



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10

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OFFICE OF
WATER AND WATERSHEDS

DEC 21 2016

Ms. Wendy Wiles, Administrator
Environmental Solutions Division
Department of Environmental Quality
700 NE Multnomah Street, Suite #600
Portland, Oregon 97232

Re: Partial Approval/Partial Disapproval of Oregon's Final 2012 303(d) List

Dear Ms. Wiles:

The U.S. Environmental Protection Agency has reviewed the Section 303(d) List for 2012 that was submitted by the Oregon Department of Environmental Quality (ODEQ) as part of the State's Integrated Report, on November 5, 2014, including ODEQ's assessment methodology and other supporting documentation and information provided by ODEQ or made available on ODEQ's website.

For the reasons discussed below, the Environmental Protection Agency (EPA) partially approves and partially disapproves Oregon's 2012 303(d) list consistent with the requirements of Clean Water Act (CWA) Section 303(d) and 40 CFR 130.7. Further explanation of these decisions is provided in the attached "Review of Oregon's 2012 Integrated Report." See Enclosure 1.

As a result of this review, the EPA has determined that Oregon's 2012 Section 303(d) listing of 131 water quality limited segments (WQLSs) still requiring TMDLs meets the requirements of CWA Section 303(d) and EPA's implementing regulations. In addition, the EPA has determined that the removal of 60 water quality limited segments due to standards attainment was also consistent with CWA Section 303(d) and the federal regulations. An additional 17 WQLSs were also placed appropriately in Category 4a and 4b, consistent with CWA Section 303(d) and the federal regulations.

However, the EPA found that 11 other additions were proposed in error, and at the request of ODEQ has removed these WQLSs from the list. The EPA determined that the proposed delisting of 8 additional WQLSs from the 303(d) list was inappropriate, and is disapproving these delistings and proposing the addition of these WQLSs to Category 5.

The EPA has also determined that ODEQ failed to assemble and evaluate all readily available data and information for water bodies of the state when developing Oregon's 2012 Section 303(d) list. Specifically, based on EPA's review of data ODEQ solicited and collected for the 2012 303(d) list development that was entered into the Laboratory Analytical Storage and Retrieval (LASAR) database, ODEQ failed to evaluate readily available data and information for the following pollutants: alkalinity; ammonia; aquatic weeds; bacteria; biocriteria; chloride; chlorine; chlorophyll a; dissolved oxygen outside the Willamette and Umatilla Basins; marine waters; metals; nitrates; pH; phosphorus; temperature; tissue of fish and soft shell clams; total dissolved gas; and toxics outside the Willamette

and Umatilla Basins.¹ Therefore, EPA is disapproving ODEQ's failure to list 332 WQLSs, as required by CWA Section 303(d) and 40 CFR 130.7(b)(5).

The EPA also evaluated waters in Category 4A being challenged in Northwest Environmental Advocates (NWEA) v. United States EPA (Civil No.: 3:12-cv-01751-AC.) The EPA is now proposing to add these waters subject to litigation to Category 5 to emphasize the need to replace these TMDLs. See Enclosure 7 for a detailed list of the 714 waters included in this action.

As required by EPA regulations at 40 CFR § 130.7(d)(2), if EPA disapproves listings EPA must identify waters not meeting the state's water quality standards and accept public comment on the proposed additions. The EPA will be accepting comments on our proposed additions from December 22, 2016 to February 6, 2017. Comments can be sent to Jill Fullagar at Fullagar.jill@epa.gov and should include the subject line "OR 2012 comment period." All decision documents and supporting information pertaining to this action are available on EPA's website at: <https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list>. After considering comments received from the public, the EPA will make a final decision regarding the addition of water quality limited segments to the final 2012 303(d) list.

Separate from the comment period on the EPA's proposed additions, the EPA is also seeking data, information and comments on potential aquatic life impairments in Oregon coastal marine waters. Please see Enclosure 2 for details regarding the specific nature of the information being sought, and submit any comments by the close of the comment period, which is also open from December 22, 2016 to February 6, 2017. Comments can be sent to Jill Fullagar at Fullagar.jill@epa.gov and should include the subject line "OR 2012 comment period." All decision documents and supporting information pertaining to this action are available on EPA's website at: <https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list>.

The EPA has received Oregon's long-term schedule for TMDL development for all waters on the State's 2012 Section 303(d) list. As a policy matter, the EPA has requested that States provide such schedules. The EPA is not taking any action to approve or disapprove this schedule pursuant to Section 303(d).

The EPA's partial approval/partial disapproval of the state of Oregon's 2012 303(d) list does not apply to any waters, or portions thereof, that are within Indian Country. The EPA is taking no action to approve or disapprove the State's list with respect to any waters within Indian Country.

We recognize and appreciate the work of staff and managers at Oregon Department of Environmental Quality in developing the final 2012 303(d) List. We look forward to continuing to work with you on this process to address the water quality issues in the State.

¹ 40 CFR 130.7(b)(5) requires that "Each State shall assemble and evaluate all existing and readily available water quality related data and information to develop the list."

If you have any questions please contact Jill Fullagar, Impaired Waters Program Staff at (206) 553-2582, or Dave Croxton, Manager, Watershed Unit at (206) 553-6694.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christine Pyle for".

Daniel D. Opalski, Director
Office of Water and Watersheds

Enclosures

cc: Ms. Jennifer Wigal, ODEQ

Ms. Karla Urbanowicz, ODEQ

I. Purpose

Clean Water Act ("CWA") Section 303(d), 33 U.S.C. § 1313(d), ("Section 303(d)") requires states to identify those waters within their jurisdiction for which effluent limitations required by CWA Section 301(b)(1)(A) and (B), 33 U.S.C. § 1311(b)(1)(A) and (B), are not stringent enough to implement any applicable water quality standard, to establish a priority ranking for such waters, and to submit a listing of such waters to EPA ("Section 303(d) list").

On November 5, 2014, the Oregon Department of Environmental Quality ("ODEQ") submitted Oregon's 2012 Section 303(d) list of water quality limited segments ("WQLSs"¹) still requiring a Total Maximum Daily Load (TMDL) ("Oregon's 303(d) list"), to EPA, as part of the Integrated Report submitted by ODEQ ("submission") to meet the requirements of CWA Sections 303(d), 305(b), and 314; 33 U.S.C. § §1313(d), 1315(b), and 1324. *See* ODEQ, 2014. After receipt of ODEQ's 303(d) list, ODEQ contacted EPA about several errors made in its assessment of 11 water segments included in the 303(d) list of impaired waters, and they asked EPA to amend the list accordingly. EPA has completed its review of ODEQ's submission. As a result of this review, EPA is partially approving and partially disapproving Oregon's 303(d) list. Because of the partial nature of Oregon's final submittal, as described below, EPA required significant time to fully assess all of the existing and readily available water quality-related data and information for all state waters to determine that 1,055 waters should be proposed for listing, and is now seeking public comment on the proposed additions. Comments can be submitted through February 6, 2017 to Jill Fullagar at Fullagar.jill@epa.gov and should include the subject line "OR 2012 comment period." All decision documents and supporting information can be found on EPA's website at: <https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list> .

EPA is also taking no action at this time with respect to ocean acidification on marine waters as described briefly below and in more detail in accompanying Enclosure 2. EPA intends to act on this subset of waters once it has had a chance to consider the public comments that it is soliciting.

This document describes the basis for: (1) EPA's decision to partially approve and partially disapprove ODEQ's list of water quality limited segments requiring a TMDL identified in Oregon's 303(d) list; (2) EPA's decision to disapprove Oregon's determination to not include waters and pollutants on its list of water quality limited segments requiring a TMDL; and (3) EPA's identification of waters not meeting the state's water quality standards and proposed additions for Oregon's 303(d) list.

II. Statutory and Regulatory Background for Identification of Water Quality Limited Segments (WQLS) for Inclusion on Section 303(d) Lists

¹ The phrase "water quality limited segment" refers to impaired waters. A water body may be Section 303(d) listed multiple times if it is threatened or impaired for more than one pollutant or use.

Enclosure 1: Review of Oregon's 2012 Integrated Report

Section 303(d) and EPA regulations, at 40 CFR § 130.7, establish the procedures that States must follow when developing their Section 303(d) lists. EPA has issued various guidance documents to assist states in making the required determinations, including EPA's *Guidance for Water Quality-Based Decisions*. See EPA, 1991. Section 303(d)(1)(A) directs states, when identifying and prioritizing waters, to take into account the severity of the pollution causing the impairment and the uses to be made of such waters. This Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, consistent with EPA's long-standing interpretation of Section 303(d). EPA regulations provide that states do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act; (2) more stringent effluent limitations required by federal, state or local authority; and (3) other pollution control requirements required by federal, state, or local authority. See 40 CFR 130.7(b)(1).

40 CFR 130.7 (d)(2) requires EPA to either approve or disapprove a state's list. If EPA disapproves a list, EPA must identify waters in the state that do not meet water quality standards. After EPA has identified waters not attaining water quality standards, EPA must issue a public notice seeking comments on the list. After considering public comment, EPA will transmit the final list to the state. See 40 CFR 130.7(d)(2).

A. Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, the following: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent CWA Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any CWA Section 319 nonpoint assessment submitted to EPA. See 40 CFR § 130.7(b)(5). The 1991 EPA Guidance describes categories of water quality-related data and information that may be existing and readily available. See EPA, 1991, Appendix C. While states are required to evaluate all existing and readily available water quality-related data and information, states may decide to rely or not rely on particular data or information in determining whether to list particular waters. See EPA, 1991.

In addition, 40 CFR § 130.7(b)(6) requires states to include, as part of their submission to EPA, documentation to support decisions to rely or not rely on particular data and information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by the EPA Regional Administrator. 40 CFR § 130.7(b)(6).

B. Priority Ranking

EPA regulations also codify and interpret the requirement in Section 303(d)(1)(A) that states establish a priority ranking for listed waters. The regulations at 40 CFR § 130.7(b)(4) require states to prioritize waters on their Section 303(d) lists for TMDL development, taking into account the severity of the pollution and the uses to be made of such waters. Priority ranking must include identification of those WQLSs still requiring TMDLs and targeted for TMDL development in the next two years. 40 CFR 130.7(b)(4). States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities. *See* 57 FR 33040, 33044-33045 (July 24, 1992); and EPA, 1991.

III. Analysis of Oregon's Submission

EPA's review of Oregon's 303(d) list was based on the elements required to be included in state submissions by Section 303(d) and 40 CFR § 130.7. EPA reviewed the methodology used by ODEQ in developing its list and the description of the data and information that ODEQ considered. EPA's review of Oregon's 303(d) list is based on EPA's analysis as to whether ODEQ reasonably considered existing and readily available water quality-related data and information and reasonably identified waters required to be listed.

A. Identification of waters, assembly and evaluation of existing and readily available water quality related data and information and priority ranking

In reviewing ODEQ's submission, EPA has concluded that, with respect to the changes that ODEQ made to its Section 303(d) list, ODEQ failed to develop its Section 303(d) list consistently with the requirements of Section 303(d) and 40 CFR § 130.7. This conclusion is based on EPA's analysis of whether ODEQ reasonably evaluated existing and readily available water quality-related data and information, assessed whether waters were attaining water quality standards, and identified waters required to be listed. EPA determined that ODEQ did not assemble and evaluate all readily available data and information for all waters of the State. The following further describes the details of that conclusion, and documents EPA's process for assembling, evaluating and assessing the outstanding data and proposing the addition of waters to the 303(d) list.

ODEQ's submission included the following supporting documentation: (1) Oregon's 2012 Section 303(d) List of Category 5 Water Quality Limited Waters Needing a TMDL, Oregon's Integrated Report, (2) Waters De-listed in 2012, (3) Oregon's 2012 Integrated Report database report, (4) Oregon's 2012 TMDL Priorities and Schedule, (5) Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters; (6) Memorandum-Category 4b Demonstration Addressing Pentachlorophenol in Willamette River Sediments, and (7) Response to Comments on Oregon's 2012 Integrated Report. The submission included ODEQ's evaluation of data and information related to dissolved oxygen and toxics in the Willamette and Umatilla Basins, a subset of data for selected areas that included arsenic, iron, biocriteria, mercury, chlorophyll *a*, *E. coli*, and toxic substances in order to apply updated human health water quality standards, as well as identification of waters removed from Oregon's previous Section 303(d) list as a result of TMDL development. *See* ODEQ, 2014.

Enclosure 1: Review of Oregon's 2012 Integrated Report

In conducting its analysis, EPA reviewed the supporting documentation provided with the ODEQ's submission and also reviewed the on-line version of ODEQ's assessment database, available on the internet at: <http://www.deq.state.or.us/wq/assessment/rpt2012/search.asp>.

1. Oregon's 303(d) list development process

Oregon's 2010 Section 303(d) list, on which EPA took final action on December 14, 2012, was the starting point for ODEQ in developing Oregon's Section 303(d) list for 2012. ODEQ conducted a "call for data," for the 2012 list from December 16, 2011 to January 31, 2012, in order to allow the public to submit data to ODEQ. Data received during this call for data period, together with data collected directly by ODEQ, were used to develop the Integrated Report and Section 303(d) list. These data were assembled in ODEQ's Laboratory Analytical and Storage Retrieval (LASAR) database, and included data collected from January 1, 2000 through December 31, 2011.

ODEQ assessed the assembled data for dissolved oxygen and toxics in the Willamette and Umatilla Basins, and a subset of data for selected areas that included arsenic, iron, biocriteria, mercury, chlorophyll *a*, *E. coli*, and toxic substances in order to apply updated human health water quality standards. ODEQ reviewed existing impairment listings due to the withdrawal of the beryllium and manganese criteria. ODEQ also removed waters from its Section 303(d) list based on approved TMDLs. The draft 2012 Integrated Report, including the draft 303(d) list, and the listing methodology were published for public comment from January 2 to February 24, 2014. Oregon submitted its final list to EPA on November 5, 2014.

ODEQ's final submission included the following supporting documentation: (1) Oregon's 2012 Section 303(d) List of Category 5 Water Quality Limited Waters Needing a TMDL, Oregon's Integrated Report, (2) Waters De-listed in 2012, (3) Oregon's 2012 Integrated Report database report, (4) Oregon's 2012 TMDL Priorities and Schedule, (5) Methodology for Oregon's 2012 Water Quality Report and List of Water Quality Limited Waters; (6) Memorandum-Category 4b Demonstration Addressing Pentachlorophenol in Willamette River Sediments, and (7) Response to Comments on Oregon's 2012 Integrated Report. *See* Oregon, 2014. After receipt of ODEQ's 303(d) list, ODEQ contacted EPA about several errors made in its assessment of 11 water segments included in the 303(d) list of impaired waters, and they asked EPA to amend the list accordingly.

2. Public Participation

Oregon provided four opportunities for public input in the listing process. In addition to the previously discussed call for data and public comment period on the draft list, Oregon also held one public hearing to provide information and receive public comments on January 14, 2014. No comments were received at the hearing. An additional public web-based information session was held on January 29, 2014.

Enclosure 1: Review of Oregon's 2012 Integrated Report

Oregon's submission includes an index of people and organizations that provided comments on the draft Integrated Report and listing methodology published for public review in 2012, a summary of the comments received by ODEQ, and ODEQ's response to comments. *See* ODEQ, 2014. Oregon received twenty-six written comment letters and summarized them in the document entitled *Response to Comments on Oregon's Draft 2012 Integrated Report, November, 2014*. *See* ODEQ, 2014.

EPA found the State's public participation process to be in accordance with federal listing requirements. EPA further found, however, that the response to public comments overlooked potential readily available data and information, which EPA then fully assessed as part of its review.

3. Listing Methodology and Assessments

As part of their submission, States are required to include a description of the methodology utilized to assess waters of the State for compliance with applicable water quality standards. Oregon provided its listing methodology used to develop its Section 303(d) list. *See* ODEQ, 2014.

4. Analysis of Waters Removed from Oregon 2010 Section 303(d) List

Waters not listed due to water quality standards attainment. Oregon proposed the removal of 68 WQLS due to standards attainment. *See* Oregon's proposed list of waters removed from the 303(d) list at <http://www.deq.state.or.us/wq/assessment/rpt2012/resultsdelist12.asp>. EPA is approving the removal of 60 segments from Oregon's Section 303(d) list because EPA agrees with the State that there is information showing they were meeting applicable water quality standards:

- Seven of the segments were removed from the list because additional data showed they met water quality standards.
- Forty of the segments met water quality standards because the water quality standard for which they were listed had been withdrawn and there was no replacement for that standard.
- One was delisted due to a criterion change and EPA agreed with the State that the data indicated the waterbody was attaining the new criterion.
- Three segments were moved to Category 3 due to insufficient data.
- Nine waters were removed due to listing errors resulting in duplicative listings.

Based on EPA's review of Oregon's assessment, EPA has determined that Oregon's removal of each of these waters from the Section 303(d) list is consistent with the requirements of Section 303(d) of the Act and 40 CFR 130.7. *See* ODEQ, 2014.

EPA is disapproving the removal of 8 WQLSs from Oregon's Section 303(d) list.

- Oregon proposed moving 4 WQLSs to Category 2, as attaining standards. Upon review of the data, EPA found these waters to still be impaired and is proposing to add those waters back to Category 5.

Enclosure 1: Review of Oregon's 2012 Integrated Report

- Oregon proposed removing 4 additional WQLSs to Category 2 due to a designated use change. Upon review, EPA determined that there was insufficient documentation supporting the change to the designated use and is proposing to add those waters back to Category 5.

Please see Enclosure 3 for detailed information regarding these disapprovals and proposed additions to the State's list. EPA is seeking public comment on the addition of these 8 specific segments back to Category 5.

Waters not listed due to TMDL approved. Oregon proposed the removal of 16 WQLSs from its Section 303(d) list, based on EPA approval of TMDLs for these waters. See Oregon's proposed list of waters removed from the 303(d) list, at:

<http://www.deq.state.or.us/wq/assessment/rpt2012/resultsdelist12.asp>. These water segments were placed in Category 4a, TMDLs Approved, of the Integrated Report. Under EPA regulations at 40 CFR § 130.7, the 303(d) list is an inventory of water bodies impaired by pollutants and requiring a TMDL. EPA determined that these 16 WQLSs had been appropriately placed in Category 4a and is therefore approving their removal from Category 5.

ODEQ had also proposed moving one unlisted segment from Category 3 into Category 4a, as having an approved TMDL. During the course of EPA's review, it was determined that this segment was not in fact covered by a TMDL and that ODEQ's placement of that segment in Category 4a was the result of a technical error. At the request of ODEQ, EPA is moving that segment back to Category 3 because there is insufficient data and/or information to make a use support determination. While ODEQ was verifying information for this segment, they determined that another segment that was previously listed and had been moved into Category 4a during a previous listing cycle was also not covered by a TMDL. At the request of ODEQ, EPA is proposing to place this water back into Category 5 because it is impaired and a TMDL is needed. See Enclosure 3 for detailed information regarding this correction to Category 3 and proposed addition to Category 5. EPA is seeking public comment on the proposed addition of this specific segment back to Category 5. EPA has determined that ODEQ's removal from the 303(d) list of each of the remaining 16 assessment units with an EPA approved TMDL meet the requirements of CWA Section 303(d).

Waters Not Listed Because Other Pollution Control Requirements Will Result in Attainment of Water Quality Standards Within a Reasonable Time. ODEQ proposed the removal of one segment from Category 5 and placed it in Category 4b because other pollution control requirements are in place as described in the rationale submitted to EPA. Under 40 CFR 130.7(b)(1), States are not required to list WQLS still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by State or local authority, or other pollution control requirements required by State, local, or federal authority, are stringent enough to implement applicable water quality standards. The regulation does not specify the time frame in which these various requirements must implement applicable water quality standards to support a State's decision not to list particular waters. Waterbodies with other appropriate pollution control requirements in place may be placed in Category 4b. EPA's 2006 memo, "Information Concerning 2008 Clean Water Act Sections 303(d), 305(b), and 314

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Integrated Reporting and Listing Decisions,” details the requirements for a Category 4b demonstration (EPA, 2006).

In order for WQLS to remain in Category 4b in future listings, ODEQ must review any new progress reports and any available recent monitoring data for each of the waterbodies included in Category 4b during each list cycle and provide an analysis with the Integrated Report. If new data and information indicate an increase in pollutant concentrations, the 4b analysis must include a discussion of ongoing sources; an explanation of the way in which the adaptive management process will address recontamination; and an assessment of whether or not water quality standards will be obtained within the timeframe given in the 4b rationale (EPA, 2006).

Where standards will not be attained through implementation of the remedy relied on by ODEQ from the requirements listed in 40 CFR 130.7(b)(1) in a reasonable time, it is appropriate for the water to be placed on the Section 303(d) list to ensure that implementation of the required controls and progress towards compliance with applicable standards is tracked. If it is determined that the water is, in fact, meeting applicable standards when the next Integrated Report and 303(d) list are developed, it would be appropriate for the State to remove the water from Category 4b and place the waterbody in Category 1 at that time (EPA, 2006). EPA determined that the placement of this WQLS in Category 4b was appropriate and consistent with the requirements of CWA section 303(d).

B. Priority Ranking and Scheduling

EPA also reviewed Oregon's priority ranking of listed waters for TMDL development, in which ODEQ identified water quality limited segments targeted for TMDL development in the next two years. *See* ODEQ, 2014, Oregon's 2012 TMDL Priorities and Schedule document. EPA concluded that the State, in accordance with CFR 130.7, took into account the severity of the pollution and the designated uses of the targeted waters when developing its priority ranking for TMDL development in this time frame.

IV. Basis for EPA's Decision to Add Waters to Oregon's 2012 303(d) list

EPA is partially disapproving Oregon's 2012 303(d) list due to the failure to assemble and evaluate all existing and readily available water quality related data and information and the decision not to add 332 WQLSs to the 303(d) list. EPA is proposing to add those segments to Oregon's 303(d) list because EPA's assessment of the data indicate the segments are not attaining water quality standards. EPA's determination to add waters and/or pollutants is based on data the state collected and solicited for the development of its submission, data EPA collected and reviewed, as well as additional material cited in the References section at the end of this document, to ensure that all readily available data and information had been evaluated by either the State or EPA. EPA will open a public comment period from December 22, 2016 to February 6, 2017 on these proposed additions to Oregon's 303(d) list and will, if appropriate, revise the list of added waters and pollutants following consideration of any comments received.

Enclosure 1: Review of Oregon's 2012 Integrated Report

The general basis for adding waters and pollutants is discussed below. Case-specific water body information is provided in Enclosure 4 and Appendices A-K.

EPA analyzed ODEQ's water body assessments and supporting rationales to determine whether the state's decisions not to list waters were consistent with federal listing requirements and the provisions of state water quality standards. *See* ODEQ, 2014. Section 303(d)(1)(A) requires states to identify waters that do not meet applicable water quality standards. 40 CFR § 130.7(d)(1) requires states to submit a list biennially to EPA for approval. EPA's review of ODEQ's water body assessments included ODEQ's analysis of data and information for the following: dissolved oxygen and toxics in the Willamette and Umatilla Basins, a subset of data for selected areas that included arsenic, iron, biocriteria, mercury, chlorophyll *a*, *E. coli*, and toxic substances in order to apply updated human health water quality standards,

As a result of its review of Oregon's submission, EPA has determined that ODEQ failed to evaluate all readily available data and information and failed to identify all waters as impaired that do not meet applicable water quality standards, for the reasons discussed below.

1. Available Data and Information Supports Listing Additional Waters

EPA evaluated data that was entered in to Oregon's Laboratory Analytical and Storage Retrieval (LASAR) database for the time period that Oregon solicited for during their call for data. (<http://www.deq.state.or.us/lab/lasar.htm>, January 1, 2000, through December 31, 2011). LASAR is a repository for data Oregon collects and data and information that ODEQ received in response to the call for data during the development of the 2012 303(d) list. Specifically, Oregon did not evaluate data and information for the following pollutants: alkalinity; ammonia; aquatic weeds; bacteria; biocriteria; chloride; chlorine; chlorophyll *a*; dissolved oxygen outside the Willamette and Umatilla Basins; marine waters; metals; nitrates; pH; phosphorus; temperature; tissue of fish and soft shell clams; total dissolved gas; and toxics outside the Willamette and Umatilla Basins. *See* ODEQ, 2014. EPA evaluated the data and information that the State did not and determined they were of sufficient quality to use for identifying whether segments are impaired. As a result, EPA has determined that additional WQLSs that meet the federal listing requirements under 40 CFR 130.7 were omitted from Oregon's list of WQLSs requiring a TMDL.

2. Waters Identified as Impaired Must Be Placed on the 303(d) List

A. EPA's List Development Process

As required by 40 CFR 130.7(d)(2), EPA is proposing to add waters, that the State failed to identify as impaired, to Oregon's Section 303(d) list. In so doing, the Agency has assembled and evaluated all available water quality data and information provided by a multitude of sources (detailed below). EPA is proposing additional waters to Oregon's Section 303(d) list for public notice and comment. This section discusses the process EPA has used to develop its list of proposed additions.

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EPA began the list development process by retrieving all the readily available water quality data and information, starting with data from Oregon's LASAR database. EPA also gathered data from EPA's STORET (Storage and Retrieval) data warehouse and from the U.S. Geological Survey (USGS) water data repository. Additional data from the City of Portland, the Army Corps of Engineers, the Oregon Health Authority, the National Oceanic and Atmospheric Administration (NOAA), the University of Washington (UW), numerous literature papers on ocean acidification, and data from various volunteer organizations was also evaluated. EPA evaluated additional data suggested during the public comment period, but determined the data were not appropriate for use in listing decisions. *See* Enclosure 5. EPA reviewed data from the resources appropriate for listing for the period beginning May 1, 2010 to September 30, 2014. Due to the abundance of quickly emerging science regarding ocean acidification, ocean acidification literature relevant to Oregon waters published through 2016 was also included in EPA's review. When determining whether to add waters to Oregon's Section 303(d) list, EPA used Oregon's water quality standards (Oregon Administrative Rules (OAR), Chapter 340, Division 41) and Oregon's 2012 Listing Methodology. EPA also referred to the water quality assessment guidance documents issued by EPA. *See* ODEQ, 2014; EPA, 2001; EPA, 2003; EPA, 2005; EPA, 2006; EPA, 2009; and EPA, 2011.

EPA evaluated and used data that Oregon failed to evaluate for the following pollutants: alkalinity; ammonia; the aquatic life narrative; aquatic weeds; bacteria; biocriteria; chloride; chlorine; chlorophyll *a*; dissolved oxygen outside the Willamette and Umatilla Basins; metals; nitrates; pH; phosphorus; temperature; tissue of fish and soft shell clams; total dissolved gas; and toxics outside the Willamette and Umatilla Basins. In identifying water bodies to be listed, EPA assessed whether all current applicable water quality standards were being attained and primarily utilized Oregon's 2012 assessment methodology. For sediment and phosphorus, where Oregon has no established methodology, EPA developed methodologies, which are based on scientific literature and/or methodologies utilized by other states. EPA's assessment methodology is described in detail in Enclosure 6.

EPA also evaluated waters in Category 4A being challenged in Northwest Environmental Advocates (NWEA) v. United States EPA (Civil No.: 3:12-cv-01751-AC). On October 12, 2016, the U.S. District Court Magistrate's Findings and Recommendations found ten basin-wide temperature TMDLs approved between 2006 and 2010 to be invalid retroactively after EPA's disapproval of the natural conditions criteria on August 8, 2013. EPA did not object to the Magistrate's CWA findings and recommendations and anticipates that the District Court will formally invalidate these TMDLs imminently. EPA is now proposing to add these waters subject to litigation to Category 5 to emphasize the need to replace these TMDLs. *See* Enclosure 7 for a detailed list of the 714 waters included in this action.

B. EPA Will Propose Additional Listings

As discussed above, when EPA disapproves a state's list, EPA must identify waters in the state that do not meet applicable water quality standards that the state should have identified. Based on the analyses discussed above, EPA is proposing to add waters to Oregon's Section 303(d) list.

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Based on EPA's list development process, EPA is proposing to add a total of 1,055 waters to Oregon's Section 303(d) list. This includes the 8 delistings EPA disapproved, one 4a correction, the 332 additions based on EPA's data review, and the 714 listings involved in the litigation. The list of waters EPA is proposing to add to Oregon's 2012 Section 303(d) list is included in Enclosure 3, 4 and 7.

C. Corrections to ODEQ's Proposed Additions to the List

ODEQ proposed 142 new 303(d) listings in the final submittal of the 2012 303(d) list. *See* ODEQ, 2014. The complete list of waters ODEQ proposed for addition to the 303(d) list can be viewed at: <http://www.deq.state.or.us/wq/assessment/rpt2012/results303dnew12.asp>. Because technical errors had occurred in making the listing determination for 11 of these proposed additions, ODEQ subsequently requested EPA remove them from the list. Please see Enclosure 8 for detailed information about these listings and the corrections to ODEQ's additions. EPA is approving the inclusion of the remaining 131 WQLSs in Category 5.

3. Waters on Which EPA Is Taking No Action at This Time

EPA is taking no action at this time with respect to ocean acidification on marine waters. The state did not list these waters notwithstanding a growing body of information on potential aquatic life impairments possibly caused by ocean acidification including studies conducted in laboratories, related issues at hatcheries, and chemical and biological data, most of which were collected outside Oregon state waters. EPA is evaluating these studies, and whether or not the information presented in them is representative of Oregon state waters. At this time, EPA invites the public to submit any other data or information potentially related to aquatic life impairments from acidification within coastal Oregon state waters. This issue, and EPA's call for public comment, are discussed in more detail in accompanying Enclosure 2. EPA has opted for this approach with respect to Oregon's marine waters so that it can act on the rest of Oregon's waters without delay. EPA intends to act on this subset of waters once it has had a chance to consider public comments on ocean acidification within coastal Oregon state waters. Comments can be submitted through February 6, 2017 to Jill Fullagar at Fullagar.jill@epa.gov and should include the subject line "OR 2012 comment period." All decision documents and supporting information can be found on EPA's website at:

<https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list> .

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REQUEST FOR PUBLIC COMMENT ON OCEAN ACIDIFICATION IMPACTS IN OREGON MARINE WATERS

Background: EPA is seeking Public Comment on Data and Information

Separate from the public comments that EPA requests on water segments now proposed for listing, EPA is also requesting public comment on the studies and information developed by the National Oceanic and Atmospheric Administration (NOAA), University of Washington (UW) and others, which describe potential aquatic life impacts off Oregon's coast. The studies and information are listed below. These materials are subject to copyright protections, so EPA is providing links to them in the reference section below, but will not be providing copies of the documents themselves. Over the years, EPA has assembled a significant amount of information on ocean acidification (OA) that focused mainly on studies conducted in laboratories, related issues at hatcheries, and chemical and biological data, most of which were collected outside Oregon state waters. More recently, EPA reviewed numerous additional studies published in the time period extending from 2012 through 2016. Most relevant to determining whether Oregon state waters may be impaired for the purposes of the Clean Water Act would be the studies conducted in State waters (or nearby adjacent coastal waters) and studies of aquatic life populations in those same waters.

EPA's current request invites public comment on the below cited literature, which may be relevant to Clean Water Act decisions about impaired Oregon marine waters, and also solicits any additional existing and readily available water quality-related data collected in Oregon state marine waters, related to acidification of those coastal waters. The aquatic life studies listed below pertain to locations off the Oregon Coast, but outside state waters (which extend three miles seaward from shore). EPA is considering these studies, and whether or not the information presented in the studies is representative of Oregon state waters, but is also inviting the public to submit any other data or information potentially related to acidification within coastal Oregon state waters potentially related to ocean acidification.

Specifically, EPA is seeking public comment regarding whether these studies and information may be representative of conditions in Oregon's coastal waters with relation to the designated aquatic life uses and associated narrative criteria found at OAR 340-41-007(1) and (11). Those narrative criteria provide:

(1) Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.

(11) 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

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EPA is Seeking Public Comment on Specific Data and Information

Numerous lab and field studies have shown impacts to shellfish from corrosive conditions. Mollusks (such as mussels, clams, and oysters) have been shown to be sensitive to ocean acidification, and both early life stages and adults have shown reduced calcification, growth, and survival when exposed to corrosive conditions (e.g., aragonite saturation less than 1) (Waldbusser *et al.*, 2014.) Laboratory studies have shown that oyster larvae experience conditions detrimental to their development and growth at an aragonite saturation level of 1.5 and below (Waldbusser *et al.*, 2014). Laboratory studies by Miller *et al.*, 2016, demonstrate impacts on early stages of Dungeness crabs, including delays in hatching at a pH of 7.1, and significantly reduced zoeal survival at a pH of 7.5 and below. Busch *et al.*, 2014, conducted laboratory experiments that indicate pteropod shell dissolution increases as aragonite saturation state decreases. Some of the conditions simulated in these studies are being recorded off the coast of Oregon, as well as in Oregon state waters.

EPA reviewed NOAA data (Feely *et al.*, 2014a; Feely *et al.*, 2014b; Feely *et al.*, 2015) and found the data demonstrate an aragonite saturation state of less than 1, which is corrosive to pteropods, in 73% of observations in Oregon state waters. Oregon does not, however, have a numeric water quality standard for aragonite, so in order to determine an impairment, the impact of the presence of corrosive waters on the aquatic life designated use must be assessed.

In 2014, Bednarsek *et al.* published a widely publicized study on the shell dissolution of pteropods off the coast of Washington, Oregon, and California. Pteropods are an important prey group for ecologically and economically important fish, bird, and whale diets (Bednarsek *et al.*, 2014). For Oregon, the pteropod samples were collected at stations ranging from 6.5 miles to 85 miles from the Oregon shoreline (i.e., all outside the three-mile limit of Oregon state coastal waters). The stations with the highest proportion of individuals exhibiting signs of dissolution are located closest to shore (see graphs below.)

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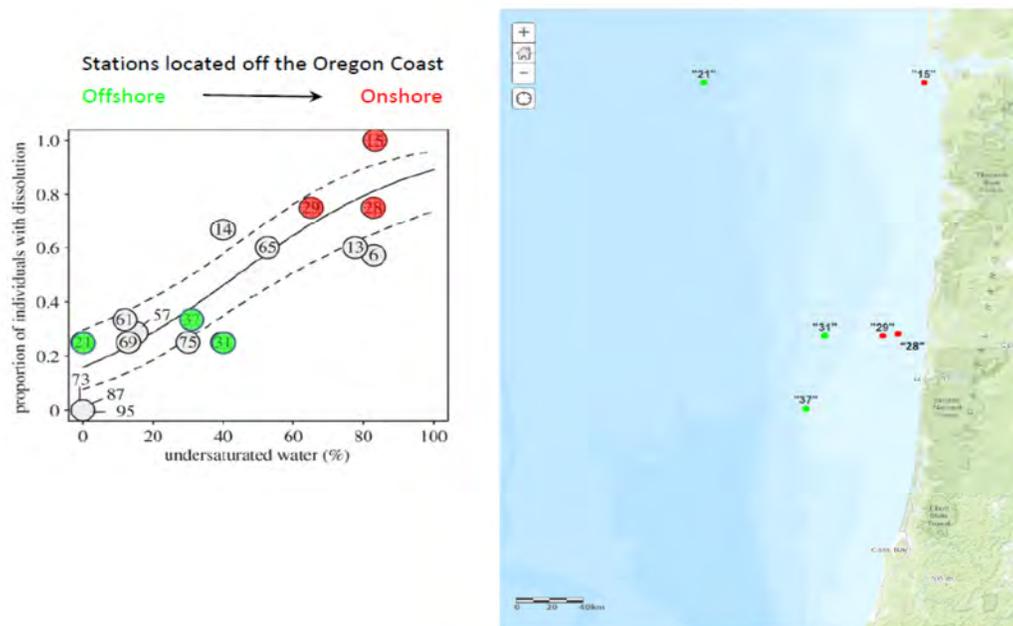


Figure 3 from Bednarsek *et al.* (2014) highlighting data points offshore of Oregon. Right panel shows 2011 sampling locations offshore of Oregon.

The 2014 Bednarsek study found that 24% of offshore pteropods and 53% of onshore pteropods (delineated by the 200 meter isobaths) had severe dissolution damage, and the authors estimated that the incidence of severe pteropod shell dissolution owing to anthropogenic OA has doubled since pre-industrial times in near shore habitats across the study area and is on track to triple by 2050. Harris *et al.*, 2013, explained that coastal upwelling zones, located closer to shore, may be more vulnerable to enhanced acidification. Upwelling causes low aragonite saturation state waters to be forced to the surface, while the aragonite saturation state is further suppressed by anthropogenic CO₂ and freshwater inputs. The sampling locations in these studies were also located outside the three-mile state water boundary, however.

Additionally, unpublished data from Bill Peterson (NOAA, NW Fisheries Science Center,) show a decline in pteropod populations at a station located 9.1 km (5.65 miles) from the Oregon shore (Peterson, 2014.) There are studies linking such declines to increases in shell dissolution (Mackas and Galbraith, 2012; Bednarsek *et al.*, 20016; Lischka *et al.*, 2011.) Bednarsek *et al.*, 2016 (submitted) documents increased pteropod mortality with increased dissolution. Recent studies by both Bednarsek *et al.*, 2016, and Lischka *et al.*, 2011, document the cumulative effects of decreased pH, deoxygenation and increased ocean temperatures, which negatively affected survival of pteropods. Mackas and Galbraith (2012) examined several time series, one collected since 1979, and observed declines in pteropod populations of one species on the continental shelf of Vancouver Island correspond with demonstrated high occurrences of severe shell dissolution, although a definitive link has not been made. Two other pteropod species exhibited

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different trends, however, so no sustained and consistent downward trend in total pteropod abundance/biomass has been recorded. (Mackas and Galbraith, 2012.)

Waldbusser *et al.*, 2015, demonstrate how OA acts as a multi-stressor on bivalve larvae. Saturation state effects on shell formation carry over into later life stages, where pH or CO₂ effects can further exacerbate initial OA effects. Again, the sampling locations in these studies are outside Oregon state waters, or are conducted in laboratories; however, given the patterns and trends they represent, of increasing shell dissolution in the presence of aragonite saturation states less than 1, which are present in Oregon state waters, these data suggest that there may be impairments of aquatic life present within Oregon waters.

EPA is Seeking Additional Data and Information from the Public

Please submit any additional data or information specifically related to potential aquatic life impairments in coastal Oregon state waters to EPA by the close of this comment period, which is open from December 22, 2016 to February 6, 2017. Comments can be sent to Jill Fullagar at Fullagar.jill@epa.gov and should include the subject line “OR 2012 comment period.” All decision documents and supporting information related to this action can be found on EPA’s website at: <https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list>. EPA will evaluate any new data and information received and make an attainment determination as to whether Oregon’s coastal waters are attaining applicable water quality standards. If EPA determines that impairment listings are appropriate in light of any new data and information that is received, EPA will identify such listings as proposed additions to the list, and take public comment consistent with the requirements of 40 C.F.R. 130.7(d)(2). Otherwise, EPA will approve Oregon’s decision not to list those segments following the close of this comment period.

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