Association of Washington Business

Attached please find a comment letter plus additional supporting documents submitted on behalf of Association of Washington Business.

ASSOCIATION OF WASHINGTON BUSINESS, NORTHWEST PULP & PAPER ASSOCIATION, WESTERN STATES PETROLEUM ASSOCIATION, WASHINGTON FARM BUREAU, FOOD NORTHWEST, WESTERN WOOD PRESERVERS INSTITUTE, and WASHINGTON STATE WATER RESOURCES ASSOCIATION

COMMENTS ON DRAFT

AQUATIC LIFE TOXICS WATER QUALITY CRITERIA

FOR THE

STATE OF WASHINGTON

May 6, 2024

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The Association of Washington Business, Northwest Pulp & Paper Association, Western States Petroleum Association, Washington Farm Bureau, Food Northwest, Western Wood Preservers Institute, and Washington State Water Resources Association (hereafter "AWB") submit the following comments on the Department of Ecology proposed amendment to WAC 173-201A to update aquatic life toxics criteria. AWB requests that these comments and the documents referenced in and submitted with these comments be included in the administrative record for the rulemaking.

Introduction

AWB appreciates the opportunity to submit these comments on the proposed water quality aquatic life toxics criteria. In general, AWB recommends that Ecology undertake additional work to better explain the basis and the methodologies used to derive some of the criteria. Ecology should also improve the reasonableness of the cost estimates presented in the cost-benefit analysis and develop an appropriate implementation plan that considers the impact on individual and general permits based on the terms of an actual implementation plan. Ecology should likewise defer action on fish tissue-based criteria until it has developed more specific information regarding how these standards will be implemented. AWB requests that these comments and the documents submitted herewith be included in the administrative record for this rulemaking. These comments are substantially based on the technical memoranda provided by the National Council for Air and Stream Improvement and Geosyntec Consultants which are attached, and incorporated herein, as Appendix A and B.

Rulemaking Requirements

Comment No. 1: Ecology should fully comply with state rulemaking requirements.

The adoption of water quality standards is subject to the significant legislative rule (SLR) requirements of the state Administrative Procedures Act (APA). RCW 34.05.328. These include the following[1]:

- Statement of general goals and objectives. A detailed statement of the general goals and objectives of the statute that the rule implements. RCW 34.05.328 (1)(a).

- Statement of necessity and alternatives analysis. A determination that the rule is necessary to achieve the general goals and specific objectives, an analysis of alternatives to rulemaking, and analysis of the consequences of not adopting the rule. RCW 34.05.328 (1)(b).

- Preliminary and final cost-benefit analysis. A preliminary cost-benefit analysis must be prepared at the time a draft rule is published for public comment. A final cost-benefit analysis must be issued when the rule is adopted. RCW 34.05.328 (1)(c). The

[1] In addition to these elements, the SLR also requires determinations that the rule does not require actions that violate the requirements of other state or federal laws, RCW 34.05.328 (1)(f), and that the rule does not impose more stringent requirements on private entities than on public entities unless required by federal law. RCW 34.05.328(1)(g).

cost-benefit analysis must include a determination 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." RCW 34.05.328 (1)(d).

- Least burdensome alternative analysis. A determination, 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 identified under RCW 34.05.328 (1)(a). RCW 34.05.328(1)(e).

- Justification for more stringent requirements than federal law. Ecology must determine if the rule is more stringent than federal standards. If so, Ecology must determine that the difference is justified either by a state statute that explicitly allows the agency to differ from federal standards or by "substantial evidence" that the difference is necessary to achieve the general goals and specific objectives stated under RCW 34.05.328 (1)(a). RCW 34.05.328(1)(h).

- Implementation plan. Prior to adoption, Ecology must provide an implementation plan that describes how the agency intends to implement and enforce the rule including a description of the resources the agency intends to use, how the agency will inform and educate affected persons about the rule, how the agency will promote and assist voluntary compliance, and an evaluation of whether the rule achieves the purpose for which it was adopted. RCW 34.05.328 (3).

- Report to joint administrative rules review committee. After adopting a rule regulating the same subject matter as another provision of federal law, Ecology will be required to submit a report to the legislature identifying the existence of any overlap, duplication, or difference with federal law and making recommendations for any legislation necessary to eliminate or mitigate any adverse effects of such overlap, duplication or difference. RCW 34.05.328 (4).

The APA also requires that the Ecology water quality program identify the sources of information reviewed and relied upon by the agency in preparing a SLR. RCW 34.05.272. The APA further requires that a draft rule package include a small business economic impact statement (SBEIS) that complies with RCW 19.85.040. RCW 34.05.320 (1)(j). RCW 34.05.320. The SBEIS must include an evaluation of compliance impacts on small businesses and provide a determination of whether the rule will have a disproportionate cost impact on small businesses.

A rule can be invalidated under the APA where a court determines that it is arbitrary and capricious. RCW 34.05.570 (2)(c). A rule will not be upheld if it is "willful and unreasoning and taken without regard to the attending facts or circumstances." *Wash. Indep. Telephone Ass'n v. WUTC*, 149 Wn.2d 17, 65 (2003). Regulatory reform legislation in 1995, in findings appended to RCW 34.05.328, sets forth standards for what constitutes an arbitrary and capricious action. These standards direct courts reviewing administrative rules to "determine whether the agency decision making was rigorous and deliberative; whether the agency reached its result through a process of reason; and whether the agency took a hard look at the rule before its adoption." Laws

1995 c 403 §1. The 1995 legislative findings include several key principles applicable to Ecology's rulemaking:

- Rules should assure that policies are clearly understood, fairly applied, and uniformly enforced.
- Rules should not impose excessive, unreasonable, or unnecessary obligations.
- Rules should not be used to establish substantial policy decisions; those decisions should be made by the legislature.
- Rules should be justified and reasonable based on common sense criteria.

In the case of the proposed aquatic life criteria, the draft rule is not in full compliance with these important rulemaking requirements under state law. AWB requests that Ecology address these deficiencies in a revised draft rule package that is subject to public notice and comment.

Proposed Standards

Comment No. 2: Aspects of the methodology used by Ecology to derive standards are not scientifically justified.

The proposed revisions to Washington aquatic life toxics criteria aim to align current criteria with latest scientific data and updated EPA recommendations, ensuring adequate protection of aquatic biota within state waters. The criteria were developed using different substance-specific approaches, depending on the likelihood of a substance to adversely affect species that are federally listed as endangered and threatened in Washington. In some cases, the derivation method outlined by Stephen et al. (1985) was adopted in which the 5th percentile of the species sensitivity distribution (SSD) toxicity data was used, following EPA recommendations. Additionally, Ecology reviewed and evaluated toxicity data published after the last EPA criteria update ("new science") and used the 5th percentile of the SSD to derive criteria. Finally, Ecology considered Biological Opinions (BiOps) issued by the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to Idaho (2014-2015) and Oregon (2004) during their toxics criteria review, which indicated when endangered species were vulnerable to extinction at toxic concentrations equal to EPA national recommendations. In these instances, protection levels were set to the 1st percentile of the SSD or the 20th percentile using a single species to selectively align with substance concentrations identified in BiOps.

This methodological change is not reflective of the scientific approach described by EPA guidance that incorporates data from multiple studies, species, and taxa groups to generate criteria. Rather, Ecology structured their calculations using lower criteria threshold values defined by a subset of studies or species cited in BiOps to achieve more stringent criteria. While establishing criteria based on the most conservative observed effects among available data or target species (e.g., threatened, and endangered taxa) is a valid management decision, better articulation is needed to clarify the intended management decision and why it is scientifically justified. Note that EPA guidance seeks to ensure that criteria are not reliant on the outcomes from a select few studies, since they may not be reflective of true exposure risk given the variability in toxic response within and across species, methods used in toxicity testing, and other factors. Departure from EPA guidance needs to be transparent, and the scientific underpinning clearly expressed.

Additionally, there is no empirical evidence that the modified approach used to derive criteria will definitively enhance species and endangered species protection. Instead, protection of species should be informed by observed drivers of impairment. That is, empirical data are needed to better understand and quantify the principal factors contributing to ecosystem impairment and inform criteria protective of ESA-listed species. If habitat loss, temperature, or barriers to movement are key factors affecting ESA species, more stringent water quality criteria will not alleviate these pressures and further protect populations. In the absence of such data, it is prudent to adhere to established EPA recommendations (utilizing the 5th percentile; Stephen et al. 1985) or scientifically justified deviations from these until additional evidence and data are available. By grounding percentile choices in EPA recommendations (or, alternatively, with new empirical evidence and scientific consensus), Ecology can enhance the credibility, acceptance, and effectiveness of its aquatic life toxics criteria, ensuring they serve the intended purpose of safeguarding aquatic ecosystems and the species they support.

Ecology should not deviate from EPA recommended criteria for several toxics on the premise that EPA criteria are not adequately protective of aquatic species listed as threatened or endangered in Washington under the Endangered Species Act (ESA). ESA-listed species are not present in all the waters covered by the criteria and therefore these species should not be the driver for developing state-wide criteria. Toxicity studies based on ESA-listed species, when available, can be used for the derivation of criteria through the standard scientifically supported process recommended by EPA. Ecology should rely on the ESA consultation process to develop site-specific criteria for waters naturally inhabited by ESA-listed species. This approach specifically relates the designated beneficial uses for aquatic life in Washington surface waters to the water quality criteria used to evaluate whether those uses are adequately protected.

Comment No. 3: The protocol for study acceptability in evaluating scientific articles has not been consistently applied where the test species is invasive.

The test acceptability requirements set forth in the Technical Support Document (TSD), p. 38, states that the test species for scientific studies "must be non-invasive North American species. This requirement additionally states that "invasive species with established populations were not considered in this rule because they do not represent native fauna of Washington, there is a significant amount of time and resources used to eradicate these species, and they are generally less sensitive than native species thereby precluding their use as a surrogate." When "invasive species" is used, Ecology should clarify the spatial area to which it refers. That is, does the term "invasive" pertain to North America broadly or specifically Washington state? For example, *Orconectes immunis* (current taxonomic name, *Faxonius immunis*) was identified as a non-North American species and excluded from criteria derivation for pentachlorophenol (page 146/249). This is not accurate since its native range includes Lakes Erie, Ontario, Huron, and Southern Lake Michigan; lower Ohio, and upper Mississippi drainages; Massachusetts to Wyoming; and Alabama to Ontario, Canada (Hobbs 1974). In contrast, *Orconectes rusticus* (current taxonomic name, *Faxonius rusticus*) was included in the derivation calculations for the freshwater acute chromium VI, TSD criterion, TSD, at 67, despite being a prolifically invasive species with established populations in twenty states outside of its native range of the Ohio River basin. Neither of these species are documented in Washington, but both are handled differently in criteria derivation. Ecology use of studies with invasive species should be clarified, and the basis for identifying species as invasive evaluated to ensure that the species included in criteria derivation are consistent.

Comment No. 4: Ecology has improperly deviated from EPA guidance on derivation of water quality criteria.

Ecology is inconsistently deviating from EPA guidance for deriving numerical water quality criteria. The goal of establishing aquatic life criteria is to be protective of ecosystems within waterbodies within the state (plants, invertebrates, fish). The EPA methodology is designed to provide a reasonable and adequate amount of protection considering the uncertainty associated with translating laboratory-based toxicity studies to environmental exposures. Further, if inadequate studies are available demonstrating the toxicity associated with a chemical, a value should not be derived (Stephen et al. 1985). EPA methods aim to protect 95% of the aquatic genera with the use of 5th percentile of the genus sensitivity distribution (GSD) divided by two. Recognizing that some species may be more sensitive, EPA recommends that if the acute toxics criteria calculated using the methods above (i.e., one half of the 5th percentile of the GSD) is greater than the mean acute value for an individual species, then the Species Mean Acute Value (SMAV) should be used (Stephen et al. 1985). Ecology did not follow this approach and instead arbitrarily used the 1st percentile of the GSD for pollutants that have been determined in previous biological opinions as being more harmful to Washington threatened and endangered species. While protecting these species is important, Ecology did not provide sufficient rationale or empirical evidence that the 1st percentile value is more scientifically justified or protective than the 5th percentile value particularly when considering other factors affecting species survival (habitat loss, migration barriers, competition from non-native species, etc.). Additionally, Ecology has not provided sufficient justification where their methods differ from EPA guidance when the datasets are the same. Ecology expressed in an email communication on April 17, 2024, that it has changed the intercepts of some hardness- based metals equations to "accurately predict the criteria from hardness" based on new studies. However, in the case of the cadmium criteria, the studies cited by Ecology are the same studies used by EPA. The datasets were the same, however, Ecology changed the intercepts of the equations to result in more conservative criteria. Ecology needs to provide a more rigorous justification for altering these equations, including goodness of fit statistics for both the EPA model and Ecology model.

Comment No. 5: Ecology has improperly excluded toxicological data in deriving the proposed criteria.

The standard EPA methodology develops criteria based on toxicological data that represent sensitive species. However, Ecology has excluded mortality of 50% of the population (LC50) results that would likely increase the resulting criteria. There may be some justifiable reasons for excluding data (e.g., selecting results from flow-through studies over static exposure studies); however, exclusion of data based on the result alone is insufficient and unnecessarily biases the calculated criteria. Further, developing criteria when there are an insufficient number of studies is inappropriate (i.e., use of a single study to represent a genus).

Comment No. 6: The rulemaking documentation should be subject to peer review prior to publication of the draft rule.

The rulemaking documentation and data analysis have not been externally peer reviewed, or if they have, this review has not been reported. We believe this is the most glaring issue with the entire rulemaking process. While we expect the technical support document to have a thorough editorial review to address some noted typos (e.g., page 239 mentions that exceedance of a benchmark is a permit violation, and on page 238 the formula for calculating respective calculated limit is incorrect), there is a need for a third-party technical review. The analysis and presentation of data used to derive default statewide criteria is insufficient to determine whether the data used are representative and unbiased. For example, the peer reviewed study that was used in developing copper criteria has a misprint and it does not include the values for the most important parameters. The correction to that study has not yet been issued. In other cases, where Ecology has summarized sources of data used to derive new formulas for computing criteria, it lacks details on the goodness of fit, potential outliers, standard errors, percent bias, or other statistics commonly used to indicate that the data follow the assumed (log-normal) distribution and how well the regression equations fit the data. These details are important for the public to have confidence that Ecology is using appropriate and representative data and making assumptions that are technically sound and reasonable.

Comment No. 7: The default criteria for aluminum should be based on more spatially explicit data.

Ecology's methodology for deriving aluminum criteria, which aligns with EPA's latest recommendations, lends itself well to the calculation of site-specific criteria that leverage local dissolved organic carbon (DOC), pH, and hardness (or conductivity) input data. However, as proposed, only East/West defaults were calculated and noted to be used in the absence of available local data. Given the spatial distribution of available concurrently sampled inputs (as shown, e.g., in Fig 1 of the technical support document), consideration should be given to deriving ecoregion-specific aluminum criteria using more regionally specific input data. Oregon's Department of Environmental Quality, for example, used Level III Ecoregions when deriving its default aluminum criteria (ODEQ 2021). At the very least, a thorough data analysis should be conducted to justify the spatial extent chosen for default criteria, and locally prioritized data should be considered for constructing more than simply East/West defaults.

Comment No. 8: The western Washington criteria for aluminum and copper are not based on representative water quality conditions.

The default criteria for aluminum and copper have been calculated using the 5th percentile of the data from the western and the eastern part of the state. For western Washington, more than 5% of the data are from national parks (Olympic and Mount Rainier) with pristine water quality with naturally low hardness and organic carbon, making the criteria exceptionally strict and not representative of many water bodies of the state.

Comment No. 9: Ecology should consider the background concentrations of aluminum in water bodies in Washington to ensure there is empirical data to support the theoretically calculated default and site-specific aquatic life criteria.

Aluminum is the second most abundant element in the Earth's crust and therefore is ubiquitous in the environment. In Washington (and along the west coast in general), the aluminum content of soils is among the highest in the nation (Figure 1). This has a direct impact on the concentrations of aluminum in surface waters and stormwater runoff, as well as in stormwater treated by proprietary media filters and natural treatment systems, most of which contain sand and soils. Ecology should consider the naturally higher aluminum content in soils and the potential for aquatic species to be better adapted to these conditions when applying EPA's recommended MLR model for computing aquatic toxicity.

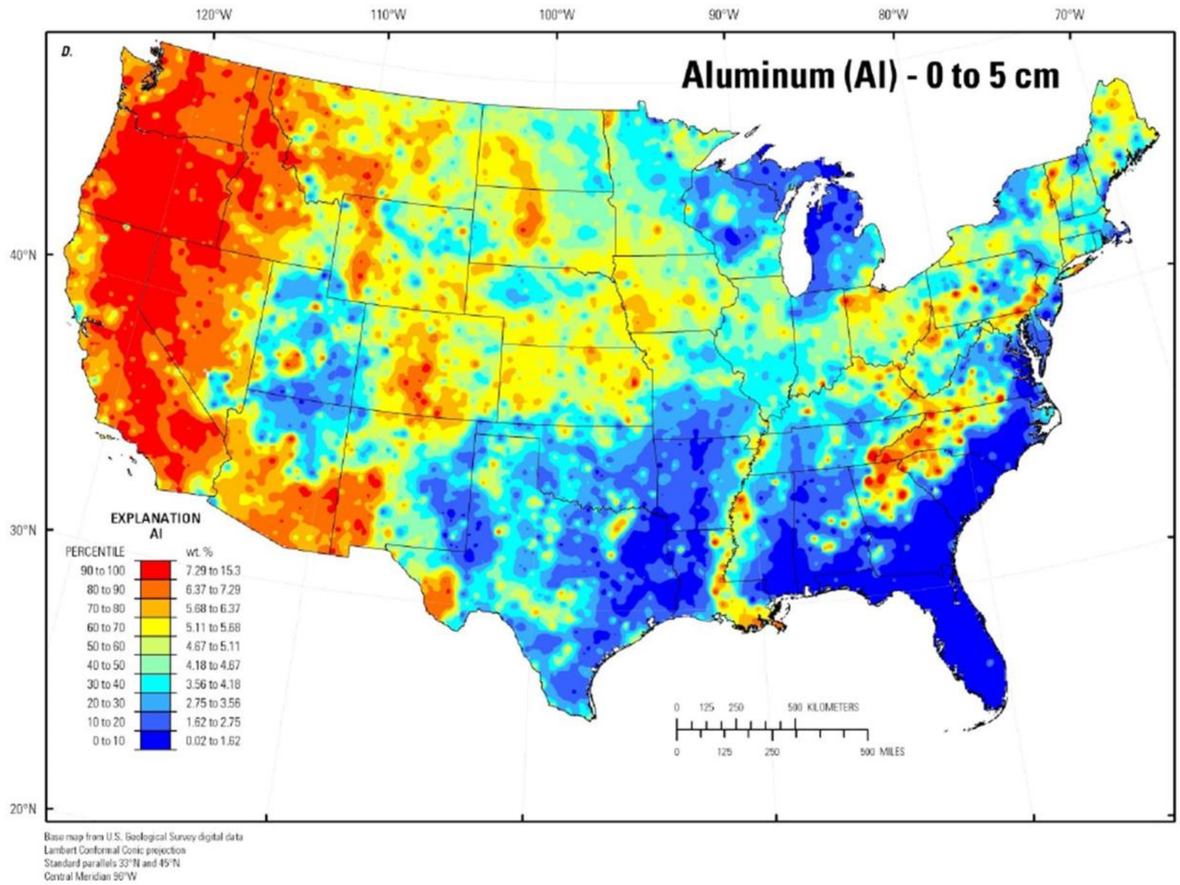


Figure 1. Distribution of aluminum (Al) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (USGS, 2014).

The International Stormwater Best Management Practice (BMP) Database contains influent and effluent stormwater data for many stormwater BMP types that can be analyzed using an online statistical analysis tool (https://bmpdatabase.org/bmp-statistical-analysis-tool). For BMP studies located in Washington, Oregon, and California (EPA Rain Zones 6 & 7) the median influent aluminum concentration is 2640 µg/L. These studies include a variety of land uses and therefore can be considered indicative of typical magnitude of aluminum concentrations that could be found in stormwater in Washington. If aluminum becomes regulated in stormwater permits and benchmarks are set close to or near the proposed default water quality criteria, there is a high likelihood that exceedances will be commonplace. Therefore, aluminum may become a challenging pollutant for industrial stormwater permittees with serious implications for treatability and compliance. Ecology should consider the background concentrations of aluminum in water bodies in Washington to ensure there is empirical data to support the theoretically calculated default and site-specific aquatic life criteria (i.e., species inhabiting water bodies with naturally high aluminum concentrations are absent or exhibiting toxic effects). Ecology should also consider the costs of NPDES compliance if aluminum becomes a regulated pollutant in stormwater permits.

Comment No. 10: An uneven distribution of samples potentially biases the default criteria calculation for aluminum and copper.

To calculate the default criterion for aluminum, Ecology used the ambient monitoring data for the entire state, classified the data into East (2210 data points) and West Washington (1127 data points) (e.g. Figure 2), applied the EPA Multiple linear regression (MLR) calculator for each data point (about 3337), and used the fifth percentile for East and West Washington to calculate the respective default criteria (e.g. Figure 3).

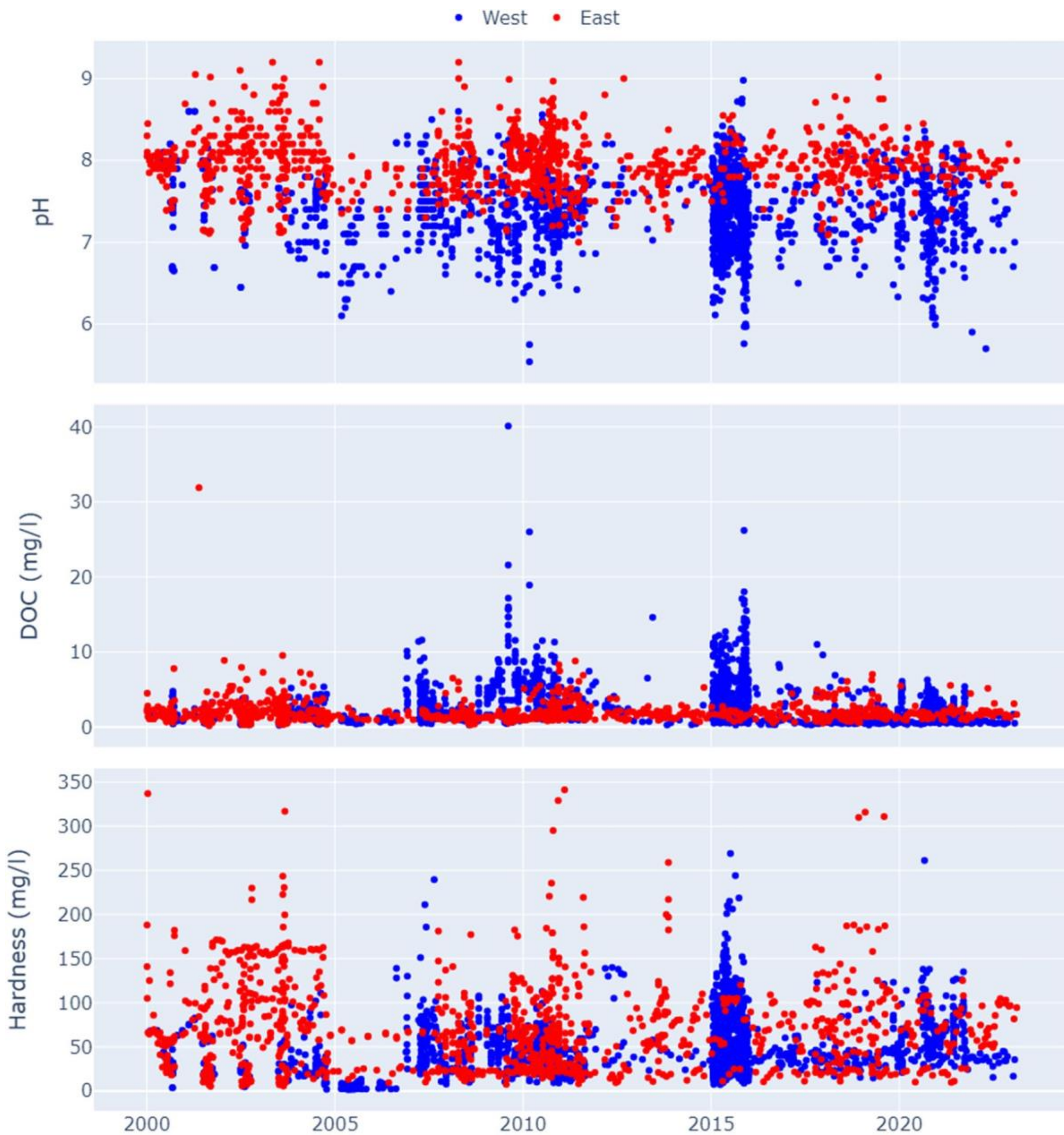
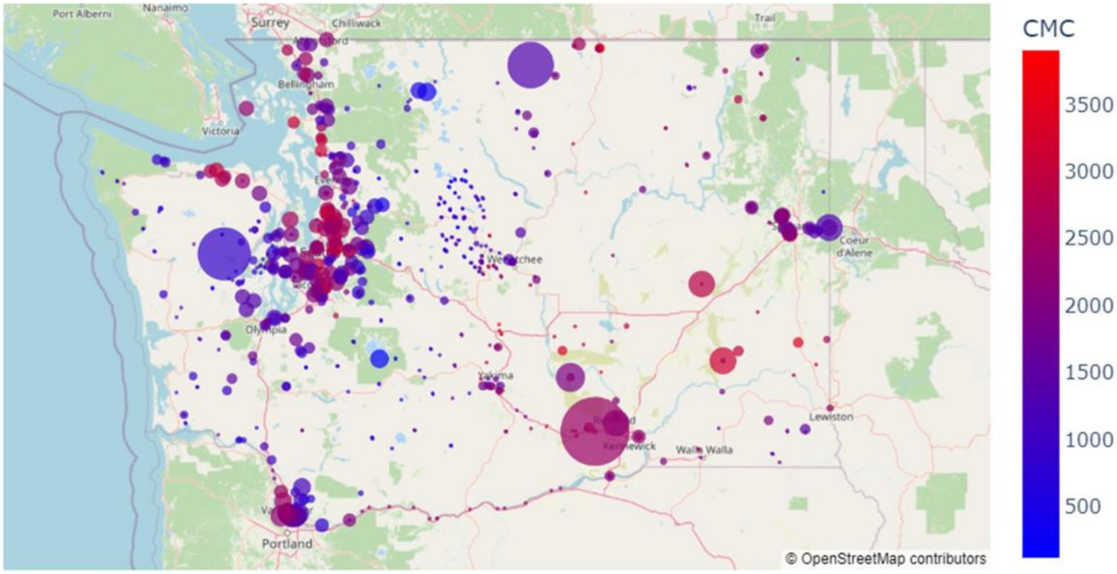


Figure 2. pH, Dissolved Organic Carbon, and Hardness Values used for Calculating Statewide Aluminum and Copper Criteria.



Size of the circles represents the number of samples.

Figure 3. Fresh Water Criterion Maximum Concentration (CMC) for Aluminum Using Multiple Linear Regression Model.

A review of the default criterion calculations using this method by Geosyntec, Appendix B, illustrates potential issues with spatial and temporal distribution of samples used for the analysis. The following examples describe the issues with the distribution.

1. Almost 50% of the samples for western Washington were collected in 2015, whereas the samples for eastern Washington were more uniformly collected for the twenty-year period for which the data was used.

2. The samples for eastern and western Washington are more concentrated at specific locations. For example, for eastern Washington, 20% of the samples (>200) were collected at one location on the Yakima River, and for western Washington, more than 5% (149) samples were collected at the North Fork Skokomish River in the Olympic National Forest and Sunbeam Creek in Mount Rainier National Park.

The uneven distribution (spatially and temporally) of samples potentially biases the default criteria calculation. A criterion for western Washington that is based on the 5th percentile, where more than five percent of the data were collected in pristine national forests, makes the western Washington default criterion biased and exceptionally low for other water bodies in the region.

Comment No. 11: The default criteria for aluminum and copper should be based on more spatially explicit data.

The technical support document states that "We considered ecoregional default values (e.g., EPA level III ecoregions), but we had limited geospatial representation in some ecoregions and therefore developed default values for western and eastern Washington" (page 73/249).

While AWB appreciates that Ecology is prioritizing the use of site-specific chemistry data from permittees when available, Ecology should establish ecoregional defaults allow for the use of eastern and western defaults for those ecoregions that do not have sufficient local data. Ecology should consider the use of default and estimated values for the relevant factors in calculating the applicable aluminum and copper criteria in the proposed aluminum and copper criteria in Oregon (ODEQ, 2024a, Endnotes N and O). Ecology should postpone rulemaking and prioritize collecting enough representative data for each ecoregion.

Comment No. 12: The proposed freshwater copper criteria should be deferred until the basis for the criteria is corrected and peer reviewed.

EPA recommends using a Biotic Ligand Model (BLM) that depends on at least twelve water quality parameters for derivation of water quality criteria for copper. Ecology has not demonstrated that the MLR model is as protective as the BLM model for the state of Washington. The model used by Ecology for copper is based on Brix et al. (2021). However, the published study has a misprint and that a correction will be issued later this year. This was confirmed in a personal communication with Geosyntec on April 17, 2024. (WDOE 2024b) Some parameters of the formula (intercepts for the MLR equation) are missing, and the technical support document authors had to request information about these parameters separately. The study should not be used for developing the copper criteria until the correction is published and peer reviewed. Moreover, this study should be independently replicated. This is standard practice for new research with new methodologies. Peer review of a single study alone is not enough. Additional analysis or new data may result in completely different coefficients for the MLR equation.

Comment No. 13: The Technical Support Document and Implementation Plan do not adequately explain how ambient water quality data will be collected and applied for the aluminum and copper criteria.

The MLR criteria are dependent on the ambient water quality (e.g., pH, hardness, dissolved organic carbon). The TSD mentions that permittees will be able to measure the ambient data themselves to calculate the site-specific criteria. However, it is not clear if the ambient data must be collected in the receiving water or at the NPDES discharge point. In addition, the cost due to additional sample collections has not been included in the regulatory analysis.

Ecology should explain in the TSD exactly how it will apply the copper and aluminum criteria in both individual and general permits. The draft cost benefit analysis is a limited analysis of the impact of the proposed copper criteria on facilities covered under the Industrial Stormwater General Permit. The cost benefit analysis used regional pH, hardness, and DOC values for eastern and western Washington without any reference to TSD or Implementation Plan. Ecology should explain how it intends to develop copper effluent limits and benchmarks and whether it intends to add any new parameters to the ISGP based on the other proposed aquatic life toxics criteria. Ecology should also explain whether it will continue to a modest dilution factor of 5 in deriving copper benchmarks as it has done in the Industrial Stormwater General Permit (ISGP) and Boatyard General Permit. Absent this information, the cost benefit analysis is illusory.

Comment No. 14: More information is needed to comment on the proposed cadmium criteria.

Ecology is proposing to make the freshwater cadmium criteria even more stringent than EPA recommendations. The cadmium freshwater criterion maximum concentration (CMC) and the freshwater criterion continuous concentration (CCC) equations slopes match those from previously presented EPA equations (USEPA 2016). However, the intercepts of the Ecology equations do not match EPA equations, but Ecology notes that they used the same toxicity studies identified in EPA's guidance (2016). The methods and results for derivation of the CMC and CCC equations should be presented in the technical support document and the information presented (e.g., calculated slope, statistical significance, etc.) should be similar to Table 6 of EPA guidance (2016) with the selected intercept highlighted.

Ecology selected the criteria to match with the Idaho and Swinomish approved criteria and then back calculated the percentile/calculation to justify the number. For calculating the freshwater chronic cadmium criterion, Ecology used the 1st percentile of the toxicity data distribution from the EPA toxicity dataset but provided no scientific justification for this selection (vs. the 5th percentile used in the EPA guidance).

Comment No. 15: Ecology has not justified the exclusion of data in deriving criteria for nickel.

Ecology is proposing new nickel criteria that are much lower than EPA recommendations. The derivation of the final acute value (FAV), the basis of the acute criteria and by extension the chronic criteria, is based on four genus mean acute values (GMAVs). The four GMAVs are based on *Leptoxis ampla*, *Ceriodaphnia dubia*, *Neocloeon triangulifer*, and *Somatogyrus sp*. One study for *Ceriodaphnia dubia* was excluded, but Ecology believes the same study was of sufficient quality to include to represent *Daphnia pulex.* The juxtaposition of exclusion for one species over another is justified based on the resulting LC50 value. However, this is insufficient justification to exclude a calculated LC50 value from a toxicity study if the study is deemed to be appropriate for inclusion.

Comment No. 16: Ecology has not justified the exclusion of data in deriving criteria for silver.

As with nickel, Ecology is proposing a new freshwater acute criterion for silver that is much lower than the EPA recommendation. Additionally, Ecology has developed proposed freshwater and saltwater chronic criteria, while EPA does not have established recommendations. The derivation of the FAV, the basis of the acute criteria and by extension the chronic criteria, is based on four GMAVs. The four GMAVs are based on *Ceriodaphnia dubia*, *Daphnia magna*, *Danio rerio*, and *Hyalella Azteca*. Four studies for *Ceriodaphnia dubia* were excluded, but Ecology believes the same study was of sufficient quality to include to represent *Pimephales promelas*. The juxtaposition of exclusion for one species over another is justified based on the resulting LC50 value. However, this is insufficient justification to exclude a calculated LC50 value from a toxicity study if the study is deemed to be appropriate for inclusion.

Comment No. 17: Ecology has not justified the use of certain data in deriving criteria for zinc.

The derivation of the FAV for zinc, the basis of the acute criteria and by extension the chronic criteria, is based on four GMAVs. The four GMAVs are based on *Neocloeon triangulifer*, *Hyalella Azteca*, *Euchlanis dilatate*, and *Ceriodaphnia dubia*. However, the first three (i.e., most sensitive species) are based on a single toxicological study. Development of a GMAV based on a single study is insufficient and the resulting FAV has very low confidence.

Comment No. 18: Ecology has not provided a sufficient basis for the PFOS/PFOA standards.

Information describing Ecology's analysis of EPA's PFOS and PFOA aquatic life recommendations is lacking, and there does not appear to be sufficient guidance to clarify the implementation of these criteria in Washington waters. Rather than adopting EPA recommendations (if they are finalized), a more scientifically defensible and robust approach would be to implement a full rulemaking review with scientific evaluation of the appropriateness of EPA recommendations for Washington waters.

It is also premature for Ecology to adopt tissue-based standards for PFOS and PFOA without an implementation plan for implementing the criteria in NPDES permits, impairment determinations, water quality improvement plans, and section 401 certifications. In 2016 Ecology declined to adopt tissue-based human health water quality criteria for methylmercury in the absence of information on how a tissue-based criterion will be implemented in discharge permits, in water quality assessments, and in Section 401 water quality certifications. (Ecology 2016). The TSD and implementation plan for this rule include no information that addresses these issues. Absent that information, adoption of draft EPA tissue-based criteria for PFOS and PFOA should be deferred.

Specifically, further clarification is needed to quantify "steady-state" conditions when determining whether fish tissue or water column concentration criteria should apply. In addition, Washington-specific field sampling requirements are needed to ensure fish tissue measurements are spatially and temporally representative and reflect conditions that are intended to be protected. It is well known that sampling design (e.g., number and proximity of measurements), species characteristics (e.g., life history, size, sex, lipid content, functional group), and environmental conditions (e.g., seasonality, habitat conditions) play important roles in bioaccumulative substances (Barnhart et al. 2021). Therefore, detailed guidance is needed and should be approved through targeted rulemaking initiatives rather than included in this round of aquatic life criteria updates. Rather than adopting EPA fish-tissue criteria recommendations, a more scientifically defensible and robust approach would be to implement a full rulemaking review with scientific evaluation of the appropriateness of EPA's tissue-based recommendations for Washington waters.

Comment No. 19: It is premature for Ecology to adopt tissue-based criteria for selenium.

As with the proposed criteria for PFOS and PFOA, it is premature to adopt freshwater chronic tissue-based criteria for selenium. The TSD and implementation plan is devoid of any information or analysis as to how Ecology plans to implement the tissue-based criteria in NPDES permit limits, water quality assessments, and section 401 certifications.

Ecology should take the same approach as the state of Oregon in deferring action on the current EPA recommendations for tissue-based criteria for selenium. The rationale of the Oregon Department of Environmental Quality is equally applicable to the state of Washington:

> DEQ is not proposing to adopt EPA's 2016 selenium criterion at this time because of the crucial need for implementation guidance to make it feasible for Oregon to apply the complex four-part criterion effectively and efficiently in state water quality programs. Further, Oregon does not have high concentrations of selenium in state waters compared with other regions of the U.S, and Oregon currently has water-column criteria for selenium to protect fish and aquatic life that is only slightly higher (5.0 µg/L) compared with the 2016 recommendation (3.1 µµg/L or 1.5 µg/L). DEQ may propose to adopt the 2016 selenium criterion in the future if DEQ can work with EPA to develop selenium criterion implementation guidance before adopting the criteria.

ODEQ 2004b, at 37.

Comment No 20: The proposed 6PPD-quinone acute freshwater criterion is not supported by sufficient data.

EPA's minimum data requirements for deriving aquatic life criteria (Stephen et al. 1985) for 6PPD-quinone were not met, and data informing toxicity and species-specific impacts remain sparse. In addition, there remain large gaps in knowledge regarding chronic effects of 6-PPD-quinone, but also regarding its mechanisms of toxicity and interaction with environmental stressors. The extent to which 6PPD-quinone poses a risk to diverse aquatic species is still poorly understood, and therefore development of criteria protective of aquatic life are premature. Research efforts should prioritize elucidating the sub-lethal and cumulative impacts of 6PPD-quinone exposure across a range of concentrations, environments, and time scales. Additionally, studies aimed at identifying the sensitivity variances among species and life stages can help refine water quality criteria, ensuring they quantifiably protect the most vulnerable members of aquatic ecosystems. Until these data are available, following EPA recommendations by abstaining from proposing aquatic life criteria until minimum data requirements are met may result in more robust, scientifically defensible criteria.

The proposed freshwater acute criterion is based on development of a species sensitivity distribution (SSD) and selection of the effective concentration at 5%. The species included (with the most sensitive listed first) in the SSD were: coho salmon (Tian et al. 2022; Lo et al. 2023; Greer et al. 2023), white spotted char (Hiki et al. 2022), brook trout (Brinkman et al. 2022), rainbow trout (Brinkman et al. 2022; Di et al. 2022), and zebra fish (Varshney et al. 2022). The resulting 5th percentile of the SSD produced the value of 8 ng/L which coincidentally aligns with the LC5 value in Lo et al. 2023 (~7 to 8 ng/L) (the study with the lowest estimated LC50 value). Ecology excluded relevant data from the reviewed toxicity studies. For example, Greer et al. 2023 includes an LC50 value for chinook salmon (81,100 ng/L) and Lo et al. 2023 did not observe an LC50 for sockeye salmon in their investigation. If the SSD methodology is used, it is appropriate to include LC50 values from other salmonids. At a minimum, the sensitivity of the proposed acute freshwater criteria should be clearly investigated, and appropriate rationale should be provided as to why a datapoint was excluded. The lack of data and approved testing methods indicate that it is premature to establish a 6PPD-quinone criterion in Washington.

Comment No. 21: Ecology should defer action on freshwater acrolein criteria.

Ecology should reconsider the proposed acute and chronic toxicity criteria for acrolein at 3.0 µg/L (or ppb). Many irrigation districts and water companies in the State of Washington rely on the usage of this chemical tool for aquatic vegetation management in irrigation conveyance systems. There is major concern that the establishment of these criteria standards will have an enormous impact on the current discharge effluent limit allowed under the general permit for Irrigation System Aquatic Weed Control (ISAWC). This chemical is the most effective and reliable herbicide tool on the market that provides broad spectrum control of large vascular plants and algae in irrigation conveyance systems throughout the western United States and worldwide. When applied in accordance with the product labels and manual this herbicide will provide results in a short time frame of hours opposed to days, and its non-selective mode of action will eliminate all types of aquatic vegetation pests such as pondweeds, elodea, watermilfoil, and algae. Irrigation Districts and water companies have the responsibility to deliver satisfactory water supply to landowners and/or growers when they need it. The ability to control overgrowth of aquatic weeds and algae with acrolein must be available to operate the conveyance systems efficiently and economically as possible. By setting very low surface water quality standards for acrolein, it will cause major disruption in the sustainability of designated agricultural water uses and the continued viability of agricultural production in the State of Washington.

The proposed criteria do not align with the practicable usage of the EPA and Washington State Department of Agriculture registered herbicide product and labels for Magnacide H™ (EPA Reg. No. I 0707-9 and EPA SLN WA-040017) which contains the active ingredient acrolein. Many best management and operational practices, such as closing spillway gates or rediverting treated irrigation water, are implemented by irrigation districts to contain acrolein within the conveyance system and protect the water quality of receiving waterbodies. Ecology should consider the amount of current and past operational and compliance efforts performed by irrigation districts which have resulted in positive impacts on the water quality and aquatic life throughout the State of Washington. Establishing a 3.0 µg/L standard for acrolein will only lead to additional economic and operational costs for managing the aquatic vegetation within an irrigation district's vast irrigation conveyance system.

Comment No. 22: The proposed criteria rule is not in compliance with the significant legislative rule requirements of the APA.

Ecology has not met its obligations under RCW 34.05.328 with respect to significant legislative rules. Under RCW 34.05.328(2) Ecology "must place in the rule-making file documentation of sufficient quantity and quality so as to persuade a reasonable person that the determinations [under RCW 34.05.328(1)] are justified." The foregoing comments document several instances where there is no explanation in the TSD regarding the use of some scientific studies and not other studies, the manner in which scientific data has been used in the derivation of standards, and the use of non-representative for establish regional background values for the aluminum and copper criteria. In the case of PFOS and PFOA, there is no analysis of how draft federal criteria relate to or fit in the context of Washington waters. Without this information, Ecology is not able to fulfill its obligations with respect to the determinations required under RCW 34.05.328(1) including any assessment of alternatives, cost benefit analysis, least burdensome alternative, or why any of the standards are more stringent than federal recommendations.

Under RCW 34.05.328(3) Ecology is required to publish an implementation plan with any proposed water quality standard update. The implementation plan is critical to making the determinations under RCW 34.05.328(1). The implementation plan in this instance lacks any substance and consists, without any substance, a disclosure that Ecology will have to implement the rule in permitting, water quality assessments, TMDLs, and section 401 water quality certifications. Without any understanding of how the criteria will be implemented, the assessment of impacts on impaired water body listings, existing individual and general permits, and the cost benefit analysis are illusory. Regarding all the elements in the rulemaking package, Ecology calculated putative water quality criteria, permit limits and benchmarks for the freshwater copper criteria on the basis of eastern and western Washington values for pH, hardness, and DOC. There is no basis in the actual or the implementation plan for this approach. Indeed, the proposed criteria state that if site specific and concurrent data are not available, the copper applicable default criteria will be as stated in the draft rule.

The implementation plan should be clear on how concurrent data will be collected, who will be responsible for the collection of that data, and how the quality of that data will be assured. The plan should also disclose whether the opportunity to collect that data, if needed, will be afforded to permittees prior to application of the new criteria.

In the case of stormwater, the implementation plan should disclose how Ecology intends to derive copper and aluminum benchmarks. Ecology should also include information in the implementation plan as to whether it intends to include benchmarks for aluminum in the general permit and how those benchmarks will be derived. This discussion should include some disclosure as to whether the western and eastern calculated values for the MLR factors may be used to set benchmarks. The basis for copper benchmarks in the current Industrial Stormwater General Permit and Boatyard General Permit includes a modest dilution factor of 5. (Herrera 2009; WDOE 2022a). The implementation plan needs to disclose whether Ecology will continue this practice. Without this information, the assessment of impacts on permits and the cost benefits analysis is simply speculative. The significant legislative rule requirements demand more.

The cost benefit analysis additionally fails to include many additional costs that will be incurred by the ISGP permit holders to comply with new or revised permit conditions based on the proposed rule. For example, the analysis assumes that a level 1 ISGP corrective action would require 1-2 hours of labor by an environmental engineering technician, estimated at $24.51 per hour. A quick review of current job openings on most common employment portals suggests an hourly wage of at least $30/hour for an entry level environmental engineer position. However, the cost to an industry is typically two to three times the hourly pay rate. In addition, Ecology also states they assume this work would be done by existing staff. However, many ISGP holders do not have environmental engineers on staff and would need to hire a consultant. Typically, the cost of hiring an environmental engineering consultant starts at about $150/hour.

Additionally, in the analysis of the additional costs that ISGP permit holders may incur in the future due to lower benchmarks and the subsequent triggering of Level 3 Corrective Actions (Appendix C of the Preliminary Regulatory Analysis), Ecology did not consider the many steps that permittees must take to implement advanced treatment systems. These steps typically include pollutant source investigations, preliminary alternatives analyses, pre-design activities (e.g., site surveys, pipe condition assessments, geotechnical investigations), engineering design and production of plans and specifications, permitting, and construction. Ecology also assumed that commonly used technologies (passive and active media filters) will be sufficient to meet the more stringent limits and benchmarks for copper and zinc. Based on effluent data from the International Stormwater BMP Database, there are no passive BMPs that can achieve the proposed default water quality criteria for copper (Clary et al. 2020). The omission of critical steps in completing a Level 3 Corrective Action and the assumed technology needed to comply with more stringent limits and benchmarks indicates the financial impacts estimated by Ecology are orders of magnitude lower than they will be for ISGP permit holders. In fact, Ecology acknowledged that the cost estimates could be improved during the workshop and requested the public to submit cost data. However, the process for submitting cost information and the schedule impacts for Ecology to review and incorporate these data into a revised regulatory analysis is unclear. Ecology should adopt a formal process for soliciting this type of critical information from the public as part of the implementation plan included in the draft rulemaking package that is open to public comment with the draft rule. It is inherently difficult if not impossible to comment on this aspect of the draft rule without a fully articulated implementation plan.

AWB is further concerned that the cost benefit analysis is limited to potential impacts to permittees coverage under the ISGP with no consideration of individual or other general permits. This is particularly true since compliance with numeric water quality-based effluent limits, or, for example, the copper benchmarks in the Boat Yard General Permit are not strictly based on corrective actions. For individual permits exceeding an effluent limit is a permit violation. It does not appear that Ecology has made any effort to adequately address compliance issues for individual permits or assess those impacts in a cost benefit analysis or the other determination required under RCW 34.05.328(1).

It is also imperative that the implementation plan and cost benefit analysis consider how the proposed copper and acrolein criteria will apply to aquatic pesticide permits. The 2023 Irrigation System Aquatic Weed Control Permit allows the use of specific pesticides that include copper and acrolein. These applications are critical to operations of irrigation systems and to management of beneficial uses of water for agricultural purposes. Ecology cannot finalize the aquatic life criteria without undertaking a thorough evaluation of how it will implement the standards in context of aquatic pesticide permits and what the cost benefit of the standards will be for agriculture and other businesses and property owners who rely on the permits.

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Appendix A

NCASI

IMPACT. SCIENCE. SOLUTIONS.

National Council for Air and Stream Improvement, Inc.

April 24, 2024

TO: Chris McCabe, Executive Director, NWPPA

FROM: Brad Barnhart, Senior Research Scientist, NCASI
Camille Flinders, Program Director, NCASI

SUBJECT: Comments on WA Department of Ecology's Proposed Aquatic Life Toxics Criteria Revisions

Upon your request, NCASI has evaluated Washington Department of Ecology's (hereafter Ecology) proposed revisions to chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington, and provided comments below. NCASI is an independent, non-profit research organization that focuses on environmental topics of interest to the forest products industry. NCASI conducts research and technical studies on behalf of forest products companies across the US, and its members represent over 80% of the pulp and paper production and two-thirds of wood panels produced nationwide. In its capacity as a research organization, NCASI has a long history of working to inform the science needed to address numerous environmental topics related to the forest products industry including effluent regulation, water quality management, and relationships between human and natural stressors on aquatic ecosystems. The following comments are provided to help ensure important scientific aspects of Ecology's approach for revising the water quality toxics criteria for the protection of aquatic life in Washington's surface waters, including species federally listed as threatened and endangered in Washington.

1. *It is not clear that Ecology's decision-making process and approach to criteria derivation is justified by empirical data*

Ecology's proposed revisions to Washington's aquatic life toxics criteria aim to align current criteria with latest scientific data and updated EPA recommendations, ensuring adequate protection of aquatic biota within state waters. The criteria were developed using different substance-specific approaches, depending on the likelihood of a substance to adversely affect species that are federally listed as endangered and threatened in Washington. In some cases, the derivation method outlined by Stephens et al. (1985) was adopted in which the 5th percentile of the species sensitivity distribution (SSD) toxicity data was used, following EPA recommendations. Additionally, Ecology reviewed and evaluated toxicity data published after EPA's last criteria update ("new science"), and used the 5th percentile of the SSD to derive criteria. Finally, Ecology considered Biological Opinions (BiOps) issued by the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to Idaho (2014-2015) and Oregon (2004) during their toxics criteria review, which indicated when endangered species were vulnerable to extinction at toxic concentrations equal to EPA's national recommendations. In these instances, protection levels were set to the 1st percentile of the

SSD or the 20th percentile using a single species to approximate substance concentrations identified in BiOps.

This methodological change is not reflective of the scientific approach described by EPA's guidance that incorporates data from multiple studies, species, and taxa groups to generate criteria. Rather, Ecology structured their calculations using lower criteria threshold values defined by a subset of studies or species cited in BiOps, in order to achieve more stringent criteria. While establishing criteria based on the most conservative observed effects among available data or target species (e.g., threatened and endangered taxa) is a valid management decision, better articulation is needed to clarify the intended management decision and why it is scientifically justified. Note that EPA's guidance seeks to ensure that criteria are not reliant on the outcomes from a select few studies, since they may not be reflective of true exposure risk given the variability in toxic response within and across species, methods used in toxicity testing, and other factors. Departure from this guidance needs to be transparent, and the scientific underpinning clearly expressed.

Additionally, there is not empirical evidence that the modified approach used to derive criteria will definitively enhance species and endangered species protection. Instead, protection of species should be informed by observed drivers of impairment. That is, empirical data are needed to better understand and quantify the principal factors contributing to ecosystem impairment and inform criteria protective of ESA-listed species. If habitat loss, temperature, or barriers to movement are key factors affecting ESA species, more stringent water quality criteria will not alleviate these pressures and further protect populations. In the absence of such data, it is prudent to adhere to EPA's established recommendations (utilizing the 5th percentile; Stephan et al. 1985) or scientifically justified deviations from these until additional evidence and data are available. By grounding percentile choices in EPA recommendations (or, alternatively, with new empirical evidence and scientific consensus), Ecology can enhance the credibility, acceptance, and effectiveness of its aquatic life toxics criteria, ensuring they serve the intended purpose of safeguarding aquatic ecosystems and the species they support.

2. The term 'invasive' requires clarification and consistency of use

The definition of 'invasive species' for the basis of inclusion of species in toxicity sensitivity distributions is unclear. Specifically, Ecology indicates that "test species must be a non-invasive North American species", but continues that "invasive species with established populations were not considered in this rule because they do not represent native fauna of Washington, there is a significant amount of time and resources used to eradicate these species, and they are generally less sensitive than native species thereby precluding their use as a surrogate". When 'invasive species' is used, Ecology should clarify the spatial jurisdiction to which it refers. That is, does the term 'invasive' pertain to North America broadly or specifically Washington state? For example, *Orconectes immunis* (current taxonomic name, *Faxonius immunis*) was identified as a non-North American species and excluded from criteria derivation for pentachlorophenol (page 149/249). However, its native range includes Lakes Erie, Ontario, Huron, and Southern Lake Michigan; lower Ohio, and upper Mississippi drainages; Massachusetts to Wyoming; and Alabama to Ontario, Canada (Hobbs 1974). Similarly, *Orconectes rusticus* (current taxonomic name, *Faxonius rusticus*) was included in the derivation calculations for the freshwater acute chromium VI criterion despite being a prolifically invasive species with established populations in 20 states outside of its native range of the Ohio River basin. Neither of these species are documented in Washington, but both are handled differently in criteria derivation. Ecology's existing definition of invasive species should be clarified, and the basis for identifying species as invasive evaluated to ensure that the species included in criteria derivation align with Ecology's definition.

3. Default aluminum criteria should leverage existing, more spatially explicit data

Ecology's methodology for deriving aluminum criteria, which aligns with EPA's latest recommendations, lends itself well to the calculation of site-specific criteria that leverage local dissolved organic carbon (DOC), pH, and hardness (or conductivity) input data. However, as proposed, only East/West defaults were calculated and noted to be used in the absence of available local data. Given the spatial distribution of available concurrently sampled inputs (as shown, e.g., in Fig 1 of the technical support document), consideration should be given to deriving ecoregion-specific aluminum criteria using more regionally specific input data. Oregon's Department of Environmental Quality, for example, used Level III Ecoregions when deriving its default aluminum criteria (ODEQ 2021). At the very least, a thorough data analysis should be conducted to justify the spatial extent chosen for default criteria, and locally prioritized data should be considered for constructing more than simply East/West defaults.

4. Default copper criteria should leverage existing, more spatially explicit data

As in the aluminum criteria calculations, Ecology's proposed copper criteria also use multiple linear regressions that require local data, leveraging 3,337 concurrent sampling events across 646 unique locations (page 73/249). The technical support document states that "We considered ecoregional default values (e.g., EPA level III ecoregions), but we had limited geospatial representation in some ecoregions and therefore developed default values for western and eastern Washington" (page 73/249). Aligned with our previous comment, we appreciate that Ecology is prioritizing the use of site-specific chemistry data from permittees when available. We also suggest ecoregional defaults be calculated when possible and that eastern/western defaults only be used for those ecoregions that do not have sufficient local data.

5. Implementation guidance for fish tissue criteria is lacking and incomplete

Information describing Ecology's analysis of EPA's fish tissue standards (e.g., selenium, PFOS, PFOA) is lacking, and there does not appear to be sufficient guidance to clarify the implementation of these criteria in Washington waters. Specifically, further clarification is needed to quantify 'steady-state' conditions when determining whether fish tissue or water column concentration criteria should apply. In addition, Washington-specific field sampling requirements are needed to ensure fish tissue measurements are spatially and temporally representative and reflect conditions that are intended to be protected. It is well known that sampling design (e.g., number and proximity of measurements), species characteristics (e.g., life history, size, sex, lipid content, functional group), and environmental conditions (e.g., seasonality, habitat conditions) play important roles in bioaccumulative substances (Barnhart et al. 2021). Therefore, detailed guidance is needed and should be approved through targeted rulemaking initiatives rather than included in this round of aquatic life criteria updates. Rather than adopting EPA fish-tissue criteria recommendations, a more scientifically defensible and robust approach would be to implement a full rulemaking review with scientific evaluation of the appropriateness of EPA's tissue-based recommendations for Washington waters. Such an approach would align with previous Ecology decision-making regarding fish tissue concentrations and water quality criteria given the need for a state-specific approach that addresses questions related to mixing zones, variances, field sampling recommendations, assessing non-attainment of fish tissue criterion, TMDL development, and NPDES permit limits (e.g., Washington Department of Ecology 2016).

6. 6-PPD-quinone criteria are premature due to insufficient data

EPA's minimum data requirements for deriving aquatic life criteria (Stephan et al. 1985) for 6-PPD-quinone were not met, and data informing toxicity and species-specific impacts remain sparse. In addition, there remain large gaps in knowledge regarding chronic effects of 6-PPD-quinone, but also regarding its mechanisms of toxicity and interaction with environmental stressors. The extent to which 6-PPD-quinone poses a risk to diverse aquatic species is still poorly understood, and therefore development of criteria protective of aquatic life are premature. Research efforts should prioritize elucidating the sub-lethal and cumulative impacts of 6-PPD-quinone exposure across a range of concentrations, environments, and time scales. Additionally, studies aimed at identifying the sensitivity variances among species and life stages can help refine water quality criteria, ensuring they quantifiably protect the most vulnerable members of aquatic ecosystems. Until these data are available, following EPA recommendations by abstaining from proposing aquatic life criteria until minimum data requirements are met may result in more robust, scientifically-defensible criteria.

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Appendix B

Geosyntec consultants

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18 April 2024

James Tupper
Marten Law
1191 Second Ave, Suite 2200
Seattle, WA-98101

Re: Technical Review of the Proposed Updates to the Aquatic Life Toxics Criteria in Washington State

Dear Mr. Tupper:

Upon your request, Geosyntec Consultants, Inc. (Geosyntec) has reviewed the documents related to the Washington Aquatic Life Toxics Criteria (ALTC) update that will be used to amend chapter 173-201A Washington Administrative Code (WAC) Water Quality Standards for surface waters of the State of Washington. We attended the workshop and public hearing events offered by the Washington State Department of Ecology (Ecology). In addition, we analyzed the data provided by Ecology that was used to develop the proposed criteria for some pollutants. Our comments below describe some of the major issues that we feel should be addressed by Ecology before moving forward with the rulemaking process. If you have additional questions about our comments or analysis, please do not hesitate to contact us.

BACKGROUND

The Washington Department of Ecology (Ecology) published its proposed rule for Aquatic Life Toxics Criteria (ALTC) on February 15, 2024. Washington has aquatic life criteria for 28 toxic chemicals and Ecology is proposing updates for 16 of those. In addition, Ecology is also adding 14 new toxic chemicals in the proposed rule. Ecology is inviting comments from the general public and affected businesses in the current comment period. Ecology expects to review and respond to the comments received and adopt the new rules in summer 2024. In the proposed list of toxics, Ecology has included PFOA/PFOS as dependent upon the acceptance of draft recommendations by US Environmental Protection Agency (EPA). However, in one of the public meetings, Ecology clarified that it may not be included in the final list of the toxics due to the delays in adopting draft recommendations by USEPA.

Public comments on the proposed criteria are due on May 7, 2024. Ecology held a public workshop on March 26, 2024, and Bryson Finch from Ecology answered multiple questions during that workshop. In addition, Ecology held two formal public hearings on the rulemaking in April. In both hearings, no one submitted oral comments.

The ALTC, once approved by the EPA, will be used as the basis to update applicable pollutant benchmarks and numeric effluent limits in individual and general National Pollutant Discharge Elimination System (NPDES) permits issued by Ecology. Many industries in Washington are regulated under the Industrial Stormwater General Permit (ISGP). The current ISGP expires on December 31, 2024, and Ecology has started the permit reissuance process. The formal public comment period on ISGP permit reissuance will start in summer 2024 and a final decision will be made in December 2024. Due to the current rulemaking and ISGP reissuance timelines, Ecology has clarified that the proposed ALTC will not be part of the new ISGP issued in 2025.

Once finalized, the new ALTC will be used in future Water Quality Assessments (WQAs) to determine the water quality status of all waters of the state. This process informs updates to the 303(d) list. The WQA process includes the public comment period before it is finalized and submitted to USEPA for approval of the 303(d) list. This means that there will be an opportunity to provide comments on how the ALTC are implemented in the WQA.

GENERAL REVIEW OF THE PROPOSED CRITERIA

In general, Ecology has been transparent and forthcoming in their approach in the development of these criteria. The technical support documents provided by the Ecology described the processes, science, and assumptions behind the development of these criteria. However, we noted some issues and concerns in the technical documentation and the cost/benefit analysis. Some of these are noted below.

1. The rule making documentation and data analysis have not been externally peer reviewed, or if they have, this review has not been reported. We believe this is the most glaring issue with the entire rulemaking process. While we expect the technical support document to have a thorough editorial review to address some noted typos (e.g. page 239 mentions that exceedance of a benchmark is a permit violation, and on page 238 the formula for calculating respective calculated limit is incorrect), there is a need for a third-party technical review. The analysis and presentation of data used to derive default statewide criteria is insufficient to determine whether the data used are representative and unbiased. For example, the peer reviewed study that was used in developing copper criteria has a misprint and it does not include the values for the most important parameters. The correction to that study has not yet been issued. In other cases, where Ecology has summarized sources of data used to derive new formulas for computing criteria, it lacks details on the goodness of fit, potential outliers, standard errors, percent bias, or other statistics commonly used to indicate that the data follow the assumed (log-normal) distribution and how well the regression equations fit the data. These details are important for the public to have confidence that Ecology is using appropriate and representative data and making assumptions that are technically sound and reasonable.
2. Ecology is deviating from EPA's recommended criteria for several toxics on the premise that EPA's criteria are not adequately protective of aquatic species that are listed as threatened or endangered in Washington in accordance with the Endangered Species Act

(ESA). However, the ESA-listed species are not present in all the waters covered by said criteria and therefore these species should not be the driver for developing state-wide criteria. Toxicity studies based on ESA-listed species, when available, can be used for the derivation of criteria through the standard scientifically supported process proposed by EPA. Ecology should rely on the ESA consultation process to develop site-specific criteria for waters naturally inhabited by ESA-listed species. This approach specifically relates the designated beneficial uses (in this case, the aquatic life uses) of Washington's surface waters to the water quality criteria used to evaluate whether those uses are adequately protected.

3. Ecology is inconsistently deviating from EPA's guidance for deriving numerical water quality criteria. The goal of establishing aquatic life criteria is to be protective of ecosystems within waterbodies within the state (plants, invertebrates, fish). The EPA methodology is designed to provide a reasonable and adequate amount of protection considering the uncertainty associated with translating laboratory-based toxicity studies to environmental exposures. Further, if inadequate studies are available demonstrating the toxicity associated with a chemical, a value should not be derived (Stephen et al., 1985). EPA's methods aim to protect 95% of the aquatic genera with the use of 5th percentile of the genus sensitivity distribution (GSD) divided by 2. Recognizing that some species may be more sensitive, EPA recommends that if the acute toxics criteria calculated using the methods above (i.e., one half of the 5th percentile of the GSD) is greater than the mean acute value for an individual species, then the Species Mean Acute Value (SMAV) should be used (Stephen et al., 1985). Ecology did not follow this approach and instead arbitrarily use the 1st percentile of the GSD for pollutants that have been determined in previous biological opinions as being more harmful to Washington's threatened and endangered species. While protecting these species is important, Ecology did not provide sufficient rationale or empirical evidence that the 1st percentile value is more scientifically justified or protective than the 5th percentile value particularly when considering other factors affecting species survival (habitat loss, migration barriers, competition from non-native species, etc.). Additionally, Ecology has not provided sufficient justification where their methods differ from EPA's when the datasets are the same. Ecology expressed in an email communication on 17 April 2024 that they have changed the intercepts of some hardness-based metals equations to "accurately predict the criteria from hardness" based on new studies (Finch, 2024). However, in the case of the cadmium criteria, the studies cited by Ecology are the same studies used by EPA. The datasets were the same, however, Ecology changed the intercepts of the equations to result in more conservative criteria. Ecology needs to provide a more rigorous justification for altering these equations, including goodness of fit statistics for both EPA's model and Ecology's model.
4. The derivation of criteria relies on toxicological studies of sufficient quality be available for development of a representative average value for a species. As discussed in the

previous comment, the standard EPA methodology develops criteria based on toxicological data that represent sensitive species. However, Ecology has excluded mortality of 50% of the population (LC50) results that would likely increase the resulting criteria. There may be some justifiable reasons for excluding data (e.g., selecting results from flow-through studies over static exposure studies); however, exclusion of data based on the result alone is insufficient and unnecessarily biases the calculated criteria. Further, developing criteria when there are an insufficient number of studies is inappropriate (i.e., use of a single study to represent a genus).

5. For the metals that use the multi-linear regression (MLR) model to derive criteria (aluminum and copper), the default criteria have been calculated using the 5th percentile of the data from the western and the eastern part of the state. However, for western Washington, more than 5% of the data are from national parks (Olympic and Mount Rainier) with pristine water quality with naturally low hardness and organic carbon, making the criteria exceptionally strict and not representative of many water bodies of the state.
6. The MLR criteria are dependent on the ambient water quality (e.g. pH, hardness, dissolved organic carbon). The technical support document mentions that permittees will be able to measure the ambient data themselves to calculate the site-specific criteria. However, it is not clear if the ambient data must be collected in the receiving water or at the NPDES discharge point. In addition, the cost due to additional sample collections have not been included in the regulatory analysis.
7. The cost/benefit analysis did not include many additional costs that will be incurred by the permit holders to comply with new or revised permit conditions based on the proposed rule. For example, Ecology's cost/benefit analysis assumes that a level 1 ISGP corrective action would require 1-2 hours of labor by an environmental engineering technician, estimated at $24.51 per hour. A quick review of current job openings on most common employment portals suggests an hourly wage of at least $30/hour for an entry level environmental engineer position. However, the cost to an industry is typically two to three times the hourly pay rate. In addition, Ecology also states they assume this work would be done by existing staff. However, many ISGP holders do not have environmental engineers on staff and would need to hire a consultant. Typically, the cost of hiring an environmental engineering consultant is about $150/hour.

   Additionally, in the analysis of the additional costs that ISGP permit holders may incur in the future due to lower benchmarks and the subsequent triggering of Level 3 Corrective Actions (Appendix C of the Preliminary Regulatory Analysis), Ecology did not consider the many steps that permittees must take to implement advanced treatment systems. These steps typically include pollutant source investigations, preliminary alternatives analyses, pre-design activities (e.g., site surveys, pipe condition assessments, geotechnical investigations), engineering design and production of plans and specifications, permitting, and construction. Ecology also assumed that commonly used technologies (passive and active media filters) will be sufficient to meet the more stringent limits and benchmarks for copper and zinc. Based on effluent data from the International Stormwater BMP Database, there are no passive BMPs that can achieve the proposed water quality criteria for copper (Clary et al., 2020). The omission of critical steps in completing a Level 3 Corrective Action and the assumed technology needed to comply with more stringent limits and benchmarks indicates the financial impacts estimated by Ecology are likely orders of magnitude lower than they will be for ISGP permit holders. In fact, Ecology acknowledged that the cost estimates could be improved during the workshop and requested the public to submit cost data. However, the process for submitting cost information and the schedule impacts for Ecology to review and incorporate these data into a revised regulatory analysis is unclear. Ecology should adopt a formal process for soliciting this type of critical information from the public as part of its rulemaking process.

PARAMETER SPECIFIC REVIEWS

Geosyntec focused on some specific parameters that will be affected by this rulemaking as described below.

Aluminum

Currently Washington does not have aluminum criteria. Aluminum is the second most abundant element in the Earth's crust and therefore is ubiquitous in the environment. In Washington (and along the west coast in general), the aluminum content of soils is among the highest in the nation (Figure 1). This has a direct impact on the concentrations of aluminum in surface waters and stormwater runoff, as well as in stormwater treated by proprietary media filters and natural treatment systems, most of which contain sand and soils. Ecology should consider the naturally higher aluminum content in soils and the potential for aquatic species to be better adapted to these conditions when applying EPA's recommended MLR model for computing aquatic toxicity.

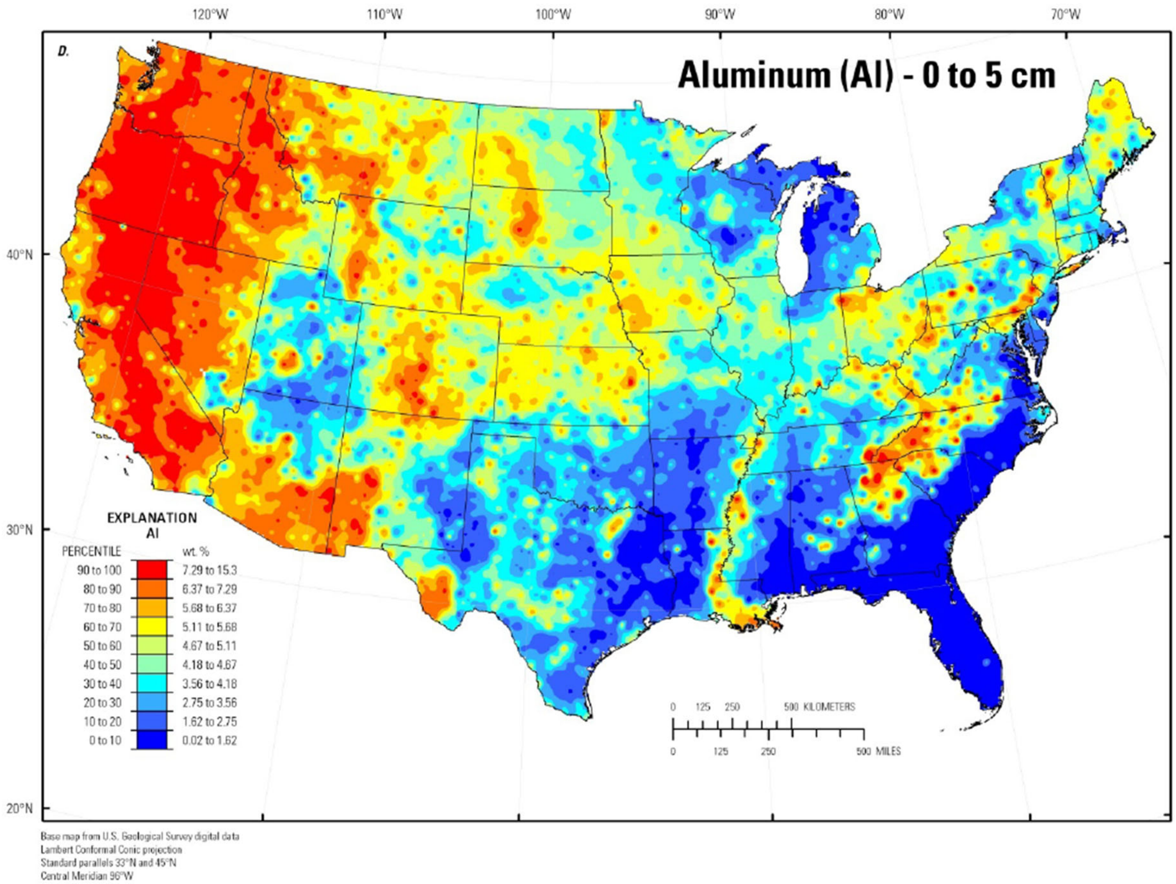


Figure 1. Distribution of aluminum (Al) in surface soils collected from a depth of 0 to 5 centimeters, conterminous United States (USGS, 2014).

The International Stormwater BMP Database contains influent and effluent stormwater data for many stormwater BMP types that can be analyzed using an online statistical analysis tool (https://bmpdatabase.org/bmp-statistical-analysis-tool). For BMP studies located in Washington, Oregon, and California (EPA Rain Zones 6 & 7) the median influent aluminum concentration is 2640 ug/L. These studies include a variety of land uses and therefore can be considered indicative of typical magnitude of aluminum concentrations that could be found in stormwater in Washington. If aluminum becomes regulated in stormwater permits and benchmarks are set close to or near the proposed default water quality criteria, there is a high likelihood that exceedances will be commonplace. Therefore, aluminum may become a challenging pollutant for industrial stormwater permittees with serious implications for treatability and compliance. Ecology should consider the background concentrations of aluminum in water bodies in Washington to ensure there is empirical data to support the theoretically calculated default and site-specific aquatic life criteria (i.e., species inhabiting water bodies with naturally high aluminum concentrations are absent or exhibiting toxic effects). Ecology should also consider the costs of NPDES compliance.

Ecology has followed EPA recommendations and proposed a multiple linear regression (MLR)-based criterion (Table 1). This criterion is calculated based on concurrently collected hardness, dissolved organic carbon (DOC), and pH. In absence of the concurrent data, a default criterion is applicable for western and eastern Washington. To calculate the default criterion, Ecology used the ambient monitoring data for the entire state, classified the data into East (2210 data points) and West Washington (1127 data points) (e.g. Figure 2), applied the EPA MLR calculator for each data point (about 3337), and used the fifth percentile for East and West Washington to calculate the respective default criteria (e.g. Figure 3).

Table 1. Comparison of Washington's current freshwater (FW) and saltwater (SW) aluminum acute and chronic criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from Technical Support Document (TSD) Table 12 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	-	-	-	-
EPA	Multiple Linear Regression Model	Multiple Linear Regression Model	-	-
Proposed	West: 510[1] East: 820[1] (Multiple Linear Regression Model; 1-hour)	West: 270[1] East: 480[1] (Multiple Linear Regression Model; 4-day)	-	-

[1] Represents the 5th percentile default criteria. The boundary between east and west designations is found in WAC 222-16-010.

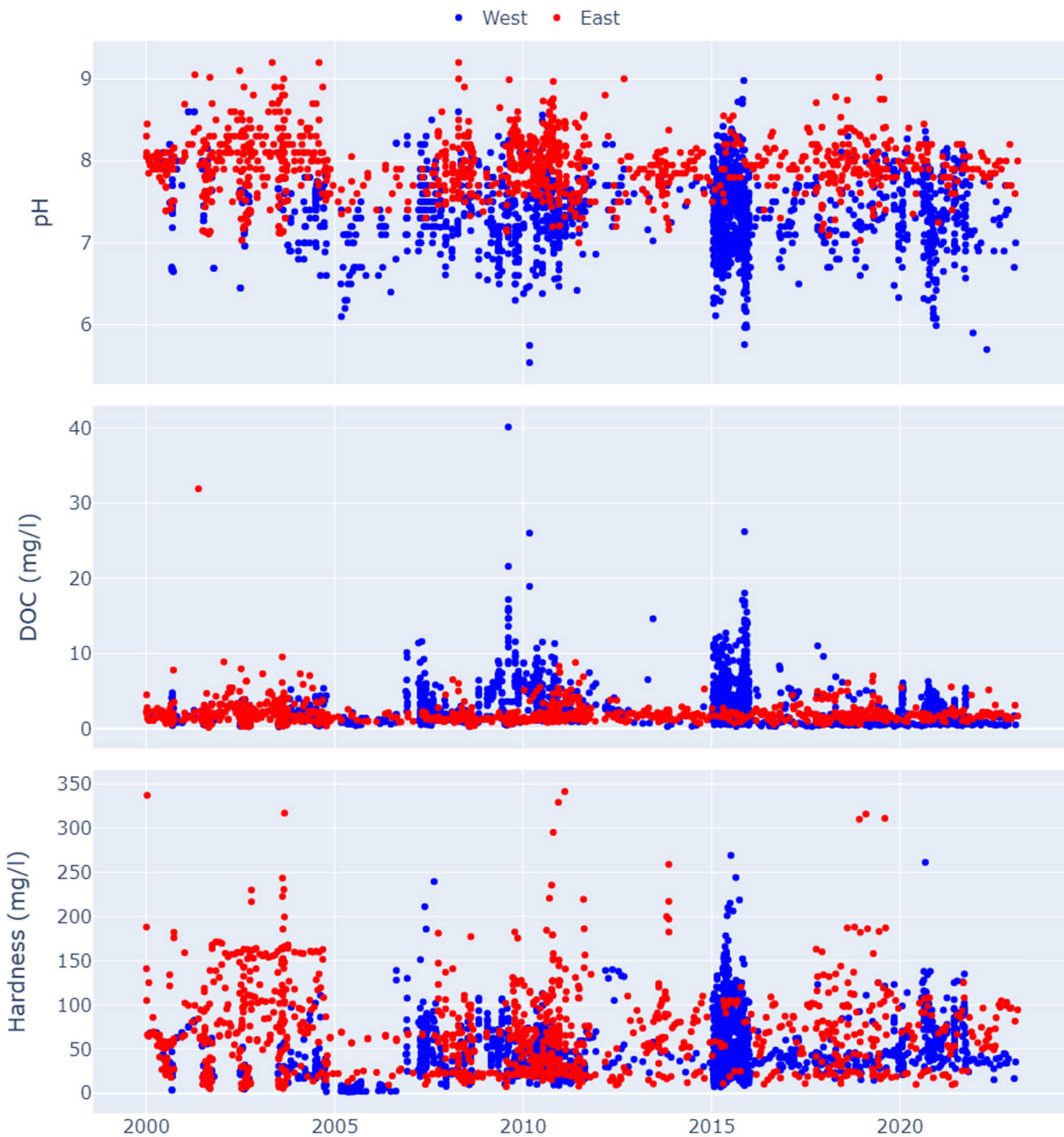
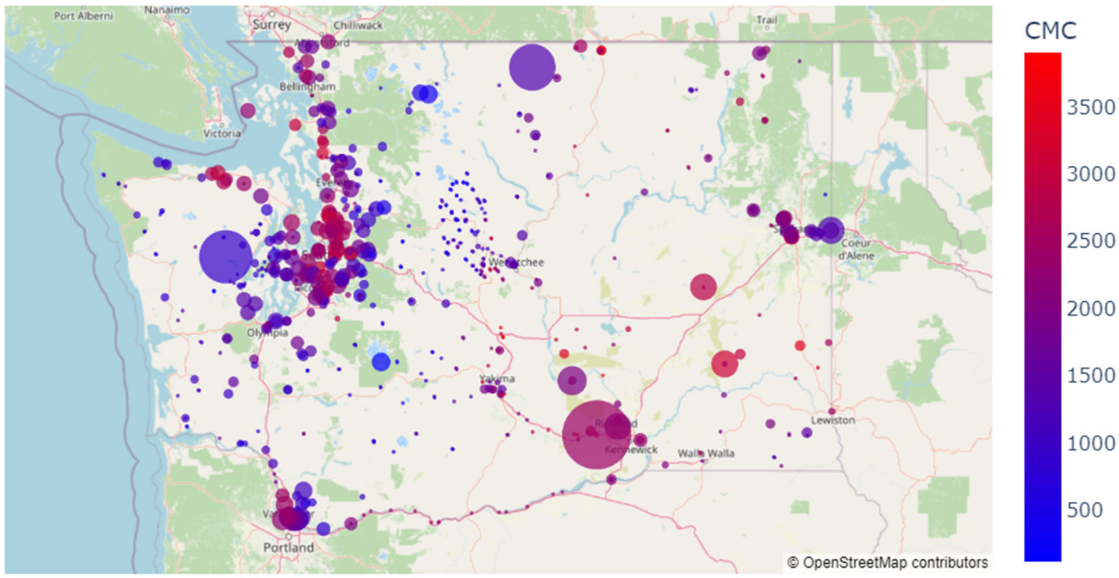


Figure 2. pH, Dissolved Organic Carbon, and Hardness Values used for Calculating Statewide Aluminum and Copper Criteria.



Size of the circles represents the number of samples.

Figure 3. Fresh Water Criterion Maximum Concentration for (CMC) Aluminum Using Multiple Linear Regression Model.

A review of the default criterion calculations using this method illustrates potential issues with spatial and temporal distribution of samples used for the analysis. The following examples describe the issues with the distribution.

1. Almost 50% of the samples for western Washington were collected in 2015, whereas the samples for eastern Washington were more uniformly collected for the twenty-year period for which the data was used.
2. The samples for eastern and western Washington are more concentrated at specific locations. For example, for eastern Washington, 20% of the samples (>200) were collected at one location on the Yakima River, and for western Washington, more than 5% (149) samples were collected at the North Fork Skokomish River in the Olympic National Forest and Sunbeam Creek in Mount Rainier National Park.

The uneven distribution (spatially and temporally) of samples potentially biases the default criteria calculation. A criterion for western Washington that is based on the 5th percentile, where more than five percent of the data were collected in pristine national forests, makes the western Washington default criterion biased and exceptionally low for other water bodies.

An initial review suggests that the measurement of concurrent pH, hardness, and DOC data in the receiving water will result in a site-specific criterion that may be greater than the default criteria for most locations. Permittees will have the opportunity to collect their own site-specific data to calculate site-specific criteria. It is however not clear if the site-specific concurrent data means the receiving water during ambient conditions, near the discharge location when discharge is occurring, or from the discharge. The collection of additional concurrent data will also increase the overall cost to permittee that Ecology has not accounted for in its economic impact analysis.

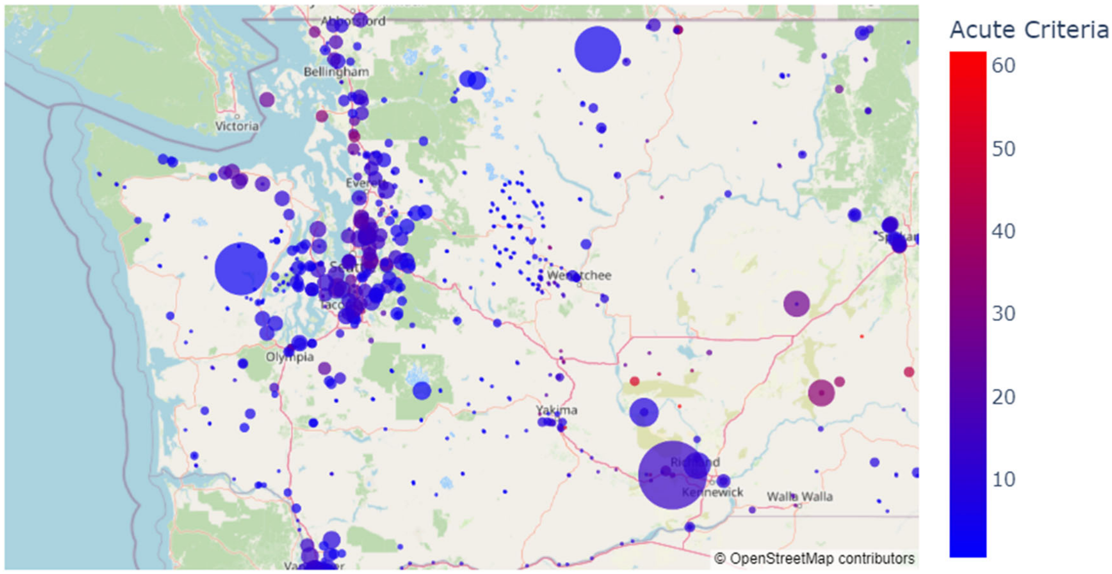
Copper

Copper is currently regulated in Washington based on a hardness-based calculation for freshwater (Table 2). Ecology is proposing to move from hardness-based criteria to MLR model, similar to aluminum, which uses pH, hardness and DOC as input parameters (Figure 4). However, EPA recommends using a Biotic Ligand Model (BLM) that depends on at least twelve water quality parameters. Ecology has not demonstrated that the MLR model is as protective as the BLM model for the state of Washington. The model proposed by Ecology is based on Brix et al. (2021). However, it appears that the published study had misprint and the correction will be issued later this year (personal communication, April 16, 2024). Some parameters of the formula (intercepts for the MLR equation) are missing, and the technical support document authors had to request information about these parameters separately. We believe that until the correction is published, and peer reviewed, it should not be used for developing the copper criterion.

Table 2. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic copper criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 27 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	Hardness-based (1-hour)	Hardness-based (4-day)	4.8 (1-hour)	3.1 (4-day)
EPA	Biotic Ligand Model (1-hour)	Biotic Ligand Model (4-day)	4.8 (1-hour)	3.1 (4-day)
Proposed	West: 2.0[1] East: 2.5[1] (Multiple Linear Regression Model; 1-hour)	West: 1.6[1] East: 1.8[1] (Multiple Linear Regression Model; 4-day)	No change	No change

[1] Represent 5th percentile default criteria values. The boundary between east and west designations is defined in WAC 222-16-010.



Size of the circles represents the number of samples.

Figure 4. Fresh Water Acute Criteria for Copper Using Multiple Linear Regression Model.

Ecology used the same dataset and method (but different equations) as aluminum to calculate the default criteria for the eastern and western Washington. The issues related to the spatial and temporal distribution of the input data for aluminum are true for copper as well (i.e., western Washington biased by the high number of samples collected in the Olympic National Forest and Mount Rainier National Park where the hardness and DOC concentrations are naturally low).

The proposed copper criteria are lower than the current hardness-based criteria, under average hardness, pH, and DOC conditions. As described in the Preliminary Regulatory Assessment document, the current baseline acute criterion for copper is 12 µg/L based on a mean statewide hardness value (70.2 mg/L). The ISGP benchmark value for total copper is 14 µg/L for western Washington, and 32 µg/L for eastern Washington. Due to the much lower proposed copper criteria (reduced by approximately a factor of 6 for western Washington and a factor of 10 for eastern Washington), it is anticipated that the ISGP copper benchmarks will be commensurately lowered when the ALTC are implemented in the ISGP. These lower benchmarks will be extremely challenging to consistently achieve using conventional stormwater treatment measures, such as bioretention, media filtration, and detention basins. The best performing stormwater best management practices (BMPs) included in the International Stormwater BMP Database (www.bmpdatabase.org) have been shown to achieve median effluent concentrations of 3 to 5 µg/L (Clary et al., 2020). Since these are median concentrations, about half of the time these BMPs will likely have effluent concentrations higher than this range. This indicates that more advanced or active treatment may be required at many industrial facilities. Ecology should revise their economic impact assumptions to reflect the much higher treatment costs associated with complying with the potentially much lower benchmarks for copper.

Similar to aluminum, permittees will have the opportunity to collect site-specific data to calculate site-specific criteria. Additional clarification is needed, if the concurrent data must be collected at the receiving waterbody or at the discharge source.

Cadmium

Current cadmium criteria in Washington are above EPA's recommendations (Table 3). EPA's recommendations, updated in 2016, have not undergone Endangered Species Act (ESA) consultation in any Pacific Northwest states. However, a jeopardy call was issued for EPA's 2001 freshwater acute criterion, and a likely to adversely affect (LAA) determination was reported for the chronic criterion, in the Oregon Biological Opinions (BiOps) in 2012. Because of these ESA concerns, Ecology is proposing to make the freshwater cadmium criteria even more stringent than EPA's recommendations. Unlike copper, cadmium tends to be lower in stormwater runoff and conventional passive treatment such as bioretention can typically achieve effluent concentrations lower than the proposed criteria.

The cadmium freshwater criterion maximum concentration (CMC) and the freshwater criterion continuous concentration (CCC) equations slopes match those from previously presented EPA equations (EPA, 2016). However, the intercepts of Ecology's equations do not match EPA's equations, but Ecology notes that they used the same toxicity studies identified in EPA's guidance (2016). The methods and results for derivation of the CMC and CCC equations should be presented in the technical support document and the information presented (e.g., calculated slope, statistical significance, etc.) should be similar to Table 6 of EPA guidance (2016) with the selected intercept highlighted.

Table 3. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic cadmium criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 19 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	3.7[1,2] (1-hour)	1.0[1,2] (4-day)	42[2] (1-hour)	9.3[2] (4-day)
EPA	1.8[1,2] (1-hour)	0.72[1,2 (vacated)] (4-day)	33[2] (1-hour)	7.9[2] (4-day)
Proposed	1.3[1,2] (1-hour)	0.41[1,2] (4-day)	33[2] (1-hour)	7.9[2] (4-day)

[1]Hardness based criteria (numeric value shown based on 100 mg/L)
[2] Presented as the dissolved fraction

According to the technical support document - *"The freshwater acute cadmium criterion is based upon the commercially important rainbow trout (Oncorhynchus mykiss). EPA found that the rainbow trout SMAV was less than the 5th percentile of the GMAV toxicity distribution for the* *freshwater acute data set, necessitating the use of rainbow trout SMAV to derive criteria. Rather than using the geometric mean of acute toxicity values for rainbow trout to derive the acute criterion, we used the 20th percentile of available acute toxicity data for rainbow trout to add increased protection for endangered species. We sought to align our proposed freshwater acute cadmium criterion with Idaho's and Swinomish approved criterion of 1.3 µg/L to ensure protection of endangered species."*

It appears as if Ecology selected the number to match with the Idaho and Swinomish approved criterion and then back calculated the percentile/calculation to justify the number. For calculating the freshwater chronic cadmium criterion, Ecology used the 1st percentile of the toxicity data distribution from the EPA toxicity dataset but provided no scientific justification for this selection (vs. the 5th percentile used in the EPA guidance).

Nickel

Similar to cadmium, Washington's freshwater nickel criteria are currently higher than EPA's recommendations (Table 4). LAA determinations were made for EPA's recommended criteria when they were proposed in Idaho and Oregon. Therefore, Ecology is proposing new criteria much lower than EPA's recommendations. Based on data contained in the International Stormwater BMP Database (Clary et al., 2020), bioretention and media filters appear capable of achieving effluent concentrations below the proposed criteria. However, it is important to note that the influent concentrations for the studies in the database are also lower than the criteria.

The derivation of the final acute value (FAV), the basis of the acute criteria and by extension the chronic criteria, is based on four GMAVs. The four GMAVs are based on *Leptoxis ampla*, *Ceriodaphnia dubia, Neocloeon triangulifer*, and *Somatogyrus sp*. One study for *Ceriodaphnia dubia* was excluded, but Ecology believes the same study was of sufficient quality to include to represent *Daphnia pulex.* The juxtaposition of exclusion for one species over another is justified based on the resulting LC50 value. However, this is insufficient justification to exclude a calculated LC50 value from a toxicity study if the study is deemed to be appropriate for inclusion.

Table 4. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic nickel criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 33 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	1415[1,2] (1-hour)	157[1,2] (4-day)	74[2] (1-hour)	8.2[2] (4-day)
EPA	470[1] (1-hour)	52[1] (4-day)	74[2] (1-hour)	8.2[2] (4-day)
Proposed	34[1,2] (1-hour)	5.6[1,2] (4-day)	No change	No change

[1] Hardness based criteria (numeric value shown based on 100 mg/L)

[2] Presented as the dissolved fraction

Silver

Currently, only acute criterion are established for freshwater and saltwater silver in Washington (Table 5). The current freshwater acute criterion is similar to, but slightly above, EPA's recommendation. Due to LAA determinations in Oregon, Ecology is proposing a new freshwater acute criterion that is much lower than EPA's recommendation. Additionally, Ecology has developed proposed freshwater and saltwater chronic criteria, while EPA does not have established recommendations. Silver is rarely detected in urban stormwater, so these lower criteria are not expected to impact many permittees if silver becomes a benchmark. For studies in the International Stormwater BMP Database (www.bmpdatabase.org) where silver has been detected in the influent, effluent concentrations are generally below the proposed acute criteria.

The derivation of the FAV, the basis of the acute criteria and by extension the chronic criteria, is based on four GMAVs. The four GMAVs are based on *Ceriodaphnia dubia*, *Daphnia magna*, *Danio rerio*, and *Hyalella Azteca*. Four studies for *Ceriodaphnia dubia* were excluded, but Ecology believes the same study was of sufficient quality to include to represent *Pimephales promelas*. The juxtaposition of exclusion for one species over another is justified based on the resulting LC50 value. However, this is insufficient justification to exclude a calculated LC50 value from a toxicity study if the study is deemed to be appropriate for inclusion.

Table 5. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic silver criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 39 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	3.4[1,2] (1-hour)	-	1.9[2] (instantaneous)	-
EPA	3.2[1,2] (instantaneous)	-	1.9[2] (instantaneous)	-
Proposed	0.52[1,2] (1-hour)	0.21[1,2] (4-day)	2.2 (1-hour)	0.87 (4-day)

[1] Hardness based criteria (numeric value shown based on 100 mg/L)

[2] Presented as the dissolved fraction

Zinc

Washington's current freshwater acute and chronic criteria for zinc are lower than EPA's current recommendations (Table 6). LAA determinations were made for EPA's recommendations in Oregon, and jeopardy calls were made for these recommendations in Idaho. Ecology is proposing much lower freshwater criteria based on these ESA concerns. Zinc is also included in the ISGP, with a benchmark value of 117 µg/L. Based on the notable decrease in proposed criteria, it is anticipated that the ISGP zinc benchmark may be lowered when the ALTC are implemented in the ISGP. While the International Stormwater BMP Database data indicates common BMPs such as bioretention and media filters can achieve median effluent concentrations below the proposed criteria (Clary et al., 2020), it is suspected that many ISGP permit holders will experience challenges meeting a benchmark that is 50% lower than the current benchmark. Ecology's economic analysis reflects this with its estimate of 259 existing permittees predicted to have Level 1 exceedance and 149 existing permittees predicted to have Level 3 exceedance. While the economic analysis does not attempt to predict the number of new facilities that may be required to apply for permit coverage in the future, there likely will be more permittees than there currently are today due to Ecology broadening the scope of industries covered under the permit, either by adding new sectors or by tightening criteria for determining which industries require permitting.

The derivation of the FAV, the basis of the acute criteria and by extension the chronic criteria, is based on four GMAVs. The four GMAVs are based on *Neocloeon triangulifer, Hyalella Azteca*, *Euchlanis dilatate*, and *Ceriodaphnia dubia*. However, the first three (i.e., most sensitive species) are based on a single toxicological study. Development of a GMAV based on a single study is insufficient and the resulting FAV will have low confidence.

Table 6. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic zinc criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 47 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	114[1,2] (1-hour)	105[1,2] (4-day)	90[2] (1-hour)	81[2] (4-day)
EPA	120[1,2] (1-hour)	120[1,2] (4-day)	90[2]	81[2]
Proposed	57[1,2] (1-hour)	39[2] (4-day)	No change	No change

[1] Hardness based criteria (numeric value shown based on 100 mg/L)

[2] Presented as the dissolved fraction

6PPD-quinone

6PPD-quinone is an emerging contaminant that is not currently regulated in Washington. There is no EPA-approved method of testing for 6PPD-quinone, no EPA recommendation for 6PPD-quinone criteria, and existing data regarding 6PPD-quinone in Washington is limited. However, juvenile coho salmon have been shown to be the most susceptible species to exposure to 6PPD-quinone. Therefore, Ecology is proposing a freshwater acute 6PPD-quinone criterion (Table 7).

Table 7. Comparison of Washington's current freshwater (FW) and saltwater (SW) acute and chronic 6PPD-quinone criteria (duration in parentheses) with EPA recommendations and the newly proposed criteria. Recreated from TSD Table 54 (Ecology, 2024).

	FW Acute (µg/L)	FW Chronic (µg/L)	SW Acute (µg/L)	SW Chronic(µg/L)
Washington	-	-	-	-
EPA	-	-	-	-
Proposed	0.008 (1-hour)	-	-	-

The proposed criterion is based on development of a species sensitivity distribution (SSD) and selection of the effective concentration at 5%. The species included (with the most sensitive listed first) in the SSD were: coho salmon (Tian et al. 2022; Lo et al. 2023; Greer et al. 2023), white spotted char (Hiki et al. 2022), brook trout (Brinkman et al. 2022), rainbow trout (Brinkman et al. 2022; Di et al. 2022), and zebra fish (Varshney et al. 2022). The resulting fifth percentile of the SSD produced the value of 8 ng/L which coincidentally aligns with the LC5 value in the Lo et al. 2023 (~7 to 8 ng/L) (the study with the lowest estimated LC50 value). Ecology excluded relevant data from the reviewed toxicity studies. For example, Greer et al. 2023 includes an LC50 value for chinook salmon (81,100 ng/L) and Lo et al. 2023 did not observe an LC50 for sockeye salmon in their investigation. If the SSD methodology is used, it is appropriate to include LC50 values from other salmonids. At a minimum, the sensitivity of the proposed acute freshwater criteria should be clearly investigated, and appropriate rationale should be provided as to why a datapoint was excluded. The lack of data and approved testing methods indicate that it is premature to establish a 6PPD-quinone criterion in Washington.

CONCLUSIONS

Geosyntec reviewed the proposed aquatic life toxics criteria and the additional supporting documents. Ecology has been transparent and forthcoming in the process. They provided the requested data and any additional information that was used for developing the criteria, upon request. However, we noted that there are some shortcomings in the process and reliance on data that may be biasing the statewide defaults that together may result in unrealistic criteria for some toxics and cause significant burden to the business community. We believe that Ecology should address these issues before moving ahead with the rulemaking process.

Very truly yours,

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ANALYSIS REPORT

Water Quality Risk Evaluation for Proposed Benchmarks/Action Levels in the Industrial Stormwater General Permit

Prepared for

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Introduction

The Washington State Department of Ecology (Ecology) is currently working with an external stakeholder workgroup to facilitate public participation during the reissuance of the Industrial Stormwater General Permit (ISWGP). In connection with this effort, Ecology and the workgroup are evaluating a broad range of related issues related to the ISWGP, including the adequacy of permit targets (i.e., benchmarks and action levels) for industrial stormwater effluent.

To support this evaluation, Ecology requested that Herrera Environmental Consultants (Herrera) perform analyses to determine the risk of exceeding acute water quality standards given the proposed benchmarks and action levels. Because this analysis must take into account the broad range of facility types and receiving waters that would be covered under the ISWGP, compliance with water quality standards cannot be evaluated based solely on site-specific information. Therefore, this analysis utilized simple dilution models to evaluate the potential for exceeding water quality standards given the following model inputs: representative receiving water data for western and eastern Washington, representative dilution factors, and the proposed permit targets.

To provide some basis for assessing uncertainty in these analyses, a Monte Carlo simulation was employed in running the dilution models to determine the probability of exceeding water quality standards based on the receiving water conditions having the highest potential for occurrence. This methodology was adapted from similar analyses that were performed by Herrera in association with the “6415 report” (EnviroVision and Herrera 2006) that examined an alternative suite of proposed benchmarks and action levels. The analyses presented herein focus solely on copper, lead, and zinc because these are the primary parameters of concern with regard to the ISWGP and there are relevant water quality criteria for each metal.

A detailed description of the methods used for these analyses is provided below, followed by the results of this assessment for western and eastern Wasington.

Data Analysis Methods

This analysis utilized a simple spreadsheet dilution model with the following equation to evaluate the risk of exceeding acute water quality standards given the proposed benchmarks and action levels for copper, lead, and zinc, and different levels of dilution within the receiving water:

$$C_r = (1/F_d \times C_f) + ([1 - 1/F_d] \times C_b)$$

where: C_r = receiving water concentration at facility point of discharge
F_d = dilution factor
C_f = effluent concentration
C_b = receiving water background concentration.

Separate analyses were performed using representative receiving water background concentrations (C_b) for western and eastern Washington and dilution factors (F_d) of 1, 5, and 10. The predicted receiving water concentration from the dilution model at the facility point of discharge (C_r) was subsequently compared to the applicable water quality standard to determine if the proposed benchmark or action level is protective of water quality at a given dilution factor.

Monte Carlo simulation was incorporated into the spreadsheet model in order to quantify uncertainty in the analyses that may arise from the following variables:

- Receiving water background concentrations
- Translator values for estimating dissolved metals concentrations from total metals concentrations
- Hardness dependent water quality standards for metals.

In order to perform the Monte Carlo simulation, the Crystal Ball® software package was used to generate theoretical probability distributions for these variables. These probability distributions were then used to derive input data for each variable during 5,000 iterations of the dilution model. The receiving water dilution factor (F_d) and effluent concentration (C_f) were each held as constants during these iterations. The risk of exceeding the state water quality standard for a given combination of dilution factors and effluent concentrations was subsequently determined based on the number (percentage) of these iterations where the predicted receiving water concentration at the facility point of discharge (C_r) exceeded the predicted hardness-dependent water quality standard. These model runs were performed across a range of potential effluent concentrations in order to generate "risk curves" that show the probability of exceeding water quality standards as a function of the effluent concentration. A separate series of curves were developed for dilution factors of 1, 5, and 10, respectively.

The following subsections describe in more detail the procedures that were used to generate theoretical probability distributions for the variables identified above.

Receiving Water Background Concentrations

Theoretical probability distributions for background receiving water concentrations were derived based on data obtained from Ecology's Environmental Information Management (EIM) database (Ecology 2008). Separate queries of the EIM database were performed to obtain data for dissolved copper, dissolved lead, and dissolved zinc from stream and river systems in eastern and western Washington. The specific search criteria that were used in connection with these queries are documented in Appendix A.

Because these data were meant to represent generalized water quality conditions in each of the two regions, data obtained from the initial query were screened to include only sample concentrations obtained from ambient monitoring programs and to exclude concentrations from focused studies of known water quality problems (e.g., mine remediations, Total Maximum Daily Loads, contaminated site investigations). Data were classified into one of these two categories based on an examination of descriptive information that is provided in the "Study_Name" and "Study_Type" fields within the EIM database. Where information obtained from these fields was too ambiguous to make a definitive classification either way, attempts were made to obtain more detailed information on specific studies through on-line searches. Appendix B documents the specific studies from the original EIM database query that were identified as ambient monitoring programs through this process. The data from these studies were subsequently utilized for analyses related to this effort.

Summary statistics derived from these data are provided in Table 1 for eastern and western Washington. Due to the relatively large number of non-detected values (i.e., censored values) in the datasets for each of the three target metals, these summary statistics were calculated using regression on order statistics (ROS) where applicable. ROS develops probability plotting positions for each data point (censored and uncensored) based on the ordering of the data (CALTRANS 2001; Helsel 1990; Shumway and Azari 2000). A least squares line is then fit by regressing the log transformed concentrations to the uncensored probability plotting positions. The censored data points are assigned concentrations for calculating summary statistics based on their probability plotting positions and the regression line equation. Summary statistics are then calculated based on the uncensored data points and the "filled-in" censored values.

The mean and standard deviation for dissolved copper, dissolved lead, and dissolved zinc in Table 1 were subsequently used as input for the Crystal Ball® software package to derive theoretical log-normal distributions for each metal. Graphical representations of these distributions are provided in Appendix C for each metal in eastern and western Washington. These distributions were then used to generate input data for receiving water background concentrations (C_b) in the dilution model described above, during the Monte Carlo simulations.

Translator Values

Federal guidelines require benchmarks and action levels identified in the ISWGP for copper, lead, and zinc to be expressed as "total recoverable metals". However, state water quality standards are based on the dissolved fractions of these metals. Therefore, in order to facilitate comparisons to these standards, a "translator value" must be used to estimate the dissolve fraction that would be present in the receiving water for effluent concentrations (C_f) that are expressed as total recoverable metals.

In this analysis, these conversions were made using translator values that were derived from guidance presented by Pelletier (1996). Because these translator values vary depending on the total suspended solids concentration in the receiving water, the EIM database was again queried to obtain representative data for this parameter from stream and river systems in eastern and western Washington. The specific search criteria that were used in connection with these queries are documented in Appendix A. As described in the previous subsection, the data obtained from the initial query were screened to include only sample concentrations obtained from ambient

Table 1. Summary statistics for data obtained from the Environmental Information Management database to characterize receiving water background concentrations of dissolved copper, dissolved lead, and dissolved zinc in eastern and western Washington.

	Dissolved Copper		Dissolved Lead		Dissolved Zinc	
	Western Washington	Eastern Washington	Western Washington	Eastern Washington	Western Washington	Eastern Washington
n	**833**	**353**	**681**	**346**	**828**	**353**
Percent detected	**71.7%**	**99.2%**	**36.6%**	**61.8%**	**62.2%**	**86.4%**
Mean (µg/L)	1.01	0.94	0.06	0.19	3.36	13.9
Standard Deviation (µg/L)	1.43	5.27	0.18	0.88	6.70	25.4
Coefficient of Variation	1.42	5.59	2.72	4.58	2.00	1.83
Lower 95% Confidence Limit about Mean (µg/L)	0.91	0.39	0.05	0.10	2.90	11.25
Upper 95% Confidence Limit about Mean (µg/L)	1.10	1.49	0.08	0.29	3.81	16.55
25th percentile (µg/L)	0.35	0.44	0.01	0.01	0.50	0.95
Median (µg/L)	0.65	0.65	0.02	0.03	1.28	3.02
75th percentile (µg/L)	1.19	0.96	0.06	0.11	3.27	9.63
Inter Quartile Range (µg/L)	0.84	0.53	0.05	0.10	2.77	8.69
Minimum Detected Value (µg/L)	**0.10**	**0.07**	**0.01**	**0.02**	**0.17**	**0.26**
Maximum Detected Value (µg/L)	**17.0**	**71.6**	**3.00**	**12.6**	**57.0**	**124**
Minimum Reporting Limit (µg/L)	**0.05**	**0.05**	**0.02**	**0.01**	**0.03**	**0.40**
Maximum Reporting Limit (µg/L)	**5.00**	**0.50**	**1.00**	**0.10**	**5.00**	**5.00**

Bold values are exact calculations. Unbolded values are estimated using regression on ordered statistics (ROS).
ROS statistics calculated using the CALTRANS (2001) data analysis tool (DAT).
µg/L: micrograms per liter

monitoring programs. Appendix B documents the specific studies that were identified through this process. The data from these studies were subsequently utilized for analyses related to this effort. Summary statistics derived from these data are provided in Table 2 for eastern and western Washington.

Table 2. Summary statistics for data obtained from the Environmental Information Management database to characterize receiving water total suspended solids concentrations in eastern and western Washington.

	Total Suspended Solids	
	Western Washington	**Eastern Washington**
n	29,631	31,811
Mean (mg/L)	34.4	49.1
Standard Deviation (mg/L)	295.1	383.2
Coefficient of Variation	8.6	7.8
Lower 95% Confidence Limit about Mean (mg/L)	31.0	44.9
Upper 95% Confidence Limit about Mean (mg/L)	37.7	53.3
25th percentile (mg/L)	2.0	3.0
Median (mg/L)	5.0	7.0
75th percentile (mg/L)	13.0	21.0
Inter Quartile Range (mg/l)	11.0	18.0

mg/L: milligrams per liter

The Crystal Ball® software package was then used to fit theoretical probability distributions to these data. Results from these analyses indicated the total suspended solids data from both eastern and western Washington were fit best by a gamma distribution. Graphical representations of these distributions are provided in Appendix C for eastern and western Washington. These distributions were then used to generate input data for estimating the dissolved fraction that would be present in the receiving water during Monte Carlo simulations given effluent concentrations (C_f) that are expressed as total recoverable metals. Probability plots for the actual translator values that were used in the calculations are provided in Appendix D.

Hardness Dependant Numeric Criteria for Metals

As described above, predicted receiving water concentrations at the facility point of discharge (C_r) were compared to applicable water quality standards to determine if a proposed benchmark or action level is protective. Because state water quality standards for zinc, copper, and lead vary with the hardness of the receiving water, the EIM database was again queried to obtain representative data for this parameter from rivers systems in eastern and western Washington. The specific search criteria that were used in connection with these queries are documented in Appendix A. As described in the previous two subsections, the data obtained from the initial query were screened to include only sample concentrations obtained from ambient monitoring programs. Appendix B documents the specific studies that were identified through this process. The data from these studies were subsequently extracted for analyses related to this effort. Summary statistics derived from these data are provided in Table 3 for eastern and western Washington.

Table 3. Summary statistics for data obtained from the Environmental Information Management database to characterize receiving water hardness concentrations in eastern and western Washington.

	Hardness	
	Western Washington	**Eastern Washington**
n	8,983	7,670
Mean (mg/L)	32.8	82.8
Standard Deviation (mg/L)	30.8	199.0
Coefficient of Variation	0.9	2.4
Lower 95% Confidence Limit about Mean (mg/L)	32.2	78.4
Upper 95% Confidence Limit about Mean (mg/L)	33.4	87.3
25th percentile (mg/L)	18.0	35.0
Median (mg/L)	25.6	68.0
75th percentile (mg/L)	38.0	100.0
Inter Quartile Range (mg/l)	20.0	65.0

mg/L: milligrams per liter

The Crystal Ball® software package was then used to fit theoretical probability distributions to these data. Results from these analyses indicated the hardness data from eastern Washington were fit best by a gamma distribution, whereas the data from western Washington were fit best by a log-normal distribution. Graphical representations of these distributions are provided in Appendix C for eastern and western Washington. These distributions were then used to estimate state water quality standards during Monte Carlo simulations for comparisons to predicted receiving water concentrations at the facility point of discharge (C_r).

Analysis Results

Results from this analysis are summarized in Figures 1 through 3 for copper, Figures 4 through 6 for lead, and Figures 7 through 9 for zinc. Each figure presents the risk curves described previously that show the probability of exceeding water quality standards as a function of effluent concentration given one of three dilution factors (i.e., 1, 5, or 10). Separate curves are presented in each figure with the results for eastern and western Washington.

The actual risk level that is deemed acceptable for exceeding water quality standards is a policy issue that must be resolved by Ecology with input from other stakeholders associated with the ISWGP. In connection with ongoing discussions between Ecology and the external stakeholder workgroup, proposed benchmarks and action levels are being considered based on a dilution factor of 5, and a 10 percent risk threshold for exceeding the applicable water quality standard for each metal. The approximate effluent concentrations for each metal that meet these criteria are summarized in Table 4 for eastern and western Washington. For reference, the 10 percent risk threshold for exceedence of the applicable water quality standard is also shown in Figures 1 through 9.

Table 4. Effluent concentrations for each metal corresponding to a 10 percent risk for exceeding the applicable water quality standard given a dilution factor of 5.

Parameter	Effluent Concentration (µg/L)	Probability of Exceeding Acute Water Quality Standard (%)		
		Dilution Factor = 1	Dilution Factor = 5	Dilution Factor = 10
Copper, total	Western WA: 14	52.61	9.86	5.73
	Eastern WA: 32	52.50	9.66	4.27
Lead, total	Western WA: 310	90.07	10.22	0.80
	Eastern WA: 640	74.27	10.38	2.49
Zinc, total	Western WA: 200	85.68	9.77	2.67
	Eastern WA: 255	55.56	10.17	5.36

µg/L: micrograms per liter

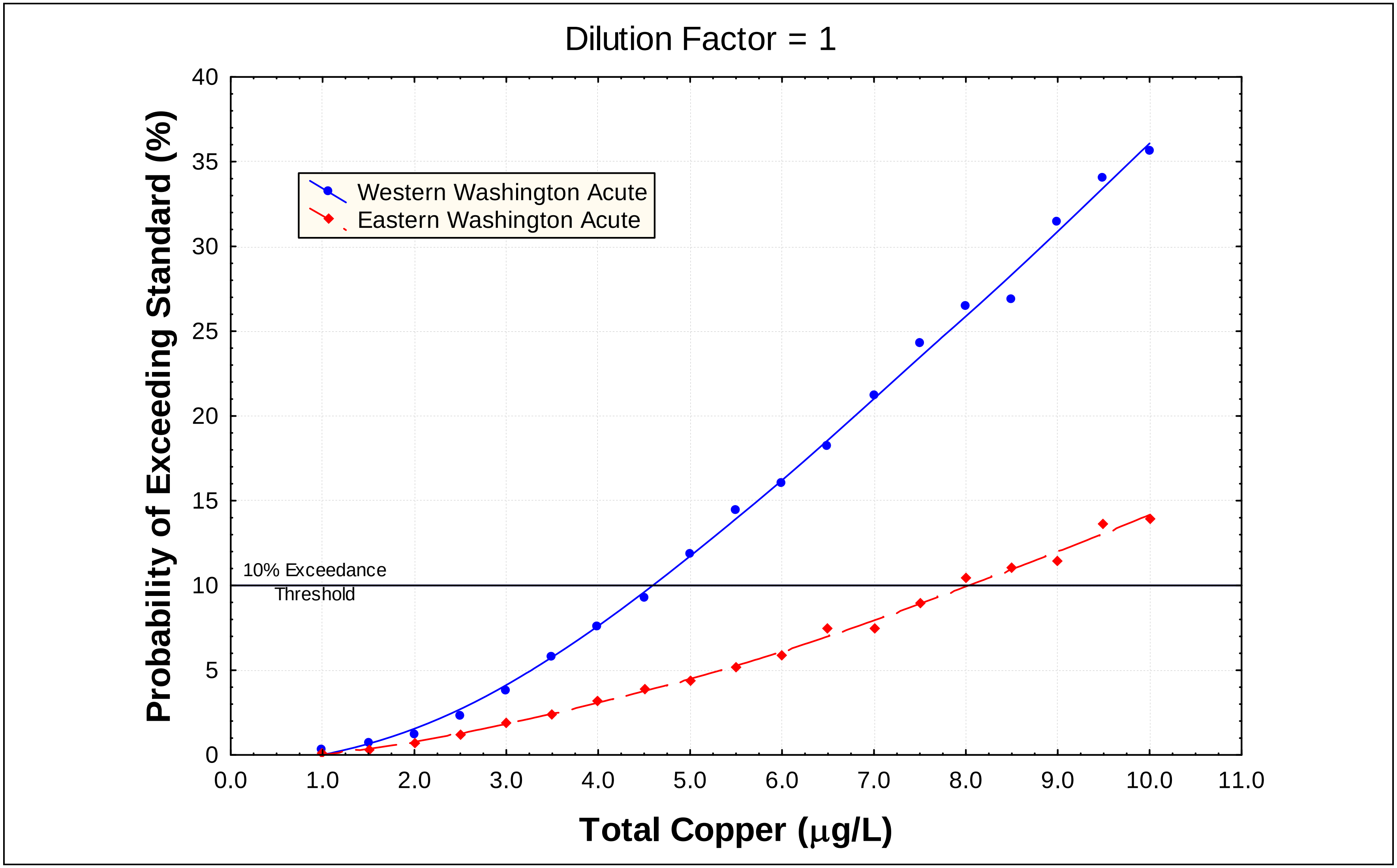

Figure 1. Risk curve for copper showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 1.

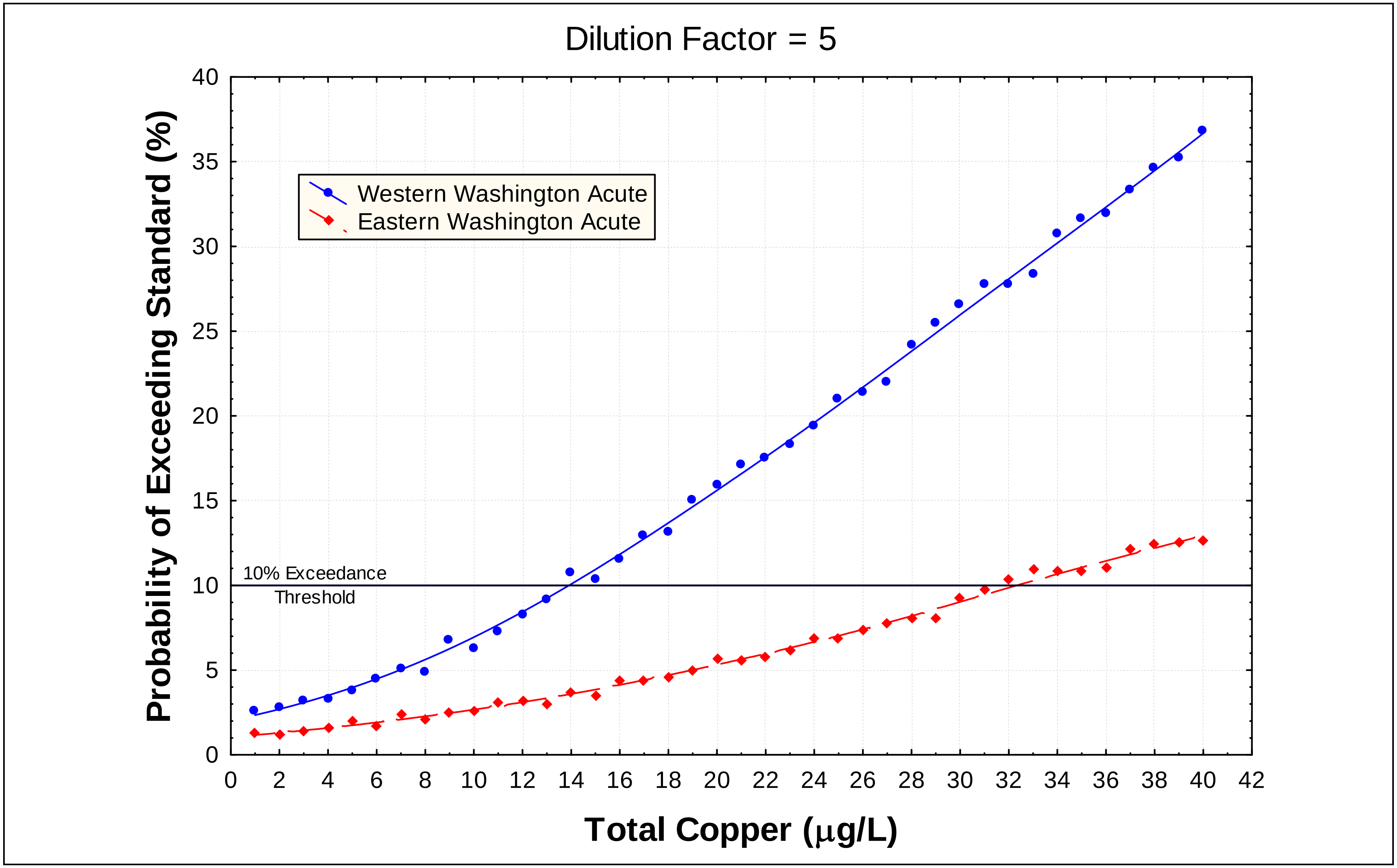

Figure 2. Risk curve for copper showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 5.

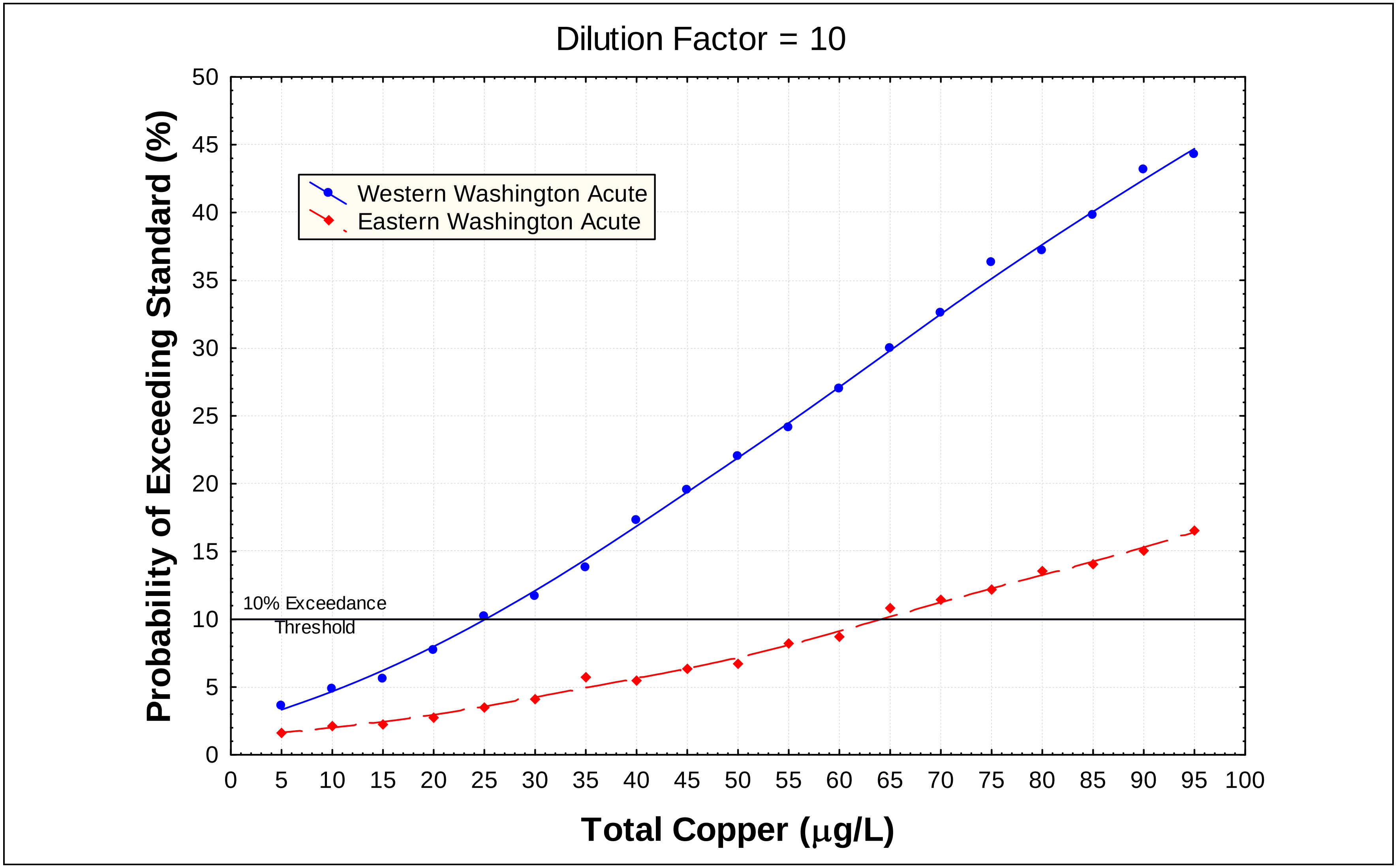

Figure 3. Risk curve for copper showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 10.

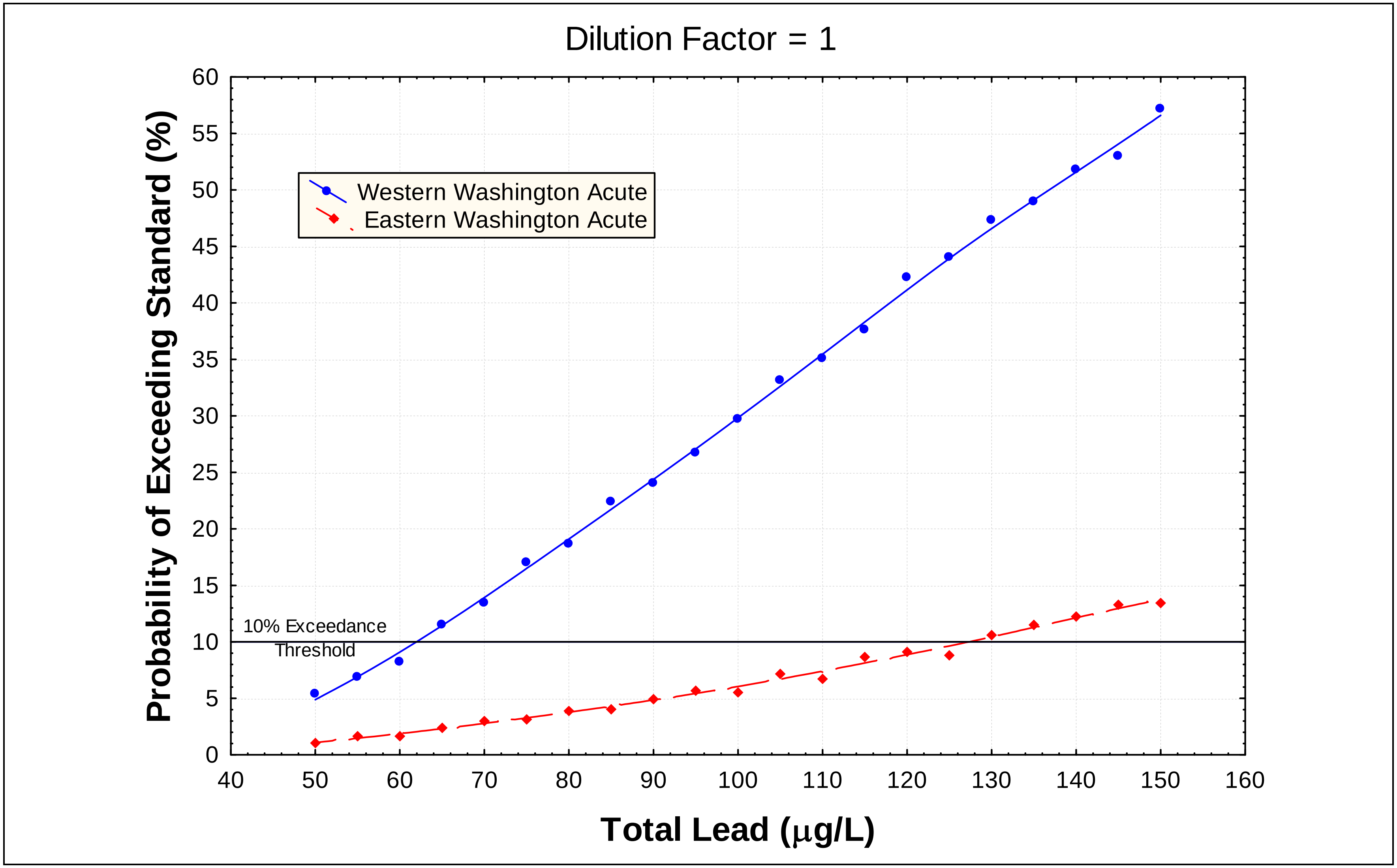

Figure 4. Risk curve for lead showing the probability of exceeding the applicable water quality standard as a function of effluent `concentration given a dilution factor of 1.

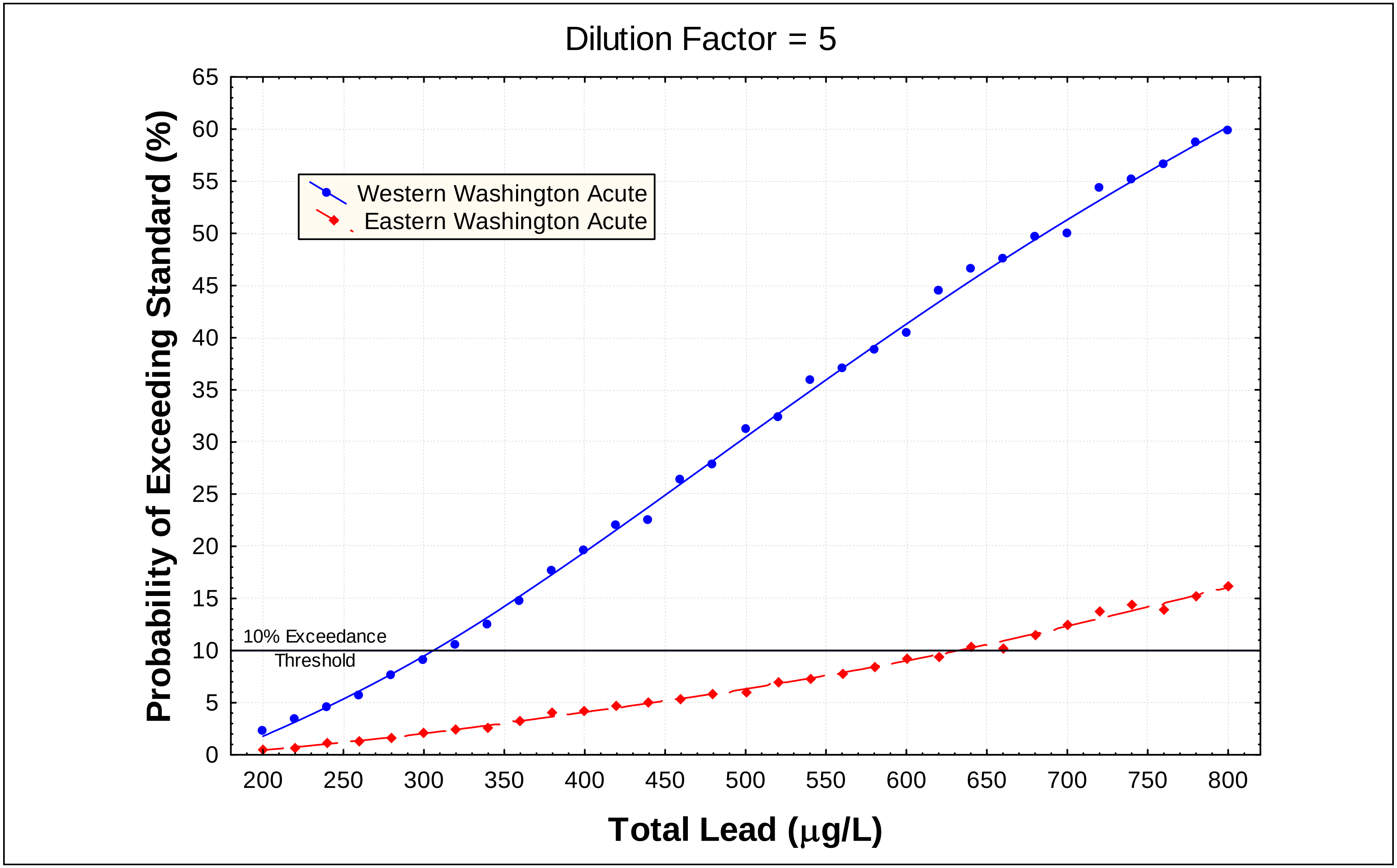

Figure 5. Risk curve for lead showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 5.

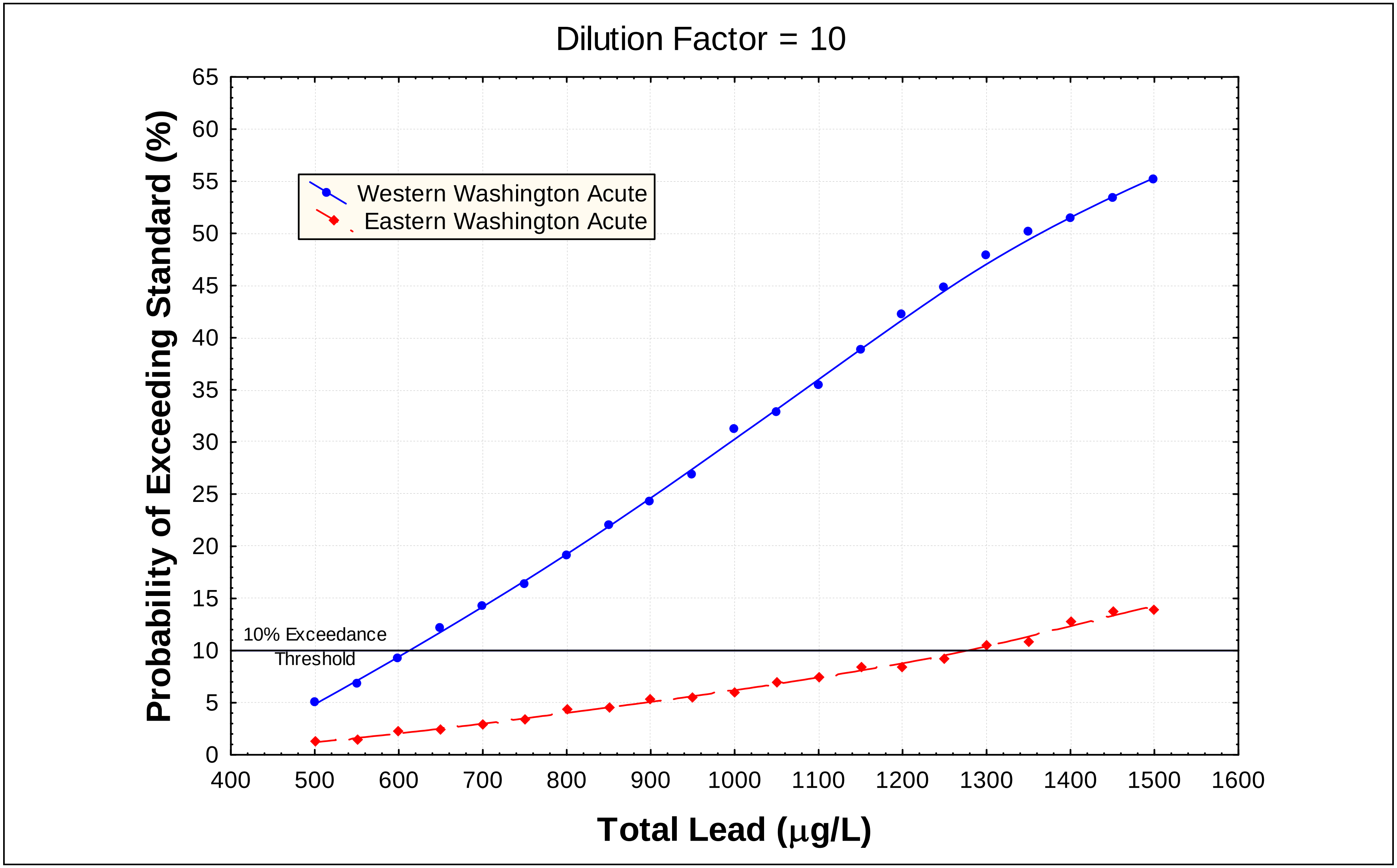

Figure 6. Risk curve for lead showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 10.

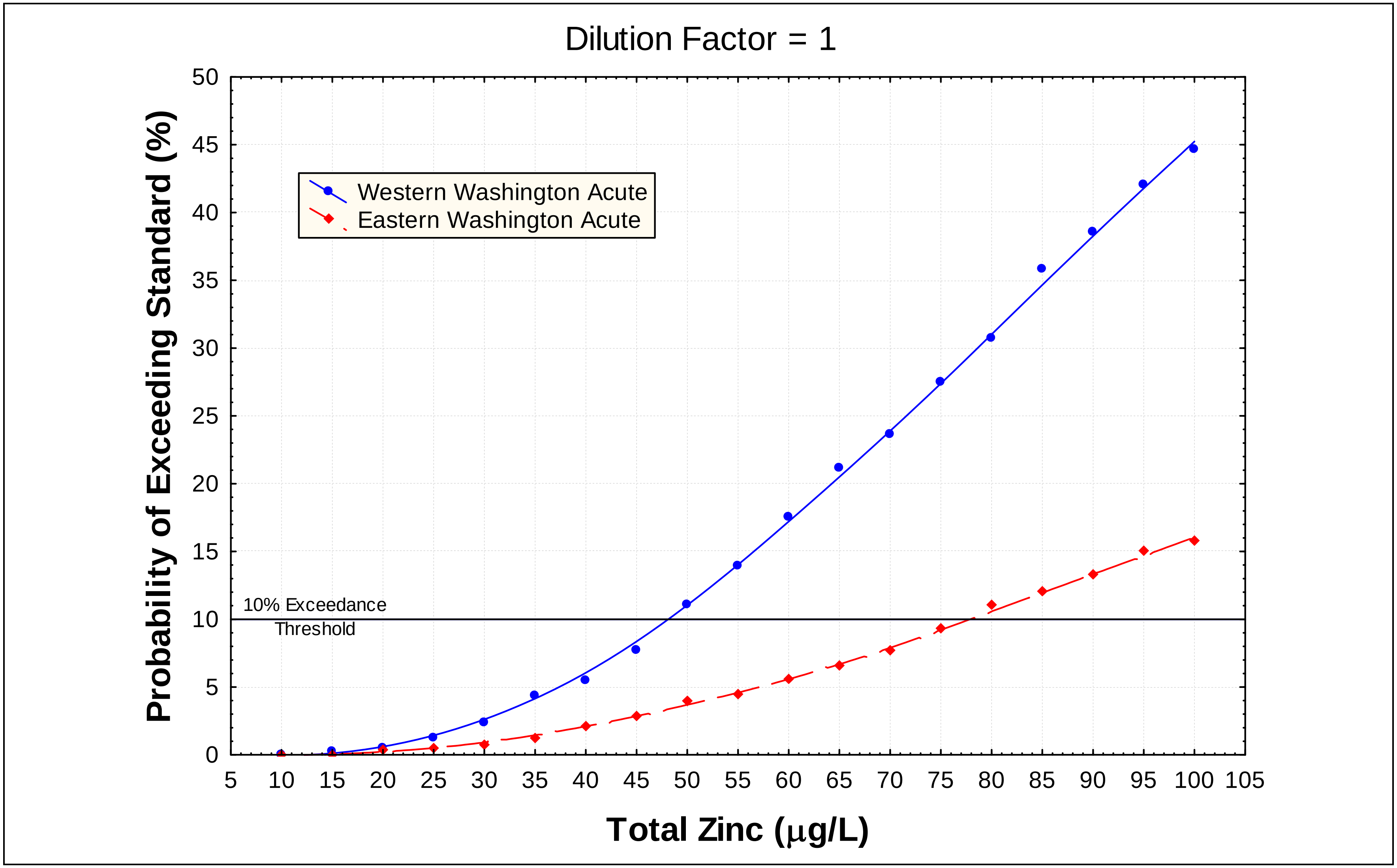

Figure 7. Risk curve for zinc showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 1.

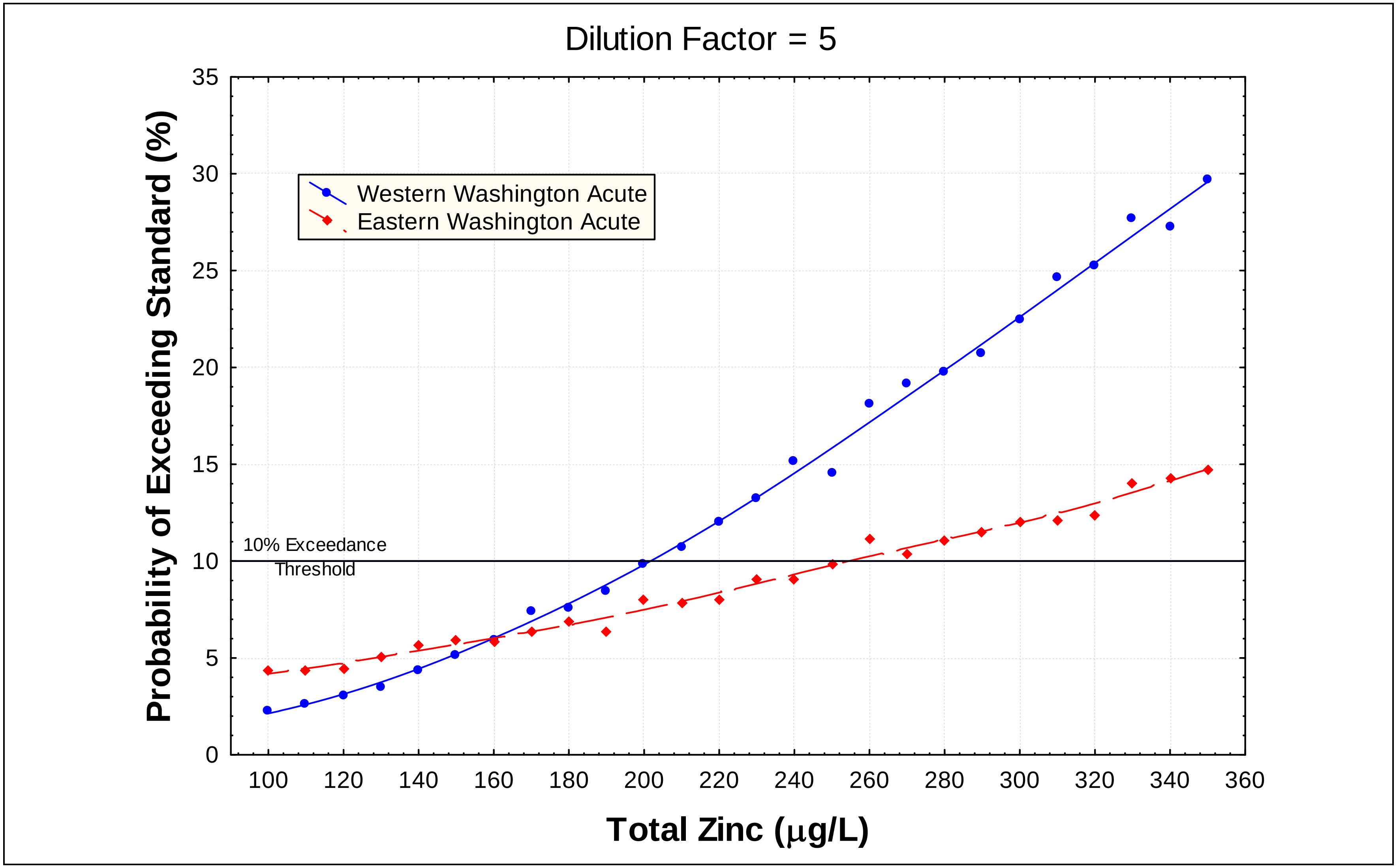

Figure 8. Risk curve for zinc showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 5.

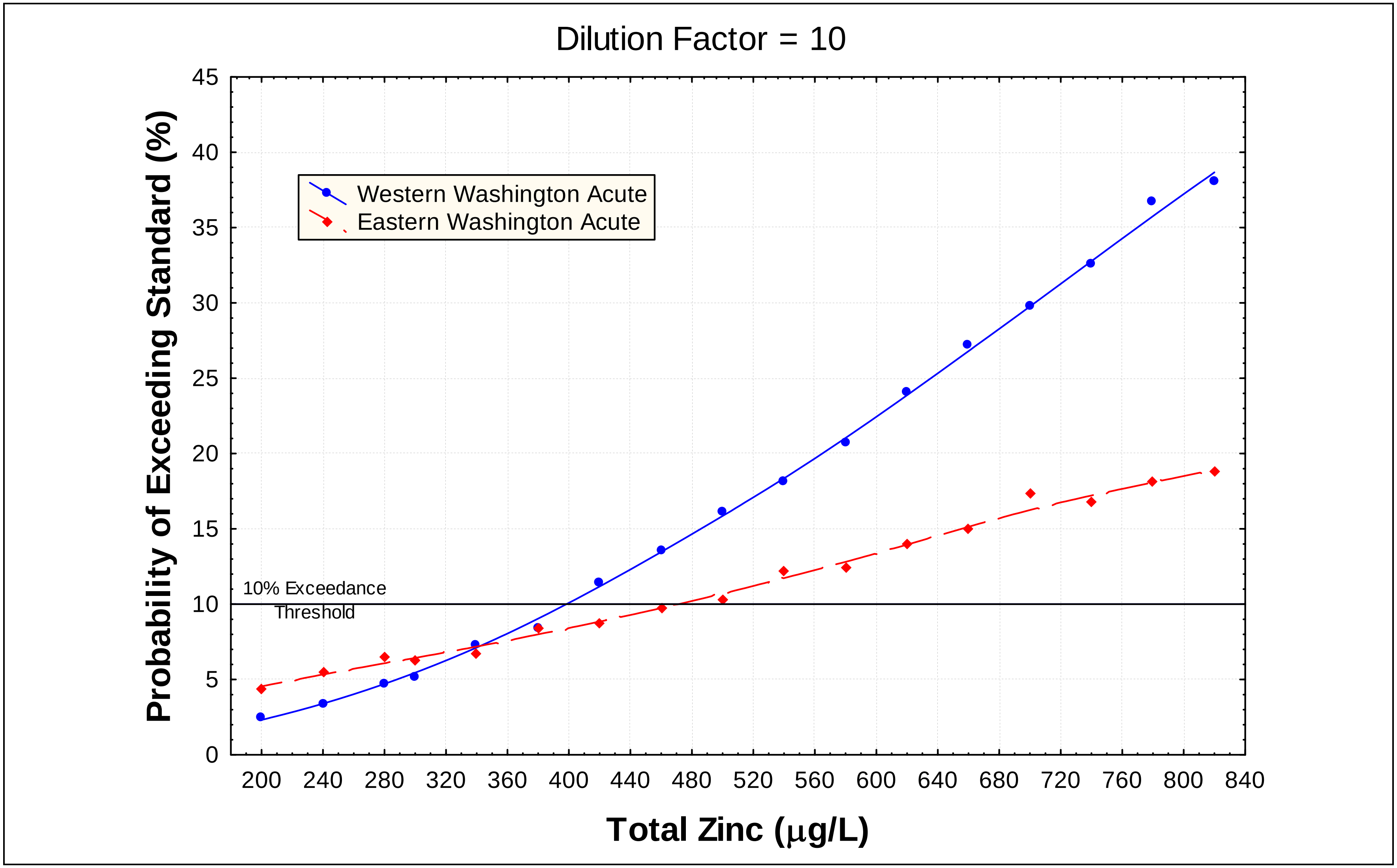

Figure 9. Risk curve for zinc showing the probability of exceeding the applicable water quality standard as a function of effluent concentration given a dilution factor of 10.

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APPENDIX A

Search Criteria Used in Queries of the Environmental Information Management Database

Search Criteria Used in Queries of the Environmental Information Management Database for Western Washington

Result Parameter List

Copper
Hardness as CaCO3
Lead
Total Suspended Solids
Turbidity
Zinc

Sample Matrix	Water
Sample Source	Fresh/Surface Water
Location Type	Stream/River
WRIA Number	ALL

County

Clallam
Clark
Cowlitz
Grays Harbor
Island
Jefferson
King
Kitsap
Lewis
Mason
Pacific
Pierce
San Juan
Skagit
Skamania
Snohomish
Thurston
Wahkiakum
Whatcom

Search Criteria Used in Queries of the Environmental Information Management Database for Eastern Washington

Result Parameter List

Copper
Hardness as CaCO3
Lead
Total Suspended Solids
Turbidity
Zinc

Sample Matrix	Water
Sample Source	Fresh/Surface Water
Location Type	Stream/River
WRIA Number	ALL

County

Adams
Asotin
Benton
Chelan
Columbia
Douglas
Ferry
Franklin
Garfield
Grant
Kittitas
Klickitat
Lincoln
Okanogan
Pend Oreille
Spokane
Stevens
Walla Walla
Whitman
Yakima

APPENDIX B

Sources of Ambient Receiving Water Background Concentrations from the Environmental Information Management Database

Table B1. Sources of ambient dissolved copper data for rivers and streams in western Washington from the Environmental Information Management database.

User Study ID	Study Name
G0300038	Camano Island Baseline Water Quality Monitoring Program
KCstrm-1	King County Routine Ambient and Wet Weather Streams Monitoring
G0100027	S.F. Nooksack River Water Quality Study
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
G0100202	White River Water Quality Study
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B2. Sources of ambient dissolved copper data for rivers and streams in eastern Washington from the Environmental Information Management database.

User Study ID	Study Name
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B3. Sources of ambient dissolved lead data for rivers and streams in western Washington from the Environmental Information Management database.

User Study ID	Study Name
G0300038	Camano Island Baseline Water Quality Monitoring Program
KCstrm-1	King County Routine Ambient and Wet Weather Streams Monitoring
G0100027	S.F. Nooksack River Water Quality Study
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
G0100202	White River Water Quality Study
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B4. **Sources of ambient dissolved lead data for rivers and streams in eastern Washington from the Environmental Information Management database.**

User Study ID	Study Name
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B5. **Sources of ambient dissolved zinc data for rivers and streams in western Washington from the Environmental Information Management database.**

User Study ID	Study Name
G0300038	Camano Island Baseline Water Quality Monitoring Program
KCstrm-1	King County Routine Ambient and Wet Weather Streams Monitoring
G0100027	S.F. Nooksack River Water Quality Study
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
G0100202	White River Water Quality Study
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B6. Sources of ambient dissolved zinc data for rivers and streams in eastern Washington from the Environmental Information Management database.

User Study ID	Study Name
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B7. Sources of ambient total suspended solids data for rivers and streams in western Washington from the Environmental Information Management database.

User Study ID	Study Name
G0000106	Baseline Assessment of Lower Hood Canal Streams
BBCWQ06	Burnt Bridge Creek - 2006 Water Quality Monitoring
G0300038	Camano Island Baseline Water Quality Monitoring Program
KCstrm-1	King County Routine Ambient and Wet Weather Streams Monitoring
G9300265	Mashel/Ohop Water Quality Investigations
TAX90187	Nisqually River Basin Water Quality Monitoring
G0100027	S.F. Nooksack River Water Quality Study
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
G0000258	Samish Basin Watershed Water Quality Monitoring Project
G0400133	Skagit County Monitoring Program
G9700218	Snohomish Watershed Water Quality Monitoring Project
G0100205	Stabler Water Quality/Quantity Study project
AJOH0029	Statewide Arsenic Sampling in Selected Rivers
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001C	Statewide River and Stream Ambient Monitoring-1980 to 1988
AMS001B	Statewide River and Stream Ambient Monitoring-Pre 1980
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
TAX91050	Upper Stillaguamish Monitoring/Database
SPMDTR07	Washington State Toxics Monitoring Program (WSTMP), Semipermeable Membrane Device's (SPMDs) Trends Monitoring.
WSTMP02	Washington State Toxics Monitoring Program: Exploratory Monitoring 2002
G0300021	Water Quality Monitoring Implementation
G9800201	Whatcom Water Quality Improvement Project
G0100202	White River Water Quality Study

Table B8. Sources of ambient total suspended solids data for rivers and streams in eastern Washington from the Environmental Information Management database.

User Study ID	Study Name
G9700156	Chamokane Creek Watershed Planning Project
G0000116	Cooperative Water Quality Monitoring Project
G9700063	Crab Creek Water Quality Monitoring
G0200377	Fecal Coliform Baseline Study
G9600127	Hangman Creek Subwatershed Improvement
G0000026	Irrigation Management Zone Demonstration Project
G9900069	Jumpoff Joe Implementation Project
G9600152	Jump-Off Joe Watershed Planning
G9900036	Little Spokane Water Quality Assessment
G0300037	Lower Palouse River Scoping Project
WKEN0001	Methow River Water Quality Survey and Assessment
G0200314	Mill Creek Watershed Implementation Plan
G9700221	Mill Creek Watershed Planning Project
G0000225	Okanogan Water Quality Monitoring Project
G9800072	Onion Creek Integrated Planning Project
G0100141	Pingston Creek Watershed Planning
GMER0001	R-EMAP Bioassessment Study-Yakima Basin & Coast Range
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
G0000279	Species Habitat Improvement Project
G9600119	Spring Creek Watershed Project
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001C	Statewide River and Stream Ambient Monitoring-1980 to 1988
AMS001B	Statewide River and Stream Ambient Monitoring-Pre 1980
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
99-40-IM	The Hangman Creek Water Quality Network
G0000233	Upper Crab Creek Watershed, Phase II Project
G0200179	Upper Pend oreille Sub-Watershed Ranking
G0600368	Yakama Nation Surface Water Quality Investigation
G0300183	Yakima Mainstem Monitoring and BMP Implementation Project
G0200276	Yakima River Salmonid Habitat Improvement Project
G0000280	Yakima River Water Quality Improvement Project
AJOH0007	Zinc, Copper, Lead, and Cadmium in four WA rivers

Table B9. Sources of ambient hardness data for rivers and streams in western Washington from the Environmental Information Management database.

User Study ID	Study Name
G0300038	Camano Island Baseline Water Quality Monitoring Program
KCstrm-1	King County Routine Ambient and Wet Weather Streams Monitoring
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
KCsamm	Sammamish River Water and Sediment Quality Assessment
AMS002	Statewide Lake Monitoring
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001C	Statewide River and Stream Ambient Monitoring-1980 to 1988
AMS001B	Statewide River and Stream Ambient Monitoring-Pre 1980
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
G0100202	White River Water Quality Study

Table B10. Sources of ambient hardness data for rivers and streams in eastern Washington from the Environmental Information Management database.

User Study ID	Study Name
G9700156	Chamokane Creek Watershed Planning Project
G9600152	Jump-Off Joe Watershed Planning
G0200314	Mill Creek Watershed Implementation Plan
G9700221	Mill Creek Watershed Planning Project
JHSVII01	Salmon Recovery Index Watershed Program (SRIW)
AJOH0028	Statewide Metals in Selected Rivers & Creeks
AMS001C	Statewide River and Stream Ambient Monitoring-1980 to 1988
AMS001B	Statewide River and Stream Ambient Monitoring-Pre 1980
AMS001D	Statewide River and Stream Ambient Monitoring-WY1989 through WY1999
AMS001	Statewide River and Stream Ambient Monitoring-WY2000 to present
MinesII	Water & Sediment Quality in Ten Metals Mining Districts II

APPENDIX C

Graphical Representations of Theoretical Probability Distributions for Input Data Used in Monte Carlo Simulations

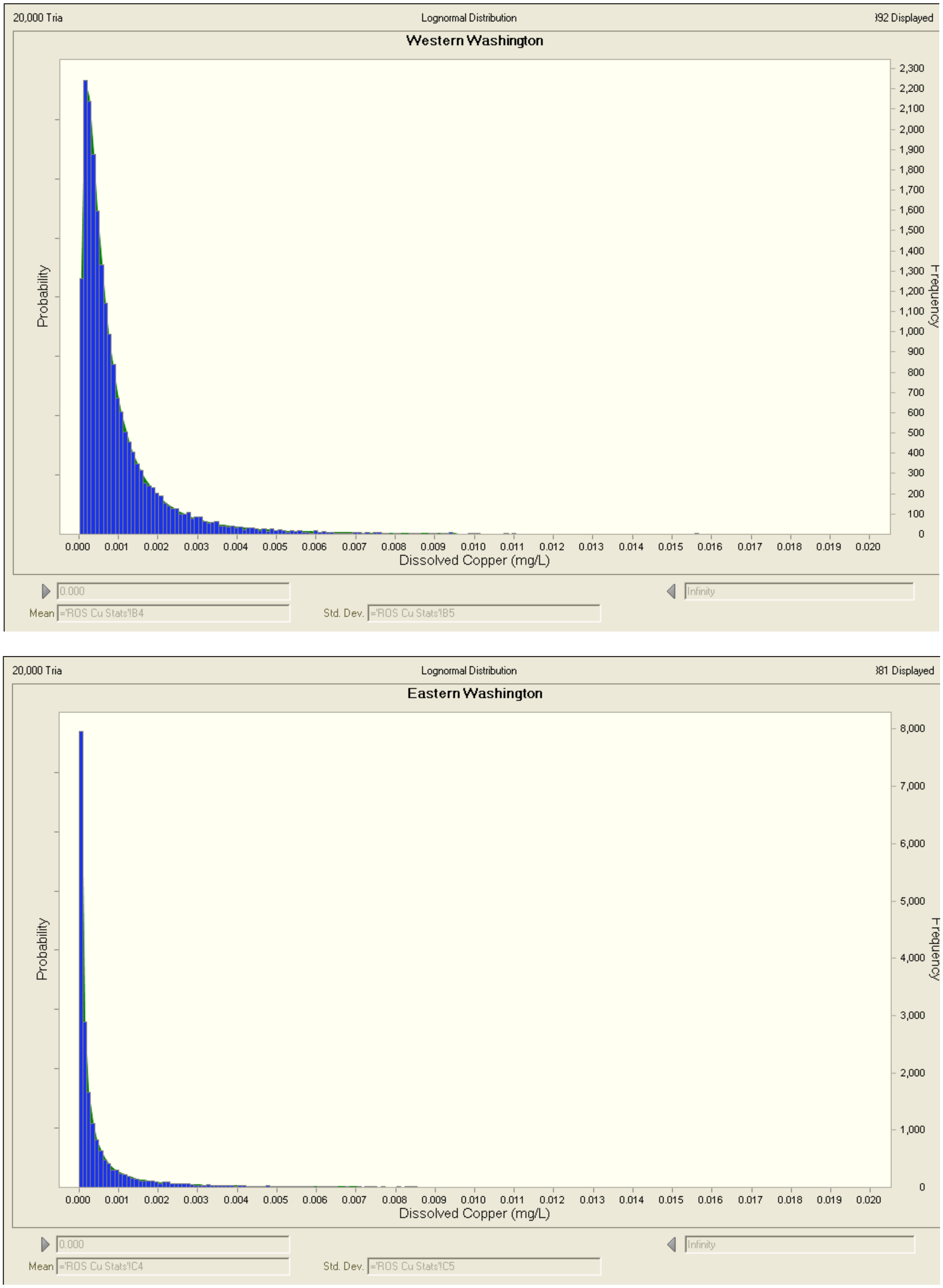
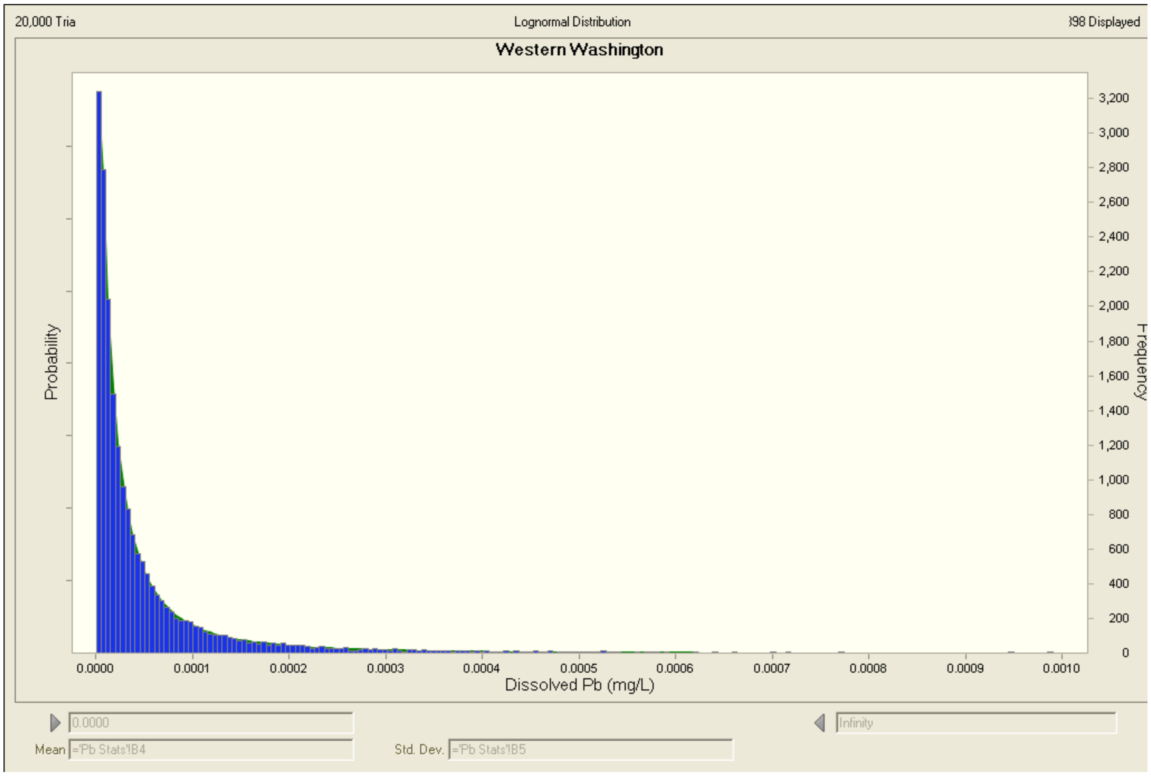


Figure C1. Theoretical probability distributions for dissolved copper data used in Monte Carlo simulations.



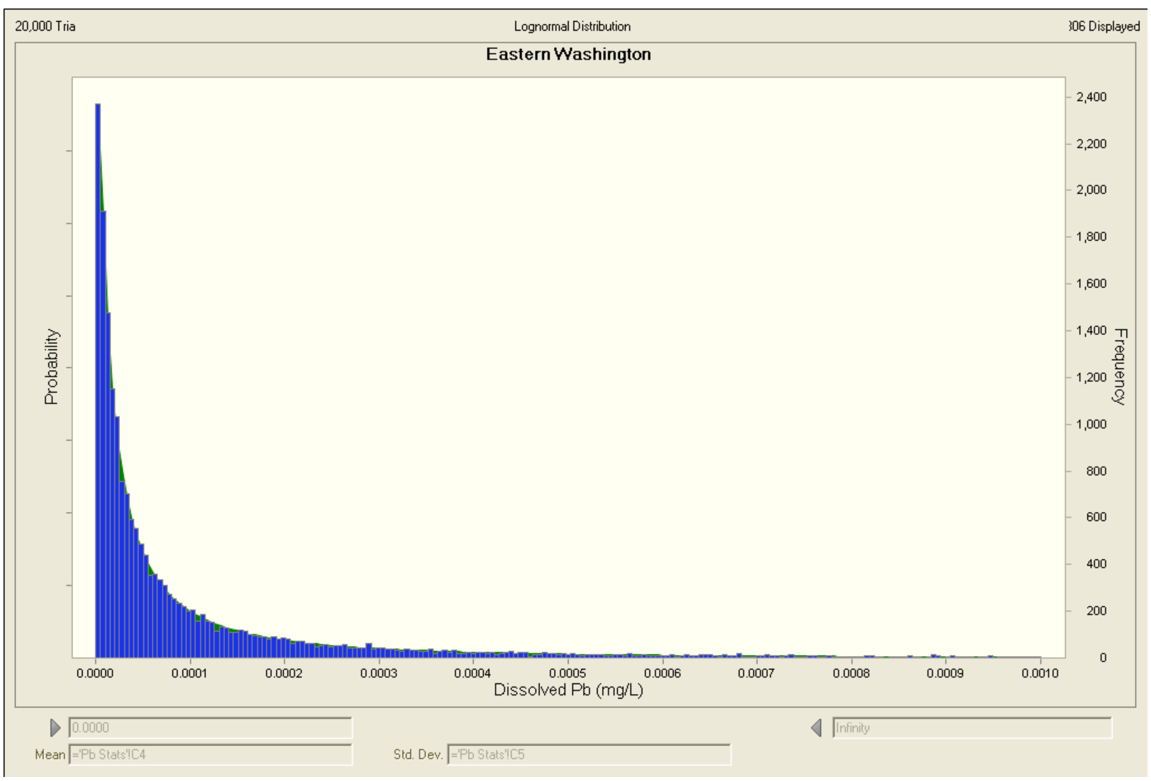
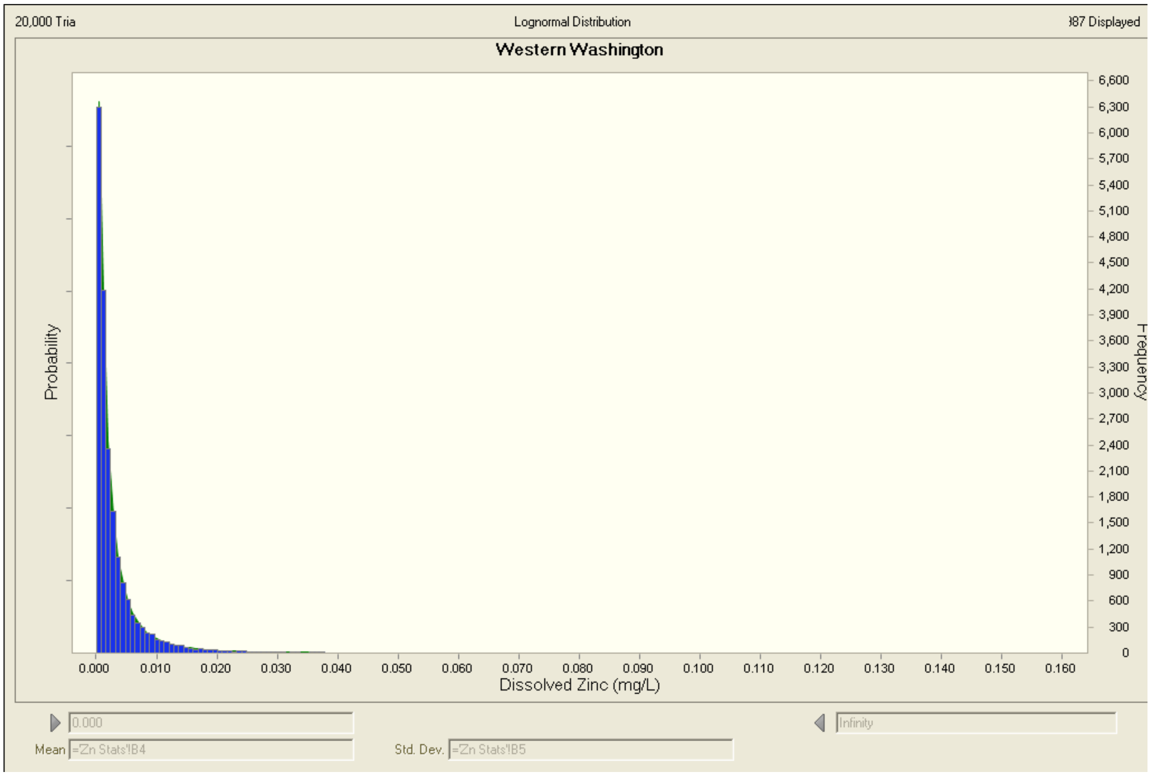


Figure C2. Theoretical probability distribution for dissolved lead data used in Monte Carlo simulations.



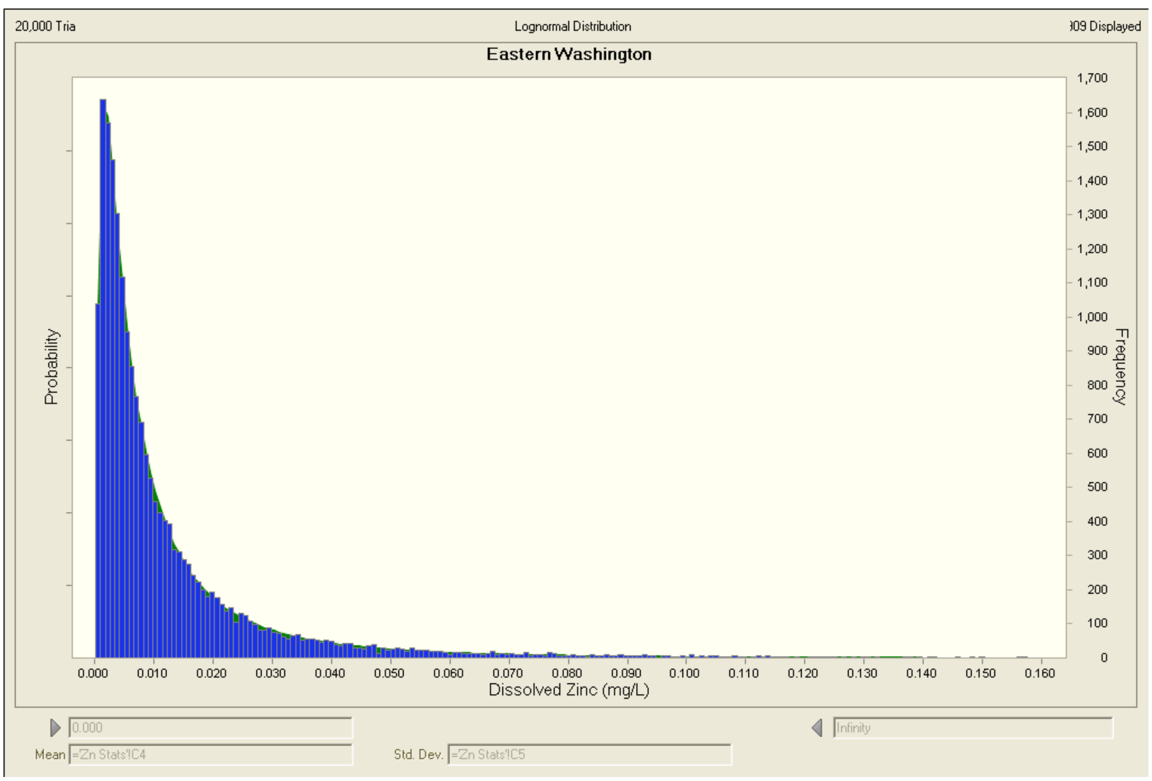
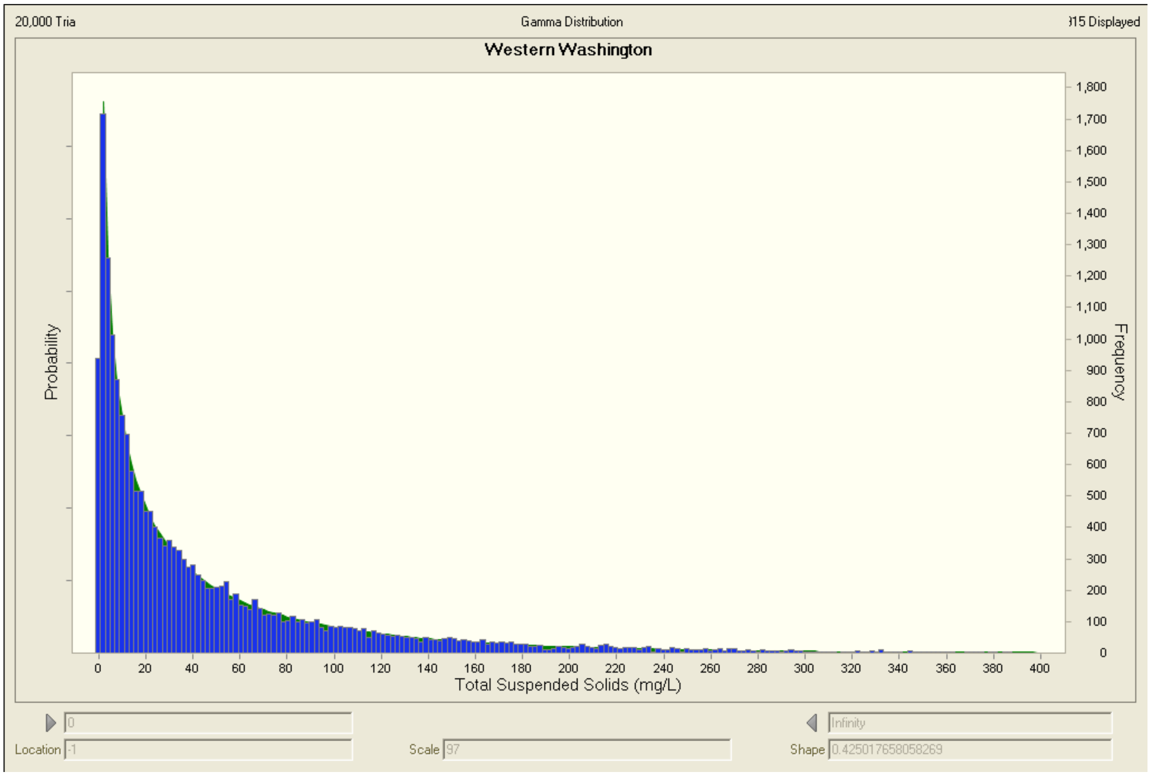


Figure C3. The theoretical probability distribution for dissolved zinc data used in Monte Carlo simulations.



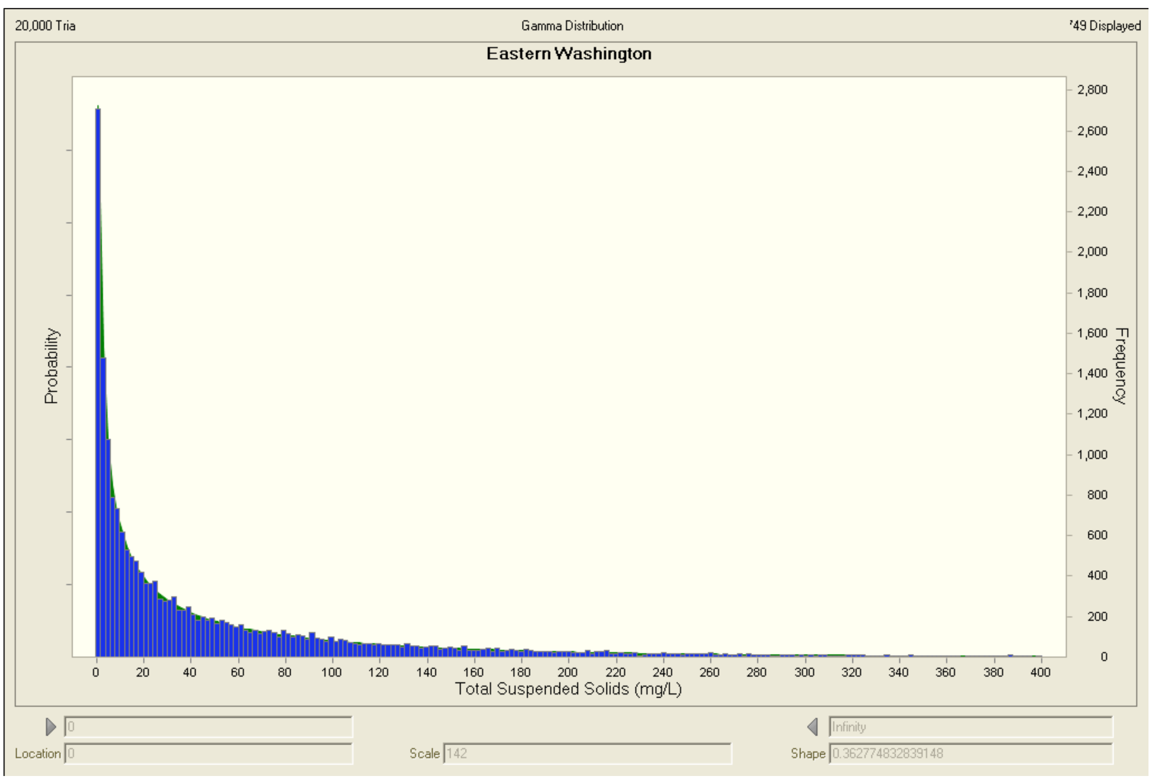


Figure C4. Theoretical probability distribution for total suspended solids data used in Monte Carlo simulations.

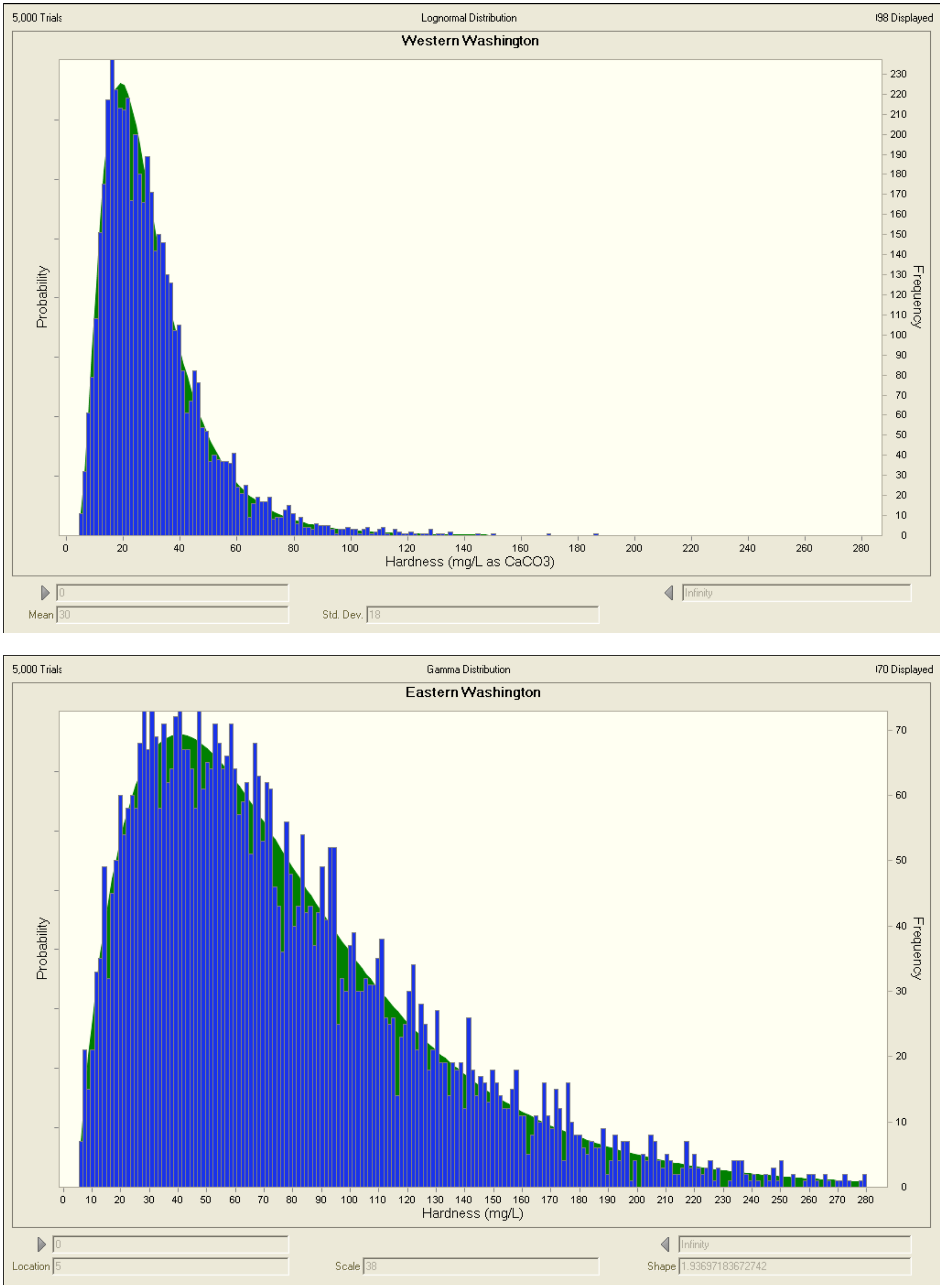
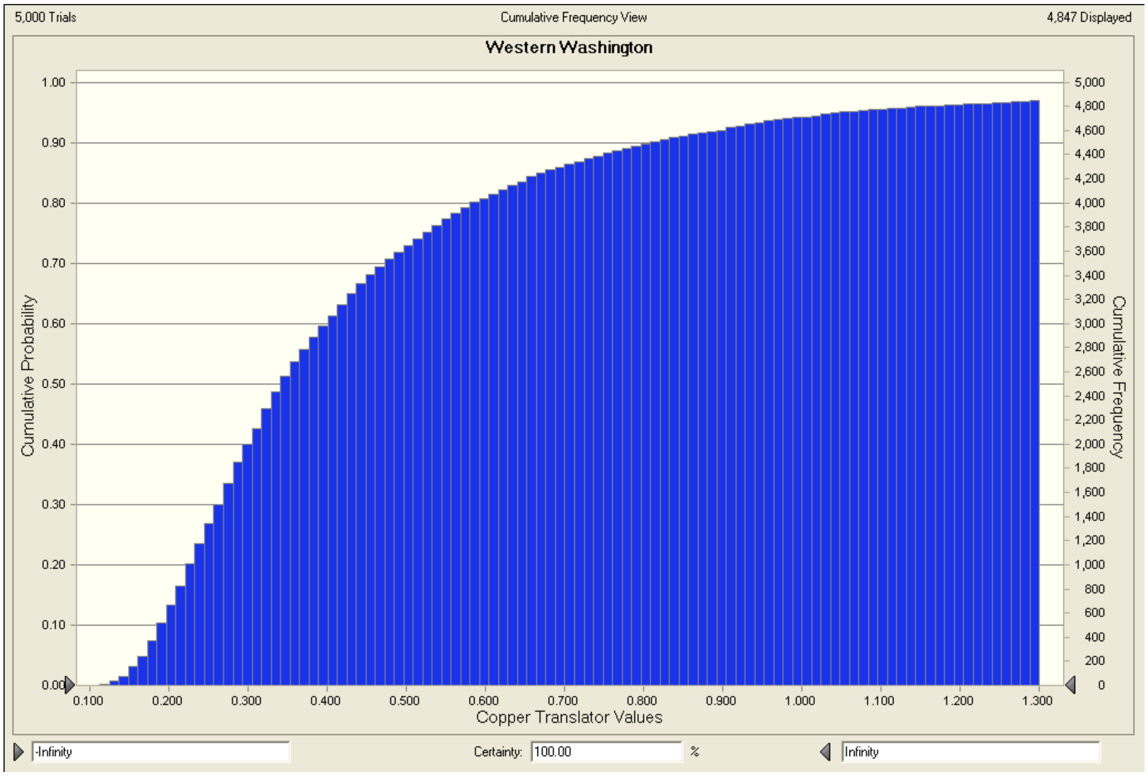


Figure C5. Theoretical probability distribution for hardness data used in Monte Carlo simulations.

APPENDIX D

Cumulative Probability Plots for Translator Values Used in Monte Carlo Simulations



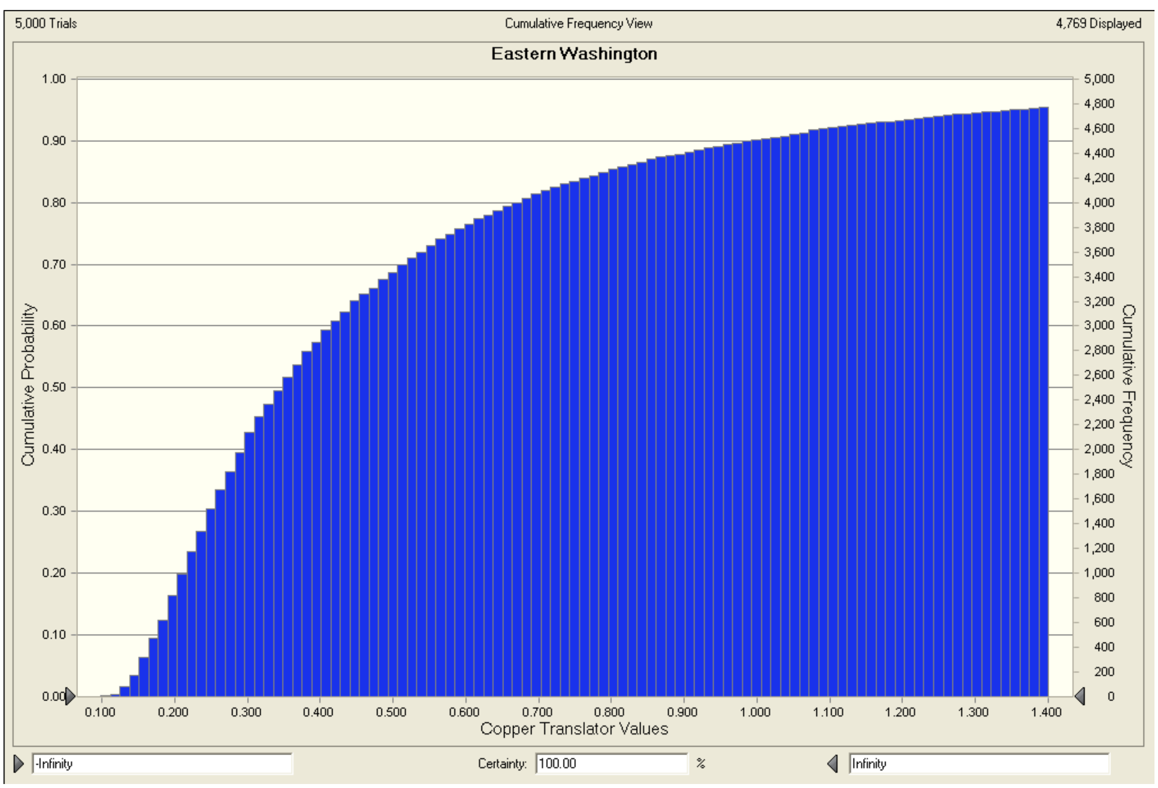
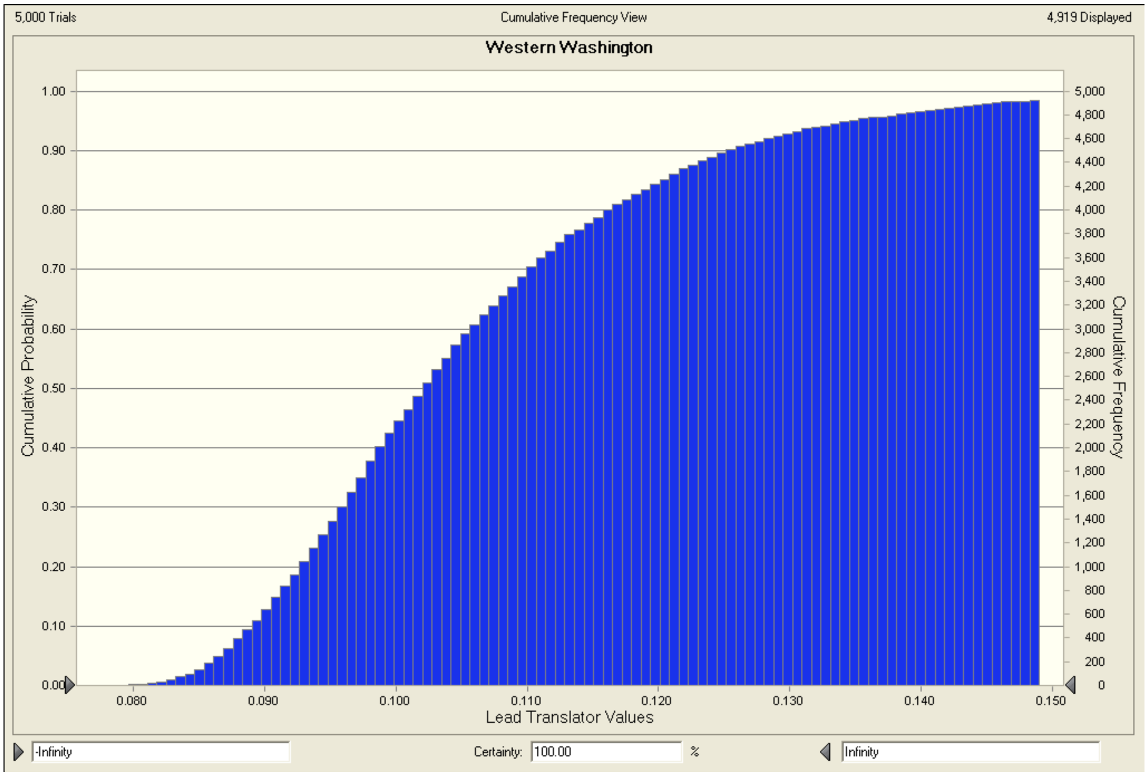


Figure D1. Cumulative probability plot for copper translator values used in Monte Carlo simulations.



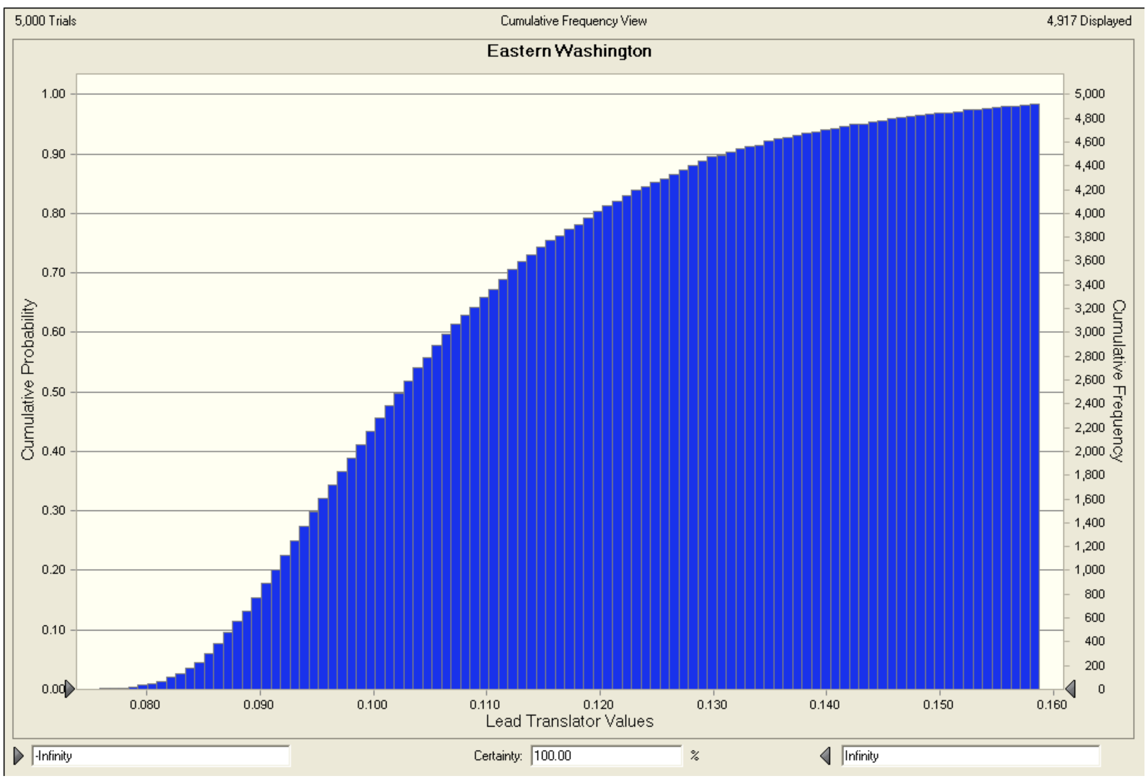
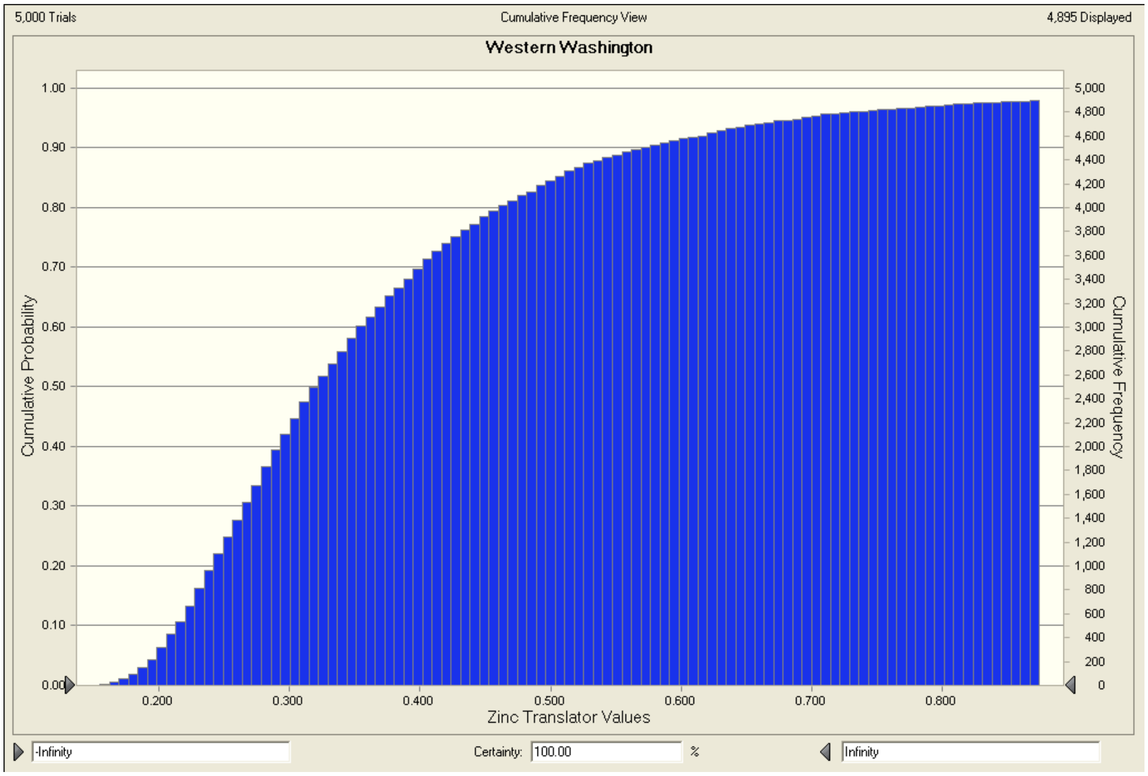


Figure D2. Cumulative probability plot for lead translator values used in Monte Carlo simulations.



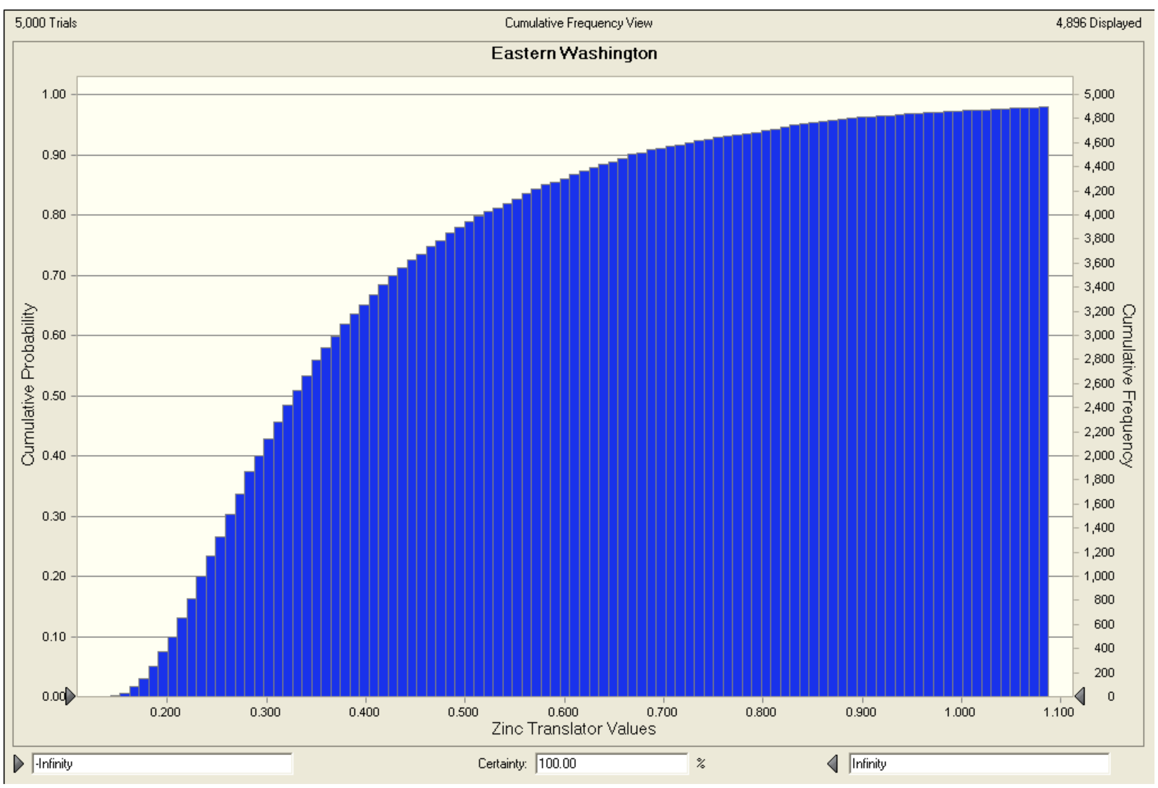


Figure D3. Cumulative probability plot for zinc translator values used in Monte Carlo simulations.

DEPARTMENT OF
ECOLOGY
State of Washington

Washington State Water Quality Standards: Human health criteria and implementation tools

Overview of key decisions in rule amendment

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Washington State Water Quality Standards: Human health criteria and implementation tools

Overview of key decisions in rule amendment

Water Quality Program
Washington State Department of Ecology
Olympia, Washington

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Glossary and List of Acronyms

303(d)	Ecology's list of impaired waters that violate the Water Quality Standards.
BCF	Bioconcentration Factor
BMP	Best Management Practices
BSAF	Biota Sediment Accumulation Factor
BW	Body Weight
CFR	Code of Federal Regulations
CSF	Cancer Slope Factor
CSO	Combined Sewer Overflow
DI	Drinking water Index
DOC	Dissolved Organic Carbon
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management system
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act (US Federal)
FCR	Fish Consumption Rate
HHC	Human Health Criteria
HQ	Hazard Quotient
IRIS	Integrated Risk Information System
Kg	Kilograms
Kow	chemical specific octanol-water partition coefficient
mg/l	Milligrams Per Liter
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System Permitting Program

NRWQS	National Recommended Water Quality Criteria
NTR	National Toxics Rule
PBDEs	Polychlorinated Biphenyls
PCBs	Polychlorinated Biphenyls; manufactured chemicals which persist and accumulate in food chains
POC	Particulate Organic Carbon
RAGS	Risk Assessment Guidance for Superfund
RCW	Revised Code of Washington
RfD	Reference Dose
RL	Risk Level
RSC	Relative Source Contribution
SDWA	Safe Drinking Water Act
TMDL	Total Maximum Daily Load, or Water Clean-Up Plan
µg/L	Micrograms per liter
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code (The Water Quality Standards for Surface Waters of the State of Washington are in WAC 173-201A)

Overview

What is this rulemaking about and is it required of the state?
This state rulemaking is a revision to the Water Quality Standards for Surface Waters of the State of Washington (Chapter 173-201A WAC). This rulemaking addresses two specific areas of the water quality standards:

1. Development and adoption of new human health criteria (light grey highlighted area in Figure 1); and
2. Revision, expansion, and clarification of some of the tools in the standards that help in criteria implementation (darker grey highlighted area in Figure 1).

This document explains the changes and the rationale supporting the changes, including specific risk management input to Ecology by Governor Inslee. The rule language can be seen at Ecology's Water Quality Standards website:
www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203ov.html.

All states are required to adopt surface water quality standards by a federal law titled the Federal Water Pollution Control Act (hereinafter called the Clean Water Act). Surface waters include streams, lakes, river, bays, and marine waters. States adopt water quality standards to:

- Protect public health or welfare.
- Enhance the quality of water.
- Serve the purposes of the Clean Water Act.

Section 303(c) of the Clean Water Act provides the federal legal basis for the water quality standards program. Section 303(c)(2)(b) specifically requires states to adopt criteria for toxic priority pollutants. The federal regulatory requirements governing the water quality standards program, the Water Quality Standards Regulation, are published by the federal government in the *Code of Federal Regulations* (CFR) at 40 CFR 131.

Washington State law gives Ecology authority and responsibility to protect the quality of Washington waters and implement federal Clean Water Act programs. The authority and responsibility regarding water quality standards can be found in the Revised Code of Washington (RCW): RCW 90.48.030, RCW 90.48.035, and RCW 90.48.260(1).

What is in Washington's surface water quality standards?
The surface water quality standards regulation (WAC 173-201A) defines the water quality goals of the surface waters in Washington. As required by federal regulation, the water quality standards include:

- Designated uses (also called beneficial uses) for all surface waters, such as aquatic life habitat, recreational uses, harvest, public and industrial water supply, and others.
- Water quality concentrations or levels (called criteria) necessary to protect the uses. These criteria can be numeric (such as concentrations of chemicals or maximum

temperatures) or narrative (descriptions such as "…must not … offend the senses of sight, smell, touch, or taste…").

- Antidegradation provisions that prevent degradation of the water quality.

Washington's water quality standards also contain other provisions that aid in and direct the implementation and future changes to the standards.

The designated uses, criteria, antidegradation provisions, and other provisions are illustrated in Figure 1.

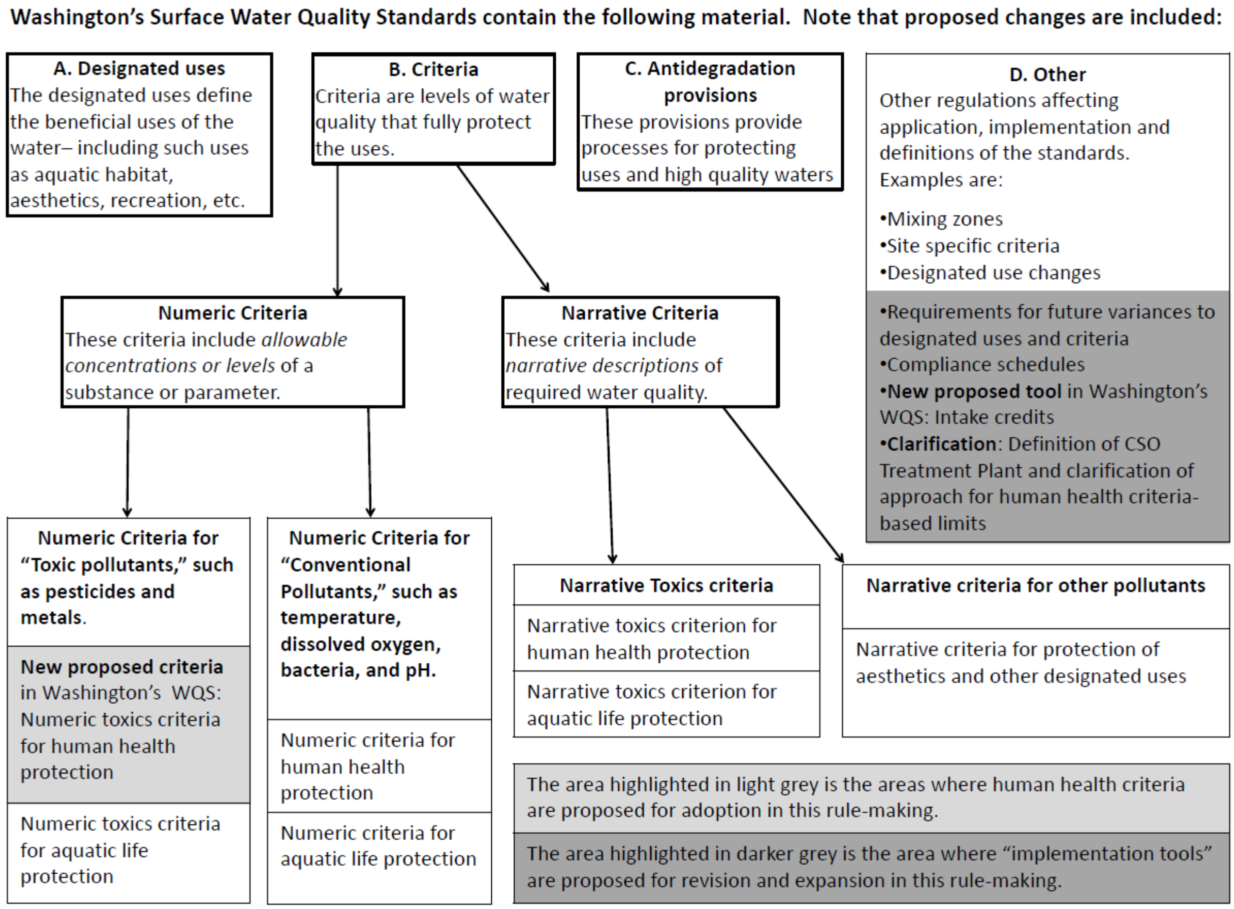

Figure 1: Description of Washington water quality standards with changes highlighted

How are water quality standards revised?

Washington's water quality standards are revised periodically through a formal public rulemaking process. Revisions are made to incorporate new science, to meet new federal or state requirements, to provide additional clarity, and for many other reasons. All water quality standards revisions are submitted to the United States Environmental Protection Agency (EPA) for Clean Water Act approval prior to use. If Endangered Species Act (ESA)-listed species are affected by new water quality standards, then EPA is required to consult with the National Oceanic and Atmospheric Administration (NOAA) and United States Fish and Wildlife Service

(USFWS) regarding effects of the new water quality standards on the ESA-listed species prior to federal approval.

An important part of the state's rule revision process, and in determining which revisions are most important to make, is public review and discussion about the water quality standards. Federal regulations require that states hold public hearings at least once every three years to review applicable surface water quality standards and, as appropriate, adopt new or modified standards. This process is called a *triennial review*.

The triennial review provides an opportunity to discuss the priorities and commitments that Ecology makes with EPA and others regarding the surface water quality standards. Ecology then places activities (guidance development, research needs, or rulemaking) on schedules that match their complexity and importance, rather than trying to force them into a three-year cycle. The latest (2010) triennial review and the Water Quality Program's five-year plan for water quality standards can be seen at http://www.ecy.wa.gov/programs/wq/swqs/triennial_review.html.

Because the triennial review and subsequent rulemaking processes are an ongoing set of actions, this approach results over time in a balanced ongoing update to the water quality standards, with higher priority items taking precedence in rulemaking efforts:

Selection of rulemaking topics

- Topics are selected based on the goal of getting the greatest environmental and/or administrative benefit.
- Topics are prioritized based on the expected environmental benefits, technical complexity, available staff resources, federal mandates, and need for change in the water quality standards guidance, rule, or process.
- A long-term list of prioritized topics is maintained, with commitments to implementing changes (rulemaking or otherwise). Those short-term (<1-5 years) priorities are built into the Ecology and EPA Performance Partnership Agreement (Ecology commitments to EPA), based on Ecology's ability to anticipate and commit staff resources.
- The long-term list of topics is reviewed, and modified where appropriate, during each Triennial Review.

What are the specific areas of the rule that were modified?

This rulemaking modified two specific areas of the water quality standards: (1) adoption of new human health criteria: and, (2) revision and expansion of some of the tools in the standards that help in implementation. These are discussed separately below.

New human health criteria

Numeric criteria: The human health criteria (HHC) are water concentrations for toxic substances that protect people who consume fish and shellfish from local waters and who drink untreated water from local surface waters. HHC for Washington waters are also under the federally promulgated National Toxics Rule (NTR). The NTR criteria are applicable to Washington until EPA approves the state's new HHC.

HHC are calculated from a variety of different factors, including chemical-specific toxicity to humans, how chemicals move from water into fish and shellfish and then into humans, as well as other factors. The criteria calculation and these factors are discussed at more length in the section on HHC Variables. Specific information on arsenic is found in the section on Challenging Chemicals: Arsenic. The development and adoption of new HHC includes consideration of new science on toxicity factors and new information on body weight and Washington-specific fish consumption. The factors that are included in the criteria calculations are a mix of average and higher percentile values, and in general are consistent with EPA guidance and practice. This approach results in high levels of consumer protection from pollutants that could be found in untreated surface water, fish, and shellfish from Washington. These factors were applied to 94 of 97 different chemicals in this rule (see section on Criteria Chemicals). The criteria for arsenic, copper, and asbestos are not calculated values. Instead, they are based on the regulatory level used in the Safe Drinking Water Act (SDWA; 42 U.S.C. § 300f and as amended).

As well as incorporation of new science, this rulemaking also included several risk management decisions that affected the final criteria values. Governor Inslee announced a proposal for the new criteria on October 8, 2015 (http://www.governor.wa.gov/news-media/inslee-announces-new-path-water-quality-rule-continues-work-broader-toxics-reduction). This included direction to use an updated fish consumption rate in the criteria calculations for carcinogens and non-carcinogens (an average fish consumption rate of 175 g/day) and to continue use of the existing risk level in the water quality standards: one-in-one-million (10^{-6}). Criteria for arsenic, copper, and asbestos are values based on the Safe Drinking Water Act, and a chemical-specific approach is used for PCBs.

Narrative criteria: The water quality standards include narrative provisions that address chemicals that are not included in the list of 97 chemicals for which Ecology is developing criteria.

Revised and expanded implementation tools.

The water quality standards contain a number of tools that relate directly to how the criteria are met. These tools are implemented both in permits and in orders, and specify how the current designated uses and criteria can be changed if certain factors can be demonstrated. Ecology revised two of the tools (compliance schedules and variance requirements) that were already in the water quality standards, and added a new tool (intake credits). These three tools and the rule changes associated with them are fully discussed in this document under implementation tools. Ecology also added implementation clarification language for Combined Sewer Overflows (CSOs). Here is a brief summary of the three tools and CSO language changes:

Compliance schedules: Compliance schedules are tools used in Ecology discharge permits, orders, or other directives that allow time for dischargers to make needed modifications to treatment processes in order to meet permit limits or requirements. They are commonly used for construction and treatment plant upgrades, and cannot be used for new or expanding discharges. Compliance schedules are used when there is an expectation that the discharge will meet permit limits at the end of the schedule. The prior water quality standards contained a maximum time limit of ten years for compliance schedules. In 2009, the Washington legislature passed a law requiring Ecology to develop longer compliance schedules for certain types of discharges.

Variances: A variance is a time-limited designated use and criterion as defined in 40 CFR 131.3, and must be adopted by EPA. A variance temporarily waives water quality standards for a specific chemical criterion and designated use for either a single discharge or for multiple discharges, or, for specified stretches of surface waters (e.g., for a specific tributary, a lake, a watershed). Variances are used in situations where it can be demonstrated that: (1) a discharge can eventually meet the permit limit or a water body can eventually meet the criteria and designated use, but a longer time frame is needed than allowed in a compliance schedule, or, (2) it is not known whether the discharge will ever be able to meet the permit limit or whether a waterbody will meet a criterion and/or designated use. Because a variance is a temporary change to a criteria and use, variances are considered changes to the water quality standards and must go through a rulemaking and subsequent EPA Clean Water Act approval to be effective. The prior water quality standards gave a brief list of the requirements for granting variances and set a maximum five-year period. The federal water quality standards regulations were recently revised and now include substantial requirements for granting variances (40 CFR 131.14; http://www2.epa.gov/wqs-tech/final-rulemaking-update-national-water-quality-standards-regulation). The new state rule language on variances expands on the prior rule language and is consistent with the new EPA regulations. Demonstrating the need for a variance could be very labor intensive, depending on the specific situation. More detailed specifications in the water quality standards will help set clearer expectations for both dischargers and the state, and will result in more predictable outcomes for dischargers.

This rule change does not grant any specific variances to water quality standards. Instead, this rule change gives more details on the information requirements for granting variances, and on the types of actions that would be required of dischargers during variance periods. This includes extending the duration of variances beyond five years if necessary.

Intake credits: Intake credits are a permitting tool that allows a discharge limit to be calculated in a way that does not require the discharger to "clean-up" pollutants in the discharge that are in the intake water, when the intake water and receiving water for the discharge are the same water body. This tool is also used to calculate technology-based limits. This tool is used to calculate water quality-based limits in several other states, including Oregon and the Great Lakes states.

This new rule contains language describing how and when intake credits could be used.

Implementation Clarification for Combined Sewer Overflows Treatment Plants (CSOs): Ecology adopted new language to be explicit about how the permitting process of combined sewer overflow treatment facilities occurs. A new definition has been added to define a Combined Sewer Overflow (CSO) Treatment Plant as "a facility that provides At-Site treatment as provided for in chapter 173-245 WAC. A CSO treatment plant is a specific facility identified in a department-approved CSO Reduction Plan (Long-term Control Plan) that is designed, operated, and controlled by a municipal utility to capture and treat excess combined sanitary sewage and stormwater from a combined sewer system."

Ecology also added new language at 173-201A-510 WAC to describe implementation of these facilities: "The influent to these facilities is highly variable in frequency, volume, duration, and pollutant concentration. The primary means to be used for requiring compliance with the HHC shall be through the application of narrative limitations, which includes but is not limited to, best management practices required in waste discharge permits, rules, orders and directives issued by the department."

CSOs are driven by influxes of stormwater into combined sanitary and stormwater collection systems. Because of the episodic and short-term nature of CSO discharges, it is infeasible to calculate effluent limits that are based on criteria with durations of exposure up to 70 years. The federal regulations (40CFR122.44(k)) allow use of best management practices (BMP)-based limits in NPDES permits if it is infeasible to calculate numeric limits.

Public Discussion

In December 2011, Ecology started public discussions around implementation tools, and in October 2012, started public discussions around state adoption of HHC. The agency has held many public meetings in a variety of formats to encourage participation. These meetings, and the materials used for the meetings, are at Ecology's Water Quality Standards rule website www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203ov.html. Ecology has also met many times with various interested groups, including business, municipalities, environmental groups, counties, the US EPA, and Tribes. Ecology received comment from the public and has provided a Response to Comments in its Concise Explanatory Statement.

First Proposed Rule and Supporting Risk Management Decisions

The first proposed rule for HHC and implementation tools was released in January 2015, but was not finalized. The first proposed rule was coupled with an innovative and comprehensive approach to toxics reduction. On July 9, 2014, Governor Inslee released an integrated strategy to reduce pollutants that end up in fish and water. This strategy was based on two joined parts: (1) adoption of HHC and revised and new implementation tools into the state's water quality standards, and, (2) passage of a toxics reduction bill as part of the state's water quality standards rule submittal to the U.S. Environmental Protection Agency.

This strategy included two risk management decisions in the proposed rule: (1) an increase in the risk level from one-in-one-million (10^{-6}) to one-in-one-hundred thousand (10^{-5}); and (2) a risk overlay that dictated that no criterion, except arsenic, would be a higher concentration than the NTR criterion. Adoption of HHC using these risk management decisions, coupled with the draft legislative bill, would have resulted in reductions to a broad suite of toxics at their sources.

July 9, 2014 http://www.governor.wa.gov/news-media/inslee-takes-new-approach-create-meaningful-effective-state-clean-water-standards?id=293

Excerpts from Governor Inslee's 2014 announcement on the first proposed rule

"Gov. Jay Inslee today announced his proposed update to the state's water quality standards, saying he worked until he found a solution that advanced the values of human, environmental and economic health."

"Washingtonians' actual risk to cancer and other harmful effects will be reduced by this proposal," Inslee said. "We are making our waters cleaner and safer."

"But Inslee said the state must also act on the many toxic chemicals from other unregulated sources that the Clean Water Act doesn't address. Inslee said ***he is calling on the Legislature next year to pass a toxics reduction bill as part of the state's submittal to the U.S. Environmental Protection Agency."***

"We could set standards at a thousand grams per day with a cancer risk rate of 10^{-20}, but it still wouldn't do anything to protect our children from exposure to too many toxics that cause neurological and reproductive damage," Inslee said. "This toxics reduction bill gives us the tools to tackle pollutants at their source and make meaningful improvements in the health of our water, our fish and our children."

"Inslee is directing the Department of Ecology to issue a preliminary draft rule no later than Sept. 30 (2014). ***He will submit legislation to the Legislature in 2015 and will make a decision on whether to adopt the final rule only after seeing the outcome of the session. He will ask the EPA to consider the benefits of the full package in determining federal approval of Washington's clean water standards."***

"I believe this approach honors our commitment to keep our children healthy and protect those who regularly eat fish, and doesn't create ineffective and undue requirements on a small number of businesses and governments," Inslee said. "I look forward to working with legislators, businesses, tribes, health care professionals and others to ensure we do the right thing for Washington state and work together for successful implementation of this integrated plan."

Figure 2: Excerpt from Governor Inslee's July 9, 2014 Announcement

In December 2014, Governor Jay Inslee reiterated his comprehensive plan combining the proposed water quality standards with proposed legislation and funding to provide stronger and broader controls on toxic threats in our environment (see the Governor's Policy Brief at: http://www.ecy.wa.gov/water/standards/Gov-Dec2014-ReducingToxicPollution.pdf). In January 2015, Ecology issued a proposed rule establishing new HHC to protect designated uses and provide predictable regulatory implementation tools to help dischargers comply with existing and new source control requirements or discharge limits. The Governor's proposed toxics reduction bill passed the House during the regular legislative session, but the Senate failed to act on it before the legislative session concluded.

Based on the Governor's decision to hold up adoption, Ecology did not adopt the initial proposed rule. Instead, Ecology proposed a new water quality standards rule.

The Second Proposed Rule
Governor Inslee announced a new direction on the second proposed rule on October 8, 2015. That direction included proposing a fish consumption rate of 175 grams per day, staying with the state's currently adopted risk rate of one-in-one-million (10^{-6}), continuing forward with implementation tools, and chemical-specific approaches to arsenic and PCBs. The second proposed rule incorporated the risk management directions given by Governor Inslee. However, the second proposed rule was not linked with any proposed legislation to reduce toxics.

The Final Rule
The final rule was adopted on August 1, 2016. After adoption, Ecology will submit the rule to the EPA for Clean Water Act approval. The new water quality standards do not become effective for Clean Water Act purposes until approved by the EPA.

The new toxics table gives a different look to the water quality standards
The new HHC adds several additional pages of information to the standards. In the new rule, the aquatic life and human health criteria for toxics are combined into one large table.

The aquatic life criteria for toxics, and the accompanying footnotes (WAC 173-201A-240(3), Table 240(3)) are in this section and table. These changes have not modified the aquatic life toxics criteria or their application in any way – this is simply a formatting change. This is considered a non-substantive change. Any references to the aquatic life toxics table in the water quality standards have been updated to reference the new section.

Other changes since the first proposed rule
Subsequent to the publication of the first proposed rule, three federal regulatory actions were taken that affected HHC development in Washington:

1. ***June 2015***. EPA finalized new Clean Water Act 304(a) National Recommended Water Quality Criteria (NRWQC) for human health (80FR No.124, Monday, June 29, 2015, pages 36986-36989: See: (http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm). Several of the inputs to the new 304(a) guidance values were changed from earlier versions. Because the federal regulations recommend that states consider EPA's 304(a) Guidance when adopting criteria (40 CFR §131.11 (b); see the following text box), this Decision Document for the second rulemaking includes discussion of EPA's most recent NRWQC.

> **40 CFR §131.11**
>
> **(b)** *Form of criteria:* In establishing criteria, States should:
>
> **(1)** Establish numerical values based on:
>
> **(i)** 304(a) Guidance; or
>
> **(ii)** 304(a) Guidance modified to reflect site-specific ...

2. ***August 21, 2015***. EPA published a final rule updating six key areas of the federal water quality standards regulation that helps implement the Clean Water Act. The final rule was published in the Federal Register on August 21, 2015 (80 FR 51019) and is in 40 CFR 131. Several different program areas are addressed in the final rule, including water quality standards variances. The new language on variances in this revised rule is aligned with the new EPA regulation on variances.
3. ***September 2015***. EPA proposed a new regulation (80 FR No. 177, Monday, September 14, 2015. Pages 55063 – 55077) that would promulgate new federal HHC applicable to Washington's waters. In 1992 and 1999, EPA finalized HHC for Washington State in the NTR, and this federal regulation contains HHC currently applied to Washington waters. The newest EPA proposal (September 2015) contains updates for 99 priority pollutants. If Ecology submits the final HHC criteria to EPA for Clean Water Act review and approval before EPA finalizes the new federal regulation containing human health water quality criteria for Washington, EPA will review and act upon the state's submission prior to any final action on the federal criteria. If EPA approves criteria submitted by the state, the corresponding federal criteria will not be finalized. See: (http://www.epa.gov/sites/production/files/2015-09/documents/washington-rule-factsheet-2015.pdf).

Specific decisions used to develop the new criteria and implementation tools

The following sections in this document explain the rationale for the substantive portions of this rule revision.

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What Chemicals and Criteria Are Included

Decision

Ecology adopted HHC for all Clean Water Act 307(a) priority toxic pollutants (except for mercury/methylmercury) for which EPA has developed a national recommended numeric HHC. The existing rule language includes a narrative statement for protection from priority pollutants that do not have numeric criteria and from non-priority toxic pollutants.

The state's prior HHC are found in the federal NTR. The NTR contains calculated HHC for 85 priority pollutants, which includes 84 pollutants with calculated criteria values and one pollutant (asbestos) with a Safe Drinking Water Act-based human health criterion. Ecology's revised rule contains calculated and Safe Drinking Water Act-based HHC for 97 priority pollutants. The increased number of chemicals (from 85 to 97) is based on EPA's development of new criteria since the NTR was first issued and last revised.

Background

NTR HHC chemicals: HHC that apply to Washington's waters are found in the federal NTR (EPA, 1999). The NTR contains the complete listing of all 126 of the Clean Water Act 307(a) priority toxic pollutants (priority pollutants), and calculated HHC concentrations for 85 of the priority pollutants (some of the priority pollutants names are *not* accompanied by HHC concentrations). Of the 126 priority pollutants, 85 have numeric criteria for fresh water (exposure routes of drinking untreated surface waters and ingestion of fish and shellfish), and 84 have criteria for marine water (ingestion of fish and shellfish only). The NTR HHC apply to Washington's waters until EPA approves the newly adopted HHC.

EPA's recommended national criteria for chemicals: Since the 1992 NTR was published (and subsequently updated in 1999), EPA developed and published several additional Clean Water Act 304(a) recommended national HHC values for both priority pollutants and for non-priority pollutants. EPA's current recommended national criteria table (EPA, 2015) indicates that EPA has developed national recommended HHC for 99 of the priority pollutants and approximately 18 non-priority pollutants. Washington adopted new criteria for 97 of the chemicals that EPA has indicated are priority pollutants. This lower number of proposed chemicals (97) is because Washington is deferring adoption of new criteria for methylmercury, and will stay under the NTR criteria for mercury. Another chemical that Ecology is not adopting criteria for is bis(2-chloroisopropyl) ether, because it was determined that it does not have a 304(a) national recommended criteria associated with it (see further explanation later in this section).

EPA's recommendations to states on selecting chemicals for criteria adoption: EPA's *Water Quality Standards Handbook: Second Edition* (EPA, 2012) provides guidance to states that are choosing chemical criteria. These include recommendations for priority pollutants and nonpriority pollutants, as description follows. An explanation of an exception to adopting the chemical bis(2-chloroisopropyl ether is also included.

Priority pollutants (Clean Water Act 303(c)(2)(B) requirements): the following are excerpts of guidance from EPA's *Water Quality Standards Handbook: Second Edition* (EPA, 2012, Chapter 3.4.1):

Excerpt 1
"*Section 303(c)(2)(B) addresses only pollutants listed as "toxic" pursuant to section 307(a) of the Act, which are codified at 40 CFR 131.36(b). The section 307(a) list contains 65 compounds and families of compounds, which potentially include thousands of specific compounds. The Agency has interpreted that list to include 126 "priority" toxic pollutants for regulatory purposes. Reference in this guidance to toxic pollutants or section 307(a) toxic pollutants refers to the 126 priority toxic pollutants unless otherwise noted."*

Excerpt 2
"States may meet the requirements of Clean Water Act section 303(c)(2)(B) by choosing one of three scientifically and technically sound options (or some combination thereof):

1. *Adopt statewide numeric criteria in state water quality standards for all section 307(a) toxic pollutants for which EPA has developed criteria guidance, regardless of whether the pollutants are known to be present;*
2. *Adopt specific numeric criteria in state water quality standards for section 307(a) toxic pollutants as necessary to support designated uses where such pollutants are discharged or are present in the affected waters and could reasonably be expected to interfere with designated uses;*
3. *Adopt a "translator procedure" to be applied to a narrative water quality standard provision that prohibits toxicity in receiving waters. Such a procedure is to be used by the state in calculating derived numeric criteria, which shall be used for all purposes under section 303(c) of the Clean Water Act. At a minimum, such criteria need to be developed for section 307(a) toxic pollutants, as necessary to support designated uses, where these pollutants are discharged or present in the affected waters and could reasonably be expected to interfere with designated uses,*

Option 1 is consistent with state authority to establish water quality standards and meets the requirements of the Clean Water Act. Option 2 most directly reflects the Clean Water Act requirements and is the option recommended by EPA, but is relatively more labor intensive to implement than Option 1. Option 3, while meeting the requirements of the Clean Water Act, is best suited to supplement numeric criteria from Option 1 or 2…"

Non-priority pollutants (see 40 CFR 131.11). Under these requirements, states must adopt criteria based on sound scientific rationale that cover sufficient parameters to protect designated uses. Both numeric and narrative criteria may be applied to meet these requirements.

Exception for Bis(2-chloroisopropyl) ether*:* Ecology has determined that bis(2-chloroisopropyl) ether does not have a 304(a) national recommended criteria associated with it, thus the proposed criteria for this chemical were deleted from the final rule. Ecology has determined that the older NTR criteria for bis(2-chloroisopropyl) ether were incorrect, and were not developed for that particular priority pollutant. Ecology is adopting criteria only for the priority pollutants for which EPA has published 304(a) criteria documents. Further rationale for this decision:

Background information on bis(2-chloroisopropyl) ether: Appendix A to 40 CFR Part 423 lists the 126 Priority Pollutants (PP) published by EPA. Bis(2-chloroisopropyl) ether is priority pollutant number 42 on that list. The priority pollutant list does not specify Chemical Abstract Service numbers (CAS #'s); only names are specified. In EPA's most recent revisions to the 304(a) national recommended criteria for human health, EPA did not publish new criteria for this chemical, and further examination of the history of the criteria for this chemical indicates that the criteria in the NTR for Bis(2-chloroisopropyl) ether were in fact calculated for a different chemical. Bis(2-chloroisipropyl) ether was paired with the CAS # 108-60-1 in the 1992 NTR. This CAS number is incorrect. The CAS # for bis(2-chloroisipropyl) ether is CAS # 39638-32-9.

HHC were promulgated in the NTR for the chemical with CAS # 108-60-1, which is the unique identifier for bis(2-chloro-1-methylethyl)ether. This chemical has a different chemical structure than bis(2-chloroisipropyl)ether, and is an isomer. Bis(2-chloro-1-methylethyl) ether is not on the EPA's Priority Pollutant list at 40 CFR Part 423.

In its most recent (2015) revisions to the 304(a) national recommended criteria for human health EPA published new criteria for bis(2-chloro-1-methylethyl) ether (CAS # 108-60-1). EPA did not publish criteria for the priority pollutant bis(2-chloroisipropyl) ether (CAS # 39638-32-9). It appears that over the years EPA synonymized the two different chemicals during development of criteria, but instead of focusing on the actual pollutant priority name in 40 CFR Part 423, it chose to focus on the CAS # that was paired with the priority pollutant name in the NTR, and developed criteria for the non-priority pollutant. Subsequent information from EPA confirms that EPA drafted the criteria to apply to the non-priority pollutant bis(2-chloro-1-methylethyl) ether (CAS # 108-60-1).

Decision on bis(2-chloroisipropyl) ether for this Rulemaking: In the proposed rule Ecology included criteria for bis(2-chloroisipropyl) ether (CAS no. 108-60-1), based on EPA's NTR chemical list and CAS #s and the matching CAS # for EPA's new criteria for bis(2-chloro-1-methylethyl)ether. Subsequent examination (described previously) brought to light the differences in CAS #'s and chemical names for these two compounds, and the lack of criteria values for the priority pollutant bis(2-chloroisipropyl) ether (CAS # 39638-32-9).

Because the chemical bis(2-chloro-1-methylethyl) ether (CAS no. 108-60-1) is not on EPA's priority pollutant list at Appendix A to 40 CFR Part 423, and because Ecology has made the decision to adopt HHC for priority pollutants only, Ecology is not adopting HHC for this chemical. Because the older criteria for bis(2-chloroisipropyl) ether in the NTR was developed for the non-priority pollutant bis(2-chloro-1-methylethyl) ether (CAS no. 108-60-1) Ecology is not adopting the NTR criteria for this chemical. When Ecology submits final adopted water quality standards to EPA for approval, it will include a recommendation that EPA revise the priority pollutant list at Appendix A to 40 CFR Part 423 to reflect the chemical name that it considers to be the original intended name.

Basis for Ecology's Decisions on HHC

Ecology adopted HHC for all Clean Water Act Sec. 307(a) priority toxic pollutants (except mercury/methyl mercury) for which EPA has developed national recommended numeric HHC, regardless of whether the pollutants are known to be present (EPA guidance for option 1, Priority Pollutants Excerpt 2, described previously). This includes criteria for 97 different pollutants. The exception is that Ecology is not proposing new criteria for methyl mercury, therefore it will remain under the NTR. The state water quality standards include a narrative statement for priority pollutants that do not have numeric criteria and for non-priority toxic pollutants. This approach is consistent with Option 1 from EPA's guidance cited previously.

Ecology did not adopt numeric criteria for non-priority pollutants at this time. Ecology will use a narrative statement to protect designated uses from effects of chemicals that do not have numeric criteria. If monitoring or other information indicates that non-priority pollutant sources or concentrations are a concern, Ecology will use the narrative statement to protect designated uses from regulated sources. The ongoing triennial review process for the water quality standards will be used to determine whether there is a need to adopt numeric criteria for additional pollutants in future revisions to the water quality standards.

Ecology added an additional statement on downstream protection to the draft rule in language preceding the toxics table. This language is duplicative of existing implementation language in WAC 173-201A-260(3)(b), requiring that upstream waters be conducted in manners that meet downstream water body criteria and will not change any requirements for implementation of the new HHC criteria. The language was added at EPA's recommendation to states to ensure downstream protection is considered.

Ecology's chemical choice:

- Ensures that Washington will satisfy the intent of the Clean Water Act.
- Is within a state's legal authority under the Clean Water Act to adopt broad water quality standards.

- Is a comprehensive approach to satisfy the statutory requirements because it includes all of the priority toxic pollutants for which EPA has prepared section 304(a) criteria guidance (except mercury/methylmercury).
- Is fairly simple and straightforward to implement (does not require the monitoring needed to support EPA's Option 2 listed previously).
- Contains the same chemical list format (the full priority pollutant list) found in the NTR. Inserting the entire priority pollutant list in the water quality standards (even though not all priority pollutants will have accompanying criteria) makes for an easy comparison of the state's HHC with federally-required NPDES discharge permit application information.
- Relies on an already-existing narrative statement in the standards to protect designated uses from effects of chemicals without adopted numeric criteria.

References

EPA, 1992. U.S. Environmental Protection Agency. Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B). 40 CFR Part 131.36. Fed. Register, Vol. 57, No. 246, page 60848. (Also known as the National Toxics Rule.)

EPA, 1999. U.S. Environmental Protection Agency. Toxics criteria for those states not complying with Clean Water Act section 303(c)(2)(B), originally published in 1992, amended in 1999 for PCBs. 40 CFR Part 131.36. Fed. Register, Vol. 64, No. 216, page 61182. http://www.ecfr.gov/cgi-bin/text-idx?SID=76816a2f92256bf94a548ed3115cee23&node=40:23.0.1.1.18.4.16.6&rgn=div8

EPA, 2012. U.S. Environmental Protection Agency. Water Quality Standards Handbook: Second Edition (EPA-823-B-12-002; March 2012); *http://water.epa.gov/scitech/swguidance/standards/handbook/index.cfm) (Note: This website was referenced 4/2014)*

EPA, 2015. U.S. Environmental Protection Agency. National Recommended Human Health Criteria list: *http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm (Note: This website was referenced 10/2015)*

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Human Health Criteria Equations and Variables

Decision

Ecology adopted surface water HHC for 97 priority toxic pollutants. Of those chemicals, 94 have criteria calculations associated with them that are reflected in the following discussion. The other three chemicals (arsenic, copper, and asbestos) are based on Safe Drinking Water Act regulatory levels, and thus their criteria do not involve using human health criteria calculations. The following discussion does not apply to these three chemicals, except where arsenic information is discussed below in the section on Cancer Slope Factor (CSF).

Table 1 provides a comparison of the explicit variables that are found in the human health equations for the federal NTR (applied in Washington), and the new criteria in the WQS. Discussion of the new EPA 304(a) guidance values is also included as needed. In almost all cases, values for chemical-specific toxicity factors are taken from EPA's Integrated Risk Information System (IRIS) or from the EPA National Recommended Water Quality Criteria documents, noted in Table 1. There are also implicit variables in the equations that Ecology did not change from the approach used in the NTR. They are further described in the background section of this document. See Appendix A of this document for the individual chemical-specific values used to calculate the new criteria.

Table 1: Comparison of equation variables for Washington's proposed rule

Explicit variables	NTR Criteria	Washington's new rule (2016)
Fish and shellfish consumption rate (FCR)	6.5 grams/day	175 g/day
Risk level (RL)	Additional lifetime risk of 1 in a million ($1x10^{-6}$)	Additional lifetime risk of 1 in one million ($1x10^{-6}$) (no change)
Relative source contribution (RSC)	1	1 (no change)
Body weight (BW)	70 kilograms (154 pounds).	80 kilograms (176 pounds)
Drinking water intake (DI)	2 liters/day	2.4 liters/day
Reference dose (RfD) for specific chemicals	EPA IRIS values and other sources	Updated values in EPA IRIS and EPA NRWQC documents
Cancer slope factor (CSF) for specific chemicals	EPA IRIS values and other sources	Updated values in EPA IRIS and EPA NRWQC documents
Bioconcentration factor (BCF)	BCFs found in the NTR	Values from 1992 NTR and 1999 revision; EPA's 2002 HHC Calculation Matrix (EPA, 2002), and pre-2015 NRWQC. Two additional BCFs calculated based on EPA 1980.

Background

The human health water quality criteria (HHC) are chemical-specific concentrations applied to surface waters. The HHC are developed to protect human populations from undue risks to chemical exposures from drinking untreated surface-water, and eating fish and shellfish that live in those waters.

The criteria are calculated using equations developed by EPA that incorporate information on risk and exposure, and the degree to which the pollutants accumulate in fish and shellfish tissue. EPA has developed equations for both carcinogens and noncarcinogens that apply to exposures from drinking untreated surface water and consuming fish and shellfish, or, consuming fish and shellfish only. *For purposes of simplifying the discussion, these scenarios will be referred to as fresh waters or marine waters, respectively. However, some freshwaters in Washington do not have "domestic water supply" as a designated use, and for these waters, the criteria that address only the consumption of organisms are applied.* This Decision Document provides summary-only information about the equations that are used to develop HHC for Washington; the bulk of the document provides more detailed discussion about the individual variables that go into the equations.

Ecology used best available science in developing this rule. Note that what is considered "best available science" is subjective and changes over time. An assessment of "best" at any specific time includes the perspectives of the evaluators, the context of the evaluation, and other factors important to the specific type of decision. The topic of best available science is comprehensively discussed in Sullivan et al (2006). Ecology used the best available science in developing new HHC applicable to Washington State. The input variables were chosen to provide full protection for the designated uses addressed by the HHC. Ecology's rule process acknowledged scientific uncertainties in the inputs to the criteria equations (e.g., the use of uncertainty factors in reference dose development). Ecology developed clear science and/or policy statements to support the final criteria, and has clearly stated the basis of these in materials supporting the proposed and new rule, in particular where new science is emerging or underway. These are discussed in this document. In particular this has been clarified for arsenic, PCBs, and dioxin, where issues of toxicity factors, alternative approaches to criteria development, and risk levels have been addressed. The use of a bioconcentration-based approach over the EPA-recommended bioaccumulation factors in criteria calculation is also clarified in this document.

References cited in the document are included at the end under the section on Additional Information.

HHC equations and types of variables considered in the equations: In total, four equations are used to calculate HHC. These equations are based on chemical effects (carcinogens or noncarcinogens) and routes of exposure (fresh or marine water):

- *Chemical effects*: HHC equations are used to calculate criteria for both cancer-causing chemicals, called carcinogens, and non-cancer causing chemicals, called noncarcinogens.

The criteria for any one chemical are based on the acceptable level of risk (the effect that would occur at the lowest water concentration).

- *Routes of exposure*: Washington has both marine and fresh waters that are regulated under the Clean Water Act and under state jurisdiction. Therefore, separate equations are needed for each type of water to account for presence or absence of an untreated drinking water exposure route. Marine waters are assumed to include estuarine waters, and both of these do not have the drinking water use applied.

Several different factors, or variables, are included in each equation. The variables help to characterize risk and exposure, including the degree and type of toxicity attributed to specific chemicals, human body weight, human drinking water rates, fish and shellfish consumption rates, and others. These variables are assigned values, which are then used in the equations to derive HHC concentrations. The exposure variables represent a combination of averages and upper percentiles. The choice of variables, and the science policy and risk management decisions that are included in the variables, act together to determine criteria that are estimates of desired levels of protection.

Why are these variables important? Each variable in the equations affects the final calculated HHC concentrations. Some variables make significant differences in the calculated values, while other variables make smaller changes. For instance, the additional lifetime cancer risk level for carcinogens can make a large difference in some criteria concentrations. If the risk level increases, the criteria become less stringent. Fish consumption rates also affect the calculation considerably. Higher fish consumption rates result in lower criteria concentrations. An example of a variable that has much less effect on the calculated value is body weight. Higher body weight results in only slightly higher criteria concentrations.

EPA publishes Clean Water Act Sec. 304(a) national recommended HHC guidance values for approximately 117 chemicals, including priority and non-priority pollutants. The recommended criteria are calculated using a combination of default and chemical-specific pieces of information recommended for state use by EPA. Some of the recommended criteria are based on Safe Drinking Water Act MCLs (maximum contaminant levels). Values for some variables can differ among states, based on location or regional information, science, science policy, and risk management, and can result in criteria that may differ from those recommended by EPA. For other variables, states generally use standard values, supported by national scientific research, that tend to remain constant across states even when developing state-specific criteria. The following variables are explicitly used in the HHC calculation, and are discussed later in this document:

Values for these variables vary among states:

- Fish Consumption Rate (FCR)
- Risk level (RL)
- Relative Source Contribution (RSC)

States generally use the same values for these variables:

- Body Weight (BW)
- Drinking Water Intake (DI)
- Reference Dose (RfD)
- Cancer Slope Factor (CSF)
- Bioconcentration Factor (BCF).

The four equations for developing HHC are summarized in Table 2. The equations shown in the table have been simplified for purposes of this discussion document. Units and correction factors are not presented. The full equations with all units can be found in the EPA (2000) guidance.

Table 2: Summary of HHC equations

Toxicity endpoint	Water type and exposure route	Chemical-specific criterion equation
Cancer	Fresh water: fish/shellfish consumption and drinking untreated surface water	$\frac{RL \times BW}{CSF \times (DI + [FCR \times BCF])}$
Non-Cancer	Fresh water: fish/shellfish consumption and drinking untreated surface water	$\frac{RfD \times RSC \times BW}{DI + (FCR \times BCF)}$
Cancer	Marine and estuarine waters: fish and shellfish consumption	$\frac{RL \times BW}{CSF \times FCR \times BCF}$
Non-Cancer	Marine and estuarine waters: fish and shellfish consumption	$\frac{RfD \times RSC \times BW}{FCR \times BCF}$

In addition to the variables described in the table, which are used explicitly in the equations, certain other factors are considered *implicitly* (i.e., they are not part of the written equation but are assumed during calculation). Some of these will be discussed briefly later in this document, including lifespan, duration of exposure, and hazard quotient for non-cancer effects.

Basis for Ecology's new criteria:

Variables in the equation

A more detailed description of the variables in the equation will be presented in the following order:

Variables where the values vary among states:

1. Fish Consumption Rate (FCR)
2. Risk level (RL)
3. Relative Source Contribution (RSC)

Variables where the values generally do not vary among states:

4. Body Weight (BW)
5. Drinking Water Intake (DI)
6. Reference Dose (RfD)
7. Cancer Slope Factor (CSF)
8. Bioconcentration Factor (BCF)

Variables implicit in the HHC equations:

9. Lifespan and duration of exposure
10. Hazard quotient for non-cancer effects

1. Fish Consumption Rate (FCR)

Application: *This explicit variable* ***applies to all four equations****: carcinogen/fresh water; carcinogen/marine water; noncarcinogen/fresh water; and noncarcinogen/marine water.*

Ecology used a fish consumption rate of 175 g/day in the HHC equation, based on a Washington-specific risk management decision to use a value that: (1) is representative of state-specific information; and (2) was determined through a process that included consideration of EPA guidance and precedent, and input from multiple groups of stakeholders.

General information: The fish consumption rate (FCR) used in the equations usually refers to a statistic that describes a set of data from surveys of people based on the amount of fish and shellfish they eat. The data are represented as daily intake rates using the units of grams per day (g/day). When calculating HHC, the statistic used to describe the data set is a risk management decision made by states and tribes, and can be an average, a median, an upper percentile, or some other statistic. A state should also consider what target population to base the FCR on, and use survey data that represent that population of users. For example, the FCR could be based on survey data from the general population, or from high-consuming populations in the state.

The statistic used by the EPA and states has historically been an *average of a national general population data set (including consumers and non-consumers*), *freshwater and estuarine aquatic species only* (salmon excluded because of its marine life history). This is the origin of the 6.5 g/day fish consumption rate that is incorporated into the 1992 NTR. In 2000 EPA updated that national general population average value to 7.5 g/day, based on new science, and changed its guidance on the use of national general population data to recommend using a 90th percentile value (rather than an average) for freshwater and estuarine species only (EPA, 2000). That new 90th percentile recommended value was 17.5 g/day, and has been used by many states in criteria calculation.

EPA makes the following specific recommendation for protection of the general population for purposes of HHC development in the EPA 2000 guidance:

> *"EPA recommends a default fish intake rate of 17.5 grams/day to adequately protect the general population of fish consumers, based on the 1994 to 1996 data from the USDA's CSFII Survey. EPA will use this value when deriving or revising its national 304(a) criteria. This value represents the 90th percentile of the 1994-96 CSFII data. This value also represents the uncooked weight estimated from the CSFII data, and represents intake of freshwater and estuarine finfish and shellfish only."* (EPA, 2000, page 4-24)

In 2015 EPA published revised National Recommended Water Quality Criteria (NRWQC) for human health and included a new 90th percentile FCR for the national general population of 22 g/day, based on newer national survey data.

EPA 2000 makes the following specific recommendation for protection of highly exposed populations:

> *"EPA recommends default fish intake rates for recreational and subsistence fishers of 17.5grams/day and 142.4 grams/day, respectively. These rates are also based on uncooked weights for fresh/estuarine finfish and shellfish only. However, because the level of fish intake in highly exposed populations varies by geographical location, EPA suggests a four preference hierarchy for States and authorized Tribes to follow when deriving consumption rates that encourages use of the best local, State, or regional data available… **EPA strongly emphasizes that States and authorized Tribes should consider developing criteria to protect highly exposed population groups and use local or regional data over the default values as more representative of their target population group(s)**. The four preference hierarchy is: (1) use of local data; (2) use of data reflecting similar geography/population groups; (3) use of data from national surveys; and (4) use of EPA's default intake rates."* (EPA, 2000, pages 4-24 to 4-25, emphasis added)

Since Washington has a strong tradition of fish and shellfish harvest and consumption from local waters, and within-state survey information indicates that different groups of people harvest fish both recreationally and for subsistence (Ecology, 2013), *Ecology has made the risk management decision to base the fish consumption rate used in the HHC equation on "highly exposed populations,"* which include, among other groups, the following: tribes, Asian Pacific Islanders (API), recreational and subsistence fishers, immigrant populations. Fish consumption rates developed in several surveys around the Pacific Northwest are summarized and discussed in a recent Ecology publication (Ecology, 2013).

The choice of a FCR is a risk management decision made by states: The choice of an FCR that represents a specific population, and the statistic (e.g., average, median, or other percentile) representing the distribution of individual FCRs from that specific population, is a risk management decision made by states. EPA provides language on this risk management decision in EPA 2000:

> *"Risk management is the process of selecting the most appropriate guidance or regulatory actions by integrating the results of risk assessment with engineering data and with social, economic, and political concerns to reach a decision. In this Methodology, the choice of a default fish consumption rate which is protective of 90 percent of the general population is a risk management decision. The choice of an acceptable cancer risk by a State or Tribe is a risk management decision."* (Section 2.2)

As previously discussed, the statistic used by the EPA and states has historically been an *average of a national general population data set.* The FCR incorporated into the NTR is an average. Ecology is continuing use of the average statistic as described.

The new state FCR of 175 g/day: A FCR of 175 g/day is representative of average FCRs ("all fish and shellfish," including all salmon, restaurant, locally caught, imported, and from other sources) for highly exposed populations that consume both fish and shellfish from Puget Sound waters. This numeric value was used by the Oregon Department of Environmental Quality to calculate HHC in a 2011 rulemaking. A FCR of 175 g/day is considered an "endorsed" value. Groups endorsing the use of this numeric value, at different times in the process, include EPA and several tribes. Average FCR values for various highly exposed groups that harvest both fish and shellfish from Puget Sound waters are found in FCR Technical Support Document (Ecology, 2013).

The range of average values for the three highest Puget Sound tribal average values are in the Table 3, copied from Table 1 of the FCR Technical Support Document (Ecology, 2013):

Table 3: Fish consumption data from Table 1 FCR Technical Support Document

Population	Source of Fish	Number of Adults Surveyed	Mean	Percentiles		
				50th	90th	95th
General population (consumers only)	All sources: EPA method	2,853	56	38	128	168
	All sources: NCI method	6,465	19	13	43	57
Columbia River Tribes	All sources	464	63	41	130	194
	Columbia River	–	56	36	114	171
Tulalip Tribes	All sources	73	82	45	193	268
	Puget Sound	71	60	30	139	237
Squaxin Island Tribe	All sources	117	84	45	206	280
	Puget Sound	–	56	30	139	189
Suquamish Tribe	All sources	92	214	132	489	797
	Puget Sound	91	165	58	397	767
Recreational Fishers (compilation of multiple studies)	Marine waters, WA State	–	11–53	1.0–21	13–246	
	Freshwater, WA State	–	6.0–22	–	42–67	

Sources: Adapted from Polissar et al., 2012, Table E-1. Data for recreational fishers is from Table 3, Technical Issue Paper: *Recreational Fish Consumption Rates* (Ecology, 2012). General population data are for consumers only, as opposed to per capita. See Chapters 4 and 6.

The three highest average (mean) values are from the Tulalip, Squaxin Island, and Suquamish tribal surveys (average FCRs are, respectively, 82 g/day, 84 g/day, 214 g/day). The mean of the three tribal studies combined is 127 g/day. The FCR value of 175 g/day is not a calculated value. It was chosen as part of the risk management process for this rule and is based on the best available science for purposes of this rulemaking and is representative of the average value/values of these surveys.

Ecology compared the Asian Pacific-Islander (API) FCRs from Puget Sound, as summarized in Table 4, to the three tribal studies identified previously. The percentile information from the API survey is comparatively lower than the percentile information for the Suquamish study (the tribe with the highest consumption rates). For example, a median equal to 74 g/day was from the API study, while a median equal to 132 g/day was from the Suquamish study. Average (mean) values were not reported for the API study, but because the mid and upper percentiles are all lower than the Suquamish study, it is reasonable to infer that this population is consuming amounts of fish and shellfish that, at the average, are not greater than the tribal studies used to develop the value of 175 g/day, and are therefore encompassed by the value of 175 g/day.

Table 4: API Consumption rates from Table 30 FCR Technical Support Document (Ecology, 2013)

Population API	Species Group	Source of Fish	Descriptive Statistics (g/day) 50th Percentile	90th Percentile	95th Percentile
Asian-Pacific Islander (API)	Total seafood consumption	All sources	74.0	227	286
	All species	Harvested anywhere	6.5	25.9	58.8
	All species	Harvested from King County	5.7	22.2	48.4
	Non-anadromous species	Harvested anywhere	6.2	37.9	54.1
	Non-anadromous species	Harvested from King County	6.0	20.1	45.5

Sources: Adapted from Kissinger, 2005, Table 5. See also Polissar et al., 2012.

Decision for the rule:

Ecology used a FCR of 175 g/day to calculate the HHC, based on a state-specific risk management decision. (http://www.governor.wa.gov/news-media/inslee-announces-new-path-water-quality-rule-continues-work-broader-toxics-reduction).

2. Risk level (RL)

*Application: This explicit variable applies **only to equations for carcinogens**: carcinogen/fresh water and carcinogen/marine water.*

Ecology continued use of the risk level of one-in-one-million (10^{-6}) as specified in 173-201A-240 WAC, except for the chemical-specific risk level for PCBs (discussed later in this document). The new criteria for carcinogens using the risk level are identified in the newly formatted toxics criteria table at 173-201A-240 WAC.

Background: The risk level used in the HHC equations for carcinogens is defined as the "upper bound estimate of excess lifetime cancer risk" (EPA, 2000). The risk level value is only used when calculating criteria for pollutants that may cause cancer. Applying the risk level to the equations results in HHC concentrations that would hypothetically be expected to increase an individual's lifetime risk of cancer by no more than the assigned risk level, regardless of the cancer risk that may come from exposure to the chemical from sources other than surface water.

EPA 2000 guidance recommends that states and tribes set HHC risk levels for the general population at either one additional occurrence of cancer, after 70 years of daily exposure, in 100,000 people (1×10^{-5}) or one in 1,000,000 people (1×10^{-6}). EPA 2000 guidance also recommends that for states with high fish consuming populations, the most highly exposed populations should not exceed a risk level of one additional occurrence of cancer in 10,000 people (1×10^{-4}). Washington's current HHC from the NTR apply a risk level of one additional occurrence of cancer in 1,000,000 (1×10^{-6}).

The choice of an acceptable additional lifetime cancer risk level is a risk management decision made by states. EPA provides specific language on this in EPA 2000:

> *"Risk management is the process of selecting the most appropriate guidance or regulatory actions by integrating the results of risk assessment with engineering data and with social, economic, and political concerns to reach a decision. In this Methodology, the choice of a default fish consumption rate which is protective of 90 percent of the general population is a risk management decision. The choice of an acceptable cancer risk by a State or Tribe is a risk management decision."* (Section 2.2)

General information: The choice of risk level is a policy decision by the state. Nationwide, states (including Washington) and tribes, have typically chosen to use a risk level of one additional occurrence of cancer in 100,000 people (1×10^{-5}) or one in 1,000,000 people (1×10^{-6}) for HHC. This is demonstrated in a list of state and tribal risk levels provided to Ecology by EPA Region 10 (see http://www.ecy.wa.gov/programs/wq/swqs/RiskLevelCarcinogens.pdf). This list was presented as part of Ecology's Policy Forum #3, held February 8, 2013 (http://www.ecy.wa.gov/programs/wq/swqs/hhcpolicyforum.html). EPA guidance advises that states and tribes using these risk levels must ensure that the risk level for the most highly exposed subpopulations does not exceed one additional occurrence of cancer in 10,000 people (1×10^{-4}), (EPA, 2000). Section 303(c) of the Clean Water Act directs the requirements for setting and revising water quality standards, but does not specify risk levels.

It should be noted that it is not possible to assume that an equal amount of risk will be realized by the entire population of a state. All other factors being equal, people and groups who consume more fish and shellfish are inherently at greater risk from those contaminants than those who do not (assuming that contaminants are present in these items and that equal concentrations of contaminants are present in the consumed items). Regardless of the specific fish consumption rate used in the criteria calculations, or the final water quality criteria that are applied to waters, unequal risk among groups and individuals will always exist because of differences in fish consumption habits. This difference would exist even if criteria were not present. Therefore it is not reasonable to assume that a given risk level chosen by a state reflects the actual risk across all populations or among all individuals in the entire state.

How well do the criteria equations characterize actual risk? Even though the HHC equations appear to directly stipulate risk, other factors (those within the HHC equations and those not included in the HHC equations) complicate the ability to gauge an individual's or population's actual risk level.

Direct quantification of risk for populations is described in EPA guidance (EPA, 2000) as follows:

> *"EPA's Guidelines For Exposure Assessment (USEPA, 1992) describes the extreme difficulty in making accurate estimates of exposures and indicates that uncertainties at the more extreme ends of the distribution increase greatly. On quantifying population exposures/risks, the guidelines specifically state:*

In practice, it is difficult even to establish an accurate mean health effect risk for a population. This is due to many complications, including uncertainties in using animal data for human dose-response relationships, nonlinearities in the dose response curve, projecting incidence data from one group to another dissimilar group, etc. Although it has been common practice to estimate the number of cases of disease, especially cancer, for populations exposed to chemicals, it should be understood that these estimates are not meant to be accurate estimates of real (or actuarial) cases of disease. The estimate's value lies in framing hypothetical risk in an understandable way rather than in any literal interpretation of the term 'cases.'"(EPA 2000, pages 2-1 to 2-1)

Washington's current risk level and information on changing the risk level: On December 18, 1991, in its official comments on EPA's proposed NTR the Department of Ecology (Ecology) directed EPA to promulgate HHC for the state at $1x10^{-6}$. At the time, Ecology understood that the $1x10^{-6}$ risk level would be applied with a 6.5 grams/day fish consumption rate of freshwater and estuarine fish, and that higher consumption rates would still be protective, but at a different risk level (for example, a 65 grams/day fish consumption rate would have an estimated $1x10^{-5}$ risk level) as this was clearly described by EPA in the November 19, 1991 proposed NTR. During the summer of 1992, the state formally proposed and held public hearings on revisions to its water quality standards. The standards, which were scheduled for adoption in late November 1992, included a risk level of $1x10^{-6}$ which remain unchanged in the current approved standards.

In the 1992 NTR (EPA, 1992) the following excerpt provided information to states planning to adopt their own criteria in order to be removed from the NTR *(#3. Approach for States that Fully Comply Subsequent to Issuance of this Final Rule)*:

As discussed in prior Sections of this Preamble, the water quality standards program has been established with an emphasis on State primacy. Although this rule was developed to Federally promulgate toxics criteria for States, EPA prefers that States maintain primacy, revise their own standards, and achieve full compliance. EPA is hopeful this rule will provide additional impetus for non-complying States to adopt the criteria for priority toxic pollutants necessary to comply with section 303(c)(2)(B).

Removal of a State from the rule will require another rulemaking by EPA according to the requirements of the Administrative Procedure Act (5 U.S.C. 551 et seq.). EPA will withdraw the Federal rule without a notice and comment rulemaking when the State adopts standards no less stringent than the Federal rule (i.e., standards which provide, at least, equivalent environmental and human health protection). For example, see 51 FR 11580, April 4, 1986, which finalized EPA's removal of a Federal rule for the State of Mississippi.

However, if a State adopts standards for toxics which are less stringent than the Federal rule but, in the Agency's judgment, fully meet the requirements of the Act, EPA will propose to withdraw the rule with a Notice of proposed rulemaking and provide for *public participation. This procedure would be required for partial or complete removal of a State from this rulemaking. An exception to this requirement would be when a State adopts a human health criterion for a carcinogen at a 10^{-5} risk level where the Agency has promulgated at a 10^{-6} risk level. In such a case, the Agency believes it would be appropriate to withdraw the Federal criterion without notice and comment because the Agency has considered in this rule that criteria based on either 10^{-5} or 10^{-6} risk levels meet the requirements of the Act. A State covered by this final rule could adopt the necessary criteria using any of the three Options or combinations of those Options described in EPA's 1989 guidance." (*1992 NTR*)*

How risk was applied in this new rule: The approach Ecology used to calculate the new HHC is very similar to that used by EPA to calculate their Clean Water Act 304(a) national recommended criteria. EPA's method, however, focuses on providing protection to the general population, while the Ecology approach focuses on protection of highly exposed populations, which in Washington are assumed to include (among others) tribes, API populations, immigrant populations, recreational, and subsistence fishers. Washington implemented this change of focus in the proposed criteria equations by changing the FCR variable from a statistic (the average) that represents the general population FCR distribution to an equivalent statistic (the average) representative of FCR distributions of highly exposed populations. The body weight input to the equations is representative of average adults of both the national general population, for the adult average of at least three tribes in Washington, and is used by EPA in its 2015 NRWQC (see Body Weight (BW) discussion later in this document). The Drinking Water Intake (DI) input to the equations is representative of average adults and the national general population, and is used by EPA in its 2015 NRWQC. (see Drinking Water Intake (DI) discussion later in this document). The risk level used in the HHC equations is one to one million (10^{-6}), the risk level currently in Washington's water quality standards (see Overview section of this document for a description of this risk management decision). However, a state-specific risk level was chosen for PCBs (see section on Challenging Chemicals: PCBs.).

Washington applied the risk framework, developed by EPA for the current federal HHC rule (the 1992 NTR), to highly exposed populations in Washington in the following manner:

- Washington is currently under the federal NTR for HHC. Those criteria are set at a 10^{-6} risk level and the risk level is applied to the arithmetic mean (average) of the *general population.*
- For this new rule, the Washington risk level of 10^{-6} is applied to a FCR of 175 g/day that is representative of the arithmetic means (averages) of *highly exposed populations* instead of the general population. (Note: the risk level used for total PCBs is different from 10^{-6}. Please see section on Challenging Chemicals: PCBs.).

Most states follow EPA's approach and apply the state's default risk level to a general population (as EPA also does in its Clean Water Act §304(a) national recommended criteria) and then ensure that highly exposed populations do not exceed EPA's upper levels of allowed risk. In this new rule Washington has taken the extra protective measure of basing the FCR on

Washington’s most highly exposed populations, and the important local food sources of “all fish and shellfish" (which includes the additional protective step of including local and non-local sources, such as all salmon, restaurant, locally caught, imported, and from other sources). The new rule also includes the additional protective step of applying the more broadly protective FCR to a risk level most frequently applied to the general population. The Washington approach ensures that highly exposed populations in Washington will be protected by HHC calculated using the same risk level and FCR statistic (representative of the arithmetic mean) that is currently applied to the NTR HHC calculated for the general population.

Decision for proposed rule: Ecology continued use of the risk of *one-in-one-million or 10^{-6}*. This risk management decision is described in the Overview section of this Decision Document.

3. Relative Source Contribution (RSC)

*Application: This explicit variable applies **only to equations for noncarcinogens**: noncarcinogen/fresh water and noncarcinogen/marine water.*

Ecology applied a relative source contribution value of one (1), which is the same value used to calculate the criteria in the NTR.

Background: The Relative Source Contribution (RSC) is a variable in the HHC equation that represents the portion of an individual’s daily exposure to a contaminant that is attributed to exposure sources regulated by the Clean Water Act as opposed to exposure sources of toxic chemicals that are not regulated by the Clean Water Act. The RSC only applies to the equations for noncarcinogens.

The HHC are used to regulate pollution sources that discharge to waters of the state and are under the authority of the Clean Water Act, in order to control chemical exposure from untreated surface-water used for drinking water, and eating fish and shellfish that live in those waters. The RSC is intended to account for secondary sources of pollutants, outside of the authority of the Clean Water Act, such as atmospheric deposition or marine fish sources (e.g., mercury in tuna).

Relative source contributions (RSCs) are used in the criteria equation only for non-carcinogens and non-linear carcinogens. Non-carcinogenic chemicals that express their toxicity through threshold effects are more likely to express effects when a specific dose – the reference dose (RfD) – is surpassed. The RSC, as applied in the HHC equations, assumes that exposure of a particular chemical through surface water (i.e., drinking water and fish/shellfish consumption) contributes a portion of the RfD, with the remaining portion from exposure to other sources (such as dietary intake other than non-local fish and shellfish). The portion of RfD exposure through surface water is the RSC, expressed as a decimal fraction. For example, an RSC of 0.4 indicates 40% of the RfD is due to exposure through surface waters and 60% is due to other sources.

The 1980 EPA guidance for HHC (EPA 1980), used to develop the pre-2000 HHC, included the alternative of considering total exposure from all sources in the criteria calculations, but the Clean Water Act 304(a) HHC, developed following these guidelines, assumed an RSC of 1.0

(EPA, 2002). The 1992 NTR HHC applied a RSC of 1.0 (100% allocation of exposure given to sources regulated by the Clean Water Act). In 2015, EPA published revised NRWQC for a large number of pollutants using RSCs based on EPA 2000 guidance. These RSCs are largely limited to RSC = 0.2.

The EPA 2000 guidance and follow-up clarifications from EPA (2013 and 2015), recommend new default values for the RSC to be used in the HHC equations for noncarcinogens:

> *"In the absence of scientific data, the application of the EPA's default value of 20 percent RSC in calculating 304(a) criteria or establishing State or Tribal water quality standards under Section 303(c) will ensure that the designated use for a water body is protected. This 20 percent default for RSC can only be replaced where sufficient data are available to develop a scientifically defensible alternative value. If appropriate scientific data demonstrating that other sources and routes of exposure besides water and freshwater/estuarine fish are not anticipated for the pollutant in question, then the RSC may be raised to the appropriate level, based on the data, but not to exceed 80 percent. The 80 percent ceiling accounts for the fact that some sources of exposure may be unknown."*

In the simplest terms, EPA's latest RSC guidance recommends two conservative default approaches:

- If sources of exposure to a chemical are not known, then a default RSC of 0.2 is included in the equation.
- If sources of exposure to a chemical are well known and documented, then a calculated RSC is included in the equation. This calculated RSC gives the HHC the remainder of the reference dose or allowable daily exposure that is not accounted for by other non-Clean Water Act sources. EPA guidance suggests that the RSC value should not be greater than 0.8.

An inherent assumption in how the RSC for HHC is developed is that all other sources of the contaminant are required to be accounted for in the exposure scenario, and the HHC get the remainder of the reference dose or allowable daily exposure that is assumed to come from sources under the authority of the Clean Water Act. The resulting situation seems contradictory; as the contribution of a contaminant from water sources becomes smaller, the HHC becomes more stringent and in effect becomes a larger driver for more restrictive limits.

The use of an RSC affects criteria calculation results as follows:

- ➢ If the RSC is 1.0, then it does not change the resulting criteria calculation.
- ➢ If the RSC is 0.8, then the criterion becomes more stringent by 20%.
- ➢ If the RSC is 0.5, then the criterion becomes more stringent by 50%.
- ➢ If the RSC is 0.2, then the criterion becomes more stringent by 80%.

The RSC can drive, very directly, the resulting human health water quality criteria and related regulatory and permit levels. Using an RSC of 0.2, for example, means that an ambient water quality criterion that would otherwise be 10 units would be reduced by 80% to 2 units, thus becoming lower, or more stringent, in order to compensate for sources that are outside of the sources regulated by the Clean Water Act. Many other programs that address toxics, such as the Safe Drinking Water Act and the Superfund Clean-up Program, also establish similar concentration goals but then use a risk management approach that allows for consideration of other factors, such as cost and feasibility, in establishing actual compliance levels that have to be achieved. Conversely, the ambient water quality criteria under the Clean Water Act set direct regulatory levels that are enforced as both ambient concentrations in the water body (through the Clean Water Act 303(d) program with subsequent load allocation requirements [40CFR130]), as well as through NPDES permit levels (criteria applied at end-of-pipe or with use of a dilution zone, depending on the specific circumstances).

EPA's Water Quality Standards Handbook: Second Edition (EPA, 2012) provides additional guidance on this subject. This guidance is different from the EPA 2000 guidance, and indicates that in practice criteria may be based on risk from only the surface water exposure routes:

"Human Exposure Considerations: *A complete human exposure evaluation for toxic pollutants of concern for bioaccumulation would encompass not only estimates of exposures due to fish consumption but also exposure from background concentrations and other exposure routes. The more important of these include recreational and occupational contact, dietary intake from other than fish, intake from air inhalation, and drinking water consumption. For section 304(a) criteria development, EPA typically considers only exposures to a pollutant that occur through the ingestion of water and contaminated fish and shellfish. This is the exposure default assumption, although the human health guidelines provide for considering other sources where data are available (see 45 F.R. 79354). Thus the criteria are based on an assessment of risks related to the surface water exposure route only (57 F.R. 60862-3)." (text copied from EPA web site on 11/10/2015):*

http://www2.epa.gov/sites/production/files/2014-10/documents/handbook-chapter3.pdf

The use of an RSC to compensate for sources of exposure outside the scope of the Clean Water Act when establishing HHC is a risk management decision that states need to carefully weigh. If the scope of the Clean Water Act is limited to addressing potential exposures from NPDES- or other Clean Water Act regulated discharges to surface water, it could be argued that an RSC of less than 1.0 inappropriately expands of the scope of what the Clean Water Act would be expected to control. On the other hand, if it is assumed that the scope of the Clean Water Act includes consideration and protection from other sources of toxics not regulated by the Clean Water Act, such as atmospheric deposition or marine fish sources (e.g., mercury in tuna), one could argue for an RSC of less than 1.0. The role of the RSC and how to calculate it is an issue that must be carefully considered by a state when establishing HHC.

Decision for new rule: Because the geographic and regulatory scope of the Clean Water Act addresses contaminant discharge directly to waters of the state (not other sources or areas), Ecology made a risk management decision that the human health criteria in the new rule be based on a relative source contribution of one (RSC = 1). Given the limited ability of the Clean Water Act to control sources outside its jurisdiction, Ecology firmly believes that this is a prudent decision.

4. Body Weight (BW)

Application: This explicit variable ***applies to all four equations****: carcinogen/fresh water; carcinogen/marine water; noncarcinogen/fresh water; and noncarcinogen/marine water.*

Ecology updated the BW value used in the equations, based on new science and local data, from 70 kg to 80 kg.

Background: The BW approach included in the 1992 NTR, EPA's 2000 guidance, and EPA's published recommended national Clean Water Act 304(a) criteria values is to use an average adult BW in the HHC calculation. The BW historically used in EPA guidance and regulation is 70 kilograms (154 pounds). EPA's revised NRWQC from 2015 use a BW of 80 kg. (176 pounds). EPA's most recent Exposure Factors Handbook (EPA, 2011) provides an updated average BW of 80 kilograms, which also closely aligns with the tribal average adult BWs of the Tulalip and Suquamish tribes (EPA, 2007) of 81.8 and 79 kilograms, respectively. This newer science and local data compelled Ecology to use the updated BW value in the HHC equations. Table 5 provides HHC-relevant information on use of the body weight exposure factor.

Table 5: Summary of guidance and studies on body weight

Date	Source	BW input
1992	National Toxics Rule (40CFR131.36)	70 kg = average adult body weight
2000	EPA 2000 HHC Methodology (EPA -822-B-00-004)	EPA recommends using 70 kg = average adult body weight as "a representative average value for both male and female adults:" "EPA recommends maintaining the default body weight of 70 kg for calculating AWQC as a representative average value for both male and female adults."
2007	Tribal FCR studies – as summarized in: US EPA Reg. 10, Framework for Selecting and Using Tribal Fish and Shellfish Consumption Rates for Risk-Based Decision Making at CERCLA and RCRA Cleanup Sites in Puget Sound and the Strait of Georgia, Working Document, To Be Applied in Consultation with Tribal Governments on a Site-specific Basis, Revision 00.2007 (EPA, 2007, Tables B-1 and B-2 in Appendix B).	Tulalip Tribe = 81.8 kg average adult Suquamish Tribe = 79 kg average adult
2011	EPA Exposure Factors Handbook - 2011 edition. EPA 600/R-090/052F. (EPA, 2011)	EPA recommends 80 kg for average adult body weight
2015	EPA revised NRWQC for human health	EPA revisions used 80 kg. average adult body weight

Decision for new rule: Based on this information Ecology updated the body weight value used in the equations for the new HHC, based on new science and local data, from 70 kg to 80 kg.

5. Drinking Water Intake (DI)

Application: This explicit variable ***applies only to equations for fresh waters****: carcinogen/fresh water and noncarcinogen/fresh water.*

Ecology used the new EPA-recommended drinking water intake (as per revised 2015 EPA NRWQC) value of 2.4 L/day to calculate criteria in the new rule.

Background: The drinking water intake approach included in the 1992 NTR, EPA's 2000 guidance, and EPA's published recommended Clean Water Act 304(a) national criteria values is to use an approximate 90th percentile adult exposure value in the HHC calculation. The drinking water intake historically used in EPA guidance and regulation is 2 liters/day.

An excerpt from the EPA 2000 guidance that recommends using 2 liters/day states:

> *"EPA recommends maintaining the default drinking water intake rate of 2 L/day to protect most consumers from contaminants in drinking water. EPA believes that the 2 L/day assumption is representative of a majority of the population over the course of a lifetime. EPA also notes that there is comparatively little variability in water intake within the population compared with fish intake (i.e., drinking water intake varies, by and large, by about a three-fold range, whereas fish intake can vary by 100-fold). EPA believes that the 2 L/day assumption continues to represent an appropriate risk management decision…" (EPA, 2000,* (pages 4-22 to 4-23)

EPA's most recent Exposure Factors Handbook (EPA, 2011, Tables 3-10, 3-26, and 3-27) provides examples of updated 90th percentile adult (ages 18-65) drinking water intake values between 2.1 and 3.1 liters/day, based on national data. These values are for direct and indirect (water added in the preparation of a food or beverage) consumption of water, and are further explained in the previous tables. EPA released new *Supplemental Guidance for Superfund* on February 6, 2014 (memo from Dana Stalcup, USEPA to Superfund National Policy Managers, Regions 1-10; OSWER Directive 9200.1-120) that incorporates and adopts updates to *Risk Assessment Guidance for Superfund(RAGS): Human Health Evaluation Manual, Part A through E,* based on data in the 2011 Exposure Factors Handbook. This includes a recommended 90th percentile adult drinking water intake value of 2.5 L/day. EPA's revised 2015 NRWQC for human health use a 90th percentile drinking water intake of 2.4 L/day.

Table 6 is information on the drinking water exposure factor:

Table 6: Drinking water exposure factor

Date	Source	Drinking Water Intake (DI) input
1992	National Toxics Rule, 40CFR131.36 (EPA 1992)	2 L/day = approximate 90^{th} percentile
2000	EPA 2000 HHC Methodology, EPA -822-B-00-004 (EPA, 2000)	EPA recommends using 2 L/day: “EPA recommends maintaining the default drinking water intake rate of 2 L/day to protect most consumers from contaminants in drinking water. EPA believes that the 2 L/day assumption is representative of a majority of the population over the course of a lifetime. EPA also notes that there is comparatively little variability in water intake within the population compared with fish intake (i.e., drinking water intake varies, by and large, by about a three-fold range, whereas fish intake can vary by 100-fold). EPA believes that the 2 L/day assumption continues to represent an appropriate risk management decision…” (pages 4-22 to 4-23)
2011	EPA Exposure Factors Handbook - 2011 edition. EPA 600/R-090/052F (EPA 2011)	The Exposure Factors Handbook contains new information on drinking water intake for various ages, groups, consumer types, and water sources. It provides updated 90^{th} percentile adult drinking water intake values, based on national data, See Chapter 3.
2014	EPA 2014; OSWER Directive 9200.1-120.	Previous default value was 2 L/day. Currently recommended value is 2.5 L/day, which is the 90th percentile of consumer-only ingestion of drinking water (≥ 21 years of age)
2015	EPA, 2015: FR V80, Number 124 (Monday, June 29, 2015)Pages 36986-36989	Previous default value (EPA 2000) was 2 L/day. The updated drinking water intake is 2.4 L/day for consumer-only water ingestion at the 90th percentile for adults (≥21 years of age)

Decision for new rule: Ecology used the EPA 2015 recommended drinking water intake value of 2.4 liters/day to calculate criteria for the proposed rule.

6. Reference Dose (RfD)

Application: This explicit variable ***applies only to noncarcinogens****: noncarcinogen/fresh water; and noncarcinogen/marine water.*

Background: The reference dose is an estimate of the daily exposure to the human population (including sensitive subgroups) via ingestion to a chemical that is likely to be without appreciable risk of deleterious health effects during a lifetime. The reference dose applies only to non-carcinogens. EPA has developed chronic reference doses for use in regulatory programs. These can be found in EPA’s Integrated Risk Information System (IRIS) and in EPA’s NRWQC documents (EPA, 2015).

Decision for new rule: Ecology used reference doses found in either EPA’s IRIS or NRWQC documents to calculate the criteria for non-carcinogens for the new rule.

7. Cancer Slope Factor (CSF)

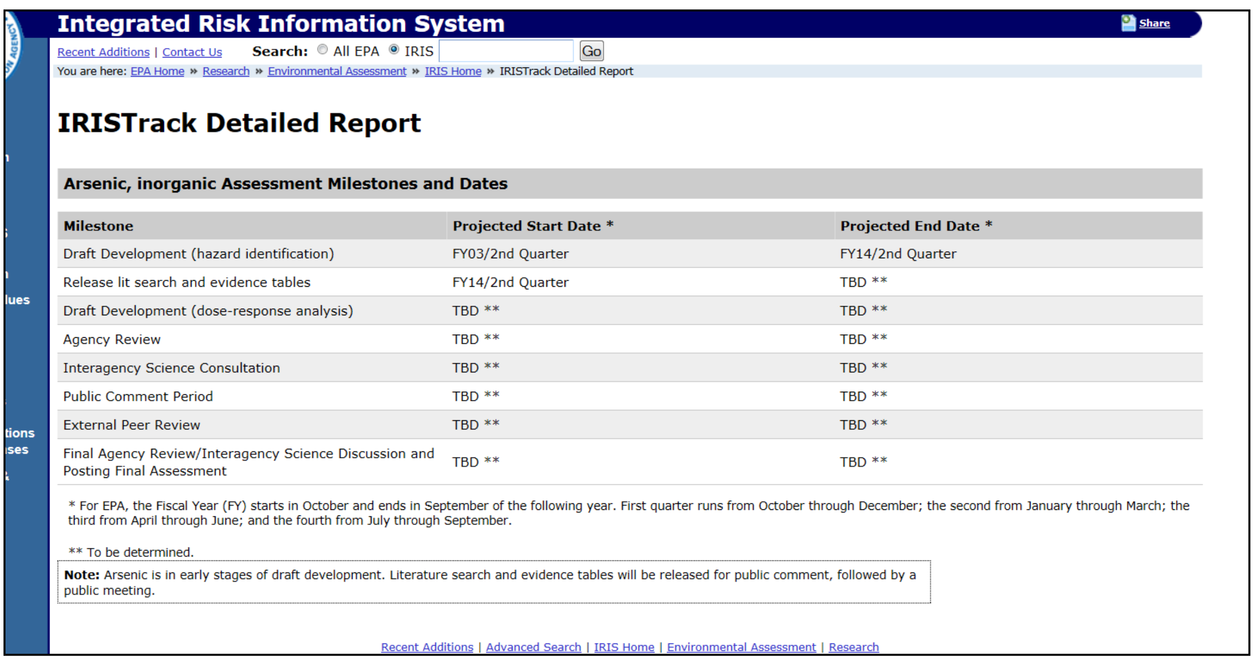
Application: This explicit variable ***applies only to carcinogens****: carcinogen/fresh water and carcinogen/marine water.*

Ecology used EPA 2015 cancer slope factors (most from IRIS) for carcinogens to calculate the criteria in the proposed rule.

Background: The ***cancer slope factor (CSF)*** provides a measure of the toxicity of an identified carcinogen. This slope factor is used for chemicals where the carcinogenic risk is assumed to decrease linearly as the chemical dose decreases. The CSF is specific to each chemical and can be found in the EPA IRIS (EPA, 2014) and in EPA 2015 individual criteria documents.

Ecology used, with few exceptions, the EPA 2015 CSFs for carcinogens to calculate the criteria in the new rule. Ecology made the decision not to use the CSFs in HHC calculations for inorganic arsenic and 2,3,7,8-TCDD based on recent scientific information and uncertainty surrounding assessment of carcinogenicity. Rationale for each of these chemicals varies. The explanation follows:

At any given time, there will be some IRIS toxicity factors undergoing review. In these cases, EPA has a specific process that is followed to review and develop revised factors. At present, several toxicity factors are under review, two of which have been under review for many years: the carcinogenicity reviews of inorganic arsenic and 2,3,7,8-TCDD. Information of the status of the reviews (copied from the EPA IRIS website March 2014) is in Figures 3 and 4. The uncertainty around agreed-upon cancer slope factors for these chemicals is considerable, as evidenced by the long history of the review processes as well as the lack of a prospective date for completion.


Integrated Risk Information System

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IRISTrack Detailed Report

Arsenic, inorganic Assessment Milestones and Dates

Milestone	Projected Start Date *	Projected End Date *
Draft Development (hazard identification)	FY03/2nd Quarter	FY14/2nd Quarter
Release lit search and evidence tables	FY14/2nd Quarter	TBD **
Draft Development (dose-response analysis)	TBD **	TBD **
Agency Review	TBD **	TBD **
Interagency Science Consultation	TBD **	TBD **
Public Comment Period	TBD **	TBD **
External Peer Review	TBD **	TBD **
Final Agency Review/Interagency Science Discussion and Posting Final Assessment	TBD **	TBD **

* For EPA, the Fiscal Year (FY) starts in October and ends in September of the following year. First quarter runs from October through December; the second from January through March; the third from April through June; and the fourth from July through September.

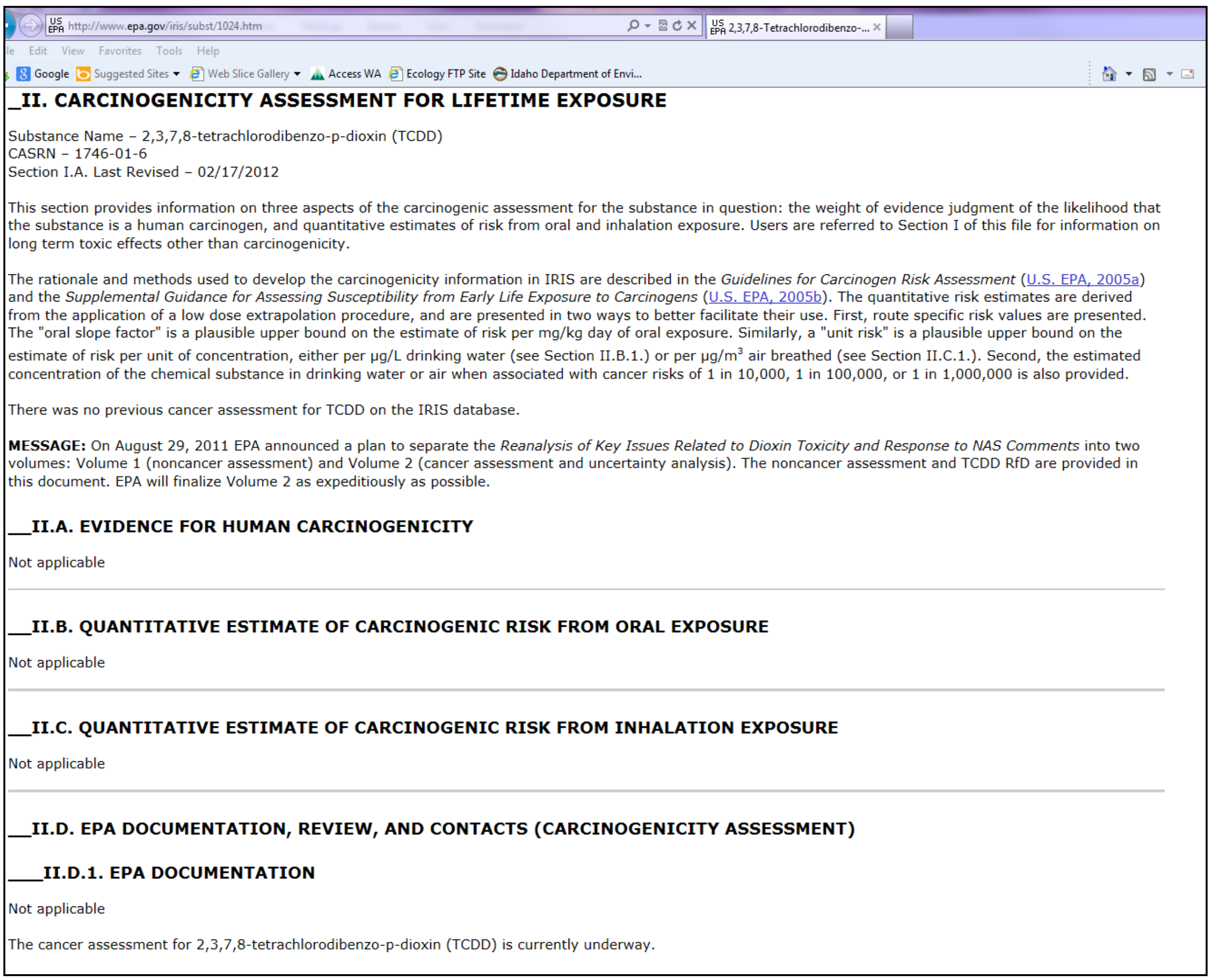
** To be determined.

Note: Arsenic is in early stages of draft development. Literature search and evidence tables will be released for public comment, followed by a public meeting.

Recent Additions | Advanced Search | IRIS Home | Environmental Assessment | Research

Figure 3: Integrated Risk Information System report for arsenic

Without a reliable toxicity factor for cancer, Ecology cannot calculate arsenic criteria based on cancer. EPA agrees that new cancer-based criteria for arsenic cannot be calculated at this time. In a May 6, 2016 filing with the United States District Court for the Western District of Washington, EPA stated that it will withdraw its proposed arsenic criteria for Washington because "extensive additional scientific analysis is necessary before revised criteria" for arsenic can be promulgated. *Puget Soundkeeper Alliance et. al. V. U.S.E.P.A.*, Case No. 2:16-cv-00293-JLR, EPA's Motion for Summary Judgment (May 6, 2016) at 13. As EPA explained in the Declaration of Elizabeth Southerland, Director of the Office of Science and Technology with EPA's Office of Water, "EPA did not update its CWA section 304(a) recommended criteria" for arsenic in 2015, and "EPA recognizes that there is substantial uncertainty surrounding the toxicological assessment of arsenic with respect to human health effects." Declaration of Elizabeth Southerland (May 5, 2016).



http://www.epa.gov/iris/subst/1024.htm

_II. CARCINOGENICITY ASSESSMENT FOR LIFETIME EXPOSURE

Substance Name – 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
CASRN – 1746-01-6
Section I.A. Last Revised – 02/17/2012

This section provides information on three aspects of the carcinogenic assessment for the substance in question: the weight of evidence judgment of the likelihood that the substance is a human carcinogen, and quantitative estimates of risk from oral and inhalation exposure. Users are referred to Section I of this file for information on long term toxic effects other than carcinogenicity.

The rationale and methods used to develop the carcinogenicity information in IRIS are described in the *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a) and the *Supplemental Guidance for Assessing Susceptibility from Early Life Exposure to Carcinogens* (U.S. EPA, 2005b). The quantitative risk estimates are derived from the application of a low dose extrapolation procedure, and are presented in two ways to better facilitate their use. First, route specific risk values are presented. The "oral slope factor" is a plausible upper bound on the estimate of risk per mg/kg day of oral exposure. Similarly, a "unit risk" is a plausible upper bound on the estimate of risk per unit of concentration, either per µg/L drinking water (see Section II.B.1.) or per µg/m^3 air breathed (see Section II.C.1.). Second, the estimated concentration of the chemical substance in drinking water or air when associated with cancer risks of 1 in 10,000, 1 in 100,000, or 1 in 1,000,000 is also provided.

There was no previous cancer assessment for TCDD on the IRIS database.

MESSAGE: On August 29, 2011 EPA announced a plan to separate the *Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments* into two volumes: Volume 1 (noncancer assessment) and Volume 2 (cancer assessment and uncertainty analysis). The noncancer assessment and TCDD RfD are provided in this document. EPA will finalize Volume 2 as expeditiously as possible.

__II.A. EVIDENCE FOR HUMAN CARCINOGENICITY

Not applicable

__II.B. QUANTITATIVE ESTIMATE OF CARCINOGENIC RISK FROM ORAL EXPOSURE

Not applicable

__II.C. QUANTITATIVE ESTIMATE OF CARCINOGENIC RISK FROM INHALATION EXPOSURE

Not applicable

__II.D. EPA DOCUMENTATION, REVIEW, AND CONTACTS (CARCINOGENICITY ASSESSMENT)

___II.D.1. EPA DOCUMENTATION

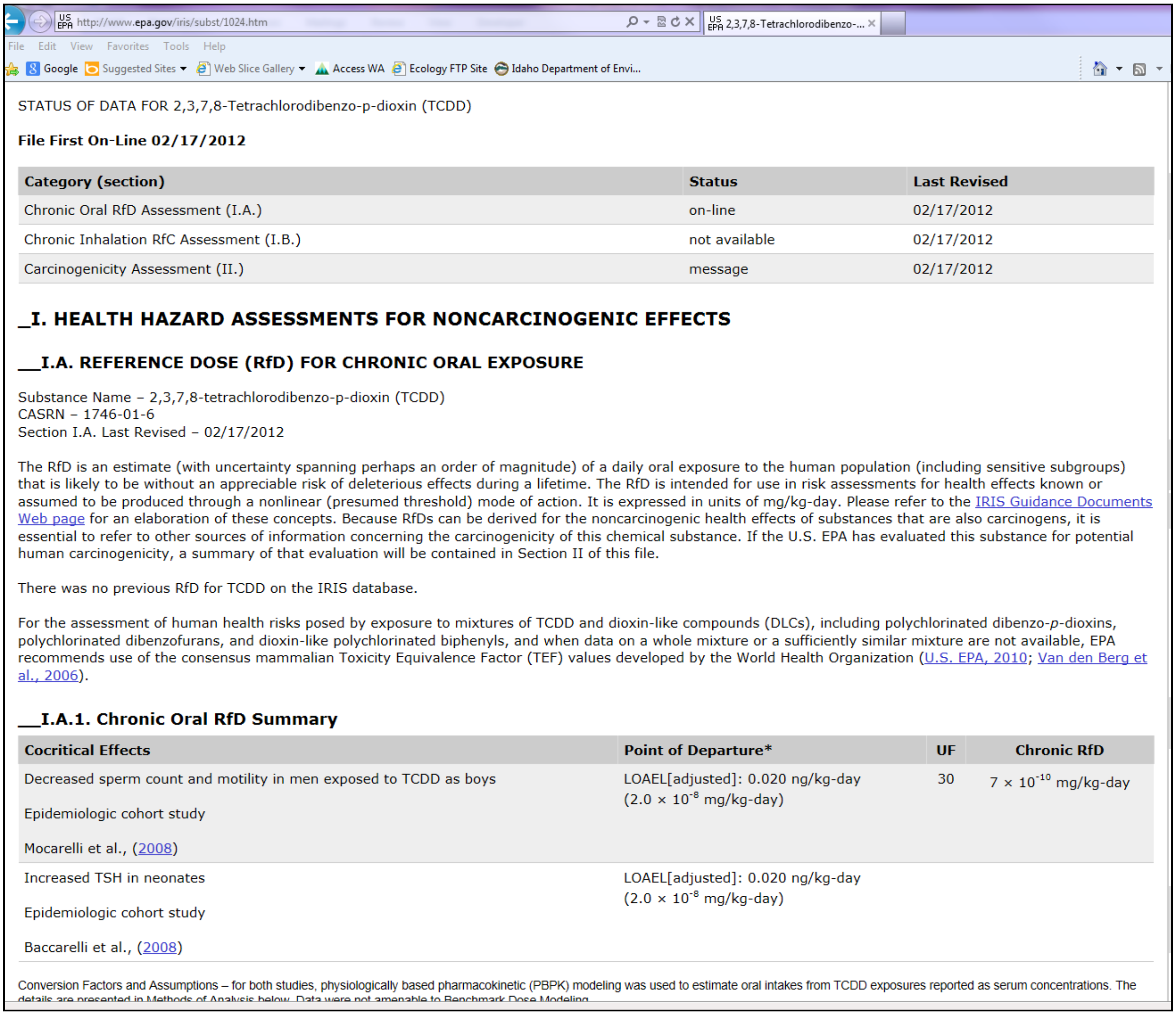
Not applicable

The cancer assessment for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) is currently underway.

Figure 4: Carcinogenicity assessment for 2,3,7,8-TCDD

Without a reliable toxicity factor for cancer, Ecology cannot calculate dioxin criteria based on cancer. EPA agrees that new cancer-based criteria for dioxin cannot be calculated at this time. In a May 6, 2016 filing with the United States District Court for the Western District of Washington, EPA stated that it will withdraw its propose dioxin criteria for Washington because “extensive additional scientific analysis is necessary before revised criteria” for dioxin can be promulgated. *Puget Soundkeeper Alliance et. al. V. U.S.E.P.A.,* Case No. 2:16-cv-00293-JLR, EPA’s Motion for Summary Judgment (May 6, 2016) at 13. As EPA explained in the Declaration of Elizabeth Southerland, Director of the Office of Science and Technology with EPA’s Office of Water, “EPA did not update its CWA section 304(a) recommended criteria” for dioxin in 2015, and “IRIS does not currently contain a quantitative carcinogenicity assessment” for dioxin. Declaration of Elizabeth Southerland (May 5, 2016). These statements indicate that the existing science does not allow either Ecology or EPA to adopt new cancer-based dioxin criteria for Washington.

Based on these uncertainties, Ecology decided not to use CSFs in HHC calculations for these two chemicals. The approach taken for arsenic is described in the section on Challenging chemicals: Arsenic. The approach taken for 2,3,7,8-TCDD is to use the most recent IRIS non-cancer reference dose for HHC calculation. This reference dose was finalized in 2012. The IRIS information (copied from the IRIS website March 2014) follows:



STATUS OF DATA FOR 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)

File First On-Line 02/17/2012

Category (section)	Status	Last Revised
Chronic Oral RfD Assessment (I.A.)	on-line	02/17/2012
Chronic Inhalation RfC Assessment (I.B.)	not available	02/17/2012
Carcinogenicity Assessment (II.)	message	02/17/2012

_I. HEALTH HAZARD ASSESSMENTS FOR NONCARCINOGENIC EFFECTS

__I.A. REFERENCE DOSE (RfD) FOR CHRONIC ORAL EXPOSURE

Substance Name – 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
CASRN – 1746-01-6
Section I.A. Last Revised – 02/17/2012

The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. The RfD is intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action. It is expressed in units of mg/kg-day. Please refer to the IRIS Guidance Documents Web page for an elaboration of these concepts. Because RfDs can be derived for the noncarcinogenic health effects of substances that are also carcinogens, it is essential to refer to other sources of information concerning the carcinogenicity of this chemical substance. If the U.S. EPA has evaluated this substance for potential human carcinogenicity, a summary of that evaluation will be contained in Section II of this file.

There was no previous RfD for TCDD on the IRIS database.

For the assessment of human health risks posed by exposure to mixtures of TCDD and dioxin-like compounds (DLCs), including polychlorinated dibenzo-*p*-dioxins, polychlorinated dibenzofurans, and dioxin-like polychlorinated biphenyls, and when data on a whole mixture or a sufficiently similar mixture are not available, EPA recommends use of the consensus mammalian Toxicity Equivalence Factor (TEF) values developed by the World Health Organization (U.S. EPA, 2010; Van den Berg et al., 2006).

__I.A.1. Chronic Oral RfD Summary

Cocritical Effects	Point of Departure*	UF	Chronic RfD
Decreased sperm count and motility in men exposed to TCDD as boys Epidemiologic cohort study Mocarelli et al., (2008)	LOAEL[adjusted]: 0.020 ng/kg-day (2.0×10^{-8} mg/kg-day)	30	7×10^{-10} mg/kg-day
Increased TSH in neonates Epidemiologic cohort study Baccarelli et al., (2008)	LOAEL[adjusted]: 0.020 ng/kg-day (2.0×10^{-8} mg/kg-day)		

Conversion Factors and Assumptions – for both studies, physiologically based pharmacokinetic (PBPK) modeling was used to estimate oral intakes from TCDD exposures reported as serum concentrations. The details are presented in Methods of Analysis below. Data were not amenable to Benchmark Dose Modeling

Figure 5: Health hazard assessments for noncarcinogenic effects for 2,3,7,8 TCDD

Decision for new rule: Ecology used, with few exceptions, the EPA NRWQC cancer slope factors for carcinogens to calculate the criteria in the proposed rule. Ecology decided, based on scientific information and/or uncertainty, not to use cancer slope factors (either in IRIS or outside of IRIS) in HHC calculations for arsenic and 2,3,7,8-TCDD.

8. Bioconcentration Factor (BCF)

Application: This explicit variable ***applies to all four equations****: carcinogen/fresh water; carcinogen/marine water; noncarcinogen/fresh water; and noncarcinogen/marine water.*

Ecology used a bioconcentration factor-based approach for criteria calculation.

Background: The HHC are expressed as chemical concentrations in water, but are based on information and assumptions about how those chemicals move from water into edible tissues of aquatic organisms and then into consumers of those tissues. This section addresses the factor in the HHC equations that is used to describe how chemicals accumulate from water into aquatic organisms.

Predicting the accumulation of toxics into aquatic organisms from the surrounding water media is a complex task. Accumulation into aquatic organisms can be affected on a site-specific basis by many factors, some of which are discussed in the following paragraph. The HHC equations depend on a single variable to account for the accumulation step: either the bioconcentration factor (BCF) or the bioaccumulation factor (BAF). This variable in the equations is likely more affected by site-specific waterbody factors than any other variable used in the HHC calculations.

> Osterberg and Pelletier, 2015. *Puget Sound Regional Toxics Model…; Page* 94, (for PCBs and PBDEs)
> https://fortress.wa.gov/ecy/publications/documents/1503025.pdf
> "In sum, the sensitivity tests showed that in relatively uncontaminated areas where contaminant concentrations in the sediments were low, predicted concentrations of contaminants in biota were more strongly influenced by changes to contaminant concentrations in the water column than by comparable changes in sediment concentrations. Although the majority of PCB and PBDE mass in the Sound is stored in the sediments, these results indicate the importance of contaminants in water as an exposure route and driver of bioaccumulation in many areas. Efforts to decrease contaminant concentrations in Puget Sound marine waters (e.g., by actions to reduce loads or prevent releases) may therefore be a critical component of strategies to achieve ecosystem health goals. Sensitivity analyses also indicated that the influence of sediments was greater in areas where sediment concentrations were elevated. These results underscore the importance of sediment cleanup activities for reducing contaminant uptake and bioaccumulation in the urban bays and at regional contaminant "hot spots."

Bioconcentration is the process of absorption of chemicals into an organism only through respiratory and dermal surfaces (Arnot and Gobas, 2006). For purposes of the HHC equations, bioconcentration refers to the accumulation of a chemical directly from the water by fish and shellfish. Using a bioconcentration factor (BCF) accounts for any pollution uptake fish or shellfish are exposed to in their surrounding water. Because BCFs look at a specific portion (water only) of the total uptake of a chemical, the BCFs are generally laboratory-derived or modeled values. Bioaccumulation is a broader term that refers to the accumulation of chemicals from all sources, including water, food, and sediment. Bioconcentration is a subset of bioaccumulation. Models to describe both bioconcentration and bioaccumulation have evolved over the past several decades (e.g., see Arnot and Gobas, 2004 and 2006, Gobas 2001, and Veith 1979) and have been used for many purposes, including risk assessment, chemical prioritization for toxics control strategies, and for HHC development.

The amount of accumulation tied directly to water or to sediments is unknown in most waterbodies, and pathways vary based on many factors, including waterbody-specific physical characteristics, properties of the chemical of concern, and biota. For instance, Puget Sound-specific modelling (Osterberg and Pelletier, 2015; see text box) for open waters indicates that PCBs and PBDEs accumulation is more closely tied to water concentrations than to sediment concentration. In more contaminated embayments around Puget Sound the sediments are a larger driver for accumulation.

EPA Guidance and use of accumulation factors. EPA HHC guidance on how to describe and predict accumulation into aquatic organisms has changed throughout the years. For example, the 1980 guidance includes use of a BCF-based approach and the 2000 guidance modifies that earlier guidance to use a BAF-based approach. Both older and newer guidance recommend use of steady state accumulation factors.

EPA and states have generally defaulted to the use of EPA's older lipid-normalized BCFs when calculating criteria. These values were used in the 1992 NTR. The majority of BCFs used in the calculation of NRWQC (as listed in EPA 2002 and prior to the 2015 EPA 304(a) guideline updates) were carried over from 1980 criteria documents. BCFs reported in the 1980 criteria documents were generally determined by laboratory experiments, except when field data (e.g., "Practical BCFs (PBCFs)" for mercury (USEPA 1980); in effect, a field derived BAF) contradicted laboratory BCFs. If both laboratory and field data were lacking, the BCFs for lipid soluble compounds used to calculate the 1980 criteria were based on chemical specific octanol-water partition coefficients (K_{ow}'s; the K_{ow} is correlated with the potential for a chemical to bioconcentrate in organisms). In summary, the 1980 BCFs reflect a combination of laboratory measured BCFs, modeled BCFs, and field-measured BAFs. In this discussion all these values are generally referred to as BCFs or as a "BCF-based approach." The approaches for lipid soluble and for non-lipid soluble compounds (USEPA 1980) used to develop the early BCFs follow.

> *"For lipid-soluble compounds, when a measured BCF is available and corresponding lipid content is known* the equation below is used to estimate the weighted average BCF for an average diet.
>
> $$Weighted\ average\ BCF\ for\ average\ diet = Measured\ BCF\ x\ \frac{Weighted\ average\ percent\ lipids\ for\ average\ diet}{Species\ specific\ lipid\ content}$$
>
> *For lipid-soluble compounds, when measured BCF and corresponding lipid content is unknown* the equation below is used to estimate the BCF for aquatic organisms containing about 7.6 percent lipids (Veith 1979; USEPA 1980). This includes an adjustment for 3% lipids in the average diet versus 7.6% in order to derive the weighted average BCF.
>
> $$Log\ BCF = (0.85\ Log\ Kow) - 0.70$$
>
> *For non-lipid soluble compounds*, the available BCFs for the edible portion of consumed freshwater and estuarine fish and shellfish are weighted according to consumption factors to determine a weighted BCF representative of the average diet." (EPA 1980)

Subsequent to the EPA 1980 approach, EPA 2000 guidance recommends the use of a BAF in criteria calculation, and recommends that states and tribes use the methodology outlined in EPA 2000 to develop locally appropriate BAFs. Figure 6 shows the process as summarized by EPA (EPA 2000, page 5-13) in its Figure 5-1):

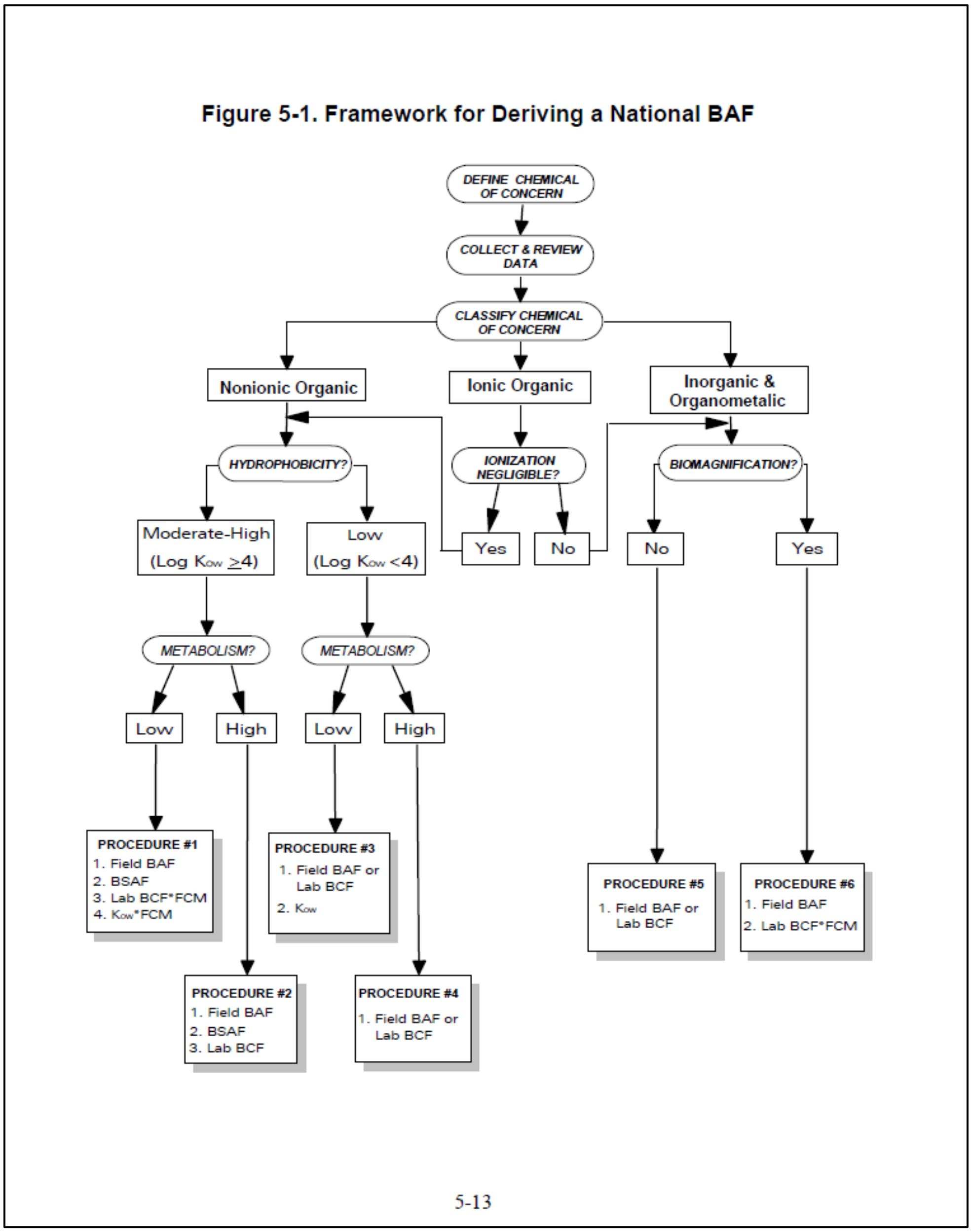


Figure 6: Framework for deriving BAF taken from EPA 2000, Figure 5-1

Subsequent to the 2000 guidance, EPA (2014, 2015) developed Clean Water Act 304(a) draft and final guidance criteria that were calculated using BAFs:

- In May 2014 EPA published 94 draft 304(a) nationally recommended HHC that included use of model-derived BAFs. These BAFs were developed using EPA's EPI Suite™ of models.
- In June 2015 EPA published final 304(a) criteria documents that used the BAF development approach described in EPA 2000 (see Figure 6), which includes use of lipid normalized BCFs in some cases.
- In September 2015, EPA published a new draft regulation for Washington and a revision to the NTR that included draft criteria that were calculated using chemical-specific trophic level 4 BAFs for the majority of the chemicals. The draft federal regulation also includes draft criteria that were developed using new BCFs and the older 1980 (NTR) BCFs (e.g., the draft criteria for metals other than mercury and copper; see following text box).

Washington Chemicals of Concern: PCBs, Arsenic, and Mercury

The accumulation factors used by EPA for some of the chemicals of greatest concern in Washington have not changed since the 1992 NTR, or, have been removed from the HHC equation entirely:

PCBs and arsenic: Older NTR BCFs are still used for the current 304(a) national recommended criteria and for the 2015 EPA proposed Washington regulation to calculate criteria for total PCBs, arsenic, and dioxin . Ecology used these BCFs for calculating the criteria for total PCBs and for dioxin in the draft rule . The criteria for arsenic are discussed later in this document.

Mercury: The methylmercury tissue residue criterion (part of the current 304(a) national recommended criteria and the 2015 EPA proposed regulation for Washington) does not include either a BAF or a BCF in the criterion equation, and instead accumulation is addressed as part of the implementation approaches that states will determine as they adopt and implement methylmercury criteria . Ecology did not adopt the methylmercury criterion in this rulemaking . This decision is discussed later in this document.

Lipid content affects the applicability of calculated BAFs and BCFs: A chemical's tendency to accumulate in lipids is driven by its hydrophobicity and lipophilicity. BAFs and BCFs for lipophilic chemicals are generally lipid normalized from a modeled or measured value to reflect the average percent lipids for aquatic organisms consumed by people.

Most of the BCFs historically used by EPA in NRWQC development, and by most states in HHC development, are lipid-normalized to an average lipid content of 3% for edible tissues and species (see equations earlier in this section) as consumed in national surveys (see Veith 1980; EPA 1980). The percent lipid of individual species consumed from Washington waters (Osterberg and Pelletier, 2015) are both lower and higher (e.g., spot prawn 1.5%; English sole

1.6%; Chinook salmon (immigrant) 5.4%) than the 3% average used by EPA. Attempting to calculate the average % lipid content of the amount of tissues of species consumed in Washington (as reflected by the proportion of different types of organisms consumed as described in the FCR surveys used to develop the proposed FCR of 175 g/day) would likely result in an estimated value with a large margin of uncertainty because the surveys do not all contain detailed information on the amounts of all specific species consumed. However, even if this information was readily available, it would not necessarily reflect the average lipid content of organisms grown in Washington waters because the proposed FCR includes all fish and shellfish including market, imported, restaurant, ocean-caught, etc.

EPA 2000 recommends that BAFs be used in criteria development to more accurately reflect the total uptake of a chemical into aquatic biota and thus more fully account for consumers' exposure to chemicals. EPA 2000 and EPA 2003 provide detailed information on the theory and methods supporting chemical-specific development of national BAFs, including calculation paths to address chemical-specific factors such as tendency to metabolize, Kow, applicability of biota sediment accumulation factor (BSAF) pathways, assumptions about chemical and physical parameters in ambient waters, food web structure, and many other factors. The EPA guidance is too extensive to present here (refer to EPA (2000, 2003) for more information). The national guidance was used by EPA to develop BAFs for the new EPA 2015 NRWQC, mainly for nonionic organic chemicals (these make up a large number of the new 2015 criteria). The EPA 2015 BAFs for these chemicals include trophic level-specific information on lipids, and incorporate this information in calculated baseline BAFs that can be applied across waterbodies. The baseline BAFs are adjusted to reflect the lipid content of commonly consumed aquatic biota. The default lipid fraction for commonly consumed fish and shellfish is derived from national survey information: 0.019 for trophic level 2 organisms, 0.026 for trophic level 3 organisms, and 0.030 for trophic level 4 organisms. Whether these default values are representative of an average lipid value(s) that would be appropriately representative of Washington is confounded by the same sources of uncertainty as discussed above for BCFs.

Dissolved organic carbon (DOC) and particulate organic carbon (POC) affect accumulation: Chemical sorption to POC and DOC in the water column can substantially reduce the fraction of the chemical in water that can actually be absorbed by aquatic organisms (Gobas 2001). Because of this BCFs and BAFs are frequently expressed in terms of the freely dissolved chemical concentration. EPA's 2000 guidance and the new BAFs in EPA's 2015 criteria documents are based on use of the freely dissolved concentration. The EPA 2000 methodology depends on median DOC (2.9 mg/L) and POC (0.5 mg/L) concentrations developed from a national dataset to develop national BAFs. DOC and POC concentrations can vary widely among waterbodies. DOC and POC data from Washington waters show a wide range of values (0.2 to 81.6 mg/L DOC and 0.028 to 1.78 mg/L POC; see Table 7) that differ among marine and estuarine waters, streams, and lakes and reservoirs

Table 7 shows dissolved organic carbon (DOC) and particulate organic carbon (POC) data from surface water sampling in Washington waters. Data is from Ecology's Environmental Management System (EIM) Database, accessed November 18, 2015.

Table 7: DOC and POC data from Washington surface water

Parameter	Statistic	Freshwater streams	Freshwater lakes and reservoirs	Marine and estuarine waters
DOC (mg/L)	min	0.2	0.5	0.611
	max	81.6	22.2	64.9
	median	2.1	2.6	1.805
	mean	3.230	2.514	3.718
	n	6871	1193	204
POC (mg/L)	min			0.028
	max			1.78
	median			0.0545
	mean			0.123
	n			32

EPA encourages states to use local DOC and POC information for water quality standards (EPA 2000):

> *"Although national default values of POC and DOC concentrations are used by EPA to set national 304(a) criteria as described by this document, EPA encourages States and authorized Tribes to use local or regional data on POC and DOC when adopting criteria into their water quality standards. EPA encourages States and Tribes to consider local or regional data on POC and DOC because local or regional conditions may result in differences in POC or DOC concentrations compared with the values used as national defaults."*

Because Washington waters have a wide range of DOC and POC concentrations, the national BAFs that were calculated using national default POCs and DOCs likely are not reflective of BAFs in many of Washington's waters. Site-specific DOC and POC can also affect BCFs, and, how or if these parameters are accounted for in BCF development also introduces uncertainty around the applicability of a single chemical-specific BCF across different waterbodies in Washington. The 1980 BCFs are based on total concentrations (not freely dissolved fractions), and do not incorporate DOC and /or POC into the equations).

There are many site-specific sources of variability in accumulation factors that affect their applicability to specific waterbodies: EPA (2009) describes sources of variability in BAFs:

> *"The bioaccumulation methodology used in the 2000 Human Health Methodology encourages developing site-specific BAFs because EPA recognizes that BAFs vary not*

only between chemicals and trophic levels, but also among different ecosystems and waterbodies; that is, among sites. The bioaccumulation potential of a chemical can be affected by various site-specific physical, biological, and chemical factors:

- *water temperature and dissolved oxygen concentration;*
- *sediment-water disequilibria;*
- *organism health, physiology and growth rate;*
- *food chain structure;*
- *food quality; and*
- *organic carbon composition.*

National average BAF value for a given chemical and trophic level may not provide the most accurate estimate of bioaccumulation for certain waterbodies in the United States. At a given location, the BAF for a chemical may be higher or lower than the national BAF, depending on the nature and extent of site-specific influences."

These site-specific sources of variability could also apply to many measured and calculated BCFs.

Historic and current use of BCFs and BAFs in HHC development: Both BCFs and BAFs have been, and currently are, used in criteria development. Recent actions where both have been applied include:

- EPA used BCFs and trophic level weighted BAFs (based on EPA 2000 methodology) in its June 2015 final revisions to the Clean Water Act 304(a) national recommended criteria (EPA 2015).
- EPA used BCFs and trophic level 4 BAFs in its proposed September 2015 revision to the NTR for Washington (EPA 2015).
- Oregon used EPA's BCFs in its 2011 adoption of HHC that were subsequently approved by EPA.
- Several states surrounding the Great Lakes have used BAFs in EPA-approved criteria development.
- EPA used the older EPA BCF values in 2000 to promulgate Clean Water Act HHC for states in federal regulation (40CFR131.38; FR Vol. 65, No. 97, May 18, 2000, pages 31710-31719).

Different approaches to BAF development have been used for Clean Water Act criteria: EPA has used different approaches to develop BAFs, and depends on a mix of BAFs and BCFs for current (2015) criteria calculations:

- EPA's final Great Lake's Guidance (Final Water Quality Guidance for the Great Lakes System, Federal Register: March 23, 1995 (Volume 60, Number 56, Page 15365-15425) requires use of BAFs, and presents a hierarchy of methods to develop BAFs based on chemical-specific factors.

- In May 2014 EPA published 94 draft Clean Water Act 304(a) nationally recommended HHC that included use of model-derived BAFs. These BAFs were developed using the BCF BAF module of EPA's EPI Suite™ of models. This module was developed using species from the Great Lakes (USEPA 2014).
- EPA used BCFs and trophic level weighted BAFs (based on EPA 2000 methodology) in its June 2015 final revisions to the Clean Water Act 304(a) national recommended criteria (EPA 2015).
- EPA used BCFs and trophic level 4 BAFs in its proposed September 2015 revision to the NTR for Washington (EPA 2015).

Process used to develop new 304(a) guidance documents and concerns about BAF development: 40CFR131.11 recommends that states consider EPA's Clean Water Act 304(a) guidelines when adopting criteria. As part of that consideration states evaluate the basis of and the process used to develop the criteria guideline documents. States need confidence in the EPA guidelines in order to use them as the basis of state regulations, and depend on the criteria guideline documents to provide a clear and adequately extensive content that supports both review and replication of the EPA results and recommendations. In the case of the new BAFs and BCFs in the 2015 304(a) guideline documents, although many can be replicated with the provided information and using EPA's guidance, we have been unable to evaluate and replicate all of the new BAF/BCF values (e.g., anthracene).

EPA published guidance on development of BAFs in 2000, 2003, and 2009. In EPA's 2014 proposed guideline documents EPA used the EPI Suite™ of models to calculate BAFs. In Ecology's comments on EPA's draft 2014 NRWQC Ecology asked for more details about EPA's use of EPI Suite™ to calculate bioaccumulation factors (BAFs), and expressed reservations about the use of BAFs in criteria development. As a result of public comment EPA changed its BAF approach for the final recommended criteria development documents and based its new BAFs on its 2000 HHC methodology. This change of direction was briefly addressed in EPA's response to comments, but after reviewing the finalized 304(a) guidance documents, the approach used to develop the new 2015 BAFs resulted in as much uncertainty as Ecology had over the initial use of the EPI Suite™ models.

Each of EPA's finalized chemical-specific 304(a) guidance documents contains a specific section on BAF development that uses identical language to describe the 2000 guidance. However, out of approximately 2 pages devoted to BAF development in each chemical-specific document, only approximately 3-5 unique sentences are actually present in each document to address chemical-specific information. In some cases EPA cites multiple sources for inputs to its BAF development, but the sources contain values that do not appear to clearly lead to replication of all of EPA's results. Steps to adjust or combine inputs are not clearly explained to users of the documents. Replicating the steps and the inputs EPA took to develop many of the BAFs/BCFs is not possible with the information provided in the individual criteria documents.

On January 14, 2016, EPA posted at its HHC web site:

(http://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table) supplemental information to support the calculation of the new BAFs and BCFs used in EPA's new 2015 304(a) criteria guidance documents:

- *National Bioaccumulation Factors – Supplemental Information Document (January 2016)*
- *National Bioaccumulation Factors – Supplemental Information Table (excel) (1 pg., 523 K) (MS Excel Spreadsheet) (January 2016).*

EPA's release of this information, as Ecology was preparing the final proposed rule including determination of costs and benefits in accordance with the state's Administrative Procedures Act, did not allow Ecology time to be able to review the new information prior to development of the proposed rule and supporting documentation. Ecology considered this new information on BAFs provided by EPA as it developed the final rule, including consideration of any comments received on the use of BCFs versus BAFs.

Additional circumstances that add to concern about use of the new 2015 BAFs are:

- In EPA's *Water Quality Criterion for the Protection of Human Health: Methylmercury* (USEPA 2001) substantial coverage is given to the development of BAFs and the rationale for *not* developing national trophic level-specific BAFs for this chemical. In the methylmercury implementation document (EPA 2009), detailed information on alternatives for different BAF development pathways is provided. These documents underwent extensive peer and public review, and because only one chemical was being addressed, a detailed focus on the information and approaches to BAF development was part of the process. EPA's recent 2015 304(a) guidance documents include new chemical-specific BAFs for 73 pollutants and new BCFs for 19 pollutants (the new criteria for cyanide uses the older 1980 BCF, as per 68 FR No. 250, Wednesday, December 31, 2003, 75507-75515), and, as mentioned previously, included virtually no chemical specific information on the inputs used in BAF/BCF derivation. The disparity in the process used to develop new BAFs/BCFs for these pollutants, when compared with the transparency and thoughtful approach used in the methylmercury BAF development, caused concerns about using the new BAFs without additional data and information.
- EPA recently (EPA, 2015) published a new draft 304(a) aquatic life criteria document for cadmium. This document includes 2 pages of discussion on cadmium-specific BAF/BCF information, and 11 pages of tables with cadmium-specific BAF/BCF data. The document does not cite EPA 2000 as a method development approach for BAFs for aquatic life criteria, yet we would expect EPA to depend on its guidance in evaluation of cadmium accumulation for different trophic levels. The draft cadmium document does not directly use a BAF or BCF estimate to calculate the draft criteria, yet the BAF/BCF write-up provides substantial clarity and information. This more informative approach was used in the older chemical-specific criteria guidance documents but appears to have been dropped in the new 2015 HHC 304(a) guidance documents. This brevity of information is likely to affect states for many years to come as they attempt to evaluate

the EPA 304(a) guideline documents, which states will be inclined to do because the 40CFR131.11 recommends it.

- The development of the 2015 304(a) guideline documents appears rushed (drafts proposed in May 2014, finals published in June 2015), and EPA did not take the time for a thoughtful external review of individual BAFs, as was done for the methylmercury criteria document.
- Upon release by EPA of the new 2015 NRWQC, states were not provided with sufficient background information on the new BAFs, so Ecology was not in a position to understand if the 2015 BAF recommendations were appropriate to move forward with under Washington State's Administrative Procedures Act rule process as it was developing the proposed new HHC rule.
- Since the proposed rule was published additional information has come to Ecology's attention that reinforces Ecology's concern with the new 2015 304(a) criteria documents and the equation inputs used in those documents. In particular, EPA published and posted a criteria document for the new, and non-priority pollutant, bis(2-chlkoro-1-methylethyl)ether, as a priority pollutant. EPA then proposed criteria for this chemical in draft regulations for Washington and Maine, asserting in the federal publications that the new criteria were for priority pollutants only. This situation reinforces the skepticism that Ecology has regarding the thoroughness of the process used to develop the new 2015 EPA criteria, and reinforces the concern over the single public review of the new 2015 criteria documents, particularly with regard to the bioaccumulation and bioconcentration factors used in calculating those criteria.
- Concern with the new HHC was expressed to EPA in Ecology's public comment on EPA's draft 304(a) criteria (8/6/2014 letter from Melissa Gildersleeve, Ecology, to EPA Water Docket), on EPA's draft regulation for Washington (12/21/15 letter from Maia Bellon, Ecology, to Gina McCarthy, EPA) and in this Decision Document. A significant part of the rationale has to do with the inapplicability of the new BAFs to Washington and the inadequacy of the public process EPA used in developing them. Ecology continues to assert that the BAFs used in the EPA's final 304(a) criteria should have been considered second draft BAFs because they differed so significantly from the first draft that was commented on by the public, and should have been published in the federal register for a second round of public review before finalization. Ecology continues to be concerned with EPA's apparent urgency in finalizing the 304(a) criteria without a second public review to be able to consider the modified BAF approach, which Ecology believes would have been a better approach and resulted in a more durable product. Ecology's comment letter to EPA on their draft proposed regulation and this Decision Document explains why the BAFs used in that proposal are inappropriate for Washington at this time.

- Florida, which recently released a draft HHC rule, also declined to use the EPA national BAFs and, in order to use BAFs appropriately, found it necessary to develop Florida-specific BAFs. That type of intensive effort in Washington would have necessitated another draft rule to be developed and published, which would have significantly delayed adoption of HHC in Washington.

Protectiveness of the calculated criteria and use of BAFs or BCFs: The criteria equations balance many different factors, such as “more protective” (e.g., uncertainty factors up to the thousands for reference doses, linear-multistage-based CSFs, in Washington’s proposal a FCR that includes all fish and shellfish from all sources) and “less-protective” (e.g., not accounting for additive or synergistic effects of chemicals), that are used to develop criteria protective of people who consume fish and shellfish. No one input to the equations alone defines the degree of protection provided by the numeric criterion values (see previous discussion on Risk Level above). Choice of the newer BAF-based approach over the older BCF-based approach does not guarantee higher or lower criteria concentrations. In some cases the newer EPA BAFs are lower than the older EPA BCFs (e.g., acrolein has a BCF of 215 and a newer BAF of 1.0) and in some cases higher (e.g., dieldrin has a BCF = 4,670 and newer trophic level BAFs of TL2 = 14,000, TL3 = 210,000, TL4 = 410,000BAF). In general, for those chemicals that have new BAFs, the new BAFs are higher values than the BCFs for more hydrophobic lipophilic compounds. However, the accumulation factors for some of the chemicals of greatest concern in Washington have not changed. For example, older BCFs for total PCBs, arsenic, and dioxin are still the basis of EPA’s national recommended criteria (EPA 2015) and of the proposed criteria in EPA’s draft regulation for Washington (EPA 2015). As mentioned previously, the methylmercury tissue residue criterion does not include either a BAF or a BCF, and instead accumulation is addressed as part of the implementation approaches that states will determine as they adopt and implement methylmercury criteria.

Choosing a BCF or a BAF for criteria development: Both BCFs and BAFs as currently developed have uncertainty in their applicability and development. However, only two practical alternatives exist to reflect accumulation of toxics by aquatic organisms:

1. 1980 BCF-based approach (as used in the NTR – note that these BCFs are a combination of measured and modeled BCFs and some BAFs, plus two additional newly calculated BCF values based on EPA 1980 guidance; and
2. 2015 BAF-based approach:
    - the trophic level weighted BAFs and BCFs (the majority are BAFs) used to calculate EPA’s 2015 NRWQC, or,
    - the trophic level 4 BAFs and BCFs (the majority are BAFs) used in EPA’s 2015 proposed new regulation (proposed 40CFR131.45).

Ecology is eliminating the second 2015 BAF approach described previously (trophic level 4 BAFs and BCFs used in EPA’s 2015 proposed new regulation) because the use of trophic level 4 BAFs, based mainly on consideration of salmon and steelhead consumption, is not reflective of the consumption patterns shown in the FCR surveys that were used to develop the proposed

Washington FCR of 175 g/day: Washington-specific information on consumption indicates that different groups of people harvest both fish and shellfish, both recreationally and for subsistence (Ecology, 2013). The FCR of 175 g/day includes "all fish and shellfish," including all salmon, restaurant, locally caught, imported, and from other sources, thus includes trophic levels 2-4.

A BAF-only pathway is not readily available because EPA-developed BAFs for all HHC chemicals are not available for Ecology and the public to consider. Other approaches (e.g., developing Washington-specific development of BAFs or BCFs) would greatly increase the data and analysis needed to support the rulemaking and would cause further delays.

Decision for proposed rule: Ecology is making a risk management decision that this proposed rule use a BCF-based approach (as per EPA, 1980, and as used in the NTR) for criteria calculation for the following reasons:

- BCFs are more closely related to the specific environmental media (water) that is regulated under the Clean Water Act.
- The BCFs do not include as many inputs and predictions that are based on national water, sediment, and biota datasets, while the BAFs are dependent on these inputs. The national datasets supporting the BAFs are not necessarily reflective of Washington waters.
- The BCF-based approach includes far fewer input values. Because of this, the BCFs have far fewer sources of directly introduced uncertainty.
- BCFs are acceptable science for purposes of Clean Water Act criteria development. EPA currently uses a combination of BAFs and BCFs to calculate its NRWQC, and used a combination of BAFs and BCFs for its 2015 proposed new regulation for Washington. Therefore, both BAFs and BCFs could represent acceptable science choices for Clean Water Act purposes.

Based on Ecology's decision to use BCFs, new BCFs were calculated using EPA 1980 guidance. EPA (2015) published BAF-based criteria for two additional priority pollutants (1,1,1-trichloroethane and 3-methyl-4-chlorophenol). These pollutants do not have EPA-calculated BCFs available. Ecology-calculated BCFs for these pollutants using the EPA 1980 guidance to provide consistency among the suite of BCF values used in this rulemaking. Ecology queried the EPA EcoTox database for measured BCFs. Calculations follow:

1,1,1-Trichloroethane. A query of the EPA EcoTox database (accessed 10/16/15) resulted in a single measured BCF of 9 L/kg (BCF from: Barrows et al 1978). A measured lipid content for similar bluegills is 4.8% (Johnson 1980, as cited in EPA 1980). BCF calculations, as per EPA 1980 guidance, are shown below:

$$Weighted\ average\ BCF\ for\ average\ diet =$$

$$Measured\ BCF\ x\ \frac{Weighted\ average\ percent\ lipids\ for\ average\ diet}{Species\ specific\ lipid\ content}$$

$$BCF = 5.6\ L/kg$$

3-Methyl-4-chlorophenol. A query of EPA's EcoTox database (accessed 10/16/15) showed no results for measured BCFs for this pollutant. A BCF based on Kow (EPA 1980) was calculated. Log Kow = 3.1 (EPA 2015) was used in the calculation.

$$Log\ BCF = (0.85\ Log\ Kow) - 0.70$$
$$Log\ BCF = (0.85\ x\ 3.1) - 0.70$$
$$\log\ BCF = 1.935$$
$$BCF = 1258$$

9. Lifespan and duration of exposure:

*Application: These implicit variables **apply in all four equations**: carcinogen/fresh water; carcinogen/marine water; noncarcinogen/fresh water; and noncarcinogen/marine water.*

Ecology proposes to specifically acknowledge the longer-term durations of exposure that are implicit in the criteria in the proposed rule.

Background: EPA 2000 guidance for HHC development assumes a lifetime exposure of 70 years, and a duration of daily exposures over 70 years. Use of the 70-year lifespan and a duration of daily exposures over 70 years is implicit in the HHC equations. These paired assumptions result in no overall numeric change in the equation's results. However, a change in either one of these could change the calculated results of the equation. A 10-year increase or decrease in lifespan would have little effect on the calculated criteria concentrations. Changing the duration of exposure to less than the total lifespan would increase criterion concentrations, but the magnitude of increase would depend on the ratio between lifespan and duration of exposure. For instance, use of a 30-year duration of exposure (as used in some clean-up risk assessments) with a 70-year life span would increase the criteria concentrations substantially. Because the goal of the criteria is to provide for protection of people throughout their lifetime with an assumption that people could obtain all their fish from Washington waters during that period, reducing the level of protection of the criteria concentrations by assuming a shorter duration of exposure was not considered for these criteria development.

EPA also describes the duration of exposure for the HHC in the Water Quality Standards Handbook, Second Edition (EPA, 2012) as follows:

> **"Magnitude and Duration**
>
> *Water quality criteria for human health contain only a single expression of allowable magnitude; a criterion concentration generally to protect against long-term (chronic) human health effects. Currently, national policy and prevailing opinion in the expert community establish that the duration for HHC for carcinogens should be derived assuming lifetime exposure, taken to be a 70-year time period. The duration of exposure assumed in deriving criteria for noncarcinogens is more complicated owing to a wide variety of endpoints: some developmental (and thus age-specific and perhaps gender-specific), some lifetime, and some, such as organoleptic effects, not duration-related at*

all. Thus, appropriate durations depend on the individual noncarcinogenic pollutants and the endpoints or adverse effects being considered."

Ecology is proposing to adopt HHC based on health effects, but not on organoleptic effects, thus non-duration-related exposures are not applicable to the criteria being considered in this rulemaking.

EPA's Superfund Program provides specific guidance (EPA, 1989; *Risk Assessment Guidance for Superfund, Part A, or RAGSA,* see Section 8), on interpreting the duration of exposure applicable to cancer and non-cancer effects:

Page 8-11, guidance on exposure durations for noncarcinogenic health effects:

"Three exposure durations that will need separate consideration for the possibility of adverse noncarcinogenic health effects are chronic, subchronic, and shorter-term exposures. As guidance for Superfund, chronic exposures for humans range in duration from seven years to a lifetime; such long-term exposures are almost always of concern for Superfund sites (e.g., inhabitants of nearby residences, year-round users of specified drinking water sources). Subchronic human exposures typically range in duration from two weeks to seven years and are often of concern at Superfund sites. For example, children might attend a junior high school near the site for no more than two or three years. Exposures less than two weeks in duration are occasionally of concern at Superfund sites. For example, if chemicals known to be developmental toxicants are present at a site, short-term exposures of only a day or two can be of concern."

RAGSA, Pages 8-4 to 8-5, guidance on exposure durations for carcinogenic and noncarcinogenic health effects:

"Averaging period for exposure. *If the toxicity value is based on average lifetime exposure (e.g., slope factors), then the exposure duration must also be expressed in those terms. For estimating cancer risks, always use average lifetime exposure; i.e., convert less-than-lifetime exposures to equivalent lifetime values (see EPA 1986a, Guidelines for Carcinogen Risk Assessment). On the other hand, for evaluating potential noncarcinogenic effects of less-than lifetime exposures, do not compare chronic RfDs to short-term exposure estimates, and do not convert short-term exposures to equivalent lifetime values to compare with the chronic RfDs. Instead, use subchronic or shorter-term toxicity values to evaluate short-term exposures. Check that the estimated exposure duration is sufficiently similar to the duration of the exposure in the study used to identify the toxicity value to be protective of human health (particularly for subchronic and shorter-term effects). A toxicologist should review the comparisons. In the absence of short-term toxicity values, the chronic RfD may be used as an initial screening value; i.e., if the ratio of the short-term exposure value to the chronic RfD is less than one, concern for potential adverse health effects is low. If this ratio exceeds unity, however, more appropriate short-term toxicity values are needed to confirm the existence of a significant*

> *health threat. ECAO may be consulted for assistance in finding short-term toxicity values."*

The reference doses used to calculate the HHC are the chronic reference doses mentioned previously, as opposed to the subchronic or acute toxicity values also mentioned. Toxicity values for shorter duration exposure periods have been developed (e.g., the Agency for Toxics Substances and Disease Registry's Minimal Risk levels (MRLs) at http://www.atsdr.cdc.gov/mrls/index.asp).

Although the duration of exposure for the HHC can be up to 70 years, the EPA recommended criteria do not contain specific durations of exposure in either a chemical-specific or overall approach. The duration of exposure is an important characteristic needed to most effectively implement the criteria to reflect the variables and assumptions in the criteria. Because the EPA criteria and equations do not *explicitly* include a lifetime value or a duration of exposure factor, and because these factors are needed to effectively implement the criteria in a manner consistent with their implicit presence in the calculation, these implicit factors are acknowledged in the proposed rule language accompanying the numeric criteria values, and will be considered by Ecology in development of permit limits and water quality assessments. The proposed rule includes language that explicitly states that the criteria are calculated using durations of exposure that can be up to 70 years. Ecology will draft implementation guidance to address how this information could be used in permit limit development. This information is most likely to affect discharge limits for episodic discharges where the short term nature of some discharges may make calculation of limits that are based on the longer exposure durations that are in the HHC infeasible. In these cases discharge limits, if needed, could be based on best management practices, as per 40CFR122.44(k).

Decision for proposed rule: Ecology proposes to specifically acknowledge the longer-term durations of exposure that are implicit in the criteria calculation in the proposed rule.

10. Hazard quotient (HQ)

Application: This implicit variable ***applies only in the noncarcinogen equations****: noncarcinogen/fresh water; and noncarcinogen/marine water.*

Ecology applied this implicit variable in the HHC equations.

A hazard quotient equal to one represents a risk level where non-cancer effects should not be present at specified exposure assumptions. This value is implicit in the noncarcinogen HHC equations.

Decision for new rule: Ecology applied this EPA implicit variable in the HHC noncarcinogen equations.

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Challenging Chemicals: Polychlorinated Biphenyls (PCBs)

Decision

Ecology adopted HHC (HHC) for total polychlorinated biphenyls (PCBs) of 0.00017 µg/L for most freshwaters (drinking surface waters and ingesting fish and shellfish) and 0.00017 µg/L for marine and estuarine waters and a limited number of fresh waters (fish and shellfish ingestion only). For ease of reference, these different exposure routes are called fresh and marine for the remainder of this document. This decision on criteria concentrations is based on a chemical-specific state risk management decision and is in conformance with EPA historic and recent HHC development guidance.

A comparison of the NTR HHC with the new state criteria for PCBs is defined in the text below:

National Toxics Rule (NTR) HHC	2016New HHC
Freshwater: 0.00017 µg/L	Freshwater: 0.00017 µg/L
Marine: 0.00017 µg/L	Marine: 0.00017 µg/L

Background

Polychlorinated Biphenyls (PCBs) are a group of man-made chlorinated organic compounds. There are 209 individual PCB compounds, known as congeners. Aroclor is a commonly used trade name for specific PCB mixtures and is often referenced in PCB regulations.

PCBs in the environment are human-caused and there are no known natural sources. Used as coolants and lubricants in electrical equipment because of their insulating properties, manufacturing of PCBs was halted in the United States in 1979 (EPA, 2014) due to evidence that PCBs accumulate and persist in the environment and can cause harmful health effects. From 1929 to 1979 about 600,000 metric tons of PCBs were commercially manufactured in the US. The 1976 *Toxics Substances Control Act* (TSCA) prohibited manufacture, processing, and distribution of PCBs. Products made before 1979 that may contain PCBs include older fluorescent lighting fixtures and electrical devices.

Even though they are “banned,” PCBs are still allowed in many products manufactured and sold in the United States, including many pigments and caulking. The concentrations of PCBs in these products are regulated by the EPA under the Toxic Substances Control Act regulations.

PCBs are also regulated under additional state and federal laws, and they are not always consistent. For example, the level of PCBs that is allowed in products under TSCA is millions of times higher than what is allowed in water under the Clean Water Act. This leads to water permit holders being held responsible at the end of their pipe for PCBs that came from other products.

Back in the late 1970's the total amount seemed small and the amount allowed in each product seemed low, but now we know that it's high compared to levels that impact human health.

Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults, and neurobehavioral and immunological changes in children. PCBs have been shown to cause cancer in animals (EPA 2014). Studies of exposed workers have shown changes in blood and urine that may indicate liver damage. According to the Agency for Toxics Substances & Disease Registry (ATSDR, 2001), PCB exposures in the general population are not likely to result in skin and liver effects.

According to the ATSDR, exposure routes for PCBs include:

- Leaks from old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, that were made 30 or more years ago and may be a source of skin exposure.
- Eating contaminated food. The main dietary sources of PCBs are fish (especially sport fish caught in contaminated lakes or rivers), meat, and dairy products.
- Breathing air near hazardous waste sites and drinking contaminated well water.
- Hazards in the workplace during repair and maintenance of PCB transformers, such as accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

HHC for PCBs: The cancer-based HHC for PCBs that are currently effective in Washington for Clean Water Act purposes are found in the 1999 revisions to the 1992 NTR. The newly adopted criteria will be effective only after EPA reviews and approves them for Clean Water Act use. The 1992 NTR rule included HHC for individual Aroclors that were calculated using a cancer potency factor of 7.7 per mg/kg-day (EPA, 1992). EPA reassessed the cancer potency of PCBs in 1996 (EPA, 1996) and adopted an approach that distinguishes among PCB mixtures by using information on environmental mixtures and different exposure pathways. Based on this reassessment, EPA derived a new cancer potency factor of 2 per mg/kg-day. EPA revised the NTR human health criterion for PCBs in 1999 (EPA, 1999) to incorporate this new science. The newer NTR criterion is 0.00017 µg/L for the protection of human health from consumption of aquatic organisms and water, and the consumption of aquatic organisms only.

PCBs in Washington's surface waters: PCBs are difficult to detect in surface waters. The analytical method required by EPA for compliance purposes (EPA Method 608) does not detect PCBs at the low concentrations in water at which they occur. Because PCBs in waters are difficult to detect, methods that depend on concentration of PCBs in fish and shellfish tissue are frequently used to assess PCB levels across the state. Aquatic biota accumulate PCBs as part of their exposure to the food web, and the PCBs are often detected in fish and shellfish tissue. The use of fish and shellfish tissue monitoring data are used to support development of Washington Department of Health fish advisories (WDOH, 2014) and Clean Water Act Section 303(d) impaired waters lists (Ecology, 2012). Monitoring information demonstrates that PCBs are widespread in the environment, but have in general been decreasing in concentrations since the 1979 “ban” on use of PCBs was put in place.

PCBs present regulatory challenges for Clean Water Act programs because:

- PCBs were widely used prior to the 1979 “ban”.
- PCBs are widespread in the sediments and in biota.
- PCBs are long-lasting and bind readily to fats. Because of this they continue to cycle in the environment and in the food web. PCBs readily accumulate in organisms.
- PCBs are transported through the atmosphere.
- Because PCBs are transported along many pathways, and come from many sources associated with human habitation and use, they are found widely in environments that range from pristine to highly developed.
- Treatment plants are most often not designed to remove these chemicals. However, treatment plants that enhance solids removal will also remove PCBs.

These PCB characteristics make them particularly difficult to control, and efforts to address PCBs are multimedia, including contaminated site clean-up, regulation of PCBs in products, and reductions of PCBs from airborne sources. Disposal of PCBs requires specifically designed equipment. Ecology has developed a Chemical Action Plan for PCBs to address additional multi-media approaches to control PCBs entering the environment (Ecology, 2014).

Basis for Ecology’s Decision

Ecology’s new HHC for total PCBs are based on an approach that is consistent with EPA’s 2000 Human Health Criteria Guidance (EPA, 2000) and that also provides a high level of protection for Washingtonians. Ecology used a state-specific risk level exclusively for PCBs. These calculated criteria concentrations are higher than the prior NTR values, and because PCBs are a chemical of concern in Washington, Ecology made a chemical-specific decision *not to increase the criteria concentrations* above the prior criteria levels, thus the proposed criteria values are the same as the NTR values of 0.00017 μg/L.

State-specific risk management decisions on chemical-specific risk levels are consistent with EPA HHC guidance as well as with precedent from other states. For example, EPA approved inorganic arsenic criteria adopted by the Oregon Department of Environmental Quality (ODEQ) based on $1x10^{-4}$ and $1x10^{-5}$ risk levels, even though risk levels for other chemicals were set to 10^{-6} (ODEQ, 2011). This criteria development approach combines the current cancer-based calculation with a state-specific risk level. All other variables in the HHC equations for PCBs would remain the same. The state-specific risk level is summarized in the following text:

Equation variable	Risk Value	Information
Additional lifetime cancer risk level	4.0×10^{-5} (0.00004) = 4 possible additional cancer occurrences in 100,000 people after 70 years of daily exposure	Choice of a state-specific risk level is a risk management decision made by individual states. EPA 2000 guidance (EPA, 2000) specifies that the maximum risk level for highly exposed populations should not exceed $1x10^{-4}$ (1 possible additional cancer occurrence in 10,000 people after 70 years of daily exposure.) The chemical-specific risk level for PCBs was chosen to be consistent with the level of risk/hazard in the toxicity factor used by the WDOH in developing fish advisories. This is an estimated cancer risk at the corresponding safe dose (RfD) for a chemical. This value was developed as follows: Equation: RfD (mg/kg-day) x cpf $(mg/kg\text{-}day)^{-1}$ = Risk Level Equation with PCB toxicity factors: 2.0×10^{-5} mg/kg-day x 2.0 $mg/kg\text{-}day^{-1}$ = 4.0×10^{-5} This state-specific risk level is a *lower* level of risk (*is more protective*) than the maximum risk recommended in EPA guidance.

Since the bioconcentration factor for PCBs is very large, exposure through drinking water is negligible. The calculated criteria for exposure routes with and without drinking water are virtually the same, as are the calculated criteria values. The calculated total PCB criteria using this approach are 0.00029 µg/L. These calculated values are higher than the current NTR values, and because PCBs are a chemical of concern in Washington Ecology made a chemical-specific risk management decision not to increase the criteria concentrations, thus the proposed criteria values are the same as the NTR values of 0.00017 µg/L. This value is associated with a lower risk level ($2.3 \times 10^{-5)}$ than the calculated criteria. These values are shown below.

Additional lifetime Cancer Risk Level	Average Fish Consumption Rate (g/day)	Calculated HHC concentration (µg/L = parts per billion)
Calculated value:		
4×10^{-5} Four–in-one hundred thousand = 0.00004	175	0.00029
New criteria (= NTR Criteria)		
0.00017		
The risk level associated with the final 0.00017 ppb PCB criteria is 2.3×10^{-5}		

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Challenging Chemicals: Arsenic

Decision

Ecology adopted (1) surface water HHC for arsenic of 10 µg/L (total arsenic) and (2) required arsenic pollution minimization efforts.

These criteria are equivalent to the Safe Drinking Water Act (SDWA), Maximum Contaminant Level (MCL) that applies in Washington for drinking water sources. The decision to use the drinking water MCL is based on scientific information, regulatory precedent by other states and EPA, and acknowledgement of high concentrations of naturally occurring arsenic in Washington surface waters.

A comparison of the NTR HHC with the new HHC for arsenic is shown in the text below:

National Toxics Rule (NTR) HHC	2016 New HHC
Freshwater: 0.018 µg/L (inorganic)	Freshwater and Marine Water: 10 µg/L (total)
Marine: 0.14 µg/L (inorganic)	

Background

Arsenic is a naturally occurring element present in the environment in both inorganic and organic forms. Arsenic is present in rocks, soils, and the waters in contact with them, and concentrations in ground waters in the United States generally are highest in the West, with elevated levels also commonly occurring in the Midwest and Northeast. (USGS, 2000). Inorganic forms of arsenic are considered to be the most toxic, and are found in groundwater and surface water, as well as in many foods. A wide variety of adverse health effects, including skin and internal cancers, and cardiovascular and neurological effects, have been attributed to chronic arsenic exposure, primarily from drinking water (NAS, 1999; CTD, 2013).

There are also anthropogenic sources of arsenic in the environment, which include pesticides and herbicides, pressure treated lumber (this is a legacy source, as production of new pressure treated lumber treated with an arsenic compound has been phased out), fertilizers, pharmaceuticals, electronic semiconductors, automobile lead-acid batteries, lead bullets and shot, and metal smelting.

Arsenic Standards in Washington State*:* Washington's aquatic life water quality standards for arsenic are contained in the state's water quality standards rule for aquatic life criteria (WAC 173-201A-240). Arsenic HHC are also contained in the United States Environmental Protection Agency (EPA)-promulgated NTR (EPA 1992; 40 CFR 131.36). Both HHC and aquatic life criteria are shown in Table 8 below and are expressed as micrograms per liter (µg/L), which is equivalent to parts per billion (ppb). EPA recently proposed a revision to the NTR for Washington that contains proposed criteria for inorganic arsenic of 0.0045 µg/L (freshwater) and 0.0059 µg/L (marine and estuarine waters). These proposed federal criteria are based on a cancer slope factor of 1.75 mg/kg day.

Table 8: Washington's water quality standards for arsenic prior to the new rule

National Toxics Rule (NTR)- Human Health Criteria (1992)		Washington State Water Quality Standards (WAC 173-201A) for Aquatic Life			
Freshwater-Organism + Water	Marine-Organism Only	Acute Marine	Chronic Marine	Acute Freshwater	Chronic Freshwater
0. 018 µg/L (inorganic)	0.14 µg/L (inorganic)	69 µg/L (dissolved)	36 µg/L (dissolved)	360 µg/L (dissolved)	190 µg/L (dissolved)

In addition to the NTR and the state water quality standards, EPA establishes Maximum Contaminant Levels (MCLs) for arsenic under the federal Safe Drinking Water Act (SDWA). Up until 2001, the drinking water MCL for arsenic was 50 µg/L. EPA lowered the arsenic MCL to 10 µg/L in 2001 (EPA, 2001), following an extensive public process. The new standard went into effect for public supplies of drinking water nationwide in 2006. SDWA standards for arsenic in Washington are under the authority of the Washington Department of Health (WDOH).

EPA is currently in the process of reviewing the toxicity information in the Integrated Risk Information System (IRIS) related to inorganic arsenic, and plans to submit its next draft to the National Research Council for future peer review (EPA, 2014).

HHC for arsenic in other states: Nationwide, nearly half of the states use the SDWA MCL value of 10 µg/L for their arsenic HHC (ODEQ, 2011, P. 19). Use of SDWA regulatory levels as HHC is not unusual for both EPA and states. EPA developed Clean Water Act §304(a) national recommended HHC (for freshwater) for asbestos in 1991 and copper in 1998 based on SDWA regulatory levels (EPA 2002). The SDWA-based asbestos criterion (7,000,000 fibers/L) is currently in EPA's NTR and was issued to several states in 1992 and was retained in the 1999 NTR revision, and the copper criterion (1,300 mg/L) was issued by EPA to California in 2000 (40 CFR 131.38 - Establishment of Numeric Criteria for Priority Toxic Pollutants for the State Of California). EPA's 2015 draft HHC regulation for Washington includes retention of the asbestos criterion in the NTR, as well as addition of the SDWA-based copper criterion.

In the west, where naturally high levels of arsenic in groundwater and geology are prevalent, six states have also adopted the SDWA MCL as their HHC for arsenic. Oregon took a different approach and adopted risk-based HHC for arsenic (see Table 9 below).

EPA promulgated HHC for the state of California in 2000, as the California Toxics Rule. However, EPA did not promulgate criteria for arsenic and acknowledged the limitations associated with using the 1988 IRIS cancer slope factor. The following is language from the EPA's 2000 promulgation of the California Toxics Rule (EPA, 2000):

> *"EPA is not promulgating human health criteria for arsenic in today's rule. EPA recognizes that it promulgated human health water quality criteria for arsenic for a number of States in 1992, in the NTR, based on EPA's 1980 section 304(a) criteria guidance for arsenic established, in part, from IRIS values current at that time. However, a number of issues and uncertainties existed at the time of the CTR proposal concerning the health effects of arsenic…."*
>
> *"…Today's rule defers promulgating arsenic criteria based on the Agency's previous risk assessment of skin cancer..…"*

Table 9: EPA approved Human Health Criteria for arsenic in western states

State	Arsenic criteria (µg/L)	Basis
Alaska	10 (total arsenic)	Same as SDWA MCL
Idaho	10 (total arsenic)	
Wyoming	10 (total arsenic)	
Nevada	10 (total arsenic)	
Utah	10 (total arsenic)	
New Mexico	10 (total arsenic)	
Oregon	2.1 (drinking surface + fish and shellfish: "fresh waters") (inorganic arsenic)	1 x 10^{-4} cancer risk level
	1.0 (fish and shellfish only: marine and estuarine)(inorganic arsenic)	1 x 10^{-5} cancer risk level
California [(1)]	5.0 Note: California uses the term "objective" , which is comparable to the term "state criteria."	Objectives are found in individual Basin Plans for the California Regional Water Quality Control Boards (see notes below for examples [(1)]– Based on Maximum Contaminant Levels as specified in Table 64431-A (Inorganic Chemicals) of Section 64431, Title 22 of the California Code of Regulations, as of June 3, 2005.

Notes:
[(1)] (California Regional Water Quality Control Board, San Francisco Bay Region, 2013), (Los Angeles Regional Water Quality Control Board, 1994), (North Coast Regional Water Quality Control Board, 2011), (Regional Water Quality Control Board, Central Coast Region, 2011)

The arsenic cancer slope factor (CSF): Without a reliable toxicity factor for cancer Ecology cannot calculate arsenic criteria based on cancer. EPA agrees that new cancer-based criteria for arsenic cannot be calculated at this time. In a May 6, 2016 filing with the United States District Court for the Western District of Washington, EPA stated that it will withdraw its proposed arsenic criteria for Washington because "extensive additional scientific analysis is necessary before revised criteria" for arsenic can be promulgated. *Puget Soundkeeper Alliance et. al. V. U.S.E.P.A.,* Case No. 2:16-cv-00293-JLR, EPA's Motion for Summary Judgment (May 6, 2016) at 13. As EPA explained in the Declaration of Elizabeth Southerland, Director of the Office of Science and Technology with EPA's Office of Water, "EPA did not update its CWA section 304(a) recommended criteria" for arsenic in 2015, and "EPA recognizes that there is substantial uncertainty surrounding the toxicological assessment of arsenic with respect to human health effects." Declaration of Elizabeth Southerland (May 5, 2016) at 7.

Ecology has determined that use of the EPA cancer potency factor would introduce a significant amount of uncertainty if used to develop HHC for arsenic:

- The inorganic arsenic cancer potency factor has been under reassessment for many years, and a date for finalization is not finalized (EPA, 2014). Newer information from EPA indicates that the CSF for arsenic could be finalized in EPA's IRIS in 2017 (see EPA's public comment letter on this proposed rule, included in the Concise Explanatory Statement accompanying this rulemaking).
- EPA did not use the 1998 IRIS cancer potency factor in its development of the new Safe Drinking Water Act (SDWA) MCL of 10 ppb promulgated in 2001, nor did they depend on this value in their promulgation of the HHC for the state of California in 2000. In the 2000 California Toxics Rule, EPA expressed their finding of uncertainty around the effects of arsenic, and did not use the newer 1998 cancer potency factor (EPA 2000). EPA used the older cancer potency factor ((1.75 per (mg/kg)/day) derived from the drinking water unit risk (5E-5 per (μg/L)) that was used to calculate the NTR arsenic criteria in its 1998 and 2002 national recommended guidance criteria calculations, but not as the basis of new regulations in either the 2000 California Toxics Rule or the new 2001 Safe Drinking water Act MCL for arsenic.
- Using either the older cancer potency factor of 1.75 per (mg/kg)/day) derived from the drinking water unit risk that was used to calculate the NTR arsenic criteria, or, the 1998 cancer potency factor of 1.5E+0 per (mg/kg)/day), injects a high degree of uncertainty into the criteria calculation for a regulatory level, especially given that EPA has not relied on either of these as the basis of more final recent regulations.

The arsenic BCF: In addition to an uncertain cancer slope factor, the accumulation factor used in the development of EPA's current 304(a) criteria is based on total arsenic, and will need to be modified in order to accurately address accumulation of inorganic arsenic into tissues. The bioconcentration factor (BCF) of 44 L/kg used in EPA's 304(a) criteria is based on total arsenic. This value does not accurately reflect the uptake of inorganic arsenic, the most toxic form of arsenic and the form to which EPA applies it's 304(a) criteria. Most of the arsenic in fish and shellfish tissues is in the organic form, which is much less toxic than the inorganic form (EPA 1997). EPA (1997; page 10) estimated the percentage of inorganic arsenic in tissue*: "the maximum inorganic arsenic in fish and shellfish used for this estimate is 4% …The median inorganic arsenic value for the fish and shellfish data… is 0.4%. No inorganic arsenic was detected in 23 of 42 fish samples and 18 of 50 shellfish samples. Therefore, the median value reflects the higher inorganic arsenic concentrations found in shellfish and is a conservative value."* A BCF specific to inorganic arsenic is not available in EPA's criteria documents, but applying the data above to the current BCF of 44 indicates that the BCF of 44 could be adjusted downward by a large amount if inorganic arsenic only were considered. A new BCF for arsenic, as well as a new CSF, will be required for in order to calculate criteria for arsenic using the HHC equations.

The arsenic Safe Drinking Water Act (SDWA) MCL: The SDWA is based on science and feasibility. This does not invalidate use of a SDWA MCL for use in Clean Water Act programs. EPA uses SDWA values as 304(a) criteria for both asbestos and copper, and has approved use of the arsenic SDWA MCL as a Clean Water Act criterion for many states. Nothing in the Clean Water Act prohibits use of SDWA regulatory values, or of cost, in the state adoption of standards. In fact, the Clean Water Act and the Code of Federal Regulations explicitly direct states to adopt standards taking into account "use and value" of the resource. EPA's 2000 guidance (page 2-4) specifies that many factors apart from science can be taken into consideration in state risk management decisions: *"Risk management is the process of selecting the most appropriate guidance or regulatory actions by integrating the results of risk assessment with engineering data and with social, economic, and political concerns to reach a decision."*

The EPA went through an extensive process to evaluate science and feasibility to derive and finalize the SDWA arsenic MCL, and that MCL development is based on consideration of newer science than the older CSF included in EPA's 304(a) criteria for arsenic.

Arsenic exposures through tissue: Although Ecology acknowledges the large amount of uncertainty in the CSF and the BCF, using the CSFs and BCF in comparative criteria calculations helps to illustrate why the organism ingestion exposure route is largely irrelevant when considering risk levels between 10^{-4} and 10^{-6}, and why the only relevant exposure routes for those waters with drinking water as a designated use (most freshwaters in the state) is the drinking water exposure route.

The same inputs to the organism + water criteria equation for carcinogens that EPA used in its draft rule for Washington results in the hypothetical criterion (0.0045 μg/L) with the hypothetical 10^{-6} risk level in the table below. If that criterion concentration is held constant, but the risk level is increased due to changes in the FCR, the small effect of the FCR on the criteria can be seen. Using the EPA inputs and holding all variables other than FCR and risk level constant, it takes 2,240 g/day of fish + 2.4 L/day of drinking water to raise the risk level to 10^{-5} while staying at the same hypothetical water concentration. It takes 22,900 g/day of fish + 2.4 L/day of drinking water to raise the risk level to 10^{-4} while staying at the same hypothetical water concentration.

FCR survey data from Washington indicates that no one, even high consuming individuals from the surveys of the highest consuming populations, eat this much fish and shellfish on average on a daily basis over a lifetime. These increases in FCR are possible because the BCF for arsenic is low, and most of the risk is conferred by the exposure to 2.4 L/day of drinking water. In addition, the use of a BCF that was calculated for total arsenic instead of inorganic arsenic provides a large and unaccounted for protective factor in this example. Since virtually no risk is associated with the exposure to organisms, a criterion based on drinking water protection is appropriate and protective for waters with designated uses of drinking water supply.

Table 10 : Hypothetical criterion resulting from draft EPA criteria for Arsenic

Hypothetical criteria value (µg/L)[1]	Risk level	Fish consumption rate (g/day)	Fish consumption rate (pounds /day	Body weight (kg)	Cancer slope factor[3]	Drinking water intake (L/day)	BCF for total arsenic (not inorganic) (L/kg)[4]
0.0045[2]	10^{-6}	175	0.39	80	1.75	2.4	44
0.0045	10^{-5}	2,240	4.94	80	1.75	2.4	44
0.0045	10^{-4}	22,900	50.49	80	1.75	2.4	44

Footnotes:

[1] Criteria values were held constant, only the FCR and risk levels were changed in the calculations.

[2] This is EPA's proposed criteria in its proposed regulation for Washington, which was calculated with the variables shown in this row of the table.

[3] This CSF was used for illustrative purposes only. Scientific uncertainty precludes its use in criteria development.

[4] This is the BCF for total arsenic in tissues from EPA's most recent Clean Water Act 304(a) criteria document for arsenic. Most arsenic in tissues is in the organic form (see: EPA 1997. *Arsenic and fish consumption*. EPA 822-R-97-003.) A BCF (or BAF) that expresses total or inorganic arsenic in water to inorganic arsenic in tissue would be much lower than the 44 L/kg used here. In that case the possible FCRs in the table would be even greater. Uncertainty in this value precludes its use in criteria development.

Concentrations of arsenic in surface waters of Washington: In Washington, natural levels of inorganic arsenic in surface freshwaters are most frequently below the SDWA MCL of 10 µg/L total arsenic, but are frequently higher than the NTR HHC inorganic arsenic concentration of 0.018 µg/L. In situations where natural conditions result in ambient concentrations that are greater than the NTR criteria concentrations, Ecology uses the "natural conditions" provision in the water quality standards at WAC 173-201A-260 rather than the numeric criteria to implement the arsenic criteria.

The following provides one example of a total maximum daily load (TMDL) study that demonstrates natural concentrations of arsenic from the Similkameen River in Okanogan County:

The Similkameen River “TMDL Evaluation for Arsenic” (Ecology, 2002) noted that “EPA human health criteria of 0.018 and 0.14 µg/L are, however, consistently exceeded by an order of magnitude or more.” Ecology’s TMDL demonstrated that natural background arsenic levels in the Similkameen River are greater the NTR human health criteria. The TMDL determined that the Similkameen River naturally exceeds the EPA arsenic criteria upstream of the areas disturbed by mining. It was determined that natural conditions constitute the water quality criteria. Because arsenic levels naturally exceed criteria, the loading capacity for the river was set equal to the natural background concentration of arsenic. The TMDL was approved by EPA in 2004.

Basis for Ecology’s decision

Ecology made two specific rule changes for arsenic:

- Surface water HHC for total arsenic at the SDWA MCL of 10 µg/L, based on a consideration of the continuing uncertainty around the long-term reassessment of the EPA IRIS cancer potency factor for arsenic, the need for a BCF specific to inorganic arsenic, EPA’s Clean Water Act-approval of the of the SDWA MCL for arsenic for other states, and presence of naturally occurring arsenic in Washington. The criterion of 10 µg/L is being applied to both marine and freshwater scenarios. The MCL was developed for drinking waters. Because calculation of new criteria for arsenic is not possible with current information, Ecology also chose to apply the criterion of 10 µg/L to marine and estuarine waters in lieu of not adopting a criterion value for these waters.
- Pollution minimization requirements to reduce anthropogenic inputs of arsenic in discharges to surface waters.

Ecology has determined that use of the EPA cancer potency factor and BCF would introduce a significant amount of uncertainty if used to develop HHC for arsenic.

After review of what other states have done in setting HHC for arsenic, with subsequent approval by EPA, consideration of naturally high concentrations of arsenic in Washington, the scientific uncertainty in assessing risk from exposures to arsenic from tissue ingestion (no CSF for inorganic arsenic) and also with translating that to a water criterion value (no accumulation translator (BCF) for inorganic arsenic), and given the extensive process carried out by EPA to develop a protective MCL appropriate for drinking water exposures, Ecology has determined that use of the SDWA MCL for arsenic, coupled with pollution prevention requirements for industrial dischargers, is appropriate for Washington:

- ***Use of SDWA MCL for Arsenic:*** Use of the MCL has been approved by EPA widely across the nation. In particular, several other western states that have high levels of natural arsenic in the environment have adopted the SDWA MCL and are successfully applying it for protection of human health (Table 2). The SDWA is based on science and feasibility. This does not invalidate use of a SDWA MCL for use in Clean Water Act programs. EPA uses SDWA values as 304(a) criteria for both asbestos and copper, and has approved use of the arsenic SDWA MCL as a Clean Water Act criterion for many states. Nothing in the Clean Water Act prohibits use of SDWA regulatory values in the state adoption of standards.

- ***Pollution prevention requirements:*** Adopting new arsenic criteria that reflect both a change in the chemical form (a change from inorganic arsenic to total arsenic) and a higher concentration has prompted Ecology to address implementation of the arsenic criteria to ensure that unforeseen industrial discharges of arsenic are controlled and reduced. The following rule language was adopted to address discharges of arsenic, from industrial sources, to waters with the designated use of domestic water supply:

  "When Ecology determines that an indirect or direct industrial discharge to surface waters designated for domestic water supply may be adding arsenic to its wastewater, Ecology will require the discharger to develop and implement a pollution prevention plan to reduce arsenic through the use of AKART (All Known and Reasonable Treatment). Indirect discharges are industries that discharge wastewater to a privately or publicly owned wastewater treatment facility."

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Challenging Chemicals: Methylmercury

Decision

Ecology decided to defer state adoption of HHC for methylmercury at this time, and plans to schedule adoption of methylmercury criteria and develop a comprehensive implementation plan after the current rulemaking is completed and has received EPA Clean Water Act approval. This decision means that Washington's HHC for total mercury will remain in the NTR until new methylmercury criteria are adopted by the state. The decision allows time for Ecology to gather more information to make an informed decision on how the new methylmercury criteria will be implemented.

Background

Mercury is a toxic metal that is released to the environment through natural and human processes. Most commonly, the gaseous form is released to the atmosphere, which is then deposited onto land and water from rain and snow. Once in the water, mercury can convert to its most toxic form, methylmercury, which accumulates in fish and aquatic organisms. Humans are exposed to methylmercury and its associated health problems by consuming contaminated fish. As of 2008, all 50 states had issued fish consumption advisories due to mercury contamination (EPA, 2010). Washington currently has Clean Water Act Section 303(d) listings based on the current mercury HHC, and the Washington Department of Health has issued statewide fish advisories for mercury for different fish species.

Washington's criteria for mercury: Washington's HHC and aquatic life criteria for mercury are shown in Table 11 below. The HHC for total mercury were issued to Washington in the 1992 NTR (40 CFR 131.36). Washington's current aquatic life criteria for total mercury are contained in the state's water quality standards rule for aquatic life criteria (WAC 173-201A-240). The HHC are based on non-cancer effects to human health. The acute aquatic life criteria are based on aquatic life effects, and the chronic aquatic life criteria are based on human health protection. The chronic marine and freshwater numeric criteria and the chronic criteria provision of "edible tissue concentrations shall not be allowed to exceed 1.0 mg/kg of methylmercury" are all based on the federal Food and Drug Administration's action level of 1 parts per million (ppm) for methylmercury in commercial fish.

Table 11: Washington's current water quality standards for mercury

National Toxics Rule (NTR)-Human Health Criteria (1992)		Washington State water quality standards (WAC 173-201A) Aquatic Life Criteria			
Organism + Water (µg/L)	Organism Only (µg/L)	Acute Marine (µg/L)	Chronic Marine (µg/L)	Acute Freshwater (µg/L)	Chronic Freshwater (µg/L)
0. 14 (total)	0. 15 (total)	1.8 (dissolved)	(1) 0.025 (total)	2.1 (dissolved)	(1) 0.012 (total)

Footnote 1. Edible fish tissue concentrations shall not be allowed to exceed 1.0 mg/kg of methylmercury.

EPA national recommended 304(a) guidance criterion for methylmercury: Prior to 2001 the U.S. Environmental Protection Agency (EPA) recommended that states adopt mercury HHC as "total mercury" measured in surface waters. In January 2001, EPA published a new recommended Clean Water Act section 304(a) water quality criterion for methylmercury based on fish tissue residues. This new criterion replaced the prior total mercury recommended criteria. The new recommended water quality criterion, 0.3 milligram (mg) methylmercury per kilogram (kg) fish tissue wet weight, describes the concentration of methylmercury in freshwater and estuarine fish and shellfish tissue that EPA recommends not be exceeded in order to protect consumers of fish and shellfish. The new EPA 2001 recommended national criterion (0.3 mg/kg) was calculated using a fish consumption rate of 17.5 g fish/day of freshwater and estuarine fish. The older total mercury HHC (the 1992 NTR criteria) were calculated using a fish consumption rate of 18.7 g/day, as opposed to the 6.5 g/day fish consumption rate incorporated in other HHC published by EPA prior to 2001 (EPA 2001) and 2002 (US EPA 2002).

EPA draft federal criterion for methylmercury for Washington: In September 2015 EPA proposed a regulatory change that would revise the current federal human health criteria applicable to Washington's waters (the NTR; 40CFR131.36). In 1992 EPA promulgated HHC for Washington State in the NTR, and this regulation contains the state's current HHC for mercury. EPA's newest proposal for Washington contains updates for 99 priority pollutants, including an "organisms-only" criterion for methylmercury of 0.033 mg/kg in tissue. If EPA approves criteria submitted by the state, Ecology assumes the corresponding federal criteria for mercury would remain in the NTR.

Implementation considerations: Washington currently implements the HHC and aquatic life criteria for total and dissolved mercury in discharge permits, in water quality assessments, and in Section 401 water quality certifications. In discharge permitting, the chronic aquatic life criteria are most likely to result in effluent limits because they are set at lower concentrations than the NTR criteria. EPA has published sensitive analytical methods for total mercury that are used in NPDES permitting as required in 40 CFR Part 136.

The 2001 methylmercury criterion was the first EPA-developed HHC expressed as a fish and shellfish *tissue* value rather than as a water column value. EPA recognized that this approach differed from traditional water column criteria and might pose implementation challenges. Therefore, in April 2010, EPA issued *Guidance for Implementing the January 2001*

Methylmercury Water Quality Criterion to provide direction to states and tribes on how to use the new fish tissue-based criterion recommendation in developing water quality standards for methylmercury and in implementing those standards in total maximum daily loads (TMDLs) and National Pollutant Discharge Elimination System (NPDES) permits. This guidance would also be applicable to EPA's 2015 proposed federal NTR criterion for Washington. However, even with guidance from EPA, questions around the following exist and will require development of a Washington specific approach:

- Mixing zones
- Variances
- Field sampling recommendations
- Assessing non-attainment of fish tissue criterion
- Developing TMDLs for water bodies impaired by mercury
- Incorporating methylmercury limits into NPDES permits

Controlling sources of mercury: Controlling the sources of mercury entering the aquatic environment is a complex issue. Complications include:

- There are many sources and pathways for mercury to enter Washington's environment (atmospheric transport from local areas and from other areas of the world, direct discharges, pharmaceuticals, food supplies, contaminated sites, etc.) - see Ecology's Mercury Chemical Action Plan information at http://www.ecy.wa.gov/mercury/.).
- Many of these mercury sources cannot be addressed using Clean Water Act laws and implementing regulations.
- There are existing levels of mercury in fish sampled throughout the state that have prompted the WDOH to issue statewide fish advisories for selected species of fish.
- Developing NPDES discharge limits for permits based on a form of mercury (methylmercury criterion) that is created after mercury enters the environment is not straightforward.

Developing an implementation process that effectively addresses mercury controls and also delineates between Clean Water Act and non-Clean Water Act responsibilities will take considerable time and resources, as well as considerable public input.

Basis for Ecology's decision

Ecology has decided to defer state adoption of HHC for methylmercury at this time, and plans to schedule adoption of methylmercury criteria and develop a comprehensive implementation plan after the current rulemaking is completed and has received Clean Water Act approval. This decision means that Washington's HHC for total mercury will remain in the NTR until new methylmercury criteria are adopted by the state or are updated by EPA.

Ecology based this decision on the following factors:

- Implementation and control strategies to reduce methylmercury concentrations in fish and shellfish tissue need an integrated approach that uses available Clean Water Act tools and also other non-Clean Water Act actions (Ecology 2003).
- Taking time to develop an integrated approach now would slow the progress of the adoption of the other proposed HHC and implementation tools. Ecology thinks continued progress on the main rule adoption is important to maintain.
- The state currently has criteria for mercury that address human health protection (the NTR criteria and the marine and freshwater chronic aquatic life criteria).

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Implementation Tools: Intake Credits

Decision

Ecology added a new definition for “intake credits” and a new section to the water quality standards rule at WAC 173-201A-460 that addresses situations where facilities bring in and discharge levels of background pollutants contained in the intake water, referred to as intake credits (see Figure 7 below for implementation of the new language). Intake credits have typically been allowed for technology based effluent limits (TBELs). The new rule language is applicable to the granting of intake credits for use with water quality-based effluent limits (WQBELs). The new language clarifies the conditions where intake credits would be allowed for determining reasonable potential and WQBELs. The procedure accounts for pollutants already present in the intake water, and would only be allowed when the mass and concentration of effluent is the same or less than intake water, and there is “no net addition” of the pollutant.

Background

An intake credit is a tool intended to be used primarily in the National Pollutant Discharge Elimination System (NPDES) Permit Program, in specific circumstances where the discharger is not contributing any additional mass of the identified intake pollutant in its wastewater, thereby having a “no net addition” of the pollutant. Examples of a pollutant already found in the intake water could be from naturally-occurring or legacy pollutants that are outside of the control of the facility. This implementation tool will not impact Washington’s water quality and public health because it will not be granted unless the facility meets the requirements for “no net additions” of the pollutant.

The following conditions must be met for an intake credit to apply:

- The facility must not contribute any additional mass of the identified intake pollutant to its wastewater unless an equal or greater mass is removed prior to discharge.
- Intake water must come from the same body of water to which the discharge is made.
- The facility must not alter the identified intake pollutant chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the pollutants were left in-stream.
- The facility must not increase the identified intake pollutant concentration at the point of compliance as compared to the pollutant concentration in the intake water.
- The timing and location of the discharge must not cause adverse water quality impacts to occur that would not occur if the identified intake pollutant were left in-stream.

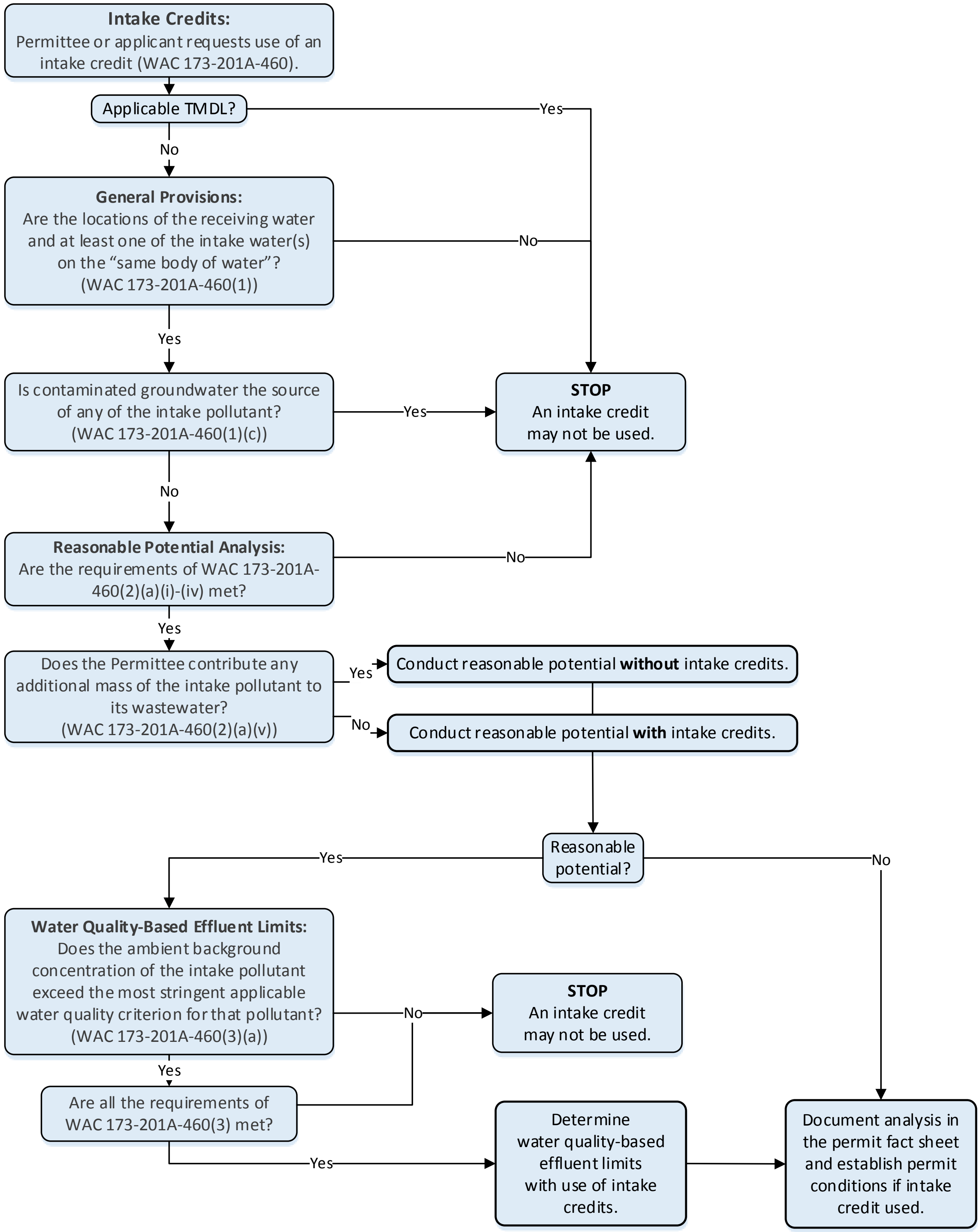

Figure 7: Flowchart for implementation of intake credit language at WAC 173-201A-460

Basis for Ecology's decision

The new language in WAC 173-201A-460 closely follows the directives for allowing intake credits for determining reasonable potential and WQBELs outlined in EPA's Great Lakes Initiative, and in the recently adopted and EPA-approved Oregon water quality standards.

Federal regulations at 40 CFR 122.45(g) allow for adjustment of (TBELs) to reflect credit for pollutants in the discharge's intake water. Therefore, the permittee is only responsible for treating the portion of the pollutant load generated or concentrated as part of their process. The credits are commonly referred to as "intake credits." Although intake credits are commonly used by states for TBELs, states have only recently begun to use intake credits for WQBELs. The most developed of these is contained in the *Great Lakes Water Quality Guidance*, which offers a process for doing an alternative reasonable potential analysis for WQBELs that incorporates the concept of intake credits.

Intake credit language has been adopted into the water quality administrative rules of a number of states including California, Ohio, Indiana, Michigan, Wisconsin, Illinois, Minnesota, Pennsylvania, and New York, although they are only included in a limited number of actual permits due to the inherent limitations of the Intake Credit procedure and the availability of other implementation procedures.

In Region 10, Oregon recently revised its intake credits provisions as part of their rulemaking for HHC and modeled their revisions after the language approved by the EPA for the Great Lakes Initiative. This language can be found in OAR 340-045-0105, and includes the general requirements listed above. The Oregon regulations provide facilities the ability to gain credit for pollutants in their intake water when there is "*no net addition*" of pollution, or when the facility removes any additional mass of a pollutant that might have been added during production, prior to discharging.

References

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Implementation Tools: Compliance Schedules

Decision

Ecology added a new definition in WAC 173-201A-020 to define "Compliance Schedule" or "Schedule of Compliance." Ecology deleted the specific period of time for a compliance schedule and added language to describe circumstances when a compliance schedule can go beyond the term of a permit, and ensure that compliance is achieved as soon as possible. Language has been added to authorize compliance schedules for longer periods of time in accordance with RCW 90.48.605, where a total maximum daily load (TMDL) exists. Language has also been added for circumstances when more time is needed and a TMDL does not exist.

Background

A compliance schedule is a tool that is intended to be used in the National Pollutant Discharge Elimination System (NPDES) Permit Program, in specific circumstances where an individual discharger requires additional time to comply with NPDES permit limits based on new or revised criteria in a state's water quality standards. The compliance schedule allows the particular discharger time to meet permit's limit while taking steps to eventually achieve compliance. Typically, the compliance schedule is included as part of the Terms and Conditions in an NPDES permit and includes interim requirements. A key point in a compliance schedule is that the discharger is required to achieve the final water quality-based effluent limit as soon as possible.

A compliance schedule is an enforceable tool used as part of a permit, order, or directive to achieve compliance with applicable effluent standards and limitations, water quality standards, or other legally applicable requirements. Compliance schedules include a sequence of interim requirements such as actions, operations, or milestone events to achieve the stated goals. Compliance schedules are a broadly used tool for achieving state and federal regulations; compliance schedules under the Clean Water Act are defined federally at Clean Water Act 502(17) and 40 CFR Section 122.2.

Schedules of compliance have existed in Ecology regulations at WAC 173-220-140 and WAC 173-226-180 for the NPDES permit program since 1974. These regulations require that compliance schedules set forth the shortest, reasonable period of time to achieve the specified requirements, and require that such period to be consistent with federal guidelines and requirements of the Clean Water Act. Compliance schedules become an enforceable part of the permit. If a permittee fails or refuses to comply with interim or final requirements of a compliance schedule in a permit, such noncompliance constitutes a violation of the permit. Compliance schedules were incorporated into the state water quality standards in 1992 to ensure continued use in the permitting program, and can be found at WAC 173-210A-510(4).

The use and limitations of compliance schedules for NPDES permits in Washington are described at WAC 173-220-140 and WAC 173-226-180. For purposes of water quality standards, compliance schedules may be used only where there is a finding that a permittee cannot immediately comply with a new, or newly revised, water-quality based effluent limit (WQBEL). Compliance schedules lasting longer than one year must include interim milestones, along with dates for their achievement, with no more than one year between dates. Interim milestones might relate, for example, to purchase and installation of new equipment, modification of existing facilities, construction of new facilities, and/or development of new programs. Compliance schedules also must include specific numeric or narrative effluent limits that will be met during the compliance schedule period.

Compliance schedules are not allowed for new or expanded facilities.

Compliance schedules must require a permittee to meet the applicable WQBEL “as soon as possible.” The determination of what constitutes “as soon as possible” is made on a permit-by-permit basis considering the specific steps a permittee must take to achieve compliance. A compliance schedule typically is short-term in duration and includes a schedule of actions (investigations such as source identification studies, treatment feasibility studies) to meet the final effluent limitation. A compliance schedule differs from a variance in that a discharge may need more time to meet a final effluent limitation, but it has identified specific actions that will attain water quality effluent limits. In other words, the discharger knows they can achieve the water quality standard but they need more time.

The prior Washington State regulations limited compliance schedules to no more than ten years. However, Ecology was been directed by the Legislature to extend the maximum length of compliance schedules to more than ten years when a compliance schedule is appropriate, the base requirements for compliance schedules are met (i.e., compliance “as soon as possible”), and a permittee is not able to meet its total maximum daily load (TMDL) waste load allocations only by controlling and treating its own effluent. Statutory language can be found at RCW 90.48.605 - Amending state water quality standards — Compliance schedules in excess of ten years authorized. Available online: http://apps.leg.wa.gov/rcw/default.aspx?cite=90.48.605.

Basis for Ecology’s Decision

The main basis for Ecology’s proposal is state legislation in 2009 that recognized there are circumstances where extending a compliance schedule would be appropriate. Compliance schedules must still meet requirements in state NPDES regulations at WAC 173-220-140 and WAC 173-226-180, which includes specific timeframes within the schedule of compliance and enforceable provisions. RCW 90.48.605 focuses on instances when a TMDL exists on the receiving water, and describes a four part test that must be established:

1. The permittee is meeting its requirements under the total maximum daily load as soon as possible.
2. The actions proposed in the compliance schedule are sufficient to achieve water quality standards as soon as possible.
3. A compliance schedule is appropriate.

4. The permittee is not able to meet its waste load allocation solely by controlling and treating its own effluent.

Ecology has also added language that takes into consideration circumstances where a TMDL does not exist, but a compliance schedule would be the most appropriate tool to bring the permittee into compliance with the standard in the shortest timeframe possible. In this case, the actions must be identified that will bring the discharger into compliance with the effluent limits, but more time is needed than the term of the permit.

Revised language for compliance schedules emphasizes that compliance schedules must be completed as soon as possible and should generally not exceed the term of the permit. The revisions remove the ten-year limit for compliance schedules to allow flexibility on a permit by permit basis.

In considering a longer time period than ten years under certain circumstances, the use of compliance schedules in other states was reviewed. As an example, in Idaho, the town of Smelterville wastewater treatment plant draft permit includes a compliance schedule of “twenty years plus five months” for dissolved metals. Smelterville is located within the Bunker Hill Mining and Metallurgical Complex Superfund Site that has a current clean-up schedule of thirty years. This schedule, along with the need for additional data collection to determine the source of continued elevated metal levels in the new treatment plant effluent, was part of the justification for the twenty-year compliance schedule. EPA has approved this schedule as meeting the “as soon as possible” requirement.

In summary, the following apply as a basis for the use of the new rule language for the general allowance for compliance schedules in Washington:

- They are a part of a permit and do not require a rule change.
- They are allowed when the facility can achieve water quality standards but needs more time.
- The discharger must meet water quality standards or compliance “as soon as possible.”
- They must contain an enforceable sequence of actions and final limit.
- They must make progress towards the final limit or water quality standards by requiring interim actions with milestones if the schedule is longer than one year.
- They are not allowed for new dischargers.
- They cannot be renewed.

References

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Implementation Tools: Variances

Decision

Ecology added a new definition in WAC 173-201A-020 to define "Variance." Ecology revised language in WAC 173-201A-420 that establishes minimum qualifications for granting variances for individual dischargers, stretches of waters, or application to multiple dischargers. Language was adopted to establish a process for considering a variance that includes:

- A public process, including tribal notification, rulemaking, and EPA approval.
- The time period for when a variance would be in effect, generally not to exceed the term of the permit but under certain circumstances can be longer, as long as the time is as short a duration as possible.
- Requirements for a pollutant reduction plan that identifies specific schedule of actions that are set forth to achieve compliance with the original criteria.
- Requirements for interim numeric and narrative requirements that reflect the highest achievable water quality, within the shortest time possible, during the term of the variance.
- Requirements for a mandatory five-year review if the variance extends beyond the term of a permit.
- For variances that apply more broadly than individual variances, require a watershed assessment or total maximum daily load (TMDL) to identify responsible sources.
- Conditions under which a variance would be shortened or terminated, and when renewal would be considered.

Background

A variance is a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) for a single discharger, a group of dischargers, or stretch of waters. Variances establish a set of temporary requirements that apply instead of the otherwise applicable water quality standards and related water quality criteria. A variance may be considered when the standards are expected to be attained by the end of the variance period or the attainable use cannot be reliably determined. Variances can be targeted to specific pollutants, sources, and/or stretches of waters. Variances are not allowed for new or expanded facilities.

EPA's recent revision to the federal water quality standards regulations (40CFR131) added new regulatory requirements for variances (40CFR131.14), as well as the ability to use variances for restoration activities. The new federal regulation defines a variance as

> *"131.3(o) A water quality standards variance is a time-limited designated use and criterion for a specific pollutant(s) or water quality parameter(s) that reflect the highest attainable condition during the term of the water quality standards variance."*

The US Environmental Protection Agency (EPA) has dictated that state variance procedures, as part of state water quality standards, must be consistent with the substantive requirements of 40 CFR 131.14. EPA has approved state-adopted variances in the past and has indicated that it will continue to do so if:

- Each variance is adopted into rule as part of the water quality standard.
- The state demonstrates that meeting the standard is unattainable based on one or more of the grounds outlined in 40 CFR 13 1.10(g) for removing a designated use. Note: EPA's new water quality standards regulation makes this requirement only applicable to Clean Water Act 101(1)(2) uses (the "fishable/swimmable" uses of the Clean Water Act), which is Ecology's intent also. Variances for other uses must include consideration of the "use and value" of the water. (see 40CFR131.14 for new federal requirements).
- The justification submitted by the state includes documentation that treatment more advanced than that required by sections 303(c)(2)(A) and (B) has been carefully considered, and that alternative effluent control strategies have been evaluated.
- The more stringent state criterion is maintained and is binding upon all other dischargers on the stream or stream segment.
- The discharger who is given a variance for one particular constituent is required to meet the applicable criteria for other constituents.
- The variance is granted for a specific period of time and can be renewed upon expiration.
- The discharger either must meet the standard upon the expiration of this time period or must make a new demonstration of "unattainability."
- Reasonable progress is being made toward meeting the standards.
- The variance was subjected to public notice, opportunity for comment, and public hearing. The public notice should contain a clear description of the impact of the variance upon achieving water quality standards in the affected stretch of waters.

The temporary requirements established through a variance are only effective for the life of the variance. Because a variance establishes a temporary set of requirements that apply instead of the underlying water quality criteria, EPA has specified that variances for the Clean Water Act 101(a)(2) fishable/swimmable uses are appropriate only under the same circumstances required in federal rule to undertake a Use Attainability Analysis (UAA), used to change a designated use for a water body. Also, variances can be granted when they are needed to undertake restoration activities:

> 40CFRE131.14(b)(2)(i)(A)
>
> *"…the State must demonstrate that attaining the designated use and criterion is not feasible throughout the term of the water quality standards variance because:*
>
> *(1) One of the factors listed in § 131.10(g) is met, or*
>
> *(2) Actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented."*.

Regulations found in 40 CFR 131.10(g) establish six circumstances under which a UAA, or a variance, might be appropriate. They are:

1. Naturally occurring pollutant concentrations prevent attainment of the use.
2. Natural, ephemeral, intermittent or low flow conditions or water levels prevent attainment of the use, unless these conditions may be compensated for by discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met.
3. Human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.
4. Dams, diversions, or other types of hydrologic modifications preclude attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in attainment of the use.
5. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.
6. Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

Recent EPA guidance offered two examples of the circumstances under which variances may be particularly appropriate to consider:

- When attaining the designated use and criteria is not feasible under current conditions (e.g., water quality-based controls required to meet the numeric nutrient criterion would result in substantial and widespread social and economic impact) but achieving the standards could be feasible in the future if circumstances related to the attainability determination change (e.g., development of less expensive pollution control technology or a change in local economic conditions).
- When it is not known whether the designated use and criteria may ultimately be attainable, but feasible progress toward attaining the designated use and criteria can be made by implementing known controls and tracking environmental improvements (e.g., complex use attainability challenges involving legacy pollutants).

Federal regulations (40CFR131.14) require that the term of the variance can only be as long as necessary to achieve the highest attainable condition.

Variances have not been issued in Washington to date but are allowed under WAC 173-201A-420. The new language states that a variance is subject to a public and intergovernmental involvement process, and a variance does not go into effect until it is incorporated into WAC 173-201A and approved by EPA. The new duration of a variance is not specified and variances may be renewed after providing another opportunity for public and intergovernmental involvement and review.

Basis for Ecology's decision

Ecology adopted HHC for Washington's water quality standards. Changes to the variables that go into the HHC equation, such as an updated fish consumption rate, generally result in more protective criteria. Ecology recognizes that these new, more protective criteria may be difficult to meet in situations where technology is not yet available or feasible to remove the pollutant, or in cases where either (1) a persistent pollutant resides and is cycling within the aquatic ecosystem of the water body and cannot be removed without degrading the system, or (2) when the main sources of the pollutant are not within the scope of the state's jurisdiction to control through water quality protection. In addition, other criteria and uses may not be possible to attain in the short term and variances could be applicable to these circumstances as well. An example of this is the time needed to improve temperature in streams where the only feasible cooling method is shade via streamside tree planting and subsequent tree canopy maturation.

EPA has advised states that a variance should be used instead of removal of a use where the state believes the standard can or might ultimately be attained. By maintaining the beneficial use rather than changing it, the state will ensure that further progress is made in improving water quality and attaining the standard. With a variance, NPDES permits may be written such that reasonable progress is made toward attaining the standards without violating section 402(a)(l) of the Clean Water Act, which requires that NPDES permits must meet the applicable water quality standards.

With these factors in mind, Ecology revised the variance section of the water quality standards at WAC 173-201A-420, as part of the rulemaking for developing HHC. The key goals of these revisions are:

- ***Provide accountability*** that the discharger cannot feasibly meet the original criteria and that they continually strive to make reasonable progress to meet the original criteria and highest attainable condition during the life of the variance. Build in checks and balances to ensure that variance information is reviewed on a regular basis, new technology and science is taken into account, and benchmarks are required to ensure that implementation of the variance is occurring and that the variance continues to be necessary.
- ***Extend timeframe*** of a variance where necessary to allow time to deal with difficult, complex toxics compounds, such as legacy pollutants or those that come from sources outside of Clean Water Act jurisdiction. Include mandatory reviews to ensure that the variance is still necessary. Provide framework for renewing, shortening, and revoking a variance.
- ***Efficiency of Resources*** where possible, reduce resource intensity of regulating agencies in issuing variances.

The new language at WAC 173-201A-420 includes general provisions, and specific requirements that would apply for variances for individual dischargers, stretches of waters, and multiple dischargers. Requirements are intended to be consistent with federal guidance and also provide the necessary tools for implementing state water quality standards.

Besides requirements for issuing an individual variance, new rule language also provides requirements for issuing a variance to multiple dischargers for circumstances where multiple permittees cannot attain a designated use or criteria for the same pollutant(s) for the same reason, regardless of whether or not they are located on the same water body. In these cases, the new rule language streamlines the variance process by adopting one variance that applies to all the permittees. These are generally known as "multiple discharger variances." Multiple discharger variances may be considered under the same circumstances, and must meet the same standards, as single discharger variances. A permittee that could not qualify for an individual variance should not qualify for a multiple discharger variance. Ecology is following EPA guidance, which recommends that justifications for multiple discharger variances should:

1. Apply only to permittees experiencing the same challenges in meeting water quality based effluent limits for the same pollutant(s), criteria, and designated uses.
2. Group permittees based on specific characteristics or technical and economic scenarios that they share, and conduct a separate analysis for each group. The more homogenous a group is in terms of factors affecting attainability of the designated use and criteria, the more credible a multiple discharger variance will be. For example: type of discharger (public or private); industrial classification; permittee size and/or effluent quality; pollutant treatability; whether or not the permittee can achieve a level of effluent quality comparable to the other permittees in the group; and water body or watershed characteristics.
3. Collect sufficient information from each individual permittee to support the assignment of each individual permittee to the designated group of multiple dischargers. The justification for a multiple discharger variance should account for as much individual permittee information as possible. When a permittee does not fit with any of the group characteristics, an individual variance should instead be considered.

Ecology is adopted new language that will allow a variance for stretches of waters, such that the variance would apply to an entire stretch of water or portions of water body segments. Other states have used water body variances where the problems in a stretch of waters are significantly impacting water quality and habitat, are widespread, and involve numerous sources of point and nonpoint pollution; that is, where waters are significantly impaired by multiple sources, not just a few point sources. For example, where historic mining practices have impaired both water quality and habitat throughout a headwater basin, states have applied temporary standards with specific expiration dates for certain pollutants related to the historic mining practices rather than downgrading these waters through a use change. In this way, states have maintained designated uses and underlying criteria for other pollutants, while recognizing that existing ambient conditions for certain pollutants are not correctable in the short-term.

The temporary standards provide a basis for permit limits in the shorter term that will in turn lead to remediation of damaged water resources to the point that they will once again provide protection for the underlying designated use and criteria. By issuing a variance instead of a use change, the underlying use and criteria are preserved, allowing them to actively drive water quality improvements in the longer-term. A water body variance provides time for the state to work with both point and nonpoint sources to determine and implement adaptive management approaches on a water body or watershed scale to achieve pollutant reductions and strive toward attaining the water body's designated use and associated criteria.

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Implementation Clarification for Combined Sewer Overflows (CSO) Treatment Plants

Decision

Ecology added a new definition to WAC 173-201A-020 to define CSO Treatment Plants and new language to WAC 173-201A-510 *Means of Implementation*, to clarify implementation of HHC in NPDES permits for CSO Treatment Plants. This new rule language provides clarification but does not change any current practices with regard to permit requirements.

Background

The following description of CSO's is taken from EPA 2004.

"Two types of public sewer systems predominate in the United States: combined sewer systems (CSSs), and sanitary sewer systems (SSSs). CSSs were among the earliest sewer systems constructed in the United States and were built until the first part of the 20th century. As defined in the 1994 CSO Control Policy (EPA 1994a), a CSS is:

> *A wastewater collection system owned by a state or municipality (as defined by Section 502(4) of the Clean Water Act) that conveys domestic, commercial, and industrial wastewaters and storm water runoff through a single pipe system to a publicly-owned treatment works (POTW).*

During wet weather events (e.g., rainfall or snowmelt), the combined volume of wastewater and storm water runoff entering CSSs often exceeds conveyance capacity. Most CSSs are designed to discharge flows that exceed conveyance capacity directly to surface waters, such as rivers, streams, estuaries, and coastal waters. Such events are called CSOs. A CSO is defined as:

> *The discharge from a CSS at a point prior to the POTW treatment plant.*
>
> *Some CSO outfalls discharge infrequently, while others discharge every time it rains. Overflow frequency and duration varies from system to system and from outfall to outfall within a single CSS. Because CSOs contain untreated wastewater and storm water, they contribute microbial pathogens and other pollutants to surface waters. CSOs can impact the environment and human health. Specifically, CSOs can cause or contribute to water quality impairments, beach closures, shellfish bed closures, contamination of drinking water supplies, and other environmental and human health problems."*

CSOs are driven by influxes of stormwater into combined sanitary and stormwater collection systems. Because of the episodic and short-term nature of CSO discharges it is infeasible to calculate effluent limits that are based on criteria with durations of exposure up to 70 years. The federal regulations (40CFR122.44(k)) allow use of best management practices (BMP)-based limits in NPDES permits if it is infeasible to calculate numeric limits:

"§ 122.44 Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs, see § 123.25).

In addition to the conditions established under § 122.43(a), each NPDES permit shall include conditions meeting the following requirements when applicable.

***(k)** Best management practices (BMPs) to control or abate the discharge of pollutants when:*

***(1)** Authorized under section 304(e) of the Clean Water Act for the control of toxic pollutants and hazardous substances from ancillary industrial activities;*
***(2)** Authorized under section 402(p) of the Clean Water Act for the control of storm water discharges;*
***(3)** Numeric effluent limitations are infeasible; or*
***(4)** The practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the Clean Water Act."*

In Washington CSO control strategies are implemented through methods and approaches specified in chapter 173 of the Washington Administrative Code (WAC 173), 40CFR122, and the *Water Quality Program Permit Writer's Manual* (Ecology 2015). Chapter 173-245 WAC establishes procedures for CSO reduction. One reduction strategy available is treatment at the CSO site. Discharges from these CSO Treatment Plants are typically more frequent than once per year though still relatively infrequent and typically of short duration. Ecology adopted the additional CSO treatment plant implementation language in the water quality standards in order to provide clarity to the implementation of HHC in permits for CSO Treatment Plants.

Basis for Ecology's decision

Ecology adopted CSO treatment plant implementation language in the water quality standards in order to provide clarity to the implementation of HHC in permits for CSO Treatment Plants. The new rule language is below:

173-201A-020 Definitions.
Combined Sewer Overflow (CSO) Treatment Plant **–** is a facility that provides At-Site treatment as provided for in chapter 173-245 WAC. A CSO Treatment plant is a specific facility identified in a department-approved CSO Reduction Plan (Long-term Control Plan) that is designed, operated and controlled by a municipal utility to capture and treat excess combined sanitary sewage and stormwater from a combined sewer system.

173-201A-510 Means of Implementation
(6) *Combined Sewer Overflow Treatment Plant*

The influent to these facilities is highly variable in frequency, volume, duration, and pollutant concentration. The primary means to be used for requiring compliance with the human health criteria shall be through the application of narrative limitations, which includes but is not limited to best management practices required in waste discharge permits, rules, orders and directives issued by the department.

References

EPA 2004. U.S. Environmental Protection Agency. *Report to Congress on the Impacts and Control of CSOs and SSOs.*

Ecology 2015. *Water Quality Program Permit Writer's Manual*. Revised January 2015,

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Appendix A. Input Values to Calculate New HHC Criteria

The table below contains the input values used by Ecology to calculate the new 2016 human health criteria found in WAC 173-201A-240, as adopted on August 1, 2016. Risk levels and hazard quotients are not shown. The risk level used with the cancer slope factors was 1 x 10^{-6}, except for PCBs, which was 4 x 10^{-5}. The hazard quotient used with the reference doses was 1. For further information see the following sections in this document:

- Human Health Criteria Equations and Variables
- Challenging Chemicals: Arsenic
- Challenging Chemicals: PCBs, for the bases of the input values.

Notes:
1. RfDs in orange are in the EPA 2015 final criteria documents and have corresponding CSFs which are the basis of the EPA proposed Rule for Washington. These RfDs were not the basis of the proposed EPA rule.
2. Safe Drinking Water Act criteria bases are indicated in blue rows.

Column headings:
PP# = Priority pollutant number (Appendix A to 40 CFR Part 423)
NTR Chem # = Chemical number in the National Toxics Rule (40CFR131.36)
CAS # = Chemical Abstract Service number
RSC = Relative source contribution
RfD = Reference dose (mg/kg-day)
BW = Body weight (kg)
DWI = Drinking water intake (L/day)
FCR = Fish consumption rate (kg/day)
BCF = bioconcentration factor (L/kg)
CSF = Cancer slope factor (mg/kg-day)

PP #	NTR Chem #	Chemical Name	CAS # - 1	CAS # -2	RSC	RfD	BW	DWI	FCR	BCF	CSF
11	41	1,1,1-Trichloroethane	71556	71-55-6	1	2	80	2.4	0.175	5.6	-
15	37	1,1,2,2-Tetrachloroethane	79345	79-34-5	1	0.02	80	2.4	0.175	5	0.2
14	42	1,1,2-Trichloroethane	79005	79-00-5	1	0.004	80	2.4	0.175	4.5	0.057
29	30	1,1-Dichloroethylene	75354	75-35-4	1	0.05	80	2.4	0.175	5.6	-
8	101	1,2,4-Trichlorobenzene	120821	120-82-1	1	0.01	80	2.4	0.175	114	0.029
25	75	1,2-Dichlorobenzene	95501	95-50-1	1	0.3	80	2.4	0.175	55.6	-
10	29	1,2-Dichloroethane	107062	107-06-2	1	0.078	80	2.4	0.175	1.2	0.0033
32	31	1,2-Dichloropropane	78875	78-87-5	1	0.0893	80	2.4	0.175	4.1	0.036
37	85	1,2-Diphenylhydrazine	122667	122-66-7	1	-	80	2.4	0.175	24.9	0.8
30	40	1,2-Trans-Dichloroethylene	156605	156-60-5	1	0.02	80	2.4	0.175	1.58	-
26	76	1,3-Dichlorobenzene	541731	541-73-1	1	0.002	80	2.4	0.175	55.6	-
33	32	1,3-Dichloropropene	542756	542-75-6	1	0.025	80	2.4	0.175	1.91	0.122
27	77	1,4-Dichlorobenzene	106467	106-46-7	1	0.07	80	2.4	0.175	55.6	-
129	16	2,3,7,8-TCDD (Dioxin)	1746016	1746-01-6	1	7E-10	80	2.4	0.175	5,000	-
21	55	2,4,6-Trichlorophenol	88062	88-06-2	1	0.001	80	2.4	0.175	150	0.011
31	46	2,4-Dichlorophenol	120832	120-83-2	1	0.003	80	2.4	0.175	40.7	-
34	47	2,4-Dimethylphenol	105679	105-67-9	1	0.02	80	2.4	0.175	93.8	-
59	49	2,4-Dinitrophenol	51285	51-28-5	1	0.002	80	2.4	0.175	1.5	-
35	82	2,4-Dinitrotoluene	121142	121-14-2	1	0.002	80	2.4	0.175	3.8	0.667
20	71	2-Chloronaphthalene	91587	91-58-7	1	0.08	80	2.4	0.175	202	-
24	45	2-Chlorophenol	95578	95-57-8	1	0.005	80	2.4	0.175	134	-
60	48	2-Methyl-4,6-Dinitrophenol	534521	534-52-1	1	0.0003	80	2.4	0.175	5.5	-
28	78	3,3'-Dichlorobenzidine	91941	91-94-1	1	-	80	2.4	0.175	312	0.45
22	52	3-Methyl-4-Chlorophenol	59507	59-50-7	1	0.1	80	2.4	0.175	1258	-
94	110	4,4'-DDD	72548	72-54-8	1	0.0005	80	2.4	0.175	53,600	0.24

PP #	NTR Chem #	Chemical Name	CAS # - 1	CAS # -2	RSC	RfD	BW	DWI	FCR	BCF	CSF
93	109	4,4'-DDE	72559	72-55-9	1	0.0005	80	2.4	0.175	53,600	0.167
92	108	4,4'-DDT	50293	50-29-3	1	0.0005	80	2.4	0.175	53,600	0.34
1	56	Acenaphthene	83329	83-32-9	1	0.06	80	2.4	0.175	242	-
2	17	Acrolein	107028	107-02-8	1	0.0005	80	2.4	0.175	215	-
3	18	Acrylonitrile	107131	107-13-1	1	-	80	2.4	0.175	30	0.54
89	102	Aldrin	309002	309-00-2	1	0.00003	80	2.4	0.175	4,670	17
102	103	alpha-BHC	319846	319-84-6	1	0.008	80	2.4	0.175	130	6.3
95	112	alpha-Endosulfan	959988	959-98-8	1	0.006	80	2.4	0.175	270	-
78	58	Anthracene	120127	120-12-7	1	0.3	80	2.4	0.175	30	-
114	1	Antimony	7440360	7440-36-0	1	0.0004	80	2.4	0.175	1	-
115	2	Arsenic	7440382	7440-38-2	Based on Safe Drinking Water Act, see sections in this document: Human Health Criteria Equations and Variables, and, Challenging Chemicals: Arsenic						
116	15	Asbestos	1332214	1332-21-4	Based on Safe Drinking Water Act, as per EPA 304(a) criteria documents.						
4	19	Benzene	71432	71-43-2	1	0.0005	80	2.4	0.175	5.2	0.055
5	59	Benzidine	92875	92-87-5	1	0.003	80	2.4	0.175	87.5	230
72	60	Benzo(a)Anthracene	56553	56-55-3	1	-	80	2.4	0.175	30	0.73
73	61	Benzo(a)Pyrene	50328	50-32-8	1	-	80	2.4	0.175	30	7.3
74	62	Benzo(b)Fluoranthene	205992	205-99-2	1	-	80	2.4	0.175	30	0.73
75	64	Benzo(k)Fluoranthene	207089	207-08-9	1	-	80	2.4	0.175	30	0.073
103	104	beta-BHC	319857	319-85-7	1	-	80	2.4	0.175	130	1.8
96	113	beta-Endosulfan	33213659	33213-65-9	1	0.006	80	2.4	0.175	270	-
18	66	Bis(2-Chloroethyl)Ether	111444	111-44-4	1	-	80	2.4	0.175	6.9	1.1
66	68	Bis(2-Ethylhexyl) Phthalate	117817	117-81-7	1	0.06	80	2.4	0.175	130	0.014
47	20	Bromoform	75252	75-25-2	1	0.03	80	2.4	0.175	3.75	0.0045
67	70	Butylbenzyl Phthalate	85687	85-68-7	1	1.3	80	2.4	0.175	414	0.0019
6	21	Carbon Tetrachloride	56235	56-23-5	1	0.004	80	2.4	0.175	18.75	0.07

PP #	NTR Chem #	Chemical Name	CAS # - 1	CAS # -2	RSC	RfD	BW	DWI	FCR	BCF	CSF
91	107	Chlordane	57749	57-74-9	1	0.0005	80	2.4	0.175	14,100	0.35
7	22	Chlorobenzene	108907	108-90-7	1	0.02	80	2.4	0.175	10.3	-
51	23	Chlorodibromomethane	124481	124-48-1	1	0.02	80	2.4	0.175	3.75	0.04
23	26	Chloroform	67663	67-66-3	1	0.01	80	2.4	0.175	3.75	-
76	73	Chrysene	218019	218-01-9	1	-	80	2.4	0.175	30	0.0073
120	6	Copper	7440508	7440-50-8	Based on Safe Drinking Water Act, as per EPA 304(a) criteria documents.						
121	14	Cyanide	57125	57-12-5	1	0.0006	80	2.4	0.175	1	-
82	74	Dibenzo (a,h) Anthracene	53703	53-70-3	1	-	80	2.4	0.175	30	7.3
48	27	Dichlorobromomethane	75274	75-27-4	1	0.003	80	2.4	0.175	3.75	0.034
90	111	Dieldrin	60571	60-57-1	1	0.00005	80	2.4	0.175	4,670	16
70	79	Diethyl Phthalate	84662	84-66-2	1	0.8	80	2.4	0.175	73	-
71	80	Dimethyl Phthalate	131113	131-11-3	1	10	80	2.4	0.175	36	-
68	81	Di-n-Butyl Phthalate	84742	84-74-2	1	0.1	80	2.4	0.175	89	-
97	114	Endosulfan Sulfate	1031078	1031-07-8	1	0.006	80	2.4	0.175	270	-
98	115	Endrin	72208	72-20-8	1	0.0003	80	2.4	0.175	3,970	-
99	116	Endrin Aldehyde	7421934	7421-93-4	1	0.0003	80	2.4	0.175	3,970	-
38	33	Ethylbenzene	100414	100-41-4	1	0.022	80	2.4	0.175	37.5	-
39	86	Fluoranthene	206440	206-44-0	1	0.04	80	2.4	0.175	1,150	-
80	87	Fluorene	86737	86-73-7	1	0.04	80	2.4	0.175	30	-
104	105	gamma-BHC (Lindane)	58899	58-89-9	1	0.0047	80	2.4	0.175	130	-
100	117	Heptachlor	76448	76-44-8	1	0.0001	80	2.4	0.175	11,200	4.1
101	118	Heptachlor Epoxide	1024573	1024-57-3	1	0.000013	80	2.4	0.175	11,200	5.5
9	88	Hexachlorobenzene	118741	118-74-1	1	0.0008	80	2.4	0.175	8,690	1.02
52	89	Hexachlorobutadiene	87683	87-68-3	1	0.0003	80	2.4	0.175	2.78	0.04
53	90	Hexachloro-cyclopentadiene	77474	77-47-4	1	0.006	80	2.4	0.175	4.34	-
12	91	Hexachloroethane	67721	67-72-1	1	0.0007	80	2.4	0.175	86.9	0.04

PP #	NTR Chem #	Chemical Name	CAS # - 1	CAS # -2	RSC	RfD	BW	DWI	FCR	BCF	CSF
83	92	Indeno (1,2,3-cd) Pyrene	193395	193-39-5	1	-	80	2.4	0.175	30	0.73
54	93	Isophorone	78591	78-59-1	1	0.2	80	2.4	0.175	4.38	0.00095
46	34	Methyl Bromide	74839	74-83-9	1	0.02	80	2.4	0.175	3.75	-
44	36	Methylene Chloride	75092	75-09-2	1	0.006	80	2.4	0.175	0.9	0.002
	8b	Methylmercury	22967926	22967-92-6	1	0.0001	80	2.4	0.175	NA	-
124	9	Nickel	7440020	7440-02-0	1	0.02	80	2.4	0.175	47	-
56	95	Nitrobenzene	98953	98-95-3	1	0.002	80	2.4	0.175	2.89	-
61	96	N-Nitrosodimethylamine	62759	62-75-9	1	-	80	2.4	0.175	0.026	51
63	97	N-Nitrosodi-n-Propylamine	621647	621-64-7	1	-	80	2.4	0.175	1.13	7
62	98	N-Nitrosodiphenylamine	86306	86-30-6	1	-	80	2.4	0.175	136	0.0049
64	53	Pentachlorophenol	87865	87-86-5	1	0.005	80	2.4	0.175	11	0.4
65	54	Phenol	108952	108-95-2	1	0.6	80	2.4	0.175	1.4	-
106-112	119	Polychlorinated Biphenyls (PCBs)	n	1336-36-3	1	-	80	2.4	0.175	31,200	2
84	100	Pyrene	129000	129-00-0	1	0.03	80	2.4	0.175	30	-
125	10	Selenium	7782492	7782-49-2	1	0.005	80	2.4	0.175	4.8	-
85	38	Tetrachloroethylene	127184	127-18-4	1	0.006	80	2.4	0.175	30.6	0.0021
127	12	Thallium	7440280	7440-28-0	1	0.000068	80	2.4	0.175	116	-
86	39	Toluene	108883	108-88-3	1	0.0097	80	2.4	0.175	10.7	-
113	120	Toxaphene	8001352	8001-35-2	1	0.00035	80	2.4	0.175	13,100	1.1
87	43	Trichloroethylene	79016	79-01-6	1	0.005	80	2.4	0.175	10.6	0.05
88	44	Vinyl Chloride	75014	75-01-4	1	0.003	80	2.4	0.175	1.17	1.5
128	13	Zinc	7440666	7440-66-6	1	0.3	80	2.4	0.175	47	-

FACT SHEET

National Pollutant Discharge Elimination System (NPDES) and
State Waste Discharge General Permit for Stormwater
Discharges Associated with Industrial Activities

May 1, 2019

Washington State Department of Ecology

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PURPOSE OF THIS FACT SHEET

This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial Stormwater General Permit, or ISGP). The draft permit authorizes the discharge of stormwater, and certain conditionally authorized "non-stormwater" discharges. Discharges of process wastewater are not authorized by this permit and require a separate permit. This fact sheet explains the nature of authorized discharges, Ecology's decisions on limiting the pollutants in stormwater and non-stormwater discharges, and the regulatory and technical bases for those decisions.

The Washington State Department of Ecology is proposing to reissue the ISGP with changes. The major changes to the permit are documented in Table 1 of this fact sheet. The permit will replace the permit that expires on December 31, 2019. The permit authorizes stormwater discharges associated with industrial activities and a limited number of non-stormwater discharges. The permit limits the discharge of pollutants to surface waters under the authority of the Federal Water Pollution Control Act (U.S.C.S. 1251) and limits the discharge of pollutants to surface and groundwater under the authority of Chapter 90.48 RCW. Ecology anticipates that Permittees' diligent implementation of the requirements of this permit will result in discharges that do not cause or contribute to violations of state water quality standards.

This fact sheet does not contain any independently enforceable requirements. The General Permit contains all of the actual requirements applicable to dischargers. In case of any conflict between the fact sheet and the General Permit, the terms of the General Permit govern.

Table 1: Summary of Major Changes in the Draft ISGP

Section(s)	Previous Permit Language	Draft Permit Language
S1. Permit Coverage		
S1.A Facilities required to seek permit coverage and throughout the permit	The previous permit relied on 1987 Standard Industrial Classification (SIC) groups to identify the sectors required to apply for permit coverage.	The draft permit proposes to use 2017 North American Industry Classification System (NAICS) groups to classify the sectors required to apply for permit coverage.
S1.A Facilities required to seek permit coverage	N/A	The draft permit adds two new categories that are required to obtain permit coverage. Those categories are: • Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing • Marine Construction
S1.C Facilities Not Required to Obtain Coverage	Industrial facilities that discharge stormwater only to groundwater (e.g., on-site infiltration) with no discharge to surface waters of the state under any condition.	Industrial facilities that discharge stormwater only to groundwater (e.g., on-site infiltration) with no discharge to surface waters of the state under any condition, provided the facility doesn’t meet the requirements of S1.B.
S1.C Facilities Not Required to Obtain Coverage	Inactive mining, inactive oil and gas operations, or inactive landfills where neither an owner nor an operator can be identified.	This draft permit removes this language.
S1.E Discharges to Ground	1. For sites that discharge to both surface water and groundwater, the terms and conditions of this permit shall apply. 2. Facilities that discharge to groundwater through an underground injection control well shall comply with any applicable requirements of the Underground Injection Control regulations, Chapter 173-218 WAC.	1. For sites with a discharge point groundwater, the terms and conditions of this permit shall apply to all groundwater discharges. 2. Facilities with a discharge point to groundwater through an underground injection control well shall comply with any applicable requirements of the Underground Injection Control (UIC) regulations, Chapter 173-218 WAC.
S1.F Conditional “No Exposure” Exemption (CNE)	1. Any industrial activity identified for coverage under Condition S1.A that is eligible for a “No Exposure” exemption from the permit under 40 CFR §122.26(g), may submit a No Exposure Certification From to Ecology, either in writing or electronically.	1. A facility engaged in industrial activity may qualify for a “No Exposure” exemption if there is no exposure of industrial materials and activities to rain, snow, snow melt, and/or runoff. Industrial materials and activities include, but are not limited to, material-handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, and final products, or waste products. Material handling activities include storage, loading and unloading, transport, or conveyance of any raw materials, intermediate product, by-product, final products, or waste products. 2. To determine if you qualify for a CNE, eleven questions must be answered and certified that none of the following materials or activities are, or will be in foreseeable future, exposed to precipitation. To view the eleven questions, go to:

Section(s)	Previous Permit Language	Draft Permit Language
		https://ecology.wa.gov/DOE/files/81/818af313-b688-4bb7-9df8-5389d9faced4.pdf. If any of the answers are “Yes,” an exemption **cannot** be granted. 3. To apply for an exemption, an electronic application must be submitted to Ecology’s Water Quality Permitting Portal (WQWebPortal). The WQWebPortal can accessed at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance.
S2. Application For Coverage		
S2.A Obtaining Permit Coverage	N/A	**New Language:** Electronic Submittal Use the Water Quality Permitting Portal (WQWebPortal) to submit a complete application for coverage to Ecology. For more information about the WQWebPortal, visit: https://secureaccess.wa.gov/ecy/wqwebportal. To access the WQWebPortal, you must first register for Secure Access Washington (SAW). For additional information about SAW, visit: https://support.secureaccess.wa.gov.
S3. Stormwater Pollution Prevention Plan		
S3.A General Requirements	All Permittees and applicants for coverage under this permit shall develop and implement a SWPPP for the permitted facility as follows	All Permittees and applicants for coverage under this permit shall implement a SWPPP developed by *Qualified Personnel* as follows
S3.A.3.a Update of the SWPPP	The Permittee shall modify the SWPPP if the owner/operator or the applicable local or state regulatory authority determines during inspections or investigations that the SWPPP is, or would be, ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The Permittee shall modify the SWPPP:	The Permittee shall modify the SWPPP if the owner/operator or, the local regulatory authority, or Ecology determines during inspections or investigations that the SWPPP is, or would be, ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The Permittee shall modify the SWPPP:
S3.B.1 The site map shall identify:	a. The scale or include relative distances between significant structures and drainage systems. b. Significant features. c. The stormwater drainage and discharge structures and identify, by name, any other party other than the Permittee that owns any stormwater drainage or discharge structures. d. The stormwater drainage areas for each stormwater discharge point off-site (including discharges to groundwater) and assign a unique identifying number for each discharge point.	a. The scale or include relative distances between significant structures and drainage systems. b. The size of the property in acres. c. The location and extent of significant structures and impervious surfaces; d. Direction of stormwater flow (use arrows); e. Locations of all structural control measures; f. Locations of all receiving water (including wetlands and drainage ditches) in the immediate vicinity of the facility; g. Conditionally approved non-stormwater discharges;

Section(s)	Previous Permit Language	Draft Permit Language
	e. Each sampling location by unique identifying number. f. Paved areas and buildings. g. Areas of pollutant contact (actual or potential) associated with specific industrial activities. h. Conditionally approved non-stormwater discharges (Condition S5.D). i. Surface water locations (including wetlands and drainage ditches). j. Areas of existing and potential soil erosion that could result in the discharge of a significant amount of turbidity, sediment or other pollutants. k. Vehicle maintenance areas. l. Lands and waters adjacent to the site that may be helpful in identifying discharge points or drainage routes.	h. Areas of existing and potential soil erosion that could result in the discharge of a significant amount of turbidity, sediment, or other pollutants; i. Locations of all stormwater conveyances including ditches, pipes, swales, etc.; j. Locations of actual and potential pollutant sources; k. Locations of all stormwater monitoring points; l. The stormwater drainage areas for each stormwater discharge point off site (including discharges to groundwater); m. Locations of stormwater inlets and outfalls with a unique identification number for each sampling point, indicating any that are identified as substantially identical, and identify, by name, any other party other than the Permittee that owns any stormwater drainage or discharge structures; n. Combined sewers or MS4s and where stormwater discharges to them; o. Locations of fueling and vehicle maintenance areas; p. Locations and sources of run-on to your site from adjacent properties that may contain pollutants.
S3.B.4.b.i.2.d BMP requirements	Keep all dumpsters under cover or fit with a lid that must remain closed when not in use.	Keep all dumpsters under cover or fit with a storm proof lid that must remain closed when not in use.
S3.B.4.b.i.4.a BMP requirements	Store chemical liquids, fluids, and petroleum products, on an impervious surface that is surrounded with a containment berm or dike that is capable of containing 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank, whichever is greater.	Store all hazardous substances, petroleum/oil liquids, and other chemical solid or liquid materials that have potential to contaminate stormwater on an impervious surface that is surrounded with a containment berm or dike that is capable of containing 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank, whichever is greater, or use UL Approved double-walled tanks.
S3.B.4.b.i.4.c.i BMP requirements	Oil absorbents capable of absorbing 15 gallons of fuel.	Oil absorbents capable of absorbing 15 gallons of fuel. Facilities with a Spill Prevention, Containment, and Countermeasures Plan (SPCCP) must have enough oil absorbents capable of absorbing the minimum anticipated spill amount if more than 15 gallons.
S4. Sampling and S5. Benchmarks and Effluent Limitations		
S4.B.1.b Sample Timing and Frequency	Permittees shall sample the stormwater discharge from the first fall storm event each year. “First fall storm event” means the first time on or after October 1st of each year that precipitation occurs and results in a stormwater discharge from a facility.	Permittees shall sample the stormwater discharge from the first fall storm event each year. “**First fall storm event**” means the first time on or after September 1st of each year that precipitation occurs and results in a stormwater discharge from a facility.
S4.B.2 Sample Locations	N/A	c. Ecology may require sampling points located in areas where adverse conditions prevent regular sampling be moved to areas where regular sampling can occur.

Section(s)	Previous Permit Language	Draft Permit Language
		d. The Permittee shall notify Ecology of any changes or updates to sample locations, discharge points, and/or outfalls. The Permittee may be required to provide additional information to Ecology prior to changing sampling locations. Changes and updates to sample locations are not allowed until all corrective actions have been completed.
S4.B.7 Consistent Attainment	**Summary**: The previous version allowed for the suspension of sampling for 12 full quarters.	Summary: This version will require one sample per year to ensure the facility is still at consistent attainment. The sample will be taken during the 4^{th} quarter. Facilities may average the annual sample over the 4^{th} quarter. **Added language:** c. The annual sample must be taken during the 4th quarter. A facility may average the annual sample with any other samples taken over the course of the 4th quarter. d. A Permittee whose annual sample exceeds the benchmark during consistent attainment is no longer allowed to claim consistent attainment. The Permittee must begin sampling in accordance with S4.B.
S5. Benchmarks, Effluent Limitations and Specific Sampling Requirements		
S5.B. Table 3: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries	N/A	**Summary:** Certain sectors were assigned additional parameters based on their activities. Those additional changes are as follows: Machinery Manufacturing assigned Total Lead and Petroleum Hydrocarbons Wood Products Manufacturing assigned COD and TSS Coal Mining; Oil and Gas Extraction; Nonmetallic Mining and Quarrying, except Fuels; Petroleum and Coal Products Manufacturing; Nonmetallic Mineral Product Manufacturing; Steam Electric Power Generation assigned TSS and Petroleum Hydrocarbons
S5.B. Table 3: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries	N/A	**Summary**: Additional monitoring was added for the two new sectors being brought into the permit as follows: Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing is assigned Total Petroleum Hydrocarbons. Marine Industrial Construction is assigned TSS and Petroleum Hydrocarbons. Additionally, this sector will also have “report only” monitoring for Arsenic, PAH Compounds, p-cresol, and Phenol. Ecology will analyze the results from this sector to determine if benchmarks need to be developed or sampling for these parameters suspended for the next permit cycle.

Section(s)	Previous Permit Language	Draft Permit Language
S5.B. Table 3: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries	**Summary:** Lead benchmark was set at 81.6 µg/L Silver benchmark was set at 3.8 µg/L	**Summary:** Based on the water quality calculations, Lead is now set at 64.6 µg/l and Silver is set at 3.4 µg/L.
S6. Discharges to Impaired Waterbodies		
S6.C Additional Sampling Requirements and Effluent Limits for Discharges to Certain Impaired Waterbodies and Puget Sound Sediment Cleanup Sites	c. For discharge points not subject to a TSS effluent limit under the 2010 ISGP, the TSS effluent limit in Table 6 does not become effective until January 1, 2017, or two years after the effective date of permit coverage, whichever is later. However, TSS sampling and reporting is effective January 1, 2015, or the first full quarter following permit coverage, whichever is later.	**Summary:** Language removed as the TSS effluent limit is now in effect.
S6.C Table 6: Sampling and Effluent Limits Applicable to Discharges to 303(d)-listed Waters	**Summary:** Pentachlorophenol Effluent limit for Freshwater was 9 µg/L	**Summary:** Pentachlorophenol Effluent for freshwater is assigned at time of permit coverage. E. coli and Enterococci were added based on the water quality standard update.
S9. Reporting and Recordkeeping		
S9.A Electronic Reporting Requirements	N/A	The Permittee shall submit all NOIs, NOTs, Noncompliance Reports, Annual Reports, DMRs, and other reporting information as required electronically, unless you have a received a waiver from Ecology. All information required to be submitted shall be submitted through Ecology's Water Quality Permitting Portal. If you are unable to submit electronically (for example, you do not have access to the internet), you must contact Ecology to request an Electronic Reporting Waiver form and submit the completed form to Ecology.
S9.G	Provide a copy of the plans and records to Ecology, where the requestor may view the records, within 14 days of a request; or may arrange with the requestor for an alternative, mutually agreed upon location for viewing and/or copying of the plans and records. If access to the plans and records is provided at a location other than at an Ecology office, the Permittee will provide reasonable access to copying services for which it may charge a reasonable fee.	If you provide a URL in your NOI where your SWPPP can be found, and maintain your current SWPPP at this URL, you will have complied with the public availability requirements for the SWPPP. To remain current, you must post any SWPPP modifications, records and other reporting elements required for the permit term at the same URL as the main body of the SWPPP.
S13. Notice Of Termination (NOT)		
S13.A Conditions for a NOT	N/A	Ecology determines that the discharges from the facility are no longer required to be covered under this permit.

Section(s)	Previous Permit Language	Draft Permit Language
Appendix A		
	N/A	Added acronym for NAICS
Appendix B		
	N/A	**Summary:** Definition added for NAICS and unsafe conditions.

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INTRODUCTION

The Federal Clean Water Act (CWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. The National Pollutant Discharge Elimination System (NPDES) permit program is one of the mechanisms for achieving the goals of the CWA. The NPDES Permit program is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

State regulations specify procedures for issuing general permits (Chapter 173-226 WAC), water quality criteria for surface and groundwaters (Chapters 173-201A and 173-200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that Ecology issue a permit before allowing discharge of wastewater to waters of the state. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the draft permit. WAC 173-226-110 requires the preparation of a draft permit and an accompanying fact sheet before issuing a general permit under the NPDES permit program. The fact sheet and draft permit are available for review (see *Appendix A—Public Involvement Information,* of the fact sheet for more detail on the Public Notice procedures).

After the public comment period has closed, The Department of Ecology (Ecology) will summarize the substantive comments and respond to each comment. The summary and response to comments will become part of the administrative record. Parties submitting comments will receive a copy of Ecology's response. Ecology will summarize comments and the resultant changes to the draft permit in *Appendix D—Response to Comments*.

BACKGROUND INFORMATION

GENERAL PERMIT APPROACH

Ecology has determined that the general permit approach to regulate industrial stormwater is appropriate for the following reasons:

- A general permit is the most efficient method to handle the large number of industrial stormwater permit applications;
- The application requirements for coverage under a general permit are far less rigorous than individual permit application requirements and more cost effective;
- A general permit is consistent with EPA's four-tier permitting strategy, the purpose of which is to use the flexibility provided by the Clean Water Act in designing a workable and reasonable permitting system; and,
- A general permit is an efficient method to establish the essential regulatory requirements that are appropriate for a broad spectrum of industrial facilities with similar pollutant-generating activities.

In most cases, the draft general permit will provide sufficient and appropriate stormwater management requirements for discharges of stormwater from industrial sites.

SOURCES OF STORMWATER POLLUTANTS

Stormwater may become contaminated by industrial activities as a result of contact with materials stored outside, spills and leaks from equipment or materials used onsite, contact with materials during loading, unloading or transfer from one location to another, and from airborne contaminants.

Many of the potential pollutants in stormwater discharges are industry specific but there are also significant commonalties among various industrial activities. Motorized equipment, cars, trucks, and heavy equipment are typically used at industrial sites. They represent a source of contamination by petroleum products and metals that are common to most facilities with coverage under this permit. Industrial activities are typically associated with impervious surfaces and the collection of dirt and other debris that stormwater may mobilize. This can result in high levels of suspended solids and turbidity in the stormwater discharge. Metals are also common contaminants at industrial sites. Sources of metals pollution include oils and lubricants from motor vehicles and equipment, tire dust, brake pad dust, raw material and products, and exposed galvanized metal surfaces on buildings, fences, and equipment.

STORMWATER CHARACTERIZATION BY INDUSTRIAL SECTOR

The US Environmental Protection Agency (EPA) has published an Industrial Stormwater Fact Sheet Series that provides a summary of the common activities, pollutant sources, and associated pollutants for the industrial sectors covered under EPA’s Multisector General Permit, and Ecology’s ISGP. The industrial sectors are based on the definition of "stormwater discharge associated with industrial activity" found at 40 CFR §122.26 (b)(14)(i)-(ix), (xi). Most sectors are based on a facility’s Standard Industrial Classification (SIC) code. A SIC code describes a broad sector of industries with a similar type of product or purpose. A SIC code group is denoted by a four-digit alphanumeric code. For more detailed information about SIC codes, please refer to the Standard Industrial Classification Manual, 1987. The EPA Industrial Stormwater Fact Sheets are available online (http://cfpub2.epa.gov/npdes/stormwater/swsectors.cfm) and are incorporated into this fact sheet by reference.

The draft permit is changing from defining sectors based on SIC codes to the 2017 North American Industry Classification System (NAICS) codes. A NAICS code is denoted by a six digit alphanumeric code. NAICS is the new standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. It was developed jointly by the U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's Instituto Nacional de Estadistica y Geografia to allow for a high level of comparability in business statistics among the North American countries. The switch from SIC codes to NAICS codes helps better define the connections between certain industries and makes for a more consistent implementation approach by Ecology. Crosswalks exist for facilities to navigate the switch, although, most facilities are already using NAICS codes to report to other agencies.

Appendix C contains statistical summaries of the DMRs submitted by ISGP facilities during the previous permit cycle. These data were initially entered into Ecology's Permit and Reporting Information System (PARIS) database. The data characterize stormwater sampling conducted by Permittees over 4 years (16 quarters); the first quarter of 2015 through the 4th quarter of 2018. *Appendix C – Summary of 2015-2018 DMR Data* contains tables that are grouped by industrial sectors and SIC codes. The sector-specific summary tables indicate the mean (average), minimum, median and maximum concentrations for each pollutant parameter analyzed. While the mean and median values are both provided in the summary tables, Ecology considers the median to be a better measure of central tendency, because DMR data is not normally distributed.

SEPA COMPLIANCE

New facilities must demonstrate compliance with the State Environmental Policy Act, SEPA (Chapter 43.21C RCW), before permit coverage can be authorized. Permit modification also requires SEPA compliance, and additional SEPA review may be necessary if the modification falls outside of the scope of the initial SEPA evaluation of industrial siting and activities.

Any existing facility planning a significant process change must submit a new application for coverage to modify their permit. With this submittal they must also demonstrate that the proposed change has complied with SEPA review. A significant process change for industries covered under this permit may cause a change in the nature of pollutants in the stormwater or an increase in the volume of stormwater. Therefore, any change in facility activities or procedures that would alter the types or concentration of pollutants in the stormwater discharge such as by adding a new industrial activity (SIC) that was not previously covered will require modification of permit coverage. Any change that would add additional impervious surface or acreage increasing stormwater discharge by 25 percent or more requires modification of permit coverage. Facilities must demonstrate compliance with SEPA and must apply for modification of coverage at least 60 days before implementing any significant process change.

DRAFT PERMIT LIMITATIONS

INTRODUCTION TO LEGAL REQUIREMENTS FOR LIMITATIONS TO CONTROL POLLUTANTS IN DISCHARGES

Section 502(11) of the CWA defines "effluent limitation" as *any restriction on the quantity, rate, and concentration of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance*. Effluent limitations are among the permit conditions and limitations prescribed in NPDES permits issued under Section 402(a) of the Act, 33 U.S.C. §1342(a).

TYPES OF EFFLUENT LIMITATIONS: TECHNOLOGY-BASED & WATER-QUALITY BASED

The CWA requires that discharges from existing facilities, at a minimum, meet technology-based effluent limitations reflecting, among other things, the technological capability of Permittees to control pollutants in their discharges which are economically achievable. State laws (RCW 90.48.010, 90.52.040 and 90.54.020) require the use of "all known, available and reasonable methods of prevention, control and treatment" (AKART).

Water quality-based effluent limitations (WQBELs) are required by CWA Section 301(b)(1)(C) and, in Washington State, are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Groundwater Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the Federal human health criteria for Washington (40 CFR §131.45). The more stringent of these two limits (technology or water quality-based) must be chosen for each of the parameters of concern, and implemented through NPDES permits. [CWA sections 301(a) and (b)].

Effluent limitations in NPDES permits may be expressed as numeric or non-numeric standards. Under EPA's regulations, non-numeric effluent limits are authorized in lieu of numeric limits, where "[n]umeric effluent limitations are infeasible." [40 CFR §122.44(k)(3).] Courts have recognized that there are circumstances when numeric effluent limitations are infeasible and have held that EPA may issue permits with conditions (e.g., Best Management Practices or "BMPs") designed to reduce the level of effluent discharges to acceptable levels:

> *Natural Res. Def. Council, Inc. v. EPA, 673 F.2d 400, 403 (D.C. Cir. 1982)* (noting that "*section 502(11)* defines 'effluent limitation' as *'any restriction' on the amounts of pollutants discharged, not just a numerical restriction*"; holding that section of CWA authorizing courts of appeals to review promulgation of "*any effluent limitation or other limitation*" did not confine the court's review to the EPA's establishment of numerical limitations on pollutant discharges, but instead authorized review of other limitations under the definition) (emphasis added).
>
> In *Natural Res. Def. Council, Inc. v. Costle, 568 F.2d 1369 (D.C. Cir. 1977)*, the D.C. Circuit stressed that when numerical effluent limitations are infeasible, EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels.

TECHNOLOGY-BASED LIMITATIONS

Types of Technology-Based Effluent Limitations

Technology-based effluent limitations are in many cases established by EPA in regulations known as effluent limitations guidelines, or “ELGs.” EPA establishes these regulations for specific industry categories or subcategories after conducting an in-depth analysis of that industry.[1]

The Act sets forth different standards for the effluent limitations based upon the type of pollutant or the type of Permittee involved.

The CWA establishes two levels of pollution control for existing sources. In the first stage, existing sources that discharge pollutants directly to receiving waters were initially subject to effluent limitations based on the “best practicable control technology currently available” or “BPT.” 33 USC § 1314(b)(1)(B). BPT applies to all pollutants. In the second stage, existing sources that discharge conventional pollutants are subject to effluent limitations based on the “best conventional pollutant control technology,” or “BCT.” 33 USC §1314(b)(4)(A); see also 40 CFR §401.16 (list of conventional pollutants) while existing sources that discharge toxic pollutants or “nonconventional” pollutants (*i.e.,* pollutants that are neither “toxic” nor “conventional”) are subject to effluent limitations based on “best available technology economically achievable,” or “BAT.” 33 USC §1311(b)(2)(A); see also 40 CFR §401.15 (list of toxic pollutants).

The factors to be considered in establishing the levels of these control technologies are specified in section 304(b) of the CWA and EPA’s regulations at 40 CFR §125.3.

All NPDES permits are required to consider technology-based limitations (water quality-based effluent limitations may be more stringent). 40 CFR §122.44(a)(1) and 125.3. CWA sections 301(b)(1)(A) for (BPT); 301(b)(2)(A) for (BAT); and 301(b)(2)(E) for (BCT). Technology-based limits in this permit represent the BPT (for conventional, toxic, and non-conventional pollutants), BCT (for conventional pollutants), and BAT (for toxic pollutants and non-conventional) levels of control for the applicable pollutants. When EPA has not promulgated effluent limitation guidelines for an industry, or if an operator is discharging a pollutant not covered by the effluent guideline, permit limitations may be based on the best professional judgment (BPJ, sometimes also referred to as "best engineering judgment") of the permit writer. 33 USC §1342(a)(1); 40 CFR §125.3(c). See *Student Public Interest Group v. Fritzsche, Dodge & Olcott, 759 F.2d 1131, 1134 (3d Cir. 1985); American Petroleum Inst. v. EPA, 787 F.2d 965, 971 (5th Cir. 1986)*. For this permit, most of the technology-based limits are based on BPJ decision-making because no ELG applies. However, the permit also includes technology-based limits based on the stormwater-specific ELGs, where applicable (i.e., certain landfills and airports).

Authority to Include Non-Numeric Technology-Based Limits in NPDES Permits

Under EPA’s regulations, non-numeric effluent limits are authorized in lieu of numeric limits, where “[n]umeric effluent limitations are infeasible.” 40 CFR §122.44(k)(3). As far back as 1977, courts have recognized that there are circumstances when numeric effluent limitations are infeasible and have held that EPA may issue permits with conditions (e.g., Best Management Practices or “BMPs”) designed to

[1] Where EPA has not issued effluent guidelines for an industry, EPA and State permitting authorities establish effluent limitations for NPDES permits on a case-by-case basis based on their best professional judgment. See 33 USC § 1342(a)(1); 40 CFR § 125.3(c)(2).

reduce the level of effluent discharges to acceptable levels. *Natural Res. Def. Council, Inc. v. Costle, 568 F.2d 1369 (D.C.Cir.1977)*.

Through the Agency's NPDES permit regulations, EPA interpreted the CWA to allow BMPs to take the place of numeric effluent limitations under certain circumstances. 40 CFR §122.44(k), entitled "Establishing limitations, standards, and other permit conditions (applicable to State NPDES programs ...)," provides that permits may include BMPs to control or abate the discharge of pollutants when: (1) "[a]uthorized under section 402(p) of the CWA for the control of stormwater discharges"; or (2) "[n]umeric effluent limitations are infeasible." 40 CFR §122.44(k).

In 2006, The U.S. Court of Appeals for the Sixth Circuit held that the CWA does not require the EPA to set numeric limits where such limits are infeasible. *Citizens Coal Council v. United States Environmental Protection Agency, 447 F3d 879, 895-96 (6th Cir. 2006)*. The Citizens Coal court cited to *Waterkeeper Alliance, Inc. v. EPA, 399 F.3d 486, 502 (2d Cir. 2005)*, stating "site-specific BMPs are effluent limitations under the CWA." "In sum, the EPA's inclusion of numeric and non-numeric limitations in the guideline for the coal remining subcategory was a reasonable exercise of its authority under the CWA."

Additionally, the Sixth Circuit cited to *Natural Res. Def. Council, Inc. v. EPA, 673 F.2d 400, 403 (D.C.Cir.1982)* noting that "section 502(11) [of the CWA] defines 'effluent limitation' as '*any* restriction' on the amounts of pollutants discharged, not just a numerical restriction." EPA has substantial discretion to impose non-quantitative permit requirements pursuant to Section 402(a)(1)), especially when the use of numeric limits is infeasible. See *NRDC* v. *EPA, 822 F.2d 104, 122-24 (D.C. Cir. 1987)* and 40 CFR §122.44(k)(3).

Rationale for Non-Numeric Technology-Based Effluent Limits in This Permit

Numeric effluent limitations are not always feasible for industrial stormwater discharges as such discharges pose challenges not presented by the vast majority of NPDES-regulated discharges. Stormwater discharges can be highly intermittent, they are usually characterized by very high flows occurring over relatively short time intervals, and they carry a variety of pollutants whose source, nature and extent varies. See 55 FR at 48,038; 53 FR at 49,443. This is in contrast to process wastewater discharges from a particular industrial or commercial facility where the effluent is more predictable and can be more effectively analyzed to develop numeric effluent limitations.

To develop numeric technology-based effluent limitations, EPA generally obtains efficacy data concerning removals achieved from representative facilities employing the technology viewed as representing the BAT level of control. Even in this situation, there is some variability in performance at facilities properly using the BAT levels of control and EPA is often subject to challenge that it did not sufficiently take into account the variability that occurs even in a well-controlled discharge. In other words, facilities argue that the numeric effluent limits cannot be met even when they are properly operating BAT levels of control.

The variability of effluent and efficacy of appropriate control measures makes setting uniform effluent limits for stormwater extremely difficult. There is a high level of variability among stormwater discharges, in terms of both flow rates and volumes and levels of pollutants, since the volume and quality of stormwater discharges associated with industrial activity depend on a number of factors. These factors include:

- the industrial activities occurring at the facility,

- the nature of precipitation, and
- the degree of surface imperviousness.

Due to the dissimilarity among the different industrial sectors covered by this permit, and among the individual facilities within the different industrial sectors, the sources of pollutants in stormwater discharges differ with the type of industry operation and specific facility features. For example, material storage operations may be a significant source of pollutants at some facilities, shipping and receiving areas at others, while runoff from such areas at other facilities may result in insignificant levels of pollutants. Additionally, because it is often not reasonable to use traditional wastewater treatment technologies to control industrial stormwater discharges due to the absence of a steady flow of wastewater, control measures for such discharges tend to focus on pollution prevention measures, called Best Management Practices (BMPs). In addition, the same set of pollution prevention measures or BMPs typically is not appropriate for all the different types of facilities and discharges covered by this permit. The pollutant removal/reduction efficacies of these pollution prevention and BMP-based control measures are not amenable to the type of comparative analyses conducted for non-stormwater treatment technologies and used to set numeric effluent limits.

While EPA and Ecology continue to study the efficacy of various types of pollution prevention BMPs, including emerging stormwater treatment systems, neither EPA nor Ecology has a basis for developing numeric limits that would reasonably represent a well-run application of BMPs. Because the flow and concentration of stormwater is so variable, if EPA or Ecology were to try to base numeric limits on a few sites, it is likely that any number it would develop would not be technologically available and economically achievable by all well-run facilities.

These factors create a situation where, at this time, it is generally not feasible for EPA or Ecology to calculate numeric, technology-based effluent limitations, with the limited exception of certain effluent limitations guidelines that have already been established through EPA rulemaking. For example, covering exposed areas where feasible and cleaning them regularly where they are not covered may be an effective way of significantly reducing stormwater pollutant discharges, but the degree of pollutant reduction will be highly site-specific and cannot be generally quantified. Therefore, EPA and Ecology have determined that it is not feasible to calculate numeric, technology-based limitations for many of the discharges covered under this general permit and, based on the authority of 40 CFR §122.44(k), has chosen to adopt non-numeric technology-based effluent limitations.

The AKART/BAT/BPT/BCT (technology-based) effluent limitations in this permit are expressed as specific pollution prevention requirements for minimizing the pollutant levels in stormwater discharges. In the context of this general permit, these requirements represent AKART and the best technologically available and economically practicable and achievable controls. Ecology has determined that the combination of pollution prevention approaches and structural management practices required by these limits are the most practical and environmentally sound way to control the discharge of pollutants in stormwater runoff. Pollution prevention (source control of pollutants) continues to be the cornerstone of the NPDES stormwater program.

Ecology has determined that Permittees in full compliance with the Industrial Stormwater General Permit meet the state AKART requirements in Chapter 90.48 RCW.

Rationale for Numeric Technology-Based Effluent Limitations in this Permit

Technology-based effluent limitations are in many cases established by EPA in regulations known as effluent limitations guidelines, or “ELGs.” EPA establishes these regulations for specific industry categories or subcategories after conducting an in-depth analysis of that industry.

Ecology has determined that several categories of facilities subject to ELG or New Source Performance Standards (NSPS) Under 40 CFR Subchapter N, or Toxic Pollutant Effluent Standards under 40 CFR Subchapter D, §129 should not be covered under the ISGP, as individual permits are more appropriate to address the legal and technical NPDES requirements.

The following categories of facilities must apply for an individual NPDES permit, or seeks coverage under an industry-specific general permit, if available:

40 CFR §411 Cement manufacturing	40 CFR §423 Steam electric power generating
40 CFR §412 Feedlots	40 CFR §434 Coal mining
40 CFR §418 Fertilizer manufacturing	40 CFR §436 Mineral mining and processing
40 CFR §419 Petroleum refining	40 CFR §440 Ore mining and dressing
40 CFR §422 Phosphate manufacturing	40 CFR §443 Paving and roofing materials
40 CFR §449.11(a) Airports with more than 10,000 annual jet departures.	

Non-hazardous waste landfills subject to the provisions of 40 CFR §445 Subpart B must comply with the applicable EPA technology-based limits. These limits are contained in Condition S5.C of the permit and are as follows:

Table 2: Effluent Limitations Applicable to Non-Hazardous Waste Landfills (Table 4 of draft permit)

Parameter	Units	Average Monthly[a]	Maximum Daily[b]	Analytical Method[c]	Laboratory Quantitation Level[d]	Minimum Sampling Frequency[e]
BOD_5	mg/L	37	140	EPA 405.1 or SM 5210B	2	1/quarter
TSS	mg/L	27	88	SM2540-D	5	1/quarter
Total Ammonia (as N)	mg/L	4.9	10	SM4500-NH3-GH.	0.02	1/quarter
Alpha Terpineol	µg/L	16	33	EPA 625.1	[f]	1/quarter
Benzoic Acid	µg/L	71	120	EPA 625.1	[f]	1/quarter
p-Cresol	µg/L	14	25	EPA 8270D	10	1/quarter
Phenol	µg/L	15	26	EPA 625.1	4.0	1/quarter
Zinc, Total	µg/L	110	200	EPA 200.8	2.5	1/quarter
pH	SU	Between 6.0 and 9.0		Meter/Paper[e]	±0.1	1/quarter

[a] The average monthly effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. If only one sample is taken during the calendar month, the average monthly

effluent limitation applies to that sample. If only one sample is taken during the reporting period, the average monthly effluent limitation applies to that sample.

[b] The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day; this does not apply to pH.

[c] Or other equivalent EPA-approved method with the same or lower quantitation level.

[d] The Permittee shall ensure laboratory results comply with the quantitation level specified in the table.

[e] 1/quarter means 1 sample taken each quarter, year-round.

[f] EPA method 625.1 does not list quantitation levels for this pollutant. Reporting limits will be performance based and laboratory reporting levels must be included on the DMR.

Airports with 1,000 or more annual jet departures are subject to new EPA technology-based numeric effluent limits for ammonia based on BAT and ELGs (40 CFR §9 and 449).[2] Condition S5.C requires Permittees operating airlines and airports subject to provisions of 40 CFR §9 and §49 shall comply with the following:

a. Airfield Pavement Deicing. Existing and new primary airports with 1,000 or more annual jet departures (annual non-propeller aircraft departures) that discharge wastewater associated with airfield pavement deicing commingled with stormwater must either use non-urea-containing deicers[3], or meet the effluent limit in Table 5 at every discharge point, prior to any dilution or any commingling with any non-deicing discharge.

Table 3: Effluent Limit Applicable to Airports Subject to 40 CFR §9 and 449 (Table 5 of draft permit)

Parameter	Units	Maximum Daily [a]	Analytical Method [b]	Laboratory Quantitation Level [c]	Minimum Sampling Frequency [d]
Total Ammonia (as N)	mg/L	14.7	SM4500-NH3-GH.	0.02	1/quarter

[a.] Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day.

[b.] Or other equivalent EPA-approved method with the same or lower quantitation level.

[c.] The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR §136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report.

[d.] 1/quarter means one sample taken each quarter, year-round.

[2] *Effluent Limitations Guidelines and New Source Performance Standards for the Airport Deicing Category; Final Rule*. Federal Register / Vol. 77 , No. 95 / Wednesday, May 16, 2012 / Rules and Regulations.

[3] Affected Permittees must certify in its annual report that it does not use airfield deicing products that contain urea, or meet the numeric limit in Table 5 (Condition S9.B.4).

SURFACE WATER QUALITY LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-510 states that waste discharge permits shall be conditioned such that the discharges authorized will meet the water quality standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving waters to be protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in a discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a discharge permit.

Numerical Criteria for the Protection of Human Health

The EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (40 CFR §131.45). These criteria are designed to protect humans from cancer and other diseases, primarily from fish and shellfish consumption and drinking water from surface waters. Because most human health-based criteria are based on lifetime exposures, direct comparisons of receiving water criteria with pollutant concentrations in intermittent stormwater discharges are not appropriate. This and the high variation in stormwater pollutant concentrations and discharge volumes, both between storms and during a single storm, make the application of human health criteria to stormwater particularly problematic.

Based on the authority of 40 CFR §122.44(k)(3), Ecology is requiring the implementation of best management practices to control or abate pollutants because it is infeasible to derive appropriate numeric effluent limits for the human health criteria.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-260) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh water (WAC 173-201A-200) and marine water (WAC 173-201A-210) in the state of Washington.

Ecology must consider the narrative criteria described in WAC 173-201A-260 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the State.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

Tier I and Tier II are considered in this permit. Ecology has determined that no ISGP-covered facilities discharge to Tier III waters.

Tier I Antidegradation Plan

Protection and Maintenance of Existing and Designated Uses (WAC 173-301A-310) states:

(1) Existing and designated uses must be maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in this chapter.

(2) For waters that do not meet assigned criteria, or protect existing or designated uses, the department will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.

(3) Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria. Where water quality criteria are not met because of natural conditions, human actions are not allowed to further lower the water quality, except where explicitly allowed in this chapter.
[Statutory Authority: Chapters 90.48 and 90.54 RCW. WSR 03-14-129 (Order 02-14), § 173-201A-310, filed 7/1/03, effective 8/1/03.]

To comply with Tier I, the draft ISGP applies water quality-based limitations to industrial stormwater discharges, as discussed later in this section. To comply with Tier II, the draft ISGP proposes to continue implementing the Tier II Antidegradation Plan that was reviewed by the Pollution Control Hearings

Board and affirmed in on April 25, 2011in *Findings of Fact, Conclusions of Law, and Order PCHB Nos. 09-135 through 09-141*, excerpted below:

> *"After hearing on the merits, the Board concludes that Ecology has complied with the Tier II antidegradation requirements, and that the previously issued Stay should be dissolved. In 2009, after discontinuance of the TAPE program, the Legislature directed Ecology to create a Stormwater Technical Resource Center to provide tools for stormwater management, as funding becomes available. RCW 90.48.545. Initial funding has allowed this effort to proceed through TAPE, and the process described in the original Fact Sheet and public notice has resumed after an initial delay. We also give deference to Ecology's interpretation of WAC 173-201A-320(6) and how it should be applied in the context of general permits. It is reasonable and valid for Ecology to conclude that this rule allows the adaptive management scheme of the permit, combined with regular updates of the SWMM which capture new and emerging technologies, to stand as the method to comply with antidegradation requirements in the general permit context."*

Tier II Antidegradation Plan

Background**:** Federal regulations and the Water Quality Standards for Surface Waters of the State of Washington establish a water quality antidegradation program. WAC 173-201A-320 contains the Tier II antidegradation provisions for the state's surface water quality standards:
http://apps.leg.wa.gov/WAC/default.aspx?dispo=true&cite=173-201A-320

A Tier II analysis is required when new or expanded actions are expected to cause a measurable change in the quality of a receiving water that is of a higher quality than the criterion designated for that waterbody in the water quality standards. WAC 173-201A-320(1). WAC 173-201A-320(3) defines a measureable change as specific reductions in water quality, and defines "new or expanded actions" as "human actions that occur or are regulated for the first time, or human actions expanded such that they result in an increase in pollution, after July 1, 2003[.]" This definition includes facilities that first began to discharge pollutants, or increased the discharge of pollutants after July 1, 2003. The definition also applies to those facilities that discharged pollutants prior to July 1, 2003, but were regulated by Ecology for the first time after July 1, 2003. This Antidegradation Plan applies to those applicants for coverage under the ISGP that are subject to a Tier II antidegradation analysis.

Formal Adaptive Process to comply with WAC 173-201A-320(6):

WAC 173-201A-320(6) states that "the antidegradation requirements of this section can be considered met for general permits and programs that have a formal process to select, develop, adopt, and refine control practices for protecting water quality and meeting the intent of this section. This adaptive process must:

1) Ensure that information is developed and used expeditiously to revise permit or program requirements.
2) Review and refine management and control programs in cycles not to exceed five years or the period of permit reissuance,
3) Include a plan that describes how information will be obtained and used to ensure full compliance with this chapter. The plan must be developed and documented in advance of permit or program approval under this section."

Permit Development Process

Ecology uses a formal process to develop and reissue the ISGP every five years. The process includes selecting, developing, adopting, and refining control practices to protect water quality and meet the intent of WAC 173-201A-320. All NPDES permits, including the ISGP, are effective for a fixed term not to exceed five years (40 CFR §122.25). Each time Ecology reissues the ISGP, it evaluates the effluent limits and permit conditions to determine if it should incorporate additional or more stringent requirements.

Ecology's evaluation includes a review of information on new stormwater pollution prevention and treatment practices. Ecology may incorporate these practices into the ISGP as permit conditions or in support of effluent limits. This approach works to reduce the discharge of pollutants incrementally during each successive new five-year permit cycle. Sources of such information include, but are not limited to:

- **Public comments and testimony** provided during listening sessions and the public comment period on the draft permit. Ecology encourages the public to share what is working and what is not. Ecology uses this formal public process to review and refine stormwater management and control requirements in each successive permit.

- **Ecology's Stormwater Management Manuals (SWMMs)**. Ecology updates the SWMMs periodically based on new information and science. The updates include a public involvement process. The ISGP requires Permittees to select BMPs from the most recent edition of the SWMMs (or approved equivalent SWMMs). Therefore, the BMPs contained in the updated SWMMs are adopted and used expeditiously to refine and improve the effectiveness of these stormwater controls to protect water quality and meet the intent of the anti-degradation provisions in the water quality standards.

- **Technology Assessment Protocol – Ecology (TAPE) process**. This formal process involves reviewing and testing treatment technologies for eventual adoption into Ecology's Stormwater Management Manuals. The TAPE – Emerging Technologies Program of the Washington Stormwater Center [http://www.wastormwatercenter.org/tape/] provides assistance to Ecology's TAPE Program by:
  - Coordinating and reviewing applications, sampling plans, and technical reports submitted to Ecology
  - Coordinating and compiling reviews by the Board of External Reviewers (BER)
  - Working with the Stakeholder Advisory Group (SAG) to revise guidance documents and provide direction and input

  The TAPE process stimulates the development and use of innovative stormwater technologies, used at facilities covered under the ISGP.

- **US EPA Effluent Limitation Guidelines** (ELGs) Ecology and other NPDES permitting authorities are required to incorporate ELGs developed by the US Environmental Protection Agency (US EPA) into each general permit as it is renewed. For the draft ISGP, Ecology proposes to add new numeric effluent limits for ammonia, based on EPA's 2013 airfield pavement deicing ELG (40 CFR § 9 and 449). Although Ecology's NPDES permit requirements are typically more stringent than US EPA ELGs, this is another formal process used to develop, adopt, select and refine control practices for protecting water quality and meeting the anti-degradation provisions in the WQ standards.

- **Ecology stormwater staff** (inspectors, enforcement staff, permit writers and engineers) attend training and conferences, confer with regulatory agency staff nationally and locally; and review professional journals and scientific literature. Ecology conducts research on stormwater management practices and the effect of stormwater discharges on water quality. Ecology uses its expertise in the field of stormwater management to adopt and refine stormwater controls and management practices in the SWMMs and ISGP.

- **ISGP requires adaptive management**. In addition to the formal programmatic improvements to the SWMM and ISGP described above, the ISGP contains an adaptive management process. The process requires Permittees to implement timely revisions to their Stormwater Pollution Prevention Plans (SWPPPs) when stormwater discharges exceed benchmarks. As such, stormwater controls on individual projects are subject to ongoing refinement (i.e., addition of new BMPs and/or enhancement of existing BMPs) that reduces the amount of pollutants that would otherwise be discharged to receiving waterbodies.

Public Notice of the General Permit Antidegradation Plan and Individual Actions

Since Ecology has chosen to address Tier II anti-degradation in accordance with WAC 173-201A-320(6), Ecology will not perform site-specific analyses of each "new or expanded action" proposed for coverage under the permit. However, it is important that the public be able to weigh in on whether individual actions are "necessary and in the overriding public interest". The antidegradation rule establishes a refutable presumption that they do, but only through a public notice process does the general public have an opportunity to question individual actions.

Ecology will require the general permit applicant's public notice to include language regarding Tier II antidegradation. Specifically, when an applicant runs the public notice per WAC 173-226-130(5), the notice will include:

- All public notice information currently required on the ISGP application form including name/location of the facility and the receiving water.
- The following statement: "Ecology will review all public comments regarding Tier II antidegradation and consider whether discharges from this facility are expected to cause a measurable change in the quality of the receiving water and, if so, whether such change is necessary and in the overriding public interest."

Critical Conditions

Surface water quality-based limits are derived for the water body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses. The factors include the flow and background level of toxic substances in the receiving water and the flow and concentration of toxic substances in the discharge. The inherent variability of storm events and stormwater discharges add complexity to defining critical conditions. Storm events are naturally occurring and affect the characteristics of both the stormwater discharge and the receiving water body. They vary in intensity and duration; they can be isolated events or part of storm event pattern. All these factors affect flows and water quality.

Acute conditions are changes in the physical, chemical, or biological environment that are expected or demonstrated to result in injury or death to an organism as a result of short-term exposure to the substance or detrimental environmental condition. The acute criteria for metals are one-hour concentrations not to be exceeded more than once every three years. The most likely critical stormwater conditions for acute toxicity would be a high intensity short duration storm event that occurs after a long period of no rain. Under this scenario, the receiving water experiences low flows and the stormwater has a high potential to mobilize pollutants. The critical condition for acute toxicity is most likely to occur during a summer-time or early fall storm event.

Chronic conditions are changes in the physical, chemical, or biological environment which are expected or demonstrated to result in injury or death to an organism as a result of repeated or constant exposure over an extended period of time to a substance or detrimental environmental condition. The chronic criteria for metals are four-day averages not to be exceeded more than once every three years. Since chronic exposure is over several days, the “first flush” effect that occurs after a dry period is not as likely to be significant. Chronic exposure also requires storm events that result in stormwater discharge over a four-day period. However, the critical condition is still most likely to occur after the summer drought when water body flows are low. Much of the stormwater that falls in a drainage basin at the beginning of the wet season will be absorbed reducing the impact on flow in the receiving water body. During the same time the stormwater discharge off a developed site is likely to be in direct proportion to the storm event.

Due to the variability of storm events and the characteristics of stormwater discharges, the critical condition of a receiving water body is difficult to quantify. For example, after the beginning of a storm event the hardness of a stream typically decreases, depending on the intensity and duration of the storm. As the hardness of the stream decreases, the water quality criteria of some metals change and the toxicity of these metals increases. The variability of storm events makes the determination of critical conditions very difficult. Ecology believes that with the infrequent occurrence of summer storms in Washington, the critical period for stormwater discharge is in the early fall when storms are more frequent and runoff becomes more consistent. This period is approximately September 1 through October 31.

Mixing Zones

No mixing zones are authorized in this permit. Since a general permit must apply to a number of different sites, precise mixing zones and the resultant dilution are not applicable to facilities covered under a general permit.

Any discharger may request a mixing zone through an application for an individual permit in accordance with WAC 173-220-040 or WAC 173-216-070.

Description of the Receiving Water

This draft general permit applies to facilities across the state that may discharge to many different receiving waters. Stormwater may be discharged to a municipal separate stormwater sewer system, a stormwater conveyance system such as a roadside ditch, or directly to a creek, lake, pond or other surface water body. The discharge will enter waters assigned designated uses intended to protect aquatic life and human health.

In highly urbanized areas, the discharge likely enters a collection system and commingles with other sources of stormwater before discharging to a water body. In these urbanized locations, the receiving water is likely to be more than a small creek in size but also likely to be subject to a significant number of municipal and industrial stormwater discharges. In a more suburban setting, the receiving water is not as likely to be subject to multiple municipal and industrial stormwater discharges, but is more likely to be a small creek or intermittent stream. In both cases, the potential impact of stormwater can be significant. Ecology anticipates that the diligent implementation and maintenance of BMPs identified in the Permittee's SWPPP will result in stormwater discharges that do not cause or contribute to violations of the state's Surface Water Quality Standards (Chapter 173-201A WAC).

Surface Water Quality Criteria

WACs 173-201A-200 through -260 define applicable surface water quality criteria for aquatic biota. These criteria were established to protect existing and potential uses of the surface waters of the state. Consideration was also given to both the natural water quality and its limitations. The surface water quality criteria are an important component of the state's Surface Water Quality Standards (Chapter 173-201A WAC).

Application of the surface water quality criteria to a discharge requires site-specific analysis of the discharge and the receiving water. Such analysis is not possible in a statewide general permit that covers more than 1,100 facilities. However, the criteria influenced calculation of the benchmarks for turbidity, copper, lead and zinc. See section S5. Benchmarks and Effluent Limitations of this fact sheet for a discussion of this issue.

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

40 CFR §122.44 requires the permit to contain effluent limitations to control all pollutants or pollutant parameters which are, or may be, discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard.

Based upon EPA's Nationwide Urban Runoff Program (NURP), *Evaluation of Washington's Industrial Stormwater General Permit* (2006 Herrera Evaluation), and best professional judgment, Ecology has determined that stormwater discharges may cause a violation of water quality standards for a variety of pollutant parameters. Therefore, the draft permit includes Water Quality-Based Effluent Limits (WQBELs) to control discharges as necessary to meet applicable water quality standards. The provisions of Conditions S6.C & D (303(d) and TMDLs), S8 (Corrective Actions), S10.A (Compliance with Standards) and S12 (Solid Waste Management) constitute the WQBELs of this permit. These WQBELs supplement the permit's technology-based effluent limits in S3 (SWPPP), S5.C (ELGs), S5.E (Prohibited Discharges), S5.F (General Prohibitions), and S10.B (AKART).

The following is a list of the permit's WQBELs:

- Condition S6.C requires facilities that discharge to certain waterbodies listed as impaired according to Section 303(d) of the Clean Water Act to comply with water quality-based numeric and narrative effluent limitations. The draft permit also proposes numeric and narrative effluent limitations for dischargers to sediment impaired waterbodies defined as a ***Puget Sound Sediment Cleanup Site***[4]. These sites are, or will be, undergoing cleanup under the authority of

[4] ***Puget Sound Sediment Cleanup Site*** means Bellingham Bay, Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway, Eagle Harbor, Elliot Bay, Everett/Port Gardener, Hood Canal (North), Liberty Bay, Port Angeles Harbor, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway.

the Model Toxics Control Act (MTCA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund.

- Condition S6.D requires facilities to comply with TMDLs, including any applicable wasteload allocations.
- Conditions S5 A &B, and S8 requires facilities that exceed (water quality-based) benchmark values to implement escalating levels of source control and treatment BMPs to ensure that future discharges do not cause or contribute to violations of water quality standards.
- Condition S10.A prohibits discharges that cause or contribute to violations of Surface Water Quality Standards (Chapter 173-201A WAC), Groundwater Quality Standards (Chapter 173-200 WAC), and Sediment Management Standards (Chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (40 CFR §131.36).
- Condition S12 requires facilities to prevent solid waste material or leachate from causing violations of the Surface Water Quality Standards (Chapter 173-201A WAC), Groundwater Quality Standards (Chapter 173-200 WAC), and Sediment Management Standards (Chapter 173-204 WAC).

The rationale for water quality based effluent limitations in the draft permit are discussed below.

Condition S6.C Water Quality-Based Effluent Limitations for Certain Discharges to Impaired Waters

The Washington State Water Pollution Control Act RCW 90.48.555 required the Department of Ecology (Ecology) to develop appropriately derived water quality-based numeric effluent limitations for discharges regulated by the Industrial Stormwater General Permit (ISGP).

Specifically, RCW 90.48.555(7) stated:

> (a) By November 1, 2009, except for discharges identified in (b) of this subsection, the department shall modify or reissue the industrial stormwater general permit to require compliance with appropriately derived numeric water quality-based effluent limitations for existing discharges to water bodies listed as impaired according to 33 USC Sec. 1313(d) (Sec. 303(d) of the federal clean water act, 33 USC Sec. 1251 et seq.).
>
> (b) For pollutants other than bacteria, the industrial stormwater general permit must require Permittees to comply with appropriately derived numeric water quality-based effluent limitations in the permit, as described in (a) of this subsection, by no later than six months after the effective date of the modified or reissued industrial stormwater general permit. By July 1, 2012, the industrial stormwater general permit must require Permittees with discharges to water bodies listed as impaired for bacteria to comply with nonnumeric, narrative effluent limitations.

To meet RCW 90.48.555(7)(a), Ecology applied the basic assumption that numeric effluent limitations would only be applied to facilities discharging to impaired waterbodies that were “listed” due to pollutants that are typically present in industrial stormwater discharges.

Under this assumption, water quality-based numeric effluent limitations would not be required for discharges to the following types of 303(d)-listed waterbodies:

- ***Temperature.*** Numeric effluent limits would not apply to dischargers to waterbodies listed for temperature. The rationale is that temperature is a seasonal water quality problem, and considering weather patterns in Washington State, stormwater discharges typically do not occur during the late summer months when temperature impaired waterbodies are relatively warm and more susceptible to thermal loading (discharges of heated water). *Low Dissolved Oxygen.* Numeric effluent limits would not apply to waterbodies listed for low dissolved oxygen (D.O.). Low D.O. impairments are seasonal (summer) problems, while stormwater discharges in Washington commonly occur from October through April. Low D.O. impairments are typically attributed to:
    - Heavy loading of nutrients (e.g., nitrogen or phosphorus) that cause excessive algae and plant growth, the decay of which depletes oxygen levels in the summer-time (eutrophication), or
    - Excessive discharges of wastewater or other substances with a high biochemical oxygen demand, expressed as BOD_5 - a test to see how fast biological organisms use up oxygen in a waterbody. These kinds of pollutants have a “far field” effect – which means the demand for oxygen doesn’t occur directly where the effluent or runoff water is discharged; it occurs somewhere downstream where decomposition finally occurs. This can make it difficult to show a direct relationship between the discharge of oxygen demanding substance and a low D.O. problem without site-specific water quality modeling.
- ***Fish Tissue/Bioassessment.*** Numeric effluent limits would not apply to waterbodies 303(d)-listed due to contaminated fish tissue (e.g., PCBs, DDT) or bioassessment (surveys of benthic invertebrate communities). It would be extremely difficult to show a direct relationship between stormwater discharges and impairments due to contaminated fish tissue or bioassessment.

As described above, discharges to waterbodies listed for temperature, low dissolved oxygen, or bacteria would not trigger a numeric effluent limitation. In addition, 303(d) listings related to contaminated fish tissue (e.g., PCBs, DDT) or bioassessment (surveys of benthic invertebrate communities), would not trigger numeric effluent limitations. In addition, discharges to waterbodies impaired for total dissolved gas, debris, habitat, invasive species and/or instream flow do not trigger numeric effluent limitations; Ecology has determined that industrial stormwater does not cause or contribute to these types of impairments. However, facilities discharging to any other waterbodies with 303(d)-listings (Category 5) would be subject to numeric effluent limitations for the 303(d)-listed parameter (e.g., if receiving waterbody listed for total zinc, the facility would be subject to a numeric effluent limitation for total zinc), or in the case of a sediment quality impairment (Category 5 and/ or Puget Sound Sediment Cleanup Site), a numeric effluent limitation for Total Suspended Solids (30 mg/L). The technical basis for these limitations is described below.

- ***pH.*** Facilities with outfalls to freshwater on the 303(d) list for pH are subject to a water quality based numeric effluent limitation, applied end-of-pipe, as follows:
    - Between 6.0 and 8.5 if the 303(d) listing was for high pH only;
    - Between 6.5 and 9.0 if the 303(d) listing was for low pH only; and
    - Between 6.5 and 8.5 if the 303(d) listing was for both low and high pH.

These limitations are based upon the aquatic life criteria in WAC 173-201A-200(1)(g).

Facilities with outfalls to marine waters on the 303(d) list for pH are subject to a water quality based numeric effluent limitation of between 7.0 and 8.5, applied end-of-pipe. This effluent limitation is based on the aquatic life criteria in WAC 173-201A-210(1)(f).

- ***Total Phosphorus.*** Facilities with outfalls to waterbodies on the 303(d) list for Total Phosphorus are subject to a water quality based numeric effluent limitation. This effluent limitation will be derived and assigned at the time of permit coverage based upon the receiving water-specific ecoregion and trophic-state in accordance with the lake nutrient criteria in the state surface water quality standards (WAC 173-201A-230).
- ***Total Copper.*** *Fac*ilities with outfalls to waterbodies on the 303(d) list for Total Copper are subject to a water quality based numeric effluent limitation. This effluent limitation will be derived as the dissolved copper criteria at the time of permit coverage, based upon receiving water type (freshwater or marine) and hardness, and a total/dissolved translator factor, in accordance with WAC 173-201A-240(3), applied end-of-pipe as a “daily maximum” limit.
- ***Total Zinc.*** Facilities with outfalls to waterbodies on the 303(d) list for Total Zinc are subject to a water quality based numeric effluent limitation. This effluent limitation will be derived and assigned at the time of permit coverage based upon receiving water type (freshwater or marine) and hardness, and total/dissolved conversion factor, in accordance with WAC 173-201A-240(3), applied end-of-pipe as a “daily maximum” limit..
- ***Total Mercury.*** Facilities with outfalls to waterbodies on the 303(d) list for Total Mercury are subject to a water quality based numeric effluent limitation. This effluent limitation will be derived and assigned at the time of permit coverage based upon receiving water type (freshwater or marine), applied end-of-pipe as a “daily maximum” limit.
- ***Total Ammonia.*** There are currently no marine waters on the 303(d) list for total ammonia. Facilities with outfalls to fresh waters on the 303(d) list for total ammonia will be assigned a water quality based numeric effluent limitation based on the toxic substances criteria in WAC 173-201A-240 and the table below, applied end-of-pipe as a “daily maximum” limit:

Table 4: Acute, Fresh Water Ammonia Criteria Based On pH [5]

pH	Total Ammonia Nitrogen in mg-N/L	
	Acute Criteria with Salmonids Present	Acute Criteria with Salmonids Absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

- ***Pentachlorophenol.*** Facilities with outfalls to waterbodies on the 303(d) list for Pentachlorophenol are subject to a water quality based numeric effluent limitation. The effluent limitation will be derived and assigned at the time of permit coverage, based upon the toxic substances criteria in WAC 173-201A-240, applied end-of-pipe as a “daily maximum” limit.
- ***Sediment Quality Impairment****.* Facilities with outfalls to Category 5 sediment impaired waterbodies (Sediment Management Standards, Chapter 173-204 WAC) are subject to a water quality based numeric effluent limitation of 30 mg/L Total Suspended Solids (TSS). This limitation is based upon a best professional judgment determination that stormwater discharges with less than 30 mg/L TSS will not cause or contribute to a violation of sediment management standards.

  Discharges to sediment-impaired waterbodies defined as a Puget Sound Sediment Cleanup Sites are also subject to numeric and narrative effluent limitations. These sites are, or will be, undergoing cleanup under the authority of the Model Toxics Control Act (MTCA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund.

In addition to meeting the 30 mg/L TSS numeric effluent limit, Permittees discharging to a Puget Sound Sediment Cleanup Site must also implement additional storm drain line cleaning BMPs, solids sampling, and reporting, per Condition S6.C.2.

- ***Bacteria.*** Ecology modified the ISGP on May 16, 2012 (effective July 1, 2012), and the numeric effluent limits for fecal coliform bacteria were replaced with narrative effluent limits (i.e., monitoring and mandatory BMPs). For the draft ISGP, Ecology proposes to continue imposing the current narrative effluent limits for discharges to bacteria impaired waters. With the update to the Water Quality Standards for bacteria to include E. coli and Enterococci, the draft permit has added these two parameters in addition to Fecal Coliform. Ecology will apply monitoring for bacteria in accordance with the Rule Implementation Plan – Chapter 173-201A Water Quality Standards for Surface Waters for the State of Washington (January 2019).

Condition S6.D Effluent Limitations for Discharges to Waterbodies with Approved TMDLs

Ecology plans to continue implementing a permit application review process to identify discharges to impaired waters with an approved or established Total Maximum Daily Load (TMDL). Where an operator indicates on its application for coverage form that the discharge is to one of these waters, Ecology will review the applicable TMDL to determine as a threshold matter whether the TMDL includes requirements that apply to the individual discharger or its industrial sector. Ecology will determine whether any more stringent requirements are necessary to comply with the WLA, whether compliance with the existing permit limits is sufficient, or, alternatively, whether an individual permit application is necessary. If Ecology determines that additional requirements are necessary, Ecology will incorporate the final limits as site-specific terms to the facilities general permit coverage.

Condition S6.D is intended to implement the requirements of 40 CFR §122.44(d)(1)(vii)(B), which requires that water quality based effluent limits “are consistent with the assumptions and requirements of any available wasteload allocation for the discharge … .” Because WLAs for stormwater discharges may be specified in many different formats, Ecology plans to ensure that these requirements are properly interpreted and communicated to the Permittee in way that can be implemented.

Condition S5 A & B and S8 Benchmarks and Corrective Actions

Special Condition S8 includes a non-numeric effluent limitation that requires facilities that exceed water quality-based numeric benchmark values (Special Condition S5.A&B) trigger incremental revisions to the facilities Stormwater Pollution Prevention Plan (SWPPP) to include additional Best Management Practices (BMPs). The adaptive management mechanism requires monitoring, evaluation, and reporting requirements to ensure that stormwater discharges are controlled by adequate best management practices (BMPs) that prevent violations of water quality standards.

RCW 90.48.555(8)(a) stated that “…the adaptive management mechanism shall include elements designed to result in permit compliance and shall include, at a minimum, the following elements:

(i) An adaptive management indicator, such as monitoring benchmarks;
(ii) Monitoring;
(iii) Review and revisions to the stormwater pollution prevention plan;
(iv) Documentation of remedial actions taken; and
(v) Reporting to the department.”

RCW 90.48.555(8)(b) required the permit to include the “timing and mechanisms for implementation of treatment best management practices”.

The permit continues the previous permits’ adaptive management approach that requires facilities to monitor stormwater quality against several water quality-based benchmarks (indicator values). The rationale for the selection and derivation of benchmark values for specific pollutant parameters is described in Special Condition S5 of this fact sheet.

If the benchmark for a particular pollutant parameter is met, the discharge is presumed to not cause or contribute to a violation of water quality standards for that parameter. If a (water quality-based) benchmark is exceeded numerous times, the potential for a violation of water quality standards increases, and the facility is required to implement escalating levels of SWPPP review and the implementation of additional BMPs.

Since benchmark values are not numeric effluent limitations, discharges that exceed a benchmark value are not necessarily considered a permit violation or a violation of water quality standards. However, if a Permittee exceeds benchmarks that trigger a corrective action, but does not comply with the specific corrective action requirements in Special Condition S8, it would be a permit violation.

The rationale for the benchmark values is provided in Special Condition S5, and the rationale for the adaptive management (corrective action) mechanism is provided in Special Condition S8 of this fact sheet.

Condition S10.A Water Quality Standards

Condition S10.A prohibits discharges that cause or contribute to violations of Surface Water Quality Standards (Chapter 173-201A WAC), Groundwater Quality Standards (Chapter 173-200 WAC), Sediment Management Standards (Chapter 173-204 WAC), and human health-based criteria in the federal human criteria for Washington (40 CFR §131.45).

Each Permittee is required to control its discharge as necessary to meet applicable water quality standards. Ecology expects that compliance with the other conditions in this permit (e.g., the technology-based limits, Stormwater Pollution Prevention Plan (SWPPP), monitoring, corrective actions) will result in discharges that are controlled as necessary to meet applicable water quality standards.

If the Permittee becomes aware, or Ecology determines, that the discharge causes or contributes to a water quality standards exceedance, corrective actions and an Ecology non-compliance notification is required. In addition, at any time Ecology may require additional monitoring or an individual permit, if information suggests that the discharge is not controlled as necessary to meet applicable water quality standards. This additional monitoring will be assigned through the use of an Administrative Order as stated in Permit Condition G12.

Ecology has determined that, in general, the effluent limits contained in this permit, combined with the other requirements concerning corrective actions, inspections, and monitoring, will control discharges as necessary to meet applicable water quality standards. Condition S8 requires each facility to implement an enforceable adaptive management program with monitoring and benchmarks that may trigger escalating levels of corrective actions (SWPPP revisions), to ensure that best management practices (BMPs) are adequate to prevent violations of water quality standards.

The permit also requires that Permittees modify their SWPPP, if during inspections or investigations by the Permittee (Condition S7) or Ecology (Condition G3), it is determined that the SWPPP is, or would be, ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the facility. In this way, the Permittee may improve upon the initial selection, design, installation, or implementation of BMPs to further ensure that its discharges are controlled as necessary to meet applicable water quality standards.

Other information that identify discharges that may cause or contribute to a violation of water quality standards and trigger a need for corrective actions include:

- Monthly visual inspections of the facility (Condition S7);
- Additional water quality sampling (Condition G12);
- Required monitoring for numeric effluent limitations guidelines for sectors subject to effluent limitation guidelines, or for discharges to 303(d) listed waters; or
- Information provided to Ecology or the operator by the public (including State or local authorities) suggestive that the control measures are not stringent enough meet the water quality standards.

Sediment Quality

Ecology has promulgated Sediment Management Standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that Ecology may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400). The permit requires BMPs to limit contamination of stormwater. Source control BMPs can reduce or eliminate contamination of stormwater and help comply with the sediment management standards. However, if Ecology determines that BMPs are ineffective in protecting sediment quality, Ecology may issue an Administrative Order requiring the Permittee to implement additional measures to assure compliance with the sediment standards or to apply for an individual permit.

The draft permit also includes numeric and narrative effluent limitations for dischargers to sediment impaired waterbodies defined as a Puget Sound Sediment Cleanup Sites. These sites are, or will be, undergoing cleanup under the authority of the Model Toxics Control Act (MTCA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. The requirements will reduce concentrations of sediment and other pollutants in stormwater discharges; and reduce the potential of discharges to cause or contribute to contamination or recontamination of Puget Sound Sediment Cleanup Sites.

GROUNDWATER QUALITY LIMITATIONS

Ecology has promulgated Groundwater Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of groundwater. Permits issued by Ecology prohibit violations of those standards (WAC 173-200-100). The permit requires BMPs to limit contamination of stormwater. Source control BMPs can eliminate/minimize the potential contamination of stormwater and protect groundwater quality. However, if Ecology determines that BMPs are ineffective in protecting groundwater quality, Ecology may require the Permittee to implement additional measures to protect groundwater quality or to apply for an individual permit.

Condition S1.E of the ISGP states:

Discharges to Ground

1. For sites that discharge to both surface water and groundwater, or discharges to groundwater in violation of S1.B, the terms and conditions of this permit shall apply to all groundwater discharges.
2. Facilities that discharge to groundwater through an underground injection control well shall comply with any applicable requirements of the Underground Injection Control (UIC) regulations, Chapter 173-218 WAC.

DISCUSSION OF SPECIAL CONDITIONS

Ecology has edited the ISGP to streamline it, remove repetitive language, and make it more easily understandable. Italicized words are defined in Appendix 2 of the draft permit. The draft permit is in an outline format so that specific permit requirements can be more easily found. In addition, Ecology's revisions in the draft permit comply with the governor's "Plain Talk" policy for clearly written documents.

The following narrative describes the main requirements in the draft permit and the rationale behind the requirements.

S1. PERMIT COVERAGE

Facilities Required to Seek Coverage Under the Permit

The draft ISGP is a statewide permit that provides coverage for discharges of stormwater associated with industrial activities within the State of Washington. Condition S1.A defines which industrial sectors are required to seek coverage under the general permit. ISGP Condition S1. Table 1 provides a list of industrial activities and 2017 North American Industry Classification System (NAICS) codes that are categorically required to apply for coverage, if there is a discharge of stormwater from industrial activity to surface waters of the state, or a conveyance system that discharges to surface waters of the state. The sector descriptions are based on NAICS Codes and Industrial Activity Codes consistent with the definition of stormwater discharge associated with industrial activity at 40 CFR §122.26(b)(14)(i-ix, xi) and Chapter 90.48 RCW, including RCW 90.48.160. The switch from Standard Industrial Classification (SIC) codes to NAICS codes is not meant the include any industry categorically excluded in 40 CFR §122.26(b)(14)(i-ix, xi).

The draft ISGP is switching from 1987 SIC codes to 2017 NAICS codes. This switch is meant to add clarity to the industrial sectors that are required to seek coverage under the general permit. SIC codes have not been updated since 1987, and some industries have evolved or ceased to be due to technological advancements. The 2017 NAICS codes group the similar industrial activities closer together and provide a more comprehensive description of the categories as well as provide cross referencing to other categories that may be similar.

The draft ISGP includes two new categories that are required to seek coverage. Certain facilities under both categories have been required to seek coverage in the past due to Significant Contributor of Pollutants designations at those facilities. The two new categories are:

NAICS 53241X Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing. This industry comprises establishments primarily engaged in renting or leasing one or more of the following without operators: heavy construction, off-highway transportation, mining, and forestry machinery and equipment. Establishments in this industry may rent or lease products, such as aircraft, railroad cars, steamships, tugboats, bulldozers, earthmoving equipment, well drilling machinery and equipment, or cranes.

ECY003 Marine Construction. This industry comprises establishments primarily engaged in construction or repair of marine facilities, piers, wharfs, docks and other marine construction activities. The inclusion of this category does not permit the actual construction activity as that activity is covered under other permits. The inclusion of this category is meant to cover the equipment storage/maintenance/repair and material storage facilities associated with this activity only.

Significant Contributors of Pollutants

Condition S1.B of the draft permit retains the ability for Ecology to require permit coverage for certain facilities that would otherwise be exempt. The Federal Clean Water Act at Section 402(p)(2)(E) gives the state of Washington this authority, as does the state mandate in Chapter 90.48 RCW to protect waters of the state.

Specifically, Ecology may require any facility to obtain permit coverage if the facility:

1. Is a "significant contributors of pollutants" to waters of the state, which includes surface water and groundwater; or
2. May reasonably be expected to cause a violation of any water quality standard; or
3. Conducts industrial activity, or has a NAICS code, with stormwater characteristics similar to any industrial activity or NAICS code listed in Table 1 in S1.A.

The ISGP also allows discharges to the ground to be considered a Significant Contributor of Pollutants under conditions where groundwater is impacted or legacy pollutants may cause long term contamination. Ecology will consider the following when determining if a facility is a Significant Contributor of Pollutants to groundwater:

1. Stormwater discharges to ground from areas where industrial processes or raw or finished materials are stored and exposed in a groundwater protection area (GWPA) such as a wellhead protection area or sole source aquifer.
2. Stormwater discharges at Toxic Cleanup Program (TCP) sites where soil, groundwater, or both, remain contaminated (No Further Action (NFA) or conditional NFA letter has not been issued to the facility).
3. Stormwater discharges to ground from areas where the activities or conditions listed below exist outdoors and are exposed to rainfall:
    a. generation, storage, treatment, or disposal of hazardous wastes
    b. vehicle maintenance, repair, recycling, or service; or commercial fleet washing
    c. animal feeding operations
    d. airport/airplane deicing
    e. composting of biosolids; concrete or asphalt recycling.

Facilities Not Required to Obtain Coverage

Condition S1.C contains an annotated list of industries not required to apply for coverage under this permit. Generally, facilities are exempted by federal regulation. For example, 40 CFR §122.26(a)(2) provides broad exemptions from permit coverage for the mining and oil and gas exploration industries. 40 CFR §122.26(a)(14) exempts "office buildings and accompanying parking lots." Land application sites used for the beneficial use of municipal or industrial sludge (or biosolids) are exempt under subsection 122.26(a)(14)(ix).

Facilities discharging stormwater to combined sewers are not required to obtain coverage under this permit. Combined sewers convey both sanitary wastewater and stormwater to sewage treatment plants. Combined sewers are owned and operated by municipalities. These wastewaters receive some treatment by the municipality and combined sewer discharges are regulated by the NPDES permit held by the municipality. If a facility is required by Condition S1.A of the permit to apply for coverage, Ecology may require a facility to provide documentation that it discharges to a combined sewer.

Facilities Excluded from Coverage under this Permit

Condition S1.D. Identifies categories of facilities and activities that are excluded (precluded) from coverage under the draft general permit and may require coverage under an individual permit.

The exclusion in S1.D.1 applies to 10 categories of industrial facilities subject to stormwater effluent limitation guidelines or new source performance standards, as specified by the code of federal regulations at 40 CFR Subchapter N or Toxic Pollutant Effluent Standards at 40 CFR Subchapter D Part 129:

40 CFR §411 Cement manufacturing	40 CFR §423 Steam electric power generating
40 CFR §412 Feedlots	40 CFR §434 Coal mining
40 CFR §418 Fertilizer manufacturing	40 CFR §436 Mineral mining and processing
40 CFR §419 Petroleum refining	40 CFR §440 Ore mining and dressing
40 CFR §422 Phosphate manufacturing	40 CFR §443 Paving and roofing materials (tars & asphalt)

The exclusion in S1.D.2 for nonpoint source silvicultural activities is based on 40 CFR §122.27.

S1.D.3 excludes facilities located on federal land or are federally owned or operated, based on Ecology's NPDES delegation agreement with the US Environmental Protection Agency.

S1.D.4 excludes facilities located on "Indian Country" as defined in 18 USC §1151, except portions of the Puyallup Reservation as noted in the permit. The draft ISGP clarifies which tribal facilities are excluded from coverage under the ISGP, and thereby covered under EPA's Multi-Sector General Permit (MSGP).

S1.D.5 excludes facilities authorized to discharge stormwater associated with industrial activity under an existing NPDES individual or other general permit. This exclusion does not apply to stormwater discharged under the authority of a Phase I or Phase I municipal stormwater permit, except the Washington State Department of Transportation (WSDOT) municipal stormwater permit, which authorizes the discharge of stormwater associated with industrial activity from WSDOT vehicle maintenance facilities.

S1.D.6 excludes coverage for stormwater discharges associated with construction activity. Permittees planning construction activities with a disturbed area greater than or equal to 1 acre must apply for the Construction Stormwater General Permit (CSWGP). Ecology determined that the requirements of the construction permit are more specific and extensive than what can be accommodated in the ISGP. These more specific requirements formed the rationale for creating a separate permit for construction activity in the mid-1990s. For example, the SWPPP requirements in the CSWGP are more extensive than those in the ISGP. In addition, the sampling frequency for turbidity in the CSWGP is weekly compared to the four samples per year in the draft ISGP.

Conditions S1.D.7 excludes coverage of facilities where the general permit is not sufficient to assure compliance with other regulations governing water quality protection. This could include special protections for groundwater recharge zones or limitations established through watershed management agreements.

Conditions S1.D.8 excludes coverage for new discharges to a waterbody listed pursuant to Section 303(d) of the Clean Water Act, unless the Permittee meets the requirements of Condition S6.B. This exclusion is based on 40 CFR §122.4(i) (prohibiting the issuance of permits to new dischargers that will cause or contribute to the violation of water quality standards) prior to coverage under the permit. To satisfy the requirements of 40 CFR §122.4(i), an operator must (a) eliminate all exposure to stormwater of the pollutant(s) for which the waterbody is impaired, and document no exposure and retain such documentation with the SWPPP; or (b) demonstrate that the pollutant for which the waterbody is impaired is not present at the site, and retain documentation of this finding with the SWPPP; or (c) submit data to Ecology documenting that the pollutant discharge will not cause or contribute to an excursion of water quality standards because the discharge will meet in-stream water quality standards at the point of discharge or because there are sufficient remaining wasteload allocations in an approved TMDL and the discharge is controlled at least as stringently as similar discharges subject to that TMDL.

Discharges to Groundwater

Special Condition S1.E is intended to protect groundwater from stormwater discharged or infiltrated to groundwater, under the authority of Chapter 90.48 RCW. In RCW 90.48.020, the definition of “waters of the state” includes “undergroundwaters”, i.e., groundwater. For sites that discharge to groundwater, the terms and conditions of this permit shall apply. ***However, this does not mean that all discharges to ground are subject to stormwater sampling and monitoring*****.** Only point source discharges from the facility to surface water of the state are subject to sampling and benchmarks. Ecology will require additional sampling for discharges that are significant contributors of pollutants to groundwater, but currently there are no benchmarks to groundwater. The monitoring will be classified as “Report Only.”

Facilities that discharge or infiltrate stormwater to groundwater shall ensure that the state AKART requirements are met to ensure that polluting matter is not discharged to groundwater (RCW 90.48.080).

Facilities that discharge to groundwater through an underground injection control well shall comply with any applicable requirements of the Underground Injection Control (UIC) regulations, Chapter 173-218 WAC.

Certificate of No Exposure

Condition S1.F allows the Permittee for apply for a Conditional “No Exposure” (CNE) certificate, as provided for in the federal regulation (40 CFR §122.26(g)). Any facility that qualifies may submit a request for “no exposure” exemption from permit coverage. “No exposure” means that all industrial activities are conducted under cover so that there is no reasonable probability that pollutants from industrial activities will come in contact with stormwater.

Some facilities that are subject to permit coverage may be able to apply for and receive a “no exposure” exemption. The “no exposure” certificate conveys to Ecology the right to enter and inspect the facility and, according to EPA Rules, facilities must re-apply every five years.

S2. APPLICATION REQUIREMENTS

40 CFR §122.21(a)(1) requires any facility that “discharges or proposes to discharge pollutants” to surface waters to apply for permit coverage. 40 CFR §122.22 specifies the person or persons within the applicant's organization who may sign the application. WAC 173-226-200 describes the application process to obtain coverage, as required in Condition S2, Coverage Requirements. The regulation explains public notice requirements, SEPA compliance, and the effective date of coverage. There are some differences in application requirements for new facilities versus existing facilities. WAC 173-226-130 requires facilities under permit that are increasing or altering their discharge, to notify the public of this intent in a newspaper of general circulation within the geographical area of the draft discharge or change in discharge. Existing facilities (except those modifying their permit coverage) are not subject to that requirement. Chapter 173-226 WAC defines “new operation” as one that begins activities on or after the effective date of the permit. For purposes of this permit, “new operation” and “new facility” have the same meaning[5]. The draft permit defines existing facilities as those that were in operation prior to the permit effective date so, under the draft permit, these facilities would not be subject to public notice requirements.

Timing of Application

Condition S2.A.1 of the draft permit requires new facilities to submit their application for coverage at least 60 days before beginning operation or implementing a significant process change. In addition, a new facility must complete the SEPA process, in accordance with Chapter 197-11 WAC. Since the applicant is required to have permit coverage before they are authorized to discharge stormwater from an operating site, applicants should allow more time than 60 days prior to discharging stormwater from the facility. Issues such as discharging to impaired waters may require additional time to process the application for coverage.

S3. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

SWPPP Requirement

In accordance with 40 CFR §122.44(k) and 40 CFR §122.44 (s), the draft general permit includes requirements for the development and implementation of SWPPPs along with BMPs to minimize or prevent the discharge of pollutants to waters of the state. BMPs constitute Best Conventional Pollutant Control Technology (BCT) and Best Available Technology Economically Achievable (BAT) for stormwater discharges. Ecology has determined that development of a SWPPP and implementation of adequate BMPs in accordance with this permit constitutes “all known, available, and reasonable methods of prevention, control, and treatment” (AKART).

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[5] ***New Facility*** means a facility that begins activities that result in a discharge or a potential discharge to waters of the state on or after the effective date of this general permit.

The SWPPP is a vital element of the ISGP. A site-specific SWPPP requires implementation of actions necessary to manage stormwater to comply with the state's requirement under Chapter 90.48 RCW to protect the beneficial uses of waters of the state. The permit identifies a few situations such as existing facilities coming under permit for the first time, where time is allowed to fully develop and implement the SWPPP. For those facilities currently under permit coverage and for all new facilities, the permit requires a fully developed and implemented SWPPP prior to application for coverage.

The SWPPP must identify potential sources of stormwater contamination from industrial activities and how those sources of contamination are managed to prevent or minimize contamination of stormwater. If contamination of stormwater is unavoidable, the SWPPP will quantify the environmental risk and determine if treatment of the stormwater is necessary to prevent a violation of water quality standards and loss of beneficial uses in waters of the state. The SWPPP must be a "living" document that the Permittee continuously reviews and revises as necessary to assure that stormwater discharges do not degrade water quality. Pollution prevention requires constant vigilance and full participation if it is to be effective. Like maintaining safety at the site, the SWPPP will only be successful when it becomes part of the way all employees at the site perform activities that could affect stormwater quality. The SWPPP must be retained on-site or within reasonable access to the site and available for review by Ecology.

Ecology does not review SWPPPs for formal approval or denial for several reasons. The development and implementation of the SWPPP are the responsibility of the Permittee. Ecology feels the existing and draft permits clearly specify the required minimum elements of the SWPPP. With the aid of Ecology-approved stormwater management manuals, the permit allows the Permittee the flexibility to select and implement those BMPs that fit the characteristics of the site, stormwater pollutant concentrations, and the Permittee's resources. The ISGP requires SWPPP updates based on inspections, corrective actions, or direction from Ecology or other regulatory authority. Ecology intends the SWPPP to be used together with sampling results and the corrective action program to allow the Permittee to design the most effective stormwater management plan for the site.

SWPPP Signature and Certification Requirements

The draft permit requires the Permittee to sign and date the SWPPP consistent with procedures detailed in General Condition G2 (Signatory Requirements). Specifically, S3.A.6 states:

> "The Permittee shall sign and certify all SWPPPs, inspection reports, and Level 1, 2, and 3 SWPPP Certification Forms in accordance with General Condition G2."

This requirement is consistent with standard NPDES permit conditions described in 40 CFR §122.22 and is intended to ensure that the Permittee understands its responsibility to create and maintain a complete and accurate SWPPP. Permittees are allowed to appoint delegate an authorized representative consistent with the regulations. Therefore, if a facility feels it is more appropriate for a member of the stormwater pollution prevention plan team to sign the documentation, that option is available under the permit. The signature requirement includes an acknowledgment that there are significant penalties for submitting false information.

Best Management Practices (BMPs)

BMPs are the actions identified in the SWPPP to manage, prevent contamination of, and treat stormwater. BMPs include schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment systems, operating procedures, and practices used to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage. In

Condition S3.B.3, BMPs are categorized as operational source control, structural source control, and treatment BMPs. Under each category, specific (mandatory) BMPs are required to be included in the SWPPP and implemented, unless site conditions render the BMP unnecessary, and the exception is clearly justified in the SWPPP. In addition to the specific BMPs listed in S3.B.3, (e.g., vacuum sweep paved surfaces) the Permittee must ensure that their SWPPP includes the operational and structural source control BMPs listed as "applicable" in Ecology's stormwater management manuals. Many of these "applicable" BMPs are sector-specific or activity-specific, and are not required at facilities engaged in other industrial sectors or activities.

Ecology-Approved Stormwater Management Manuals

The permit contains a narrative effluent limitation which requires the implementation of BMPs that are contained in stormwater technical manuals approved by Ecology, or practices that are demonstrably equivalent to practices contained in stormwater technical manuals approved by Ecology. This is intended to ensure that BMPs will prevent violations of state water quality standards, and satisfy the state AKART requirements and the federal technology-based treatment requirements under 40 CFR §125.3. Specifically, Condition S.3.A.3 states that BMPs shall be consistent with:

a. *2019 Stormwater Management Manual for Western Washington* for sites west of the crest of the Cascade Mountains; or

b. *2019 Stormwater Management Manual for Eastern Washington* for sites east of the crest of the Cascade Mountains; or

c. Revisions to the manuals in S3.A.3. a & b., or other stormwater management guidance documents or manuals which provide an equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-220-190. For purposes of this section, the documents listed in Appendix 10 of the August 1, 2019 Phase I Municipal Stormwater Permit are hereby incorporated into this permit ; or

d. Documentation in the SWPPP that the BMPs selected provide an equivalent level of pollution prevention, compared to the applicable Stormwater Management Manuals, including:

   i. The technical basis for the selection for all stormwater BMPs (scientific, technical studies, and/or modeling) which support the performance claims for the BMPs selected; ***and***

   ii. An assessment of how the BMPs will satisfy AKART requirements and the applicable technology-based treatment requirements under 40 CFR §125.3.

Western Washington

The *Stormwater Management Manual for Western Washington* (SWMMWW) is the current standard for minimum technical requirements addressing water quality of stormwater through treatment BMPs for facilities in Western Washington. Under the SWMM for Western Washington, the design basis for volume-based treatment systems is the 6-month, 24-hour storm event. For flow rate-based treatment systems, the design basis is the flow rate at, or below which, 91% of the runoff volume, as estimated by an approved continuous runoff model, will be effectively treated. This design storm was derived to assure that stormwater treatment facilities were sized to treat 91% of the stormwater.

Eastern Washington

The *Stormwater Management Manual for Eastern Washington* (SWMMEW) is the current standard for minimum technical requirements addressing water quality of stormwater through treatment BMPs for facilities in Eastern Washington.

The design basis for volume based treatment systems in Eastern Washington is defined in several ways:

1. A six-month regional storm,
2. A six-month, 24-hour U. S. Department of Agriculture Soil Conservation Service (SCS) Type IA storm,
3. A six-month, 24-hour SCS Type II storm, ***or***
4. 0.5 inch of predicted runoff from the site.

Although the storm event differs from the 6-month 24-hour event defined for western Washington, it meets the same type of standard, 91% of stormwater treated, as western Washington. Treatment systems must be fully functional for all storm events that do not exceed the design storm.

Alternative Manuals and BMPs

Condition S3.A.3 has provisions for the use of BMPs other than those contained in Ecology's Stormwater Management Manuals (SWMM). Specifically, Permittees may use BMPs consistent with:

- Revisions to the manuals in S3.A.3. a & b., or other stormwater management guidance documents or manuals which provide an equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-220-190; or
- Documentation in the SWPPP that the BMPs selected provide an equivalent level of pollution prevention, compared to the applicable Stormwater Management Manuals, including:
    - The technical basis for the selection for all stormwater BMPs (scientific, technical studies, and/or modeling) which support the performance claims for the BMPs selected; **and**
    - An assessment of how the BMPs will satisfy AKART requirements and the applicable technology-based treatment requirements under 40 CFR §125.3.

Operational Source Control BMPs

Operational source control BMPs include a schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the pollution of waters of the state. These activities do not require construction of pollution control devices but are very important components of a successful SWPPP. Employee training, for instance, is critical to achieving timely and consistent spill response. Pollution prevention is likely to fail if the employees do not understand the importance and objectives of BMPs. Prohibitions might include eliminating outdoor repair work on equipment and certainly would include the elimination of intentional draining of crankcase oil on the ground. Good housekeeping and maintenance schedules help prevent incidents that could result in the release of pollutants. Operational BMPs represent a cost-effective way to control pollutants and protect the environment. The SWPPP must identify all the operational BMPs and how and where they are implemented. For example, the SWPPP must identify what training will consist of, when training will take place, and who is responsible to assure that employee training happens.

Volume 4 in the Western Washington SWMM and Chapter 8 of the Eastern Washington SWMM provides detailed lists of operational source control measures that apply to virtually all industrial activities. These chapters provide the required BMPs for each major category listed in the permit and include "recommended additional… BMPs" for good housekeeping, preventative maintenance, and spill prevention and cleanup.

The draft ISGP continues the previous permit requirement for a Spill Prevention and Emergency Cleanup Plan. This section includes requirements for secondary containment, and other BMPs to minimize the potential for spills, leaks and drips that can contaminate stormwater. The draft permit requires spill kits within 25 feet of all stationary fueling stations and mobile fueling units.

Structural Source Control BMPs

Structural source control BMPs include physical, structural, or mechanical devices or facilities intended to prevent pollutants from entering stormwater. Examples of source control BMPs include erosion control practices, maintenance of stormwater facilities (e.g., cleaning out sediment traps), construction of roofs over storage and working areas, and direction of equipment wash water and similar discharges to the sanitary sewer or a dead end sump. Structural source control BMPs likely include a capital investment but are cost effective compared to cleaning up pollutants after they have entered stormwater. Structural source control BMPs are also identified in Volume 4 in the *Stormwater Management Manual for Western Washington* and Chapter 8 of the *Stormwater Management Manual for Eastern Washington*. Some of the control measures are specific to an industrial group such as "Commercial Composting" while others apply to general industrial activities such as "Mobil Fueling of Vehicles and Heavy Equipment."

Treatment BMPs

The previously described BMPs are designed to prevent pollutants from entering stormwater. However, even with an aggressive and successful program, stormwater may still require treatment to achieve compliance with water quality standards. Treatment BMPs are intended to remove pollutants from stormwater. Examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, and constructed wetlands[6]. Volume 5 of the Western Washington SWMM and Chapter 5 of the Eastern Washington SWMM provides information on treatment BMPs including guidance on selecting appropriate treatment BMPs. All facilities are encouraged to review these SWMM chapters and select and implement appropriate treatment BMPs. Facilities that are unable to achieve discharge compliance through source control BMPs must implement appropriate treatment BMPs. If treatment BMPs are not required, the facility must still include in their SWPPP a description of how they arrived at that conclusion.

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[6]Developing a constructed wetland can be an effective way to treat stormwater. However, wetlands constructed for treatment of stormwater are not eligible for use as compensatory mitigation for authorized impacts to regulated wetland systems.

Volume/Flow Control BMPs

Ecology recognizes the need to include specific BMP requirements for stormwater runoff quantity control to protect beneficial water uses, including fish habitat. New facilities and existing facilities undergoing redevelopment must implement the requirements for peak runoff rate and volume control identified by volume 1 of the Western Washington SWMM and Chapter 2 in the Eastern Washington SWMM as applicable to their development. Chapter 3 of volume 3 Western Washington SWMM and Chapter 6 in the Eastern Washington SWMM lists BMPs to accomplish rate and volume control. Existing facilities in western Washington should also review the requirements of volumes 1 (Minimum Technical Requirements) and Chapter 3 of volume 3 in the Western Washington SWMM. Chapter 2 (Core Elements for New Development and Redevelopment) in the Eastern Washington SWMM contains the minimum technical requirements for facilities east of the Cascades. Although not required to implement these BMPs, controlling rate and volume of stormwater discharge maintains the health of the watershed. Existing facilities should identify control measures that they can implement over time to reduce the impact of uncontrolled release of stormwater.

S4. SAMPLING

WAC 173-220-210 and 40 CFR §122.41 require sampling, recording, and reporting for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

RCW 90.48.555(8), required an enforceable adaptive management mechanism with monitoring, evaluation, and reporting requirements to ensure that stormwater discharges are controlled by adequate best management practices (BMPs) that prevent violations of water quality standards.

90.48.555(8)(a) stated that "…the adaptive management mechanism shall include elements designed to result in permit compliance and shall include, at a minimum, the following elements:

(i) An adaptive management indicator, such as monitoring benchmarks;

(ii) Monitoring;

(iii) Review and revisions to the stormwater pollution prevention plan;

(iv) Documentation of remedial actions taken; and

(v) Reporting to the department."

The permit requires Permittees to conduct stormwater sampling and analysis, as well as visual inspections of the facility. The Permittee is required to report sampling results to Ecology on a quarterly basis.

Sampling data, when compared to benchmark indicator values, provides tangible evidence of the effectiveness of the permit to control pollutants in stormwater, both at specific sites and statewide. The permit requires that all Permittees conduct sampling for a core set of pollutant parameters. The core set of parameters required in the permit should be adequate under most conditions to identify sites that are most likely to pose a risk to water quality. In addition to core sampling requirements, certain industrial sectors are subject to additional sampling parameters and benchmarks, based on the stormwater pollutants that are typically associated with the industrial activity in these sectors.

The draft permit retains the stormwater sampling framework from the previous permit, based upon:

- Sampling recommendations made by Envirovision and Herrera in "Evaluation of Washington's Industrial Stormwater General Permit" (November 2006).
- *Industrial Stormwater General Permit Addendum to Fact Sheet: Appendix C – Response to Public Comments* (October 21, 2009).
- PCHB Nos. 09-135 through 09-141*, Findings of Fact, Conclusions of Law, and Order* (April 25, 2011):
    - "The Board concludes that the general sampling requirements of the ISGP are valid, both with respect to the amount of required sampling, and the provisions that allow averaging of such samples. The quarterly sampling regime now requires sampling of all discharge points, unless they are substantially identical, an improvement over the approach of the last permit, which allowed the Permittee to monitor the outfall with the highest concentration of pollutants, an uncertain endeavor when it comes to variable stormwater discharges. We also conclude that the sampling provision that allows Permittees monitoring more than once per quarter to average all the monitoring results for each parameter to be valid. Condition S4.B.6.c.*"*
- *Appendix D – Permit Modification Fact Sheet Addendum for the Industrial Stormwater General Permit National Pollutant Discharge Elimination System (NPDES) and State Waste General Permi*t (February 1, 2012).
- *Industrial Stormwater General Permit Modification Addendum to Fact Sheet: Appendix E – Response to Public Comments on the Draft Permit Modification* (May 16, 2012).

The draft ISGP retains the previous permit's allowance for the quarterly averaging of benchmark parameters. This permit condition is based upon:

- PCHB Nos. 09-135 through 09-141*, Findings of Fact, Conclusions of Law, and Order* (April 25, 2011).
- *Appendix D – Permit Modification Fact Sheet Addendum for the Industrial Stormwater General Permit National Pollutant Discharge Elimination System (NPDES) and State Waste General Permit* (February 1, 2012).
- *Industrial Stormwater General Permit Modification Addendum to Fact Sheet: Appendix E – Response to Public Comments on the Draft Permit Modification* (May 16, 2012).

The draft permit states: "Permittees who monitor more than once per quarter shall average all of the monitoring results for each parameter (except pH and "visible oil sheen") and compare the average to the benchmark value." This approach was affirmed by the PCHB in 2011: "*We also conclude that the sampling provision that allows Permittees monitoring more than once per quarter to average all the monitoring results for each parameter to be valid. Condition S4.B.6.c."*[7] A Permittee who collects more than one sample during a 24-hour period, must first calculate the daily average of the individual grab sample results collected during that 24-hour period; then use the daily average to calculate a quarterly average. Daily Average means the average measurement of the pollutant throughout a period of 24 consecutive hours starting at 12:01 A.M. and ending at the following 12:00 P.M. (midnight). This reduces

[7] *PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order* (April 25, 2011)

the possibility for sampling bias, and ensures that quarterly averages adequately represent the overall quality of stormwater discharged during the quarter.

Sampling Locations

The draft permit S4.B.2 proposes to change requirements around the sampling locations at some facilities. Language has been added to the draft permit that allows Ecology to require a facility to move sampling locations out of areas where unsafe conditions prevent regular sampling to locations where sampling can occur more regularly. Ecology will only require sampling locations to be moved if the current location is inaccessible due to unsafe conditions frequently and if the new location will still be representative. While Ecology recognizes that safety and security are issues for many facilities, it is not an acceptable reason to alter the sampling required by the Permit. The access issues will have to be resolved and staff will have to plan accordingly so that samples can be obtained.

The added language for sampling locations is as follows:

c. Ecology may require sampling points located in areas where adverse conditions prevent regular sampling be moved to areas where regular sampling can occur.

d. The Permittee shall notify Ecology of any changes or updates to sample locations, discharge points, and/or outfalls by submitting an "Industrial Stormwater General Permit Discharge/Sample Point Update Form" to Ecology. The Permittee may be required to provide additional information to Ecology prior to changing sampling locations. Changes and updates to sample locations are not allowed until all corrective actions have been completed.

Reduced Sampling Due to Consistent Attainment

The draft permit proposes to reduce sampling to once per year for a period of three years for one or more parameters (other than visible oil sheen) based upon the "consistent attainment" of benchmark values. The previous permit allowed for suspension of monitoring for 3 years if a facility was at consistent attainment. The DMR data submitted to Ecology showed several Permittees were exceeding benchmarks once monitoring resumed. Ecology determined that an annual sample requirement would show which facilities really are at consistent attainment and the facilities that have exceedances would need to resume sampling and correct the issues.

Consistent attainment means eight consecutive quarterly samples (quarterly average) demonstrate a reported value equal to or less than the benchmark value; or for pH, within the range of 5.0 – 9.0. Facilities must have 8 total consecutive samples that show the facility is at or below the benchmarks to qualify for consistent attainment. For the purpose of tallying consecutive samples, facilities need to account for periods when no sample is taken. If a discharge occurred during regular business hours and a facility did not grab a sample, then the facility must restart sampling. If a discharge did not occur during regular business hours, a facility does not have to restart sampling. A "No Discharge" quarter does not count as a sample. A facility must collect 8 total samples before they can claim consistent attainment.

The proposed language in the permit states:

c. The annual sample must be taken during the 4th quarter. A facility may average the annual sample with any other samples taken over the course of the 4th quarter.

d. A Permittee who has a benchmark exceedance during consistent attainment is no longer allowed to claim consistent attainment. The Permittee must begin sampling in accordance with S4.B.

As with the previous ISGP, the draft ISGP does not allow the consistent attainment provisions to be applied to pollutant parameters subject to numeric effluent limitations, based on federal ELGs, or Section 303(d) of the Clean Water Act.

S5. BENCHMARKS AND NUMERIC EFFLUENT LIMITATIONS

Core Benchmark Parameters and Sampling Rationale

Condition S5.A requires all Permittees with stormwater discharges to surface water to conduct base level sampling for five core pollutant parameters. Ecology does not attempt to address all the possible pollutants from each industrial facility. Instead, a basic set of parameters was selected to provide an indication of how well the facilities BMPs are functioning to prevent violations of the state surface water quality standards. The representative parameters are pH, turbidity, total zinc, copper and oil and grease. Ecology selected these parameters to reasonably indicate the overall effectiveness of each facility's BMPs to reduce and prevent stormwater discharges that could cause a violation of water quality standards. A secondary objective was to minimize the level of laboratory expenses to what is necessary to reasonably ensure compliance with permit conditions.

The draft permit retains the requirement for all facilities to conduct quarterly sampling for five core parameters. These include: turbidity, pH, zinc, copper, and visible oil sheen.

Turbidity of water is related to the amount of suspended and colloidal matter contained in the water. Increasing turbidity reduces the clarity and penetration of light, negatively impacting aquatic organisms. Suspended solids can settle out, covering up gravel beds and suffocating or driving off benthic organisms. Fish may be harmed by suspended particles which can irritate the gills. In addition, many of the pollutants that are found in stormwater are attached to the small particles that become suspended in the stormwater, increasing their potential toxicity. Turbidity is an indirect measure of total suspended solids (TSS). For these reasons, high turbidity is a useful indicator of stormwater contamination. Turbidity was also chosen as a core parameter, in part, because Chapter 173-201A WAC includes a turbidity standard, and Ecology studies have demonstrated a poor statistical correlation between turbidity and TSS. Turbidity sampling provides a more direct basis for determining compliance with water quality standards. Turbidity sampling can be conducted on-site if the Permittee purchases a turbidity meter. Ecology also believes turbidity is an indicator of good housekeeping practices.

The permit requires all Permittees to sample for **pH** to determine the acid/base state of the discharge. Extremes in pH are toxic to fish and unsuitable for groundwater used as a drinking water source. Rainfall is typically slightly acidic as it hits the ground, but buffers quickly, achieving near neutral pH. Stormwater discharges with significantly higher or lower pH values strongly indicate that the stormwater has been contaminated. The permit authorizes the use of paper (benchmark monitoring only) or a calibrated pH meter for measuring pH, unless the discharge is subject to a pH effluent limitation (Condition S5.C). Permittees subject to a pH effluent limitation must use a pH meter.

The Herrera Evaluation recommended that **oil and grease** sampling and analysis be eliminated from the permit, because only seven percent of the samples for oil and grease exceeded the benchmark. Furthermore, oil and grease concentrations in the majority of samples were below applicable detection limits. Ecology does not interpret these data to mean that stormwater discharges from industrial facilities have insignificant levels of petroleum contamination. The Herrera Evaluation stated, "*The reason there are few excursions of the oil and grease benchmark is more likely related to how and when the samples are collected, rather than providing evidence of well controlled site conditions. Oil and grease problems are more appropriately addressed with visual assessments; by the time the laboratory results are available, the event causing the problem will likely have ended.*" Therefore, Ecology has decided to eliminate analytical oil and grease sampling, replacing it with a visible assessment of petroleum contamination using **visible oil sheen**. If visible oil sheen is observed by the Permittee at a sampling location during a stormwater discharge event, it is considered an excursion of the benchmark.

Zinc can be toxic to aquatic organisms and is a common constituent of contaminated stormwater. Sources of zinc in stormwater include tire dust from vehicle and material handling equipment, leaks and drips of vehicle fluids, galvanized surfaces, paints containing zinc oxide, erosion of earthen materials, pesticides, and atmospheric deposition. A 2006 Survey of Zinc Concentrations Industrial Stormwater identified the two major sources of zinc at industrial sites:

- Galvanized surfaces on roofs (e.g., HVAC, ductwork, ventilator covers); and
- Motor oil, hydraulic fluid, and tire dust on parking, loading dock, and ground surfaces. Cars, trucks, and, in some cases, forklifts are the presumed sources of these materials[8].

Ecology also believes that other sources of zinc in stormwater include paints and coatings containing zinc oxide, erosion of earthen materials, and atmospheric deposition.

Copper can be toxic to aquatic organisms and is a common constituent of contaminated stormwater. Sources of copper in stormwater include vehicle brake pads, architectural copper, pesticides, marine antifouling coatings, and vehicle servicing and cleaning, domestic water sources, wood preservatives, and atmospheric deposition[9]. Ecology considers copper from vehicle brake pads to be the most significant source of copper at industrial facilities.

Basis of Core Benchmark Values

The draft permit retains the previous permit's core benchmark values for discharges of conventional pollutants (i.e., Turbidity and pH) and toxic pollutants (i.e., Total Zinc and Petroleum/Oil & Grease). The technical and legal basis for these benchmarks are incorporated by reference from the previous (2009) ISGP Fact Sheet; and the PCHB Order on the appeal of the 2010 ISGP [*PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order* (April 25, 2011)], which affirmed the benchmark values.

Basis of Sector-Specific Benchmark Values

The draft ISGP retains the previous permit's framework of requiring certain industrial sectors to perform additional monitoring against benchmark values which, if exceeded a number of times, triggers escalating levels of adaptive management. Sectors subject to additional sampling and benchmarks fall into 8 categories. In the draft ISGP, additional sectors were selected for additional benchmarks based on the type of activities conducted at those sites. Those sectors are Machinery Manufacturing, Wood Product Manufacturing, Coal Mining, Oil and Gas Extraction, Nonmetallic Mining and Quarrying except

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8 A Survey of Zinc Concentrations in Industrial Stormwater Runoff, Washington State Department of Ecology. January 2006.

9 Fact Sheet – Reducing Copper in Industrial Stormwater Runoff. Oregon Department of Environmental Quality. March, 12, 2014

Fuels, Petroleum and Coal Products Manufacturing, Nonmetallic Mineral Product Manufacturing, and Steam Electric Power Generation. These sectors were chosen after a review of the related activities and additional monitoring imposed by EPA's Multi Sector General Permit as well as other states Industrial Stormwater Permits.

The draft ISGP also proposes additional sector specific monitoring for the two new industrial sectors being added to this permit. Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing will be assigned Petroleum Hydrocarbons as an additional parameter for monitoring.

Marine Industrial Construction will be assigned TSS and Petroleum Hydrocarbons as additional benchmarks. This category will also have monitoring for Arsenic, PAH compounds, p-cresol, and Phenol as "Report Only" parameters. Ecology will review the results from these four parameters to determine if monitoring or benchmarks will be necessary for the next permit term or if these four pollutants will be removed.

Ecology proposes the following additional monitoring categories:

Table 5: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries (Table 3 of draft permit)

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
1. Chemical and Allied Products (325xxx), Food and Kindred Products (311xxx-312xxx)					
BOD_5	mg/L	30	SM 5210B	2	1/quarter
Nitrate + Nitrite Nitrogen, as N	mg/L	0.68	SM4500 NO3-E/F/H	0.10	1/quarter
Phosphorus, Total	mg/L	2.0	EPA 365.1	0.01	1/quarter
2. Primary Metals(331xxx), Metals Mining (2122xx), Automobile Salvage and Scrap Recycling (42314x and 42393x), Metals Fabricating (332xxx), Machinery Manufacturing (333xxx)					
Lead, Total	µg/L	64.6	EPA 200.8	0.5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
3. Hazardous Waste Treatment, Storage and Disposal Facilities and Dangerous Waste Recyclers subject to the provisions of Resource Conservation and Recovery Act (RCRA) Subtitle C					
Chemical Oxygen Demand (COD)	mg/L	120	SM5220-D	10	1/quarter
Total Ammonia (as N)	mg/L	2.1	SM4500-NH3- GH	0.02	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
Arsenic, Total	µg/L	150	EPA 200.8	0.5	1/quarter
Cadmium, Total	µg/L	2.1	EPA 200.8	0.25	1/quarter
Cyanide, Total	µg/L	22	EPA 335.4	10	1/quarter

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
Lead, Total	µg/L	64.6	EPA 200.8	0.5	1/quarter
Magnesium, Total	µg/L	64	EPA 200.8	50	1/quarter
Mercury, Total	µg/L	1.4	EPA 1631E	0.0005	1/quarter
Selenium, Total	µg/L	5.0	EPA 200.8	1.0	1/quarter
Silver, Total	µg/L	3.4	EPA 200.8	0.2	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
4. Air Transportation[c] (481xxx)					
Total Ammonia (as N)	mg/L	2.1	SM4500-NH3- GH	0.02	1/quarter
BOD_5	mg/L	30	SM 5210B	2	1/quarter
COD	mg/L	120	SM5220-D	10	1/quarter
Nitrate + Nitrite Nitrogen, as N	mg/L	0.68	SM 4500-NO3-E/F/H	0.10	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
5. Timber Product Industry (321xxx), Paper and Allied Products (322xxx), Wood Product Manufacturing (321xxx)					
COD	mg/L	120	SM5220-D	10	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
6. Transportation (482xxx-485xxx), Petroleum Bulk Stations and Terminals (4247xx), Transportation Equipment Manufacturing (336xxx), Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing (53421)					
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
7. Coal Mining (2121xx), Oil and Gas Extraction (2111xx), Nonmetallic Mining and Quarrying, except Fuels (2123xx), Petroleum and Coal Products Manufacturing (324xxx), Nonmetallic Mineral Product Manufacturing (327xxx), Steam Electric Power Generation					
TSS	mg/L	100	SM2540-D	5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
8. Marine Industrial Construction (ECY003)					
Arsenic	µg/L	Report Only[d]	EPA 200.8	0.5	1/quarter

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
PAH compounds	µg/L	Report Only[d]	EPA 610	10	1/quarter
p-cresol	µg/L	Report Only[d]	EPA 8270D	10	1/quarter
Phenol	µg/L	Report Only[d]	EPA 625.1	4.5	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter

a The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR §136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report.

b. 1/quarter means at least one sample taken each quarter, year-round.

c. For airports where a single Permittee, or a combination of permitted facilities use more than 100,000 gallons of glycol-based deicing chemicals and/or 100 tons or more of urea on an average annual basis, monitor these additional five parameters in those discharge points that collect runoff from areas where deicing activities occur.

d. “Report only” reporting may not be applied to consistent attainment. Ecology will use the data collected during this permit term to determine if the pollutants listed will need to be included in the next permit, and if so, develop benchmarks based on the data received and water quality criteria.

Special Conditions S5.B requires facilities in the categories above to sample for specific pollutants likely to be in their stormwater discharges. The technical and legal basis for industrial sector-specific additional sampling and benchmarks are incorporated by reference from the previous ISGP Fact Sheets; and the PCHB Order on the appeal of the 2010 ISGP [*PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order* (April 25, 2011)], which affirmed some of the sector-specific benchmark values.

Two benchmarks in the sector specific tables have changed, lead and silver. The new lead benchmark is 64.6 µg/L and the new silver benchmark is 3.4 µg/L. This change bases the benchmarks on the acute water quality standard with a hardness of 100. Both benchmarks are attainable by Permittees based on past compliance data.

Analytical Methods and Quantitation Levels

Historically, the method detection limit (MDL) was used to determine compliance (all data at or above the MDL were considered adequate for assessing compliance and supporting enforcement actions). The MDL, however, is the level at which a chemical's presence or absence can be detected, and provides limited information with regard to actual concentration. The low concentrations of many of the aquatic life-based and human health-based criteria have made the issue of quantitation important to both the regulator and the discharger. Ecology uses the term “quantitation level” as equivalent to the term “minimum level of quantitation (ML)” which is used by EPA. The ML is defined by EPA as the lowest concentration of an analyte that can be measured with a defined level of confidence. This may also be called the reporting level by some laboratories. Based on Ecology's *Permit Writers Manual*, the draft ISGP defines the quantitation level as the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that all method-specified sample, weights, voluments, and cleanup procedures have been employed.

The draft permit updates some analytical methods and establishes quantitation levels, consistent with Ecology's *Permit Writers Manual*. If an alternate analytical method from 40 CFR §136 is sufficient to produce measurable results the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report.

For more information on analytical methods and quantitation levels, refer to Ecology's *Permit Writers Manual*, Chapter VI.4 Analytical Methods: https://fortress.wa.gov/ecy/publications/summarypages/92109.html.

With the exception of certain parameters, the permit requires all sampling data to be prepared by a laboratory accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The Permittee may sample pH and turbidity and report without lab accreditation. The permit allows the use of either a pH meter or narrow range pH indicator paper, unless the Permittee is a non-hazardous waste landfill or is otherwise subject to a numeric effluent limitation for pH. Permittees using pH indicator paper must use high resolution paper that will measure pH within ±0.5 SU.

Sampling Requirements for Permittees Subject to Federal Effluent Limitations

In addition to sampling for the core parameters required in Condition S5.A, Permittees with either non-hazardous waste landfills or Airlines/Airports with 1000+ annual jet departures to comply with the effluent limitations in Condition S5.C and sample their stormwater discharges for the specified parameters. The effluent limitations in the draft permit are based on EPA Effluent Limitation Guidelines.

Non-hazardous Landfills: The draft ISGP retains the previous ISGP's additional sampling and numeric effluent limitations for non-hazardous waste landfills. The effluent limits for non-hazardous waste landfills in the draft permit are taken from 40 CFR §445 Subpart B. Non-hazardous waste facilities include those landfills or land application sites that receive or have received industrial waste, including sites subject to regulation under Subtitle D of RCRA. 40 CFR §445.1 lists exceptions that may apply. Landfill operations with coverage under the general permit should review the exceptions, particularly any facility where the landfill is operated by and limited to wastes generated by the permitted facility.

Airlines and Airports with 1,000 or More Annual Jet Departures: The draft ISGP retains the sampling and numeric effluent limits for certain air transportation facilities based on Airport Deicing Effluent Guidelines promulgated by the EPA May 16, 2012[10]. Airports with 1,000 or more annual jet departures are subject to new EPA technology-based numeric effluent limits for ammonia based on BAT and ELGs (40 CFR §9 and 449). Condition S5.C requires Permittees operating airlines and airports subject to provisions of 40 CFR §9 and 449 to comply with the following:

1. Permittees operating airlines and airports subject to provisions of 40 CFR §9 and 449 shall comply with the following:

   b. Airfield Pavement Deicing. Existing and new primary airports with 1,000 or more annual jet departures (annual non-propeller aircraft departures) that discharge wastewater

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[10] Effluent Limitations Guidelines and New Source Performance Standards for the Airport Deicing Category; Final Rule. Federal Register / Vol. 77 , No. 95 / Wednesday, May 16, 2012 / Rules and Regulations

associated with airfield pavement deicing commingled with stormwater must either use non-urea-containing deicers[11], or meet the effluent limit in Table 5 at every discharge point, prior to any dilution or any commingling with any non-deicing discharge.

Table 6: Effluent Limit Applicable to Airports Subject to 40 CFR §9 and 449 (Table 5 of draft permit)

Parameter	Units	Maximum Daily [a]	Analytical Method [b]	Laboratory Quantitation Level [c]	Minimum Sampling Frequency [d]
Total Ammonia (as N)	mg/L	14.7	SM4500-NH3-GH	0.02	1/quarter

a. Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day.

b. Or other equivalent *EPA*-approved method with the same or lower quantitation level.

c. The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR §136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report.

d. 1/quarter means at least one sample taken each quarter, year-round.

Conditionally Authorized and Prohibited Discharges

The draft ISGP retains Condition S5.D which authorizes the Permittee to discharge specific non-stormwater discharges, such as cooling tower mist and fire hydrant flush water, if certain conditions are met. Ecology based this permit condition on an identical condition in the MSGP.

Condition S5.E continues to prohibit the discharge of process wastewater or illicit discharges under this permit. Unless authorized by a separate NPDES or state waste discharge permit, prohibited discharges are considered violations of the ISGP.

S6. DISCHARGES TO IMPAIRED WATERS

The basis for water quality based effluent limitations for certain discharges 303(d)-listed waters is discussed previously in the fact sheet: *Consideration of Surface Water Quality-Basted Limits for Numeric Criteria - Condition S6.C. Water Quality-Based Effluent Limitations for Certain Discharges to Impaired Waters*.

The draft ISGP clarifies in S6.B that the restrictions on covering new discharges to impaired waterbodies applies to Category 5 waterbodies, as well as impaired waterbodies with an applicable TMDL (Category 4A), or a pollution control program for sediment cleanup (i.e., Category 4B sediment-impaired waterbody.

The draft permit retains the numeric and narrative effluent limitations from the previous permit for dischargers to sediment impaired waterbodies defined as a Puget Sound Sediment Cleanup Sites. These

[11] Affected Permittees must certify in its annual report that it does not use airfield deicing products that contain urea, or meet the numeric limit in Table 5 (Condition S9.B.4).

sites are, or will be, undergoing cleanup under the authority of the Model Toxics Control Act (MTCA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund.

In addition to meeting the 30 mg/L TSS numeric effluent limit, Permittees discharging to a Puget Sound Sediment Cleanup Site must also implement additional storm drain line cleaning BMPs, solids sampling, and reporting, per Condition S6.C.2.

The requirements for discharges to Puget Sound Sediment Cleanup Sites will: 1) reduce concentrations of sediment and other pollutants in stormwater discharges, and reduce the potential of discharges to cause or contribute to contamination or recontamination of Puget Sound Sediment Cleanup Sites; 2) Allow Ecology to screen for site-specific issues not adequately addressed by the ISGP, and determine if additional sampling, source control, and/or treatment is necessary; and 3) Gather baseline information that will inform the next (2025) version of the ISGP.

Discharges to Water Bodies with Applicable TMDLs

Condition S6.D requires a Permittee discharging to water bodies with applicable TMDLs to comply with any additional requirements listed on the coverage sheet attached to its permit. Specifically, S6.D requires the following:

1. The Permittee shall comply with applicable TMDL determinations. Applicable TMDLs or TMDL determinations are TMDLs which have been completed by the issuance date of this permit, or which have been completed prior to the date that the Permittee's application is received by Ecology, whichever is later. The Permittee’s requirements to comply with this condition will be listed on the letter of permit coverage.
2. TMDL requirements associated with TMDLs completed after the issuance date of this permit only become effective if they are imposed through an administrative order issued by Ecology.
3. Where Ecology has established a TMDL *wasteload allocation* and sampling requirements for the Permittee's discharge, the Permittee shall comply with all requirements of the TMDL as listed in Appendix 5.
4. Where Ecology has established a TMDL general wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not identified specific requirements, Ecology will assume the Permittee's compliance with the terms and conditions of the permit complies with the approved TMDL.
5. Where Ecology has not established a TMDL wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not excluded these discharges, Ecology will assume the Permittee's compliance with the terms and conditions of this permit complies with the approved TMDL.
6. Where a TMDL for a parameter present in the Permittee's discharge specifically precludes or prohibits discharges of stormwater associated with industrial activity, the Permittee is not eligible for coverage under this permit.

S7. INSPECTIONS

The draft ISGP retains the previous ISGP’s requirements for monthly visual inspections. The legal and technical basis for the ISGP inspection requirements established in WAC 173-220-210(1)(b) and 40 CFR

§122.48(b). RCW 90.48.55(8)(a)(ii) specifically requires this permit to include monitoring of stormwater discharges as part of the adaptive management program. Visual inspections are in important part of the discharge monitoring schedule, verification of BMP effectiveness, and adaptive management program.

S8. CORRECTIVE ACTIONS

The draft permit continues to utilize the previous ISGP's framework of stormwater sampling, benchmarks, and corrective actions to fulfill the adaptive management program required by RCW 90.48.555(8)(a). Facilities that exceed water quality-based numeric benchmark values (Special Condition S5.A&B) trigger incremental revisions to the facilities Stormwater Pollution Prevention Plan (SWPPP) to include additional Best Management Practices (BMPs).

The adaptive management mechanism requires monitoring, evaluation, and reporting requirements to ensure that stormwater discharges are controlled by adequate best management practices (BMPs) that prevent violations of water quality standards.

90.48.555(8)(a) stated that "…the adaptive management mechanism shall include elements designed to result in permit compliance and shall include, at a minimum, the following elements:

i. An adaptive management indicator, such as monitoring benchmarks;

ii. Monitoring;

iii. Review and revisions to the stormwater pollution prevention plan;

iv. Documentation of remedial actions taken; **and**

v. Reporting to the department."

90.48.555(8)(b) stated that the permit must include the "timing and mechanisms for implementation of treatment best management practices".

The permit continues the previous permits' adaptive management approach that requires facilities to monitor stormwater quality against several water quality-based benchmarks. The rationale for the selection and derivation of benchmark values for specific pollutant parameters is described in Special Condition S5.

This adaptive management program constitutes a water quality-based non-numeric (narrative) effluent limitation, as provided for in WAC 173-226-070(1)(d) and 40 CFR §122.44(k).

If the benchmark for a particular pollutant parameter is met, the discharge is presumed to not cause or contribute to a violation of water quality standards for that parameter. If a (water quality-based) benchmark is exceeded numerous times, the potential for a violation of water quality standards increases, and the facility is required to implement escalating levels of SWPPP review and the implementation of additional BMPs.

Since benchmark values are not numeric effluent limitations, discharges that exceed a benchmark value are not considered a permit violation or a violation of water quality standards. However, if a Permittee exceeds benchmarks that trigger a corrective action, but does not comply with the specific corrective action requirements in S8, it would be considered a permit violation. The PCHB affirmed the ISGP definition and use of benchmarks to drive corrective actions in its 2011 order on the ISGP:

"As we have repeatedly stated, while an exceedance of a benchmark is not, in and of itself, a violation of a water quality standard, the benchmarks are indicator values--values that are predictive of potential, or actual, water quality violations. PSA v. Northwest Marine Trade Assc.; Association of General Contractors v. Ecology, supra. A failure to meet benchmarks requires a Permittee to make continued efforts to improve application and performance of BMPs."[12]

The rationale for the derivation of benchmark values is provided in Special Condition S5.

If a benchmark is exceeded in a stormwater discharge, the draft permit requires the Permittee to take appropriate actions to identify and correct the problem(s) causing the benchmark exceedance. Compliance with these adaptive management actions ensures that:

1. Aquatic life and the other beneficial uses of state waters are likely protected by minimizing the concentrations and volumes of stormwater pollutants discharged into surface waters;
2. Permittees meet AKART; and
3. Permittees who discharge stormwater meet the intent of the Clean Water Act and Chapter 90.48 RCW.

The corrective action requirements and timelines in the draft ISGP were developed in consideration of Ecology's best professional judgment and experience with the previous permit cycles, 2008/2009 Industrial Stormwater Stakeholder Workgroup, and the 2011 and 2013 PCHB orders on the ISGP.

Implementation of Source Control and Treatment BMPs from Previous Permit

The draft permit continues the previous permit requirement to maintain forward progress towards meeting benchmarks with the implementation of corrective actions triggered during the previous permit cycles. No changes are proposed to this section:

> In addition to the Corrective Action Requirements of S8.B-D, Permittees shall implement any applicable Level 1, 2 or 3 Responses required by the previous Industrial Stormwater General Permit(s). Permittees shall continue to operate and/or maintain any source control or treatment BMPs related to Level 1, 2 or 3 Responses implemented prior to the effective date of this permit.

Level 1, 2 and 3 SWPPP Review and Certification

S8 requires Permittees who trigger a Level 1, 2 or 3 corrective action to review their SWPPP and ensure it is in full compliance with S3 (SWPPP), and contains the correct BMPs from the applicable Stormwater Management Manuals. This requirement is consistent with standard NPDES permit conditions described in 40 CFR §122.22 and is intended to ensure that the Permittee understands its responsibility to create and maintain a complete and accurate SWPPP. Permittees are allowed to appoint an authorized representative consistent with the regulations. Therefore, if a facility feels it is more appropriate for a member of the stormwater pollution prevention plan team to sign the documentation, that option is available under the permit. The signature requirement includes an acknowledgment that there are significant penalties for submitting false information.

Level 1

The draft permit continues the previous permit requirement for Level 1 Corrective Actions each time a benchmark is exceeded. These requirements and timelines are consistent with RCW 90.38.555(8)(a) and

[12] *PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order*

the 2011 PCHB Order on the appealed ISGP: "…the permit must include a reasonably short time frame within which a Permittee must initiate an investigation of a benchmark exceedence and revise its SWPPP accordingly…"[13]

Level 2

The draft permit continues the previous permit requirement for Level 2 Corrective Actions when Permittees exceed a (single) benchmark parameter[14] during any two quarters during a calendar year. These requirements and timelines are consistent with RCW 90.38.555(8)(a) and the 2011 PCHB Order on the appealed ISGP which required Ecology to shorten the 2010 ISGP's original Level 2 Deadline:

> "*We also conclude that the deadline for implementation of a Level 2 corrective action (September 30 of the following calendar year) is excessively long and must be shortened. As currently written, the timeframe provides a Permittee up to one and one half years of the five year permit cycle to implement a Level 2 corrective action, depending on when during the calendar year the benchmark exceedances occur*."[15]

In response to the 2011 PCHB order, public comments on the 2012 draft Modified ISGP, and consideration of 1) wet-weather construction constraints, 2) environmental impacts of working during the wet season (erosion, fish windows, wet weather paving, etc.), and 3) the potential for increased workload from Level 2 extension requests, Ecology implemented the PCHB ruling by shortening the Level 2 deadline from September 30, to August 31 (beginning in 2013). This deadline may be extended on a case by case basis by submitting a Modification of Coverage request by May 15 prior to the Level 2 deadline. In the draft ISGP, Ecology proposes to retain the same language: "…as soon as possible, but no later than August 31st the following year."

Draft Condition S8.C states:

Level Two Corrective Actions – Structural Source Control BMPs

Permittees that exceed an applicable benchmark value in Table 2, Table 3 and/or Table 7 (for a single parameter) for any two quarters during a calendar year shall complete a Level 2 Corrective Action in accordance with S8.C. Alternatively, the Permittee may skip Level 2 and complete a Level 3 Corrective Action in accordance with Condition S8.D.

1. Review the SWPPP and ensure that it fully complies with Permit Condition S3.
2. Make appropriate revisions to the SWPPP to include additional structural source control BMPs with the goal of achieving the applicable benchmark value(s) in future discharges.
3. Summarize the Level 2 Corrective Actions (planned or taken) in the Annual Report (Condition S9.B).
4. **Level 2 Deadline:** The Permittee shall sign/certify the SWPPP using the SWPPP Certification Form found on page 63 of this permit, and fully implement the revised SWPPP according to Permit Condition S3 and the applicable Stormwater Management Manual as soon as possible, but no later than August 31st the following year.

[13] PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order
[14] Based on the quarterly average of samples collected at the discharge point
[15] PCHB Nos. 09-135 through 09-141 Findings of Fact, Conclusions of Law, and Order

a. If installation of necessary structural source control BMPs is not feasible by August 31st the following year, Ecology may approve additional time, by approving a Modification of Permit Coverage.

b. If installation of structural source control BMPs is not feasible or not necessary to prevent discharges that may cause or contribute to a violation of a water quality standard, Ecology may waive the requirement for additional structural source control BMPs by approving a Modification of Permit Coverage.

c. To request a time extension or waiver, a Permittee shall submit a detailed explanation of why it is making the request (technical basis), and a Modification of Coverage form to Ecology in accordance with Condition S2.B, by May 15th prior to Level 2 Deadline. Ecology will approve or deny the request within 60 days of receipt of a complete Modification of Permit Coverage request.

d. While a time extension is in effect, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

For the year following the calendar year the Permittee triggered a Level 2 corrective action, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

Level 3

The draft permit continues the previous permit's emphasis on the installation of treatment BMPs at Corrective Action Level 3. The draft permit requires Permittees to make appropriate revisions to their SWPPP to include additional treatment BMPs with the goal of meeting the benchmarks.

RCW 90.48.555(8)(b) stated that the permit must include the "timing and mechanisms for implementation of treatment best management practices." The deadline for completing Level 3 Corrective Actions is "as soon as possible, but no later than September 30th the following year." The Level 3 timeframe was based upon Ecology best professional judgment, in consideration of a wide range of site conditions and treatment scenarios. The PCHB reviewed the Level 3 engineering report and corrective action timelines in 2013 and concluded, "The deadlines established by the permit are lawful and reasonable."[16] Ecology's draft ISGP continues to recognize that in some cases, it will be infeasible for the Permittee to meet the Level 3 deadline (e.g., due to local permitting delays, fish-windows, weather) so an extension of time may be requested and approved through a modification of permit coverage.

The draft permit also continues the previous permit's mechanism for Permittees to request a waiver from installing additional structural source control BMPs, if it is infeasible or not necessary to prevent violations of water quality standards. If approved, this waiver would be authorized through a modification of permit coverage.

Draft Condition S8.D states:

Level Three Corrective Actions – Treatment BMPs

Permittees that exceed an applicable benchmark value in Table 2, Table 3 and/or Table 7 (for a single parameter) for any three quarters during a calendar year shall complete a Level 3 Corrective Action in accordance with S8.D. A Level 2 Corrective Action is not required.

[16] PCHB No. 12-062c Order on Motions for Partial Summary Judgment

1. Review the SWPPP and ensure that it fully complies with Permit Condition S3.
2. Make appropriate revisions to the SWPPP to include additional treatment BMPs with the goal of achieving the applicable benchmark value(s) in future discharges. Revisions shall include additional operational and/or structural source control BMPs if necessary for proper performance and maintenance of treatment BMPs.

   A Qualified Industrial Stormwater Professional shall review the revised SWPPP, sign the SWPPP Certification Form, and certify that it is reasonably expected to meet the ISGP benchmarks upon implementation. Upon written request Ecology may, one time during the permit cycle, waive this requirement on a case-by-case basis if a Permittee demonstrates to Ecology's satisfaction that the proposed Level 3 treatment BMPs are reasonably expected to meet ISGP benchmarks upon implementation.
3. Before installing treatment BMPs that require the site-specific design or sizing of structures, equipment, or processes to collect, convey, treat, reclaim, or dispose of industrial stormwater, the Permittee shall submit an engineering report to Ecology for review.
   a. The engineering report must include:
      i. Brief summary of the treatment alternatives considered and why the proposed option was selected. Include cost estimates of ongoing operation and maintenance, including disposal of any spent media;
      ii. The basic design data, including characterization of stormwater influent, and sizing calculations of the treatment units;
      iii. A description of the treatment process and operation, including a flow diagram;
      iv. The amount and kind of chemicals used in the treatment process, if any. Note: Use of stormwater treatment chemicals requires submittal of Request for Chemical Treatment Form;
      v. Results to be expected from the treatment process including the predicted stormwater discharge characteristics;
      vi. A statement, expressing sound engineering justification through the use of pilot plant data, results from similar installations, and/or scientific evidence that the proposed treatment is reasonably expected to meet the permit benchmarks; and
      vii. Certification by a licensed professional engineer.
   b. The engineering report shall be submitted no later than the May 15th prior to the Level 3 deadline, unless an alternate due date is specified in an order.
   c. An Operation and Maintenance Manual (O&M Manual) shall be submitted to Ecology no later than 30 days after construction/installation is complete; unless an alternate due date is specified in an order.
4. Summarize the Level 3 Corrective Actions (planned or taken) in the Annual Report (Condition S9.B). Include information on how monitoring, assessment or evaluation information was (or will be) used to determine whether existing treatment BMPs will be modified/enhanced, or if new/additional treatment BMPs will be installed.
5. **Level 3 Deadline**: The Permittee shall sign/certify and fully implement the revised SWPPP according to Permit Condition S3 and the applicable Stormwater Management Manual as soon as possible, but no later than September 30th the following year.

a. If installation of necessary treatment BMPs is not feasible by the Level 3 Deadline; Ecology may approve additional time by approving a Modification of Permit Coverage.

b. If installation of treatment BMPs is not feasible or not necessary to prevent discharges that may cause or contribute to violation of a water quality standard, Ecology may waive the requirement for treatment BMPs by approving a Modification of Permit Coverage.

c. To request a time extension or waiver, a Permittee shall submit a detailed explanation of why it is making the request (technical basis), and a Modification of Coverage form to Ecology in accordance with Condition S2.B, by May 15th prior to the Level 3 Deadline. Ecology will approve or deny the request within 60 days of receipt of a complete Modification of Coverage request.

d. While a time extension is in effect, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

e. For the year following the calendar year the Permittee triggered a Level 3 corrective action, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

S9. REPORTING AND RECORDKEEPING REQUIREMENTS

The reporting and recordkeeping requirements of Special Conditions S9 are based on Ecology's authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges. Reporting of monitoring results are specified in 40 CFR §122.44(i)(3 and 4) and WAC 173-226-090(3). Discharge Monitoring Reports (DMRs) must be submitted to Ecology even if there was no discharge or if sampling was suspended based on consistent attainment of benchmark values. Recordkeeping requirements in the draft permit are specified in 40 CFR §122.41(j)(2) and WAC 173-220-210(2)(b). The requirements of Condition S9 will assure that Ecology records are maintained and demonstrate compliance with sampling requirements by the facility.

The draft permit proposes new requirements for all permit documents to be submitted electronically, using Ecology's (online) Water Quality Permitting Portal system, unless a waiver from electronic reporting has been granted (e.g., if a Permittee does not have internet access). If a waiver has been granted, DMRs must be postmarked or delivered to the following address by the due date:

Department of Ecology
Water Quality Program – Industrial Stormwater
PO Box 47696
Olympia, Washington 98504-7696

This proposed electronic requirement is expected to save time and resources for Permittees and Ecology (e.g., eliminating paperwork, data entry workload, database errors) while improving compliance and protection of water quality. It will also enhance transparency and public accountability, and provide a more level playing field among Permittees.

The electronic waiver provisions are intended to allow a paper option for certain small businesses that may not have the ability to use the Water Quality Permitting Portal system.

The requirement for electronic submittals makes progress with Ecology obligation to comply with EPA's proposed NPDES Electronic Reporting Rule (40 CFR §Parts 122, 123,127, 403, 501 and 503)[17].

The draft permit S9.B retains that DMRs are required each quarter, beginning with the first full quarter following permit coverage. This is based upon Ecology experience and is intended to solve problems with data management and Permittee confusion when permit coverage is granted mid-quarter. Ecology believes the change makes the DMR requirements more clear, enforceable, and reasonable.

The draft permit does add language that requires Permittees to submit a written explanation with their DMR if there was no sample taken or "No Discharge" explaining why the sample was missed or how there wasn't a discharge. Ecology has decided to add this requirement in order to gain a better understanding on the missing data from several Permittees.

The draft permit in S9.G has changed language related to the public access to the SWPPP requirements. The previous permit allowed Permittees the ability to give their SWPPP to Ecology for requestors to view. Ecology has learned that this was causing a conflict with public records laws and our requirements under those laws. Therefore, that language was deleted. In order to provide another avenue for SWPPP reviews, Ecology added the following language from EPA's MSGP:

> 3. If you provide a URL in your NOI where your SWPPP can be found, and maintain your current SWPPP at this URL, you will have complied with the public availability requirements for the SWPPP. To remain current, you must post any SWPPP modifications, records and other reporting elements required for the permit term at the same URL as the main body of the SWPPP.

S10. COMPLIANCE WITH STANDARDS

Condition S10 requires that discharges associated with industrial activity comply with all applicable state water quality and sediment management standards. Compliance with water quality standards is required in 40 CFR §122.44(d) and WAC 173-226-070(3)(a). Discharges that are not in compliance with these standards are not authorized by the permit and are subject to enforcement action.

In recognition of the difficulty stormwater presents in determining when a discharge is causing a water quality violation, the draft permit emphasizes BMPs, monitoring and corrective actions to prevent stormwater discharges from causing or contributing to violations of water quality standards. All Permittees are required to apply AKART, including the preparation and implementation of an adequate SWPPP, and the installation and maintenance of BMPs in accordance with the SWPPP and the terms and conditions of this permit.

To ensure compliance with the Clean Water Act, stormwater treatment systems must be properly designed, constructed, maintained, and operated to:

1. Prevent pollution of state waters and protect water quality, including compliance with state water quality standards;

[17] **Federal Register** Vol. 78, No. 146 Tuesday, July 30, 2013; website: http://www.gpo.gov/fdsys/pkg/FR-2013-07-30/pdf/2013-17551.pdf

2. Satisfy state requirements for all known available and reasonable methods of prevention, control and treatment (AKART) of wastes (including construction stormwater runoff) prior to discharge to waters of the state; and
3. Satisfy the federal technology based treatment requirements under 40 CFR §125.3.

Permittees must implement all the BMPs as identified in Special Condition S3, Stormwater Pollution Prevention Plan. Permittees must ensure that all BMPs are in place, operational, and routinely maintained. Treatment BMPs are also required for industrial activities that unavoidably lead to stormwater contamination or otherwise trigger a Level 3 Corrective Action. The SWMMs identify BMPs necessary to limit the exposure of stormwater to pollutants and in some cases to apply treatment. Ecology presumes that implementation of these BMPs will typically result in discharges of stormwater that will not violate water quality standards. If the prescribed BMPs fail to be protective, the Permittee must add additional BMPs to achieve compliance. Sampling and analysis provide an indication of when water quality violations may be a concern and additional BMPs required.

S11. PERMIT FEES

The Permittee must pay the permit fees assessed by Ecology, as established by Chapter 173-224 WAC and RCW 90.48.465(1), unless coverage is terminated or revoked.

S12. SOLID AND LIQUID WASTE MANAGEMENT

RCW 90.48.080 requires appropriate disposal of any organic or inorganic waste. This includes any wastes that are collected as a result of stormwater treatment. Maintenance of stormwater treatment facilities must include appropriate disposal of collected wastes. They must not be allowed to resuspended and discharged. The plan for appropriate collection and disposal of solid waste must be included in the stormwater pollution prevention plan.

S13. NOTICE OF TERMINATION (NOT)

The Permittee of record must comply with the terms and conditions of the permit unless the Permittee terminates coverage under the permit or transfers coverage to a new Permittee. A Permittee may terminate coverage by submitting the official Ecology form for termination of coverage.

The draft permit is proposing to add language that allows Ecology to determine if a discharge is no longer required to be covered. The termination conditions are as follows:

1. All permitted stormwater discharges associated with industrial activity that are authorized by this permit cease because the industrial activity has ceased, and no significant materials or industrial pollutants remain exposed to stormwater.
2. The party that is responsible for permit coverage (signatory to application) sells or otherwise legally transfers responsibility for the industrial activity.
3. All stormwater discharges associated with industrial activity are prevented because the stormwater is redirected to a sanitary sewer, or discharged to ground (e.g., infiltration).
4. Ecology determines that the discharges from the facility are no longer required to be covered under this permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all NPDES permits issued by the Ecology. Some of these conditions were developed for different types of discharges. Although Ecology is required by federal regulation to include them in the permit, they may not be strictly applicable.

Condition G1 requires discharges and activities authorized by the draft permit to be consistent with the terms and conditions of the permit in accordance with 40 CFR §122.41.

Condition G2 requires responsible officials or their designated representatives to sign submittals to Ecology in accordance with 40 CFR §122.22, 40 CFR §122.22(d), WAC 173-220-210(3)(b), and WAC 173-220-040(5).

Condition G3 requires the Permittee to allow Ecology to access the facility and conduct inspections of the facility and records related to the permit in accordance with 40 CFR §122.41(i), RCW 90.48.090, and WAC 173-220-150(1)(e).

Condition G4 identifies conditions that may result in modifying or revoking the general permit in accordance with 40 CFR §122.62, 40 CFR §124.5, and WAC 173-226-230.

Condition G5 identifies conditions for revoking coverage under the general permit in accordance with 40 CFR §122.62, 40 CFR §124.5, WAC 173-226-240, WAC 173-220-150(1)(d), and WAC 173-220-190.

Condition G6 requires the Permittee to notify Ecology when facility changes may require modification or revocation of permit coverage in accordance with 40 CFR §122.62(a), 40 CFR §122.41(l), WAC 173-220-150(1)(b), and WAC 173-201A-510(1).

Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations in accordance with 40 CFR §122.5(c).

Condition G8 requires the Permittee to reapply for coverage 180 days prior to the expiration date of this general permit in accordance with 40 CFR §122.21(d), 40 CFR §122.41(b), and WAC 183-220-180(2) (Note: This would only apply to long term projects or to sites with permit coverage near the time of permit expiration).

Condition G9 identifies the requirements for transfer of permit coverage in accordance with 40 CFR §122.41(l)(3) and WAC 173-220-200.

Condition G10 prohibits the reintroduction of removed substances back into the effluent in accordance with 40 CFR §125.3(g), RCW 90.48.010, RCW 90.48.080, WAC 173-220-130, and WAC 173-201A-240.

Condition G11 requires Permittees to submit additional information or records to Ecology when necessary in accordance with 40 CFR §122.41(h).

Condition G12 incorporates all other requirements of 40 CFR §122.41 and 122.42 by reference.

Condition G13 notifies the Permittee that additional monitoring requirements may be established by Ecology in accordance with 40 CFR §122.41(h).

Condition G14 describes the penalties for violating permit conditions in accordance with 40 CFR §122.41(a)(2).

Condition G15 provides the regulatory context and definition of “Upset” in accordance with 40 CFR §122.41(n).

Condition G16 specifies that the permit does not convey property rights in accordance with 40 CFR §122.41(g).

Condition G17 requires the Permittee to comply with all conditions of the permit in accordance with 40 CFR §122.41(a).

Condition G18 requires the Permittee to comply with more stringent toxic effluent standards or prohibitions established under Section 307(a) of the Clean Water Act in accordance with 40 CFR §122.41(a)(1), WAC 173-220-120(5), and WAC 173-201A-240.

Condition G19 describes the penalties associated with falsifying or tampering with monitoring devices or methods in accordance with 40 CFR §122.41(j)(5).

Condition G20 requires Permittees to report planned changes in accordance with 40 CFR §122.41(l)(1).

Condition G21 requires Permittees to report any relevant information omitted from the permit application in accordance with 40 CFR §122.41(l)(8).

Condition G22 requires Permittees to report anticipated non-compliances in accordance with 40 CFR §122.41(l)(2).

Condition G23 specifies that Permittees may request their general permit coverage be replaced by an individual permit in accordance with 40 CFR §122.62, 40 CFR §124.5, and WAC 173-220-040.

Condition G24 defines appeal options for the terms and conditions of the general permit and of coverage under the permit by an individual discharger in accordance with RCW 43.21B and WAC 173-226-190.

Condition G25 invokes severability of permit provisions in accordance with RCW 90.48.904.

Condition G26 prohibits bypass unless certain conditions exist in accordance with 40 CFR §122.41(m).

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for surface waters, sediment quality standards, or water quality standards for groundwaters, based on new information obtained from sources such as inspections, effluent sampling, and outfall studies.

Ecology may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This draft permit meets all statutory requirements for authorizing a stormwater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. Ecology proposes that this draft permit be issued for five (5) years.

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APPENDIX A - PUBLIC INVOLVEMENT INFORMATION

Ecology has tentatively determined to reissue the Industrial Stormwater General Permit to provide NPDES coverage to facilities engaged in industrial activities that are identified in Special Condition S1., Permit Coverage. The proposed (draft) permit will replace the current permit.

The draft Industrial Stormwater General Permit (ISGP), fact sheet, and application are available for review and public comment from **May 1 through June 29th, 2019**. Ecology will host informational workshops and public hearings on the draft permit. Ecology will accept written comments on the draft permit, fact sheet, and application or oral comments can be given at the public hearing.

Requesting Copies of the Permit
You may download copies of the draft permit, fact sheet, and application from the website: https://ecology.wa.gov/industrialstormwaterpermit. Or you may request copies from: Travis Porter at travis.porter@ecy.wa.gov , or (360) 407-6127.

Submitting Written and Oral Comments
Ecology will accept written and oral comments on the draft Industrial Stormwater General Permit, fact sheet, and application. Comments should reference specific text when possible. Comments may address the following:

- Technical issues
- Accuracy and completeness of information
- The scope of facilities proposed for coverage
- Adequacy of environmental protection and permit conditions
- Any other concern that would result from issuance of the revised permit

Ecology prefers comments be submitted by the eComment form located at: http://ws.ecology.commentinput.com/?id=k3Zx2.

Written comments must be postmarked or received via email no later than **June 29, 2019, midnight**.

Submit written, hard copy comments to:

Travis Porter
Department of Ecology
PO Box 47696
Olympia, WA 98504-7696

Interested parties may also provide oral comments by testifying at the public hearings.

Public Workshops
In May and June 2019, public workshops on the draft permit will be held in Olympia, Mount Vernon, Moses Lake, Vancouver WA, and Seattle. The purpose of the workshops is to explain the proposed changes to the permit. The date, time, and location of the six public workshops are posted on Ecology's Industrial Stormwater website: https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Industrial-stormwater-permit.

May 29, 2019 1 p.m. Public Workshop & Hearing	Water Resources Education Center 4600 SE Columbia Way Vancouver, WA 68661
June 4, 2019 1 p.m. Public Workshop & Hearing	Skagit Station Meeting Room 105 E. Kincaid Mount Vernon, WA 98273
Jun 6, 2019 1 p.m. Public Workshop & Hearing	Moses Lake Fire Station 701 E Third St. Moses Lake, WA 98837
June 18, 2019 1 p.m. Public Workshop & Hearing	South Seattle College – Georgetown Campus Gene J. Colin Education Hall – Building C Room C110/111 6737 Corson Avenue South Seattle, WA 98108
June 19, 2019 6 p.m Public Workshop and Hearing	Webinar Register for the webinar at https://bit.ly/2IsUsvZ
June 20, 2019 2 p.m. Public Workshop & Hearing	WA State Department of Ecology 300 Desmond Dr SE Lacey, WA 98503

Public Hearings

Ecology will host public hearings to provide an opportunity for interested parties to give formal oral testimony and comments on the draft permit. These public hearings will immediately follow the public workshops.

Issuing the Permit

After Ecology receives and considers all public comments, it will issue the final permit and a response to comments. Ecology expects to issue the final permit on November 19, 2019 with an effective date of January 1, 2020.

Further information may be obtained by contacting Lead Permit Writer, Travis Porter, at travis.porter@ecy.wa.gov, or (360) 407-6127, or by writing to Ecology's Olympia address listed above.

APPENDIX B - DEFINITIONS

Air Emission means a release of air contaminants into the ambient air.

AKART is an acronym for "all known, available, and reasonable methods of prevention, control, and treatment." AKART represents the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants and controlling pollution associated with a discharge.

Applicable TMDL means any TMDL which has been completed either before the issuance date of this permit or the date the Permittee first obtains coverage under this permit, whichever is later.

Benchmark means a pollutant concentration used as a permit threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. When pollutant concentrations exceed benchmarks, corrective action requirements take effect. Benchmark values are not water quality standards and are not numeric effluent limitations; they are indicator values.

Best Management Practices (BMPs - general definition) means schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In this permit BMPs are further categorized as operational source control, structural source control, erosion and sediment control, and treatment BMPs.

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

Clean Water Act **(CWA)** means the Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; USC 1251 et seq.

Combined Sewer means a sewer which has been designed to serve as a sanitary sewer and a storm sewer, and into which inflow is allowed by local ordinance.

Constructed Wetland means wetlands intentionally created, on sites that are not natural wetlands, for the primary purpose of wastewater or stormwater treatment and managed as such. Constructed wetlands are normally considered as part of the stormwater collection and treatment system.

Construction Activity means clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, industrial buildings, and demolition activity

Control Plan means a total maximum daily load (TMDL) determination, restrictions for the protection of state or federal threatened or endangered species, a groundwater management plan, or other limitations that regulate or set limits on discharges to a specific waterbody or groundwater recharge area.

Demonstrative Approach means stormwater BMPs that must be individually reviewed and approved by Ecology before they can be used by the Permittee. The demonstrative approach requires the Permittee to provide documentation (e. g., an engineering report) that the resulting discharge will be protective of receiving water quality.

Design Storm means the precipitation event that is used to design stormwater facilities. Refer to Ecology's Stormwater Management Manual for specific information on requirements for determining design storm volume and flow rate appropriate for designing stormwater treatment systems.

Design Storm Volume means the volume of runoff predicted to occur from a specified storm event. The storm event includes a time interval (e.g. 24-hours) and frequency (e.g. 6-month). Volume-based treatment BMPs use the design storm volume as their design basis. Refer to the Ecology Stormwater Management Manual for storm event and additional information.

Design Flow Rate means the flow rate at or below which a specified amount of the runoff volume will be treated. Flow rate-based treatment BMPs use the design flow rate (e.g. as estimated using an approved continuous runoff model) as their design basis. Refer to the Ecology Stormwater Management Manual to determine the appropriate flow rate and for additional information.

Detention means the temporary storage of stormwater to improve quality and/or to reduce the mass flow rate of discharge.

Discharge [of a pollutant] means any addition of any pollutant or combination of pollutants to waters of the United States from any point source. This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Discharger means an owner or operator of any facility, operation, or activity subject to regulation under Chapter 90.48 RCW or the Federal Clean Water Act.

Domestic Wastewater means water carrying human wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with such groundwater infiltration or surface waters as may be present.

Ecology means the Washington State Department of Ecology.

EPA means the United States Environmental Protection Agency.

Equivalent BMPs means operational, source control, treatment, or innovative BMPs which result in equal or better quality of stormwater discharge to surface water or to groundwater than BMPs selected from the SWMM.

Equivalent Stormwater Management Manual means a manual that has been determined by Ecology as being equivalent to the SWMM.

Erosion means the wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

Erosion and Sediment Control BMPs means BMPs that are intended to prevent erosion and sedimentation, such as preserving natural vegetation, seeding, mulching and matting, plastic covering, filter fences, and sediment traps and ponds.

Erosion and Sediment Control Plan means a document which describes the potential for erosion and sedimentation problems, and explains and illustrates the measures which are to be taken to control those problems.

Existing Facility means a facility that was in operation prior to the effective date of this permit. It also includes any facility that is not categorically included for coverage but is in operation when identified by Ecology as a significant contributor of pollutants.

Facility means any establishment (including land or appurtenances thereto) that is subject to regulation under this permit. See Special Condition S1.

Final Stabilization means the completion of all soil-disturbing activities at the site and the establishment of a permanent vegetative cover, or equivalent permanent stabilization measures (such as riprap, gabions or geotextiles) which will prevent erosion.

40 CFR §means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

General Permit means a single permit that covers multiple characteristically similar dischargers of a point source category within a designated geographical area, in lieu of many individual permits that are issued separately to each discharger.

Groundwater means water in a saturated zone or stratum beneath the land surface or a surface waterbody.

Illicit Discharge means any discharge that is not composed entirely of stormwater except (1) discharges authorized pursuant to a separate NPDES permit, or (2) conditionally authorized non-stormwater discharges identified in Condition S5.D.

Inactive and Unstaffed Site means a facility at which no industrial activity, production, or any auxiliary operation occurs and the facility has no assigned staff. A site may be “unstaffed” even when security personnel are present, provided that pollutant generating activities are not included in their duties.

Industrial Activity means (1) the 11 categories of industrial activities identified in 40 CFR §122.26(b)(14)(i-xi) that must apply for either coverage under this permit or no exposure certification, or (2) any facility identified by Ecology as a significant contributor of pollutants. Table 1 lists the 11 categories of industrial activities identified in 40 CFR §122.26(b)(14)(i-xi) in a different format.

Land Application Site means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application site, surface impoundment, injection well, or waste pile.

Leachate means water or other liquid that has percolated through raw material, product or waste and contains substances in solution or suspension as a result of the contact with these materials.

Listed Waters – see *Water body segments listed as Impaired - 303(d)*

Local Government means any county, city, or town having its own government for local affairs.

Municipality means a political unit such as a city, town or county; incorporated for local self-government.

North American Industry Classification System (NAICS) means the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. It was developed jointly by the U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's Instituto Nacional de Estadistica y Geografia to allow for a high level of comparability in business statistics among the North American countries.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking, and reissuing, terminating, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington Department of Ecology.

New Facility means a facility that begins activities that result in a discharge or a potential discharge to waters of the state on or after the effective date of this general permit.

Noncontact Cooling Water means water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

Notice of Termination **(NOT)** means a request for termination of coverage under this general permit as specified by Special Condition S11 of this permit.

Operational BMPs means schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the pollution of waters of the state. Not included are BMPs that require construction of pollution control devices.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure and container from which pollutants are or may be discharged to surface waters of the state. This term does not include return flows from irrigated agriculture. (See Fact Sheet for further explanation.)

Pollutant means the discharge of any of the following to waters of the state: dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, domestic sewage sludge (biosolids), munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste. This term does not include sewage from vessels within the meaning of section 312 of the FWPCA nor does it include dredged or fill material discharged in accordance with a permit issued under section 404 of the FWPCA.

Pollution means contamination or other alteration of the physical, chemical, or biological properties of waters of the state; including change in temperature, taste, color, turbidity, or odor of the waters; or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety or welfare; or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or to livestock, wild animals, birds, fish, or other aquatic life.

Presumptive Approach means the use of stormwater BMPs, pre-approved by Ecology, that are based on current science and are assumed to be protective of receiving water quality. Approved BMPs may be found in the Eastern Washington SWMM and Western Washington SWMM.

Process Wastewater means any non-stormwater which, during manufacturing or processing, comes into direct contact or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. If stormwater commingles with process wastewater, the commingled water is considered process wastewater.

Puget Sound Sediment Cleanup Site means: Category 4B (Sediment) portions of Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway (including East and West Waterway), Eagle Harbor, Elliot Bay, Hood Canal (North), Liberty Bay, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway; Category 5 (Sediment) portions of the Duwamish Waterway; Category 4A (Sediment) portions of Bellingham Bay (Inner); and the Everett/Port Gardener and Port Angeles Harbor sediment cleanup areas, as mapped on Ecology's ISGP website. All references to Category 4A, 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment.

Reasonable Potential means the likely probability for pollutants in the discharge to exceed the applicable water quality criteria in the receiving waterbody.

Receiving Water or Water Body means the water body at the point of discharge. If the discharge is to a storm sewer system, either surface or subsurface, the receiving water is the water body that the storm sewer system discharges to. Systems designed primarily for other purposes such as for groundwater drainage, redirecting stream natural flows, or for conveyance of irrigation water/return flows that coincidentally convey stormwater are considered the receiving water.

Regular Business Hours means those time frames when the facility is engaged in its primary production process, but does not include additional shifts or weekends when partial staffing is at the site primarily for maintenance and incidental production activities. Regular business hours do not include periods of time that the facility is inactive and unstaffed.

Representative [sample] means a sample of the discharge that accurately characterizes stormwater runoff generated in the designated drainage area of the facility.

Runoff means that portion of rainfall or snowmelt water not absorbed into the ground that becomes surface flow.

Sanitary Sewer means a sewer which is designed to convey domestic wastewater.

Sediment means the fragmented material that originates from the weathering and erosion of rocks, unconsolidated deposits, or unpaved yards, and is transported by, suspended in, or deposited by water.

Sedimentation means the depositing or formation of sediment.

Severe Property Damage means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

Significant Amount means an amount of a pollutant in a discharge that is amenable to available and reasonable methods of prevention, control, or treatment; or an amount of a pollutant that has a reasonable potential to cause a violation of surface or groundwater quality standards or sediment management standards.

Significant Contributor of Pollutant(s) means a facility determined by Ecology to be a contributor of a significant amount(s) of a pollutant(s) to waters of the state.

Significant Materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges.

Significant Process Change means any modification of the facility that would result in any of the following:

1. Add different pollutants in a significant amount to the discharge.
2. Increase the pollutants in the stormwater discharge by a significant amount.
3. Add a new industrial activity (SIC) that was not previously covered.
4. Add additional impervious surface or acreage such that stormwater discharge would be increased by 25% or more.

Site means the land or water area where any "facility or activity" is physically located or conducted.

Source Control BMPs means structures or operations that are intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. This permit separates source control into two types: structural source control BMPs and operational source control BMPs.

Stabilization means the application of appropriate BMPs to prevent the erosion of soils, such as, temporary and permanent seeding, vegetative covers, mulching and matting, plastic covering and sodding. See also the definition of Erosion and Sediment Control BMPs.

Standard Industrial Classification (SIC) is the statistical classification standard underlying all establishment-based federal economic statistics classified by industry as reported in the 1987 SIC Manual by the Office of Management and Budget.

State Environmental Policy Act (SEPA) means the Washington State Law, RCW 43.21C.020, intended to prevent or eliminate damage to the environment.

Storm Drain means any constructed inlet that drains directly into a storm sewer system, usually found along roadways or in parking lots.

Storm Sewer means a sewer that is specifically designed to carry stormwater.

Stormwater Discharge Associated with Industrial Activity means the discharge from any conveyance that is used for collecting and conveying stormwater and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant (see 40 CFR §122(b)(14). It may also, on a case-by-case basis, include stormwater from any portion of an industrial site subject to pollutants of a significant amount.

Stormwater Drainage System means constructed and natural features which function together as a system to collect, convey, channel, hold, inhibit, retain, detain, infiltrate or divert stormwater.

Stormwater Management Manual (SWMM) or Manual means the technical manuals prepared by Ecology for stormwater management in western and eastern Washington.

Stormwater Pollution Prevention Plan (SWPPP) means a documented plan to implement measures to identify, prevent, and control the contamination of point source discharges of stormwater.

Surface Waters of the State includes lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the jurisdiction of the state.

Total Maximum Daily Load (TMDL) means a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet state water quality standards. Percentages of the total maximum daily load are allocated to the various pollutant sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The TMDL calculations include a "margin of safety" to ensure that the waterbody can be protected in case there are unforeseen events or unknown sources of the pollutant. The calculation also accounts for seasonable variation in water quality.

Treatment BMPs means BMPs that are intended to remove pollutants from stormwater. A few examples of treatment BMPs are detention ponds, oil/water separators, biofiltration, media filtration, and constructed wetlands.

Turbidity means the optical property of water that causes light to be scattered and absorbed rather than transmitted in a straight line. Turbidity in water is caused by suspended matter, such as clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. Turbidity is a measure of water clarity using a calibrated turbidimeter according to the analytical procedure described typically by Standard Methods for the Examination of Water and Wastewater, Method 2130 B.

Uncontrolled Sanitary Landfill means a landfill or open dump, whether in operation or closed, that does not meet the requirements for runon and runoff controls established pursuant to subtitle D of the Solid Waste Disposal Act.

Underground Injection Control Well means a well that is used to discharge fluids into the subsurface. An underground injection control well is one of the following:

1. A bored, drilled, or driven shaft,
2. An improved sinkhole, or
3. A subsurface fluid distribution system.

Unstaffed means the facility has no assigned staff. A site may be "unstaffed" even when security personnel are present, provided that pollutant generating activities are not included in their duties.

Vehicle means a motor-driven conveyance that transports people or freight, such as an automobile, truck, train or airplane.

Wasteload Allocation means means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality based effluent limitation (40 CFR §130.2(h)).

Water Quality Standards means the Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC, Groundwater Quality Standards (Chapter 173-200 WAC), Sediment Management Standards (Chapter 173-204 WAC), and human health-based criteria in the federal human health criteria for Washington (40 CFR §131.45).

Water body segments listed as Impaired - 303(d) means the specific segment or grid of a water body that was listed by the State as required under Section 303(d) of the Clean Water Act. The most current list of impaired waters is the applicable list.

Waters of the State includes those waters defined as "waters of the United States" in 40 CFR §122.2 within the geographic boundaries of Washington State. State statute defines "waters of the state" to include lakes, rivers, ponds, streams, wetlands, inland waters, undergroundwaters, salt waters and all other surface waters and water courses within the jurisdiction of the state of Washington (Chapter 90.48 RCW).

APPENDIX C - SUMMARY OF 2010-2013 DMR DATA

Appendix C contains statistical summaries of DMRs submitted by ISGP facilities during the previous permit cycle. These data were initially entered into Ecology's Permit and Reporting Information System (PARIS) database. The data characterize stormwater sampling conducted by Permittees over 4 years (16 quarters); the first quarter of 2015 through the 4th quarter of 2018. The Appendix D DMR summary tables are grouped by industrial sectors and SIC codes. The sector-specific summary tables indicate the mean (average), minimum, median and maximum concentrations for each pollutant parameter analyzed. While the mean and median values are both provided in the summary tables, Ecology considers the median to be a better measure of central tendency, because stormwater data are typically not normally distributed.

Data Clean-Up and Review Methods

The first step of this data review was to extract relevant data from the PARIS database. Ecology performed a "DMR Search by Industry Code" query of the database to obtain all monitoring data associated with industrial stormwater general permits between January 1, 2015, and December 31, 2018, for the 38 specific SIC codes (21 SIC code groups) listed in Table 1 of the ISGP. This data review focused on only those parameters with numerical benchmarks and results, listed in Table 2 of the permit. The ISGP required monitoring of specific parameters by specific industries, as illustrated in Table 3 of the permit.

The second step of data review entailed data cleanup: the deletion or substitution of specific records. Data cleanup actions are identified below:

- Deleted null records and other records for which existed neither sampling data nor an explanation or indication of noncompliance with the permit reporting requirements.
- Deleted obviously replicated results.
- Deleted obviously incorrect results, such as negative concentrations and pH values that did not lie within the range of 0 through 14 standard units (S.U.).
- Deleted records that did not contain a result apparently due to "consistent attainment of the benchmark" as allowed in the ISGP.
- Replaced non-detect (ND) results (sometimes referred to as "censored data") with one-half the reported reporting limit for all parameters except copper for Western Washington (copper-west). If a record did not indicate a numerical reporting limit, Ecology used one-half of an assumed reporting limit, which was based on typical recently reported reporting limits.
- Replaced "greater than" values with a specific numerical result equal to the "greater than" value.

The final step of this data review was to calculate summary statistics for the reported and cleaned-up data. Ecology employed simple arithmetic calculations to determine average and median concentrations. Summary statistics are presented in Tables C-01 through C-21.

LIST OF TABLES IN APPENDIX C

Table C-1: Summary Statistics for DMR Results from 2015 through 2018 for the Metals Mining Category*
(SIC Codes 10xx, 12xx, 13xx, and 14xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	46	1.89	0.18	1.40	13.4
Total Lead (ug/L)	16	0.38	0.01	0.175	2
TPH-Dx (mg/L)	18	0.46	0.05	0.18	5.0
pH (S.U.)	90	6.87	6.10	6.90	7.91
Turbidity (NTU)	54	7.29	0.31	4.70	60
Total Zinc (ug/L)	56	3.93	0.50	1.63	45.0

Table C-2: Summary Statistics for DMR Results from 2015 through 2018 for the Food, Tobacco, and Kindred Products Category*
(SIC Codes 20xx and 21xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration	
BOD_5 (mg/L)	1137	16.41	0.01	4.0	3620	*
Total Copper (ug/L)	1197	9.05	0.001	5.0	230	
Nitrate+Nitrite, as N (mg/L)	1170	0.42	0.0015	0.15	12.45	
pH (S.U.)	1024	6.74	4.0	6.85	9	
Total Phosphorus (mg/L)	1136	0.35	0.005	0.1	25.3	
Turbidity (NTU)	1185	19.2	0.02	8.04	1000	
Total Zinc (ug/L)	1219	103.87	0.001	50.2	4740	

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-3: Summary Statistics for the DMR Results from 2015 through 2018 for the Textiles, Apparel, Furniture, Printing, Leather, and Others Category* (SIC Codes 22xx, 23xx, 25xx, 27xx, 31xx, 39xx, et al.)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	158	9.55	0.02	4.59	200
pH (S.U.)	145	6.98	5.0	7	8.62
Turbidity (NTU)	159	13.39	0.1	8.7	94.8
Total Zinc (ug/L)	162	193.08	0.2	65.05	3300

Table C-4: Summary Statistics for DMR Results from 2015 through 2018 for the Lumber and Wood Products Category* (SIC Code 24xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
COD (mg/L)	1782	77.26	0.2	35.2	2960
Total Copper (ug/L)	1717	8.41	0.00096	4.2	595
pH (S.U.)	1691	6.58	0.5	6.725	9.8
TSS (mg/L)	1704	31.83	0.1	13.0	1200
Turbidity (NTU)	1793	28.16	0.02	11.0	1650
Total Zinc (ug/L)	1760	61.61	0.0019	33.0	2000

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-5: Summary Statistics for DMR Results from 2015 through 2018 for the Paper and Allied Products Category* (SIC Code 26xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
COD (mg/L)	181	24.57	1.0	16.5	310
Total Copper (ug/L)	181	10.62	0.3	5	160
pH (S.U.)	181	6.79	4.5	6.8	9
TSS (mg/L)	181	75.66	0.5	15	4500
Turbidity (NTU)	181	13.77	0.1	5.7	270
Total Zinc (ug/L)	194	91.97	5.0	57.4	1200

Table C-6: Summary Statistics for DMR Results from 2015 through 2018 for the Chemicals and Allied Products Category* (SIC Code 28xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
BOD5 (mg/L)	533	15.16	1.0	2.65	1200
Total Copper (ug/L)	552	8.72	0.002	4.66	133
Nitrate+Nitrite, as N (mg/L)	549	0.42	0.01	0.17	8.19
pH (S.U.)	518	6.82	3.69	6.84	8.97
Total Phosphorus (mg/L)	531	0.44	0.005	0.07	13
Turbidity (NTU)	559	19.07	0.1	8.3	470
Total Zinc (ug/L)	564	87.25	0.03	48.75	970

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-7: Summary Statistics for DMR Results from 2015 through 2018 for the Petroleum Bulk Stations and Terminals Category* (SIC Codes 29xx and 5171)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	560	13.65	0.001	55	750
TPH-Dx (mg/L)	563	29.17	0.013	0.09	3400
pH (S.U.)	535	7.15	5	7.1	9.1
Turbidity (NTU)	575	25.42	0.2	10	3000
Total Zinc (ug/L)	580	102.07	0.009	45	3800

Table C-8: Summary Statistics for DMR Results from 2015 through 2018 for the Rubber and Miscellaneous Products Category* (SIC Code 30xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	596	9.20	0.0006	4.73	150
pH (S.U.)	569	6.73	3.4	6.8	9.7
Turbidity (NTU)	615	16.55	0.17	7.95	1100
Total Zinc (ug/L)	593	100.84	0.014	47.15	4200

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C- 9: Summary Statistics for DMR Results from 2015 through 2018 for the Stone, Clay, Glass, and Concrete Products Category* (SIC Code 32xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	434	24.99	0.003	7.08	520
pH (S.U.)	448	7.05	1.82	7.11	9.44
Turbidity (NTU)	456	36.87	0.05	9.55	1200
Total Zinc (ug/L)	467	177.46	0.015	74.4	3300

Table C-10: Summary Statistics for DMR Results from 2015 through 2018 for the Primary Metal Industries Category* (SIC Code 33xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	362	20.88	0.0026	5	1300
Total Lead (ug/L)	333	20.99	0.001	0.25	2300
TPH-Dx (mg/L)	330	18.25	0.1	0.11	1700
pH (S.U.)	336	6.92	4	6.9	9.43
Turbidity (NTU)	350	11.71	0.19	4.15	681
Total Zinc (ug/L)	371	143.94	0.061	36.2	3400

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-11: Summary Statistics for DMR Results from 2015 through 2018 for the Fabricated Metal Products Category* (SIC Code 34xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	1582	33.75	0.001	6	21959
Total Lead (ug/L)	1534	5.39	0.0001	0.69	772
TPH-Dx (mg/L)	1528	7.23	0.01	0.1	2900
pH (S.U.)	1510	6.95	2.8	6.94	8.8
Turbidity (NTU)	1570	17.41	0.01	5.6	3000
Total Zinc (ug/L)	1,277	1580	0.002	54	41900

Table C-12: Summary Statistics for DMR Results from 2015 through 2018 for the Industrial and Commercial Machinery and Computer and Electrical Equipment Category* (SIC Codes 35xx, 36xx, and 38xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	666	9.92	0.002	5	150
pH (S.U.)	658	6.70	1.81	6.8	8.9
Turbidity (NTU)	665	17.41	0.17	6.8	681
Total Zinc (ug/L)	678	97.44	0.02	45.4	2100

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-13: Summary Statistics for DMR Results from 2015 through 2018 for the Transportation Equipment Category* (SIC Code 37xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	2262	9.75	0.001	5	470
pH (S.U.)	2147	6.82	1.81	6.83	8.95
Turbidity (NTU)	2242	8.96	0.1	4.94	122
Total Zinc (ug/L)	2294	85.27	0.01	46.3	2340

Table C-14: Summary Statistics for DMR Results from 2015 through 2018 for the Railroad Transportation Category* (SIC Code 40xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	478	11.33	0.03	6	694
TPH-Dx (mg/L)	464	55.88	0.006	0.17	18900
pH (S.U.)	454	7.0	5	7	8.96
Turbidity (NTU)	492	37.88	0.25	12.33	6400
Total Zinc (ug/L)	487	117.55	0.3	59	3600

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C-15: Summary Statistics for DMR Results from 2015 through 2018 for the Local and Suburban Transit and Interurban Passenger Transport Category* (SIC Codes 41xx and 43xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	468	9.07	0.004	5.47	108
TPH-Dx (mg/L)	455	28.58	0.005	0.14	6700
pH (S.U.)	408	6.67	2.66	6.8	9.67
Turbidity (NTU)	461	13.73	0.1	7.3	341
Total Zinc (ug/L)	466	82.53	0.03	51.25	3780

Table C-16: Summary Statistics for DMR Results from 2015 through 2018 for the Motor Freight Transport and Storage Category* (SIC Code 42xx, excluding those in the next table)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	2042	13.81	0.002	6.4	1810
TPH-Dx (mg/L)	1906	23.05	0.01	0.29	18900
pH (S.U.)	1965	6.81	3.69	6.88	9.1
Turbidity (NTU)	2070	28.61	0.02	11.8	1280.3
Total Zinc (ug/L)	2089	104.75	0.005	57	4260

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission

Table C-17: Summary Statistics for DMR Results from 2015 through 2018 for the Farm Product, Refrigerated, and General Storage Category* (SIC Codes 4221, 4222, and 4225)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	2007	13.24	0.002	5.81	749
pH (S.U.)	1862	6.88	2.2	7	9.71
Turbidity (NTU)	2139	19.28	0.02	8.9	1104
Total Zinc (ug/L)	1985	100.25	0.002	48.8	6100

Table C-18: Summary Statistics for DMR Results from 2015 through 2018 for Water Transportation Category* (SIC Code 44xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	2105	18.49	0.001	8.35	1060
TPH-Dx (mg/L)	1939	11.61	0.01	0.26	9000
pH (S.U.)	2013	7.10	2.05	7.08	8.92
Turbidity (NTU)	2066	28.55	0.02	8.81	3000
Total Zinc (ug/L)	2165	171.62	0.01	123	5490

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission

Table C- 19: Summary Statistics for DMR Results from 2015 through 2018 for Air Transportation Category* (SIC Code 45xx)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Ammonia, as N (mg/L)	72	0.24	0.01	0.15	2.23
BOD5 (mg/L)	64	2.55	1.0	2	15
COD (mg/L)	76	19.35	0.003	16	78.2
Total Copper (ug/L)	576	6.12	0.0004	4.01	91.1
Nitrate+Nitrite, as N (mg/L)	66	1.05	0.05	0.30	48
TPH-Dx (mg/L)	145	1.06	0.01	0.12	9.62
pH (S.U.)	493	6.85	2.31	7	9.22
Turbidity (NTU)	586	25.99	0.03	5.01	5740
Total Zinc (ug/L)	573	43.81	0.003	21.3	1440

Table C- 20: Summary Statistics for DMR Results from 2015 through 2018 for the Treatment Works and Landfills Category* (SIC Codes 4952 and 4953)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	1016	10.66	0.01	6	467
pH (S.U.)	1243	7.08	5.2	7	9.71
Turbidity (NTU)	1216	25.61	0.01	9.19	4400
Total Zinc (ug/L)	1091	58.70	0.035	29.1	2940

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

Table C- 21: Summary Statistics for DMR Results from 2015 through 2018 for the Auto Salvage and Scrap Recycling Category* (SIC Codes 5015 and 5093)

Parameter	Number of Numeric Results	Average Concentration	Minimum Concentration	Median Concentration	Maximum Concentration
Total Copper (ug/L)	1160	33.97	0.002	7.53	5630
Total Lead (ug/L)	1137	17.73	0.0001	1.9	1880
TPH-Dx (mg/L)	1141	2.98	0.01	0.2	582
pH (S.U.)	1112	6.83	3.47	7	9
Turbidity (NTU)	1162	30.72	0.01	9.83	1900
Total Zinc (ug/L)	1180	108.60	0.006	33.6	4070

* Number of numeric results and concentrations are based upon single sample data.

Numeric results include both "detect" and "non-detect" results, but exclude results where there was no sample collected, no discharge, no qualifying storm event, or no DMR submission.

APPENDIX D - RESPONSE TO COMMENTS

Errata

For the Industrial Stormwater General Permit Issued on November 20, 2019 and effective on January 1, 2020.

November 25, 2019

Ecology corrected S6.C.2. Footnote 6. Footnote 6 defines the Puget Sound Sediment Cleanup Sites. Ecology has added Oakland Bay/Shelton Harbor to the list.

[6] ***Puget Sound Sediment Cleanup Site*** means: Category 4B (Sediment) portions of Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway (including East and West Waterway), Eagle Harbor, Elliot Bay, Hood Canal (North), Liberty Bay, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway; Category 5 (Sediment) portions of the Duwamish Waterway; Category 4A (Sediment) portions of Bellingham Bay (Inner); and the Everett/Port Gardener, Oakland Bay/Shelton Harbor, and Port Angeles Harbor sediment cleanup areas, as mapped on Ecology's ISGP website. All references to Category 4A, 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment.

December 17, 2019

Ecology corrected two typos in Table 3. The changes are marked with underlined blue text and strikethrough red text. The two typos were leaving off the NAICS code 113310 in the Wood Product Manufacturing category and transposing two numbers on the Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing category.

Table 1: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries (screenshot of changes in table)

Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
5. Timber Product Industry (321xxx), Paper and Allied Products (322xxx), Wood Product Manufacturing (321xxx,113310)					
COD	mg/L	120	SM5220-D	10	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
6. Transportation (482xxx-485xxx), Petroleum Bulk Stations and Terminals (4247xx), Transportation Equipment Manufacturing (336xxx), Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing (~~53421~~53241x)					
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
7. Coal Mining (2121xx), Oil and Gas Extraction (2111xx), Nonmetallic Mining and Quarrying, except Fuels (2123xx), Petroleum and Coal Products Manufacturing (324xxx), Nonmetallic Mineral Product Manufacturing (327xxx), Steam Electric					

Issuance Date:	November 20, 2019
Effective Date:	January 1, 2020
Expiration Date:	December 31, 2024

INDUSTRIAL STORMWATER GENERAL PERMIT

A National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated With Industrial Activities

State of Washington
Department of Ecology
Olympia, Washington 98504-7600

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1251 et seq.

Until this permit expires, is modified or revoked, Permittees that have properly obtained coverage under this general permit are authorized to discharge in accordance with the special and general conditions which follow.

Heather R. Bartlett

Heather R. Bartlett
Water Quality Program Manager
Washington State Department of Ecology

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LIST OF TABLES

SUMMARY OF PERMIT REPORTS & SUBMITTALS

Permit Section	Submittal	Frequency	Due Date(s)
S1.F	Conditional "No Exposure" Certification (CNE) Form	As necessary	As necessary, with renewals every 5 years
S2.A	Application for Permit Coverage	As necessary	As necessary
S2.B	Request Modification of Permit Coverage	As necessary	As necessary
S2.D	Request Transfer of Coverage	As necessary	As necessary
S8.D	Level 3 Engineering Report	As necessary	May 15th, prior to Level 3 deadline[1]
S8.D	Level 3 O&M Manual	As necessary	30 days after Level 3 installation
S9.B	Discharge Monitoring Reports (DMRs)	1/quarter	February 15th May 15th August 15th November 15th
S9.C	Annual Report	1/year	May 15th
S9.D	SWPPP, if requested by Ecology	Per Ecology request	Within 14 days of request
S9.F	Noncompliance Notification	As necessary	Within 30 days of noncompliance event
G8	Duty to Reapply	1/permit cycle	July 3, 2024

The text of this permit contains words or phrases in ***bold and italics***. These words or phrases are the first usage in the permit and are defined in Appendix 2.

[1] Unless an alternate due date is specified in an order

SUMMARY OF REQUIRED ONSITE DOCUMENTATION[2]

Permit Condition(s)	Document Title
S3	Stormwater Pollution Prevention Plan (SWPPP)[3]
S9.C	Copies of Annual Reports
S9.D.1.a	Copy of Permit
S9.D.1.b	Copy of Permit Coverage Letter
S9.D.1.c	Original Sampling Records (Field Notes and Laboratory Reports)
S7.C & S9.D.1.d	Site Inspection Reports
S9.D.1.j	Copies of Discharge Monitoring Reports (DMRs)

[2] A complete list is contained in Condition S9.D. The Permittee shall make all plans, documents and records required by this permit immediately available to Ecology or the local jurisdiction upon request.

[3] With signed and completed SWPPP Certification Form(s) – see Appendix 3

SPECIAL CONDITIONS

S1. PERMIT COVERAGE

A. Facilities Required to Seek Coverage Under This General Permit

This statewide permit applies to ***facilities*** conducting ***industrial activities*** that discharge ***stormwater*** to a surface waterbody or to a ***storm sewer*** system that drains to a surface waterbody. Beginning on the effective date of this permit and lasting through its expiration date, the Permittee is authorized to discharge stormwater and conditionally approved non-stormwater ***discharges*** to ***waters of the State***. All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit.

The permit requires coverage for private entities, state, and ***local government*** facilities, and includes ***existing facilities*** and ***new facilities***. Facilities conducting industrial activities listed in Table 1 or referenced in S1.A.3 shall apply for coverage under this permit or apply for a Conditional No Exposure exemption, if eligible (Condition S1.F). The ***Department of Ecology (Ecology)*** may also require permit coverage for any facility on a case-by-case basis in order to protect waters of the State (Condition S1.B).

1. Facilities engaged in any industrial activities in Table 1 shall apply for coverage if stormwater from the facility discharges to a surface waterbody, or to a storm sewer system that discharges to a surface waterbody. The ***North American Industry Classification System (NAICS)*** groups generally, but not always, associated with these activities are listed in Table 1.

Table 1: Activities Requiring Permit Coverage and the Associated NAICS Groups

Industrial Activities	NAICS Groups
Metal Ore Mining	2122xx
Coal Mining	2121xx
Oil and Gas Extraction	2111xx
Nonmetallic Mineral Mining and Quarrying, except Fuels (except facilities covered under the Sand and Gravel General Permit)	2123xx
Food, Beverage, and Tobacco Manufacturing	311xxx-312xxx
Textile and Textile Products Mills	313xxx-314xxx
Apparel Manufacturing	315xxx
Wood Products Manufacturing	321xxx, 113310 [a]
Furniture and Related Product Manufacturing	337xxx
Paper Manufacturing	322xxx
Printing and Related Support Activities	323xxx, 5111xx

Industrial Activities	NAICS Groups
Chemicals Manufacturing (including Compost Facilities)	325xxx
Petroleum and Coal Products Manufacturing (except facilities covered under the Sand and Gravel General Permit)	324xxx
Plastics and Rubber Products Manufacturing	326xxx
Leather and Allied Product Manufacturing	316xxx
Nonmetallic Mineral Product Manufacturing (except covered under the Sand and Gravel General Permit)	327xxx
Primary Metal Manufacturing	331xxx
Fabricated Metal Product Manufacturing	332xxx
Machinery Manufacturing	333xxx
Computer and Electronic Product Manufacturing	334xxx
Electrical Equipment, Appliance, and Component Manufacturing	335xxx
Transportation Equipment Manufacturing (except NPDES regulated boatyards)	336xxx
Miscellaneous Manufacturing	339xxx
Warehousing and Storage	493xxx, 531130
Recycling facilities involved in the recycling of materials, including but not limited to, metal scrap yards, battery reclaimers, salvage yards, auto recyclers, and automobile junkyards.	42314x and 42393x
Steam Electric Power Generation (Not covered under *40 CFR §* 423)	N/A
Waste Management and Remediation Services, including, but not limited to, landfills, transfer stations, open dumps, and land application sites, except as described in S1.C.6 or C.7.	562xxx
Hazardous waste treatment, storage, and disposal (TSD) facilities, and recycling facilities regulated under Chapter 173-303 WAC.	562211
Treatment works treating domestic sewage, or any other sewage sludge, or wastewater treatment device or system, used in the storage, recycling, and reclamation of municipal or domestic sewage (including land dedicated to the disposal of sewage sludge that are located within the confines of the facility) with the design flow capacity of 1 million gallons per day (MGD) or more, or required to have a pretreatment program under 40 CFR §403.	22132x
Transportation facilities which have ***vehicle maintenance*** activity, equipment cleaning operations, or airport deicing operations:	
• Railroad Transportation	482xxx, 488210
• Transit and Ground Passenger Transportation	485xxx, 488490, 487110
• Truck Transportation	484xxx
• Postal Service	491xxx

Industrial Activities	NAICS Groups
• Water Transportation	483xxx, 487210, 4883xx, 532411
• Air Transportation	481xxx, 487990
• Petroleum Bulk Stations and Terminals	4247xx
Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing	53241x
Marine Construction	ECY003

[a.] Facilities in this category that are rock crusing, gravel washing, log sorting, or log storage facilities operated in connection with silvicultural activitees defined in 40 CFR 122.27(b)(2)-(3) are considered industrial activity. This does not include the actual harvesting of timber.

2. Any facility that has an existing ***National Pollutant Discharge Elimination System (NPDES)*** permit which does not address all stormwater discharges associated with industrial activity [40 CFR §122.26(b)(14)] shall obtain permit coverage.
3. Any ***inactive facility*** which is listed under ***40 CFR*** §122.26(b)(14) where ***significant materials*** remain onsite and are exposed to stormwater shall obtain permit coverage.

B. Significant Contributors of Pollutants

Ecology may require a facility to obtain coverage under this permit if Ecology determines the facility:

1. Is a ***significant contributor of pollutants*** to waters of the State, including ***groundwater***;
2. May reasonably be expected to cause a violation of any ***water quality standard***; or
3. Conducts industrial activity, or has a NAICS code, with stormwater characteristics similar to any industrial activity or NAICS code listed in Table 1 in S1.A.1.

C. Facilities Not Required to Obtain Coverage

Ecology does not require the types of facilities listed below to obtain coverage under this permit, unless determined to be a significant contributor of pollutants.

1. Industrial facilities that submit an ***application*** and qualify for a Conditional "No Exposure" Exemption. (Condition S1.F)
2. Industrial facilities that discharge stormwater only to a municipal ***combined sewer*** or ***sanitary sewer**.* Discharge of stormwater to sanitary or combined sewers shall only occur as authorized by the municipal sewage authority.
3. Industrial facilities that discharge stormwater only to groundwater (e.g., on-site infiltration) with no discharge to ***surface waters of the State*** under any condition, provided the facility doesn't meet the requirements of S1.B.1.
4. Office buildings and/or administrative parking lots from which stormwater does not commingle with stormwater from areas associated with industrial activity.

5. Any discharge that is in compliance with the instructions of an on-scene-coordinator pursuant to 40 CFR § 300 (The National Oil and Hazardous Substances Pollution Contingency Plan) or *33 CFR* § 153.10(e) (Pollution by Oil and Hazardous Substances), in accordance with 40 CFR § 122.3(d).
6. Any ***land application site*** used for the beneficial use of industrial or municipal wastewater for agricultural activities or when applied for landscaping purposes at agronomic rates.
7. Any farmland, domestic garden, or land used for sludge management where domestic sewage sludge (biosolids) is beneficially reused (nutrient builder or soil conditioner) and which is not physically located in the confines of domestic sewage treatment works, or areas that are in compliance with Section 405 (Disposal of Sewage Sludge) of the ***Clean Water Act (CWA)***.
8. Any inactive coal mining operation if:
    a. The performance bond issued to the facility by the appropriate Surface Mining Control and Reclamation Act (SMCRA) authority has been released from applicable state or federal reclamation requirements after December 17, 1990.
    b. The mine does not have a discharge of stormwater that comes in contact with any overburden, raw material, intermediate products, finished products, byproducts, or waste products located on the site of the facility.
9. Closed ***landfills*** that are capped and stabilized, in compliance with Chapter 173-304 WAC, and in which no significant materials or industrial ***pollutant*s** remain exposed to stormwater. Permittee's with existing coverage may submit a ***Notice of Termination*** in accordance with Special Condition S13.A.1.

D. Facilities Excluded from Coverage

Ecology will not cover the following facilities or activities under this permit:

1. If any part of a facility, in the categories listed below, has a stormwater discharge subject to stormwater Effluent Limitations Guidelines, New Source Performance Standards (NSPS) Under 40 CFR subchapter N, or Toxic Pollutant Effluent Standards under 40 CFR subchapter D §129; the operator of the facility must apply for an individual NPDES permit or seek coverage under an industry-specific ***general permit*** for those stormwater discharges.

    Below is a list of categories of industries specified in 40 CFR subchapter N for which at least one subpart includes stormwater effluent limitations guidelines or NSPS. Industries included in this list should review the subchapter N guidelines to determine if they are subject to a stormwater effluent limitation guideline for activities which they perform at their site.

40 CFR 411 Cement manufacturing	40 CFR 423 Steam electric power generating
40 CFR 412 Feedlots	40 CFR 434 Coal mining
40 CFR 418 Fertilizer manufacturing	40 CFR 436 Mineral mining and processing
40 CFR 419 Petroleum refining	40 CFR 440 Ore mining and dressing
40 CFR 422 Phosphate manufacturing	40 CFR 443 Paving and roofing materials (tars & asphalt)
40 CFR 449.11(a) Airports with more than 10,000 annual jet departures	

Facilities, which are subject to effluent standards in 40 CFR subchapter D §129: Aldrin/Dieldrin; DDT; Endrin; Toxaphene; Benzidine; or Polychlorinated Biphenyls (PCBs), shall apply for an individual NPDES permit.

2. Nonpoint source silvicultural activities with natural ***runoff*** that are excluded in 40 CFR §122.27.
3. Industrial activities operated by any department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government of the United States, or another entity, such as a private contractor, performing industrial activity for any such department, agency, or instrumentality.
4. Facilities located on "Indian Country" as defined in 18 USC §1151, except portions of the Puyallup Reservation as noted below.

   Indian Country includes:

   a. All land within any Indian Reservation notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation.
   b. All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.
   c. All off-reservation federal trust lands held for Native American Tribes.

   Puyallup Exception: Following the "Puyallup Tribes of Indians Land Settlement Act of 1989," 25 USC §1773; the permit does apply to land within the Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.

5. Any facility authorized to discharge stormwater associated with industrial activity under an existing NPDES individual or other general permit.
6. All ***construction activities***. Operators of these construction activities shall seek coverage under the Construction Stormwater General Permit or an individual NPDES permit for stormwater associated with construction activity.
7. Facilities that discharge to a waterbody with a ***control plan***, unless this general permit adequately provides the level of protection required by the control plan.
8. ***New dischargers*** to a waterbody listed pursuant to Section 303(d) of the CWA, unless the Permittee meets the requirements of Condition S6.B.
9. Hazardous waste landfills subject to 40 CFR §445, subpart A.

E. Discharges to Ground

1. For sites with a ***discharge point*** to groundwater the terms and conditions of this permit shall apply. However, permittees are not required to sample on-site discharges to ground (e.g., infiltration), unless specifically required by Ecology (Condition G12).

2. Facilities with a discharge point to groundwater through an ***Underground Injection Control well*** shall comply with any applicable requirements of the Underground Injection Control (UIC) regulations, Chapter 173-218 WAC.

F. Conditional "No Exposure" Exemption

1. A facility engaged in industrial activity may qualify for a Conditional “No Exposure” Exemption (CNE) if there is no exposure of industrial materials and activities to rain, snow, snow melt, and/or runoff.

   Industrial materials and activities include, but are not limited to, ***material handling*** equipment or activities, industrial machinery, raw materials, intermediate products, by-products, and final products, or waste products.

   Material handling activities include storage, loading and unloading, transport, or conveyance of any raw materials, intermediate product, by-product, final products, or waste products.

2. To determine if you qualify for a CNE, eleven questions must be answered and certified that none of the following materials or activities are, or will be in foreseeable future, exposed to precipitationIndustrial Stormwater General Permit webpage:

   A. Is anyone using, storing or cleaning industrial machinery or equipment in an area that is exposed to stormwater, or are there areas where residuals from using, storing or cleaning industrial machinery or equipment remain and are exposed to stormwater?

   B. Are there materials or residuals on the ground or in stormwater inlets from spills/leaks?

   C. Are materials or products from past industrial activity exposed to precipitation?

   D. Is material handling equipment used/stored (except adequately maintained vehicles)?

   E. Are materials or products exposed to precipitation during loading/unloading or transporting activities?

   F. Are materials or products stored outdoors (except final products intended for outside use, e.g., new cars, where exposure to storm water does not result in the discharge of pollutants)?

   G. Are materials contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers?

   H. Are materials or products handled/stored on roads or railways owned or maintained by the discharger?

   I. Is waste material exposed to precipitation (except waste in covered, non-leaking containers, e.g., dumpsters)?

   J. Does the application or disposal of process wastewater occur (unless otherwise permitted)?

   K. Is there particulate matter or visible deposits of residuals from roof stacks/vents not otherwise regulated, i.e., under an air quality control permit, and evident in the storm water outflow?

3. To apply for an exemption, an electronic application must be submitted to Ecology's Water Quality Permitting Portal (WQWebPortal). The WQWebPortal can accessed at https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance.
   a. A Permittee is automatically granted a No Exposure exemption 90 days from Ecology's receipt of a complete and accurate No Exposure Certification Form, unless Ecology informs the applicant in writing or electronically within 90 days that it has denied or approved the request.
   b. Ecology will automatically terminate permit coverage when it grants the No Exposure exemption to a permitted facility.
   c. Facilities which are granted a No Exposure exemption must submit a No Exposure Certification Form to Ecology once every five years.
   d. No Exposure exemptions are conditional. If there is a change at the facility that results in the exposure of industrial activities or materials to stormwater, the facility is required to immediately apply for and obtain a permit.

S2. APPLICATION FOR COVERAGE

A. Obtaining Permit Coverage

1. Unpermitted facilities that require coverage under this permit shall submit to Ecology, a complete and accurate ***Notice of Intent (NOI)*** using Ecology's Water Quality Permitting Portal – Permit Coverage Notice of Intent form as follows:
   a. Existing Facilities
      i. Unpermitted existing facilities that require coverage under this permit shall submit a complete and accurate permit application to Ecology.
      ii. Existing facilities are facilities in operation prior to the effective date of this permit, January 1, 2020.
   b. New Facilities

      New facilities are facilities that begin operation on or after the effective date of this permit, January 1, 2020. All unpermitted new facilities shall*:*
      i. Submit a complete and accurate permit application to Ecology at least 60 days before the commencement of stormwater discharge from the facility.
      ii. The application shall include certification that the facility has met the applicable public notice and ***State Environmental Policy Act (SEPA)*** requirements in WAC 173-226-200(f).
   c. Electronic Submittal

      Use the Water Quality Permitting Portal (WQWebPortal) to submit a complete application for coverage to Ecology.

      For more information about the WQWebPortal, visit: https://secureaccess.wa.gov/ecy/wqwebportal/.

To access the WQWebPortal, you must first register for Secure Access Washington (SAW). For additional information about SAW, visit: https://support.secureaccess.wa.gov/.

B. Modification of Permit Coverage

A Permittee anticipating a significant process change, or otherwise requesting a modification of permit coverage, shall submit a complete Modification of Coverage Form to Ecology. The Permittee shall:

1. Apply for modification of coverage at least 60 days before implementing a significant process change; or by May15th prior to a Corrective Action deadline, if requesting a Level 2 or 3 time extension or waiver request per Condition S8.B-D.
2. Complete the public notice requirements in WAC 173-226-130(5) as part of a complete application for modification of coverage.
3. Comply with SEPA as part of a complete application for modification of coverage if undergoing a significant process change.

C. Permit Coverage Timeline

1. If the applicant does not receive notification from Ecology, permit coverage automatically commences on whichever of the following dates occurs **last**:
    a. The 31st day following receipt by Ecology of a completed application for coverage.
    b. The 31st day following the end of a 30-day public comment period.
    c. The effective date of the general permit.
2. Ecology may need additional time to review the application:
    a. If the application is incomplete.
    b. If it requires additional site-specific information.
    c. If the public requests a public hearing.
    d. If members of the public file comments.
    e. When more information is necessary to determine whether coverage under the general permit is appropriate.
3. When Ecology needs additional time:
    a. Ecology will notify the applicant in writing within 30 days and identify the issues that the applicant must resolve before a decision can be reached.
    b. Ecology will submit the final decision to the applicant in writing. If Ecology approves the application for coverage, coverage begins the 31st day following approval, or the date the approval letter is issued, whichever is later.

D. Transfer of Permit Coverage

Coverage under this general permit shall automatically transfer to a new discharger, if **all** of the following conditions are met:

1. The Permittee (existing discharger) and new discharger submit to Ecology a complete, written, signed agreement (Transfer of Coverage Form) containing a specific date for transfer of permit responsibility, coverage, and liability.
2. The type of industrial activities and practices remain substantially unchanged.
3. Ecology does not notify the Permittee of the need to submit a new application for coverage under the general permit or for an individual permit pursuant to Chapters 173-216, 173-220, and 173-226 WAC.
4. Ecology does not notify the existing discharger and new discharger of its intent to revoke coverage under the general permit. The transfer is effective on the date specified in the written agreement unless Ecology gives notice of revocation.

S3. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General Requirements

All Permittees and applicants for coverage under this permit shall implement a ***Stormwater Pollution Prevention Plan (SWPPP)*** developed by ***qualified personnel*** as follows:

1. The SWPPP shall specify the ***Best Management Practices (BMPs)*** necessary to:
   a. Provide ***All Known, Available, and Reasonable methods of prevention, control, and Treatment (AKART)*** of *stormwater pollution*.
   b. Ensure the discharge does not cause or contribute to a violation of the Water Quality Standards.
   c. Comply with applicable federal technology-based treatment requirements under 40 CFR § 125.3.
2. Proper selection and use of ***Stormwater Management Manuals (SWMM).***

   BMPs shall be consistent with:

   a. *2019 Stormwater Management Manual for Western Washington*, for sites west of the crest of the Cascade Mountains; **or**
   b. *2019 Stormwater Management Manual for Eastern Washington*, for sites east of the crest of the Cascade Mountains; **or**
   c. Revisions to the manuals in S3.A.3. a & b, or other stormwater management guidance documents or manuals which provide an equivalent level of ***pollution*** prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. For purposes of this section, the documents listed in Appendix 10 of the August 1, *2019 Phase I Municipal Stormwater Permit* are hereby incorporated into this permit; **or**
   d. Documentation in the SWPPP that the BMPs selected are ***demonstrably equivalent*** to practices contained in stormwater technical manuals approved by Ecology, including the proper selection, implementation, and maintenance of all applicable and appropriate best management practices for on-site pollution control.

3. Update of the SWPPP

   a. The Permittee shall modify the SWPPP if the owner/operator or the applicable local or state regulatory authority determines during inspections or investigations that the SWPPP is, or would be, ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The Permittee shall modify the SWPPP:

      i. As necessary to include additional or modified BMPs designed to correct problems identified.

      ii. To correct the deficiencies identified in writing from Ecology within 30 days of notice.

   b. The Permittee shall modify the SWPPP whenever there is a change in design, construction, operation, or maintenance at the facility that significantly changes the nature of pollutants discharged in stormwater from the facility, or significantly increases the quantity of pollutants discharged.

   c. If a Permittee covered under the 2015 ISGP needs to update their SWPPP to be consistent with the 2020 ISGP, the update shall be completed by January 30, 2020.

4. Other Pollution Control Plans

   The Permittee may incorporate by reference applicable portions of plans prepared for other purposes at their facility. Plans or portions of plans incorporated by reference into a SWPPP become enforceable requirements of this permit and must be available along with the SWPPP, as required in S9.F. A Pollution Prevention Plan prepared under the Hazardous Waste Reduction Act, Chapter 70.95C RCW, is an example of such a plan.

5. Signatory Requirements

   The Permittee shall sign and certify all SWPPPs in accordance with General Condition G2, each time they revise or modify a SWPPP to comply with Conditions S3.A.4 (Update of the SWPPP), S7 (Inspections) or S8 (Corrective Actions). The SWPPP Certification Form is contained in Appendix 3 of this permit and on Ecology's industrial stormwater website.

B. Specific SWPPP Requirements

The SWPPP shall contain a site map, a detailed assessment of the facility, a detailed description of the BMPs, Spill Prevention and Emergency Cleanup Plan, and a sampling plan. The Permittee shall identify any parts of the SWPPP which the facility wants to claim as confidential business information.

1. The site map shall identify(site map may be multiple pages if needed):

   a. The scale or include relative distances between significant structures and drainage systems.

   b. The size of the property in acres.

   c. The location and extent of all buildings, structures and all impervious surfaces.

   d. Direction of stormwater flow (use arrows).

   e. Locations of all structural source control BMPs.

   f. Locations of all receiving water (including wetlands and drainage ditches) in the immediate vicinity of the facility.

g. Conditionally approved non-stormwater discharges.

h. Areas of existing and potential soil ***erosion*** that could result in the discharge of a ***significant amount*** of turbidity, sediment, or other pollutants.

i. Locations of all stormwater conveyances including ditches, pipes, catch basins, vaults, ponds, swales, etc.

j. Locations of actual and potential pollutant sources.

k. Locations of all stormwater monitoring points.

l. The stormwater drainage areas for each stormwater discharge point off site (including discharges to groundwater).

m. Locations of stormwater inlets and outfalls with a unique identification number for each sampling point and discharge point, indicating any that are identified as substantially identical, and identify, by name, any other party other than the Permittee that owns any stormwater drainage or discharge structures.

n. Combined sewers or MS4s and where stormwater discharges to them.

o. Locations of fueling and ***vehicle*** maintenance areas.

p. Locations and sources of run-on to your site from adjacent properties that may contain pollutants.

2. The facility assessment shall include a description of the facility; an inventory of facility activities and equipment that contribute to or have the potential to contribute any pollutants to stormwater; and, an inventory of materials that contribute to or have the potential to contribute pollutants to stormwater.

    a. The facility description shall describe:

        i. The industrial activities conducted at the site.

        ii. Regular business hours and seasonal variations in business hours or industrial activities.

        iii. The general layout of the facility including buildings and storage of raw materials, and the flow of goods and materials through the facility.

    b. The inventory of industrial activities shall identify all areas associated with industrial activities (see Table 1) that have been or may potentially be sources of pollutants, including, but not limited to, the following:

        i. Loading and unloading of dry bulk materials or liquids.

        ii. Outdoor storage of materials or products.

        iii. Outdoor manufacturing and processing.

        iv. On-site dust or particulate generating processes.

        v. On-site waste treatment, storage, or disposal.

        vi. Vehicle and equipment fueling, maintenance, and/or cleaning (includes washing).

        vii. Roofs or other surfaces exposed to ***air emissions*** from a manufacturing building or a process area.

viii. Roofs or other surfaces composed of materials that may be mobilized by stormwater (e.g., galvanized roofs, galvanized fences).

c. The inventory of materials shall list:

i. The types of materials handled at the site that potentially may be exposed to precipitation or runoff and could result in stormwater pollution.

ii. A short narrative for each material describing the potential of the pollutant to be present in stormwater discharges. The Permittee shall update this narrative when data become available to verify the presence or absence of these pollutants.

iii. A narrative description of any potential sources of pollutants from past activities, materials and spills that were previously handled, treated, stored, or disposed of in a manner to allow ongoing exposure to stormwater. Include the method and location of on-site storage or disposal. List significant spills and significant leaks of toxic or hazardous pollutants.

3. The SWPPP shall identify specific individuals by name or by title within the organization (pollution prevention team) whose responsibilities include: SWPPP development, implementation, maintenance, and modification.

4. Best Management Practices (BMPs)

a. General BMP Requirements

The Permittee shall describe each BMP selected to eliminate or reduce the potential to contaminate stormwater and prevent violations of water quality standards. The SWPPP must explain in detail how and where the selected BMPs will be implemented.

b. The Permittee shall include each of the following mandatory BMPs in the SWPPP and implement the BMPs. The Permittee may omit individual BMPs if site conditions render the BMP unnecessary or infeasible and the Permittee provides alternative and equally effective BMPs. The Permittee must justify each BMP omission in the SWPPP.

i. ***Operational Source Control BMPs***

1) The SWPPP shall include the Operational ***Source Control BMPs*** listed as “applicable” in Ecology’s SWMMs, or other guidance documents or manuals approved in accordance with S3.A.3.c.

2) **Good Housekeeping:** The SWPPP shall include BMPs that define ongoing maintenance and cleanup, as appropriate, of areas which may contribute pollutants to stormwater discharges. The SWPPP shall include the schedule/frequency for completing each housekeeping task, based upon industrial activity, sampling results and observations made during inspections. The Permittee shall:

a) Vacuum paved surfaces with a vacuum sweeper (or a sweeper with a vacuum attachment) to remove accumulated pollutants a minimum of once per quarter.

b) Identify and control all on-site sources of dust to minimize stormwater contamination from the deposition of dust on areas exposed to precipitation.

c) Inspect and maintain bag houses monthly to prevent the escape of dust from the system. Immediately remove any accumulated dust at the base of exterior bag houses.

d) Keep all dumpsters under cover or fit with a storm resistant lid that must remain closed when not in use. (Tarps are not considered storm resistant.)

3) **Preventive Maintenance:** The SWPPP shall include BMPs to inspect and maintain the stormwater drainage, source controls, treatment systems (if any), and plant equipment and systems that could fail and result in contamination of stormwater. The SWPPP shall include the schedule/frequency for completing each maintenance task. The Permittee must:

a) Clean catch basins when the depth of debris reaches 60% of the sump depth. In addition, the Permittee must keep the debris surface at least 6 inches below the outlet pipe.

b) Maintain ponds, tanks/vaults, catch basins, swales, filters, oil/water separators, drains, and other stormwater drainage/treatment facilities in accordance with the maintenance standards set forth in the applicable Stormwater Management Manual, other guidance documents or manuals approved in accordance with S3.A.3.c, demonstrably ***equivalent BMPs*** per S3.A.3.d, or an O&M Manual submitted to Ecology in accordance with S8.D.

c) Inspect all equipment and vehicles during monthly site inspections for leaking fluids such as oil, antifreeze, etc. Take leaking equipment and vehicles out of service or prevent leaks from spilling on the ground until repaired.

d) Clean up spills and leaks immediately (e.g., using absorbents, vacuuming, etc.) to prevent the discharge of pollutants.

4) **Spill Prevention and Emergency Cleanup Plan (SPECP):** The SWPPP shall include a SPECP that includes BMPs to prevent spills that can contaminate stormwater. The SPECP shall specify BMPs for material handling procedures, storage requirements, cleanup equipment and procedures, and spill logs, as appropriate. The Permittee shall:

a) Store all hazardous substances, petroleum/oil liquids, and other chemical solid or liquid materials that have potential to contaminate stormwater on an impervious surface that is surrounded with a containment berm or dike that is capable of containing 10% of the total enclosed tank volume or 110% of the volume contained in the largest tank, whichever is greater, or use double-walled tanks.

b) Prevent precipitation from accumulating in containment areas with a roof or equivalent structure or include a plan on how it will manage and dispose of accumulated water if a containment area cover is not practical.

c) Locate spill kits within 25 feet of all stationary fueling stations, fuel transfer stations, mobile fueling units, and used oil storage/transfer stations. At a minimum, spill kits shall include:

i) Oil absorbents capable of absorbing 15 gallons of fuel. Facilities with a Spill Prevention, Control, and Countermeasures Plan (SPCCP) must have enough oil absorbents capable of absorbing the minimum anticipated spill amount or potential discharge volume identified in that plan if more than 15 gallons.

ii) A storm drain plug or cover kit.

iii) A non-water containment boom, a minimum of 10 feet in length with a 12-gallon absorbent capacity.

iv) A non-metallic shovel.

v) Two 5-gallon buckets with lids.

d) Not lock shut-off fueling nozzles in the open position. Do not “top-off” tanks being refueled.

e) Block, plug or cover storm drains that receive runoff from areas where fueling, during fueling.

f) Use drip pans or equivalent containment measures during all petroleum transfer operations.

g) Locate materials, equipment, and activities so that leaks are contained in existing containment and diversion systems (confine the storage of leaky or leak-prone vehicles and equipment awaiting maintenance to protected areas).

h) Use drip pans and absorbents under or around leaky vehicles and equipment or store indoors where feasible. Drain fluids from equipment and vehicles prior to on-site storage or disposal.

i) Maintain a spill log that includes the following information for chemical and petroleum spills: date, time, amount, location, and reason for spill; date/time cleanup completed, notifications made and staff involved.

5) **Employee Training:** The SWPPP shall include BMPs to provide SWPPP training for employees who have duties in areas of industrial activities subject to this permit. At a minimum, the training plan shall include:

a) The content of the training.

i) An overview of what is in the SWPPP.

ii) How employees make a difference in complying with the SWPPP and preventing contamination of stormwater.

iii) Spill response procedures, good housekeeping, maintenance requirements, and material management practices.

b) How the Permittee will conduct training.

c) The frequency/schedule of training. The Permittee shall train employees annually, at a minimum.

d) A log of the dates on which specific employees received training.

6) **Inspections and Recordkeeping:** The SWPPP shall include documentation of procedures to ensure compliance with permit requirements for inspections and recordkeeping. At a minimum, the SWPPP shall:

a) Identify facility personnel who will inspect designated equipment and facility areas as required in Condition S7.

b) Contain a visual inspection report or check list that includes all items required by Condition S7.C.

c) Provide a tracking or follow-up procedure to ensure that a report is prepared and any appropriate action taken in response to visual inspections.

d) Define how the Permittee will comply with signature requirements and records retention identified in Special Condition S9, Reporting and Recordkeeping Requirements.

e) Include a certification of compliance with the SWPPP and permit for each inspection using the language in S7.C.1.c.

f) Include all inspection reports completed by the Permittee (S7.C).

7) ***Illicit Discharges***: The SWPPP shall include measures to identify and eliminate the discharge of ***process wastewater***, ***domestic wastewater***, ***noncontact cooling water***, and other illicit discharges, to stormwater sewers, or to surface waters and groundwaters of the State. The Permittee can find BMPs to identify and eliminate illicit discharges in Volume IV of Ecology's SWMM for Western Washington and Chapter 8 of the SWMM for Eastern Washington.

Water from washing vehicles or equipment, buildings, pavement, steam cleaning and/or pressure washing is considered process wastewater. The Permittee must not allow this process wastewater to comingle with stormwater or enter storm drains; and must collect in a tank for off-site disposal, or discharge it to a sanitary sewer, with written approval from the local sewage authority.

ii. ***Structural Source Control BMPs***

1) The SWPPP shall include the structural source control BMPs listed as “applicable” in Ecology’s SWMMs, or other guidance documents or manuals approved in accordance with S3.A.3.c.

2) The SWPPP shall include BMPs to minimize the exposure of manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow,

snowmelt, and *runoff* by either locating these industrial materials and activities inside or protecting them with storm resistant coverings.

Permittees shall:

a) Use grading, berming, or curbing to prevent runoff of contaminated flows and divert run-on away from these areas.

b) Perform all cleaning operations indoors, under cover, or in bermed areas that prevent stormwater runoff and run-on, also that capture any overspray.

c) Ensure that all washwater drains to a collection system that directs the washwater to further treatment or storage and not to the ***stormwater drainage system***.

iii. ***Treatment BMP*****s**

The Permittee shall:

1) Use treatment BMPs consistent with the applicable documents referenced in Condition S3.A.3.

2) Employ oil/water separators, booms, skimmers or other methods to eliminate or minimize oil and grease contamination of stormwater discharges.

3) Obtain Ecology approval before beginning construction/installation of all treatment BMPs that include the addition of chemicals to provide treatment.

iv. Stormwater Peak Runoff Rate and Volume Control BMPs

Facilities with ***new development*** or redevelopment shall evaluate whether flow control BMPs are necessary to satisfy the state's AKART requirements, and prevent violations of water quality standards. If flow control BMPs are required, they shall be selected according to S3.A.3.

v. ***Erosion and Sediment Control BMPs***

The SWPPP shall include BMPs necessary to prevent the erosion of soils and other earthen materials (crushed rock/gravel, etc.), control off-site sedimentation, and prevent violations of water quality standards. The Permittee shall implement and maintain:

1) Sediment control BMPs such as ***detention*** or retention ponds or traps, vegetated filter strips, bioswales, or other permanent sediment control BMPs to minimize ***sediment*** loads in stormwater discharges.

2) Filtration BMPs to remove solids from catch basins, sumps or other stormwater collection and conveyance system components (catch basin filter inserts, filter socks, modular canisters, sand filtration, centrifugal separators, etc.).

5. Sampling Plan

   The SWPPP shall include a sampling plan. The plan shall:

   a. Identify points of discharge to surface water, storm sewers, or discrete groundwater infiltration locations, such as dry wells or detention ponds.

   b. Include documentation of why applicable parameters are not sampled at each discharge point per S4.B.3 (if applicable). The required documentation includes:

      i. Location of which discharge points the Permittee does not sample applicable parameters because the pollutant concentrations are substantially identical to a discharge point being sampled.

      ii. General industrial activities conducted in the drainage area of each discharge point.

      iii. Best Management Practices conducted in the drainage area of each discharge point.

      iv. Exposed materials located in the drainage area of each discharge point that are likely to be significant contributors of pollutants to stormwater discharges.

      v. Impervious surfaces in the drainage area that could affect the percolation of stormwater runoff into the ground (e.g., asphalt, crushed rock, grass).

      vi. Reasons why the Permittee expects the discharge points to discharge substantially identical effluents.

   c. Identify each sampling location by its unique identifying number such as A1, A2.

   d. Identify staff responsible for conducting stormwater sampling.

   e. Specify procedures for sample collection and handling.

   f. Specify procedures for sending samples to a laboratory.

   g. Identify parameters for analysis, holding times and preservatives, laboratory ***quantitation levels***, and analytical methods.

   h. Specify the procedure for submitting results to Ecology.

S4. GENERAL SAMPLING REQUIREMENTS

A. General Requirements

The Permittee shall conduct sampling of stormwater in accordance with this permit and the SWPPP.

B. Sampling Requirements

1. Sample Timing and Frequency

   a. The Permittee shall sample the discharge from each designated location at least once per quarter:

      1st Quarter = January, February, and March

      2nd Quarter = April, May, and June

3rd Quarter = July, August, and September

4th Quarter = October, November, and December

b. Permittees shall sample the stormwater discharge from the ***first fall storm event*** each year. First fall storm event means the first time on or after September 1st of each year that precipitation occurs and results in a stormwater discharge from a facility.

c. Permittees shall collect samples within the first 12 hours of stormwater discharge events. If it is not possible to collect a sample within the first 12 hours of a stormwater discharge event, the Permittee must collect the sample as soon as practicable after the first 12 hours, and keep documentation with the sampling records (Condition S4.B.3) explaining why they could not collect samples within the first 12 hours; or if it is unknown (e.g., discharge was occurring during start of regular business hours).

d. The Permittee shall obtain ***representative samples***, which may be a single grab sample, a time-proportional sample, or a flow-proportional sample.

e. Permittees need not sample outside of ***regular business hours***, during ***unsafe conditions***, or during quarters where there is no discharge, but shall submit a Discharge Monitoring Report each reporting period (Condition S9.A).

f. Permittees monitoring more than once per quarter shall ***average*** all of the monitoring results for each parameter (except pH and visible oil sheen) and compare the average value to the ***benchmark*** value. However, if Permittees collect more than one sample during a 24-hour period, they must first calculate the ***daily average*** of the individual grab sample results collected during that 24-hour period; then use the daily average to calculate a quarterly average.

2. Sample Location(s)

a. The Permittee shall designate sampling location(s) at the point(s) where it discharges stormwater associated with industrial activity off-site.

b. The Permittee is not required to sample on-site discharges to ground (e.g., infiltration) or sanitary sewer discharges, unless specifically required by Ecology (Condition G12).

c. Ecology may require sampling points located in areas where unsafe conditions prevent regular sampling be moved to areas where regular sampling can occur.

d. The Permittee shall notify Ecology of any changes or updates to sample locations, discharge points, and/or outfalls by submitting an "Industrial Stormwater General Permit Discharge/Sample Point Update Form" to Ecology. The Permittee may be required to provide additional information to Ecology prior to changing sampling locations.

3. Substantially Identical Discharge Points

a. The Permittee shall sample each distinct point of discharge off-site except as otherwise exempt from monitoring as a ***substantially identical discharge point*** per S3.B.5.b. If applicable, the Permittee is only required to monitor applicable parameters at one of the substantially identical discharge points.

The Permittee shall notify Ecology of any changes or updates to sample locations, discharge points, and/or outfalls by submitting an "Industrial Stormwater General Permit Discharge/Sample Point Update Form" to Ecology.

4. Sample Documentation

   For each stormwater sample taken, the Permittee shall record the following information and retain it on-site for Ecology review:

   a. Sample date

   b. Sample time

   c. A notation describing if the Permittee collected the sample within the first 12 hours of stormwater discharge events; or, if it is unknown (e.g., discharge was occurring during start of regular business hours).

   d. An explanation of why the permittee could not collect a sample within the first 12 hours of a stormwater discharge event, if it was not possible. Or, if it is unknown, an explanation of why it is unknown if a sample was collected within or outside the first 12 hours of stormwater discharge.

   e. Sample location (using SWPPP identifying number)

   f. Method of sampling, and method of sample preservation, if applicable.

   g. Individual who performed the sampling

5. Laboratory Documentation

   The Permittee shall retain laboratory reports on-site for Ecology review and shall ensure that all laboratory reports providing data for all parameters include the following information:

   a. Date of analysis

   b. Parameter name

   c. CAS number, if applicable

   d. Analytical method(s)

   e. Individual who performed the analysis

   f. Method detection limit (MDL)

   g. Laboratory quantitation level (QL) achieved by the laboratory

   h. Reporting units

   i. Sample result

   j. Quality assurance/quality control data

6. The Permittee shall maintain the original records onsite and make them available to Ecology upon request.

7. The Permittee can reduce monitoring to once a year for a period of three years (12 quarters) based on consistent attainment of benchmark values when:

   a. Eight consecutive quarterly samples demonstrate a reported value equal to or less than the benchmark value; or for pH, within the range of 5.0 – 9.0.

b. For purposes of tallying consecutive quarterly samples:

i. Do not include any quarters in which the Permittee did not collect a sample, but should have (e.g., discharge(s) occurred during normal working hours, and during safe conditions; but no sample was collected during the entire quarter). If this occurs, the tally of consecutive quarterly samples is reset to zero.

ii. Do not include any quarters in which the Permittee did not collect a sample because there was no discharge during the quarter (or the discharges during the quarter occurred outside normal working hours or during unsafe conditions). These quarters are not included in the calculation of eight consecutive quarters, but do not cause the tally to be reset; i.e., they are skipped over.

c. The annual sample must be taken during the 4th quarter. A facility may average the annual sample with any other samples taken over the course of the 4th quarter. The annual sample does not include the first fall storm event.

d. A Permittee whose annual sample exceeds the benchmark during consistent attainment is no longer allowed to claim consistent attainment. The Permittee must begin sampling in accordance with S4.B.

8. A Permittee who has a ***significant process change*** shall not use previous sampling results to demonstrate consistent attainment.

9. Suspension of sampling based on consistent attainment does not apply to pollutant parameters subject to "report only" requirements, oil sheen, or numeric effluent limits based on federal Effluent Limitation Guidelines (Condition S5) or Section 303(d) of the Clean Water Act (Condition S6).

C. Analytical Procedures for Sampling Requirements

The Permittee shall ensure that analytical methods used to meet the sampling requirements in this permit conform to the latest revision of the Guidelines Establishing Test Procedures for the Analysis of Pollutants contained in 40 CFR § 136, unless specified otherwise in this permit.

D. Laboratory Accreditation

1. The Permittee shall ensure that all analytical data required by Ecology is prepared by a laboratory registered or accredited under the provisions of, Accreditation of Environmental Laboratories, Chapter 173-50 WAC.

2. ***Turbidity*** and pH are exempt from this requirement, unless the laboratory must be registered or accredited for any other parameter.

S5. BENCHMARKS, EFFLUENT LIMITATIONS AND SPECIFIC SAMPLING REQUIREMENTS

A. Benchmarks and Sampling Requirements

1. Permittees shall sample their stormwater discharges as specified in Condition S4 and as specified in Table 2.

2. Additional requirements apply to specific industrial categories (S5.B), facilities subject to effluent limitation guidelines (S5.C), and certain discharges to impaired waterbodies (S6).

   If a Permittee's discharge exceeds a benchmark listed in Table 2, the Permittee shall take the actions specified in Condition S8.

Table 2: Benchmarks and Sampling Requirements Applicable to All Facilities

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
Turbidity	NTU	25	EPA 180.1 Meter	0.5	1/quarter
pH	Standard Units	Between 5.0 and 9.0	Meter/Paper [c]	±0.5	1/quarter
Oil Sheen	Yes/No	No Visible Oil Sheen	N/A	N/A	1/quarter
Copper, Total	µg/L	Western WA: 14 Eastern WA: 32	EPA 200.8	2.0	1/quarter
Zinc, Total	µg/L	117	EPA 200.8	2.5	1/quarter

[a] The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. The permittee must also upload the QA/QC documentation from the lab on the QL development.

[b.] 1/quarter means at least one sample taken each quarter, year-round.

[c.] Permittees shall use either a calibrated pH meter or narrow-range pH indicator paper with a resolution of ± 0.5 SU or better.

B. Additional Sampling Requirements for Specific Industrial Groups

1. In addition to the requirements in Table 2, all Permittees identified by an industrial activity in Table 3 shall sample stormwater discharges as specified in Condition S4 and in Table 3.
2. If a discharge exceeds a benchmark listed in Table 3, the Permittee shall take the actions specified in Condition S8.

Table 3: Additional Benchmarks and Sampling Requirements Applicable to Specific Industries

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
1. Chemical and Allied Products (325xxx), Food and Kindred Products (311xxx-312xxx)					
BOD_5	mg/L	30	SM 5210B	2	1/quarter
Nitrate + Nitrite Nitrogen, as N	mg/L	0.68	SM4500 NO3-E/F/H	0.10	1/quarter
Phosphorus, Total	mg/L	2.0	EPA 365.1	0.01	1/quarter
2. Primary Metals(331xxx), Metals Mining (2122xx), Automobile Salvage and Scrap Recycling (42314x and 42393x), Metals Fabricating (332xxx), Machinery Manufacturing (333xxx)					
Lead, Total	µg/L	64.6	EPA 200.8	0.5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
3. Hazardous Waste Treatment, Storage and Disposal Facilities and Dangerous Waste Recyclers subject to the provisions of Resource Conservation and Recovery Act (RCRA) Subtitle C					
Chemical Oxygen Demand (COD)	mg/L	120	SM5220-D	10	1/quarter
Total Ammonia (as N)	mg/L	2.1	SM4500-NH3- GH	0.02	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
Arsenic, Total	µg/L	150	EPA 200.8	0.5	1/quarter
Cadmium, Total	µg/L	2.1	EPA 200.8	0.25	1/quarter
Cyanide, Total	µg/L	22	EPA 335.4	10	1/quarter
Lead, Total	µg/L	64.6	EPA 200.8	0.5	1/quarter
Mercury, Total	µg/L	1.4	EPA 1631E	0.0005	1/quarter
Selenium, Total	µg/L	5.0	EPA 200.8	1.0	1/quarter
Silver, Total	µg/L	3.4	EPA 200.8	0.2	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
4. Air Transportation[c] (481xxx)					
Total Ammonia (as N)	mg/L	2.1	SM4500-NH3- GH	0.02	1/quarter
BOD_5	mg/L	30	SM 5210B	2	1/quarter
COD	mg/L	120	SM5220-D	10	1/quarter

Parameter	Units	Benchmark Value	Analytical Method	Laboratory Quantitation Level [a]	Minimum Sampling Frequency [b]
Nitrate + Nitrite Nitrogen, as N	mg/L	0.68	SM 4500-NO3-E/F/H	0.10	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
5. Timber Product Industry (321xxx), Paper and Allied Products (322xxx), Wood Product Manufacturing (321xxx)					
COD	mg/L	120	SM5220-D	10	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
6. Transportation (482xxx-485xxx), Petroleum Bulk Stations and Terminals (4247xx), Transportation Equipment Manufacturing (336xxx), Construction, Transportation, Mining, and Forestry Machinery and Equipment Rental and Leasing (53421)					
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
7. Coal Mining (2121xx), Oil and Gas Extraction (2111xx), Nonmetallic Mining and Quarrying, except Fuels (2123xx), Petroleum and Coal Products Manufacturing (324xxx), Nonmetallic Mineral Product Manufacturing (327xxx), Steam Electric Power Generation					
TSS	mg/L	100	SM2540-D	5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter
8. Marine Industrial Construction (ECY003)					
Arsenic	µg/L	Report Only[d]	EPA 200.8	0.5	1/quarter
PAH compounds[e]	µg/L	Report Only[d]	EPA 610	10	1/quarter
p-cresol	µg/L	Report Only[d]	EPA 8270D	10	1/quarter
Phenol	µg/L	Report Only[d]	EPA 625.1	4.5	1/quarter
TSS	mg/L	100	SM2540-D	5	1/quarter
Petroleum Hydrocarbons (Diesel Fraction)	mg/L	10	NWTPH-Dx	0.25	1/quarter

a The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific method detection level (MDL) and QL on the DMR. The permittee must also upload the QA/QC documentation from the lab on the QL development.

b. 1/quarter means at least one sample taken each quarter, year-round.

c. For airports where a single Permittee, or a combination of permitted facilities use more than 100,000 gallons of glycol-based deicing chemicals and/or 100 tons or more of urea on an average annual basis, monitor these additional five parameters in those discharge points that collect runoff from areas where deicing activities occur.

[d] A benchmark does not apply, but permittees must report the sampling result. “Report only” reporting may not be applied to consistent attainment. Ecology will use the data collected during this permit term to determine if the pollutants listed will need to be included in the next permit, and if so, develop benchmarks based on the data received and water quality criteria.

[e] PAH Comounds include: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

C. Landfills and Airports Subject to Effluent Limitation Guidelines

1. Permittees with discharges from the following activities shall comply with the effluent limits and monitor as specified in Condition S4 and Tables 4 and 5.
2. The discharge of the pollutants at a level more than that identified and authorized by this permit for these activities shall constitute a violation of the terms and conditions of this permit.
3. Permittees operating non-hazardous waste landfills subject to the provisions of 40 CFR §445 Subpart B shall not exceed the effluent limits[4] listed in Table 4.

[4] As set forth in 40 CFR §445 Subpart B, these numeric effluent limits apply to contaminated stormwater discharges from Municipal Solid Waste Landfills that have not been closed in accordance with 40 CFR §258.60, and to contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR §257 except for discharges from any of the following facilities: (a) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill; (b) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation, or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation; (c) landfills operated in conjunction with CWT facilities subject to 40 CFR §437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or (d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Table 4: Effluent Limits Applicable to Non-Hazardous Waste Landfills Subject to 40 CFR Part 445 Subpart B

Parameter	Units	Average Monthly [a]	Maximum Daily [b]	Analytical Method [c]	Laboratory Quantitation Level [d]	Minimum Sampling Frequency [e]
BOD_5	mg/L	37	140	EPA 405.1 or SM 5210B	2	1/quarter
TSS	mg/L	27	88	SM2540-D	5	1/quarter
Total Ammonia (as N)	mg/L	4.9	10	SM4500-NH3-GH	0.02	1/quarter
Alpha Terpineol	µg/L	16	33	EPA 625.1	N/A [f]	1/quarter
Benzoic Acid	µg/L	71	120	EPA 625.1	N/A [f]	1/quarter
p-Cresol (4-methylphenol)	µg/L	14	25	EPA 8270D	10	1/quarter
Phenol	µg/L	15	26	EPA 625.1	4.5	1/quarter
Zinc, Total	µg/L	110	200	EPA 200.8	2.5	1/quarter
pH	SU	Between 6.0 and 9.0		Meter	±0.1	1/quarter

a. Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured. If only one sample is taken during the calendar month, the average monthly effluent limitation applies to that sample. If only one sample is taken during the reporting period, the average monthly effluent limitation applies to that sample.

b. Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day; this does not apply to pH.

c. Or other equivalent EPA-approved method with the same or lower quantitation level.

d. The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR §136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. The permittee must also upload the QA/QC documentation from the lab on the QL development.

e 1/quarter means at least one sample taken each quarter, year-round.

f EPA method 625.1 does not list quantitation levels for this pollutant. Reporting limits will be performance based and laboratory reporting levels must be included on the DMR.

4. Permittees operating airlines and airports subject to provisions of 40 CFR §449 shall comply with the following:

   a. ***Airfield Pavement*** Deicing. Existing and new primary airports with 1,000 or more annual jet departures (***annual non-propeller aircraft departures***) that discharge wastewater associated with airfield pavement ***deicing*** commingled with stormwater must either use non-urea-containing deicers[5], or meet the effluent limit in Table 5 at every discharge point, prior to any dilution or any commingling with any non-deicing discharge.

Table 5: Effluent Limit Applicable to Airports Subject to 40 CFR Part 449

Parameter	Units	Maximum Daily [a]	Analytical Method [b]	Laboratory Quantitation Level [c]	Minimum Sampling Frequency [d]
Total Ammonia (as N)	mg/L	14.7	SM4500-NH3-GH	0.02	1/quarter

a. Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day.

b. Or other equivalent *EPA*-approved method with the same or lower quantitation level.

c. The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific method detection level (MDL) and QL on the DMR. The permittee must also upload the QA/QC documentation from the lab on the QL development.

d. 1/quarter means at least one sample taken each quarter, year-round.

D. Conditionally Authorized Non-Stormwater Discharges

1. The categories and sources of non-stormwater discharges identified in Condition S5.D.2, below, are conditionally authorized, provided:

   a. The discharge is otherwise consistent with the terms and conditions of this permit, including Condition S5, S6, and S10.

   b. The Permittee conducts the following assessment for each non-stormwater discharge (except for S5.D.2.a & f) and documents the assessment in the SWPPP, consistent with Condition S3.B.2. The Permittee shall:

      i. Identify each source.

      ii. Identify the location of the discharge into the stormwater collection system.

      iii. Characterize the discharge including estimated flows or flow volume, and likely pollutants which may be present.

[5] Affected Permittees must certify in its annual report that it does not use airfield deicing products that contain urea, or meet the numeric limit in Table 5 (Condition S9.B.4).

iv. Evaluate and implement available and reasonable source control BMPs to reduce or eliminate the discharge.

v. Evaluate compliance of the discharge with the state water quality standards.

vi. Identify appropriate BMPs for each discharge to control pollutants and or flow volumes.

2. Conditionally authorized non-stormwater discharges include:

   a. Discharges from emergency firefighting activities.

   b. Fire protection system flushing, testing, and maintenance.

   c. Discharges of potable water including water line flushing, provided that water line flushing must be de-chlorinated prior to discharge.

   d. Uncontaminated air conditioning or compressor condensate.

   e. Landscape watering and irrigation drainage.

   f. Uncontaminated groundwater or spring water.

   g. Discharges associated with dewatering of foundations, footing drains, or utility vaults where flows are not contaminated with process materials such as solvents.

   h. Incidental windblown mist from cooling towers that collects on rooftops or areas adjacent to the cooling tower. This does not include intentional discharges from cooling towers such as piped cooling tower blow down or drains.

E. Prohibited Discharges

Unless authorized by a separate NPDES or state waste discharge permit, the following discharges are prohibited:

1. The discharge of process wastewater is not authorized. Stormwater that commingles with process wastewater is considered process wastewater.

2. Illicit discharges are not authorized by this permit. Conditionally authorized non-stormwater discharges in compliance with Condition S5.D are not illicit discharges.

F. General Prohibitions

Permittees shall manage stormwater to prevent the discharge of:

1. Synthetic, natural, or processed oil or oil-containing products as identified by an oil sheen, and

2. Trash and floating debris.

S6. DISCHARGES TO IMPAIRED WATERS

A. General Requirements for Discharges to Impaired Waters

Permittees that discharge to an impaired waterbody, either directly or indirectly through a stormwater drainage system, shall conduct sampling and inspections in accordance with Conditions S4, S5, S6, and S7.

B. Eligibility for Coverage of New Discharges to Impaired Waters

Facilities that meet the definition of new discharger and discharge to a ***303(d)-listed waterbody*** (Category 5), or an impaired waterbody with an ***applicable TMDL*** (Category 4A), or a pollution control program for sediment cleanup (i.e., a Category 4B sediment-impaired waterbody) are not eligible for coverage under this permit unless the facility:

1. Prevents all exposure to stormwater of the pollutant(s) for which the waterbody is impaired, and retains documentation of procedures taken to prevent exposure onsite with its SWPPP; **or**
2. Documents that the pollutant(s) for which the waterbody is impaired is not present at the facility, and retains documentation of this finding with the SWPPP; **or**
3. Provides Ecology with data showing that the discharge is not expected to cause or contribute to an exceedance of a water quality standard, and retain such data onsite with its SWPPP. The facility must provide data and other technical information to Ecology sufficient to demonstrate:
    a. For discharges to waters without an EPA approved or established TMDL, that the discharge of the pollutant for which the water is impaired will meet instream water quality criteria at the point of discharge to the waterbody; or
    b. For discharges to waters with an EPA approved or established TMDL, that there are sufficient remaining ***wasteload allocations*** in an EPA approved or established TMDL to allow industrial stormwater discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards.

Facilities are eligible for coverage under this permit if Ecology issues permit coverage based upon an affirmative determination that the discharge will not cause or contribute to the existing impairment.

C. Additional Sampling Requirements and Effluent Limits for Discharges to Certain Impaired Waters and Puget Sound Sediment Cleanup Sites

1. Permittees discharging to a 303(d)-listed waterbody (Category 5), either directly or indirectly through a stormwater drainage system, shall comply with the applicable sampling requirements and numeric effluent limits in Table 6. If a discharge point is subject to an impaired waterbody effluent limit (Condition S6.C) for a parameter that also has a benchmark, the effluent limit supersedes the benchmark. Permittees discharging to a 303(d) – listed waterbody (Category 5) that was not 303(d)-listed at the time of 2015 permit coverage shall comply with the applicable sampling requirements and numeric effluent limits in Table 6 as soon as possible, but no later than January 1, 2022.

a. Facilities subject to these limits include, but may not be limited to, facilities listed in Appendix 4.

b. For purposes of this condition, “applicable sampling requirements and effluent limits” means the sampling and effluent limits in Table 6 that correspond to the specific parameter(s) the receiving water is 303(d)-listed for at the time of permit coverage, or total suspended solids (TSS) if the waterbody is 303(d)-listed (Category 5) for sediment quality at the time of permit coverage.

Table 6: Sampling and Effluent Limits Applicable to Discharges to 303(d)-listed Waters

Parameter	Units	Maximum Daily[a]		Analytical Method [b]	Laboratory Quantitation Level [c]	Sampling Frequency[d]
		Freshwater	Marine			
Turbidity	NTUs	25	25	EPA 180.1 Meter	0.5	1/quarter
pH	SU	[i]	Between 7.0 and 8.5	Meter	±0.1	1/quarter
Fecal Coliform Bacteria	# colonies/ 100 mL	Report Only[h]	Report Only[h]	SM 9222D	20 CFU/ 100 mL	1/quarter
E. coli	# colonies/ 100 mL	Report Only[h]	N/A	EPA 1603	20 CFU/ 100 mL	1/quarter
Enterococci	# colonies/ 100 mL	N/A	Report Only[h]	EPA 1600	20 CFU/ 100 mL	1/quarter
TSS [f]	mg/L	30	30	SM2540-D	5	1/quarter
Phosphorus, Total	mg/L	[g]	[g]	EPA 365.1	0.01	1/quarter
Total Ammonia (as N)	mg/L	[g]	[g]	SM 4500 NH^3-GH	0.02	1/quarter
Copper, Total	µg/L	[g]	[g]	EPA 200.8	2.0	1/quarter
Lead, Total	µg/L	[g]	[g]	EPA 200.8	0.5	1/quarter
Mercury, Total	µg/L	2.1	1.8	EPA1631E	0.0005	1/quarter
Zinc, Total	µg/L	[g]	[g]	EPA 200.8	2.5	1/quarter
Pentachlorophenol	µg/L	[g]	[g]	EPA 625.1	10.8	1/quarter

a Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day; this does not apply to pH.

b. Or other equivalent method with the same reporting level.

c The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific method detection level (MDL) and QL on the DMR. The permittee must also upload the QA/QC documentation from the lab on the QL development.

d. 1/quarter means at least one sample taken each quarter, e.g., Q1 = Jan 1 – March 31st, Q2 = April 1 – June 30th

[e] Permittees shall use either a calibrated pH meter consistent with EPA 9040 or an approved state method.

[f.] Permittees who discharge to a 303(d)-listed waterbody (Category 5) for sediment quality shall sample discharge for TSS.

[g.] Site-specific effluent limitation will be assigned at the time of permit coverage.

[h.] A numeric effluent limit does not apply, but Permittees must sample according to Table 6. In addition, the following mandatory BMPs shall be incorporated into the SWPPP and implemented; the Permittee must:

1) Use all known, available and reasonable methods to prevent rodents, birds, and other animals from feeding/nesting/roosting at the facility. Nothing in this section shall be construed as allowing violations of any applicable federal, state or local statutes, ordinances, or regulations including the Migratory Bird Treaty Act.
2) Perform at least one annual dry weather inspection of the stormwater system to identify and eliminate sanitary sewer cross-connections;
3) Install structural source control BMPs to address on-site activities and sources that could cause bacterial contamination (e.g., dumpsters, compost piles, food waste, animal products):
4) Implement operational source control BMPs to prevent bacterial contamination from any known sources of fecal coliform bacteria (e.g., animal waste);
5) Conduct additional bacteria-related sampling and/or BMPs, if ordered by Ecology on a case-by-case basis.

[i] The effluent limit for a Permittee who discharges to a freshwater body 303(d)-listed for pH is: Between 6.0 and 8.5, if the 303(d)-listing is for high pH only; Between 6.5 and 9.0, if the 303(d)-listing is for low pH only; and Between 6.5 and 8.5 if the 303(d)-listing is for both low and high pH. All pH effluent limits are applied end-of-pipe.

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2. Permittees discharging to a ***Puget Sound Sediment Cleanup Site***[6] ,either directly or indirectly through a stormwater drainage system, shall comply with this section:
   a. Permittees shall sample the discharge for total suspended solids (TSS) in accordance with Table 7.
   b. If the waterbody is listed within Category 5 (sediment medium) where the ***outfall*** discharges to the waterbody, the discharge is subject to the TSS numeric effluent limit in Table 6.
   c. If the waterbody is not listed within Category 5 (sediment medium) where the outfall discharges to the waterbody, the discharge is subject to the TSS benchmark in Table 7. If a discharge exceeds the TSS benchmark, the Permittee shall comply with Condition S8.

[6] *Puget Sound Sediment Cleanup Site* means: Category 4B (Sediment) portions of Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway (including East and West Waterway), Eagle Harbor, Elliot Bay, Hood Canal (North), Liberty Bay, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway; Category 5 (Sediment) portions of the Duwamish Waterway; Category 4A (Sediment) portions of Bellingham Bay (Inner); and the Everett/Port Gardener, Oakland Bay/Shelton Harbor, and Port Angeles Harbor sediment cleanup areas, as mapped on Ecology's ISGP website. All references to Category 4A, 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment.

Table 7: Benchmarks and Sampling Requirements Applicable to Discharges to Puget Sound Sediment Cleanup Sites that are not Category 5 for Sediment Quality

Parameter	Units	Benchmark Value [a]	Analytical Method	Laboratory Quantitation Level [b]	Minimum Sampling Frequency [c]
TSS	mg/L	30	SM2540-D	5	1/quarter

[a] Permittees sampling more than once per quarter shall average the sample results and compare the average value to the benchmark to determine if it the discharge has exceeded the benchmark value. However, if Permittees collect more than one sample during a 24-hour period, they must first calculate the daily average of the individual grab sample results collected during that 24-hour period; then use the daily average to calculate a quarterly average.

[b] The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the discharge monitoring report. The permittee must also upload the QA/QC documentation from the lab on the QL development.

[c.] 1/quarter means at least one sample taken each quarter, year-round.

d. Permittees shall remove accumulated solids from storm drain lines (including inlets, catch basins, sumps, conveyances lines, and oil/water separators) on or beneath your facility at least once in the term of the permit.

   Permittees shall conduct line cleaning operations (e.g., jetting, vacuuming, removal, loading, storage, and/or transport) using BMPs to prevent discharges of storm drain solids to surface waters of the State.

   Removed storm drain solids and liquids shall be disposed of in accordance with applicable laws and regulations and documented in the SWPPP.

   i. If a Permittee can demonstrate, based on video inspection, in-line storm drain solids sampling, or other documentation, that storm drain line cleaning is not necessary to prevent downstream sediment contamination or recontamination, Ecology may waive this requirement by approving a modification of permit coverage.

   ii. Requests for line cleaning waivers must be accompanied by a modification of coverage form, and a detailed technical basis to support the request. The due date for line cleaning waiver requests is May 15, 2024.

e. Permittees shall sample and analyze storm drain solids in accordance with Table 8 at least once in the term of the permit. Storm drain solids must be collected/sampled from a representative catch basin, sump, pipe or other feature within the storm drain system that corresponds to the discharge point where total suspended solids samples are collected per Condition S6.C. Samples may be either a single grab sample or a composite sample. Samples must be representative of the storm drain solids generated and accumulated in the facility's drainage system. To the extent possible, sample locations must exclude portions of the drainage system affected by water from off-site sources (e.g., run-on from off-site properties, tidal influence, backflow, etc.).

   i. If a Permittee can demonstrate that storm drain solids sampling and analysis is not feasible or not necessary, Ecology may waive this requirement by approving a modification of permit coverage.

ii. Requests for storm drain solids sampling and analysis waivers must be accompanied by a modification of coverage form, and a detailed technical basis to support the request. The due date for solids sampling and analysis waiver requests is May 15, 2021.

f. All storm drain solids sampling data shall be reported to Ecology on a Solids Monitoring Report (SMR) no later than the DMR due date for the reporting period in which the solids were sampled, in accordance with Condition S9.A. A copy of the lab report shall be submitted to Ecology with the SMR.

Table 8: Sampling and Analytical Procedures for Storm Drain Solids

Analyte	Method in Sediment	Quantitation Level [a]
Conventional Parameters		
Percent total solids	SM 2540G, or ASTM Method D 2216	NA
Total organic carbon	Puget Sound Estuary Protocols (PSEP 1997), or EPA 9060	0.1%
Grain size	Ecology Method Sieve and Pipette (ASTM 1997), ASTMD422, or PSEP 1986/2003	NA
Metals		
Antimony, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw [b]
Arsenic, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Beryllium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Cadmium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Chromium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.5 mg/kg dw
Copper, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Lead, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Mercury, Total	EPA Method 1631E, or EPA Method 7471B	0.005 mg/kg dw
Nickel, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Selenium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.5 mg/kg dw
Silver, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Thallium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Zinc, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	5.0 mg/kg dw

Analyte	Method in Sediment	Quantitation Level [a]
Organics		
PAH compounds [c]	EPA Method 8270 D	70 µg/kg dw
PCBs (aroclors), Total [d]	EPA Method 8082A	10 µg/kg dw
Petroleum Hydrocarbons		
NWTPH-Dx	NWTPH-Dx	25.0-100.0 mg/ kg dw

[a] The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the sediment monitoring report. The permittee must also upload the QA/QC documentation from the lab on the QL development. All results shall be reported. For values below the QL, or where a QL is not specified, report results at the method detection limit from the lab and the qualifier of "U" for undetected at that concentration. All results shall be reported. For values below the reporting limit, report results at the method detection limit from the lab and the qualifier of "U" for undetected at that concentration.

[b] dw = dry weight

[c] PAH compounds include: 1-methylnaphthalene, 2-methylnaphthalene, 2-chloronaphthalene, acenaphthylene, acenaphthene anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b, k)fluoranthene, benzo(ghi)perylene, dibenzo(a,h)anthracene, dibenzofuran, carbazole, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

[d] Total = sum of PCB aroclors 1016+1221+1232+1242+1248+1254+1260

D. Requirements for Discharges to Waters with Applicable TMDLs

1. The Permittee shall comply with applicable TMDL determinations. Applicable TMDLs or TMDL determinations are TMDLs which have been completed by the issuance date of this permit, or which have been completed prior to the date that the Permittee's application is received by Ecology, whichever is later. Ecology will list the Permittee's requirements to comply with this condition on the letter of permit coverage.

2. TMDL requirements associated with TMDLs completed after the issuance date of this permit only become effective if they are imposed through an administrative order issued by Ecology.

3. Where Ecology has established a TMDL wasteload allocation and sampling requirements for the Permittee's discharge, the Permittee shall comply with all requirements of the TMDL as listed in Appendix 5.

   a. If a discharge point is subject to a TMDL-related effluent limit (Condition S6.D) for a parameter that also has a benchmark (Condition S5), the effluent limit supersedes the benchmark.

4. Where Ecology has established a TMDL general wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not identified specific requirements, Ecology will assume the Permittee's compliance with the terms and conditions of the permit complies with the approved TMDL.

5. Where Ecology has not established a TMDL wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not excluded these discharges, Ecology will assume the Permittee's compliance with the terms and conditions of this permit complies with the approved TMDL.

6. Where a TMDL for a parameter present in the Permittee's discharge specifically precludes or prohibits discharges of stormwater associated with industrial activity, the Permittee is not eligible for coverage under this permit.

S7. INSPECTIONS

A. Inspection Frequency and Personnel

1. The Permittee shall conduct and document visual inspections of the site each month.
2. The Permittee shall ensure that inspections are conducted by qualified personnel.

B. Inspection Components

Each inspection shall include:

1. Observations made at stormwater sampling locations and areas where stormwater associated with industrial activity is discharged off-site; or discharged to waters of the State, or to a storm sewer system that drains to waters of the State.
2. Observations for the presence of floating materials, visible oil sheen, discoloration, turbidity, odor, etc. in the stormwater discharge(s).
3. Observations for the presence of illicit discharges such as domestic wastewater, noncontact cooling water, or process wastewater (including leachate).
    a. If an illicit discharge is discovered, the Permittee shall notify Ecology within seven days.
    b. The Permittee shall eliminate the illicit discharge within 30 days.
4. A verification that the descriptions of potential pollutant sources required under this permit are accurate.
5. A verification that the site map in the SWPPP reflects current conditions.
6. An assessment of all BMPs that have been implemented, noting all of the following:
    a. Effectiveness of BMPs inspected.
    b. Locations of BMPs that need maintenance.
    c. Reason maintenance is needed and a schedule for maintenance.
    d. Locations where additional or different BMPs are needed and the rationale for the additional or different BMPs.

C. Inspection Results

1. The Permittee shall record the results of each inspection in an inspection report or checklist and keep the records on-site, as part of the SWPPP, for Ecology review.
   The Permittee shall ensure each inspection report documents the observations, verifications and assessments required in S7.B and includes:
    a. Time and date of the inspection
    b. Locations inspected

c. Statements that, in the judgment of 1) the person conducting the site inspection, and 2) the person described in Condition G2, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and this permit.

d. A summary report and a schedule of implementation of the remedial actions that the Permittee plans to take if the site inspection indicates that the site is out of compliance. The remedial actions taken must meet the requirements of the SWPPP and the permit.

e. Name, title, and signature of the person conducting site inspection; and the following statement: "I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

f. Certification and signature of the person described in Condition G2.A, or a duly authorized representative of the facility, in accordance with Condition G2.B and D.

D. Reports of Non-Compliance

The Permittee shall prepare reports of non-compliance identified during an inspection in accordance with the requirements of Condition S9.E.

S8. CORRECTIVE ACTIONS

A. Implementation of Source Control and Treatment BMPs from Previous Permit

In addition to the Corrective Action Requirements of S8.B-D, Permittees shall implement any applicable Level 1, 2 or 3 Responses required by the previous Industrial Stormwater General Permit(s). Permittees shall continue to operate and/or maintain any source control or treatment BMPs related to Level 1, 2 or 3 Responses implemented prior to the effective date of this permit.

B. Level One Corrective Actions – Operational Source Control BMPs

Permittees that exceed any applicable benchmark value(s) in Table 2, Table 3, and/or Table 7 for any quarter during a calendar year shall complete a Level 1 Corrective Action for each parameter exceeded in accordance with the following:

1. Within 14 days of receipt of sampling results that indicate a benchmark exceedance during a given quarter[7]; or, for parameters other than pH or visible oil sheen, the end of the quarter, whichever is later:

   a. Conduct an inspection to investigate the cause.

   b. Review the SWPPP and ensure that it fully complies with Permit Condition S3, and contains the applicable BMPs from the appropriate Stormwater Management Manual.

[7] Based on quarterly average per Condition S5.A.3, S5.B.2 and/or S6.C.2.c. For pH, and visible oil sheen, quarterly averaging is not allowed, so the 14 days begin upon receipt of a single benchmark exceedance.

c. Make appropriate revisions to the SWPPP to include additional operational source control BMPs with the goal of achieving the applicable benchmark value(s) in future discharges.

2. Summarize the Level 1 Corrective Actions in the Annual Report (Condition S9.B)

3. Level One Deadline: The Permittee shall sign/certify and fully implement the revised SWPPP according to Permit Condition S3 and the applicable Stormwater Management Manual as soon as possible, but no later than the DMR due date for the quarter the benchmark was exceeded.

C. Level Two Corrective Actions – Structural Source Control BMPs

Permittees that exceed an applicable benchmark value in Table 2, Table 3 and/or Table 7 (for a single parameter) for any two quarters during a calendar year shall complete a Level 2 Corrective Action in accordance with S8.C. Alternatively, the Permittee may skip Level 2 and complete a Level 3 Corrective Action in accordance with Condition S8.D.

1. Review the SWPPP and ensure that it fully complies with Permit Condition S3.
2. Make appropriate revisions to the SWPPP to include additional structural source control BMPs with the goal of achieving the applicable benchmark value(s) in future discharges.
3. Summarize the Level 2 Corrective Actions (planned or taken) in the Annual Report (Condition S9.B).
4. **Level 2 Deadline:** The Permittee shall sign/certify the SWPPP using the SWPPP Certification Form found on page 63 of this permit, and fully implement the revised SWPPP according to Permit Condition S3 and the applicable Stormwater Management Manual as soon as possible, but no later than August 31st of the following year.

   a. If installation of necessary structural source control BMPs is not feasible by August 31st of the following year, Ecology may approve additional time, by approving a Modification of Permit Coverage.

   b. If installation of structural source control BMPs is not feasible or not necessary to prevent discharges that may cause or contribute to a violation of a water quality standard, Ecology may waive the requirement for additional structural source control BMPs by approving a Modification of Permit Coverage.

   c. To request a time extension or waiver, a Permittee shall submit a detailed explanation of why it is making the request (technical basis), and a Modification of Coverage form to Ecology in accordance with Condition S2.B, by May 15th prior to Level 2 Deadline. Ecology will approve or deny the request within 60 days of receipt of a complete Modification of Coverage request.

   d. While a time extension is in effect, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

   e. For the year following the calendar year the Permittee triggered a Level 2 corrective action, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

D. Level Three Corrective Actions – Treatment BMPs

Permittees that exceed an applicable benchmark value in Table 2, Table 3, and/or Table 7 (for a single parameter) for any three quarters during a calendar year shall complete a Level 3 Corrective Action in accordance with S8.D. A Level 2 Corrective Action is not required.

1. Review the SWPPP and ensure that it fully complies with Permit Condition S3.
2. Make appropriate revisions to the SWPPP to include additional treatment BMPs with the goal of achieving the applicable benchmark value(s) in future discharges. Revisions shall include additional operational and/or structural source control BMPs if necessary for proper performance and maintenance of treatment BMPs.

   A ***qualified industrial stormwater professional*** shall review the revised SWPPP, sign the SWPPP Certification Form, and certify that it is reasonably expected to meet the ISGP benchmarks upon implementation. Upon written request Ecology may, one time during the permit cycle, waive this requirement on a case-by-case basis if a Permittee demonstrates to Ecology's satisfaction that the proposed Level 3 treatment BMPs are reasonably expected to meet ISGP benchmarks upon implementation.
3. Before installing treatment BMPs that require the site-specific design or sizing of structures, equipment, or processes to collect, convey, treat, reclaim, or dispose of industrial stormwater, the Permittee shall submit an engineering report to Ecology for review.
   a. The engineering report must include:
      i. Brief summary of the treatment alternatives considered and why the proposed option was selected. Include cost estimates of ongoing operation and maintenance, including disposal of any spent media;
      ii. The basic design data, including characterization of stormwater influent, and sizing calculations of the treatment units;
      iii. A description of the treatment process and operation, including a flow diagram;
      iv. The amount and kind of chemicals used in the treatment process, if any.
      Note: Use of stormwater treatment chemicals requires submittal of Request for Chemical Treatment Form;
      v. Results to be expected from the treatment process including the predicted stormwater discharge characteristics;
      vi. A statement, expressing sound engineering justification through the use of pilot plant data, results from similar installations, and/or scientific evidence that the proposed treatment is reasonably expected to meet the permit benchmarks; **and**
      vii. Certification by a licensed professional engineer.
   b. The engineering report shall be submitted no later than the May 15th prior to the Level 3 deadline, unless an alternate due date is specified in an order.
   c. An Operation and Maintenance Manual (O&M Manual) shall be submitted to Ecology no later than 30 days after construction/installation is complete; unless an alternate due date is specified in an order.

4. Summarize the Level 3 Corrective Actions (planned or taken) in the Annual Report (Condition S9.B). Include information on how monitoring, assessment or evaluation information was (or will be) used to determine whether existing treatment BMPs will be modified/enhanced, or if new/additional treatment BMPs will be installed.
5. **Level 3 Deadline:** The Permittee shall sign/certify and fully implement the revised SWPPP according to Permit Condition S3 and the applicable Stormwater Management Manual as soon as possible, but no later than September 30th of the following year.
   a. If installation of necessary treatment BMPs is not feasible by the Level 3 Deadline; Ecology may approve additional time by approving a Modification of Permit Coverage.
   b. If installation of treatment BMPs is not feasible or not necessary to prevent discharges that may cause or contribute to violation of a water quality standard, Ecology may waive the requirement for treatment BMPs by approving a Modification of Permit Coverage.
   c. To request a time extension or waiver, a Permittee shall submit a detailed explanation of why it is making the request (technical basis), and a Modification of Coverage form to Ecology in accordance with Condition S2.B, by May 15th prior to the Level 3 Deadline. Ecology will approve or deny the request within 60 days of receipt of a complete Modification of Coverage request.
   d. While a time extension is in effect, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.
   e. For the year following the calendar year the Permittee triggered a Level 3 corrective action, benchmark exceedances (for the same parameter) do not count towards additional Level 2 or 3 Corrective Actions.

S9. REPORTING AND RECORDKEEPING

A. Electronic Reporting Requirements

The Permittee shall submit all NOIs, NOTs, Noncompliance Reports, Annual Reports, DMRs, and other reporting information as required electronically, unless you have a received a waiver from Ecology. All information required to be submitted shall be submitted through Ecology's Water Quality Permitting Portal.

If you are unable to submit electronically (for example, you do **not** have access to the internet), you must contact Ecology to request an Electronic Reporting Waiver form and submit the completed form to Ecology.

B. Discharge Monitoring Reports

1. The Permittee shall submit sampling data obtained during each reporting period on a Discharge Monitoring Report (DMR) or a Solids Monitoring Form (SMR)[8] form provided, or otherwise approved, by Ecology.
2. Upon permit coverage, the Permittee shall ensure that DMRs are submitted to Ecology by the DMR due dates below:

Table 9: Reporting Dates and DMR Due Dates

Reporting Period	Months	DMR Due Date
1st	January-March	May 15
2nd	April-June	August 15
3rd	July-Sept	November 15
4th	October-December	February 15

3. DMRs and SMRs shall be submitted electronically using Ecology's Water Quality Permitting Portal – Discharge Monitoring Report (DMR) application, unless a waiver from electronic reporting has been granted (e.g., if a Permittee does not have broadband internet access). SMR forms, identified as a single sample DMR type, are included with the quarterly DMR forms on the Portal. If a waiver has been granted, reports must be postmarked or delivered to the following address by the due date:

   Department of Ecology
   Water Quality Program – Industrial Stormwater
   PO Box 47696
   Olympia, Washington 98504-7696

4. The first full quarter following permit coverage, the Permittee shall submit a DMR each reporting period, whether or not the facility discharged stormwater from the site.
   a. If no stormwater sample was obtained from the site during a given reporting period, the Permittee shall submit the DMR form indicating "no sample obtained," or "no discharge during the quarter," with a written explanation as to why there was no sample taken or no discharge.
   b. If a Permittee has suspended sampling for a parameter due to consistent attainment, the Permittee shall submit a DMR and indicate that it has achieved consistent attainment for that parameter(s).
5. The Permittee must use the Water Quality Permitting Portal – Permit Submittals application (unless otherwise specified in the permit) to submit all other written permit-required reports by the date specified in the permit unless a waiver has been granted under S9.B. If a

[8] SMR required if Condition S6.C.2 applies.

waiver has been granted, DMRs must be postmarked or delivered to the address listed in S9.B.3 by the due date.

C. Annual Reports

1. The Permittee shall submit a complete and accurate Annual Report to the Department of Ecology no later than May 15th of each year using Ecology's Water Quality Permitting Portal – Permit Submittals application, unless a waiver from electronic reporting has been granted according to S9.B.3. Annual Reports are not required if the Permittee didn't have permit coverage during the previous calendar year.
2. The annual report shall include corrective action documentation as required in S8.B-D. If corrective action is not yet completed at the time of submission of this annual report, the Permittee must describe the status of any outstanding corrective action(s).
3. Permittees shall include the following information with each annual report. The Permittee shall:
    a. Identify the condition triggering the need for corrective action review.
    b. Describe the problem(s) and identify the dates they were discovered.
    c. Summarize any Level 1, 2 or 3 corrective actions completed during the previous calendar year and include the dates it completed the corrective actions.
    d. Describe the status of any Level 2 or 3 corrective actions triggered during the previous calendar year, and identify the date it expects to complete corrective actions.
    e. Primary airport Permittees with at least 1,000 annual jet departures shall include a certification statement in each annual report that it does not use airfield deicing products that contain urea. Alternatively, Permittees shall meet the numeric effluent limit for ammonia in Condition S5.C, Table 5.
4. Permittees shall retain a copy of all annual reports onsite for Ecology review.

D. Records Retention

1. The Permittee shall retain the following documents onsite for a minimum of five years:
    a. A copy of this permit.
    b. A copy of the permit coverage letter.
    c. Records of all sampling information specified in Condition S4.B.3.
    d. Inspection reports including documentation specified in Condition S7.
    e. Any other documentation of compliance with permit requirements.
    f. All equipment calibration records.
    g. All BMP maintenance records.
    h. All original recordings for continuous sampling instrumentation.
    i. Copies of all laboratory reports as described in Condition S3.B.4.
    j. Copies of all reports required by this permit.

k. Records of all data used to complete the application for this permit.

2. The Permittee shall extend the period of records retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee, or when requested by Ecology.

3. The Permittee shall make all plans, documents, and records required by this permit immediately available to Ecology or the local jurisdiction upon request; or within 14 days of a written request from Ecology.

E. Additional Sampling by the Permittee

If the Permittee samples any pollutant at a designated sampling point more frequently than required by this permit, then the Permittee shall include the results in the calculation and reporting of the data submitted in the Permittee's DMR.

If Permittees collect more than one sample during a 24-hour period, they must first calculate the daily average of the individual grab sample results collected during that 24-hour period; then use the daily average to calculate a quarterly average.

F. Reporting Permit Violations

1. In the event the Permittee is unable to comply with any of the terms and conditions of this permit which may endanger human health or the environment, or exceed any numeric effluent limitation in the permit, the Permittee shall, upon becoming aware of the circumstances:

   a. Immediately take action to minimize potential pollution or otherwise stop the noncompliance and correct the problem.

   b. Immediately notify the local jurisdiction and appropriate Ecology regional office of the failure to comply:

      • **Central Region** at (509) 575-2490 for Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, or Yakima County

      • **Eastern Region** at (509) 329-3400 for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, or Whitman County

      • **Northwest Region** at (425) 649-7000 for Island, King, Kitsap, San Juan, Skagit, Snohomish, or Whatcom County

      • **Southwest Region** at (360) 407-6300 for Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, or Wahkiakum County

   c. Submit a detailed written report to Ecology within 5 days of the time the Permittee becomes aware of the circumstances, unless Ecology requests an earlier submission. The report shall be submitted using Ecology's Water Quality Permitting Portal – Permit Submittals application, unless a waiver from electronic reporting has been granted according to S9.B.3. The Permittee's report shall contain:

      i. A description of the noncompliance, including exact dates and times.

ii. Whether the noncompliance has been corrected and, if not, when the noncompliance will be corrected.

iii. The steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

d. Upon request of the Permittee, Ecology may waive the requirements for a written report on a case-by-case basis, if the immediate notification (S9.F.1.b) is received by Ecology within 24 hours.

2. Compliance with the requirements of this section does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

G. Public Access to SWPPP

The Permittee shall provide access to, or a copy of, the SWPPP to the public when requested in writing. Upon receiving a written request from the public for the SWPPP, the Permittee shall:

1. Provide a copy of the SWPPP to the requestor within 14 days of receipt of the written request; ***or***
2. Notify the requestor within ten days of receipt of the written request of the location and times within normal business hours when the requestor may view the SWPPP, and provide access to the SWPPP within 14 days of receipt of the written request; ***or***
3. If you provide a URL in your NOI where your SWPPP can be found, and maintain your current SWPPP at this URL, you will have complied with the public availability requirements for the SWPPP. To remain current, you must post any SWPPP modifications, records, and other reporting elements required for the permit term at the same URL as the main body of the SWPPP.

S10. COMPLIANCE WITH STANDARDS

A. Discharges shall not cause or contribute to a violation of Surface Water Quality Standards (Chapter 173-201A WAC), Groundwater Quality Standards (Chapter 173-200 WAC), Sediment Management Standards (Chapter 173-204 WAC), and federal human health-based criteria for Washington (40 CFR 131.45). Discharges that are not in compliance with these standards are prohibited.

B. Ecology will presume compliance with water quality standards, unless discharge monitoring data or other site specific information demonstrates that a discharge causes or contributes to violation of water quality standards, when the Permittee is:

1. In full compliance with all permit conditions, including planning, sampling, monitoring, reporting, and recordkeeping conditions.
2. Fully implementing stormwater best management practices contained in stormwater technical manuals approved by the department, or practices that are demonstrably equivalent to practices contained in stormwater technical manuals approved by Ecology,

including the proper selection, implementation, and maintenance of all applicable and appropriate best management practices for on-site pollution control.

C. Prior to the discharge of stormwater and non-stormwater to waters of the State, the Permittee shall apply all known and reasonable methods of prevention, control, and treatment (AKART). To comply with this condition, the Permittee shall prepare and implement an adequate SWPPP, with all applicable and appropriate BMPs, including the BMPs necessary to meet the standards identified in Condition S10.A, and shall install and maintain the BMPs in accordance with the SWPPP, applicable SWMMs, and the terms and conditions of this permit.

S11. PERMIT FEES

A. The Permittee shall pay permit fees assessed by Ecology and established in Chapter 173-224 WAC.

B. Ecology will continue to assess permit fees until it terminates a permit in accordance with Special Condition S13 or revoked in accordance with General Condition G5.

S12. SOLID AND LIQUID WASTE MANAGEMENT

The Permittee shall not allow solid waste material or ***leachate*** to cause violations of the State Surface Water Quality Standards (Chapter 173-201A WAC), the Groundwater Quality Standards (Chapter 173-200 WAC) or the Sediment Management Standards (Chapter 173-204 WAC).

S13. NOTICE OF TERMINATION (NOT)

A. Conditions for a NOT

Ecology may approve a Notice of Termination (NOT) request when the Permittee meets one or more of the following conditions and Ecology determines that the discharges from the facility are no longer required to be covered under this permit:

1. All permitted stormwater discharges associated with industrial activity that are authorized by this permit cease because the industrial activity has ceased, and no significant materials or industrial pollutants remain exposed to stormwater.
2. The party that is responsible for permit coverage (signatory to application) sells or otherwise legally transfers responsibility for the industrial activity.
3. All stormwater discharges associated with industrial activity are prevented because the stormwater is redirected to a sanitary sewer, or discharged to ground (e.g., infiltration).

B. Procedure for Obtaining Termination

1. The Permittee shall apply for a NOT on a form specified by Ecology (NOT Form).
2. The Permittee seeking permit coverage termination shall sign the NOT in accordance with Condition G2 of this permit.
3. The Permittee shall submit the completed NOT form to Ecology through the WQWebPortal.

GENERAL CONDITIONS

G1. DISCHARGE VIOLATIONS

All discharges and activities authorized by this general permit shall be consistent with the terms and conditions of this general permit. Any discharge of any pollutant more frequently than, or at a level in excess of that identified and authorized by the general permit, shall constitute a violation of the terms and conditions of this permit.

G2. SIGNATORY REQUIREMENTS

A. All permit applications shall be signed:

1. In the case of corporations, by a ***responsible corporate officer***.
2. In the case of a partnership, by a general partner of a partnership.
3. In the case of sole proprietorship, by the proprietor.
4. In the case of a municipal, state, or other public facility, by either a principal executive officer or ranking elected official.

B. All reports required by this permit and other information requested by Ecology shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above and submitted to the Ecology.
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

C. Changes to authorization. If an authorization under paragraph G2.B.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph G2.B.2 above shall be submitted to Ecology prior to, or together with, any reports, information, or applications to be signed by an authorized representative.

D. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G3. RIGHT OF INSPECTION AND ENTRY

The Permittee shall allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law:

A. To enter upon the premises where a discharge is located or where any records shall be kept under the terms and conditions of this permit.

B. To have access to and copy, at reasonable times and at reasonable cost, any records required to be kept under the terms and conditions of this permit.

C. To inspect, at reasonable times, any facilities, equipment (including sampling and control equipment), practices, methods, or operations regulated or required under this permit.

D. To sample or monitor, at reasonable times, any substances or parameters at any location for purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act.

G4. GENERAL PERMIT MODIFICATION AND REVOCATION

This permit may be modified, revoked and reissued, or terminated in accordance with the provisions of Chapter 173-226 WAC. Grounds for modification, revocation and reissuance, or termination include, but are not limited to, the following:

A. When a change which occurs in the technology or practices for control or abatement of pollutants applicable to the category of dischargers covered under this permit.

B. When effluent limitation guidelines or standards are promulgated pursuant to the CWA or Chapter 90.48 RCW, for the category of dischargers covered under this permit.

C. When a water quality management plan containing requirements applicable to the category of dischargers covered under this permit is approved.

D. When information is obtained which indicates that cumulative effects on the environment from dischargers covered under this permit are unacceptable.

G5. REVOCATION OF COVERAGE UNDER THE PERMIT

A. Pursuant with Chapter 43.21B RCW and Chapter 173-226 WAC, Ecology may terminate coverage for any discharger under this permit for cause. Cases where coverage may be terminated include, but are not limited to, the following:

   1. Violation of any term or condition of this permit.
   2. Obtaining coverage under this permit by misrepresentation or failure to disclose fully all relevant facts.
   3. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.
   4. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090.
   5. A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations.
   6. Nonpayment of permit fees or penalties assessed pursuant to RCW 90.48.465 and Chapter 173-224 WAC.

7. Failure of the Permittee to satisfy the public notice requirements of WAC 173-226-130(5), when applicable.

B. Ecology may require any discharger under this permit to apply for and obtain coverage under an individual permit or another more specific general permit.

C. Permittees who have their coverage revoked for cause according to WAC 173-226-240 may request temporary coverage under this permit during the time an individual permit is being developed, provided the request is made within 90 days from the time of revocation and is submitted along with a complete individual permit application form.

G6. REPORTING A CAUSE FOR MODIFICATION

The Permittee shall submit a new application, or a supplement to the previous application, whenever a material change to the industrial activity or in the quantity or type of discharge is anticipated which is not specifically authorized by this permit. This application shall be submitted at least 60 days prior to any proposed changes. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not relieve the Permittee of the duty to comply with the existing permit until it is modified or reissued.

G7. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in this permit shall be construed as excusing the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G8. DUTY TO REAPPLY

The Permittee shall apply for permit renewal at least 180 days prior to the expiration date of this permit.

G9. REMOVED SUBSTANCES

Collected screenings, grit, solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of stormwater shall not be resuspended or reintroduced to the final effluent stream for discharge to state waters.

G10. DUTY TO PROVIDE INFORMATION

The Permittee shall submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also submit to Ecology, upon request, copies of records required to be kept by this permit [40 CFR 122.41(h)].

G11. OTHER REQUIREMENTS OF 40 CFR

All other requirements of 40 CFR 122.41 and 122.42 are incorporated in this permit by reference.

G12. ADDITIONAL SAMPLING

Ecology may establish specific sampling requirements in addition to those contained in this permit by administrative order or permit modification.

G13. PENALTIES FOR VIOLATING PERMIT CONDITIONS

Any person who is found guilty of willfully violating the terms and conditions of this permit shall be deemed guilty of a crime, and upon conviction thereof shall be punished by a fine of up to $10,000 and costs of prosecution, or by imprisonment at the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of this permit shall incur, in addition to any other penalty as provided by law, a civil penalty in the amount of up to $10,000 for every such violation. Each and every such violation shall be a separate and distinct offense, and in case of a continuing violation, every day's continuance shall be deemed to be a separate and distinct violation.

G14. UPSET

Definition – "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of the following paragraph are met.

A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that: 1) an upset occurred and that the Permittee can identify the cause(s) of the upset; 2) the permitted facility was being properly operated at the time of the upset; 3) the Permittee submitted notice of the upset as required in condition S9.E; **and** 4) the Permittee complied with any remedial measures required under this permit.

In any enforcement proceeding, the Permittee seeking to establish the occurrence of an upset has the burden of proof.

G15. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G16. DUTY TO COMPLY

The Permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

G17. TOXIC POLLUTANTS

The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.

G18. PENALTIES FOR TAMPERING

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any sampling device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this Condition, punishment shall be a fine of not more than $20,000 per day of violation, or imprisonment of not more than four years, or both.

G19. REPORTING PLANNED CHANGES

The Permittee shall, as soon as possible, give notice to Ecology of planned physical alterations, modifications, or additions to the permitted industrial activity, which will result in:

A. The permitted facility being determined to be a new source pursuant to 40 CFR 122.29(b).

B. A significant process change, as defined in the glossary of this permit.

C. A change in the location of industrial activity that affects the Permittee's sampling requirements in Conditions S3, S4, S5, and S6.

Following such notice, permit coverage may be modified, or revoked and reissued pursuant to 40 CFR 122.62(a) to specify and limit any pollutants not previously limited. Until such modification is effective, any new or increased discharge in excess of permit limits or not specifically authorized by this permit constitutes a violation.

G20. REPORTING OTHER INFORMATION

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to Ecology, it shall promptly submit such facts or information.

G21. REPORTING ANTICIPATED NON-COMPLIANCE

The Permittee shall give advance notice to Ecology by submission of a new application, or supplement to the existing application, at least 45 days prior to commencement of such discharges, of any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility or activity which may result in noncompliance with permit limits or conditions. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during non-critical water quality periods and carried out in a manner approved by Ecology.

G22. REQUESTS TO BE EXCLUDED FROM COVERAGE UNDER THE PERMIT

A. Any discharger authorized by this permit may request to be excluded from coverage under the general permit by applying for an individual permit.

B. The discharger shall submit to Ecology an application as described in WAC 173-220-040 or WAC 173-216-070, whichever is applicable, with reasons supporting the request. These reasons shall fully document how an individual permit will apply to the applicant in a way that the general permit cannot.

C. Ecology may make specific requests for information to support the request. Ecology shall either issue an individual permit or deny the request with a statement explaining the reason for the denial.

D. When an individual permit is issued to a discharger otherwise subject to the industrial stormwater general permit, the applicability of the industrial stormwater general permit to that Permittee is automatically terminated on the effective date of the individual permit.

G23. APPEALS

A. The terms and conditions of this general permit, as they apply to the appropriate class of dischargers, are subject to appeal by any person within 30 days of issuance of this general permit, in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC.

B. The terms and conditions of this general permit, as they apply to an individual discharger, are appealable in accordance with Chapter 43.21B RCW within 30 days of the effective date of coverage of that discharger. Consideration of an appeal of general permit coverage of an individual discharger is limited to the general permit's applicability or nonapplicability to that individual discharger.

C. The appeal of general permit coverage of an individual discharger does not affect any other dischargers covered under this general permit. If the terms and conditions of this general permit are found to be inapplicable to any individual discharger(s), the matter shall be remanded to Ecology for consideration of issuance of an individual permit or permits.

G24. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

G25. BYPASS PROHIBITED

Bypass, which is the intentional diversion of waste streams from any portion of a treatment facility, is prohibited, and Ecology may take enforcement action against a Permittee for bypass unless one of the following circumstances (A, B, or C) is applicable.

A. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions

Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten days before the date of the bypass.

B. Bypass Which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit

This bypass is permitted only if:

1. Bypass is unavoidable to prevent loss of life, personal injury, or ***severe property damage***. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

2. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment downtime (but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance), or transport of untreated wastes to another treatment facility.
3. Ecology is properly notified of the bypass as required in condition S9E of this permit.

C. Bypass which is anticipated and has the Potential to Result in Noncompliance of this Permit

The Permittee must notify Ecology at least thirty days before the planned date of bypass. The notice must contain (1) a description of the bypass and its cause; (2) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (3) a cost-effectiveness analysis of alternatives including comparative resource damage assessment; (4) the minimum and maximum duration of bypass under each alternative; (5) a recommendation as to the preferred alternative for conducting the bypass; (6) the projected date of bypass initiation; (7) a statement of compliance with SEPA; (8) a request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated; and (9) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above must be considered during preparation of the engineering report or facilities plan and plans and specifications and must be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is necessary up to and including the construction period in an effort to minimize or eliminate the bypass.

Ecology will consider the following prior to issuing an administrative order for this type bypass:

1. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
2. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
3. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. The public must be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by Ecology under RCW 90.48.120.

APPENDIX 1 – ACRONYMS

AKART	All Known, Available and Reasonable methods of prevention, control and Treatment
BMP	Best Management Practice
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWT	Centralized Waste Treatment
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
FAA	Federal Aviation Administration
FWPCA	Federal Water Pollution Control Act
NAICS	North American Industry Classification System
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
SARA	Superfund Amendment and Reauthorization Act
SEPA	State Environmental Policy Act
SIC	Standard Industrial Classification
SMCRA	Surface Mining Control and Reclamation Act
SWMM	Stormwater Management Manual
SWPPP	Stormwater Pollution Prevention Plan

TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USC	United States Code
WAC	Washington Administrative Code
WQ	Water Quality

APPENDIX 2 – DEFINITIONS

40 CFR means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

303(d)-Listed water body means waterbodies as listed as Category 5 on Washington State's Water Quality Assessment.

Air Emission means a release of air contaminants into the ambient air.

Airfield Pavement means all paved surfaces on the airside of an airport.

AKART is an acronym for “all known, available, and reasonable methods of prevention, control, and treatment.” AKART represents the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants and controlling pollution associated with a discharge.

Annual Non-Propeller Aircraft Departures means the average number of commercial turbine-engine aircraft that are propelled by jet, i.e., turbojet or turbofan, that take off from an airport on an annual basis, as tabulated by the Federal Aviation Administration (FAA).

Applicable TMDL means a TMDL which has been completed either before the issuance date of this permit or the date the Permittee first obtains coverage under this permit, whichever is later.

Application means a request for coverage under this general permit pursuant to WAC 173-226-200. Also called a Notice of Intent (NOI).

Average means arithmetic mean, which is equal to the sum of the measurements divided by the number of measurements.

Benchmark means a pollutant concentration used as a permit threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. When pollutant concentrations exceed benchmarks, corrective action requirements take effect. Benchmark values are not water quality standards and are not numeric effluent limitations; they are indicator values.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In this permit BMPs are further categorized as operational source control, structural source control, erosion and sediment control, and treatment BMPs.

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

Clean Water Act (CWA) means the Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; USC 1251 et seq.

Combined Sewer means a sewer which has been designed to serve as a sanitary sewer and a storm sewer, and into which inflow is allowed by local ordinance.

Construction Activity means clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, industrial buildings, and demolition activity.

Control Plan means a total maximum daily load (TMDL) determination, restrictions for the protection of state or federal threatened or endangered species, a groundwater management plan, or other limitations that regulate or set limits on discharges to a specific waterbody or ground water recharge area.

Daily Average means the average measurement of the pollutant throughout a period of 24 consecutive hours starting at 12:01 A.M. and ending at the following 12:00 P.M. (midnight).

Deicing means procedures and practices to remove or prevent any accumulation of snow or ice on: 1) an aircraft; or 2) airfield pavement.

Demonstrably Equivalent means that the technical basis for the selection of all stormwater best management practices are documented within a stormwater pollution prevention plan. The stormwater pollution prevention plan must document: 1) The method and reasons for choosing the stormwater best management practices selected; 2) The pollutant removal performance expected from the practices selected; 3) The technical basis supporting the performance claims for the practices selected, including any available existing data concerning field performance of the practices selected; 4) An assessment of how the selected practices will comply with state water quality standards; and 5) An assessment of how the selected practices will satisfy both applicable federal technology-based treatment requirements and state requirements to use all known, available, and reasonable methods of prevention, control, and treatment.

Detention means the temporary storage of stormwater to improve quality and/or to reduce the mass flow rate of discharge.

Discharge [of a pollutant] means any addition of any pollutant or combination of pollutants to surface waters of the State of Washington from any point source. This definition includes additions of pollutants into surface waters of the State of Washington from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Discharge Point means the location where a discharge leaves the Permittee's facility. Discharge point also includes the location where a discharge enters the ground on-site (e.g., infiltration BMP).

Discharger means an owner or operator of any facility or activity subject to regulation under Chapter 90.48 RCW or the Federal Clean Water Act.

Domestic Wastewater means water carrying human wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with such groundwater infiltration or surface waters as may be present.

Ecology means the Washington State Department of Ecology.

EPA means the United States Environmental Protection Agency.

Equivalent BMPs means operational, source control, treatment, or innovative BMPs which result in equal or better quality of stormwater discharge to surface water or to groundwater than BMPs selected from the SWMM.

Erosion means the wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep.

Erosion and Sediment Control BMPs means BMPs that are intended to prevent erosion and sedimentation, such as preserving natural vegetation, seeding, mulching and matting, plastic covering, filter fences, and sediment traps and ponds.

Existing Facility means a facility that was in operation prior to the effective date of this permit. It also includes any facility that is not categorically included for coverage but is in operation when identified by Ecology as a significant contributor of pollutants.

Facility means any establishment (including land or appurtenances thereto) that is subject to regulation under this permit. See Special Condition S1.

First Fall Storm Event means the first time on or after September 1st of each year that precipitation occurs and results in a stormwater discharge from a facility. This storm event tends to wash off and discharge pollutants that accumulate during the preceding dry months.

General Permit means a permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

Groundwater means water in a saturated zone or stratum beneath the land surface or a surface waterbody.

Hazardous Substance means any liquid, solid, gas, or sludge, including any material, substanct, product, commodigy, or waste, regardless of quantity, that exhibits any of the physical, chemical, or biological properties described in WAC 173-303-090 or 173-303-100.

Illicit Discharge means any discharge that is not composed entirely of stormwater except (1) discharges authorized pursuant to a separate NPDES permit, or (2) conditionally authorized non-stormwater discharges identified in Condition S5.D.

Inactive Facility means a facility that no longer engages in business, production, providing services, or any auxiliary operation.

Industrial Activity means (1) the 11 categories of industrial activities identified in 40 CFR 122.26(b)(14)(i-xi) that must apply for either coverage under this permit or no exposure certification, (2) any facility conducting any activities described in Table 1, and (3) the activities occurring at any facility identified by Ecology as a significant contributor of pollutants. Table 1 lists the 11 categories of industrial activities identified in 40 CFR 122.26(b)(14)(i-xi) in a different format.

Land Application Site means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application site, surface impoundment, injection well, or waste pile.

Leachate means water or other liquid that has percolated through raw material, product or waste and contains substances in solution or suspension as a result of the contact with these materials.

Local Government means any county, city, or town having its own government for local affairs.

Material Handling means storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product.

Municipality means a political unit such as a city, town or county; incorporated for local self-government.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking, and reissuing, terminating, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the State from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington Department of Ecology.

New Development means land disturbing activities, including Class IV -general forest practices that are conversions from timber land to other uses; structural development, including construction or installation of a building or other structure; creation of impervious surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development.

New Discharge(r) means a facility from which there is a discharge, that did not commence the discharge at a particular site prior to August 13, 1979, which is not a new source, and which has never received a finally effective NPDES permit for discharges at that site. See 40 CFR 122.2.

New Facility means a facility that begins activities that result in a discharge or a potential discharge to waters of the State on or after the effective date of this general permit.

Noncontact Cooling Water means water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

North American Industry Classification System (NAICS) means the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. It was developed jointly by the U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's Instituto Nacional de Estadistica y Geografia to allow for a high level of comparability in business statistics among the North American countries.

Notice of Intent (NOI) – *See "*Application*"*

Notice of Termination (NOT) means a request for termination of coverage under this general permit as specified by Special Condition S13 of this permit.

Operational Source Control BMPs means schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the pollution of waters of the State. Not included are BMPs that require construction of pollution control devices.

Operator means any entity with a stormwater discharge associated with industrial activity.

Outfall means the point where a discharge from a facility enters a receiving waterbody or receiving waters.

Pollutant means the discharge of any of the following to waters of the State: dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, domestic sewage sludge (biosolids), munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste. This term does not include sewage from vessels within the meaning of section 312 of the FWPCA nor does it include dredged or fill material discharged in accordance with a permit issued under section 404 of the FWPCA.

Pollution means contamination or other alteration of the physical, chemical, or biological properties of waters of the State; including change in temperature, taste, color, turbidity, or odor of the waters; or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the State as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety or welfare; or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or to livestock, wild animals, birds, fish, or other aquatic life.

Process Wastewater means any non-stormwater which, during manufacturing or processing, comes into direct contact or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. If stormwater commingles with process wastewater, the commingled water is considered process wastewater.

Puget Sound Sediment Cleanup Site means Category 4B (Sediment) portions of Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway (including East and West Waterway), Eagle Harbor, Elliot Bay, Hood Canal (North), Liberty Bay, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway; Category 5 (Sediment) portions of the Duwamish Waterway; Category 4A (Sediment) portions of Bellingham Bay (Inner); and the Everett/Port Gardener and Port Angeles Harbor sediment cleanup areas, as mapped on Ecology's ISGP website. All references to Category 4A, 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment.

Qualified Industrial Stormwater Professional means a licensed professional engineer, geologist, hydrogeologist; Certified Professional in Stormwater Quality, Certified Professional in Erosion and Sediment Control; or qualified environmental professional with education and experience in stormwater management and licensed to do business in the State of Washington.

Qualified Personnel means those who (1) possesses the knowledge and skills to assess conditions and activities at the facility that could impact stormwater quality; (2) can evaluate the effectiveness of best management practices required by this permit for this specific facility and its unique operations and; (3) is familiar with site operations and practices with sufficient authority to commit the organization to the BMPs and actions detailed in the SWPPP..

Quantitation Level (QL) *also known as Minimum Level of Quantitation (ML)* means the lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Reasonable Potential means the likely probability for pollutants in the discharge to exceed the applicable water quality criteria in the receiving waterbody.

Redevelopment means on a site that is already substantially developed (i.e., has 35% or more of existing impervious surface coverage), the creation or addition of impervious surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation or expansion of a building or other structure; replacement of impervious surface that is not part of a routine maintenance activity; and land disturbing activities.

Regular Business Hours means those time frames when the facility is engaged in its primary production process, but does not include additional shifts or weekends when partial staffing is at the site primarily for maintenance and incidental production activities. Regular business hours do not include periods of time that the facility is inactive and unstaffed.

Representative [sample] means a sample of the discharge that accurately characterizes stormwater runoff generated in the designated drainage area of the facility.

Responsible Corporate Officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Runoff means that portion of rainfall or snowmelt water not absorbed into the ground that becomes surface flow.

Sanitary Sewer means a sewer which is designed to convey domestic wastewater.

Sediment means the fragmented material that originates from the weathering and erosion of rocks, unconsolidated deposits, or unpaved yards, and is transported by, suspended in, or deposited by water.

Severe Property Damage means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

Significant Amount means an amount of a pollutant in a discharge that is amenable to available and reasonable methods of prevention, control, or treatment; or an amount of a pollutant that has a reasonable potential to cause a violation of surface or ground water quality standards or sediment management standards.

Significant Contributor of Pollutant(s) means a facility determined by Ecology to be a contributor of a significant amount(s) of a pollutant(s) to waters of the State.

Significant Materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges.

Significant Process Change means any modification of the facility that would result in any of the following:

1. Add different pollutants in a significant amount to the discharge.
2. Increase the pollutants in the stormwater discharge by a significant amount.
3. Add a new industrial activity (SIC) that was not previously covered.
4. Add additional impervious surface or acreage such that stormwater discharge would be increased by 25% or more.

Source Control BMPs means structures or operations that are intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. This permit separates source control into two types: structural source control BMPs and operational source control BMPs.

Standard Industrial Classification (SIC) is the statistical classification standard underlying all establishment-based federal economic statistics classified by industry as reported in the 1987 SIC Manual by the Office of Management and Budget.

State Environmental Policy Act (SEPA) means the Washington State Law, RCW 43.21C.020, intended to prevent or eliminate damage to the environment.

Storm Sewer means a sewer that is specifically designed to carry stormwater. Also called a storm drain.

Stormwater means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface waterbody, or a constructed infiltration facility.

Stormwater Drainage System means constructed and natural features which function together as a system to collect, convey, channel, hold, inhibit, retain, detain, infiltrate or divert stormwater.

Stormwater Management Manual (SWMM) or ***Manual*** means the technical manuals prepared by Ecology for stormwater management in western and eastern Washington.

Stormwater Pollution Prevention Plan (SWPPP) means a documented plan to implement measures to identify, prevent, and control the contamination of point source discharges of stormwater.

Structural Source Control BMPs means physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater.

Substantially Identical Discharge Point means a discharge point that shares the following characteristics with another discharge point: 1) the same general industrial activities conducted in the drainage area of the discharge point, 2) the same Best Management Practices conducted in the drainage area of the discharge point, 3) the same type of exposed materials located in the drainage area of the discharge point that are likely to be significant contributors of pollutants to stormwater discharges, and 4) the same type of impervious surfaces in the drainage area that could affect the percolation of stormwater runoff into the ground (e.g., asphalt, crushed rock, grass).

Surface Waters of the State includes lakes, rivers, ponds, streams, inland waters, salt waters, and all other surface waters and water courses within the jurisdiction of the state.

Total Maximum Daily Load (TMDL) means a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet state water quality standards. Percentages of the total maximum daily load are allocated to the various pollutant sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The TMDL calculations include a "margin of safety" to ensure that the waterbody can be protected in case there are unforeseen events or unknown sources of the pollutant. The calculation also accounts for seasonable variation in water quality.

Treatment BMPs means BMPs that are intended to remove pollutants from stormwater.

Turbidity means the clarity of water expressed as nephelometric turbidity units (NTU) and measured with a calibrated turbidimeter.

Underground Injection Control Well means a well that is used to discharge fluids into the subsurface. An underground injection control well is one of the following:

1. A bored, drilled, or driven shaft,
2. An improved sinkhole, or
3. A subsurface fluid distribution system. (WAC 173-218-030)

Unsafe Conditions means those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, or electrical storms, or situations that otherwise make sampling impractical, such as drought or extended frozen conditions.

Unstaffed means the facility has no assigned staff. A site may be “unstaffed” even when security personnel are present, provided that pollutant generating activities are not included in their duties.

Vehicle means a motor-driven conveyance that transports people or freight, such as an automobile, truck, train, or airplane.

Vehicle Maintenance means the rehabilitation, mechanical repairing, painting, fueling, and/or lubricating of a motor-driven conveyance that transports people or freight, such as an automobile, truck, train, or airplane.

Wasteload Allocation (WLA) means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality based effluent limitation (40 CFR 130.2(h)).

Water Quality Standards means the Water Quality Standards for Surface Waters of the State of Washington, Chapter 173-201A WAC, Ground Water Quality Standards (Chapter 173-200 WAC), Sediment Management Standards (Chapter 173-204 WAC), and the federal human health-based criteria for Washington (40 CFR 131.45).

Waters of the State includes those waters defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State. State statute defines "waters of the State" to include lakes, rivers, ponds, streams, wetlands, inland waters, underground waters, salt waters, and all other surface waters and water courses within the jurisdiction of the state of Washington (Chapter 90.48 RCW).

APPENDIX 3 - SWPPP CERTIFICATION FORM

The Permittee shall use this form to sign and certify that the Stormwater Pollution Prevention Plan (SWPPP) is complete, accurate and in compliance with Conditions S3 and S8 of the Industrial Stormwater General Permit.

- A SWPPP certification form needs to be completed and attached to all SWPPPs.
- Each time a Level 1, 2 or 3 Corrective Action is required, this form needs to be re-signed and re-certified by the Permittee, and attached to the SWPPP.

Is this SWPPP certification in response to a Level 1, 2 or 3 Corrective Action? ☐Yes ☐No

If Yes, Type of Corrective Action: ☐Level 1 ☐Level 2 ☐Level 3*****

Date SWPPP update/revision completed:

Briefly describe SWPPP Update (use back side, if necessary):

***Note:** For Level 3 Corrective Actions, a qualified industrial stormwater professional must review the revised SWPPP, and sign and certify below, in accordance with Condition S8.D.2:

"The Permittee has made appropriate revisions to the SWPPP to include additional Treatment BMPs with the goal of achieving the applicable benchmark value(s) in future discharges. Based on my review of the SWPPP, discharges from the facility are reasonably expected to meet the ISGP benchmarks upon implementation."

Qualified Industrial Stormwater Professional's Printed Name | Title

Qualified Industrial Stormwater Professional's Signature | Date

(cont'd next page)

"I certify under penalty of law that this SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate information to determine compliance with the Industrial Stormwater General Permit. Based on my inquiry of the person or persons who are responsible for stormwater management at my facility, this SWPPP is, to the best of my knowledge and belief, true, accurate, and complete, and in full compliance with Permit Conditions S3 and S8, including the correct Best Management Practices from the applicable Stormwater Management Manual. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Operator's Printed Name *****	Title
Operator's Signature *****	Date

***** Federal regulations require this document to be signed in accordance with Condition G2.

APPENDIX 4 - EXISTING DISCHARGERS TO IMPAIRED WATER BODIES

This appendix has a link below to a website list of existing Permittees that discharge pollutants of concern, either directly or indirectly through a stormwater drainage system, to impaired water bodies based on the 2012 EPA-approved water quality assessment and to Puget Sound Sediment Cleanup Sites. https://apps.ecology.wa.gov/paris/ImpairedWaterBodyLimits.aspxh.

Appendix 4 was originally published on Ecology's website on 11/19/2014, and is linked to Ecology's PARIS database. As such, it is subject to revision based upon new information including but not limited to: new facilities, discharge points, and/or outfalls; updates or corrections to ISGP facility locations, stormwater sample points, discharge points, and/or outfall locations.

Appendix 4 is a technical assistance tool intended to support ISGP facilities with permit compliance. Appendix 4 may contain errors or omissions for various reasons, but this does not relieve ISGP facilities of applicable permit requirements If an inconsistency exists between Appendix 4 and ISGP Condition S6, the ISGP takes precedence. Permittees aware of errors or omissions with the information contained in Appendix 4 shall contact Ecology so that an update/correction can be made. If changes or updates are made, based on new or more accurate information, Ecology will notify the affected Permittees directly. Such changes or updates will not become effective until 30 days after the affected dischargers are notified.

APPENDIX 5 - DISCHARGERS SUBJECT TO TMDL REQUIREMENTS

The list of dischargers identified as discharging to water bodies which have completed water quality cleanup plans or TMDLs and associated monitoring requirements can be viewed on Ecology's website at:

https://ecology.wa.gov/DOE/files/14/14a209fd-4090-4d4a-9d5a-debfc3628fa9.pdf.

The most current list can also be obtained by contacting Ecology at:

Industrial Stormwater General Permit
Washington State Department of Ecology
PO Box 47696
Olympia, WA 98504-7696

This list is based on the best information available to Ecology. There will be changes and updates to this list based on new, more accurate information. If changes or updates are made, Ecology will notify the affected Permittees directly. Such changes or updates will not become effective until 30 days after the affected dischargers are notified.