EPA Response to Comments on OR 2012 Partial Approval/Partial Disapproval

General Comments

Aquatic Weeds

- *Comment 1: Eugene Water & Electric Board*

"I'm also unclear why the season for this station is listed as 'Year-Round'. There is very little algae growth from late fall until early spring throughout the entire McKenzie Sub-basin."

When the time is labeled "Year-Round," that indicates that the water quality standard applies year-round and is not seasonal. It does not necessarily mean that the impairment is year-round.

- *Comment 2: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 12 stream segments to the 2012 Integrated Water Quality Assessment Report for aquatic weeds. It is not clear what action is to be taken to address these listings. DEQ has no specific criteria for aquatic weeds. Therefore, a TMDL cannot be developed for aquatic weeds and a 'Category 5' listing is not an appropriate action. A more appropriate action would be a "Category 3B – Potential Concern" listing, which would enable DEQ to collect additional data and conduct additional analyses to determine the underlying pollutants that are resulting in the impairment."

EPA's 303(d) listing regulations found at 40 CFR 130.7(b)(3) define a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements ."[1] ODEQ has developed an assessment methodology to interpret the implementation of the statewide narrative criterion that prohibits deleterious or injurious effects on aquatic and human

[1] The appropriateness of impairment listings based on information about excessive algal growth and other deleterious conditions was discussed in EPA's guidance document titled, Information Concerning 2014 Clean Water Actions Sections 303d, 305b and 314 Integrated Reporting and Listing Decisions," (EPA, 2013). "A State can determine whether a waterbody is attaining its applicable narrative criteria and designated uses by using results of visual assessments. For example, field observations of excessive algal growth, macrophyte proliferation, adverse impacts on native vegetation (e.g., eelgrass), presence or duration of harmful algal blooms, unsightly green slimes or water column color, and/or objectionable odors may be a basis to include a waterbody on the State's Section 303(d) list for failing to meet one or more applicable narrative criteria and designated uses." (pg. 8) The guidance also states, "Furthermore, if a designated use is not supported and the segment currently fails to meet an applicable water quality standard or is "threatened," it must be included on the State's Section 303(d) list even if the specific pollutant causing the water quality standard exceedance is not known at the time." (pg. 7) During the TMDL assessment phase, if not before, a stressor identification will be done to determine the source of the impairment. If it is determined that there is no pollutant cause, the water can then be placed in Category 4c, as being impaired by a non-pollutant, as explained on page 56 of EPA's "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Section 303(d), 305(b) and 314 of the Clean Water Act." (EPA, 2005)

beneficial uses from biological growths[2]. EPA followed ODEQ's 2012 Assessment and Listing Methodology for Aquatic Weeds or Algae, which states that waterbodies should be listed in Category 5 when: "documented reports of excessive growths of invasive, non-native aquatic plants that dominate the assemblage in a water body and have a harmful effect on fish or aquatic life or are injurious to health, recreation, or industry. Plants include aquatic species on the Oregon Department of Agriculture Noxious Weed Policy and Classification System designated as 'A', 'B', or 'T' weeds or those covered by a quarantine in OAR 603-052-1200."

- *Comment 3: Oregon Parks and Recreation Department*

"Many more waterbodies are dominated by invasive water primrose throughout the Willamette, and much better, more thorough datasets exist for this plant. For example, Willamette Riverkeeper and PSU have been surveying the river and identifying sites for a few years and have identified dozens of oxbow lakes, sloughs and side channels dominated by invasive water primroses. OPRD manages one of the sites EPA is suggesting be added to the 303(d) list due to aquatic weeds, Mission Lake. Since this is only one of many water primrose-dominated waterbodies in the Willamette, and even in this reach of the Willamette, I wanted to make sure that you had the best, most thorough information available about other locations to make sure that determination of new 303(d) sites based on aquatic weeds is fair and scientifically sound."

EPA has evaluated the data provided by OPRD and revised the extent of the Willamette River listings. Please see Enclosure 3 for site specific responses to comments and Enclosure 4 for details regarding the extent of impairment.

- *Comment 4: Janet Greenup, Morrow SWCD*

"My comment deals with the Willow Sub basin of the Umatilla Basin. Morrow and Gilliam Counties also has a weed district that the sub basin. The only listing is from Umatilla Co."

EPA evaluated the Oregon Invasive Species Hotline, City of Portland, Oregon Department of Parks and Recreation data and other data that were existing and readily available and for which EPA could evaluate data quality and verify that weed identification had been made by a qualified individual. EPA did not find any aquatic weed data for Morrow or Gilliam counties. EPA encourages the submission of any new data to ODEQ during its next call for data to ensure that it is considered during the next listing cycle.

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[2] DEQ's Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters (Pursuant to Clean Water Act Sections 303(d) and 305(b) and OAR 340-041-0046" (DEQ, 2014) page 25, cites to Statewide Narrative Criteria OAR 340-41-007 (9) which states: "The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed."

Biocriteria

- *Comment 1: Clean Water Services*

"EPA is proposing to add 24 stream segments on a statewide basis to the 2012 Integrated Water Quality Assessment Report for biocriteria. Clean Water Services does not believe that it is appropriate to list streams for biocriteria impairment. Since TMDLs cannot be developed for biocriteria, these impairments should be addressed by listing streams for the underlying pollutants that are causing the impairment, which are often temperature, dissolved oxygen and/or nutrients. Thus, a 'Category 5' listing for biocriteria is not an appropriate action. A more appropriate action would be a 'Category 3B – Potential Concern' listing, which would enable DEQ or EPA to collect additional data and conduct the necessary analyses to determine the underlying pollutants that are causing the impairment."

EPA's 303(d) listing regulations found at 40 CFR 130.7(b)(3) define a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements." Oregon has a specific statewide narrative standard for "Biocriteria" found at Oregon Administrative Rule 340-041-0011**,** which states: "Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities." Therefore, it is appropriate to make listing decisions for biocriteria impairment.

ODEQ developed a listing methodology to implement the statewide narrative standard for freshwater, which uses the multivariate predictive model PREDATOR to determine impairment. This can be found in "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," ODEQ, 2014. The EPA followed Oregon's methodology in using the PREDATOR model results when assessing waters for impairment. ODEQ developed the PREDATOR model to analyze biological data to determine detrimental changes to biological communities and impacts on aquatic life use support. The EPA supports the use of the PREDATOR model and accepts Oregon's model as a scientifically valid method for interpreting the narrative standard and determining impairments resulting in impacts to aquatic life use support. Many states use multi-metric, community-level biological assessments to report water resource condition. Biological assessments provide direct measures of the cumulative response of the biological community to all sources of stress and measure the condition of the aquatic resource to be protected. Furthermore, EPA's guidance states that waters should be placed on the 303(d) list (Category 5) if biological assessments used to evaluate aquatic life uses show impairment even if the specific pollutant is not known. (See "Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303d, 305b and 314 of the Clean Water Act," US EPA, July 29, 2005., pages 41, 60.) These waters should be listed unless the State can demonstrate that non-pollutant stressors cause the impairment, or that no pollutant(s) causes or contribute to the impairment. In developing TMDLs for such waters, the pollutant causing the impairment to the aquatic life uses would need to be identified. The EPA has developed guidance to assist States in identifying the causes of a biological impairment. (See "Stressor Identification Guidance" EPA 822-B-00-025, US EPA, December 2000.)

- *Comment 2: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA proposes to list 24 additional Oregon waterbody segments based on Oregon's narrative biocriteria water quality standard: "Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities. "The actual listing decisions, however, are based on a DEQ model, Predictive Assessment Tool for Oregon (PREDATOR), which evaluates macroinvertebrate sampling data from a stream against the data that the model predicts the stream would have if it were not impaired. If the PREDATOR scores for a waterbody do not meet the criteria specified in EPA's listing methodology, EPA has proposed to add the waterbody to the subsection 303(d) list. But neither the PREDATOR model nor the listing criteria based on the model results have been adopted as rules or water quality standards. Moreover, the proposal does not identify any other evidence of impairment to resident biological communities in these waterbodies. In effect, the proposal treats the PREDATOR-based listing criteria as water quality standards because not meeting the criteria is all that is required to list the waterbody as impaired. This is not a sufficient basis for concluding that the biocriteria standard has been violated in these waterbodies. At most, the PREDATOR scores provide a basis for placing these waterbodies in Category 3—Insufficient Data. The Trade Associations are separately concerned that the proposed biocriteria listings do not attribute the low PREDATOR scores to any pollutant. Pursuant to CWA, the proposed additions to Oregon's subsection 303(d) list would trigger an obligation to establish a TMDL to achieve the biocriteria standard in these waterbodies. In the absence of an identified pollutant or pollutants who's loading to the waterbody could be limited by a TMDL, however, it is not possible for DEQ (or EPA) to establish a TMDL that will achieve the standard. This is an independent reason not to add these waterbodies to the subsection 303(d) list based on the biocriteria standard."

The PREDATOR model is a scientifically valid method for interpreting Oregon's "Biocriteria" narrative standard and determining impairments resulting in impacts to aquatic life use support. Biological assessments provide direct measures of the cumulative response of the biological community to all sources of stress and measure the condition of the aquatic resource to be protected. It is appropriate to make listing decisions interpreting the narrative standard based on results of the PREDATOR model, and the scores ODEQ associated with impairment determinations are appropriate. EPA used ODEQ's current 2012 methodology for the purposes of this assessment. See response to Biocriteria comment 1 above for further response to this comment.

- *Comment 3: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 24 stream segments to the 2012 Integrated Water Quality Assessment Report for biocriteria. It is not clear what action is to be taken to address these listings. DEQ has no specific criteria for biocriteria. Therefore, a TMDL cannot be developed for biocriteria and a "Category 5" listing is not an appropriate action. A more appropriate action would be a "Category 3B – Potential Concern" listing, which would enable DEQ to collect additional data and conduct additional analyses to determine the underlying pollutants that are resulting in the impairment."

See response to Biocriteria comments 1 and 2 above.

- *Comment 4: Oregon Wild*

"We have concerns that biocriteria are not getting the full attention they deserve. We urge EPA to consider additional biocriteria that capture a broader spectrum of aquatic ecosystem health. One example is large wood in streams. Large wood is critical to the proper biological function of streams for fish and other aquatic organisms. Aquatic life in Oregon evolved with very significant inputs of large wood from stream-adjacent forests, slopes, and floodplains. Modern land uses such as forestry and agriculture typically do not provide adequate buffers to ensure that natural levels of large wood are delivered to streams. The 303d list should include streams that currently experience a deficit of large wood or are expected to suffer a shortage of large wood based on vegetation conditions and land uses within 150-300 feet of streams. Large wood plays critical roles in creating optimal habitat for aquatic life. Large wood in streams—preferably whole trees with root wads and all—provides the randomness and dynamic environment that fish absolutely need to survive in the ever-changing waters they occupy. Wood breaks up the current and spreads water sideways across its natural floodplain, creating wonderful, dynamic and necessary diversity while also absorbing energy that could cause serious damage downstream otherwise, such as flooding or unnatural erosion. It sorts gravels during high flows, creating those beautiful spawning gravel beds laid out like blankets among bigger rock. It makes those current breaks downstream of log jams. It provides cooling shade and cover, and slow pools and edge habitat that baby fish need after emerging from those gorgeous gravels to ride out high flows, find food and hide from prying eyes. Decomposing wood and the nutrients it produces jumpstarts that the natural processes critical to insect, animal, amphibian and plant life. Alan Moore, Why Fish Love 'Large Woody Debris.' Trout Unlimited. 2-4-2013. http://troutunlimitedblog.com/large-woody-debris-makes-for-fishy-rivers/ Joshua J. Roering, professor of geological sciences at the University of Oregon studies the processes that create fish habitat and concluded: "[Coho salmon] seem to respond to the heterogeneity that is so inherent in most real landscapes. Nature is messy, and the fish have adapted to that." ScienceDaily. http://www.sciencedaily.com/releases/2013/02/130211135045.htm

Current amounts of large woody debris in coastal streams of Oregon and Washington are a fraction of historical levels (Bilby and Ward 1991, Bisson et al. 1987, NRC 1992). … Stream surveys by private timber companies and federal land management agencies in the Northwest reveal an overall loss of stream habitat quality (FEMAT 1993, Kaczynski and Palmisano 1993, Wissmar et al. 1994) that is strongly related to changes in riparian vegetation, especially harvest of merchantable riparian timber. Everest, Fred H.; Reeves, Gordon H. 2006. Riparian and aquatic habitats of the Pacific Northwest and southeast Alaska: ecology, management history, and potential management strategies. Gen. Tech. Rep. PNW-GTR-692. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 130 p. http://www.fs.fed.us/pnw/pubs/pnw_gtr692.pdf. Where streams are degraded, management of riparian forests should strive to meet the high end of the natural range for large wood, not the central tendency. This brings into question the minimum requirements that pervade current standards. Fox & Bolton (2007) recommend - In degraded streams, where management is needed to restore favorable conditions, wood loads are often no longer found in the upper distribution of these ranges, or the distribution is centered around a lower mean. In these cases, merely managing for the mean or median will not restore the natural ranges of heterogeneity. Thus, for management purposes intending to restore natural wood-loading conditions, establishing

instream wood targets based on the upper portion of the distribution observed in natural systems (i.e., the 75th percentile) rather than the lower portion of the distribution are reasonable as well as prudent to restore natural ranges. Martin Fox & Susan Bolton (2007) A Regional and Geomorphic Reference for Quantities and Volumes of Instream Wood in Unmanaged Forested Basins of Washington State, North American Journal of Fisheries Management, 27:1, 342-359, DOI: 10.1577/M05-024.1. http://dx.doi.org/10.1577/M05-024.1 Listing streams with a deficit of large wood will require finding the right scale of analysis, recognizing that fish live and die at the site-scale, but wood does move within dynamic stream systems. We expect there to be a strong correlation between instream wood and vegetation conditions on stream adjacent lands. Consideration of large wood should be a supplemental biocriteria in addition to macroinvertebrate monitoring."

EPA agrees that large wood in streams plays an important role in influencing the physical structure of streams and in providing habitat for aquatic organisms. While monitoring of in-stream wood can be inconsistent in the type of variables measured and methods of measurement, efforts are underway by researchers to improve consistency in the data collection, so that data quality is assured and data sets can be compared and evaluated.

<u>Chlorophyll a</u>

- *Comment 1: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA proposes to add four waterbody segments to Oregon's 2012 subsection 303(d) list for exceeding a chlorophyll a concentration of 0.015 mg/L. Under Oregon's rules, however, this concentration is not an applicable water quality standard. Instead, it is an action level that may not be used for regulatory purposes without (1) further waterbody-specific studies of whether designated uses are impaired and (2) the adoption of a control strategy by the Oregon Environmental Quality Commission, which may include a modified chlorophyll a concentration target. No such studies have been undertaken in the waterbodies at issue, nor has the Commission adopted a control strategy in these waterbodies. Because a chlorophyll a concentration in excess of 0.015 mg/L is not in itself a violation of water quality standards, the Trade Associations urge EPA not to add these waterbodies to Oregon's subsection 303(d) list."

EPA's 303(d) listing regulations found at 40 CFR 130.7(b)(3) define a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements." EPA followed ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters" for Chlorophyll a, which references Oregon's numeric criteria (OAR 340-041-0019), which states: "(1)(a) The following average Chlorophyll a values must be used to identify water bodies where phytoplankton may impair the recognized beneficial uses: 0.01 mg/l for natural lakes that thermally stratify; and 0.015 mg/l for natural lakes that do not thermally stratify, reservoirs, rivers and estuaries." EPA views ODEQ's listing methodology for designating a water as impaired to be appropriate under these provisions.

- *Comment 2: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 4 stream segments to the 2012 Integrated Water Quality Assessment Report for chlorophyll a. Oregon has no water quality criteria for chlorophyll a. We recognize that DEQ has a standard for nuisance phytoplankton growth that uses chlorophyll a as an indicator for DEQ to conduct additional studies to understand the root cause of high concentrations. As a result, DEQ potentially would regulate those root causes. However, a "Category 5" listing for chlorophyll a at this time is inappropriate. The impacts of chlorophyll a on beneficial uses must be conducted on a site specific basis. The State of Oregon's approach is to use chlorophyll a as an indicator of whether water bodies are being impaired, and, therefore, whether further study is needed. Oregon Administrative Rules require DEQ to conduct studies to describe current water quality, determine the impact on beneficial uses, determine the probable cause of the exceedance and beneficial use impact, and develop a proposed control strategy for attaining compliance where technically and economically practicable. Rather than the "Category 5" listing for chlorophyll a, a more appropriate action for these waterbodies would be a "Category 3B – potential concern" listing, which would enable DEQ to collect additional data."

See response to chlorophyll a comment 1 above. OAR 340-041-0019 cites Chlorophyll a values which are to be used for impairment determinations. These values are used as ODEQ's methodology for determining impairment, and this is the methodology EPA followed as well.

<u>**Data and Methodologies**</u>

- *Comment 1: Northwest Environmental Advocates*

"We regret that EPA has chosen to limit public comment to its proposed additions rather than to address the question of whether those additions are based on a complete review of all readily available data and information and whether EPA has used appropriate listing methodologies in deriving its proposed additions (i.e., using DEQ's listing methodologies). In its Enclosure 4, EPA sets out 333 waterbodies for which listings have been added. The sources are limited to: DEQ, Oregon Health Authority, Oregon Invasive Species Hotline, U.S. Geological Survey, STORET, and "DEQ volunteer." The vast majority are from DEQ's own database. While on one hand this demonstrates that DEQ simply chose to ignore data that it already had—a failure to use all readily available data and information—it says little or nothing about whether EPA evaluated whether DEQ assembled all readily available data and information. Other than reviewing the documents that NWEA submitted to DEQ, there is no indication that EPA attempted to identify whether Oregon had assembled all readily available data and information and there is no master list—prepared by DEQ or EPA—that we can review for that purpose. And EPA has not asked for any additional data and information other than for specific marine sources. Although EPA has specifically not requested such information, for purposes of illustration we provide three examples of readily available sources that do not appear to have been assembled by DEQ."

EPA did not rely solely on the call for data conducted by ODEQ or data and information compiled by ODEQ in its LASAR database, because of the incomplete nature of the assessment and information assembled in the database and the time that had elapsed since ODEQ's original call for data. EPA

collected additional existing and readily available data and information and reviewed data that went beyond the cutoff date in ODEQ's call for data. EPA supplied a list of data and information sources that were assessed as part of the supplemental information included as "Enclosure 5: EPA Data Sources" during the public comment period. If additional data and information were submitted as part of the public comments, the EPA reviewed such data and information if readily available to make the final list. The EPA used ODEQ's listing methodologies when appropriate and used other well-established methodologies where ODEQ's were found to be inadequate or absent. These were outlined in the methodology document "Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List" during the public comment period.

- *Comment 2: Northwest Environmental Advocates*

"First, EPA should have asked DEQ and Oregon permittees whether they had information or data that they had not submitted to Oregon's database. This would turn up, for example, three studies on eutrophication in the Rogue River providing data that EPA may or may not have. EPA's Appendix C lists four samples in the Rogue from DEQ's database that demonstrate violations of biocriteria, resulting in EPA's adding a listing for violations of biocriteria in the Rogue, shown in Enclosure 4, line 66. Because the citation to the database does not state the original sources, but merely references "DEQ" as the source, we cannot tell if EPA has or has not obtained the data and information contained in the following three studies: (1) Rick Hafele, Medford Regional Water Reclamation Facility Outfall Assessment Study (Jan. 2013); (2) Brown and Caldwell, Medford Regional Water Reclamation Facility Mixing Zone and Biological Assessment Study (April 24, 2014); and (3) DEQ, Rogue River Algae Reconnaissance: A response to the algae concerns related to the Medford WWTP (Sept. 2014). All three studies found violations of Oregon's biocriterion in specific locations of the Rogue River. In contrast, a search of DEQ's database for biocriteria findings on the Rogue River brings up a single Category 2 entry for the South Fork of the Rogue River; there is no reference to these three studies."

Data from three studies noted in the comment were submitted to ODEQ's database and were assessed by EPA. These resulted in the additions of the Rogue River from river mile 110.7 to river mile 132.2 for biocriteria impairment.

- *Comment 3: Northwest Environmental Advocates*

"A second example are studies conducted by the U.S. Fish and Wildlife Service (FWS). These are readily available from that agency's website, as illustrated by the copy of the website we have attached. See Scientific Reports, Oregon Fish and Wildlife Office, FWS. There is no indication in DEQ's database that these data have been assembled or considered (for example, the DEQ database contains USGS data on a variety of pesticides in Gray Creek and Brown Creek but no reference to the March 2007 FWS study listed on the agency's website entitled Environmental Contaminants Program: On-Refuge Investigations Sub-Activity; Assessment of Impacts to Aquatic Organisms from Pesticide Use on the Willamette Valley National Wildlife Refuge Complex) nor is there any indication from EPA's proposed additions that EPA has assembled or considered them."

The 1998 data collected in that report were part of a cooperative study between FWS and USGS. The data are housed in the USGS NWIS database, which EPA reviewed. No new listings resulted from the assessment of that study.

- *Comment 4: City of Portland, Environmental Services*

"EPA's Enclosure 6 states that "only A and A+ Quality assurance/Quality control status data were used" in EPA's analysis. In contrast, ODEQ used "data meeting data quality level A or B requirements for the 305(b)/303(d) assessment" as stated in its methodology documents. The application of different standards is noteworthy since it yields different 303(d) list results. Some of the state's listings are based solely on the inclusion of Quality Level B data. Please explain the rationale behind EPA's exclusion of Quality Level B data from its analysis."

There was an error in Enclosure 6, which described the data as only A and A+. This is the scale ODEQ had previously used to rate data quality, and what both ODEQ and EPA used during the 2010 assessment. For the 2012 assessment, EPA followed ODEQ's current "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," and used data meeting data quality level A or B requirements for assessment purposes. EPA used all A and B data from ODEQ, as well as from volunteer data given to EPA by ODEQ. EPA also did use data from government sources (USGS, STORET, etc.) that had known standardized protocols and methods.

- *Comment 5: City of Portland, Environmental Services*

"EPA has not provided any detailed analysis or results of its review of the specific methodology that was used by ODEQ to identify additional water quality limited segments. EPA limited assessment focused on whether ODEQ considered readily available data but not whether ODEQ correctly (or incorrectly) applied methodology for data that were available. Enclosure 6 has some detail on EPA's assessment methodology but not a review of ODEQ's, nor does it explicitly describe areas where EPA deviated from the state's methods. Further, it only includes methods for the limited parameters for which EPA conducted an assessment. Please provide more information about EPA's review of ODEQ's applied methodology, how the two differ, and describe why specific adjustments were made by EPA. Please also clarify EPA's definition of "insufficient data" for purposes of using category 3."

Prior to the public comment period, ODEQ and EPA realized that some methodologies had not been applied correctly by ODEQ, which had resulted in erroneous new listings. EPA did correct these and removed them from the list prior to the public comment period, at ODEQ's request. Please see comment period Enclosure 1: Oregon 2012 Decision Document and Enclosure 8: EPA Corrections to ODEQ 2012. EPA used ODEQ's 2012 listing methodologies outlined in ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," when methodologies existed and were appropriate. EPA outlined all methodologies used for each parameter in the document "Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List." When EPA did not follow ODEQ's method, the method that was used in EPA's assessment was described, such as for total phosphorus (for which ODEQ does not have a methodology). EPA assesses for Category 5 impaired waters only, not waters for category 1, 2, or 3. See 40 CFR Section 130.7(b) and (d)(2). For information

about EPA's evaluation of ODEQ's methodologies, see EPA's comments on ODEQ assessment methodology in ODEQ's 2012 Response to Comments. EPA encourages the commenter to submit concerns regarding ODEQ's methodology to them during the public review of the methodology document to be used in the next listing cycle.

- *Comment 6: Oregon Association of Clean Water Agencies*

"ACWA's specific comments on EPA's proposed action are discussed in the comments below. "Category 5" listings must be based on good science, be representative of water quality in the listed segment, and meet data quality standards. "Category 5" listings must be based on current criteria and use all available data (e.g. actual sample hardness data for metals) meeting data quality standards. EPA and DEQ must use other listing categories when available data does not support a "Category 5" listing. When evaluating data based on targeted monitoring conducted to address a specific concern, the listing, if warranted, must reflect the spatial and temporal limitations of the supporting data."

The 303(d) listing regulations require States to assemble and evaluate all existing and readily available water quality-related data and information to develop the 303(d) list. See 40 CFR 130.7(b)(5). Additionally, given that narrative criteria are water quality standards that waterbodies need to achieve, information beyond data alone must be considered in making listing decisions. As stated in EPA's guidance document titled "Information Concerning 2014 Clean Water Actions Sections 303d, 305b and 314 Integrated Reporting and Listing Decisions (EPA, 2013)", "[t]he CWA and EPA's implementing regulations require States to identify water-quality limited segments still requiring TMDLs where pollution controls are not stringent enough to meet any applicable water quality standard, which include narrative standards. Furthermore, if a designated use is not supported and the segment currently fails to meet an applicable water quality standard or is "threatened," it must be included on the State's Section 303(d) list even if the specific pollutant causing the water quality standard exceedance is not known at the time." EPA used data quality level A and B data; however, EPA also considered other existing and readily available information for category 5 listings and applied that data and information as appropriate in the methodologies listed in "Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List." EPA primarily used ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," and when EPA did not follow an ODEQ method, the method that was used in EPA's assessment was described, such as for total phosphorus (for which ODEQ does not have a methodology). EPA applied the listing determination to the segment from which data was collected and used ODEQ defined segments based on monitoring station locations. If an assessment unit had not yet been delineated for a sampling location, EPA consulted with ODEQ prior to assigning the assessment unit to the segment.

- *Comment 7: ODEQ*

"Some of DEQ's Volunteer Monitoring data provided to EPA have not yet undergone QA/QC review and are of unknown quality. DEQ's I assessment methodology specifies that DEQ only use data that is known to be of high quality for 303(d) listing purposes. EPA should consider not using these data until the data are known to be of sufficient quality of 303(d) listing purposes."

The volunteer monitoring data provided to EPA was marked as having undergone QA/QC review. Since the public comment period, EPA, with ODEQ's assistance, reviewed the data again on a site-specific basis to confirm the quality and whether or not it should be used. Data were eliminated from the assessment if the quality of the data were in question. Please see Enclosure 3 for site responses to comments, Enclosure 4 for revised listings, and Enclosure 6 for waters the EPA determined should not be listed.

Delisting

- *Comment 1: City of Portland, Environmental Services*

"EPA is only proposing additional listings but not the removal or correction of flawed listings. A number of water bodies were incorrectly placed on the 303(d) list by ODEQ based on insufficient methods or for other reasons as specified previously, yet EPA has given no indication that it is updating or correction these listings. It is inappropriate to apply methodologies to increase listing by not to de-list water bodies that aren't truly impaired. This one-sided approach significantly and unduly increases the burden on regulated parties and misleads the public about the health of local water bodies. The majority of NPDES permitees are impacted by Category 5 listings due to the associated requirements for monitoring, evaluation and control of 303(d) pollutants and some parties are prevented from obtaining NPDES permits due to the listings. Please confirm that EPA did not take action to correct questionable listings and please clarify the expected process and timeline in addressing those listings."

Under the Section 303(d) of the CWA, EPA is to review a State's identification of impaired waters and approve or disapprove a State's determination to list or not to list its waters as impaired. See also 40 CFR 130.7. EPA does not review previous, approved listing decisions where the State does not seek to make changes to such listings. See also 40 CFR 130.7(d). In reviewing ODEQ's 2012 list, EPA reviewed ODEQ's new listings and the underlying data that support the listings. EPA also reviewed the underlying data proffered by ODEQ to justify delisting waters previously listed. Because ODEQ only assessed a limited number of waters for impairments, EPA partially disapproved ODEQ's list, and determined that additional listings were appropriate based on the existing and readily available water quality-related data and information that ODEQ had not assessed. In its partial approval and partial disapproval of ODEQ's 2012 list, at the request of ODEQ, EPA removed several listings that were proposed by ODEQ in error as detailed in "Enclosure 8: EPA Corrections to ODEQ 2012." Additionally, EPA disapproved several delistings proposed by ODEQ, as detailed in "Enclosure 3: Disapproved Delistings EPA Proposes for Category 5". Section 303(d) of the CWA specifies that when EPA disapproves a list, EPA will identify those waters in need of TMDLs, which EPA did and sought public comment on. The public comments resulted in further changes to EPA's partial approval/partial disapproval action as detailed in Enclosures 3, 4, and 6 of EPA's final decision document. EPA anticipates that ODEQ will complete a state-wide analysis of data during the next listing cycle, which will include an assessment of previously listed waters. Please see Enclosure 3 for site specific responses to comments, Enclosure 4 for revised listings, and Enclosure 6 for waters the EPA did not list as a result of public comment.

- *Comment 2: Oregon Association of Clean Water Agencies*

"It appears that EPA did not critically review the listings proposed by DEQ but simply added to DEQ's listings using a similar listing methodology."

EPA reviewed ODEQ's listings and delistings and the underlying data for both. At ODEQ's request EPA removed several listings that were listed in error, as detailed in "Enclosure 8: EPA Corrections to ODEQ 2012." EPA also disapproved several delistings proposed by ODEQ as detailed in "Enclosure 3: Disapproved Delistings EPA Proposes for Category 5." Also see the response to comment 1 above.

<u>Dissolved Oxygen</u>

- *Comment 1: Clean Water Services*

"EPA added a number of stream segments in the Tualatin River watershed to Oregon's 2010 Integrated Water Quality Assessment Report based on the application of the dissolved oxygen spawning criteria for resident trout. In its 2012 Integrated Water Quality Assessment Report, DEQ proposed the deletion of many of these stream segments based on information obtained from Oregon Department of Fish and Wildlife (ODFW), which noted that resident trout spawning does not occur in these segments. In its review of the 2012 Integrated Water Quality Assessment Report, EPA disapproved DEQ's proposed action with a note stating "insufficient documentation to support use change." By enlisting the expertise of ODFW, DEQ had taken the necessary steps to document that resident trout spawning does not occur in the stream segments that were proposed for delisting. EPA should accept ODFW's expertise in this matter and approve DEQ's proposed deletion of these segments. If there are additional administrative actions that need to be taken to implement ODFW's findings, EPA should specify these actions. Since it appears that EPA's disapproval is based on taking administrative actions based on ODFW's findings, we recommend that EPA utilize one of the other listing categories (i.e., insufficient information or similar category) for the disapprovals rather than "water quality limited and TMDL required" category."

Under Section 303(d) of the CWA and its implementing regulations, EPA reviews state listing decisions for impairment (Category 5). If existing information suggests a water segment may be appropriate for another category but is not impaired, then EPA takes no action on such water segment. Regarding EPA's disapproval of ODEQ's delistings of stream segments in the Tualatin River watershed based on the application the dissolved oxygen spawning criteria for resident trout, the EPA commented (enclosure to February 27, 2014 letter) during ODEQ's public comment period opposing the delisting of these waters and the rationale for that comment. EPA's concerns were primarily related to how Oregon's dissolved oxygen water quality standards were approved based on designated use maps adopted into the standards, and how those maps had been interpreted by ODEQ. EPA also commented that a water quality standards review process agreed to by ODEQ is necessary to revise the designated use maps based on new information.

Since EPA's disapproval of the Tualatin River watershed delistings, EPA has received additional comments and information from ODEQ about the 2014 ODFW letter and the trout spawning areas and a commitment from ODEQ in its Performance Partnership Agreement to update aquatic life use designations consistent with its implementation practices. Therefore, based on current information,

EPA is revising its disapproval of all eight delistings, and now approving five of the eight delistings. These include: Dairy Creek, Johnson Creek, North Fork Silver Creek, Tualatin River an Unnamed (Nyberg Creek). EPA and ODEQ reviewed EPA's analysis for Rock Creek, Silver Creek and South Yamhill River, and EPA and ODEQ agree that these waters are in fact impaired and will be added to Category 5. Please see Enclosure 3 for specific responses to comments, Enclosure 4 for revised listings, and Enclosure 6 for waters the EPA chose not to list as a result of public comment.

- *Comment 2: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 53 stream segments to the 2012 Integrated Water Quality Assessment Report for dissolved oxygen. It appears that many of these segments are listed based on the application of the spawning criteria for resident trout. Since Oregon does not specifically designate waterbodies for resident trout spawning, it appears that EPA applied the salmon spawning criteria to all waterbodies. There is significant overlap in the anadromous fish spawning areas and resident trout spawning areas. Rather than listing these streams in the "Category 5 – water quality limited, TMDL required" listing category, a more appropriate designation would be to identify these waterbodies as "Category 3 – insufficient information" and allow DEQ to work with the Oregon Department of Fish and Wildlife (ODF&W) to define spawning areas for resident trout in Oregon. Additionally, EPA is proposing to disapprove DEQ's proposed delistings of stream segments that were previously listed for dissolved oxygen based on the application of the spawning criteria for resident trout. In its 2012 Integrated Water Quality Assessment Report, DEQ proposed the delisting of 8 stream segments based on information obtained from ODF&W which noted that resident trout spawning does not occur in those 8 stream segments. In its review of the 2012 Integrated Water Quality Assessment Report, EPA disapproved DEQ's proposed action with a note stating "insufficient documentation to support use change." By enlisting the expertise of ODF&W, DEQ took the necessary steps to document that resident trout spawning does not occur in the 8 stream segments proposed for delisting. EPA should accept ODF&W's expertise in this matter and approve DEQ's proposed deletion of these stream segments. If there are additional administrative actions that need to be taken to implement ODF&W's findings regarding resident trout spawning in the 8 stream segments, EPA should specify the necessary actions.

EPA applied the criteria based on the existing fish use maps which are adopted into Oregon's approved water quality standards. Where ODFW supplied information about spawning activities, specifically for the proposed delistings, EPA revised the additions. Where ODFW did not provide new information, EPA listed waters based on the existing maps. ODEQ intends to undertake a use clarification process during the next Performance Partnership Agreement cycle, and could then apply those revised, clarified uses during the next listing cycle and amend the listings as appropriate. See response to dissolved oxygen comment 1 above.

<u>Listings</u>

- *Comment 1: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

“CWA requires each State to identify those waterbodies for which federal and state effluent limits are not stringent enough to implement "any water quality standard applicable" to such waterbodies. CWA requires each State to identify those waterbodies for which controls on thermal discharges are not stringent enough "to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife." The Trade Associations are concerned that EPA's criteria for listing waterbodies on Oregon's 2012 subsection 303(d) list are much too broad. This has resulted in proposed listings for which there is insufficient waterbody-specific evidence of water quality standards violations or, for temperature, insufficient waterbody-specific evidence of temperatures that will not assure a balanced, indigenous population of shellfish, fish, and wildlife. Adding waterbodies to the subsection 303(d) list has substantial consequences not only for entities regulated by the CWA, but also for the general public, the Oregon Department of Environmental Quality (DEQ), and EPA itself. First and foremost, DEQ must establish a total maximum daily load (TMDL) for every listed waterbody-pollutant combination. Developing a TMDL requires substantial commitments of time and resources by DEQ, other governmental agencies, regulated entities, and the public. These resources are extremely limited, particularly those of DEQ, which has struggled to timely fulfill its CWA obligations—including the establishment of TMDLs. Using limited resources to develop and implement TMDLs for waterbodies that may not in fact be impaired, or for pollutants and discharges that are not contributing to an impairment, will necessarily divert resources from DEQ's other, more pressing CWA obligations. Moreover, to the extent that DEQ is unable to develop and establish the required TMDLs, EPA will be required to develop and establish them, which will divert EPA's own limited water quality resources. Although in a strict legal sense the only consequence of a subsection 303(d) listing is the obligation to establish a TMDL, as a practical matter the listing decision has substantial effects on regulated entities even before a TMDL is established. These may include a presumption that the waterbody has no assimilative capacity, which, if the presumption is false, will result in unnecessarily stringent point source discharge limits and nonpoint source restrictions. Adding a waterbody to the subsection 303(d) list may also divert public and private environmental resources that could better be spent on other waterbodies and pollutants if the listing does not reflect an actual and substantial ongoing water quality standards violation or temperature impairment. For these reasons, a waterbody should not be added to the subsection 303(d) list for a pollutant in the absence of persuasive evidence of an ongoing water quality standards violation or temperature impairment associated with that pollutant. If there is only evidence of a potential ongoing violation or impairment, the waterbody and pollutant combination should be listed instead as "Category 3—1nsufficient data to determine whether a standard is met." A Category 3 listing would also better identify the waterbody and pollutant combination as a priority for additional monitoring resources to determine whether it should be added to the subsection 303(d) list.

Under the CWA, EPA must review a State’s 303(d) list of impaired waters (Category 5) and either approve or disapprove it based on existing and readily available water quality-related data and information. In reviewing Oregon’s list, EPA considered the existing and readily available water quality-related data and information in evaluating Oregon’s numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements in compliance with CWA listing regulations found at 40 CFR 130.7. EPA applied the methodologies listed in "Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List." EPA primarily used DEQ's 2012 Assessment and Listing Methodology and when EPA did not follow a ODEQ method, the method that was used was described in the assessment documents. The commenter did not provide any specific information or data regarding impairment of a particular

waterbody for the EPA to evaluate and did not specify which waterbodies they believe are incorrectly listed as impaired.

Metals

- *Comment 1: Oregon Association of Clean Water Agencies*

"DEQ previously and now EPA, are listing numerous streams for metals based on outdated criteria and overly conservative assumptions. EPA and DEQ should ensure that an updated analysis is conducted based on currently applicable criteria and actual hardness data. If EPA does not correct these mistakes at this time, the 2012 Integrated Water Quality Report will contain listings for a number of pollutants that will later require delisting. A pathway for delisting streams must be clearly defined."

EPA's role under the Section 303(d) of the CWA is to approve or disapprove a State's determination to list or not to list its waters as impaired. EPA is not required to review previous, approved listing decisions where the State does not seek to make changes to the listings. In reviewing ODEQ's 2012 list, EPA reviewed new listings and the underlying data that support the listings. In its partial approval and partial disapproval of ODEQ's 2012 list, EPA removed several listings that were proposed by ODEQ in error as detailed in "Enclosure 8: EPA Corrections to ODEQ 2012." Additionally, EPA disapproved several delistings proposed by ODEQ, as detailed in "Enclosure 3: Disapproved Delistings EPA Proposes for Category 5". The CWA specifies that when EPA disapproves a list, EPA will identify those waters in need of TMDLs, which EPA did and sought public comment on. EPA anticipates that ODEQ will complete a statewide analysis of data during the next listing cycle, which will include an assessment of previously listed waters to determine if they are now attaining standards.

EPA followed ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," for toxic substances, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. The freshwater aquatic life criteria for several metals (cadmium, chromium III, lead, nickel, silver, and zinc) are expressed as a function of hardness (mg/L) in the water column. However, if no hardness data are available, ODEQ applies a default hardness of 25 mg/L to calculate the criteria. Where no hardness data existed, consistent with ODEQ's methodology, EPA used the default value. Where new hardness data were provided during the comment period for specific waterbodies, EPA reassessed the data. See Enclosure 3 for site specific responses to comments and the additional response related to the updated copper standard under comment 2 below.

- *Comment 2: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA's proposed additions of 11 waterbody segments for copper are based on Oregon's former hardness-based chronic freshwater aquatic life criterion for copper. EPA disapproved this criterion in January 2013, well before Oregon submitted its 2012 subsection 303(d) list to EPA in November 2014. In response to the disapproval, Oregon adopted new freshwater aquatic life criteria for copper based

on EPA's recommended biotic ligand model. EPA approved the new criteria on January 9, 2017. The revised copper criteria differ substantially from the former hardness-based criteria and are a function of approximately a dozen water quality variables. Although Oregon developed its 2012 subsection 303(d) list on the basis of the now disapproved hardness-based criteria for copper, EPA cannot now add waterbodies to the list based on these criteria. Any additions to the list for copper must be based on Oregon's currently approved and effective water quality criteria for copper. Moreover, the substantial dissimilarity between the former and current criteria preclude any inferences regarding whether a violation of the former criteria would also be a violation of the current criteria."

Based on comments received and the recent approval of new freshwater aquatic life criterion for copper, EPA has removed the copper listings. The new copper criteria were approved during EPA's comment period on the 2016 listings. The new criterion uses the biotic ligand model and ODEQ had not yet finalized the new listing methodology and implementation guidance associated with the criteria, which describe how the complexities of the model will be addressed for assessment purposes. ODEQ just published the final listing methodology and implementation guidance on December 4, 2018 and will assess copper data using the biotic ligand model for the next Integrated Report.

- *Comment 3: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA proposes to add 11 waterbody segments for copper, 7 for lead, and 1 for zinc, based on exceedances of freshwater chronic water quality criteria for the protection of aquatic life. These criteria are functions of water hardness, with lower levels of hardness resulting in more stringent (lower) criteria. EPA's proposed additions, however, assume that all waterbodies have a very low, uniform hardness of 25, which results in extremely stringent criteria (3.62 micrograms per liter (pg/L) for copper, 0.54 ug/L for lead, and 36 ug/L for zinc). Thus, regardless of the actual water hardness at the time that the copper, lead, or zinc sample was taken in the waterbody, EPA assumes that the hardness was 25. This assumption is likely to result in many false positives, where the measured metals concentration did not exceed the criterion because the actual water hardness at the time was higher than 25. The likelihood of false positives is further exacerbated by EPA's listing methodology, which requires listing based on only two exceedances of the criterion in the waterbody, no matter how many measurements, or what proportion of measurements, were less than the criterion. Because the applicable water quality criteria vary substantially with hardness, there is insufficient evidence of a water quality criteria violation in the absence of contemporaneous water hardness data. Accordingly, the Trade Associations urge EPA not to add these waterbodies to Oregon's subsection 303(d) list."

EPA followed ODEQ's 2012 Assessment and Listing Methodology for toxic substances, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. The freshwater aquatic life criteria for several metals (cadmium, chromium III, lead, nickel, silver, and zinc) are expressed as a function of hardness (mg/L) in the water column. However, if no hardness data are available, ODEQ's methodology applies a default hardness of 25 mg/L to calculate the criteria. Where no hardness data existed, consistent with ODEQ's methodology, EPA used the default value. Where new

hardness data were provided during the comment period for specific waterbodies, EPA reassessed the data. Please see additional response for copper under comment 2 above, as well as Enclosure 3 for site specific responses to comments.

- *Comment 4: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 11 stream segments to the 2012 Integrated Water Quality Assessment Report for copper. As with the proposed listings for lead and zinc, the listings for copper are also based on a very conservative hardness of 25 mg/L. The actual hardness values associated with the copper samples should be used in in the assessment. Using this approach will provide a more accurate indication of whether the observed values are of concern."

Please see response to copper comment 2 above.

- *Comment 5: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 7 stream segments to the 2012 Integrated Water Quality Assessment Report for lead. These listings are based on the application of the previous "total recoverable" criterion for lead rather than the current "dissolved" lead criterion. EPA is also proposing to list one stream segment for zinc based on the application of the previous "total recoverable" criterion rather than the current "dissolved" criterion. Additionally, the listings for both lead and zinc are based on a hardness of 25 mg/L, which is a very conservative assumption. This approach results in a number of listings that are not justified under the current "dissolved" criterion and with the use of actual hardness data. EPA should use dissolved concentration data for lead and zinc when available; and furthermore, the actual hardness concentration values associated with the sample should be used in the assessment. This approach will demonstrate that most of the proposed listings for lead and zinc are not valid. DEQ had previously listed a number of stream segments in the 2012 Integrated Water Quality Assessment Report based on the previous "total recoverable" criteria for lead and zinc. Our analysis shows that these listings are also not valid. Therefore, ACWA requests that EPA remove the listings for lead and zinc or at least place the stream segments in a more appropriate listing category (i.e., "Category 3 - insufficient data" or "Category 3B - potential concern") until an analysis is conducted based on the current criteria."

See response to comment 3 above

- *Comment 6: ODEQ*

"EPA followed DEQ's protocols to calculate hardness based aquatic life criteria for toxic metals and used a default hardness of 25 mg/l where hardness data were not part of EPA's dataset. We note that a calculated criterion may be different if site and sample specific hardness data are available to determine the appropriate criterion and subsequent evaluation incorporating hardness data could result in a different conclusion regarding impairment."

See response to comment 3 above

- *Comment 7: Oregon Association of Clean Water Agencies*

EPA used DEQ's methodology of listing streams for metals and other priority pollutants when two or more samples exceed the criteria. This approach is appropriate only where there is a limited data set. This approach is not appropriate when dealing with large data sets. Listing based on two exceedances and without consideration for the number of samples penalizes municipalities that have implemented a robust ambient monitoring program and serves as a disincentive for conducting ambient monitoring. The listing procedure for metals and other priority pollutants should be modified to account for larger data sets. A simple modification to the listing criteria to account for larger data sets is provided below: Two (2) or more valid results not meeting the most stringent applicable criterion for concentrations of a specific toxic substance in the water column when these samples represent 5% or more of the total valid samples; This modification would enable DEQ and EPA to continue to list waterbodies based on the two exceedance criteria when there is a limited data set and would also allow for the consideration of larger data sets.

EPA followed ODEQ's 2012 "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," for toxic substances, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. ODEQ can choose to revise or supplement its listing methodology in the future to use appropriate statistics to take larger data sets into account.

<u>Narrative Criteria</u>

- *Comment 1: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"The proposed additions should not be based on narrative water quality standards unless there is sufficient evidence that the designated uses of the waterbody at issue are actually impaired. Many of the proposed additions to Oregon's 2012 subsection 303(d) list are based entirely on listing criteria that are not themselves water quality standards. The proposed additions also are not supported by waterbody-specific evidence of impairments to designated uses that would constitute a violation of a narrative water quality standard. In the absence of sufficient evidence of a violation of a numeric or narrative water quality standard, these waterbody-pollutant combinations should not be listed, including those discussed in the following subsections."

EPA's 303(d) listing regulations found at 40 CFR 130.7(b)(3) define a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements." The regulation at 40 CFR 130.7(b)(5) provides that states "shall assemble and evaluate all existing and readily available water quality-related data and information to develop the list . . . ." The regulation goes on to detail a non-exclusive list of water categories that a state must "at a minimum" review for producing its list of waters that require a TMDL, such as "[w]aters identified by the State in its most recent section 305(b) reports as 'partially meeting' or 'not meeting' designated uses or as 'threatened'; [w]aters for which dilution calculations or predictive models indicate nonattainment of

applicable water quality standards; [w]aters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions . . . ; and [w]aters identified . . . as impaired or threatened in a nonpoint assessment . . . ." As the regulations make clear, there are many types of data and information that should be used to assess whether water quality standards are being met. For interpreting narrative standards, EPA applied ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," where appropriate for making its list determinations or otherwise used well-established protocols or legitimate scientific data and information to interpret the narrative.

See also EPA's responses to Aquatic Weeds comment 2 and Biocriteria comment 1 above.

Phosphorus

- *Comment 1: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA proposes to add approximately 40 waterbody segments to Oregon's 2012 subsection 303(d) list for having excessive phosphorus concentrations. Oregon, however, does not have a water quality standard for phosphorus, and the proposal does not identify any specific numeric or narrative water quality standard as the basis for the proposed additions. Rather, the proposed additions appear to be based on the adverse effects that excessive phosphorus might have on the listed waterbodies' designated aquatic life, recreation, and drinking water uses. Specifically, EPA has proposed to list any waterbody for phosphorus if (1) greater than 10 percent of water quality samples have a total phosphorus concentration in excess of 0.1 milligrams per liter (mg/L) and (2) the waterbody is also listed as impaired for pH, chlorophyll a, or dissolved oxygen. The proposed phosphorus listings are improper because they are not based on an applicable water quality standard. Although EPA has limited the proposed listings to waterbodies that are also listed as impaired for pH, chlorophyll a, or dissolved oxygen, they would nonetheless oblige DEQ to develop a TMDL for phosphorus regardless of whether phosphorus itself is preventing the achievement of an applicable water quality standard. (Footnote 4: If, in fact, anthropogenic sources of phosphorus are causing violations of water quality standards for other pollutant parameters, such as dissolved oxygen and pH, the TMDLs for those other pollutant parameters could include phosphorus loading restrictions. But a phosphorus concentration of more than 0.1 mg/L does not itself violate water quality standards.) Moreover, the TMDL would presumably need to be established to achieve a phosphorus concentration in the waterbody of 0.1 mg/L—otherwise, the listing criteria would require the waterbody to remain on the list. Not only may achieving such a concentration be unnecessary to achieve applicable water quality standards, achieving it may be unattainable in some waterbodies because of naturally occurring phosphorus concentrations. Because the proposed phosphorus additions are not based on an applicable water quality standard, and would add to DEQ's TMDL workload without providing any further water quality benefits, the Trade Associations urge EPA not to list these waterbody segments for phosphorus."

There is scientific consensus that excess phosphorus negatively impacts aquatic life and recreational uses, so in evaluating phosphorus EPA is interpreting the Statewide Narrative Criteria 340-041-0007, which states: "(10): The creation of tastes or odors or toxic or other conditions that are deleterious to

fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed."

Nutrients (nitrogen and phosphorus) are one of the leading causes of water quality impairment in our nation's rivers, lakes and estuaries (see https://www.epa.gov/nutrientpollution/problem). Phosphorus is an essential element for plant life, but when there is too much of it in water, it can speed up eutrophication (a reduction in dissolved oxygen in water bodies caused by an increase of mineral and organic nutrients) of rivers and lakes. Excessive phosphorus in surface waters can cause negative ecological impacts to waterbodies by stimulating harmful algal blooms, which consume dissolved oxygen (DO) from the water column after die-off. EPA has recognized the relationship between phosphorus, as a major nutrient, and excessive aquatic weed and algae growth, and lake and reservoir eutrophication. EPA has recommended total phosphorus values in various documents ranging from 8.8 to 100 ug/L, as detailed in "Final Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List" in the partial approval and partial disapproval of Oregon's 2012 list. Oregon has not set a numeric criterion for total phosphorous and ODEQ did not assess phosphorous or any other nutrient for its 2012 list but phosphorus data has been collected for several waterbodies in the state.

EPA's assessment method for phosphorus data in this case was described in "Final Enclosure 6: EPA Listing Methodology for Oregon 2012 303(d) List." EPA's assessment method for this decision used two lines of evidence for listing: (1) Greater than 10 percent of the samples measured above 100 ug/L and a minimum of at least two samples were above this value for the time period of interest. Where there were 2 or more data points per day, EPA only used the highest value; AND (2) The waterbody was either already listed, or proposed to be listed during this listing cycle, as impaired for any one of the following parameters: pH, Chlorophyll a or dissolved oxygen. EPA's assessment method captures the most problematic waters.

Listing waters using the phosphorus data and methodology EPA applied is appropriate for interpreting Oregon's narrative criteria and ODEQ agrees the revised list of added water segments are impaired. ODEQ has requested that these listings be recorded as "nutrient impairments" until such time as ODEQ can develop phosphorus and nitrogen specific interpretations of its Statewide Narrative Criteria through its mandated peer review process. EPA's guidance document titled, "Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated and Reporting and Listing Decisions" describes a variety of approaches states can take to implement narrative criteria for nutrient listing purposes, which ODEQ could choose to use in the future. (EPA, 2013, page 6) Please note that some listings were removed based on comments indicating that TMDLs had already been completed for associated parameters, or due to listing errors. Please see Enclosure 3 for site specific responses to comments, Enclosure 4 for revised addition, and Enclosure 6 for waters the EPA chose not to list based on public comment. EPA continues to recommend that ODEQ develop its own methodology for use in future listing cycles.

- *Comment 2: ODEQ*

"Oregon does not have a numeric standard for total phosphorus. EPA's methodology used a benchmark of 100 ug/L total phosphorus as published in EPA's 1987 Gold Book for water quality criteria along with corroborating evidence of impairments for nutrient related parameters pH,

chlorophyll a, or dissolved oxygen to identify the most problematic waters for 303(d) listings. DEQ has not used such an approach in its assessments. DEQ's practice has been to evaluate the impacts of nutrients such as phosphorus when related to other impairments such as dissolved oxygen and pH during the development of TMDLs. If needed, DEQ may choose to develop an approach that differs from EPA's for future assessments and 303(d) listing to supplement the established protocols that identify impairments caused by harmful algae blooms, chlorophyll a, dissolved oxygen, pH, and temperature. When TMDLs are developed to address waters with nutrient related problems, DEQ will study the water system to determine what pollutants are causing impairments and can be managed by pollutant loading allocations. It may be that anthropogenic sources are of total phosphorus are not the primary cause for impairments, and TMDLs will target other sources, conditions. and parameters for control and water restoration."

See response to comment 1 above. Please see Please see Enclosure 3 for site specific responses to comments, Enclosure 4 for revised addition, and Enclosure 6 for waters the EPA chose not to list based on public comment. EPA continues to recommend that ODEQ develop its own methodology for use in future listing cycles.

- *Comment 3: Oregon Association of Clean Water Agencies*

"EPA is proposing to add 35 stream segments to the 2012 Integrated Water Quality Assessment Report for phosphorus. Oregon has no water quality criteria for phosphorus. A "Category 5" listing for phosphorus at this time is inappropriate. Furthermore, EPA notes in its Assessment Report that the assessment method used for phosphorus was "intended only to be a rough screen" and encouraged DEQ to develop their own methodology for assessing phosphorus. Thus, a "Category 5" listing for phosphorus based on a "rough screen" is not an appropriate action. The impacts of phosphorus on beneficial uses must be conducted on a site specific basis. Oregon Administrative Rules require DEQ to conduct studies to describe current water quality, determine the impact on beneficial uses, determine the probable cause of the exceedance and beneficial use impact, and develop a proposed control strategy for attaining compliance where technically and economically practicable. Rather than the "Category 5" listing for phosphorus a more appropriate action for these waterbodies would be a "Category 3B – potential concern" listing, which would enable DEQ to collect additional data."

The assessment methodology states that "EPA's assessment method is intended only to be a rough screen *to capture the most problematic waters"* (emphasis added, *see* public comment period Enclosure 6: EPA Listing Methodology, pg. 18) EPA chose a methodology that captures the most polluted waters and that is why we referred to it as a "rough screen." In the future, ODEQ could choose to revise the methodology to use one of the more stringent recommended levels cited in the methodology. EPA's assessment method for this decision used two lines of evidence for listing: (1) Greater than 10 percent of the samples measured above 100 ug/L and a minimum of at least two samples above this value were recorded for the time period of interest. Where there were 2 or more data points per day, EPA only used the highest value; AND (2) The waterbody was either already listed, or proposed for listing during this listing cycle, as impaired for any one of the following parameters: pH, Chlorophyll a or dissolved oxygen. The 303(d) listing regulations at 40 CFR 130.7(b)(3), requires states to list all water quality limited segments that are not attaining water quality standards, which includes narrative water quality

standards. EPA 2006 Integrated Report guidance says: "States must identify all pollutants that are known to be causing the impairment of a segment." (page 63) "….if a designated use is not supported and the segment is impaired or threatened, the fact that the specific pollutant is not known does not provide a basis for excluding the segment from Category 5. These segments must be listed unless the state can demonstrate that no pollutant(s) causes or contribute to the impairment. Prior to establishing a TMDL for such segments the pollutant causing the impairment must be identified." (page 60). The determination of the cause of the exceedance and the restoration strategy are part of the TMDL assessment. If the cause is determined to be a non-pollutant, or if a restoration strategy other than a TMDL is found to be more appropriate, the listing can be modified accordingly. Also see response to comment 1 above.

Segmentation

- *Comment 1: City of Portland, Environmental Services*

"There are cases where listings are made for large segments of waterbodies based on data taken at locations that do not necessarily represent the whole. For example, phosphorus listing for the Lower Willamette were based on measurements at the Swan Island Channel, which has sufficiently distinct characteristics to merit consideration as a separate waterbody."

EPA used the segments established by Oregon ODEQ when available or consulted with ODEQ before establishing a new segment. If data or information are available which document a change in waterbody character or use which cause data to no longer be representative of the whole segment, please submit them to ODEQ so that a segment revision can be considered during the next listing cycle.

Temperature

- *Comment 1: Northwest Environmental Advocates*

"Third, DEQ has identified "[w]aterbodies that exceed the criteria but are not identified as category 5 water quality limited" in a presentation on the Yachats River modeling for the Mid-Coast Basin TMDL. See Ryan Michie, DEQ, Mid-Coast Implementation Ready TMDL, Temperature Technical Work Group (March 9, 2017) at 5."

EPA evaluated all ODEQ temperature data collected from May 1, 2010, through September 30, 2014. The Oregon temperature criteria specify the numeric standard as the 7-day average maximum (7-DAM) temperature. For 303(d) listings, any 7-day set of temperature data that exceeds the criterion would result in the site exceeding the criteria and placement of the water body on the 303(d) list. It is difficult to interpret data from a PowerPoint presentation, however it appears that the "days" exceeding that are presented in the PowerPoint may just be the daily maximum, not the 7-DAM.

- *Comment 2: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

EPA proposes to add 714 waterbody segments for temperature based on the potential invalidation of temperature TMDLs for these waterbodies in pending litigation challenging the TMDLs. Even if the court does ultimately invalidate these TMDLs, that in itself is an insufficient basis to add these waterbody segments to Oregon's subsection 303(d) list. Unlike other pollutants, subsection 303(d) listings for heat (temperature) are not based on violations of water quality standards, but on temperatures that exceed those that would provide for a balanced, indigenous population of shellfish, fish, and wildlife. The proposed additions of 714 waterbody segments for temperature are not accompanied by any waterbody-specific findings that the measured temperatures in those waterbodies do not provide for a balanced, indigenous population of shellfish, fish, and wildlife. Nor is any waterbody-specific evidence presented concerning the health of these populations or whether any impairment of their health is attributable to excessive temperatures. Moreover, even if EPA could assume that any waterbody temperatures in excess of the currently applicable temperature standards do not assure a balanced, indigenous population of shellfish, fish, and wildlife in that waterbody, the proposed additions do not include an analysis of current compliance with those standards, which are expressed as seven-day averages of daily maximum temperatures. Simply because DEQ in the past included a waterbody on Oregon's subsection 303(d) list for temperature and later developed a temperature TMDL for that waterbody does not mean that the waterbody currently does not meet the applicable temperature standard and therefore must be added back to the list upon the invalidation of the TMDL.

The CWA provides that waterbody segments are to be listed when the water quality standards applicable to the water are not met. While the listing regulations at 40 CFR 130.7(b)(2) allow for segments also to be listed for thermal discharges based on the protection of the balanced indigenous population, impairment is found when water quality standards for temperature are exceeded. EPA is relisting these waters on Category 5, since new temperature TMDLs must be completed. These waters were previously placed in Category 4a, because they had an approved TMDL, but are not currently meeting water quality standards. The CWA specifies that when EPA disapproves (or partially disapproves) a list, EPA will identify those waters still in need of TMDLs. The standard to which the TMDLs were written has been disapproved by EPA in response to the results of litigation on that standard. Because the waters are still impaired and the district court has found that the existing TMDLs are inconsistent with federal law, the waters will require new TMDLs and are appropriately placed back in Category 5. EPA anticipates that ODEQ will complete a statewide analysis of data during the next listing cycle, which will include an assessment of previously listed waters to determine if they are now attaining standards. If there is new data that has not yet been assessed, ODEQ will include that in its next assessment to determine if these waters are still impaired. If new data indicates they are not, they can be delisted at that time.

- *Comment 3: ODEQ*

"EPA proposes re-listing 714 waters to Oregon's Category 5 303(d) list as published in Enclosure 7. EPA previously approved delisting these waters from Oregon's 2010 303(d) list after TMDLs to address water temperature conditions were approved by EPA. EPA states the rationale for now proposing to re-list these waters is that a pending U.S. District Court decision on litigation (Civil No.: 3:12-cv-01751-AC) will invalidate Oregon's temperature TMDLs approved between 2006 and 2010. Please clarify if

EPA's intent is to have these waters remain in "Category 4a: Water quality limited, TMDL approved" as well as being re-listed in "Category 5: Water quality limited, 303(d) list, TMDL needed". This is unusual in that waters generally do not have more than one assessment status for the same parameters/segment combination. EPA's final action should state clearly what assessment category/categories these waters are in."

The 714 waters were not delisted but rather recategorized to Category 4a as having an approved TMDL but not currently meeting water quality standards. EPA is relisting these waters in Category 5 because the waters require new TMDLs. EPA's intent is not to have these waters also remain in Category 4a. Although these waters currently have TMDLs, the TMDLs do not ensure achievement of the applicable standard, because the standard to which the TMDLs were written has been disapproved by EPA in response to the results of litigation on that standard. Because the waters are still impaired and the district court has found that the existing TMDLs are inconsistent with federal law, the waters will require new TMDLs and are appropriately placed back in Category 5.

- *Comment 4: Dennis Hebard*

"The listings in the TMDL litigation waters list are old most of the readings are over 15 years old some are from the 1990's

https://www.epa.gov/sites/production/files/2016-12/enc_7_tmdl_litigation_waters.xlsx" (Note: this link was included the comment letter and refers to the list of assessment units involved in the temperature litigation. The link as written is no longer active, but the list of assessment units can be located at: https://www.epa.gov/tmdl/partial-approval-and-partial-disapproval-oregon-2012-303d-list)

These waters were previously in Category 4a, meaning they had an approved TMDL, but were not currently meeting water quality standards. EPA anticipates that ODEQ will complete a statewide analysis of data during the next listing cycle, which will include an assessment of previously listed waters to determine if they are now attaining standards. If there is new data that has not yet been assessed, ODEQ will include that in its next assessment to determine if these waters are still impaired. If new data indicates they are not, they will be delisted at that time.

Also see Responses to Temperature Comments 1 through 3 above.

Toxics

- *Comment 1: City of Portland, Environmental Services*

"Using only two results as the basis for an impaired listing is unreasonably stringent, especially in cases where ample data exists for a more statistically valid determination. In its response to public comment DEQ stated that "For the 2012 303(d) list, ODEQ followed protocols in the 2012 Methodology which do not include methods to evaluate larger data sets to...allow exceedances of the 5% frequency for toxic substances. ODEQ acknowledges that an assessment methodology could consider protocols to evaluate large data sets, and to apply the frequency and duration elements of

the aquatic life and human health criteria." The practice of using only two results to list waterbodies even when large data sets exist give rise to unnecessary listings and masks true problem areas. Toxics related listings should be based on a percentage of exceedances and should take into account the magnitude, duration and frequency of exceedances. In cases where there are insufficient data, Category 3 should be used."

EPA followed ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," for metals, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. ODEQ can choose to revise this methodology for future lists by following its state process for methodology development and revisions.

- *Comment 2: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

EPA's listing criterion for toxic pollutants, including metals, is two or more measurements since 1999 that do not meet the numeric value of the most stringent applicable water quality criterion, (Footnote 1: The proposed additions are described in the December 21, 2016 letter and enclosures from Daniel D. Opalski, Director, Office of Water and Watersheds, EPA Region 10, to Wendy Wiles, Administrator, Environmental Solutions Divisions, Oregon Department of Environmental Quality, regarding the "Partial Approval/Partial Disapproval of Oregon's Final 2012 303(d) List." This listing criterion is extraordinarily and unnecessarily conservative. Indeed, once there are two such measurements, the waterbody must be listed and can never be delisted—regardless of the number or proportion of subsequent measurements that meet the criterion. For example, if two measurements exceed the numeric value of the applicable criterion, it does not matter whether there are 100, 1000, or 10,000 measurements that meet the criterion. Under the listing criteria, the waterbody must be included on the subsection 303(d) list, and DEQ must establish a TMDL for that pollutant and waterbody. But in addition to being unreasonably conservative, EPA's listing methodology is inconsistent with Oregon's water quality standards for toxic pollutants. EPA's proposed additions are based on two or more instantaneous exceedances of either chronic aquatic life criteria values or human health criteria values. Both of these types of criteria, however, are expressed as averages, not instantaneous values. Oregon's chronic aquatic life criteria are "applied as a 96-hour (4 days) average concentration" that "may not be exceeded more than once every three years. Even if EPA could reasonably assume that an instantaneous concentration measurement is representative of the average concentration over 96 hours, only two exceedances since 1999 would not be a violation of the applicable chronic criterion because the criterion allows for an exceedance once every three years. No waterbody should be added to the subsection 303(d) list based on a chronic aquatic life criterion unless there is at least an average of one exceedance for every three years -for which data is available. Moreover, where more than one measurement is available within a 96-hour period, the average value should be used. Oregon's human health criteria are intended "to protect Oregonians from potential adverse health impacts associated with long-term exposure to toxic substances associated with consumption of fish, shellfish, and water." OAR -8033(3), Table 40. For carcinogens, which comprise slightly more than half of the toxics for which there are human health criteria, the period of exposure is a human lifetime. For this reason, a waterbody should not be added to the subsection 303(d) list based on a

human health criterion exceedance unless the mean value of the measurements in the waterbody exceeds the criterion. Two instantaneous measurements in excess of the numeric value of the applicable criterion are insufficient to demonstrate that the criterion is not met.

EPA followed ODEQ's "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," for toxic substances, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. EPA reviewed data collected from May 1, 2010, through September 30, 2014 but evaluated data for 2 exceedances within a three-year period, consistent with Oregon's methodology. The development of numeric water quality criteria for aquatic life protection is described in the 1985 EPA criteria guidance documents. Chronic criteria are developed to estimate the highest 4-day concentration to which the aquatic species can be exposed without deleterious effects. These 1985 EPA guidelines are for developing water quality criteria, not for using these criteria once they are developed to make impairment determinations.

- *Comment 3: Oregon Association of Clean Water Agencies*

"Listings appear to be on a year-round basis for many pollutants, especially toxics. An examination of the data shows that these issues are seasonal and associated with high flows."

When the time is labeled "Year-Round", that indicates that the water quality standard applies year-round and is not seasonal. It does not necessarily mean that the impairment is year-round.

- *Comment 4: Northwest Pulp and Paper Association, Oregon Farm Bureau, Oregon Forest & Industries Council - "Trade Associations"*

"EPA proposes to add two waterbody segments to Oregon's 2012 subsection 303(d) list for exceeding a diazinon concentration of 50 nanograms per liter (ng/L). Oregon has adopted a guideline diazinon concentration of 50 ng/L. But this is not an approved water quality standard, and the proposed additions to the subsection 303(d) list do not include any other evidence that the designated uses of the waterbodies at issue are impaired by diazinon. Nonetheless, listing these waterbodies for diazinon would require DEQ (or EPA) to develop a TMDL for diazinon, and the TMDL would presumably need to include sufficient diazinon loading restrictions to achieve the guideline concentration of 50 ng/L This approach would eliminate the distinction between approved, applicable water quality standards and guideline concentrations by effectively treating them as the same. Because the proposed diazinon additions are based solely on guideline criteria and not on an applicable water quality standard, the Trade Associations urge EPA not to add them to Oregon's subsection 303(d) list absent waterbody-specific evidence that designated uses are impaired by diazinon."

EPA followed ODEQ's 2012 "Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters," for toxic substances, which states that waterbodies should be listed in Category 5 when two (2) or more valid results do not meet the most stringent applicable criterion for concentrations of a specific toxic substance in the water. For parameters that are not included in Table

30 or Table 40, the methodology states that ODEQ may use the guidance values in Table 31, which includes diazinon. This is the value EPA used.

Water quality criteria and TMDLs

- *Comment 1: Oregon Association of Clean Water Agencies*

"Streams must not be listed when there are no corresponding State of Oregon water quality criteria. Streams must not be listed for impairments for which TMDLs cannot be developed."

The CWA listing regulations require the use of numeric criteria, narrative criteria and designated beneficial use support for assessment and listing purposes. 40 CFR 130.7(b)(3) defines a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements." As stated in EPA's guidance document titled, "Information Concerning 2014 Clean Water Actions Sections 303d, 305b and 314 Integrated Reporting and Listing Decisions" (EPA, 2013), "The CWA and EPA's implementing regulations require States to identify water-quality limited segments still requiring TMDLs where pollution controls are not stringent enough to meet any applicable water quality standard. Applicable water quality standards include designated uses and the criteria that must be met to support the uses as well as antidegradation requirements. Furthermore, if a designated use is not supported and the segment currently fails to meet an applicable water quality standard or is 'threatened,' it must be included on the State's Section 303(d) list even if the specific pollutant causing the water quality standard exceedance is not known at the time." (page 7)

Water Quality Standards

- *Comment 1: City of Portland, Environmental Services*

"EPA used the most current approved standards in its analysis, whereas ODEQ did not. Updated standards for a number of metals had been approved for the states' use in January 2013, which was well before ODEQ submitted its Integrated Report to EPA in November 2014. ODEQ acknowledged this discrepancy in its response to public comments, yet the affected listings were not updated. Similarly, there is no indication that EPA is correcting or "de-listing" any water bodies that no longer quality for Category 5 based on the current standards. Please clarify the status of any affected listings, why EPA did not remove those from the list and the process for ODEQ to delist them."

EPA used the current WQS for this assessment and reassessed the data as standards changed during the process, with the exception of copper, as explained above in the response to copper comments. Where hardness values or other pieces of data were missing, default values were used. EPA also reassessed data using new hardness values that were provided during the public comment period. Additionally, EPA reviewed the listings proposed by ODEQ in 2012 and the underlying data that supports these listings. EPA disapproved several delistings proposed by ODEQ and removed several listings that were proposed in error, as detailed during the public comment period in "Enclosure 3: Disapproved Delistings EPA Proposes for Category 5" and "Enclosure 8: EPA Corrections to ODEQ 2012." EPA need not and did not evaluate previously listed waters for attainment if ODEQ was not proposing any change to the

listing. The CWA specifies that when EPA disapproves (or partially disapproves) a list, EPA will identify those waters still in need of TMDLs and that is the scope of what EPA did. EPA anticipates that ODEQ will complete a statewide analysis of data during the next listing cycle, which will include an assessment of previously listed waters to determine if they are now attaining standards.

Ocean Acidification

- *Comment 1: ODEQ*

"With Enclosure 2 of EPA's published notice, EPA requested information and comments on potential aquatic life impairment in Oregon coastal marine waters. Ocean acidification processes and impacts on ocean waters and marine life need further research and information. As summarized in the final report from the experts convened at Stanford University October 17-18, 2016: "Participants recognized that the recommended chemical parameters and biological indicators are not yet sufficiently advanced (e.g., specific numerical values, threshold conditions) for use as defined management goals or as criteria .... " (Oregon provided footnote citation to Meeting Summary, "Ocean Acidification: Setting Water Quality Goals" October 12-18, 2016, Stanford University, Executive Summary page 3.)

The correlation between the dissolution of pteropod shells and corresponding aragonite saturation state has been documented several studies. The *in situ* pteropod dissolution data analyzed in Bednarsek et al, 2014 have been published in a peer-reviewed publication, with sampling and analysis conducted by NOAA and the University of Washington. Additional unpublished pteropod data were collected and submitted by NOAA for consideration. Numerous peer reviewed aragonite studies and laboratory data sets also document the correlation between under saturated waters at or below a saturation state of 1 and shell dissolution, and suggest shell dissolution as an ecological indicator. (Bednarsek et al, 2017a and 2017b) EPA acknowledges that Oregon has not developed a numeric criteria or methodology for interpreting its narrative water quality standards regarding aragonite saturation state at this time.

- *Comment 2: ODEQ*

"To assess Oregon's coastal marine waters, DEQ and EPA must make determinations based on Oregon's laws and current applicable and relevant standards. Data and information supporting 303(d) listings must pertain to Oregon waters which include marine waters up to three miles out from Oregon's coast. Only these areas fall within DEQ's authority to list under the CWA 303(d) process, and are waters where Oregon's water quality standards apply. Oregon's current narrative standards for Biocriteria and numeric criteria for pH are applicable and relevant:

- **OAR 340-041-0011 Biocriteria**
- **Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.**
- **OAR 340-041-0021 pH**
- **(1) Unless otherwise specified in OAR 340-041-0101 through 340-041-0350, pH values (Hydrogen ion concentrations) may not fall outside the following ranges:**
- **(a) Marine waters: 7.0-8.5;**

The other narrative standards cited by EPA in Enclosure 2 are less relevant as they pertain to wastewater discharges (OAR 340-041-0007(1)) or protecting human consumptive use of fish and aquatic life and water (OAR 340-041-0007(10) misidentified by EPA as (11)).”

EPA agrees that 303(d) listing decisions must be based on promulgated water quality standards, which include numeric and narrative standards. EPA does not agree that the other narrative standards are less relevant to aquatic species impairments in marine waters.

- *Comment 3: ODEQ*

“The state of Oregon is concerned about the impacts of ocean acidification to coastal waters and is an active participant in multi-state and federal discussions aimed at furthering the collective understanding of current conditions and the potential for global and local pollutant contributions. However, listing Oregon's jurisdictional ocean waters is unwarranted at this time. DEQ has in previous Integrated Report cycles affirmed our commitment to listing waters within our jurisdiction when data and information show water quality standards are not met. However, none of the data and information available in previous IR cycles or summarized in EPA's Enclosure 2 has been outside the pH limits for marine waters or has provided a definite causative link to detrimental changes in resident biological communities.”

EPA appreciates Oregon’s concerns about the impacts of ocean acidification to coastal water and its participation in multi-state and federal research into the issue. EPA agrees that there are no data indicating that Oregon marine waters are outside the pH numeric criteria. While the correlation between the dissolution of pteropod shells and corresponding aragonite saturation state is documented, EPA acknowledges that the current *in situ* data indicating biological impairment to pteropods are from outside of Oregon’s state waters. The State noted that without data about the health of the extant aquatic life within Oregon’s waters, it was unable to conclude that there have been detrimental changes to the resident biological communities. It is reasonable for Oregon to await in-state data to confirm to its satisfaction that there are not environmental differences between state and federal waters that may affect the health of the resident biological communities. EPA has determined that, on that basis, it is reasonable for the State to decline to list its marine waters at this time. However, EPA remains concerned that existing water chemistry data taken inside Oregon’s state waters document that the aragonite saturation state conditions that have been observed to be corrosive to pteropods outside state waters also occur in Oregon marine waters. Therefore, EPA continues to recommend that Oregon’s future research efforts in state marine waters include pteropod data to further understand the effect of current water quality conditions on resident biological communities.

- *Comment 4: ODEQ*

“DEQ does not support EPA listing Oregon waters for parameters that do not have established criteria set to protect communities of marine life (aragonite saturation) or based on observations made in offshore waters outside Oregon's territorial limits or on hypothetical and untested projections into future time or at unmonitored locations. If in response to the request for information, EPA receives additional verifiable and good quality data that identifies locations in Oregon marine water with pH outside the allowable range, DEQ will incorporate new 303(d) listings identified by EPA in their final action on Oregon's 2012 303(d) list into the state's planning process for TMDL priorities.”

EPA's 303(d) listing regulations found at 40 CFR 130.7(b)(3) define a "water quality standard applicable to such waters" and "applicable water quality standards" as "those water quality standards established under 303 of the Act, including numeric criteria, narrative criteria, waterbody uses, and antidegradation requirements." Interpreting narrative criteria based on data and other water quality related information is required by the CWA and its implementing regulations. EPA acknowledges that the current *in situ* data indicating biological impairment to pteropods are from outside of Oregon's state waters. While water chemistry data taken inside Oregon's state waters document that the aragonite saturation state conditions that have been observed to be corrosive to pteropods outside state waters also occur in Oregon marine waters, EPA's listing regulations at 130.7(b)(6)(iii) permit the state to decline to use certain data for listing purposes if it provides a "rationale for any decision to not use" that data and information. The regulations further provided at 130.7(b)(6)(iv) that a state may "demonstrate good cause for not including a water or waters on the list." EPA believes that the lack of direct scientific observations of biological degradation within Oregon state waters is a reasonable basis for ODEQ not to list on the basis on the aragonite saturation data. Nonetheless, EPA continues to recommend that Oregon's future research efforts in state marine waters include pteropod data to further understand current water quality conditions.

- *Comment 5: Center for Biological Diversity (CBD)*

"Oregon's numerical pH criteria for marine waters (coastal and estuarine) are inadequate to address ocean acidification. The Oregon Department of Environmental Quality (ODEQ) should analyze whether marine waters are impaired by ocean acidification based on designated aquatic life uses and the associated narrative criteria. Oregon's pH criterion states that for marine waters, the pH must fall between 7.0 and 8.5 (OAR 340-041-0021). For estuarine and freshwaters, pH should fall within an even wider criteria from 6.5-9.0, depending upon location (OAR 340-041-0101 – a 340-041-0350). These criteria are very wide and most coastal and estuarine waters attain such standard. However, strong scientific evidence shows deleterious effects within these ranges for marine organisms (see below), even though pH fall within the acceptable range of the Oregon water quality standards. Therefore, numerical pH criteria for marine and estuarine waters are inadequate to address the ocean acidification problem. The EPA and ODEQ must analyze whether marine and estuarine waters are impaired by ocean acidification based on the narrative criteria related to aquatic life designated uses found at OAR 340-41-007(1) and (11)."

EPA agrees that listing assessments should be conducted based on designated aquatic life uses and associated narrative criteria in addition to numeric standards. EPA acknowledges that studies have shown aquatic life impacts when the pH of ocean water was within the promulgated numeric standard. However, at this time, the biological data that were available were collected outside Oregon territorial waters and the state has reasonably concluded that the available data and information do not support listing. EPA encourages Oregon to develop a listing methodology and interpretation for its Statewide Narrative Criteria so that the State can assess attainment of the narrative in future listing cycles, as new data allow. See also Responses to ODEQ Comments No. 1 through 4 above.

- *Comment 6: CBD*

"Oregon's marine waters affected by ocean acidification should be listed. Based on the designated aquatic life uses and associated narrative criteria, marine, coastal, and estuarine water affected by ocean acidification are not "*at the highest possible level*" and can be considered "*deleterious to fish and other aquatic life*". Ocean acidification may already impairing the capacity of organisms to produce shells and skeletons, altering food webs, and affecting the dynamic of entire coastal and estuarine ecosystems in Oregon (Hauri et al. 2009, Barton et al. 2012, Mackas and Galbraith 2012, Gruber et al. 2012, Lischka and Riebesell 2012, Hauri et al. 2013, Waldbusser and Salisbury 2014, Bednaršek et al. 2014, Ekstrom et al. 2015, Waldbusser et al. 2015a, Bednaršek and Ohman 2015, Barton et al. 2015, Chan et al. 2016, Bednaršek et al. 2016, Weisberg et al. 2016, Feely et al. 2016, Waldbusser et al. 2016, Feely et al. 2017, Bednaršek et al. 2017). Small increases in acidity of coastal and estuarine waters can substantially reduce the ability of marine organisms to produce shells and skeletons. Microscopic algae and calcifying zooplankton are especially at risk and changes in their abundance and survivorship can result in cascading effects that ripple through the entire food web, affecting other marine organisms from fishes to whales. Increasing CO2 in seawater can also directly affect fishes by affecting critical behavior such as orientation, predator avoidance, and the ability to locate food and suitable habitat."

EPA reviewed all of the above studies, as well as all of the other references CBD submitted. EPA found no indication of non-attainment of the numeric pH standard. There is no Oregon water quality standard specifically for aragonite saturation state, and Oregon has not developed methodologies for use of aragonite data in interpreting the statewide narrative criteria. The *in situ* biological pteropod data presented in the submitted literature were collected outside Oregon territorial waters and the state reasonably concluded that the available data and information do not support listing. See also Responses to ODEQ Comments No. 1 through 4 above.

- *Comment 7: CBD*

"Current water quality criteria for pH are inadequate to address ocean acidification.
The estuarine/marine habitat pH criteria for Oregon marine and estuarine waters are inadequate to protect aquatic life. Based on the best available scientific information on the deleterious effect of ocean acidification on marine life, these pH standards are inadequate, because negative biological effects can be observed at pH levels well within the current range that is considered normal. Thus, the state of Oregon in conjunction with the EPA should develop new water quality standards for ocean acidification (either numerical or narrative) that better reflect the natural variability and potential negative effects of acidification on vulnerable coastal and estuarine species."

The issue of the adequacy of promulgated water quality standards is not a matter addressed in 303(d) assessments or listing decisions, but rather a separate process conducted by States. Please see response to comment 5 above.

- *Comment 8: CBD*

"Oregon's water bodies impaired by ocean acidification: This section is an analysis of a series of water bodies across Oregon that may be already impaired by ocean acidification."

Please see Enclosure 3 for site specific comment responses.

- *Comment 9: CBD*

"Oregon must evaluate data related to ocean acidification parameters from several readily available sources. Oregon has a duty to evaluate ocean acidification parameters during its water quality assessment (EPA 2010). Oregon must "*evaluate all exiting and readily available water quality-related data and information to develop the list*" 40 C.F.R. § 130.7(b)(5). Beyond reviewing the information submitted by the Center, Oregon must also evaluate pH and other monitoring data that is readily available and seek out additional ocean acidification data from state, federal, and academic research institutions. EPA's 2010 memo and Integrated Report Guidance discussed several sources, including the NOAA data (EPA 2010: 7-9; EPA Guidance 30-31). There are several sources for high resolution ocean acidification data that will be available in the near future." CBD provided pdfs, citations and links to numerous data sources and literature articles as part of their comment letter.

EPA agrees that ODEQ did not thoroughly evaluate all existing and readily available data and information related to ocean acidification parameters in its 2012 assessment process. EPA took no action on Oregon's decision not to list marine waters for aquatic life impairments but sought comment on the existing studies and solicited additional information on the issue. EPA has reviewed the data sources and literature articles provided by CBD and others. EPA did not find any pH data outside of the standard's range. The majority of the literature pertained to laboratory studies or data that were collected from locations outside Oregon territorial waters, or for chemical parameters for which no numeric water quality standards or methodologies interpreting narrative standards currently exist. Data describing biological impacts to pteropod species were collected outside Oregon territorial waters. EPA evaluated ODEQ's rationale for not listing marine waters for aquatic life impairment at this time, and is approving ODEQ's list without any such listings. EPA's rationale for approving the absence of any marine waters listed for aquatic life impairment is contained in Enclosure 1 and further response to ODEQ's comments 1 – 4 are above.

- *Comment 10: Oregon Wild*

We support efforts to recognize declining ocean conditions caused by increasing temperatures and altered pH from increasing CO2 emissions. Listing Oregon's coastal marine waters as impaired will be an effective action-forcing mechanism to motivate Oregon to do its share to reduce GHG emissions. We support EPA's use of data from marine waters outside of Oregon's 3-mile territorial boundary. This is supported by the fact that the measurement stations with the highest proportion of individual Pteropods exhibiting signs of shell dissolution were located closest to shore. Approximately half of carbon emitted to the atmosphere is absorbed by the oceans where it contributes to acidification and serious adverse ecological consequences. John Pickrell 2004. Oceans Found to Absorb Half of All Man-Made Carbon Dioxide, National Geographic News, July 15, 2004.http://news.nationalgeographic.com/news/2004/07/0715_040715_oceancarbon_2.html. CO2 has a very long residence time in the atmosphere before it dissolves in the ocean, so there is a degree of "committed acidification" that must be accounted for. "NOAA and partner scientists have connected the concentration of human-caused carbon dioxide in waters off the U.S. Pacific coast to the dissolving of shells of microscopic marine sea snails called pteropods. … Commercially valuable fish such as salmon, sablefish and rock sole make the pteropod a major part of their diet. … 'We estimate that since pre-industrial times, pteropod shell dissolution has increased 20 to 25 percent on average in waters along the U.S. West Coast,' said Nina Bednaršek of the University of Washington." Research Links Ocean Acidification To Dissolving Shells Of Pteropods, Key Part Of Marine Food Chain. The Columbia Basin Fish & Wildlife News Bulletin. Posted Friday, December 02, 2016. "[H]uman-

released CO2 (and related factors) is intensifying the natural fluctuations so that they are more extreme and more frequent, resulting in acidic conditions that are intolerable to some species. For some species, even small changes in ocean carbon chemistry can cause very significant problems." Caren E. Braby 2016. Ocean Acidification Global Warming's Evil Twin. The Osprey. Jan. 2016.

http://jimyuskavitch.com/the_osprey_jan_2016.pdf. See also: Mathis, J.T., S.R. Cooley, K.K. Yates, and P. Williamson. 2015. Introduction to this special issue on ocean acidification: The pathway from science to policy. Oceanography 28(2):10–15, http://dx.doi.org/10.5670/oceanog.2015.26. http://www.tos.org/oceanography/assets/docs/28-2_mathis1.pdf. The effect of climate change on the oceans may in fact be an even more significant threat to life of earth than warming. Howard Lee 2015. You can't rush the oceans (why CO2 emission rates matter). http://www.skepticalscience.com/you-cant-rush-the-oceans.html ("Current human emissions are at a rate comparable to those in Earth's past that triggered powerful global warming and ocean acidification associated with mass extinctions.") See also, Craig Welch 2013. Sea Change: Pacific Ocean Takes Perilous Turn. Ocean acidification, the lesser-known twin of climate change, threatens to scramble marine life on a scale almost too big to fathom. Seattle Times series.

See Responses to Comments 1 – 9 above.

<u>Additional Comments</u>

In addition to comments NWEA submitted on EPA's 2016 partial approval/partial disapproval, NWEA also attached comments it provided to ODEQ on ODEQ's proposed list on February 24, 2014. ODEQ responded to NWEA's comments along with all other comments it received on November 3, 2014. Although most of NWEA's comments were adequately addressed by ODEQ, EPA is providing responses to several NWEA comments because either: (1) EPA disagrees with ODEQ's response; or (2) given the final decision EPA has made, EPA determined further clarification was needed in the record.

Comment 1: NWEA

"For the proposed 2012 list, DEQ used data from only three sources: (1) data submitted by the City of Gresham in response to DEQ's "call for data," (2) DEQ's own database, and (3) limited data from the U.S. Geological Survey (USGS) Oregon Water Sciences Center. *See* DEQ, Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters (Pursuant to Clean Water Act Sections 303(d) and 305(b) and OAR 340-041-0046) (Dec. 20, 2013) (hereinafter "2012 Methodology") at 9.1 DEQ limited the data it retrieved or solicited from the latter two sources to surface water data on some toxic substances, mercury tissue residue analyses, and dissolved oxygen in the Willamette and Umatilla basins. *Id.* By severely restricting its own retrieval of data and information, DEQ incorrectly relied upon its "call for data" to meet the requirements for listing impaired waters."

- ODEQ Response

"The data referenced by the Commenters were not readily available to DEQ or in a useable form. DEQ uses its Laboratory Analytical Storage and Retrieval (LASAR) system as the primary data system to store data assembled for the Integrated Report after reviewing data for quality and assigning a data

quality grade. DEQ identifies the data time period of interest for each Integrated Report which is typically ten years. DEQ retrieves data for that time period from LASAR and evaluates that data set for each cycle of the Integrated Report. Data not in DEQ's LASAR database are not available to retrieve, process, and evaluate for the Integrated Report. DEQ was limited by resources and time in the initial data retrieval for the 2012 Integrated Report and retrieved a focused set of data, discussed in Comment (4) below. DEQ has not developed the data systems to smoothly retrieve data from other data storage systems such as STORET.

DEQ attempted to re-do the data retrieval step to include toxic substance data available in LASAR, STORET, and the USGS database in order to finalize the 2012 Integrated Report. The process of retrieving data from other data systems is both complicated and unreliable. The accuracy, precision, and completeness of data in large data storage systems and the inconsistencies and comparability of the pollutant naming conventions in those systems makes data preparation and processing complex and time consuming. DEQ's attempt could not be completed with the staff resources and time available to finalize the 2012 Integrated Report. DEQ is looking forward to assistance from EPA at a national level to facilitate future efforts to retrieve data through the Water Quality Portal in order to expand the data available for Oregon's water quality assessments."

EPA agrees that ODEQ did not review all readily available data and information when developing the 2012 assessment. EPA disapproved ODEQ's 2012 submittal because of the incomplete nature of ODEQ's data collection and assessment. The readily available data and information reviewed by EPA can be found in public comment period Enclosure 5: EPA Data Sources. EPA also reviewed additional sources of data and information that were submitted during the public comment period. Regarding ODEQ's response to this comment ("Response to Comments on Oregon's Draft 2012 Integrated Report", 2014) and the database limitations which contributed to this issue, it is EPA's understanding that the data storage and management issues have been resolved, and EPA expects ODEQ to conduct a complete assessment for the next listing cycle.

- *Comment 2: NWEA*

"The "call for data" has been too infrequent, of too short a duration, and makes clear that DEQ does not accept data or information on designated use support, or information of any kind."

- ODEQ Response

"Oregon's water quality standards are developed to protect a variety of beneficial uses. Standards for specific pollutants or water conditions may protect both aquatic life and human uses of waters. DEQ's approach is to evaluate water quality when data are available by applying criteria for pollutants or parameters independent of each other, and report on whether or not those criteria are met. DEQ's Integrated Report is not organized by the beneficial uses designated in a water body, but by pollutant or parameters that are assessed in that water. One or more pollutants or parameters may contribute to beneficial use impairments, and each is considered independently. If any one of the multitude of pollutant or parameter criteria are not met, then the beneficial uses protected by the criterion are considered impaired. For instance, most waters in Oregon are designated for domestic water supply. DEQ's assessment considers data or information on aquatic weeds and algae, chlorophyll a, toxic substances, and turbidity as pollutants or conditions that potentially impair the use of water for drinking water beneficial use. This approach is consistent with EPA guidance on using the

"independent applicability" of state's water quality standards to assess water for 303(d)/305(b) reporting."

EPA agrees that ODEQ did not review all readily available data and information when developing the 2012 assessment. EPA disapproved ODEQ's 2012 submittal because of the incomplete nature of ODEQ's data collection and assessment. The readily available data and information reviewed by EPA can be found in public comment period Enclosure 5: EPA Data Sources. EPA also reviewed additional sources of data and information that were submitted during the public comment period. EPA conducted a more comprehensive analysis of available data and has identified 999 WQLS that ODEQ failed to appropriately include in Category 5.

- *Comment 3: NWEA*

"DEQ's limitation on using data on toxics, considering only water column values and not tissue residue or sediment values, is inconsistent with providing the protection allegedly established by the numeric criteria, as discussed *infra*. It is also inconsistent with the requirement to fully support designated uses, protect existing uses under Tier I of the antidegradation policy, and fully implement Oregon's narrative criterion that protects uses from toxic substances, discussed *supra*. Particularly where the detection and quantitation levels are higher than the numeric criteria, which is roughly half of the human health criteria, the Department should have and use protocols to evaluate tissue and sediment levels in a way that is consistent with the ambient water column criteria."

- ODEQ Response

"DEQ's assessment protocols are based on both Oregon's narrative and numeric standards. Numeric standards provide well established levels for protecting human and aquatic life beneficial uses and are easily applied for DEQ's assessment purposes. Except for mercury, Oregon's toxic substance numeric criteria are based on concentrations of pollutants in the water column. The aquatic life numeric criteria for toxic substances are established to protect the most sensitive aquatic life species and apply directly to measurements of toxic substances in water. The numeric human health criteria protecting the beneficial use of human consumption is measured directly at the point of human exposure in fish tissue.

In the absence of other numeric criteria for pollutant in fish tissue, DEQ applies the toxic substance narrative criteria by using Oregon Health Authority fish consumption advisories as alternate indicators of human health risk. The OHA advisories are issued after OHA analyzes fish tissue pollutant data and human use data to determine where an advisory is warranted. OHA's process for evaluating the data and extrapolating to human use levels are well established and accepted protocols that also are useful for DEQ's assessment purposes. Oregon does not have numeric standards for toxic substances in sediment. To date, OHA has not issued advisories for human exposure to sediment. DEQ does not have alternate indicators to apply the narrative criteria to toxic substances in sediment and has not developed a benchmark to use for assessment purposes to relate sediment levels to levels that would pose risk to aquatic life or human beneficial uses."

EPA does not agree with ODEQ's response to this comment as stated in "Response to Comments on Oregon's Draft 2012 Integrated Report", 2014. Accordingly, EPA assessed fish tissue toxic data and has added one listing for DDT in fish tissue. EPA is adding a second listing based on fish tissue data. EPA used values from Oregon DEQ Table 30: Aquatic Life Water Quality Criteria for Toxic Pollutants Effective April 18, 2014 and TABLE 31: Aquatic Life Water Quality Guidance Values for Toxic Pollutants Effective April 18, 2014.

- *Comment 4: NWEA*

"DEQ summarizes a NWEA comment in its "Response to Comments on Oregon's Draft 2012 Integrated Report", 2014 as "*Commenter (16)(NWEA) included comments on DEQ's methodology for applying the bacteria (E. coli, Enterococci), pH, and turbidity criteria.*
DEQ considered identical comments made on the assessment methodology for the 2010 Integrated Report and refers the Commenter to DEQ's responses provided with documentation for the 2012 Integrated Report. DEQ does not find these comments relevant to Oregon's 2012 303(d) list decisions."

- ODEQ Response

"DEQ considered identical comments made on the assessment methodology for the 2010 Integrated Report and refers the Commenter to DEQ's responses provided with documentation for the 2012 Integrated Report. DEQ does not find these comments relevant to Oregon's 2012 303(d) list decisions."

EPA disagrees that comments on methodologies are not relevant to the outcome of the 2012 list decision. If a methodology was inappropriate or applied incorrectly, those errors impact the listing decisions that are made, and should be addressed. EPA reviewed Oregon's 2012 listing methodologies and did primarily rely upon them for the list development. Where EPA determined a methodology was not consistent with the WQS or absent, EPA employed another accepted methodology instead. The details of this can be found in Enclosure 6: EPA Assessment Methodology. ODEQ has undertaken an extensive methodology revision process, which involved both peer review panels and stakeholder workgroups, which included EPA as well as a number of the entities that provided comments on the 2012 list. ODEQ published the revised methodology document on December 4, 2018 and will use it for the next assessment.