Baseline

- Fecal coliform is the recreation bacterial indicator for primary contact. Enterococcus is the recreation bacterial indicator for secondary contact.
- Primary contact (14 CFU; 43 STV) and secondary contact (70 CFU; 208 STV) recreational uses are designated.
- Averaging periods should not exceed 12 months. Language includes: "It is preferable to average by season and include five or more data collection events within each period. The period of averaging should not exceed 12 months. [Averaging periods longer than 30 days are] not permitted when such averaging would skew the data set so as to mask noncompliance periods."
- Alternative indicator criteria are allowed for samples with bacterial counts potentially confounded by the presence of other organic matter.

Adopted

- Primary contact is the only designated use for recreation.
- After December 31, 2020, fecal coliform is replaced with enterococcus as the marine water contact bacterial indicator, with an allowable equivalent illness rate of 32 illnesses per one thousand recreational users, reflected in a geometric mean of 30 CFU (110 STV).
- A minimum of three samples is required to calculate a geometric mean; samples must be within 30 day period for permit compliance or 90 days for all other monitoring data.

Expected impact

The combined rule amendments are likely to result in higher costs for dischargers who may have to do sample analysis for a different parameter beginning in 2021.

Dischargers to waterbodies with established Total Maximum Daily Loads (TMDLs) are not expected to have their wasteload allocations change under the amendments, as implementation will not change established TMDLs.

Dischargers with technology-based limits are not expected to have their limits affected by the amendments. Revisions to technology-based limits are not part of this rulemaking.

Six marine water dischargers currently reporting bacteria levels are located on waterbodies that would change use designation from secondary to primary use recreation.[2] These dischargers currently:

- Have technology-based limits that would not change under the rule amendments, or
- Do not have a limit for bacteria, but would continue to sample (they are included in the impact above regarding sampling) and use best management practices (BMPs).

We, therefore, do not expect impacts to these dischargers. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor for the adopted amendments.

We expect the amended rule to result in better accuracy of bacterial indicators as related to illness risk. Using a more accurate indicator of illness risk reduces potential costs for both dischargers and the public. This is because a more accurate bacterial indicator is less likely to result in limits and unnecessary application of treatment technologies, or restrict public access.

While we do not expect impacts to existing dischargers on waterbodies changing from secondary use to primary use under the amendments, there is a benefit to setting protections for those and other waters at the same preventative level as other waters of the state. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor for the amendments. Dischargers with multiple locations under the same company would benefit from consistent methods and requirements across the northwest. States surrounding Washington and the majority of western states have adopted enterococcus as the bacterial indicator for marine water. This continuity provides a potential benefit of clarity and reduced compliance effort.

Establishing a 30-day averaging period for permit compliance, as well as a 90-day averaging period for all other monitoring data, is likely to create a benefit of clarity and consistency, as compared to the baseline. The baseline language is vague, and may result in additional time determining appropriate compliance behavior, as well as potential unnecessary expenditure testing or treating water while working with Ecology staff to determine the best method or structure under which to comply.

[2] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS) database. Accessed 05/02/2018.

Environmental labs are not directly covered by this rule, and our regulatory analyses do not include indirect costs such as the results of increased demand for E. coli analysis in place of fecal coliform analysis. We acknowledge, however, this shift in demand could cause short-term increases in the price of E. coli analysis and a future need for more labs to become accredited for more types of analyses. Since E. coli is a subset of fecal coliform bacteria, and many labs are already accredited in this analysis, however, we do not expect a short-term shortage of available accredited labs or displaced demand to labs farther away than those dischargers already use. The two-year transition period allowed under the amendments for labs to perform analyses before they are required to be accredited is intended to mitigate these potential issues.

2.3.4 Other changes without material impact to requirements

Baseline

The existing rule contains tables indicating the designated recreational uses of areas of waterbodies.

Adopted

- Table changes reflecting adopted changes above, including use designations.
- Clarifying units for measurable change for protection higher than the standards.
- Housekeeping including updated web address

Expected impact

These amendments do not impact rule requirements, and so only have a benefit of clarifying the rule for implementation and ease of compliance. They do not create any costs on their own, though they may reflect changes to other parts of the rule.

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Chapter 3: Likely Costs of the Rule Amendments

3.1 Introduction

We estimated the likely costs associated with the rule amendments, as compared to the baseline. The rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

3.2 Cost analysis

3.2.1 Changing definitions

We do not expect any costs as a result of these amendments. See Chapter 2 for discussion.

3.2.2 Revising standards for fresh waters

3.2.2.1 Sampling costs

The combined rule amendments are likely to result in impacts to the cost of sample analysis for E. coli when compared with fecal coliform beginning in 2021. Dischargers that must meet water quality based effluent limits for downstream uses may have to analyze samples for two parameters, because shellfish harvesting-based downstream limits (not part of this rulemaking) would remain based on fecal coliform.

Dischargers that conduct sample analyses on site in their own labs may continue to do so if it is the lowest-cost option for them, and they have the expertise and equipment necessary for E. coli testing. If labs already perform fecal coliform testing, minimal costs are associated with transitioning to membrane filtration for E. coli due to the similarities in methods and minimal additional time (four hours) and steps (one additional step) required.[3] Membrane filtration is the most common and low-cost test currently being used for E. coli. See additional discussion on labs and testing below, in section 3.2.2.4.

To conservatively overestimate unit costs, however, we assumed dischargers use third-party labs. We assumed fecal coliform testing costs approximately between $25 and $47 per sample, and E. coli testing costs approximately between $17 and $53.[4] We identified 233 fresh water dischargers that currently sample for bacterial indicators.[5] Assuming weekly sampling (12,116 samples across all identified dischargers), the amendments would result between an annual cost-savings of approximately $92 thousand, and annual cost increase of $79 thousand, compared to baseline testing for fecal coliform.[6] These cost differences assume that if a discharger is currently using a low-cost method, they will continue to do so; if they are using a high-cost method, they will continue to do so as well.

[3] WA Department of Ecology, Manchester Laboratory (2018).Testing costs for fecal coliform, E. coli, and enterococcus; using membrane filtration, multi-tube, and quanti-tray.
[4] Ibid.
[5] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS). Accessed 05/02/2018.
[6] Permitted dischargers sample at least weekly. Dischargers that sample more frequently would experience larger cost impacts than those estimated here, scaling the estimates by their relative higher sampling frequency.

For potential extreme endpoints reflecting dischargers switching from high-cost to low-cost methods, or from low-cost to high-cost methods, this cost impact range would expand to between cost savings or increased costs of approximately $300 per year. It is not likely, however, that dischargers would shift dramatically between methods rather than use the lowest-cost method available under the baseline and the amendments. Costs also reflect the type of method used, which is likely to be maintained and result in consistent reporting units across fecal coliform and E. coli testing.

For long-term comparison of flows of costs and benefits, we calculate present value impacts over 20 years. This calculation converts future values to current dollar-equivalents, accounting for inflation and the opportunity cost of money.

An annual cost-savings of $92 thousand beginning in 2021 translates to a present value cost-savings of $1.4 million over 20 years. An annual cost increase of $79 thousand beginning in 2021 translates to a present value cost increase of $1.2 million over 20 years.[7]

While potential future EPA approval of the rule is not technically part of the baseline, it may be helpful to consider that if approval is a necessity, a reasonable baseline for comparison could also be the alternative indicator and criteria recommended by EPA. This would mean comparing the amendments to using enterococcus for fresh water, as it would be the only other option that would receive EPA approval. Under this scenario and using the same assumptions as in the primary calculation, the amendments would result in a relative annual cost-savings of between $302 thousand and $735 thousand, with equivalent 20-year cost-savings of between $4.6 million and $11.2 million for fresh water sampling.

3.2.2.2 Treatment costs

Because similar treatment technologies are effective for fecal coliform and E. coli, we do not expect impacts to treatment costs beyond potential minor adjustments or optimization of existing practices.

Dischargers to waterbodies with established Total Maximum Daily Loads (TMDLs) are not expected to have their wasteload allocations change under the amendments, as implementation will not change established TMDLs.

Dischargers with technology-based limits are not expected to have their limits affected by the amendments. Revisions to technology-based limits are not part of this rulemaking.

Six fresh water dischargers currently reporting bacteria levels are located on waterbodies that would change use designation from secondary to primary use recreation.[8] These dischargers currently:

[7] 1.05 percent average annual real discount rate. US Treasury Department (2018). Historic rates of return for I-Bonds. September, 1998 – May, 2018.
[8] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS). Accessed 05/02/2018.

- Have technology-based limits that would not change under the rule amendments, or
- Do not have a limit for bacteria, but would continue to sample (they are included in the impact above regarding sampling) and use best management practices (BMPs).

Moreover, these six dischargers currently report fecal coliform levels well below standards. While there is not overriding certainty on how this ability converts to meeting potentially more stringent effluent limits, we believe they could meet the standards under the amendments using existing compliance behaviors, or using minor adjustments or optimization of existing practices.

We, therefore, do not expect impacts to these dischargers. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor for the adopted amendments.

3.2.2.3 Health costs

While initially it may appear that health costs could be associated with elimination of the extraordinary primary use designation, we do not expect costs to arise from this amendment. The fecal coliform bacterial indicator has been demonstrated to have little to no correlation with illnesses in fresh water.[9] Therefore any criteria associated with fecal coliform cannot adequately protect human health at any level. E. coli is a subset of fecal coliform and therefore it could be inferred that 100 CFU E. coli may be less protective than 50 CFU fecal coliform. Note that there is a high degree of uncertainty associated with the level of protection afforded when using fecal coliform as an indicator. The uncertainty associated with protecting human health during recreation would be reduced under the amendments because E. coli has a higher correlation with illness. While the numeric value may increase under the amendments (with the removal of the extraordinary primary use class) the uncertainty related to the protection of human health would effectively be reduced.

3.2.2.4 Environmental laboratory costs

Environmental labs are not directly covered by this rule, and our regulatory analyses do not include indirect costs such as the results of increased demand for E. coli analysis in place of fecal coliform analysis. We acknowledge, however, that this shift in demand could cause short-term increases in the price of E. coli analysis and a future need for more labs to become accredited for more types of analyses. Since E. coli is a subset of fecal coliform bacteria, and many labs are already accredited in this analysis, however, we do not expect a short-term shortage of available accredited labs or displaced demand to labs farther away than those dischargers already use. Some dischargers currently performing their own analysis on site may need to send their samples to other labs if they do not become accredited in additional methods.

[9] Dufour, A. & Ballentine, R. (1986). Ambient water quality criteria for bacteria, 1986: bacteriological ambient water quality criteria for marine and fresh recreational waters. National Technical Information Service, US Department of Commerce.

Available methods for E. coli analysis include membrane filtration, multi-tube fermentation, and quanti-tray.

Membrane filtration is the most common analytical method used by dischargers that collect and conduct their own laboratory tests. Membrane filtration is the most cost-effective method, is short in duration, and requires limited expertise. The level of expertise and methods necessary for E. coli membrane filtration are very similar, though for E. coli the method takes an extra step and four more hours.

The two-year transition period allowed under the amendments is intended to mitigate the limited potential issues with lab accreditation and the E. coli bacterial indicator required for fresh waters in the amendments.

3.2.3 Revising standards for marine waters

3.2.3.1 Sampling costs

The combined rule amendments are likely to result in impacts to the cost of sample analysis for enterococcus compared with fecal coliform beginning in 2021.

Dischargers that conduct sample analyses on site in their own labs may opt to continue to do so if it is the lowest-cost option for them, and they have the expertise and equipment necessary for enterococcus testing. As few labs are accredited for testing for enterococcus, particularly using methods that provide rapid results, it is unlikely that this testing would be done on-site. See additional discussion on labs and testing below, in section 3.2.3.4.

To estimate unit costs, however, we assumed dischargers use third-party labs. We assumed fecal coliform testing costs approximately between $25 and $47 per sample, and conservatively overestimated enterococcus testing costs of $78, reflecting the most rapid test available.[10] We identified 87 marine water dischargers that currently sample for bacterial indicators.[11] Assuming weekly sampling (52 samples per year at 87 dischargers is 4,524 total samples), the amendments would result in annual cost increases of between $142 thousand and $240 thousand, compared to baseline testing for fecal coliform.[12]

For long-term comparison of flows of costs and benefits, we calculate present value impacts over 20 years. This calculation converts future values to current dollar-equivalents, accounting for inflation and the opportunity cost of money.

[10] WA Department of Ecology, Manchester Laboratory (2018).Testing costs for fecal coliform, E. coli, and enterococcus; using membrane filtration, multi-tube, and quanti-tray. We note that bulk private lab prices for quanti-tray may be as low as $15 per sample (e-mail communication between Bryson Finch and Michael Dawson, June 21, 2018). If this rate was available to all marine water dischargers, it would result in an annual cost savings of between $45 thousand and $143 thousand.

[11] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS). Accessed 05/02/2018.

[12] Permitted dischargers sample at least weekly. Dischargers that sample more frequently would experience larger cost impacts than those estimated here, scaling the estimates by their relative higher sampling frequency.

An annual cost increase of between $142 thousand and $240 thousand beginning in 2021 translates to a present value cost increase of between $2.2 million and $3.6 million over 20 years, as compared to the baseline.[13]

While potential future EPA approval of the rule is not technically part of the baseline, it is arguable that if we assume approval is a necessity, a reasonable baseline for comparison could also be the lack of an alternative indicator in the criteria recommended by EPA. This would mean the amendments result in no additional costs of marine water sampling.

3.2.3.2 Treatment costs

Similar treatment technologies are effective for fecal coliform and enterococcus. Because the amendments set recreational water quality standards with illness risk corresponding to the baseline (32 illnesses per one thousand recreational users), we do not expect impacts to treatment costs beyond potential minor adjustments or optimization of existing practices.

Dischargers to waterbodies with established Total Maximum Daily Loads (TMDLs) are not expected to have their wasteload allocations change under the amendments, as implementation will not change established TMDLs.

Dischargers with technology-based limits are not expected to have their limits affected by the amendments. Revisions to technology-based limits are not part of this rulemaking.

Six marine water dischargers currently reporting bacteria levels are located on waterbodies that would change use designation from secondary to primary use recreation.[14] These dischargers currently:

- Have technology-based limits that would not change under the rule amendments, or
- Do not have a limit for bacteria, but would continue to sample (they are included in the impact above regarding sampling) and use best management practices (BMPs).

Moreover, these six dischargers currently report fecal coliform levels well below standards. While there is not overriding certainty on how this ability converts to meeting potentially more stringent effluent limits, we believe they could meet the standards under the amendments using existing compliance behaviors, or using minor adjustments or optimization of existing practices.

[13] 1.05 percent average annual real discount rate. US Treasury Department (2018). Historic rates of return for I-Bonds. September, 1998 – May, 2018. We note that bulk private lab prices for quanti-tray may be as low as $15 per sample (e-mail communication between Bryson Finch and Michael Dawson, June 21, 2018). If this rate was available to all marine water dischargers, it would result in estimated 20-year present value cost savings of between $4.6 million and $11.2 million.

[14] WA Department of Ecology (2018). Water Quality Permitting and Reporting Information System (PARIS). Accessed 05/02/2018.

We, therefore, do not expect impacts to these dischargers. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor for the amendments.

3.2.3.3 Environmental laboratory costs

Environmental labs are not directly covered by this rule, and our Regulatory Analyses do not include indirect costs such as the results of increased demand for enterococcus analysis in place of fecal coliform analysis. We acknowledge, however, that this shift in demand could cause short-term increases in the price of enterococcus analysis, future need for more labs to become accredited in additional analyses. We do not expect a short-term shortage of available accredited labs or displaced demand to labs farther away than those dischargers already use. The two-year transition period allowed under the amendments for labs to perform analyses before they are required to be accredited is intended to mitigate these potential issues.

Available methods for enterococcus include membrane filtration, multi-tube fermentation, and quanti-tray.

Membrane filtration testing for enterococcus takes additional steps and equipment, and can take up to four days. This limits or prevents its practical use for enterococcus for compliance monitoring.

Few laboratories operating in Washington are accredited for the multi-tube fermentation test method. This method is expensive and can take three-four days, limiting its use for enterococcus.

The quanti-tray method requires limited expertise and takes 24 hours. It is similar for fecal coliform and E. coli, in time and costs. There is, however, a high start-up cost that may limit small labs ability to add and become accredited in this method.

The two-year transition period allowed under the amendments is intended to mitigate these potential issues with the enterococcus bacterial indicator required for marine waters.

3.2.4 Other changes without material impact to requirements

We do not expect any costs as a result of these amendments. See Chapter 2 for discussion.

Chapter 4: Likely Benefits of the Rule Amendments

4.1 Introduction

We estimated the likely benefits associated with the rule amendments, as compared to the baseline (both described in Chapter 2 of this document).

4.2 Benefit analysis

4.2.1 Changing definitions

We do not expect any benefits beyond added clarity as a result of these amendments. See Chapter 2 for discussion.

4.2.2 Revising standards for fresh and marine waters

4.2.2.1 Indicator accuracy benefits

We expect the amended rule to result in better accuracy of bacterial indicators as related to illness risk. EPA epidemiological studies found a mean correlation coefficient for swimming-associated gastroenteritis (GI) illnesses of 0.80 for E. coli in fresh water, and 0.74 for enterococcus.[15] This is a higher correlation than fecal coliform's estimated -0.08. Using a more accurate indicator of illness risk reduces potential costs for both dischargers and the public. This is because a more accurate bacterial indicator is less likely to result in limits and unnecessary application of treatment technologies (e.g., when fecal coliform counts are inflated by the presence of other bacteria such as Klebsiella that arise from the presence of other organic matter than fecal matter). It is also less likely to restrict public access (such as closing swimming beaches), while maintaining protection of public health.

The most recent fact sheet on chlorine disinfection available from the EPA lists example annualized capital and operations and maintenance costs of between $488 thousand and $532 thousand, with example incremental supply costs of nearly $2 thousand for a 2 thousand pound container of chlorine gas, and per-pound estimates of $4 per pound of sodium hypochlorite, and $2 per pound of calcium hypochlorite.[16]

A 2013 study found that Puget Sound tourism and recreation generate annual revenues of over $5 billion, but this accounts for activities such as shellfish harvesting, as well as boating and swimming with primary water contact.[17] The same study notes that the

[15] US Environmental Protection Agency (1986). Quality Criteria for Water. Office of Water. EPA 440/5-86-001.
[16] US Environmental Protection Agency (1999). Combined Sewer Overflow Technology Fact Sheet. EPA 832-F-99-034. Costs reported in 2018-equivalent dollars, using US Bureau of Labor Statistics (2018) Consumer Price Index for Urban Consumers.
[17] Marine Ecosystem Services Partnership (2018). Recreational Use Value for Three Southern California Beaches. Travel cost methodology. Data source: National Ocean Economics Program. Publication information: Leeworthy, VR and PC Wiley (1993). Recreational Use Value for Three Southern California Beaches. National Oceanic and

means of communication of water quality-based restrictions affects whether recreational users forego beach use and recreation entirely or ignore advisories. Past studies have placed values of between approximately $14 and $90 per trip on recreation at beaches in southern California, which may be overestimates as they have different attributes and tourism costs than Washington state beaches, and do not reflect fresh water recreation. A 2004 Lake Michigan study found that beach swimming closures cause a net economic loss of nearly $2 thousand to $50 thousand per day.[18] Perceived limitations to recreational use of fresh and marine waters could also impact nearby property values. A more accurate indicator of pathogens in water would reduce the likelihood of waters being erroneously restricted from recreational use, avoiding potential impacts such as the illustrative values above.

4.2.2.2 Environmental justice benefits

Elimination of the secondary contact designation addresses potential environmental justice concerns regarding locations and access to waterbodies currently designated as secondary contact waters. Secondary (partial immersion, e.g., wading or fishing) contact waters may be local or low-cost access points for populations with greater likelihood of:

- Subsistence or diet-augmenting fishing.
- Tribal fishing.
- Having low incomes.
- Identifying as members of minority or limited-English groups.

While we do not expect impacts to existing dischargers on waterbodies changing from secondary use to primary use under the amendments, there is a benefit to setting protections for those and other waters at the same preventative level as other waters of the state. Moreover, the EPA does not recognize the secondary use designation, and would not approve a rule that included it. While potential future EPA approval is not technically part of the baseline, it is a motivating factor in the amendments.

4.2.2.3 Regulatory continuity benefits

Dischargers on waterbodies shared with neighboring states or across international borders, as well as dischargers with multiple locations under the same company, would benefit from consistent methods and requirements across the northwest. States surrounding Washington and the majority of western states have adopted E. coli as the bacterial indicator for fresh water. This continuity provides a potential benefit of clarity and reduced compliance effort.

4.2.2.4 Averaging period benefits

Atmospheric Administration (NOAA). http://map.marineecosystemservices.org/node/7944 Costs reported in 2018-equivalent dollars, using US Bureau of Labor Statistics (2018) Consumer Price Index for Urban Consumers.

[18] Rabinovici, SJM, RL Bernknopf, AM Wein, DL Coursey, and RL Whitman (2004). Economic and Health Risk Trade-Offs of Swim Closures at a Lake Michigan Beach. Environmental Science and Technology, Vol. 38, No. 10. Costs reported in 2018-equivalent dollars, using US Bureau of Labor Statistics (2018) Consumer Price Index for Urban Consumers.

Establishing a 30-day averaging period for permit compliance, as well as a 90-day averaging period for all other monitoring data, is likely to create a benefit of clarity and consistency, as compared to the baseline. The baseline language is vague, and may result in additional time determining appropriate compliance behavior, as well as potential unnecessary expenditure testing or treating water while working with Ecology staff to determine the best method or structure under which to comply.

4.2.3 Other changes without material impact to requirements

We do not expect any benefits beyond added clarity as a result of these amendments. Amendments to tables reflecting changes adopted in other parts of the rule, units for measurable change for protection higher than the standard, and housekeeping correcting or updating references, facilitates rule clarity and could reduce confusion or misunderstanding of rule requirements, or reduce time spent determining what the rule requires.

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Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of the costs and benefits of the rule amendments

5.1.1 Costs

Assuming weekly E. coli testing at fresh water dischargers (12,116 samples across all identified dischargers), the amendments would result between an annual cost-savings of approximately $92 thousand, and annual cost increase of $79 thousand, compared to baseline testing for fecal coliform.[19]

Assuming weekly enterococcus testing at marine water dischargers (4,524 samples across all identified dischargers), the amendments would result in annual cost increases of between $142 thousand and $240 thousand, compared to baseline testing for fecal coliform.[20]

An annual fresh water cost-savings of $92 thousand beginning in 2021 translates to a present value cost-savings of $1.4 million over 20 years. An annual cost increase of $79 thousand beginning in 2021 translates to a present value cost increase of $1.2 million over 20 years.

An annual marine water cost increase of between $142 thousand and $240 thousand beginning in 2021 translates to a present value cost increase of between $2.2 million and $3.6 million over 20 years, as compared to the baseline.[21]

While potential future EPA approval of the rule is not technically part of the baseline, it is arguable that if we assume approval is a necessity, a reasonable baseline for comparison could also be the alternative indicator and criteria recommended by EPA. If the baseline was limited to criteria acceptable to EPA under its guidance, it would mean comparing the amendments to using enterococcus for fresh waters (it would be the only other option that would receive EPA approval) and enterococcus for marine waters (the only option recommended by EPA). Under this scenario and using the same assumptions as in the primary calculation, the amendments would result in:

- An annual cost-savings of between $302 thousand and $735 thousand, with equivalent 20-year cost-savings of between $4.6 million and $11.2 million for fresh water sampling.

[19] Permitted dischargers sample at least weekly. Dischargers that sample more frequently would experience larger cost impacts than those estimated here, scaling the estimates by their relative higher sampling frequency.
[20] Permitted dischargers sample at least weekly. Dischargers that sample more frequently would experience larger cost impacts than those estimated here, scaling the estimates by their relative higher sampling frequency.
[21] If a potential bulk rate of $15 was available to all marine water dischargers, it would result in an annual cost savings of between $45 thousand and $143 thousand, with equivalent 20-year present value cost savings of between $4.6 million and $11.2 million.

- No difference between the adopted use of enterococcus for marine water, and the baseline. This would result in no cost or benefit of this amendment.

We **do not** expect the amendments to result in:

- Treatment costs beyond potential minor adjustments or optimization of existing practices.
- Treatment costs to dischargers with TMDLs, or those with technology-based limits.

5.1.2 Benefits

Both E. coli and enterococcus are significantly more correlated with illness than fecal coliform. Using a more accurate indicator of illness risk reduces potential costs for both dischargers and the public. This is because a more accurate bacterial indicator is less likely to result in limits and unnecessary application of treatment technologies. It is also less likely to restrict public access, but still maintains protection of public health.

The most recent fact sheet on chlorine disinfection available from the EPA lists example annualized capital and operations and maintenance costs of between $488 thousand and $532 thousand, with example incremental supply costs of nearly $2 thousand for a 2 thousand pound container of chlorine gas, and per-pound estimates of $4 per pound of sodium hypochlorite, and $2 per pound of calcium hypochlorite.

A 2013 study found that Puget Sound tourism and recreation generate annual revenues of over $5 billion, but this accounts for activities such as shellfish harvesting, as well as boating and swimming with primary water contact. The same study notes that the means of communication of water quality-based restrictions affects whether recreational users forego beach use and recreation entirely or ignore advisories. Other studies have found recreational values for beach use of:

- Between approximately $14 and $90 per trip on recreation at beaches in southern California.
- Net economic losses of nearly $2 thousand to $50 thousand per beach closure day at Michigan beaches.
- Perceived limitations to recreational use of fresh and marine waters impact nearby property values.

Consistent protection of all the states waters, including those that may be local or low-cost access to populations with greater likelihood of:

- Subsistence or diet-augmenting fishing.
- Tribal fishing.
- Having low incomes.
- Identifying as members of minority or limited-English groups.

Regulatory continuity across state and international borders, resulting in increased clarity and potential reduced costs of compliance.

Improved clarity in requirements for averaging data for compliance and other purposes, matched to sampling frequency and availability.

5.2 Conclusion

Ecology concludes, based on reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the rule amendments, that the benefits of the adopted rule amendments are greater than the costs.

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Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

RCW 34.05.328(1)(e) requires Ecology to "...[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection." The referenced subsections are:

> (a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements;
>
> (b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule;
>
> (c) Provide notification in the notice of proposed rulemaking under RCW 34.05.320 that a preliminary cost-benefit analysis is available. The preliminary cost-benefit analysis must fulfill the requirements of the cost-benefit analysis under (d) of this subsection. If the agency files a supplemental notice under RCW 34.05.340, the supplemental notice must include notification that a revised preliminary cost-benefit analysis is available. A final cost-benefit analysis must be available when the rule is adopted under RCW 34.05.360;
>
> (d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented;

In other words, to be able to adopt the rule, Ecology is required to determine that the contents of the rule are the least burdensome set of requirements that achieve the goals and objectives of the authorizing statute(s).

Ecology assessed alternative rule content, and determined whether it met the goals and objectives of the authorizing statutes. Of those alternatives that would meet these goals and objectives, Ecology determined whether those chosen for the amended rule were the least burdensome to those required to comply with them.

6.2 Goals and objectives of the authorizing statute: Chapter 90.48 RCW

The goals and objectives of the authorizing statute are:

- Maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and

- To that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington.
- Retain and secure high quality for all waters of the state.
- Insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington.
- Delegation of the federal Clean Water Act.

6.3 Alternatives considered and why they were not included

6.3.1 Continue current fecal coliform-based recreational use criteria

EPA is requiring states to adopt the 2012 recommendations and transition away from fecal coliform based recreational use criteria to either E. coli and/or enterococci. Consequences of not adopting the 2012 EPA criteria is the loss of the BEACH grant that monitors saltwater beaches for fecal contamination and potentially EPA promulgation of federal water quality standards for recreational use criteria.

This alternative would not meet the goals and objectives of the authorizing statute.

6.3.2 Enterococcus as fresh water bacterial indicator

Enterococcus has a slightly weaker correlation with gastrointestinal illnesses. Methods used to analyze enterococcus requires large start-up costs or alternatively, shipping samples to a commercial laboratory. Both of these options, would be a greater burden to small laboratories that conduct their own testing. Enterococcus has no correlation with the fecal coliform based shellfish harvesting criteria, making it difficult to establish associations with protection of downstream uses. Enterococcus is not used as a fresh water indicator by neighboring states. This has potential to increase costs when remediating shared waterbodies. Enterococcus is slightly more resistant to chlorination, which may or may not have slight costs to fresh water dischargers.

This alternative would have been more burdensome to those required to comply with the amendments.

6.3.3 Keep extraordinary and secondary contact use classes

The extraordinary primary use class was created by the Washington Department of Ecology based on 1968 recommendations that states protect potential and future water uses and that standards be adequate to protect water quality in the face of population and industrial growth. At the time, Ecology arbitrarily halved the primary contact criteria and set the criteria for extraordinary primary contact. The current extraordinary primary contact was not a scientifically derived value. Secondary contact uses are no longer approved by EPA. EPA sets criteria that protects for full immersion in water. The definition of secondary contact is partial immersion such as fishing, wading, etc... EPA recommendations are set to protect full immersion and therefore are protective of secondary contact uses as well.

This alternative would not meet the goals and objectives of the authorizing statute.

6.3.4 Illness rate of 36 per one thousand recreational users

EPA recommended criteria at 32 or 36 illnesses per 1,000 recreational users. These illness rates are associated with numeric threshold values that led to statistically significant increases in illnesses at study sites. The illness rate of 36/1,000 recreational users was not protective at all study sites, and therefore Ecology chooses the lower risk level to ensure protection of human health in all water bodies under varying conditions in Washington State.

This alternative would not meet the goals and objectives of the authorizing statute.

6.3.5 Geometric mean calculated over 30-day rolling average for all sampling

The 30-day rolling average will continue to be used for permit compliance. A longer averaging period for ambient monitoring programs is needed given that many programs only collect one to two samples per month. A minimum of three samples are required to calculate a geometric mean and the associated variance around the mean. Extending the averaging period to 90 days for ambient monitoring programs provides opportunity for those programs with limited budgets to evaluate their water body by season using the geometric mean based criteria.

This alternative would have been more burdensome to those required to comply with the amendments.

6.3.6 No minimum number of samples for averaging

The recreational use criteria includes a geometric mean. A geometric mean is a statistic and to calculate a statistic a minimum of three samples are required to calculate an error rate (or variance) around the mean. If three samples are not collected then samples should not be compared to the geometric mean criteria. The minimum sample requirement prevents the use of individual samples to be compared to the geometric mean criteria.

This alternative would not meet the goals and objectives of the authorizing statute.

6.3.7 Adoption of cyanotoxin criteria

Several uncertainties exist including the:

- Implementation of cyanotoxin criteria.
- Methods to measure or anticipate cyanotoxin formation.
- Funding for monitoring programs.
- Interference with the DOH biotoxin program, and how it may affect established rules for nutrient control.

The degree of additional protections that cyanotoxin criteria would provide is uncertain at this time. Currently, there are several data gaps in the science regarding the presence of harmful algal blooms. EPA recommendations have yet to be finalized for microcystin and cylindrospermopsin and may be subject to further review.

This alternative would not meet the goals and objectives of the authorizing statute.

6.3.8 Elimination of alternative indicator option

Ecology initially proposed removing baseline language for fresh and marine water quality standards regarding alternative bacterial indicators. This language allowed alternative indicator criteria to be established on a site-specific basis, as approved by Ecology, "where information suggests that sample results are due primarily to sources other than warm-blooded animals (e.g., wood waste)." It was expected, at proposal, that the adoption of the enterococcus bacterial indicator eliminated the need for this language. After receiving feedback during the public comment period, however, Ecology decided to keep the language in the baseline rule and amend it to refer to existing requirements for site-specific criteria.

Ecology decided to retain the alternative indicator criteria provision to address situations where it is demonstrated that an alternative criteria (other than E. coli in freshwater or enterococcus in marine waters) can better protect human health. Bacterial indicators are indicators of pathogens that cause illnesses. At site-specific locations, when it is demonstrated that the physical/chemical/biological characteristics of a water body may result in elevated levels of bacterial indicators established in rule are not related to fecal contamination, a site-specific criteria may be appropriate. The development of an alternative indicator criteria for recreational use criteria will require the development of site-specific criteria, as defined in WAC 173-201A-430.

This alternative would have imposed additional burden on parties required to comply with the rule when the established bacterial indicator, in a specific waterbody, is less effective in determining human health risks.

6.4 Conclusion

After considering alternatives to the amended rule's contents, as well as the goals and objectives of the authorizing statute, Ecology determined that the adopted rule represents the least-burdensome alternative of possible rule contents meeting these goals and objectives.

Chapter 7: Regulatory Fairness Act Compliance

7.1 Introduction

The Regulatory Fairness Act (RFA; RCW 19.85.070) requires Ecology to perform a set of analyses and make certain determinations regarding the rule amendments.

This chapter presents the:

- Results of the analysis of relative compliance cost burden.
- Consideration of lost sales or revenue.
- Cost-mitigating action taken by Ecology, if required.
- Small business and local government consultation.
- Industries likely impacted by the amended rule.
- Expected net impact on jobs statewide.

A small business is defined by the RFA as having 50 or fewer employees. Estimated costs are determined as compared to the existing regulatory environment—the regulations in the absence of the rule amendments. The RFA only applies to costs to "businesses in an industry" in Washington State. This means that impacts, for this document, are not evaluated for non-profit or government agencies.

The existing regulatory environment is called the "baseline" in this document. It includes only existing laws and rules at federal and state levels.

7.2 Quantification of Cost Ratios

Ecology calculated the estimated per-entity costs to comply with the rule amendments, based on the costs estimated in Chapter 3. In this section, Ecology summarizes compliance cost per employee at affected businesses of different sizes.

The average affected small business likely to be covered by the rule amendments employ averages of:

- 12 people at facilities discharging to fresh waters.
- 9 people at facilities discharging to marine waters.

The largest ten percent of affected businesses employ averages of:

- 1,375 people at facilities discharging to fresh waters
- 417 people at facilities discharging to marine waters.

Based on cost estimates from Chapter 3, we estimated the following compliance costs per employee.

Table 2: 20-year present value costs per employee

Type of Business	Low	High
Fresh water small businesses	($503)	$431
Fresh water large businesses	($4)	$4
Marine water small businesses	$4,759	$4,392
Marine water large businesses	$101	$93

Parentheses indicate a cost-savings.

We conclude that the rule amendments are likely to have disproportionate impacts on small businesses, and therefore Ecology must include elements in the rule to mitigate this disproportion, as far as is legal and feasible.

7.3 Loss of sales or revenue

Businesses that would incur costs could experience reduced sales or revenues if the fee changes would significantly affect the prices of the goods they sell. The degree to which this could happen is strongly related to each business's production and pricing model (whether additional lump-sum costs significantly affect marginal costs), as well as the specific attributes of the markets in which they sell goods, including the degree of influence of each firm on market prices, as well as the relative responsiveness of market demand to price changes.

The additional sampling costs estimated in Chapter 3 could impact sales or revenues at individual firms if they significantly impact the price they must charge, and that in turn disproportionately affects the number of units they sell. As many of the affected businesses are in inelastic markets (markets from which there is limited ability to substitute to other goods), they may raise prices without a disproportionate reduction in sales units resulting in a reduction in revenues. Those businesses are more likely to incur compliance costs without impacting their competitiveness.

7.4 Action Taken to Reduce Small Business Impacts

The RFA (19.85.030(2) RCW) states that:

> Based upon the extent of disproportionate impact on small business identified in the statement prepared under RCW 19.85.040, the agency shall, where legal and feasible in meeting the stated objectives of the statutes upon which the rule is based, reduce the costs imposed by the rule on small businesses. The agency must consider, without limitation, each of the following methods of reducing the impact of the proposed rule on small businesses:
>
> a) Reducing, modifying, or eliminating substantive regulatory requirements;
> b) Simplifying, reducing, or eliminating recordkeeping and reporting requirements;
> c) Reducing the frequency of inspections;
> d) Delaying compliance timetables;
> e) Reducing or modifying fine schedules for noncompliance; or

f) Any other mitigation techniques including those suggested by small businesses or small business advocates.

Ecology considered all of the above options, and included the following legal and feasible elements in the rule amendments that reduce costs. In addition, Ecology considered the alternative rule contents discussed in Chapter 6, and excluded those elements that would have imposed excess compliance burden on businesses.

- Adding an option for reporting units.
- Clarifying averaging periods and accounting for programs with less frequent sampling.
- Delaying the change in bacterial indicator for two years.
- Taking lab testing availability into account when choosing a bacterial indicator.

7.5 Small Business and Government Involvement

Ecology involved small businesses and local government in its development of the rule amendments, by:

- Water Quality Information Listserv:
    - Voluntary membership to stay informed on the recreational use criteria rulemaking.
- Emails Soliciting for Technical Team Participants:
    - Northwest Pulp and Paper, Taylor Shellfish, Pacific Coast Shellfish Growers Association, Association of Washington Business, Washington Environmental Council, Northwest Environmental Advocates, Columbia Riverkeepers, Puget Sound Keeper Alliance, Center for Justice.
    - Thurston County, Association of Counties, Tacoma-Pierce County, Association of Cities, Washington Conservation Districts, Washington Department of Health, City of Centralia, CRITFC, NWIFC.
- Technical Advisory Team Meeting One:
    - Association of Washington Business, Washington Environmental Council, Washington Farm Bureau.
    - Tacoma-Pierce County, Jefferson County, Chelan PUD, Kitsap County, King County, City of Centralia, King County, Kalispel Tribe, Port Gamble S'Klallam Tribe, Whatcom Conservation District, Environmental Protection Agency, Washington Department of Health, City of Seattle, Washington Department of Ecology.
- Technical Advisory Team Meeting Two:
    - Association of Washington Business, Washington Environmental Council, Washington Farm Bureau.
    - Tacoma-Pierce County, Jefferson County, Chelan PUD, Kitsap County, King County, City of Centralia, King County, Kalispel Tribe, Port Game S'Klallam

Tribe, Whatcom Conservation District, Environmental Protection Agency, Washington Department of Health, City of Seattle, Washington Department of Ecology.

- Technical Advisory Team Meeting Three:
    - Association of Washington Business, Washington Environmental Council, Washington Farm Bureau.
    - Tacoma-Pierce County, Jefferson County, Chelan PUD, Kitsap County, King County, City of Centralia, King County, Kalispel Tribe, Port Game S'Klallam Tribe, Whatcom Conservation District, Environmental Protection Agency, Washington Department of Health, City of Seattle, Washington Department of Ecology.
- Kick-off Recreational Use Criteria Webinar
    - Exxon Mobil, Boeing, AECOM, Sonoco, Comcast, Geosyntec, Miles Sand and Gravel Company, Association of Washington Business, Brown Caldwell, Brooks Manufacturing, Washington State Water Resources Association, Otak, LOTT Clean Water Alliance, Windward Environmental.
    - Pierce County, City of Bainbridge, WA Department of Natural Resources, Skokomish Tribe, Snohomish County, City of Camas, Washington State Recreation and Conservation Office, Washington Department of Ecology, Kitsap County, Jefferson County, City of Spokane, Cowlitz PUD, Environmental Protection Agency, Department of Interior Bureau of Reclamation, City of Port Orchard, City of Seattle, Kalispel Tribe, King County, Washington State University, Spokane Regional Health District, City of Maple Valley, Washington Department of Transportation, Pierce Conservation District, City of Everett, Port of Anacortes, City of Kirkland, City of Bellingham.
- Coalition for Clean Water Presentation:
    - Lakehaven Water and Sewer District, LOTT Clean Water Alliance.
    - City of Tacoma, City of Lynnwood, City of Seattle, City of Bremerton, City of Vancouver, City of Everett, Tacoma-Pierce County, Spokane County, City of Spokane.
- Annual BEACH Program Meeting Presentation:
    - Washington Department of Ecology, Swinomish Tribe, Tacoma-Pierce County Health Department, Snohomish County, Kitsap Public Health District, Mason County Public Health, Stillaguamish Tribe, Island County, Jefferson County, Grays Harbor County, Thurston County, Whatcom County, Port Townsend Marine Science Center, Clallam County, Oregon Department of Environmental Quality, Makah Tribe.
- 2018 Salish Sea Conference Presentation.
- Agriculture Committee:
    - Northwest Chicken Council, Washington State Farm Bureau, Washington State

Potato Commission, Washington Cattle Feeders Association, Washington State Tree Fruit Association, Center for Environmental Law and Policy, Taylor Shellfish, Capitol Press, and National Association of Wheat Growers.

  - Whatcom Conservation District, Environmental Protection Agency Region 10, Northwest Indian Fisheries Commission, and Washington Department of Agriculture.

- Recreational Use Criteria Preliminary Decisions Webinar (June 14th) Registrants:
  - Washington Environmental Council, Snohomish County, Washington Department of Ecology, King County, Stillaguamish Tribe, Boeing, City of Camas, Thurston County, Washington State Recreation and Conservation Office, Kitsap County, City of Spokane, Resources for Sustainable Communities, IDEXX, Whatcom Conservation District, City of Everett, Yakima/Klickitat Fisheries Project, Upper Skagit Tribe, Skagit County, Grant County PUD, City of Port Orchard, Washington Department of Health, Washington Department of Agriculture, Liberty Lake Sewer and Water District, City of Richland, Teck American Incorporated, Jamestown Tribe, Quincy-Columbia Basin Irrigation District, Washington Legislature, Capital Regional District, Pierce County, Brooks Manufacturing Company, South-Columbia Basin Irrigation District, GeoEngineers, City of Federal Way, Andeavor, Lower Elwha Klallam Tribe, Washington State University, City of Centralia, Pierce Conservation District, Quileute Tribe, City of Seattle, Skokomish Tribe, Northwest Seaport Alliance, Inquisitio Scientia, Jacobs Engineering, Lott Clean Water LLC, City of Vancouver, Port of Anacortes, Washington State Conservation Commission, Sonoco, Northwest Pulp and Paper, Jefferson County, Herrera Environmental Consultants, Puget Sound River Keepers, Hart Crowser, NWIFC, Olympic Environmental Council.

7.6 NAICS Codes of Impacted Industries

The rule amendments are likely to impact North American Industry Classification System (NAICS) codes:

- 2213 – Water, Sewage and Other Systems
- 3114 – Fruit and Vegetable Preserving and Specialty Food Manufacturing
- 3117 – Seafood Product Preparation and Packaging
- 3211 – Sawmills and Wood Preservation
- 3241 – Petroleum and Coal Products Manufacturing
- 3272 – Glass and Glass Product Manufacturing
- 3313 – Alumina and Aluminum Production and Processing
- 3366 – Ship and Boat Building
- 6231 – Nursing Care Facilities (Skilled Nursing Facilities)
- 7211 – Traveler Accommodation

7.7 Impact on Jobs

Ecology used the Washington State Office of Financial Management's 2007 Washington Input-Output Model[22] to estimate the impact of the rule amendments on jobs in the state. The model accounts for inter-industry impacts and spending multipliers of earned income and changes in output.

The rule amendments will result in transfers of money within and between industries; these estimates assume increased sampling compliance costs are transferred to environmental laboratory services.

Under the low-end cost assumptions discussed in Chapter 3, the Washington State economy, beginning in 2021, could experience between a net loss of 1 full time employee (FTE) equivalent, to a net gain of 2.5 FTEs. This range depends on the distribution of costs across relevant NAICS codes transferring costs to environmental labs.

Under the high-end cost assumptions discussed in Chapter 3, the Washington State economy, beginning in 2021, could experience between a net loss of 1.6 FTE equivalent, to a net gain of 3.8 FTEs. This range depends on the distribution of costs across relevant NAICS codes transferring costs to environmental labs.

Some dischargers may not pay external labs, choosing to continue to analyze samples in house, reducing the degree of these estimated impacts, positive or negative.

These prospective changes in overall employment in the state are the sum of multiple small increases and decreases across all industries in the state. Decreases are primarily in industries directly incurring compliance costs under the rule amendments. Increases are primarily in environmental labs and related industries.

[22] See the Washington State Office of Financial Management's site for more information on the Input-Output model. http://www.ofm.wa.gov/economy/io/2007/default.asp

List of Acronyms

APA	Administrative Procedure Act
BEACH	Beaches Environmental Assessment and Coastal Health Act
BMP	Best management practices
CBA	Cost Benefit Analysis
CFU	Colony forming units
CRIFTC	Columbia River Inter-Tribal Fish Commission
DOH	Department of Health
DOI	Department of Interior
E. coli	Escherichia coli
EPA	Environmental Protection Agency
FTE	Full time employees
GI	Gastroenteritis
GM	Geometric mean
LBA	Least-Burdensome Alternative Analysis
LOTT	Lacey, Olympia, Tumwater, and Thurston County
MPN	Most probable number
MUG	Methylumbellifery glucuronide
NAICS	North American Industry Classification System
NWIFC	Northwest Indian Fisheries Commission
ONPG	Ortho-nitrophenyl-B-D-galactopyranoside
PUD	Public Utility District
STV	Statistical threshold value
TMDLs	Total Maximum Daily Loads
RCW	Revised Code of Washington
RFA	Regulatory Fairness Act
WAC	Washington Administrative Code

References

Independent peer review: Review is overseen by an independent third party

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Rabinovici, SJM, RL Bernknopf, AM Wein, DL Coursey, and RL Whitman (2004). Economic and Health Risk Trade-Offs of Swim Closures at a Lake Michigan Beach. Environmental Science and Technology, Vol. 38, No. 10.

Internal peer review: Review by staff internal to Ecology.

n/a

External peer review: Review by persons that are external to and selected by Ecology.

n/a

Open review: Documented open public review process that is not limited to invited organizations or individuals.

n/a

Legal and policy documents: Documents related to the legal framework for the significant agency action, including but not limited to: federal and state statutes, court and hearings board decisions, federal and state administrative rules and regulations, and policy and regulatory documents adopted by local governments.

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US Environmental Protection Agency (1999). Combined Sewer Overflow Technology Fact Sheet. EPA 832-F-99-034.

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Appendix A
Administrative Procedure Act (RCW 34.05.328)

A. RCW 34.05.328(1)(a) – Clearly state in detail the general goals and specific objectives of the statute that this rule implements.

See Chapter 6.

B. RCW 34.05.328(1)(b) –

1. Determine that the rule is needed to achieve the general goals and specific objectives of the statute.

See chapters 1 and 2.

2. Analyze alternatives to rulemaking and the consequences of not adopting this rule.

The Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 requires states, territories, and tribes with coastal recreation waters to adopt new or revised water quality standards within 36 months of publication of new recreational use criteria recommendations.

If Ecology decided not to update Chapter 173-201A, the EPA may promulgate criteria and remove funding from the BEACH program.
Please see the Least Burdensome Alternative Analysis, Chapter 6 of this document, for discussion of alternative rule content considered.

C. RCW 34.05.328(1)(c) - A preliminary cost-benefit analysis was made available.

When filing a rule proposal (CR-102) under RCW 34.05.320, Ecology provides notice that a preliminary cost-benefit analysis is available. At adoption (CR-103 filing) under RCW 34.05.360, Ecology provides notice of the availability of the final cost-benefit analysis.

D. RCW 34.05.328(1)(d) – Determine that probable benefits of this rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

See Chapters 1 – 5.

E. RCW 34.05.328 (1)(e) - Determine, after considering alternative versions of the analysis required under RCW 34.05.328 (b), (c) and (d) that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated in Chapter 6.

Please see Chapter 6 and record for rulemaking.

F. RCW 34.05.328(1)(f) - Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

40 CFR 131.20 requires states and tribes (with primacy for clean water actions) to periodically review and update the Water Quality Standards. The adopted updates are reviewed and approved by the EPA before becoming effective for Clean Water Act actions.

G. RCW 34.05.328 (1)(g) - Determine that rule the does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law.

The rule does not impose more stringent performance requirements on private entities than on public entities as the rule applies to all surface waters.

H. RCW 34.05.328 (1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter.

Yes.

If **yes**, the difference is justified because of the following:

☒ (i) A state statute explicitly allows Ecology to differ from federal standards.

☐ (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated in Chapter 6.

Chapter 173-201A WAC recreational use criteria are different from federal criteria. RCW 90.48.035 provides clear and direct authority to Ecology to revise the water quality standards. Additionally, 40 CFR 131.20 requires states and tribes (with primacy for clean water actions) to periodically review and update the Water Quality Standards.

I. RCW 34.05.328 (1)(i) – Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same subject matter.

Ecology is working in coordination with the U.S. EPA to update the recreational use criteria in Chapter 173-201A. Additionally, Ecology met with a technical group, including staff from other tribe and state agencies, to help understand how potential rule revisions may impact