Willamette Basin Mercury TMDL

Responses to Public Comments Report

February 4, 2021

Prepared by:
USEPA Region 10

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Introduction

The Response to Comments document addresses comments received during the January 6, 2020 through February 4, 2020 public comment period on EPA's Willamette Basin Mercury TMDL (EPA's 2019 TMDL). EPA's 2019 TMDL was established following EPA's disapproval of the Oregon Department Environmental Quality's Final Revised Willamette Basin Mercury TMDL (ODEQ's 2019 TMDL). Twenty-nine comment letters were submitted by different individuals and organizations and over 170 sub-comments were addressed by EPA. Table 1 presents the list of individuals and organizations who provided comments, along with the corresponding letter ID. Following Table 1 are the individual comment letters, subdivided by issues raised and EPA's response to each issue.

Table 1. Summary of Commenters

Letter ID	Author Name	Organization
L1	Ray Kinney	Siuslaw Soil and Water Conservation District
L2	Tom Quintal	Private Citizen
L3	Tom Quintal	Private Citizen
L4	Tom Quintal	Private Citizen
L5	Tom Quintal	Private Citizen
L6	Tom Quintal	Private Citizen
L7	Tom Quintal	Private Citizen
L8	Gerald Fisher, PE	City of Molalla
L9	Carolyn A Wesolek, MS	Private Citizen
L10	Matt W. Knudsen	Marion County Public Works
L11	Nina Bell, J.D.	Northwest Environmental Advocates
L12	Tom Pepiot	Private Citizen
L13	Mary Anne Cooper	Oregon Farm Bureau
L14	Mary Anne Cooper	Oregon Farm Bureau
L15	Thomas E. Whittington	Oregon Department of Forestry
L16	Lauren Haney	Clackamas County Water Environment Services
L17	Sharla Moffett	Oregon Business & Industry
L18	Mike Brown	Bureau of Land Management
L19	Dennis Hebard	Private Citizen
L20	Dennis Hebard	Private Citizen
L21	Dennis Hebard	Private Citizen
L22	Dennis Hebard	Private Citizen
L23	Dennis Hebard	Private Citizen
L24	Dennis Hebard	Private Citizen
L25	Salina N. Hart, P.E.	U.S. Army Corps of Engineers Portland District
L26	Bill Moore	Oregon Department of Environmental Quality
L27	Kathryn VanNatta	Northwest Pulp and Paper Association
L28	Brent Stevenson	Santiam Water Control District
L29	Joy Archuleta	U.S. Forest Service

Author Name Ray Kinney

Organization Name ***Siuslaw Soil and Water Conservation District***

Letter ID ***L1***

Comment ID L1-1

Comment Category Industrial

Comment Text

Reviewing the TMDL information for the Willamette, I did not get enough clarification of the mercury sourcing that presumably comes from crematoria smokestacks. How many exist in the Willamette valley? How much mercury from dental amalgam gets vaporized and exits these smokestacks? Is this a point source? Does this air pollution send mercury out on the winds, to scatter across the landscape to migrate into aquatic environments to become methylated to much higher toxicity? How is this sourcing quantified? How long has this sourcing been happening? How much risk of inhalation is present, and is there increased retention in the lung route compared with the ingestion route? Mercury comes from many sources, and enters a multi toxicant environment with additive and synergistic adverse effects of mixtures. Many neurotoxic metal pollutants have overlapping harm on many physiologic pathways in organisms.

Response Text

Mercury that is emitted to the atmosphere through smokestacks contributes to global atmospheric mercury cycling and, ultimately, to wet and dry deposition to the landscape and waterbodies. A discussion of sources, atmospheric cycling, and deposition processes is included in the Technical Support Document (TSD; included as Appendix B to the EPA TMDL) in Section 5.3.1. Major stationary source air emissions in the Willamette River Basin (WRB) are listed in Table 5-4. As discussed in Section 6.1.4.1 of Oregon DEQ's TMDL, most atmospheric sources of mercury deposited in the Willamette Basin originate from sources outside the Basin.

As noted in the TSD, the Oregon Department of Environmental Quality (ODEQ) Air Quality Division provided estimates of additional nonpoint THg releases for the 2014 National Emissions Inventory (NEI, https://www.epa.gov/air-emissions-inventories/national-emissions inventory-nei), which is the most recent complete estimate for Oregon, including for the ten counties that intersect the WRB (Benton, Clackamas, Columbia, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill). Because portions of some of these counties lie outside the WRB, the estimates are greater than the emissions occurring within the WRB. The NEI is the only known estimate of the net mercury releases to the atmosphere from small crematoria in Oregon. The NEI estimates that the net atmospheric emissions of crematoria within the ten counties amount to 43.7 pounds of mercury per year, which is equivalent to 33 percent of the NEI's total atmospheric emissions estimate of 131.4 pounds per year for the ten counties. The comment is thus correct that crematoria are a significant proportion of the current atmospheric emissions of mercury within or near the Willamette basin; however, the amount of the mercury released to the air by crematoria that deposits within the basin is not known, and local air emissions likely constitute only a small fraction of the total atmospheric deposition of mercury within the Willamette basin (estimated to be less than 5% - see Section 14.2 of the ODEQ TMDL).

The EPA TMDL assigns a reduction target to atmospheric deposition of mercury (in general) and does not provide targets for individual air emission sources. Because these emissions are to the atmosphere and not to water, they are not directly regulated under the Clean Water Act or the TMDL program. Air emissions are discussed in the ODEQ Water Quality Management Plan (WQMP) in Section 13.3.3.1 of

the ODEQ November 2019 TMDL (incorporated as Appendix A to the EPA TMDL). ODEQ anticipates achieving mercury reductions from air emissions through implementation of federal Title V permits, state Air Contaminant Discharge permits and the newly adopted state Cleaner Air Oregon program. The WQMP does not explicitly discuss mercury emissions from crematoria; however, the WQMP is also being developed in an adaptive management framework that will continue to be refined over time. The commenter may wish to work with DEQ to evaluate whether additional minimization efforts should be developed for crematoria as the WQMP evolves.

Factors that affect the methylation process and bioaccumulation in the food chain are discussed in Section 1.1 of the Technical Support Document as are the three models that were used to quantify sources of mercury in the basin, which include the Food Web Model (Section 3), Mercury Translator Model (Section 4) and the Mass Balance Model (Section 5).

Comment ID L1-2

Comment Category Applicable numeric criteria

Comment Text

Lead is a prominent pollutant that has adverse effects on many pathways that methyl mercury also harms. Lead, in the aquatic environment, is often not evaluated accurately for water quality criteria because appropriate water hardness dependency calculations that are required are often not applied accurately. Are there hardness dependency issues that increase mercury toxic effects in very low hardness “hate” bodies?

Response Text

Aquatic life criteria for many metals, including lead, are hardness-dependent. However, the relevant aquatic life water quality criteria for total mercury are not hardness-dependent (Oregon Administrative Rules; OAR 340-041-8033, Table 30). Further, impairments in the Willamette River Basin are based on elevated fish tissue concentrations of methylmercury and not on excursions of the aquatic life water quality criteria for total mercury. Fish tissue bioaccumulation of mercury is not expected to be affected by hardness because methylmercury is a non-polar organic compound.

Author Name Tom Quintal

Organization Name ***Private Citizen***

Letter ID ***L2***

Comment ID L2-1

Comment Category Mining

Comment Text

Please accept this email attachment #1 Rare earth metals for your EPA Willamette Basin Mercury TMDL. This article is very informative if EPA really cares about the United States of America. I will be sending a few other documents individually with both emails. Sometimes when I send large documents together your servers are not able to except over a certain Meg size.

Response Text

The attachment was successfully received. Thank you for supplying the document. The document expresses concerns about the lack of domestic supplies of Rare Earth metals and the implications this may have on international politics. The document also raises general concerns about the impact of environmental regulations on mining. The connection to the Willamette Basin Mercury TMDL is not explicitly stated. It is important to note that gold and mercury are not Rare Earth elements (as stated on the final page of the document) and unlike Rare Earth elements, there are several operating gold mines within the U.S. However, within the article there is a reference to an Oregon-based suction dredge miner and a summary of their displeasure of the regulatory environment surrounding all types of mining operations, including suction dredging. The article states that: "…instream mining, by suction dredge, adds no pollutants." While it is correct that suction dredgers do not add mercury during the mining process, it has been documented in several studies that suction dredging can result in the mobilization of mercury that occurs in the stream sediments. The content of the article did not result in a change to the TMDL.

Author Name Tom Quintal

Organization Name ***Private Citizen***

Letter ID ***L3***

Comment ID L3-1

Comment Category Suction Dredging

Comment Text

Please accept this email attachment #2 (May 3, 2011 Letter from Wise and Greene to CA Department of Fish and Game Re: "Comments regarding SEIR and Proposed Regulations for suction dredge mining in California in Favor of Maintaining Current 1994") for your EPA Willamette Basin Mercury TMDL. Joe Greene and Claudia Wise have important information to consider before listing Bohemia Mining district as a 303d Willamette basin. This article is very informative if EPA really cares about the United States of America. I will be sending a few other documents individually with my emails. Sometimes when I send large documents together your servers are not able to except over a certain Meg size.

Response Text

The attachment was successfully received. Thank you for supplying the document.

The document consists of a letter by two retired EPA scientists (Claudia Wise and Joseph Greene) expressing their concerns about proposed suction dredge mining regulations in California. Specifically, the letter provides a critique of existing studies on mercury mobilization from suction dredge mining that were performed by Fleck et al., 2011 and Humphreys 2005. In general, we concur that quantifying the impacts of suction dredge mining is complex and the results can be impacted by many environmental variables as well as the specific method/equipment used during the mining process. We also concur that extrapolating results performed under one set of conditions may not be fully representative of all suction dredge operations. However, despite these challenges, the United States Geological Survey (USGS) studies summarized by Fleck et al., 2011 and the Humphreys 2005 study remain the primary scientific literature available on the impacts of suction dredging on mercury mobilization. The letter mentions the EPA/Royer et al., 1999 study from Alaska, to support the conclusion that suction dredging does not result in an increase in mercury concentrations. However, the EPA/Royer et al., 1999 study was not performed using standard low-level mercury methods (e.g. EPA 1631) and had a detection limit of 200 ng/L, which is several orders of magnitude above environmentally relevant concentrations. Therefore, the analytical methods used in that study preclude the detection of impacts to mercury concentrations.

In addition, the letter argues that selenium provides protection against methylmercury toxicity and needs to be taken into consideration when determining the impacts of mercury pollution. The TMDL fish tissue criteria concentration of 0.04 mg/kg methylmercury does not vary depending on the molar ratio of selenium. The toxicological assessment that was used to derive the fish tissue criteria that forms of the basis the TMDL was performed at the national level and was based on a very extensive scientific assessment of the impacts of methylmercury toxicity on fish consumers (and their feti). The levels of selenium in fish in the Willamette River are not unique, and excess levels of selenium relative to mercury are commonly encountered throughout freshwater and saltwater fisheries in the western US as well as globally. Therefore, we use this information to guide our understanding of the potential impacts to the Willamette River, and the critiques presented in the attached article did not result in a change to the TMDL.

Author Name Tom Quintal

Organization Name ***Private Citizen***
Letter ID ***L4***
Comment ID L4-1
Comment Category Selenium Interaction

Comment Text
Please except this email attachment #3 for your EPA Willamette Basin Mercury TMDL. Selenium stream benefit attachment to mercury. This power point is very informative if EPA really cares about the United States of America. I will be sending a few other documents individually with my emails. Sometimes when I send large documents together your servers are not able to except over a certain Meg size.

Response Text
The attached power point presentation contains information on suction dredging and on selenium. These two topics will be discussed separately below.

Selenium:

The relationship between mercury and selenium is complex and has been the subject of numerous scientific studies. Selenium has the potential to impact several aspects of mercury cycling and toxicity. For example, 1) some studies suggest that selenium may decrease the potential for mercury methylation (Dang et al., 2019); 2) other studies suggest that selenium protects aquatic organisms against the impacts of mercury (Sørmo et al., 2011); and 3) some studies suggest that selenium in fish consumed by humans protects the consumer (and its fetus) against the adverse effects of mercury exposure (Ralston and Raymond, 2018).

1. Regarding the impact of selenium on methylmercury production, if this were occurring in the Willamette River Basin this impact would be captured in our mercury translator model. The mercury translator model takes the ambient total-mercury and methylmercury concentrations measured in the basin to allow the conversion of the fish tissue-based methylmercury criteria back to a water column total-mercury concentration. If selenium is having any impact on methylmercury production our model is accounting for this process. However, there is detectable methylmercury throughout the Willamette River in water and fish and therefore, any inhibitory impact of selenium on this process is not significant enough to reduce fish-tissue methylmercury concentration below the water quality criteria.

2. The potential protective impacts of selenium on the health of aquatic organisms are beyond the scope of this TMDL which is focused on human health. That selenium (Se) can sequester mercury (Hg) in the body and reduce toxic effects appears to be well established (e.g., Rahman et al., “Selenium and zinc protections against metal-(loids)-induced toxicity and disease manifestations: A review”, Ecotoxicol Environ Saf. 2019 Jan 30;168:146-163. Doi: 10.1016/j.ecoenv.2018.10.054). However, regardless of whether this protective effect is significant, it is not germane to the TMDL because the TMDL must be developed to attain water quality criteria adopted into state regulations. The Willamette mercury TMDL is therefore based on attaining the fish tissue concentration criterion for methymercury (MeHg) and this regulatory criterion does not vary based on the Hg:Se ratio.

3. The protective effects of selenium on fish consumers against methylmercury toxicity is relevant to the TMDL in that fish tissue criteria concentration of 0.04 mg/kg methylmercury does not vary depending on the molar ratio of selenium. The toxicological assessment that was used to derive the fish

tissue criteria that forms the basis of the TMDL was performed at the national level and was based on a very extensive scientific assessment of the impacts of methylmercury toxicity on fish consumers (and their feti) (National Research Council, 2000). The levels of selenium in fish in the Willamette River are not unique and excess levels of selenium relative to mercury are commonly encountered throughout freshwater and saltwater fisheries in the western U.S. as well as globally (Peterson et al., 2009). It is important to note that the conclusion from Peterson et al. 2009 that selenium is often in excess of mercury in fish is an interesting finding; however, this study did not assess the human health impacts on fish consumers. In contrast, the derivation of the EPA reference dose for methylmercury which forms the basis of the TMDL is based on epidemiological studies on the impacts of methylmercury in fish on human health outcomes. More recent studies on this topic have supported the EPA's assessment of methylmercury toxicity with the conclusion: "Overall, no evidence was found that Se was an important protective factor against MeHg neurotoxicity." (Choi et al., 2008).

Suction Dredging:

The presentation refers to the three main papers/reports that have been written on this topic by Humphreys, Fleck and Marvin-DiPasquale. Despite the specific concerns expressed in the presentation, to our knowledge there are not any other scientific studies that have been completed on this topic. While the presentation offers a critique of these studies, alternative studies/findings are not provided. Currently, the reports led by these three authors remain the best source of information available on the impacts of suction dredge mining on mercury mobilization. These three papers found that the sediments containing pockets of elemental mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Author Name Tom Quintal

Organization Name ***Private Citizen***
Letter ID ***L5***
Comment ID L5-1
Comment Category Selenium Interaction

Comment Text
Please except this email attachment #4 Selenium Update for your EPA Willamette Basin Mercury TMDL.

Item attachment #4 Selenium Moderates Mercury Toxicity in Free-Ranging Freshwater Fish. I will be sending a few other documents individually with my emails. Sometimes when I send large documents together your servers are not able to except over a certain Meg size.

Response Text
The relationship between mercury and selenium is complex and has been the subject of numerous scientific studies. Selenium has the potential to impact several aspects of mercury cycling and toxicity. For example, 1) some studies suggest that selenium may decrease the potential for mercury methylation (Dang et al., 2019); 2) other studies suggest that selenium protects aquatic organisms against the impacts of mercury (Sørmo et al., 2011); and 3) some studies suggest that selenium in fish consumed by humans protects the consumer (and its fetus) against the adverse effects of mercury exposure (Ralston and Raymond, 2018).

1. Regarding the impact of selenium on methylmercury production, if this were occurring in the Willamette River Basin this impact would be captured in our mercury translator model. The mercury translator model takes the ambient total-mercury and methylmercury concentrations measured in the basin to allow the conversion of the fish tissue-based methylmercury criteria back to a water column total-mercury concentration. If selenium is having any impact on methylmercury production our model is accounting for this process. However, there is detectable methylmercury throughout the Willamette River in water and fish and therefore, any inhibitory impact of selenium on this process is not significant enough to reduce fish-tissue methylmercury concentration below the water quality criteria.

2. The potential protective impacts of selenium on the health of aquatic organisms are beyond the scope of this TMDL which is focused on human health.

3. The protective effects of selenium on fish consumers against methylmercury toxicity is relevant to the TMDL in that fish tissue criteria concentration of 0.04 mg/kg methylmercury does not vary depending on the molar ratio of selenium. The toxicological assessment that was used to derive the fish tissue criteria that forms of the basis the TMDL was performed at the national level and was based on a very extensive scientific assessment of the impacts of methylmercury toxicity on fish consumers (and their feti) (National Research Council, 2000). The levels of selenium in fish in the Willamette River are not unique and excess levels of selenium relative to mercury are commonly encountered throughout freshwater and saltwater fisheries in the western US as well as globally (Peterson et al., 2009). It is important to note that the conclusion from Peterson et al., 2009 that selenium is often in excess of mercury in fish is an interesting finding; however, this study did not assess the human health impacts on fish consumers. In contrast, the derivation of the EPA reference dose for methylmercury which forms the basis of the TMDL is based on epidemiological studies on the impacts of methylmercury in fish on human health outcomes. More recent studies on this topic have supported EPA's assessment of

methylmercury toxicity with the conclusion: “Overall, no evidence was found that Se was an important protective factor against MeHg neurotoxicity.” (Choi et al., 2008).

Author Name Tom Quintal

Organization Name ***Private Citizen***
Letter ID ***L6***

Comment ID L6-1

Comment Category Mass Balance Model/HSPF

Comment Text
A watershed model, which uses the Hydrological Simulation Program - FORTRAN, will simulate movement of mercury via flow and sediment routing. Some of the many industries that will be affected by the NEW mercury TMDL have serious concerns with the Fortran Simulation Program. Oregon miners do not trust this program either?

Response Text
This comment expresses an unspecified concern with the Hydrological Simulation Program - FORTRAN or HSPF model. HSPF is a comprehensive watershed model that is in the public domain with open-source code that is recommended by EPA as an appropriate choice for the development of TMDLs (e.g., EPA 841-B-97-006, Compendium of Tools for Watershed Assessment and TMDL Development). HSPF has been used to develop many TMDLs including those for sediment and sediment bound chemicals throughout the U.S. EPA considers HSPF to be an appropriate tool to estimate the movement of water and sediment in the Willamette River Basin. Because there are no specific questions raised in the comment about the simulation of flow and sediment routing, EPA can only respond in general to this comment.

Comment ID L6-2

Comment Category Other

Comment Text
Oregon has a mineral trespass law, ORS 517.130 and most all studies indicate the people doing stream sampling for studies DEQ is using to list streams in the Bohemia mining district as 303d have committed mineral trespass. Miners with Federal mining claims were not notified or gave permission for valuable minerals to be disturbed or removed from their claims when stream studies were done. Mercury is considered a valuable mineral. ORS 517.130 A person commits mineral trespass if a person intentionally and without permission of the claim holder: (a) Enters a mining claim posted as required in ORS 517.010 (Locations of mining claims on veins or lodes or ORS 517.044 (Location of claims upon placer deposits) and disturbs, or removes or attempts to remove any mineral from the claim site. Most likely legal action will be taken against folks who are responsible for this mineral trespass. A good example of mineral trespass is the study Tracing the source of mercury contamination in the Dorena Lake watershed, Western Oregon. See chart reference page 856 chart (a), (b), (c) and (d) where minerals were removed and reference page 857 table #1 for mineral elements removed for testing without claim owner's permission.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "This comment is outside the scope of DEQ's authority. DEQ does not have the authority to determine whether or not mineral trespass was committed. The determination as to whether or not mineral trespass occurred

would not change the utility of the studies for determining the presence of mercury in the subject streams, which is the basis for DEQ's prohibition of suction mining, since multiple other studies show the potential for existing mercury to be disturbed, mobilized and methylated in the reservoir downstream and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury." This comment is outside the scope of EPA's TMDL. No further response is needed.

Comment ID L6-3

Comment Category Suction Dredging

Comment Text

Miners are only allowed to suction dredge using ODF&W in water work schedule for 2 or 3 months when low water flows carry minimal sediment flows. 700 NPDES permits only allow 300 feet turbidity and DEQ has the ability to know where the stream locations are from GPS information when a person applies for the permit. Most miners are lucky to work a few weeks in streams during the in water work schedule.

So what is the big issue with suction dredges causing heavy TMDL mercury in streams?

Response Text

The concern with suction dredge mining is that it can mobilize pockets of elemental mercury stored within the sediment. Information on where elemental mercury is located within a specific watershed remains unknown. However, it is known that historical gold and silver mining activities utilized mercury as part of the mining process. There have been several scientific studies designed to understand the impacts of suction dredge mining on the mobilization and bioavailability of mercury. These studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L6-4

Comment Category Miners will require financial reimbursement

Comment Text

Oregon miners with Federal mining claims will require financial reimbursement for the loss of their Federal Mining Mineral Estate and this mineral is considered personal property. The 9th Circuit Court USA v. Shumway. Case 96-16480: Date file 12/28/99. Now BLM will use the Prudent Man Rule to invalidate a claim if the claim is not able to show a profit. This rule determines value based on whether a person will consider investing time and money to develop a potentially viable mineral deposit. The U.S. Supreme Court concurred with this definition in 1968. The claimant is required to show a reasonable prospect of making a profit from the sale of minerals from a claim or a group of contiguous claims. It is not possible to retain a valid BLM claim using hand operated mining equipment with the listing of the streams in the paragraph below as 303d; because it will not allow DEQ to issue 700 NPDES permits for a

miner to move enough stream material. Oregon will be responsible to reimburse about 30 plus claim owners for their personal property loss in the Bohemia mining district for thousands of dollars?

Response Text
The issue of financial reimbursement to miners under federal mining rules stemming from 303(d) and NPDES actions by the State of Oregon is outside the scope of matters which EPA is able to address in this TMDL and under the CWA in general.

Comment ID L6-5

Comment Category 303(d) Listings

Comment Text
Sharps Cr. is a secondary transport pathway stream for mercury according to page reference 858 figure 5 for the Dorena lake watershed study. This stream should never require a 303d listing?

Response Text
This question was previously submitted in regard to the ODEQ Public Review Draft of the TMDL (July 2019) and answered in DEQ's November 2019 Response to Comments:

"DEQ is not currently proposing to add Sharps Creek or other tributaries to Dorena Reservoir to the 303(d) list of waterbodies impaired by mercury. The studies referenced in the [DEQ] TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20 mg/kg mercury (Hygelund et al 2001). Because Sharps Creek is tributary to Dorena Reservoir and Dorena Reservoir is 303(d) listed as impaired for mercury as a known area of mercury methylation, and has fish consumption advisories in place for mercury, and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury, DEQ's TMDL prohibits suction dredge mining in tributaries to the reservoir to reduce permitted discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments."

Comment ID L6-6

Comment Category Mining

Comment Text
The streams listed below in the Bohemia mining district will require the state of Oregon to financial reimburse claim owners if DEQ list these streams 303d. Mining according to the studies DEQ is using only shows 1% of the Mercury load for the Willamette basin streams. Please justify how mining is a mercury issue?

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Draft of the TMDL and was answered in ODEQ's November 2019 Response to Comments, as follows:

"DEQ clarifies that the TMDL modeling indicates that all permitted wastewater point source discharges contribute approximately one percent of the mercury load within the Willamette Basin. Suction dredge mining discharges regulated by the 700-PM permit contribute an unquantified amount of this one percent. The TMDL modeling also estimated that the tributaries to Dorena Reservoir contribute about

0.12 kg/yr of mercury, which is about 7% of the contribution from all permitted discharges in the entire basin. The studies referenced in the TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Because mercury has been measured in the sediment of tributaries to Dorena Reservoir ranging from 0.08 mg/kg to 8.78 mg/kg (Hygelund et al, 2001 & Tobias and Wasley, 2013) and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury, and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury, DEQ's TMDL prohibits suction dredge mining in tributaries to the reservoir to reduce permitted discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments. Finally, DEQ's TMDL also requires reduction of mercury by 95% from legacy mine-related sources, with the federal agencies as designated management agencies responsible for implementation."

EPA agrees with ODEQ's conclusion that suction dredging can be a significant source of mercury loading in areas where stream sediments are contaminated with mercury, including their analysis of tributaries to the Dorena Reservoir. The EPA TMDL (section 7.2.4) says that "EPA's TMDL reflects ODEQ's intent to prohibit suction dredge mining at locations described in the ODEQ's 2019 TMDL" and includes a zero Waste Load Allocation (WLA) for suction dredging in the Coast Fork subbasin.

Comment ID L6-7

Comment Category Suction Dredging

Comment Text

Miners for free using a suction dredge removes mercury so why would DEQ list Bohemia mining stream tributaries with 303d listing when the state has no other way to remove mercury from this environment?

Response Text

This comment was previously submitted on ODEQ's July 2019 Public Draft of the TMDL. Listed below is ODEQs response from their November 2019 Response to Comments document.

"DEQ clarifies that streams in the Bohemia Mining District are not currently proposed for inclusion on the 303(d) list of waters impaired by mercury. DEQ agrees that miners sometimes find and remove elemental mercury during suction dredge mining and that mercury currently in tributaries to Dorena Reservoir could migrate downstream to areas where methylation can occur. As noted in section 9.2.3 of the draft TMDL, the streams and upland areas within the Bohemia Mining District that are known to be contaminated with mercury due to historical mining activities are on the list of Abandoned Mine Lands sites being tracked, investigated and remediated by state and federal agencies. In the meantime, the TMDL prohibits suction dredge mining within mercury contaminated tributaries to Dorena Reservoir because the studies referenced in the TMDL show that suction dredge mining can uncover, transform, transport and increase methylation potential of mercury in stream sediment and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury."

In addition to ODEQ's response, we would like to point out that suction dredging does not reduce the potential for mercury to be mobilized downstream and converted to methylmercury. The few studies on this topic have shown the opposite, that pockets of elemental mercury are typically stored deep in the

sediment with limited mobility (Fleck, 2011; Marvin-DiPasquale, 2011). However, the process of suction dredging has been shown to mobilize this mercury and increase its movement downstream where it can become methylated (Marvin-DiPasquale, 2011). While suction dredging may result in increased oxygenation of sediments at a particular location, the mobilization of mercury into the water can result in methylation occurring further downstream. Streams that have been subject to suction dredging have been shown to have increased levels of mercury in downstream biota relative to areas where suction dredging has not occurred (Fleck, 2011).

Comment ID L6-8

Comment Category Suction Dredging

Comment Text

As miners remove sediments, sands, and gravel from streams and former mine sites to separate out the gold, they are also removing mercury. That is a benefit to the state? A 4-inch gold suction dredge captures 98% of the mercury it sucks from a stream and is a great benefit to streams? Explain why this is not the best way to recover mercury?

Response Text

This comment was previously submitted on ODEQ's July 2019 Public Draft of the TMDL and was answered in ODEQ's November 2019 Response to Comments as follows:

"DEQ clarifies that streams in the Bohemia Mining District are not currently proposed for inclusion on the 303(d) list of waters impaired by mercury. DEQ agrees that miners sometimes find and remove elemental mercury during suction dredge mining and that mercury currently in tributaries to Dorena Reservoir could migrate downstream to areas where methylation can occur. As noted in section 9.2.3 of the draft TMDL, the streams and upland areas within the Bohemia Mining District that are known to be contaminated with mercury due to historical mining activities are on the list of Abandoned Mine Lands sites being tracked, investigated and remediated by state and federal agencies. In the meantime, the TMDL prohibits suction dredge mining within mercury contaminated tributaries to Dorena Reservoir because the studies referenced in the TMDL show that suction dredge mining can uncover, transform, transport and increase methylation potential of mercury in stream sediment and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury."

There have been several scientific studies designed to understand the impacts of suction dredge mining on the mobilization and bioavailability of mercury. These studies have found that the sediments containing pockets of elemental mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L6-9

Comment Category Little data is available to show mercury in tributaries to Dorena Reservoir

Comment Text

The suggestion floured mercury, regardless of the source, would remain suspended for miles below the dredging site is not supported by any evidence from studies I have found?

Response Text

Once mercury has been mobilized from the sediment into the water column it is capable of being transported downstream in flowing water. While this may not have been measured very far downstream in the few studies that focus on suction dredge mining, other studies on mercury mobilization in rivers and streams downstream of contaminated sites indicate that mercury can remain in suspension in the water for over 100 km downstream of the initial release (Eckley et al., 2020). There have been several scientific studies designed to understand the impacts of suction dredge mining on the mobilization and bioavailability of mercury. These studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L6-10

Comment Category Suction Dredging

Comment Text

Mercury is one of the heavier elements and the physical/chemical facts would indicate that suspended mercury would not travel farther than a measured dredge plume currently limited by DEQ's 700 NPDES permit to 300 feet. That short distance to settle mercury out would not cause significant harm to streams?

The density of mercury is 13.534 g/cm3. Therefore, all other things being equal, the greater density (weight) of mercury would insure that it would fall out of suspension before the end of a dredge plume.

Another reason to use a suction dredge and DEQ to not discriminate against small scale mining?

Suction dredges provide a net environmental benefit by removing nearly all mercury they encounter.

Who else in government will provide this service for free?

Response Text

This comment was previously submitted on ODEQ's July 2019 Public Draft of the TMDL and was answered in ODEQ's November 2019 Response to Comments, as follows.

"DEQ acknowledges that stream dynamics are complex and that mercury mobilization, methylation and settling of the many forms of mercury that could be present have not been quantified. DEQ agrees that the density of elemental mercury may assist in it settling out within the 300 feet allowable for visible turbidity under the 700-PM permit. Once elemental mercury has been disturbed in stream sediments, it can become semi-dissolved in microscopic beads that can be held in suspension within flowing waters. Some of this mercury may settle out of suspension prior to reaching Dorena Reservoir during low-flow periods. However, because it is not deeply buried, it can be easily resuspended into the water during periods of higher flow which occur every year during the fall and winter. The studies referenced in the TMDL show that the process of suction dredging increases the mobility of mercury within streams, which increases its transport to downstream waterbodies such as Dorena Reservoir. DEQ regulates permitted point source discharges, including suction dredge mining, and determined that a 10% cumulative decrease in mercury from permitted point sources is needed in the basin to reach reduced in-stream targets over time and eventually safer fish consumption levels. Because mercury contamination exists in stream sediment in tributaries to Dorena Reservoir and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury, stopping suction dredge mining is needed to reduce mercury in the water and fish in the Dorena Reservoir and its tributaries."

EPA generally agrees with ODEQs response but would also like to point out that while mercury is a heavy metal, it is not heavy enough to settle out of suspension in streams and rivers. Even in lakes mercury is found dissolved in the water and does not settle to the bottom unless it is attached to heavier particles. In waterbodies mercury is encountered in the dissolved phase—often bound to dissolved organic carbon—or bound to particles. Mercury in the dissolved phase does not settle out of suspension in rivers or streams—even during periods of low flow. When mercury is bound to particles, which increases its mass by orders of magnitude, it typically stays suspended in the water column during moderate to high flow periods. During periods of low-flow, there can be some settling of particulate-bound mercury. However, this mercury is easily re-entrained during periods of higher flow. In a recent review of mercury contaminated sites, the downstream impacts of mercury released into waterbodies can occur for over a hundred kilometers downstream (Eckley et al., 2020).

There have been several scientific studies designed to understand the impacts of suction dredge mining on the mobilization and bioavailability of mercury. These studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of the elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L6-11

Comment Category Suction Dredging

Comment Text

If not removed, mercury will eventually migrate downstream to areas where it is more likely to be converted into methylmercury. Isn't another benefit to the state that miners using suction dredges? Mercury methylation happens under anaerobic conditions not found in running streams and rivers. Suction dredging even adds more oxygenation that benefits streams. Removal of elemental mercury before it can be converted, by bacteria, to methylmercury is an important component of environmental and human health protection and is provided as a secondary benefit of suction dredging.

DEQ regulates a suction dredge as a point source discharge with the 700 NPDES permit, so a dredge point source would contribute significantly less mercury to streams than nonpoint sources. Why would DEQ discriminate against one of the best tools available by using a suction dredge that removes mercury from streams at no cost? Miners are doing this work for free for the state of Oregon.

Response Text

This comment was previously submitted on ODEQ's July 2019 Public Draft of the TMDL and was answered in ODEQ's November 2019 Response to Comments as follows:

"DEQ agrees that mercury cycling within the environment occurs through many complex and interrelated processes. The studies referenced in the TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Because mercury has been measured in the sediment of tributaries to Dorena Reservoir ranging from 0.08 mg/kg to 8.78 mg/kg (Hygelund et al, 2001 & Tobias and Wasley, 2013) and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury, DEQ's TMDL prohibits suction dredge mining in tributaries to the reservoir to reduce permitted discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments."

In addition to ODEQ's response, we would like to point out that suction dredging does not reduce the potential for mercury to be mobilized downstream and converted to methylmercury. The few studies on this topic have shown the opposite, that pockets of elemental mercury are typically stored deep in the sediment with limited mobility (Fleck, 2011; Marvin-DiPasquale, 2011). However, the process of suction dredging has been shown to mobilize this mercury and increase its movement downstream where it can become methylated (Marvin-DiPasquale, 2011). While suction dredging may result in increased oxygenation of sediments at a particular location, the mobilization of mercury into the water can result in methylation occurring further downstream. Stream that have been subject to suction dredging have been shown to have increased levels of mercury in downstream biota relative to areas where suction dredging has not occurred (Fleck, 2011).

Comment ID L6-12

Comment Category DEQ's authority/responsibility to implement

Comment Text

After the order is signed, DEQ will provide a response to all comments received during the public comment period. DEQ will then submit the documents to EPA for action. Why not issue it as an administrative rule instead of an Order?

Response Text

This comment was originally submitted on ODEQ's Public Review Draft TMDL of July 2019 and answered in ODEQ's November Response to Comments. ODEQ noted: Oregon Administrative Rule 340-042-0060 titled Issuing a Total Maximum Daily Load states "(1) The Director will issue a TMDL as an order." The comment is not directly relevant to EPA's revised TMDL.

Author Name Tom Quintal

Organization Name ***Private Citizen***

Letter ID ***L7***

Comment ID L7-1

Comment Category Other

Comment Text

It is important to understand Federal mining claim owners have private property rights for locatable minerals on their mining claims. When a government agency passes a rule or law that deprives a claim owner they can only use part of their property right to recover a valuable mineral by limiting how or what tools that can be used; suction dredges, it deprives the profitability or value of their property. If you owned a three or four bedroom home and the government made up a law that you could only use part of your home for your personal life style you would have a hard time obeying such a law. EPA and DEQ using 303d laws limiting how minerals can be recovered profitably has the same effect on a private property federal claim owner. Because I am a private property mineral owner of a 40 acre federal mining claim it is financially important for me to preserve the value of the minerals now and in the future. Miners want to believe EPA will understand why 90 federal mineral claim owners in the Bohemia mining district expect to receive fair EPA ruling for 303d waters that will allow us to preserve our private property minerals.

Response Text

Neither EPA nor ODEQ has any direct jurisdiction over Federal mining claims and the TMDL does not abrogate mineral ownership rights under such claims. However, EPA, under the Clean Water Act, and ODEQ, by delegation from EPA, do have permitting jurisdiction over discharges of pollutants to waters of the U.S., including discharges from suction dredges. EPA does not contest the validity of such Federal mining claims; however, the Clean Water Act does authorize EPA and its designees to set permit effluent limits on mining activities consistent with the assumptions and requirements of waste load allocations in a TMDL. In the case of suction dredging in waterbodies where elevated mercury concentrations in stream sediment and banks have been identified and present a potential threat to non-attainment of water quality standards, EPA and ODEQ may set effluent limitations consistent with the TMDL target.

In the ODEQ 2019 TMDL, ODEQ determined that effluent discharges from suction dredging in certain areas of documented mercury contamination are not consistent with obligations to achieve water quality standards under the Clean Water Act and, upon renewal of the 700 PM permit, ODEQ will be prohibiting mercury in discharges from suction dredging. EPA finds ODEQ's approach to suction dredge mining to be consistent with the Clean Water Act.

Comment ID L7-2

Comment Category Inadequate data used

Comment Text

EPA spent thousands of taxpayer dollars for their Tetra Tech study and EPA or Tetra Tech never did contact one suction dredge miner in the Bohemia Mining District to take a suction dredge water discharge sample or any other study being used to list this basin for 303d waters. If EPA did not require a scientific suction dredge water discharge sample then none of the sediment stream samples are valid for listing Sharps Cr. Brice Cr. Champion Cr. or any other stream tributaries 303d. DEQ never included one Oregon small scale miner to be part of their study commission for the Willamette Basin TMDL. This is

another slam dunk 303d water listing against Oregon small scale mining industry. How fair is that when you consider 303d listings?

Response Text
ODEQ in response to comments on their draft 2019 TMDL clarified that streams in the Bohemia mining district, including Sharps, Brice and Champion, are not currently proposed for 303(d) listing, but that there is information documenting mercury contamination in these streams and that suction dredge mining has the potential to increase the conversion of mercury to methylmercury in downstream ecosystems, hence ODEQ's eventual prohibition of suction dredge mining in these areas. Excerpts from ODEQ's responses follow:

"DEQ clarifies that streams in the Bohemia Mining District are not currently proposed for inclusion on the 303(d) list of waters impaired by mercury. DEQ agrees that miners sometimes find and remove elemental mercury during suction dredge mining and that mercury currently in tributaries to Dorena Reservoir could migrate downstream to areas where methylation can occur. As noted in section 9.2.3 of the draft TMDL, the streams and upland areas within the Bohemia Mining District that are known to be contaminated with mercury due to historical mining activities are on the list of Abandoned Mine Lands sites being tracked, investigated and remediated by state and federal agencies. In the meantime, the TMDL prohibits suction dredge mining within mercury contaminated tributaries to Dorena Reservoir because the studies referenced in the TMDL show that suction dredge mining can uncover, transform, transport and increase methylation potential of mercury in stream sediment and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury."

"Because mercury has been measured in the sediment of tributaries to Dorena Reservoir ranging from 0.08 mg/kg to 8.78 mg/kg (Hygelund et al, 2001 & Tobias and Wasley, 2013) and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury, DEQ's TMDL prohibits suction dredge mining in tributaries to the reservoir to reduce permitted discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments."

EPA cannot comment on the involvement of suction dredge miners in the TMDL Advisory Committee, because it was a process established and implemented by ODEQ for development of its TMDL. We do note though that ODEQ (as well as EPA) held a public comment period for its draft TMDL during which suction dredgers and any other interested parties could provide comments regarding the TMDL. EPA encourages suction dredge miners to work with ODEQ as they develop their TMDL implementation monitoring strategy to fill any perceived gaps in information regarding suction dredging.

Comment ID L7-3

Comment Category Other

Comment Text
It is criminal for EPA to deprive approximately 90 federal mining claim owners who represent approximately 220 family members to lose some of their financial worth by not allowing them to recover enough valuable strategic minerals with the only tools available to recover minerals profitably using a suction dredge? No DEQ suction dredge permits available for 303d streams.

Response Text
EPA is not depriving any owners of mining claims. Neither EPA nor ODEQ have any direct jurisdiction over Federal mining claims and the TMDL does not abrogate mineral ownership rights under such claims. However, EPA, under the Clean Water Act, and ODEQ, by delegation from EPA, do have permitting jurisdiction over discharges of pollutants to waters of the U.S., including discharges from suction dredges. EPA does not contest the validity of such Federal mining claims; however, the Clean Water Act does authorize EPA and its designees to set permit effluent limits on mining activities that may be necessary to achieve compliance with a TMDL. In the case of suction dredging in waterbodies where elevated mercury concentrations in stream sediment and banks have been identified and present a potential threat to non-attainment of water quality standards, EPA and ODEQ may set effluent limitations consistent with the TMDL target. The EPA TMDL accepts the ODEQ determination that effluent discharges from suction dredging in certain areas of documented mercury contamination are not consistent with obligations to achieve water quality standards under the Clean Water Act.

Comment ID L7-4

Comment Category Inadequate data used

Comment Text
If mercury concentration for fish consumption is the real reason to shut down suction dredge mining in the streams listed above; then why did Tetra Tech use non consumable trash fish like Carp and Northern Pike Minnow also known as Squaw Fish. Oregon Fish and Wildlife pay people to catch these fish to rid them from our Oregon streams. Suction dredge miners for free are the only citizens using suction dredges that are able to remove fishermen's lead, monofilament line, car parts, lead acid batteries and other related junk from Oregon streams. Who will do this job in the future if you keep allowing streams to be listed 303d?

Response Text
The Northern Pikeminnow was used to establish the water column THg target for the TMDL. Use of the Northern Pikeminnow provides a margin of safety for the TMDL because this is a higher trophic level fish species that is the most efficient mercury bioaccumulator among the species evaluated. Therefore, the target inherently ensures that mercury tissue concentrations in lower trophic level fish species meet human health criteria. In addition, in response to case no. 3:12-cv-01751-AC, the court required the 2006 TMDL to be updated. The earlier version also applied the Northern Pikeminnow for TMDL target development.

While not a popular sport fish, EPA disagrees that the Northern Pikeminnow is "non consumable" as consumption has been documented.

Author Name Gerald Fisher, PE

Organization Name ***City of Molalla***
Letter ID ***L8***
Comment ID L8-1
Comment Category Non-point Source Load Allocations

Comment Text
I attended a webinar held by DEQ in March 2019, which included discussion regarding targeting reductions in mercury through additional regulation on small cities with a population of 5,000. My issue with DEQ's approach at that time was that it will have a negative financial impact on smaller agencies without having a real measurable impact on reducing Mercury. Molalla will reach a population of 10,000 in a very short period of time and we have most of DEQ's stormwater requirements for larger cities already in place. The issue I had with DEQ's approach was that they focused only on their permit holders and agencies they regulate to fix an issue that is much larger in scope. If a majority of the mercury is from atmospheric deposits and erosion then the focus should not be on making things harder on cities. If you look at the total footprint of cities compared to agriculture, forest lands, and mining operations, our impact is very small. We control erosion from construction activities, manage our roadways to the best of our financial capabilities, and manage storm systems in the same manner.

My opinion is that instead of focusing on cities, DEQ and the EPA should refocus its efforts with the Oregon and US Department of Agriculture to limit runoff from agricultural sites, the Oregon and US Department of Forestry for timber lands, and federal and state agencies with oversight over all mining operations including grass turf production and agricultural lands. We've all seen ag lands tilled up and clear cutting right before it rains and then watched the topsoil wash away into roadside ditches and streams. I don't think that cities are the problem and believe that the EPA and DEQ should instead focus on the land uses that have a larger impact on water quality in rivers and streams. Once all uses are held to the same standard as cities are then we can talk about whether or not we need to do more. Cities have had increasing regulation applied to them since the Clean Water Act was passed and I challenge DEQ and EPA to demonstrate the same level of regulation and enforcement on agricultural, forestry, and mining operations.

I've contacted the Oregon Ag Department in the past about the release of mercury and sediment through erosion for ag lands and have been told that their hands are tied because their rules have no enforcement teeth and the Ag lobby is a powerful force at the state legislature. If the branches of the state and federal government really do want measurable reductions in mercury then their focus on this TMDL and future TMDL's should be comprehensive across all land use types and hold everyone to the same standards. Erosion and sediment control required on all agriculture, timber, and mining operations similar to what we have to endure for construction within city limits would go a long way to controlling mercury, sediment, and other transport of materials into our rivers and streams. My recommendation is that this TMDL focus on bringing those lands up to standard before applying more regulation on local communities.

I hope that the EPA and DEQ take the lead on bringing agriculture, timber, and mining interests into the same regulatory umbrella as is applied to our community. Thanks for your time.

Response Text

The TMDL analysis indicates that large reductions in existing mercury loads will be needed to achieve the fish tissue methylmercury goal of 0.040 mg/kg. Because such large reductions are needed it will be important for all source sectors to participate in controlling the transport and delivery of mercury from the land surface to the waterbodies of the Willamette River Basin. The comment notes that larger sediment loads are likely to be generated from agricultural lands than from urban lands; however, impervious surfaces associated with urban areas tend to generate more direct surface runoff that can carry mercury loads deposited from the atmosphere to the stream network. EPA agrees with ODEQ's decision to apply the six minimum stormwater requirements to small cities with populations between 5,000 and 10,000, including Molalla, as shown in Table 13-11 of the ODEQ TMDL and Water Quality Management Plan.

Author Name Carolyn A. Wesolek, MS

Organization Name ***Private Citizen***
Letter ID ***L9***

Comment ID L9-1

Comment Category Point Source Wasteload Allocations

Comment Text

I am not in support of the EPAs proposed changes to the mercury TMDL.

It is too strict and since much of the mercury issues in the state are due to environmental deposition, regulating industry water flows so strictly is foolish, unprofessional, and unwarranted. It is going to cause financial problems for industry & private businesses in an already environmentally expensive and nonproductive 'business' environment in Oregon. The water rules in this state are already extremely challenging to live by and take many, many hours of time (and money) to manage. If this was for a pollutant that we would actually be able to impact, I would support it. But, since there is no control over depositional mercury it seems foolish and a waste of time and money.

We already have many rules that we abide by. The proposed Mercury TMDL is too strict and onerous.

We need to be able to encourage industry and business enterprise in this country. These types of regulations do just the opposite. This is why I am not in favor of them.

Response Text

The focus of the TMDL is to control in-basin transport of mercury into waterbodies, such as reducing erosion on the landscape and using the best available management practices and treatment measures. In some subbasins point sources are relatively small contributors. In other subbasins stormwater and wastewater point sources are more important contributors. For example, about 11% of the THg load in the Lower Willamette catchment is attributed to NPDES permitted Publicly Owned Treatment Works (POTWs) and industrial wastewater dischargers and about 21% originates from permitted urban stormwater sources. Additionally, Section 13 of ODEQ's TMDL provides examples of proven techniques for point source controls that have reduced mercury concentrations. Monitoring also shows that a combination of point and non-point source control activities have reduced mercury concentrations. Reductions from point sources are necessary to achieve water column and fish tissue standards in the waterbodies in the Willamette River Basin.

Author Name Nina Bell, J.D.

Organization Name ***Northwest Environmental Advocates***

Letter ID ***L11***

Comment ID L11-1

Comment Category Reasonable Assurance

Comment Text

The commenter disagrees with the conclusion in EPA's TMDL that ODEQ's approach for addressing "reasonable assurance" is "technically reasonable and legally sufficient" and suggests that the 2019 ODEQ Water Quality Management Plan will not be sufficient to achieve TMDL targets. The commenter also suggests that the vast majority of non-point source loading in the Willamette Basin comes from logging and farming lands. Some of the attachments submitted by the commenter present information about inadequacies in programs such as Oregon's Coastal Non-Point Pollution Control Program and Oregon Department of Forestry's Riparian Rules, inadequacies which EPA has identified in the past.

Response Text

ODEQ's Water Quality Management Plan (WQMP) is designed to address all the nonpoint source mechanisms of mercury transport and goes beyond simply controlling sediment from agriculture and forestry. The WQMP requires all designated management agencies (DMAs) and responsible persons to establish individual TMDL implementation plans. Implementation plans will include measures specific to each DMA/responsible person and will include components to assess the effectiveness of management measures, an adaptive management provision, and five-year review milestones. Other elements of the WQMP include but are not limited to education, outreach, technical and financial assistance, permit administration, permit enforcement, and DEQ's enforcement of the TMDL implementation plans. EPA recognizes that control of mercury will take significant time. Implementation of specific actions called for in the WQMP with revisions over time based on continued monitoring and information gathering is a reasonable approach to address a complicated environmental pollutant. EPA has concluded that the detailed WQMP developed by DEQ and its partner agencies and stakeholders provides reasonable assurance that the nonpoint source control measures, implemented over time, will achieve expected load reductions.

Author Name Tom Pepiot

Organization Name ***Private Citizen***
Letter ID ***L12***
Comment ID L12-1
Comment Category Suction Dredging

Comment Text
I am writing you to ask for a variance for suction dredging in the Bohemia Mining District. I have been suction dredging in the BMD for 30 years as a way to supplement my income and pay for college education for my 2 boys, they also work with me to find gold and other minerals on our private mining claim. I have seen the studies done and have been to the meetings at ODEQ and have a lot of issues on how and where this information was obtained. We have had a Superfund site that was done by the USFS at the Champion mill site and water and sediment samples taken through the years since completion has no mercury found in any samples all the way into Brice creek. The creeks in the BMD is pretty cold, water samples in July into August 2019 ranged from 51- 56 degrees from what I understand from EPA scientist is methyl-mercury occurs in higher temperatures with low oxygenated waters, we dredge in moving streams that have plenty of oxygenated waters, Dorena lake on the other hand is warm waters with stagnated waters due to being a containment source . I personally have not found mercury in Sharps Creek, I have found it in California and the new modern fine gold recovery suction dredges collect a lot of it, the older dredges collected 98% of mercury just think what our fine gold recovery does maybe 100%, the main thing is that if our dredges catch any mercury its better for the environment and proper disposal is essential. We mine the gravels below the water and the only profitable, economically and environmentally sound way to extract minerals is a suction dredge. In the Bohemia Mining District there are hundreds of mining claims that this will affect with thousands of dollars worth of property that will be become worthless if suction dredging is no longer a method we can use, safety and injuries are going to accompany with a much harder and physical methods that will have to be used and I hate to see that. The 700 NPDES permit has become excessively restrictive with more and more restrictions put in place to make it impossible to comply, the cost for these permits have became so expensive that those on limited incomes can no longer afford anymore. Now in the new permit, fines have become ridiculously high seemingly to intimidate miners into getting a permit, we got these permits to keep in accordance with clean water act not be attacked with a permit and threatened with violations, felony's and fines. We ask you not to make streams in the Bohemia Mining District a 303d for mercury and not to shut down our industry. I feel as do many miners that studies need to be done with suction dredges in the BMD with miners, we need to get any mercury out of the sediments if it's there, because winter and spring floods will move it down if we don't get it first.

Ultimately, we know you have a job to do and so do we. We spend a lot of time and money improving and mining our federal mining claims, I have approximately 20k of mining equipment alone that is for suction dredging. I would like to say leave us alone but we can't do that. These waters are our waters and we don't add nothing to the waters we take material, heavy metals and trash away and reinstate all the material within the stream. I hope you can see my problems with listing these waters for mercury, I hope we can find a solution that does not involve eliminating suction dredging.

Response Text
We appreciate the interest in removing mercury from and otherwise cleaning up streams in the Bohemia mining district. A similar comment regarding 303(d) listing and suction dredging in the

Bohemia mining district was submitted to ODEQ during the public comment period on the ODEQ 2019 TMDL. Oregon provided the following response:

"DEQ clarifies that streams in the Bohemia Mining District are not currently proposed for inclusion on the 303(d) list of waters impaired by mercury. DEQ agrees that miners sometimes find and remove elemental mercury during suction dredge mining and that mercury currently in tributaries to Dorena Reservoir could migrate downstream to areas where methylation can occur. As noted in section 9.2.3 of the draft TMDL, the streams and upland areas within the Bohemia Mining District that are known to be contaminated with mercury due to historical mining activities are on the list of Abandoned Mine Lands sites being tracked, investigated and remediated by state and federal agencies. In the meantime, the TMDL prohibits suction dredge mining within mercury contaminated tributaries to Dorena Reservoir because the studies referenced in the TMDL show that suction dredge mining can uncover, transform, transport and increase methylation potential of mercury in stream sediment and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury."

EPA agrees with the State's response. With regard to the request for a variance for suction dredge mining in the Bohemia mining district, variances for point sources are outside the scope of the EPA TMDL and are normally issued by ODEQ for point sources in Oregon.

Author Name Mary Anne Cooper

Organization Name ***Oregon Farm Bureau***

Letter ID ***L13***

Comment ID L13-1

Comment Category Other

Comment Text

The Oregon Farm Bureau (OFB), Oregon Forest & Industries Council (OFIC), and Oregon Association of Nurseries (OAN) submit this letter jointly to convey our comments pertaining to the Environmental Protection Agency's Willamette Basin Mercury Total Maximum Daily Load (TMDL). Our comments are based on our review of the revised, final TMDL document, our participation as members of the Advisory Committee for this TMDL, our previous comments to the Oregon Department of Environmental Quality (ODEQ) and the very real impact this TMDL could have on our memberships.

By way of background, OFB is a nonprofit organization that has been a voice for Oregon's family farmers and ranchers for 100 years. The OFB has nearly 7,000 members statewide. Over 3,000 of those members are located within the Willamette Valley. In the Willamette Valley, OFB members raise nearly 225 types of crops and livestock. OFIC is a nonprofit organization that represents over 50 Oregon forestland owners and forest products manufacturers who manage over 5 million acres of Oregon forestlands and employ nearly 60,000 Oregonians. The OAN is a nonprofit organization that provides a voice for over 700 nursery stock producers, retailers, landscapers, and other companies across the state.

Since the inception of our nonpoint source water quality programs, and for years before, our members have worked to protect, maintain and enhance water quality throughout the Willamette Valley.

Response Text

We thank OFB, OFIC, and OAN for submitting these comments on the TMDL and their work to protect, maintain and enhance water quality throughout the Willamette River Basin.

Comment ID L13-2

Comment Category Nonpoint Source

Comment Text

Agriculture and Forestry are not the Source of Mercury Exceedances

The agricultural and forestry sectors have always been proactive about protecting, maintaining and enhancing water quality on agricultural and forestry lands, which combined represent by far the largest land use in the Willamette Valley. Indeed, our industries were proactive in developing the Agricultural Water Quality Management Program and Forest Practices Act years before most states had thought of developing their nonpoint source programs. Since that time, we have invested millions in studies, on-the-ground work, and compliance with our respective programs. We will continue to be proactive into the future, as evidenced by the millions invested by each of our sectors each year in proactive water quality improvements.

Section 4.1 of EPA's TMDL document states clearly that atmospheric deposition of mercury is the dominant source of mercury reaching Willamette Basin streams. All land in Oregon receives mercury from far away sources; because of the large land area occupied by farms, forests, and nurseries, these nonpoint sources are the largest land use types on which foreign mercury deposits. Additionally, air

emissions from Oregon are small relative to global sources. The fact that Oregonians are not the source of mercury exceedances has made writing this TMDL exceedingly challenging, and we do not envy ODEQ or EPA's work to address a source of pollutant outside its control. Although the mercury entering the Willamette River system from our land originated from the atmosphere, and not from our activities, we will continue to invest in water quality on our lands and meet the rigorous requirements under our respective programs. However, without addressing the real cause of the mercury exceedances, this TMDL may request reductions that are larger than any basin stakeholder can manage.

Response Text
EPA concurs that atmospheric deposition of mercury is the dominant source of mercury reaching waterbodies in the Willamette River Basin. EPA acknowledges that the agriculture and forestry industries are generally not responsible for creating atmospheric deposition loads of mercury. However, agriculture and forestry management practices do have an important impact on the delivery of mercury from the land surface to streams. As noted in Section 14.2 of the ODEQ November 2019 TMDL, "…the greatest potential for reductions of mercury delivered to streams is through enhancing controls on nonpoint source land use activities that have the potential to result in erosion and surface runoff."

As noted in the comment, the agricultural and forestry sectors "…represent by far the largest land use in the Willamette Valley." It is for that very reason that it will be essential to reduce the runoff of dissolved and sediment-sorbed mercury from agricultural and forestry land. EPA also acknowledges that the agricultural and forestry industries have generally made large strides in reducing sediment erosion over the last few decades, yet additional reductions are still needed to achieve the mercury targets. The TMDL sets forth general reduction targets by sector and large (HUC8) watersheds. Details of how this will be implemented on the landscape are the responsibility of ODEQ and the DMAs. Initial implementation strategies are laid out in the Water Quality Management Plan section of the ODEQ TMDL (included as Appendix A to the EPA TMDL). In the WQMP, DEQ has committed to an adaptive management approach that can adjust source control strategies as more information is obtained. EPA encourages the commenter to work with DEQ to ensure that adaptive management will facilitate a cost-effective approach to the implementation of the TMDL with an emphasis on controlling the most significant sources of nonpoint source loading (e.g., activities on highly erodible land or producers with substandard management practices).

Comment ID L13-3

Comment Category General Modeling Issues – Examples

Comment Text
Neither ODEQ nor EPA Adequately Addressed our Technical Concerns with the Model

Oregon's farmers and foresters are doing an exceptional job investing in water quality improvements, studying water quality on our lands, and meeting the requirements of our programs, and we will continue to do so after this TMDL is adopted. That said, we continue to have concerns about the modeling as set forth in our previous comment letter to ODEQ, and those concerns were not addressed by EPA. We have attached this comment letter for your reference.

The myriad of significant issues with the modeling underlying the TMDL, combined with the fact that our sectors are not responsible for the mercury emissions causing the mercury exceedances, has resulted in the agriculture and forestry sectors being unable to support the load allocations and reductions requested through the TMDL. As always, we will continue to work with our designated management agencies (DMAs) to continue to invest in and improve water quality across Oregon. We continue to have

significant concerns with ODEQ and EPA's modeling, as set forth in our previous comment letter. These include many concerns about specific dimensions of the modeling that underlies the TMDL allocations, and related concerns about the loading capacity and the ensuing load allocations.

Response Text
EPA acknowledges that the farm and forestry sectors have made significant progress in addressing water quality improvements over the last several decades. However, the TMDL analysis establishes that additional actions will be needed from these and other sectors to mitigate mercury impairments within the Willamette River Basin. The mercury loads associated with farms and forests are indeed due primarily to atmospheric deposition (both historic and ongoing); however, the ways in which farm and forest lands are managed determine the fraction of the mercury derived from atmospheric deposition that is transported into the stream network.

This comment summarizes previous comments from the Oregon Farm Bureau on the July 2019 Public Review Draft of the ODEQ TMDL. Those comments were addressed point by point in Section 58 in ODEQ's November 2019 TMDL, Final Revised Willamette Basin Mercury TMDL and Water Quality Management Plan, Response to Public Comments. EPA disagrees with the characterization that these concerns about modeling were not addressed.

Comment ID L13-4

Comment Category Applicable Water Quality Standards

Comment Text
Consequently, we disagree with EPA's acceptance of both ODEQ's target concentration for water column mercury and the unquantified margin of safety that results from developing this target concentration from the Northern Pikeminnow.

Response Text
The commenter has concerns about ODEQ's development of the TMDL and EPA's decision to revise the TMDL. The Water Quality Standard is highly conservative and designed to be protective of health and aquatic life uses. Federal regulations require EPA to establish the TMDL at a level sufficient to achieve the loading capacity, defined as the amount of a pollutant or pollutants that a waterbody can receive and still meet water quality standards (40 CFR 130.2(f)). While EPA acknowledges that there is uncertainty in the modeling analyses, the presence of such uncertainty does not remove EPA's obligation to establish the TMDL at levels sufficient to meet water quality standards. As noted in 40 CFR 130.2(g), load allocations for nonpoint sources "…are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." The Clean Water Act and 40 CFR130.7(c)(1) also require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." See the response to comment L14-3 regarding the unquantified MOS. EPA determined that the target concentration for water column mercury is appropriately based on the Food Web Model analysis of tissue concentrations in the Northern Pikeminnow as this species is the most efficient bioaccumulator of mercury evaluated.

Comment ID L13-5

Comment Category Non-point Source Load Allocations

Comment Text
EPA's Additional Load Reduction Targets Compound Existing Issues with the Model

Given the significant issues with the model, we are very disappointed to find that EPA's revised TMDL is seeking even larger reductions from agriculture and forestry in the five basins where EPA believes that ODEQ's reductions were insufficient. EPA is increasing proposed reductions from nonpoint sources in these basins to 97%. These basins include several keys to agriculture and forestry in Oregon: Coast Fork Willamette, Upper Willamette, Middle Willamette, and the Tualatin. While the Lower Willamette is not as agriculture or forestry dominant, both industries will still be impacted.

Given the significant issues with the modelling associated with this work, increasing from a basin wide 88% reduction to 97% reduction in several key basins is not supported by the technical work completed by the agencies. The shortcomings suggested in our previous comment letter suggest that the 97% reduction may be higher than needed to protect human health in the Willamette Basin. This larger reduction will put our industries in an increasingly difficult position of being held responsible for astronomical reductions in a pollutant that we are not responsible for, and where we do not think ODEQ or EPA has support for its determination that such reductions are necessary or even possible.

Response Text

The regulations require EPA to establish the TMDL at a level sufficient to achieve the loading capacity, defined as the amount of a pollutant or pollutants that a waterbody can receive and still meet water quality standards (40 CFR 130.2(f)). EPA found that the reductions proposed in the ODEQ November 2019 TMDL were not sufficient to achieve water quality standards in several of the impaired HUC8 watersheds within the Willamette River Basin.

While EPA acknowledges that there is uncertainty in any modeling analyses, the presence of such uncertainty does not remove EPA's obligation to establish the TMDL at levels sufficient to meet water quality standards. As noted at 40 CFR 130.2(g), load allocations for nonpoint sources "…are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading."

The rationale for assigning 97% reductions in erosion-associated mercury loads in some HUC8 subbasins is explained on pages 8-9 of EPA's TMDL. The reduction of 88% proposed in the ODEQ TMDL was not sufficient to attain the TMDL fish tissue targets in five HUC8 watersheds. The EPA analysis suggested that reductions in nonpoint source erosion-associated mercury loads ranging from 89% to 97% would be needed to achieve targets in these watersheds. EPA established a 97% reduction for all five HUC8 watersheds where targets were not met "…for consistency purposes across land management categories." Having a consistent allocation goal can simplify implementation planning, and development of specific Best Management Practices (BMPs), where land uses cross multiple watersheds, such as in forested landscapes. It can also establish an even playing field, so to speak, where there are different landowners in different watersheds, for a particular industry. We note that the ODEQ TMDL allocations applied a consistent nonpoint source allocation across all subbasins. We have attempted to continue that approach in the EPA TMDL, though it is challenging to do so given the varying land uses in each subbasin, and varying subbasin mercury concentrations. Applying a 97% reduction to these five subbasins we feel provides a consistent allocation and is protective for all.

Atmospheric deposition of mercury is the dominant source of mercury reaching waterbodies in the Willamette River Basin. EPA acknowledges that the agriculture and forestry industries are generally not responsible for creating atmospheric deposition loads of mercury. However, agriculture and forestry management practices do have an important impact on the delivery of mercury from the land surface to streams. As noted in Section 14.2 of the ODEQ November 2019 TMDL, "…the greatest potential for

reductions of mercury delivered to streams is through enhancing controls on nonpoint source land use activities that have the potential to result in erosion and surface runoff."

Comment ID L13-6

Comment Category General Comments

Comment Text
Conclusion

Our organizations and the foresters, farmers, and growers of Oregon have done much in recent decades to protect surface water quality. From new stream buffers to wet weather haul rules to strategic implementation areas, we have worked with ODEQ and our DMAs to protect the waters of our state. We commit to continuing this close engagement on water quality issues into the future. However, we have significant concerns about ODEQ's development of this TMDL and the compounded uncertainties created by EPA's decisions to revise the TMDL. Given that this pollution is largely outside of Oregon's control, the concern with the TMDL outlined above will make it hard to create buy in on this TMDL from our members.

Response Text
EPA acknowledges that there are stakeholders from multiple sectors, representing varied land uses and sources of mercury, that have already been implementing strategies and actions that are protective of water quality. EPA anticipates that continued, as well as increased efforts to protect water quality will help the basin reach water quality goals for mercury and other TMDL pollutants. Much of the mercury in the Willamette River Basin arises from sources outside of Oregon and outside of the U.S. via atmospheric deposition, however, this does not change the need for a TMDL. Load allocations are needed for nonpoint sources, whether or not they are original sources of mercury, because land management of those nonpoint sources strongly affects the fraction of mercury (whether newly deposited from the atmosphere or already present on site) transported from such lands into the stream network of the Willamette River and its tributaries.

Comment ID L13-7

Comment Category Applicable Water Quality Standards

Comment Text
The uncertainty in this model at every stage creates the very real risk that Oregon will require very expensive measures with no change relative to the actual water quality standard. This problem is due in part to the highly conservative water quality standard upon which this TMDL is based.

Response Text
ODEQ developed a revised fish tissue consumption criterion for methylmercury of 0.040 mg/kg wet weight that was subject to a full public review and comment process and was approved by EPA in 2011. This criterion is much lower than the previous criterion of 0.35 mg/kg wet weight that was applicable to the 2006 TMDL. The revision to the fish tissue criterion inevitably results in lower mercury ambient concentration and loading targets. However, the revised criterion is incorporated into Oregon regulations (OAR 340-041-8033, Table 40) and is explicitly required to be used for the TMDL revisions in the findings set forth by Magistrate Judge Acosta in Northwest Environmental Advocates vs. USEPA (2017).

EPA does not agree that management measures to be undertaken in the implementation of this TMDL will provide "…no change relative to the actual water quality standard." The available evidence suggests that reductions in mercury loads will result in lower fish tissue concentrations, and thus movement toward achieving the regulatory criterion. EPA does encourage ODEQ to continue to collect additional data and information that could be used in an adaptive management approach to maximize the reductions in fish tissue concentrations relative to the implementation cost (see Section 14.1.4 Evaluate implementation plans and progress, pp. 137 – 140, ODEQ TMDL, November 2019).

Comment ID L13-8

Comment Category Margin of Safety

Comment Text

When compounded by additional, unquantified, and conservative assumptions in the TMDL modeling, the margin of safety implicit in the load reductions specified by this TMDL are exceedingly cautious and divorced from reality.

Oregon farmers and foresters should not be asked to bear the risk of this uncertainty. We encourage EPA to address our concerns, and not move forward with its proposed changes to the Willamette Mercury TMDL.

Response Text

The Clean Water Act and 40 CFR130.7(c)(1) require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS in the TMDL is not unduly conservative given the many sources of uncertainty identified in the TMDL linkage analysis identified by this commenter and others.

The majority of the mercury load in the Willamette River Basin is ultimately derived from atmospheric deposition and is transported to the stream network in runoff and erosion from the land surface. Because atmospheric deposition occurs over the entire watershed, it will be important for all land managers, including farmers and foresters to work together to reduce mercury transport. The proposed TMDL allocations attempt to provide an equitable division of responsibility for achieving the TMDL. The details of how this will be achieved will be further refined in the implementation plans for relevant DMAs described in Section 14 of the ODEQ TMDL. It is expected that these implementation plans will be refined and adjusted over time as part of an adaptive management strategy that will help reduce uncertainty and target management actions to the most effective strategies for achieving the needed total load reduction.

Author Name Mary Anne Cooper

Organization Name ***Oregon Farm Bureau***

Letter ID ***L14***

Comment ID L14-1

Comment Category General Comments

Comment Text

The agricultural and forestry sectors have always been proactive about protecting, maintaining and enhancing water quality on agricultural and forestry lands, which combined represent by far the largest land use in the Willamette Valley. Indeed, our industries were proactive in developing the Agricultural Water Quality Management Program and Forest Practices Act years before most states had thought of developing their nonpoint source programs. Since that time, we have invested millions in studies, on-the-ground work, and compliance with our respective programs. We will continue to be proactive into the future, as evidenced by the millions invested by each of our sectors each year in proactive water quality improvements.

Response Text

EPA acknowledges that there are stakeholders from multiple sectors, representing varied land uses and sources of mercury, that have already been implementing strategies and actions that are protective of water quality. EPA anticipates that continued, as well as increased efforts to protect water quality will help the basin reach water quality goals for mercury and other TMDL pollutants.

Comment ID L14-2

Comment Category Lacks sensitivity analysis

Comment Text

Appendix A of the TMDL document, the Technical Support Document, describes no sensitivity analyses of the model output to reasonable variations in model input data sets or parameters. For example, no sensitivity analyses have been performed to determine how the values of the biomagnification factor of the Food Web Model (FWM) might vary given other modeling decisions or how its variation might affect the calibration of the FWM. This implies that other reasonable values for this and other important modeling input parameters might also lead to satisfactory model calibrations. However, these different values would also lead to different outcomes for the target mercury concentration that drives the load and wasteload allocations.

Response Text

EPA disagrees with the statement that no sensitivity analysis was performed. EPA's TMDL includes Attachment A which is ODEQ's November 2019 TMDL. ODEQ's TMDL included an 'Appendix A' named the 'Technical Support Document'. In the Technical Support Document, the Food Web Model analysis established values of the biomagnification factor for the different fish species. The modeling process to get values of the biomagnification factor for the different fish species explicitly incorporated the variation model parameters by using the probabilistic approach in the Monte Carlo simulation. The model parameters and how they were simulated in the Monte Carlo application are listed in Table 3-2 in the Technical Support Document. Also, the response of the model to these variations is discussed in Section 3.6 of the Technical Support Document. Some key insights about how some model parameters are provided in this discussion, such as specification of the distribution of exposure concentrations is a

primary factor controlling the tails of the cumulative distribution functions used in the simulations or future to refine predator-prey interaction probabilities in the Food Web Model. This is the information that DEQ used to "…determine how the values of the biomagnification factor of the Food Web Model (FWM) might vary given other modeling decisions or how its variation might affect the calibration of the FWM".

Comment ID L14-3

Comment Category Margin of Safety

Comment Text

The Margin of Safety (MOS) provided by the modeling has not been quantified. Section 11 of the draft TMDL document describes an implicit MOS due to the use of the northern pikeminnow as the fish species whose bioaccumulation determines the target concentration of mercury in the river system, the use of the median concentration from the FWM as the TMDL target concentration, and the use of total mercury concentration in fish tissue. These are conservative assumptions that provide a MOS, but the degree of conservativism achieved by these assumptions has not been described quantitatively. It is therefore possible that the TMDL study may have produced an overly conservative target THg concentration for the Willamette River that has led to unnecessarily low load and wasteload allocations in the TMDL.

Response Text

The Clean Water Act and 40 CFR130.7(c)(1) require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS can be either explicit, through allocation of a portion of the loading capacity, or implicit, through use of conservative assumptions in the TMDL analysis or in developing a TMDL target, or both.

EPA reviewed the MOS discussion provided by ODEQ and accepted only the first and third of the proposed three components of the ODEQ MOS. EPA rejected the component of the MOS regarding the method of calculating the Food Web Model. However, EPA also added an additional MOS component, as described in Section 9 of the EPA TMDL:

"3. Needed reductions in loads are based on comparing water column mercury targets to ambient monitoring data. Those monitoring data are available through 2011 in only 9 of the 12 HUC8 watersheds and thus do not incorporate any reductions in mercury loading that have occurred since 2011. Data presented in ODEQ's 2019 TMDL (p. 37) indicate that mercury concentrations have been declining in more recent years (2012 – 2019) in the Tualatin and Lower Willamette subbasins."

With these modifications, EPA found that the components of the implicit MOS account for any lack of knowledge or uncertainties concerning the relationship between pollutant loading and receiving water quality and that the MOS is thus approvable. There is no requirement that TMDLs include a quantitative MOS. It is EPA's opinion that the MOS is not unduly conservative given the many sources of uncertainty identified in the TMDL linkage analysis by the commenter and others.

Comment ID L14-4

Comment Category Food Web Model

Comment Text

The FWM links methylmercury exposure of fish to fish tissue concentrations based on an understanding of the Willamette River food web and the bioaccumulation and biomagnification within it. This model is

calibrated so the concentrations of mercury in fish tissue match the concentrations measured in fish tissue samples collected from the Willamette River and its tributaries. However, once calibrated, its main utility is to provide one of its parameters, the biomagnification factor, to the mercury translator model (discussed below). This approach introduces significant and compounded uncertainty to the target Thg concentration in the Willamette River.

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and was partially answered in ODEQ's November 2019 Response to Comments.

The use of a Food Web Model to develop biomagnification parameters is a standard approach for developing TMDLs and Superfund cleanup targets based on fish tissue concentrations. The biomagnification factors are not "parameters" of the Food Web Model, but rather depict the output of the process-based model by summarizing the relationship between environmental exposure concentrations and the central tendency of contaminant levels in the tissue of each fish species. This allows the fish tissue target to be converted to an environmental concentration target.

EPA considers the median biomagnification factors from the Food Web Model to be sufficiently accurate based comparison to national values. The median biomagnification factors from the calibrated Food Web Model are compared to national values from EPA in Figure 6-2 of the ODEQ's final TMDL issued in November 2019 (Appendix A to the EPA TMDL) and discussed at greater length in the Technical Support Document (Appendix B to the EPA TMDL). The median of the biomagnification factor Northern Pikeminnow falls within the ranges of the national values given by EPA, confirming that the biomagnification factor is reasonable and appropriate for estimation of the water column target.

Comment ID L14-5

Comment Category Food Web Model

Comment Text
The FWM calibration is marginal for the northern pikeminnow. This is the only fish whose parameterization is used in the determination of the target concentration of THg in the river system. Although no statistical evaluation of the quality of the calibration was provided in the contractor's modeling report, inspection of Figure 3-4 in the Technical Support Document (i.e., TMDL Appendix A) reveals that the cumulative distribution function of modeled fish tissue mercury concentrations in the northern pikeminnow agrees with the distribution of observed data only around the 60th percentile concentration. Most of the rest of the modeled distribution is outside the 95% confidence interval of the distribution based on observed data. With this marginal and unquantified model calibration (and the lack of sensitivity analyses described above), we cannot be confident in the target THg concentration.

Response Text
EPA calibrated the Food Web Model for eight species. Results for Northern Pikeminnow (NPM) are used to develop the water column targets because the NPM is the most efficient mercury bioaccumulator of the species considered.

EPA acknowledges that, like any model, the FWM is an approximation of observed conditions. The Food Web Model was calibrated by attempting to match the cumulative distribution functions generated by the Food Web Model to the cumulative distribution functions for observed data (Technical Support Document [TSD] Figure 3-4) and the TSD notes that "…the fit for NPM is not perfect but is reasonable." TSD Figure 3-4 shows that the match between model and data remains within 95% confidence limits

from the 50th to 70th percentile and is thus acceptable for estimating the median of the distribution (50th percentile), which is the basis for estimating the THg target, while discrepancies are associated with the tails of the distribution. TSD Figure 3-6 shows that the relationship between fish length and mercury tissue concentration is reasonably well reproduced by the model. Finally, the bioaccumulation factor (BAF) simulated for NPM in the FWM is well within the 95% confidence limits of reported BAF values for Trophic Level 4 fish species. EPA believes that the discrepancies between the model and observed fish tissue data in the tails of the distribution - which are not used to set the water column target - are attributable to use of a steady-state bioaccumulation model to approximate the results of a dynamic relationship between exposure concentration and body burden, along with other simplifying assumptions regarding mercury uptake and depuration. These issues are discussed at length in the TSD.

Please also note that the November 2019 ODEQ TMDL contains incorrectly pasted values of the species biomagnification factor estimates in Table 6-2. The cumulative BMFs shown in ODEQ's Figure 6-2 are correct.

Comment ID L14-6

Comment Category Food Web Model

Comment Text

We understand that the model input parameters pertaining to three main processes were used to calibrate the FWM: the fish ingestion rate of mercury, the fish assimilation rate of mercury, and the fish elimination rate of mercury. From this approach, the necessary biomagnification factor is determined for the model to match observed fish tissue concentrations as closely as possible. We are concerned that there may be other reasonable values for these model input parameters that produce a decent match between the model output and observed fish tissue concentrations. If so, these would require different biomagnification factors for model output to match data. We acknowledge that this probabilistic model does not use single values for its model input parameters but instead expresses them as distributions. However, the median value of the distribution of biomagnification factor, not a range resulting from the distribution, is used in the calculation of the target THg concentration in the river. Therefore, there may be other reasonable distributions for the biomagnification factor (and, consequently, other median values) that can lead to an acceptable model calibration. This implies that the model could produce the "right" answer for the wrong reason. Consequently, we lack confidence in the target THg concentration that is calculated, in part, from the median biomagnification factor determined by the EPA contractor.

Response Text

The Food Web Model processed 10,000 Monte Carlo iterations. During each iteration, values of each model input parameter are sampled from a range or distribution of inputs, as explained in Section 3 and summarized in Table 3-2 of the Technical Support Document (Appendix B to the EPA TMDL). Thus, the analysis already accounts for uncertainty and variability in key parameters. The range of potential resulting biomagnification factors is summarized in Table 3-3 of the Technical Support Document. (Please note that the November 2019 ODEQ TMDL contains incorrectly pasted values of the species biomagnification factor estimates in Table 6-2).

EPA does agree that there can be multiple combinations of ingestion, assimilation, and elimination rates that could lead to similar predictions of fish tissue concentrations; however, these would of necessity converge toward the same central tendency of the bioaccumulation factor to achieve calibration that reproduces the relationship between observed fish tissue concentrations and exposure concentrations, which constitutes the biomagnification factor (BMF). The values of these parameters are also

constrained to be reasonable based on information in the literature. EPA and ODEQ selected the median estimate of the BMF for each species as a robust estimator of central tendency and to avoid concerns derived from relatively poorer fit to the upper and lower tails of cumulative distribution function in many species. The resulting cumulative BMF (an estimate of the bioaccumulation factor or BAF) is within the 95% confidence interval of EPA's information on BAFs for trophic level 4 fish (Figure 6-2 in the final ODEQ TMDL), confirming that the median-based BMF is appropriate to use in the calculation of the exposure concentration target.

Comment ID L14-7

Comment Category Mercury Translator

Comment Text

The Mercury Translator Model uses the biomagnification factor from the FWM and a mercury translator value to calculate a target concentration of THg in the water column from the concentration of dissolved methylmercury used as an input variable to the FWM. In this model, the slope of the regression line calculated from the aggregation of individual pairs of measured THg and methylmercury concentrations in the water column is heavily influenced by three pairs of observations. The remaining pairs of observations in Figure 6-3 do not fall in a line. We question whether linear regression is an appropriate statistical method for calculating the translator value. It may be more appropriate to present the translator value for each HUC8 basin and then average the 12 values while expressing the uncertainty of that mean. The use of linear regression on a data set that is neither linear nor normally distributed leads us to question the validity of the target THg concentration.

Response Text

The comment was resubmitted for the EPA TMDL, although clarification had already been provided in ODEQ's Response to Comments and wording changes had been included in the final ODEQ November 2019 TMDL, which is Appendix A to the EPA TMDL.

"Regarding the statement, 'The use of linear regression on a data set that is neither linear nor normally distributed leads us to question the validity of the target THg concentration', please refer to Section 4.2 in the Technical Support Document for a more thorough discussion of the mercury translator approach. Median dissolved methylmercury and median total mercury do exhibit an approximately linear relationship and there is no strong evidence of heteroscedasticity. Perfect linear correlation is neither expected nor required for linear regression. Regarding normality, it is common for environmental data to deviate from an assumption that regression residuals are normally distributed. However, a linear regression remains the best linear, unbiased estimator (BLUE) of the coefficients regardless of whether the residuals are normally distributed; the normal distribution assumption is relevant primarily to the interpretation of statistical tests on the regression parameters. The actual requirements for linear regression to be BLUE under the Gauss-Markov theorem are less restrictive: The residuals should be uncorrelated, have approximately equal variances and have an expectation of zero. Further, the linear model assumptions are generally robust to small deviations from these assumptions. See for example Peter Kennedy's A Guide to Econometrics (1979) for discussion of these issues. Because we are working with medians of data from different geographic areas, we do not expect correlation among the residuals. If the expected value of the residuals was non-zero, the primary result would be a bias in the intercept term of the linear regression; however, we are imposing a zero- intercept model here. Visual examination does not suggest any strong difference in residual variances between sites, although a rigorous parametric test is not possible due to the presence of many non-detects. Note that simply averaging the ratios across HUCs would give approximately the same answer for most points

(dMeHg:THg approximately equal to 0.016), but without a correction for sample size or meeting BLUE criteria, because the relationship is essentially linear." DEQ concluded that the translator analysis is appropriate for use in the TMDL and no changes have been made to the document or analysis. EPA agrees with ODEQ's conclusion. No further response is needed.

Comment ID L14-8

Comment Category Mass Balance Model/HSPF

Comment Text

Description: Modeling - MBM - Acknowledge uncertainty in models, perform additional model simulations

Comment: Summary of suggested change: acknowledge model uncertainties in the calculation of existing loads in the TMDL, perform additional model simulations with reasonable upper and lower bounds of, for example, atmospheric deposition or soil mercury concentrations. The Mass Balance Model (MBM) exists separately from the FWM and the Translator Model. Whereas the FWM and Translator Model are used together to determine the target THg concentration in the water column, the MBM determines the present-day contributions of THg to the Willamette River system from a variety of sources. These values are compared to the THg loading capacity (discussed below) when developing the load allocations of the TMDL. The representation of nonpoint sources in the MBM raises the following concerns: -Results of three other models serve as important inputs or points of comparison for the contributions of nonpoint sources to the Willamette River system. These models are: -the hydrology model of the Willamette Basin created by the EPA contractor several years ago using the software package HSPF, -the model of dry atmospheric deposition of mercury used by Domagalski et al. (2016), and -the USGS LOADEST model from which the EPA contractor calculated THg concentrations in the Willamette River that were then used as a calibration target for the MBM. For this reason, the TMDL will be based on six models, not the three commonly described by your team, the EPA, and its contractor. Using the output of two models as inputs of the MBM compounds uncertainty. Calibrating to the results of a separate model implies that the MBM is calibrated to match a number with its own, presently unquantified, uncertainty. While this may be unavoidable, we do not find an acknowledgement of these uncertainties in the calculation of existing loads in the TMDL. It would be appropriate to perform additional model simulations with reasonable upper and lower bounds of, for example, atmospheric deposition or soil mercury concentrations. No such calculations are described in the TMDL document (or the Technical Support Document), which reports single numbers (i.e., values with no associated uncertainties) in Table 6-7. The lack of an acknowledgement of the uncertainty in the MBM decreases our confidence in the existing loads and the subsequent calculations that use them.

Response Text

Requirements for the revised TMDL were set forth in the court findings of Magistrate Judge Acosta and include "…an analysis of factors affecting mercury pollution, including potential multiple sources, bioaccumulation patterns, and changes in the types of mercury being released and transformed in the entire complex river system." In addition, modeling to support the TMDL update "must be revised and incorporate all the new data related to mercury that has been gathered since the first TMDL…" These requirements were met because the modeling and technical assessments for the TMDL revision incorporated new mercury monitoring data (e.g., water column, sediment, fish tissue, point source effluent, etc.), as well as relevant information from recent research and modeling efforts.

The use of simulation modeling to describe the relationship between pollutant sources and environmental impacts that cause waterbody impairment is standard practice in the development of

TMDLs and is essential to fill in gaps in available observations and to predict the likely impacts of changes in pollutant sources.

All the separate models could be combined into a single modeling code, but this would not change the level of uncertainty in the model outputs. EPA acknowledges that there is uncertainty related to the modeling and analysis that was completed for the Willamette Mercury TMDL. However, EPA and ODEQ find that the modeling and analysis is suitable for TMDL development and is sufficient for implementing the TMDL and meeting water quality criteria. The modeling and analysis is consistent with EPA's understanding of the processes that control the loading, transport, transformation, and bioaccumulation of mercury and methylmercury in the basin. Potential uncertainties and how they were addressed are discussed in the following sections of the ODEQ TMDL report: 6. Explanation of Models; 7.2 Excess Load; and 11. Margin of Safety. The Technical Support Document (Appendix B to the EPA TMDL) provides further information on model uncertainty along with a detailed discussion of the data sources used in the TMDL analysis. The data used for development of the Food Web Model and mercury translator are discussed in Section 2 of the Technical Support Document. The data sources and methods used to estimate the sources for the Mass Balance Model are discussed in section 5.3 of the Technical Support Document.

The Mass Balance Model results summarized in Table 6-7 of the ODEQ TMDL represent EPA's best estimates of conditional existing data. EPA acknowledges that there is uncertainty associated with these estimates. Their primary use is to develop load allocations for nonpoint sources of mercury in the Willamette River Basin. This is consistent with regulatory requirements at 40 CFR 130.2(g): "Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." Uncertainty in the analysis is addressed through the Margin of Safety and Reasonable Assurances (Sections 9 and 10 in the EPA TMDL and Sections 11 and 14 in the November 2019 ODEQ TMDL).

ODEQ has indicated that it intends to use additional monitoring and modeling during implementation of the TMDL to improve upon the representation of mercury/methylmercury system in the Willamette River Basin. ODEQ is working with watershed partners to develop an Assessment and Monitoring Strategy that will help to reduce uncertainty in the representation of mercury in the Willamette River Basin, as well as support more robust decision-making regarding implementation of the Mercury TMDL. As discussed in Sections 13, 13.6 and 14 of the ODEQ TMDL/WQMP, data collection will continue and expand to allow for further analysis to better represent mercury sources and transport and transformation mechanisms – such as methylation in reservoirs, bioaccumulation, and groundwater mercury concentrations. It is expected that the implementation of the TMDL will be further refined over time as part of an adaptive management process.

Comment ID L14-9

Comment Category Mass Balance Model/HSPF

Comment Text

The HSPF model raises some additional concerns: -Our experience suggests the model's representation of agricultural land may be poor. We are unsure of the impact of any inaccuracies on the final modeling results. We have not seen an explanation of the justification of infiltration rates in this model. This is critical for the distinction used by your team between mercury attributable to atmospheric sources and to groundwater. -The soil mercury concentrations interpolated from a 2013 USGS study appear to be

highly uncertain due to a low spatial resolution of the observed data and a lack of detail in the interpolation (Tetra Tech, 2018a).

Response Text

ODEQ and EPA used an existing Hydrological Simulation Program - FORTRAN (HSPF) model of the Willamette Basin. The HSPF model provides a very good tool for source characterization and more robustly simulates the generation and transport of total mercury within the Willamette Basin. EPA acknowledges that there is uncertainty related to the modeling and analysis that was completed for the Willamette Mercury TMDL. However, EPA and ODEQ find the modeling and analysis is suitable for TMDL development and is sufficient for implementing the TMDL and meeting water quality criteria.

As described in the Technical Support Document (Appendix B to the EPA TMDL), the existing HSPF model was updated to incorporate the most recent available land use but was not recalibrated. The existing model used State Soil Geographic database (STATSGO) soil survey information on hydrologic soil group (HSG) to assign initial values of the HSPF index to soil infiltration rate (INFILT) for each of the four HSG classes (A, B, C, and D). Initial values for INFILT were set at the middle of the ranges for each HSG as recommended in EPA's BASINS Technical Note 6, "Estimating Hydrology and Hydraulic Parameters for HSPF." These ranges are HSG A: 0.4-1.0 in/hr, HSG B: 0.1-0.4 in/hr, HSG C: 0.05-0.1 in/hr, and HSG D: 0.01-0.05 in/hr. Note that in HSPF INFILT is an index to the mean soil infiltration rate that controls division of water between surface runoff and infiltration. INFILT is not equivalent to a maximum rate or measured rate or measured soil infiltration capacity, and its values for a given soil are generally substantially less than published infiltration rates or measured soil percolation rates. During calibration of the existing model to gaged flows, the modelers reported that "Infiltration was generally decreased from the initial values to increase storm peaks and reduce low flows…"; however, the values remained within the recommended ranges for each HSG class.

HSPF predictions for the partitioning of precipitation into evapotranspiration, surface runoff, and groundwater, along with HSPF predictions of soil erosion and transport, are used to estimate the total mercury loads associated with surface runoff, erosion, and groundwater baseflow loading. ODEQ and EPA concluded that the existing results for hydrology and associated flow pathways are reasonable and provide a sufficient basis for the development of TMDL allocations. As with all environmental simulation models, there are uncertainties in the predicted results that could potentially be reduced by additional efforts at model calibration and adjustment of the model to a finer spatial scale. ODEQ has indicated that it plans to identify key sources of uncertainty in the Mass Balance Modeling as part of the monitoring program being developed for the WQMP and may refine the HSPF model in future if needed.

EPA also acknowledges that the soil mercury concentrations derived from the 2013 USGS study are uncertain due to a low spatial resolution of the observed data (there were only three samples from agricultural land, so simple averaging was used: there were not a sufficient number of samples for spatial interpolation). This is the best information currently available. The resulting soil concentrations for agriculture and forest are consistent with the general trends among land uses summarized in D. Obrist et al., 2016, Science of the Total Environment 568:522-535. Further refinement of surface soil mercury concentrations in agricultural land areas would require additional sampling. If such data are obtained, the results and could potentially be stratified based on tillage, harvest, and residue management practices, as well as adjusted to reflect spatial patterns across the basin, and could be used to further refine estimates of total mercury loads.

Comment ID L14-10

Comment Category Loading Capacity

Comment Text

The calculation of the daily loading capacity of THg in the Willamette River system is presented in Section 7.2. The load determined is 42.17 g/day. This value is critical for developing the load and wasteload allocations in Section 10. However, this calculation is unclear. Below Table 7-1, the text states that the quantity Lcurrent is "estimated to be 361 g/day", a value consistent with Table 6-7. However, in the ensuing equations that calculate the quantities Lexcess and Load Capacity, the value 351.42 g/day is used for Lcurrent. Using the value of 361 g/day leads to a slightly higher load capacity. If this is an error, please correct it. If 351.42 g/day is the correct value for Lcurrent, please alter this passage to resolve the confusion we express here.

Response Text

This comment was submitted to Oregon DEQ during the public comment period for the State issued TMDL. The following is Oregon DEQ's response to the comment:

The value "351.42 g/day" for the current load was an error. DEQ recalculated the TMDL equation and components using a current load of 361 g/day and made associated changes in the TMDL report.

EPA agrees with ODEQ's response, and that the current load of 361 g/day was incorporated in the State's TMDL, as well as the final EPA TMDL, for the development of wasteload and load allocations.

Comment ID L14-11

Comment Category TSS as surrogate

Comment Text

ODEQ evaluated the use of the concentration of TSS as a surrogate for the concentration of THg in water. If the relationship between the concentrations of TSS and THg is statistically robust, then TSS could be measured in place of THg, thus reducing the costs of assessment and monitoring related to this TMDL. As presently drafted, the analysis presented in Section 10.3 and Appendix H raises several concerns about whether the concentration of TSS can defensibly be adopted as a surrogate for the concentration THg in this system.

In a memo from the EPA contractor that was provided to the Willamette Basin TMDL Advisory Committee in an e-mail from Priscilla Woolverton on 14 June 2019, TSS is ranked as the least preferable of four surrogates analyzed, behind suspended sediment concentration and two separate turbidity measurements (Tetra Tech 2018b). This analysis was not mentioned in the TMDL document or Appendix H. Please explain why TSS has been chosen by ODEQ as a surrogate rather than other options that have been judged as preferable.

The use of TSS as a surrogate is justified with a citation in Section 1.1 of Appendix H to a paper about urban stormwater runoff. Please justify this use of TSS as a surrogate by providing and explaining in detail the findings of any papers that show a relationship between TSS and THg in a river system that resembles to the Willamette River and its tributaries.

The statistical relationship described in Appendix H (known as a Linear Mixed Effects, or "LME" statistical model), shows that measurements of TSS and the specification of the location of that measurement can explain 81% of the variation in the THg data set. Thus, estimating THg concentrations with a surrogate introduces uncertainty into measurements of THg. This is especially true because of the

low concentrations of THg, which imply that even small absolute uncertainty can have a large relative importance. Please describe how this uncertainty will be addressed if TSS is to be used as a surrogate during allocation, compliance, or field monitoring.

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G in ODEQ's November 2019 TMDL.

EPA's 2019 TMDL document does not discuss use of (Total Suspended Solids) TSS as a surrogate. Indeed, the EPA TMDL document mentions TSS only once, in the context of Reasonable Assurances, where it is noted that "ODEQ's review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading." The TSS surrogate is thus properly seen as part of the TMDL implementation strategy, which is determined by ODEQ.

Tetra Tech did produce a draft memorandum to EPA dated July 27, 2018 that recommended use of turbidity as a surrogate measure. EPA shared this memorandum with ODEQ for informational purposes only, as the implementation strategy is determined by ODEQ. ODEQ decided that TSS was a more appropriate surrogate for detecting large erosion events that are likely to be associated with elevated loading of mercury stored in sediment.

Comment ID L14-12

Comment Category TSS as surrogate

Comment Text
Please demonstrate that the data used for the LME model are: -Sufficient: Why does ODEQ believe that 63 paired observations are enough for this analysis? How many samples are generally used to develop strong LME models? -Adequate: Please show the results of statistical tests that evaluate the normality of the TSS and THg data sets following the logarithmic transformation that was performed.

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G in ODEQ's November 2019 TMDL.

EPA's 2019 TMDL document does not discuss use of TSS as a surrogate. Indeed, the EPA TMDL document mentions TSS only once, in the context of Reasonable Assurances, where it is noted that "ODEQ's review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading." ODEQ's TMDL, which is attached to the EPA TMDL as Appendix A, does incorporate a discussion of instream surrogate targets, in Section 10.3, and proposes TSS as a surrogate "…to supplement but not supplant the allocations and TMDL water column target for evaluating TMDL implementation strategy, which is determined by ODEQ.

There is not a specific minimum criterion for sample size in linear mixed effects regression (LMER) models. Instead, the performance of the models is evaluated through their ability to explain the observed variance in THg concentrations, which appears reasonable (R^2=0.81 for the final LMER model). It is the case that LMER, like ordinary least squares, assumes normally distributed residuals, although small deviations from normality do not cause problems. As shown in the revised Appendix G to the ODEQ TMDL, ODEQ used Box-Cox transformation to demonstrate that a log10 transformation of

both THg and TSS was appropriate and provided Normal Q-Q plots to demonstrate that approximate normality was achieved.

Comment ID L14-13

Comment Category TSS as surrogate

Comment Text
The LME model is complicated. Please justify the use of the LME model by explaining: -why a simpler model (such as a multivariate model using TSS and sampling location) cannot be used here, -why it is valid to assume that observations from the same sampling site are not independent (this is implied by the choice of "sites" as a random effect in the LME model), and -how the "sites" variable was represented in the LME model. Is it categorical or continuous?

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G in ODEQ's November 2019 TMDL.

EPA's 2019 TMDL document does not discuss use of TSS as a surrogate. Indeed, the EPA TMDL document mentions TSS only once, in the context of Reasonable Assurances, where it is noted that "ODEQ's review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading." ODEQ's TMDL, which is attached to the EPA TMDL as Appendix A, does incorporate a discussion of instream surrogate targets, in Section 10.3, and proposes TSS as a surrogate "…to supplement but not supplant the allocations and TMDL water column target for evaluating TMDL implementation effectiveness." The TSS surrogate is thus properly seen as a part of the TMDL implementation strategy which is determined by ODEQ.

Comment ID L14-14

Comment Category TSS as surrogate

Comment Text
The results of this analysis are unclear. Please clarify by: -Stating the intercepts for the fixed and random effects separately in Equation 3 of Appendix H. This will make the random effects due to the variable "sites" clearer. -Showing both the adjusted R2 and conditional R2 in Table 9 and discussing each separately. -Providing examples in which "sites", which you have identified as a random predictor variable, are used along with TSS to predict concentrations of THg.

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G in ODEQ's November 2019 TMDL.

ODEQ revised Appendix H in response to this and other comments. DEQ included the full model summaries for the LME models, including conditional and adjusted R2 values. The random effects are adjustments to the model intercept (one for each of the site groups) and are traditionally not directly shown in the equations for LME models. Instead, these values are now shown in Table G-10.

Comment ID L14-15

Comment Category TSS as surrogate

Comment Text

Please resolve concerns about the quality of this analysis, specifically those related to: -Example 1 in Section 1.5 uses the LME model to indicate that a THg concentration of 0.14 ng/L is predicted by a TSS concentration of 4.272 x 10-14 mg/L. The former is a low but plausible concentration for THg in a river, but the latter is many orders of magnitude lower than the lowest TSS concentration one could ever hope to measure in a large river like the Willamette River. -Example 2 in Section 1.5 uses the LME model to relate a TSS concentration of 100 mg/L, which is high yet reasonable for a large river, to a concentration of THg of 8.38 mg/L, which is implausibly high relative to all observations presented in Table 1 of Appendix H.

Response Text

This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G in the ODEQ November 2019 TMDL. The error noted in the comment had already been fixed in the final ODEQ TMDL of November 22, 2019, which is attached as Appendix A to the EPA TMDL.

Appendix H in the ODEQ July 2019 Public Review Draft contained units errors in the example calculations. The error in the units of TSS given in Example 1 in the ODEQ Public Review Draft was corrected in response to this and other related comments. The units error in total mercury was also present in Example 2: at a TSS concentration of 100 mg/L, the predicted total mercury concentration should be 8.38 ng/L, not mg/L. Likewise, at a TSS concentration of 80 mg/L the predicted total mercury concentration should be 7.48 ng/L, not mg/L. This units error does not affect the percent reduction calculation, but it was corrected in the revised ODEQ TMDL.

Comment ID L14-16

Comment Category TSS as surrogate

Comment Text

Finally, if the above concerns can be resolved, we request that ODEQ clarify how a complicated LME model can guide mercury management by ODEQ or Designated Management Agencies. Does including "sites" as a random effect imply that each surrogate relationship will need to be site-specific? How can a surrogate relationship be used in practice to monitor THg concentrations (via measuring TSS concentration) when the relationship includes random effects?

Response Text

This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019). In response to this comment, clarification had already been provided in ODEQ's Response to Comments on the Public Review Draft and wording changes had been included in the final ODEQ TMDL of November 22, 2019, which was attached as Appendix A to the EPA TMDL.

In response to the original submission of this comment, ODEQ revised Section 10.3 and Appendix G (formerly Appendix H) of their TMDL with clarifications on the intention that TSS surrogate targets will be used as one tool for evaluating TMDL implementation effectiveness. Based on the relationship found between TSS and total mercury, surrogate instream targets were set for reductions in high TSS concentrations to reduce total mercury in waterbodies and evaluate progress towards achieving the allocations and total mercury TMDL water column target. These reductions of TSS are expected to

reduce total mercury loads that occur during high precipitation events and high flows. In addition, the use of TSS surrogate targets and other tools is described in the Assessment and Monitoring Strategy overview, which is provided in Sections 13.6 and 14.1.6 of the ODEQ TMDL.

A "random effect" is a statistical term for describing a site-specific effect on the value of a variable. The term "fixed" effect refers to how the value of a variable changes according to changes in the value of another variable. In the case of the TSS surrogate analysis, the "random effect" is the sampling site for total mercury and TSS, which controls the starting values for the two constituents. The "fixed effect" is TSS, which means the change in total mercury in response to a change in TSS is expected to be the same regardless of the site sampled. In other words, the site sets the starting value for total mercury, but the response of total mercury to change in TSS is the same regardless of the site sampled.

Comment ID L14-17

Comment Category TSS as surrogate

Comment Text

The present surrogate analysis leads us to three main concerns: 1. This surrogate analysis creates opacity for our members because it does not incorporate available background information, adds uncertainty, and adds complexity without justification. It could easily lead to in-stream TSS requirements that seem arbitrary to our members. 2. The apparent flaws in the statistical model cause concern that its use by ODEQ or our Designated Management Agencies will require our members to do much more than necessary to control erosion and sediment runoff. One of the examples in Appendix H implies that the water must have unmeasurably low concentrations of suspended sediment to meet the target concentration of THg. 3. This surrogate analysis will be confusing to our members because we do not understand how a statistical model with random effects will be used in practice.

Response Text

This comment is a copy of a comment that was submitted on the July 2019 Public Review Draft of the ODEQ TMDL and does not correctly reflect the contents of either the November 2019 final ODEQ TMDL or the December 2019 EPA TMDL.

The Clean Water Act and 40 CFR130.7(c)(1) require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS can be either explicit, through allocation of a portion of the loading capacity, or implicit, through use of conservative assumptions in the TMDL analysis or in developing a TMDL target, or both.

EPA reviewed the MOS discussion provided in ODEQ's November 2019 TMDL and accepted only the first and third of the proposed three components of the ODEQ MOS. EPA rejected the component of the MOS regarding the method of calculating the Food Web Model. However, EPA also added an additional MOS component, as described in Section 9 of the EPA TMDL:

"Needed reductions in loads are based on comparing water column mercury targets to ambient monitoring data. Those monitoring data are available through 2011 in only 9 of the 12 HUC8 watersheds and thus do not incorporate any reductions in mercury loading that have occurred since 2011. Data presented in ODEQ's 2019 November TMDL (Figure 7-3, p. 37) indicate that mercury concentrations have been declining in more recent years (2012 – 2019) in the Tualatin and Lower Willamette subbasins."

With these modifications, EPA found that the components of the implicit MOS account for any lack of knowledge or uncertainties concerning the relationship between pollutant loading and receiving water quality and that the MOS is thus approvable. The MOS is not unduly conservative given the many sources of uncertainty identified in the TMDL linkage analysis by this commenter and others.

Comment ID L14-18

Comment Category TSS as surrogate

Comment Text

Further, Section 10.3 of the TMDL document justifies the use of a surrogate by citing Oregon Administrative Rule (OAR) 340-042-0040(5)(b), which permits the use of a surrogate "to estimate allocations for pollutants addressed in the TMDL". However, Section 10.3 of the TMDL document presents a statistical relationship between TSS and THg and uses it to determine allocations of TSS that would correspond to the allocations of THg already developed. The TMDL document then states that these TSS allocations will be "used for evaluating effectiveness of the TMDL" because monitoring of "total mercury can be difficult and cost-prohibitive". This indicates that ODEQ seeks to use TSS as a surrogate to facilitate monitoring following the allocations of mercury in Section 10.1, not to create the allocations themselves. This contradicts the allowed use of a surrogate in OAR 340-042-0040(5)(b). Section 10.3 of the TMDL document and Section 1.1 of Appendix H state in general terms that monitoring for THg can be difficult and cost-prohibitive. However, monitoring of THg must have occurred to include Willamette River reaches and tributary reaches on the 303(d) list in the first place. If a surrogate will be used, what will be the appropriate mix of surrogate measurements and THg measurements? Will any THg measurements be made if a surrogate is used? What would be the cost savings gained from using TSS as a surrogate for THg, and why is this enough to justify the development of this statistical relationship and the uncertainties that will come with the use of a surrogate?

Response Text

This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Section 10.3 and Appendix G (formerly Appendix H). The issues noted in the comment had already been addressed in the final ODEQ TMDL of November 22, 2019, which was attached as Appendix A to the EPA TMDL.

As noted in ODEQ's previous response, "Surrogate Measures" are defined in OAR 340-42-0030(14) as "...substitute methods or parameters used in a TMDL to represent pollutants." In addition, OAR 340-042-0040(5)(b) states that "DEQ may use surrogate measures to estimate allocations for pollutants addressed in the TMDL." This statement does not preclude use of surrogate measures in other TMDL components. In using surrogate measures, DEQ followed OAR 340-042-0040(5)(b) in that the TMDL establishes the relationship between the surrogate measure (TSS) and pollutant (mercury; mercury is difficult to measure and TSS is closely related to mercury and is easier to monitor and track.)

In response to this comment, ODEQ revised Section 10.3 and Appendix H with clarifications on the TSS surrogate targets. Based on the relationship found between TSS and total mercury, surrogate instream targets were set for reductions in high levels of TSS concentrations to reduce total mercury in stream and evaluate progress towards achieving the allocations and total mercury TMDL water column target described in Section 10. These reductions of TSS are expected to reduce total mercury loads that occur during high precipitation events and high flows.

DEQ also noted that the TSS surrogate targets will apply to the mainstem Willamette and HUC8 outlets. The TSS surrogate targets will be used for reducing total mercury in waterbodies and as one tool for

evaluating progress towards achieving allocations and the total mercury TMDL water column target described in Section 10. In addition, because TSS is a cost-effective surrogate it will be used to supplement, but not supplant, the allocations and total mercury water column target for evaluating TMDL implementation effectiveness. The Assessment and Monitoring Strategy that DEQ is developing will include information on monitoring for THg in addition to other parameters, which will be discussed with DMAs during implementation planning. The TSS surrogate is thus properly seen as a part of the TMDL implementation strategy which is determined by ODEQ.

Comment ID L14-19

Comment Category TSS as surrogate

Comment Text

Finally, the structure of Appendix H, Table 12 makes this surrogate analysis start to look like a TSS reduction program rather than a THg reduction program. It would be more appropriate to write about the THg reductions ODEQ seeks and correlate that to TSS rather than discuss the TSS reductions ODEQ needs to see.

Response Text

The comment was resubmitted for the EPA TMDL, although clarification had already been provided in ODEQ's Response to Comments and wording changes had been included in the final ODEQ November 2019 TMDL, which is Appendix A to the EPA TMDL. In their response, ODEQ agreed with the comment and added content to the ODEQ TMDL clarifying how the TSS surrogate will be used. See Appendix G of ODEQ's November 2019 TMDL. ODEQ's November 2019 TMDL is Appendix A of EPA's December 2019 TMDL. EPA has no further response to this comment.

Comment ID L14-20

Comment Category General Comments

Comment Text

Our organizations and the foresters, farmers, and growers of Oregon have done much in recent decades to protect surface water quality. From new stream buffers to wet weather haul rules to strategic implementation areas, we have worked with DEQ and our DMAs to protect the waters of our state. We commit to continuing this close engagement on water quality issues into the future.

However, we have significant concerns about ODEQ's development of this TMDL and the compounded uncertainties discussed above. Given that this pollution is largely outside of Oregon's control, the concern with the TMDL outlined above will make it hard to create buy in on this TMDL from our members. Why should Oregon's farmers and foresters be required to mitigate pollution they did not introduce? Likewise, the TMDL proposes to regulate Total Suspended Solids as a means of driving reductions in fish tissue methylmercury concentrations. The relationship between these two parameters is extremely remote, and requires the agency model several water quality parameter relationships with compounding uncertainty. This creates the very real risk that Oregon will require very expensive measures with no change relative to the actual water quality standard. This problem is due in part to the highly conservative water quality standard upon which this TMDL is based. When compounded by additional, unquantified, and conservative assumptions in the TMDL modeling, the margin of safety implicit in the load reductions specified by this TMDL are exceedingly cautious and divorced from reality.

Oregon farmers and foresters should not be asked to bear the risk of this uncertainty. We encourage ODEQ to address our concerns, and to work closely with the Designated Management Agencies (DMAs) on implementation to assess what is truly possible and necessary within localized areas.

Response Text
The comment was resubmitted for the EPA TMDL, although clarification had already been provided in ODEQ's Response to Comments and wording changes had been included in the final ODEQ November 2019 TMDL, which is Appendix A to the EPA TMDL.

As noted in ODEQ's previous response, "DEQ acknowledges that there are stakeholders from multiple sectors, representing varied land uses and sources of mercury, that have already been implementing strategies and actions that are protective of water quality. DEQ anticipates that continued, as well as increased efforts to protect water quality will help the basin reach water quality goals for mercury and other TMDL pollutants."

"Based on the relationship found between total suspended solids and total mercury, surrogate instream targets were set for reductions in high levels of TSS concentrations to reduce total mercury in stream and evaluate progress towards achieving the allocations and total mercury TMDL water column target described in the TMDL. These reductions of TSS are expected to reduce total mercury loads that could occur during high precipitation events and high flows."

EPA agrees that significant improvements have occurred in the management practices used by farmers and foresters over the last several decades. To the extent that loadings have been reduced by recent actions relative to the baseline period used to estimate current THg concentrations in any HUC8, it would be reasonable to account for improvements since that time period as progress towards meeting the percent reductions set forth in the TMDL. Also see responses to comment L14-01 through L14-19 and L14-21.

Comment ID L14-21

Comment Category Atmospheric deposition

Comment Text
The role of atmospheric deposition is unclear. The TMDL allocations depend on the categorization of different sources (Table 10-1). In this categorization, atmospheric deposition is double counted as part of both the "General Non-point Source and Background" and as its own separate category. Additionally, the TMDL lacks clarity on atmospheric deposition of mercury and the impact that foreign sources of mercury are having on our waterways. Section 14.2 of the TMDL document states clearly that atmospheric deposition of mercury is the dominant source of mercury reaching Willamette Basin streams and that air emissions from Oregon are small relative to global sources. Atmospheric deposition is entered twice in table 10-1 - under "General Nonpoint Source and Background" and under Atmospheric Deposition. What is the difference? Is it double counted?

Response Text
This comment was originally submitted in regard to ODEQ's July 2019 Public Review Draft of the TMDL and was addressed in ODEQ's Response to Comments document. This response clarified ODEQ's choice of terminology and resulted in changes that were incorporated into ODEQ's November 2019 final TMDL draft. EPA believes that atmospheric deposition is not double-counted and agrees with ODEQ's response to this comment, which is reproduced below:

"DEQ acknowledges that accounting for atmospheric deposition in the TMDL is complex and the simplification of all sources into Table 10-1 can be confusing. The second paragraph of Section 10 acknowledges that the analysis of the available information did not allow for quantification and distinctions between the various components of atmospheric deposition. The closing sentence of the paragraph clarifies that the broad category of "atmospheric deposition," as it appears in Table 10-1, captures the source categories modeled and described in the TMDL Technical Support Document as "sediment erosion," "surface runoff" and "atmospheric deposition direct to streams." For clarity, particularly with regard to implementation, DEQ used different terminology in the TMDL and WQMP than was used in the TMDL Technical Support Document. DEQ acknowledges that the categories in Table 10-1 are confusing, even with the footnotes which were intended to add clarity. DEQ revised the presentation of category labels in Table 10-1 and added an additional footnote to explain that modeled estimates from the TMDL Technical Support Document for the categories of General Nonpoint Source, Non-Permitted Urban Stormwater and Atmospheric Deposition are combined, although allocations for the three source categories are assigned separately. While atmospheric deposition affects all source categories, it is not double-counted in the allocations, as summarized in the revised Table 10-1 of the November 2019 ODEQ TMDL."

Author Name Thomas E. Whittington

Organization Name ***Oregon Department of Forestry***
Letter ID ***L15***

Comment ID L15-1

Comment Category Forestry

Comment Text
To whom it may concern, The Oregon Department of Forestry would like to refer the EPA to our previously submitted comments concerning the Revised Willamette Basin Mercury TMDL to the Oregon DEQ. The submitted comments can be found at response #54, page 112 by Kyle Abraham, Oregon Department of Forestry in the PDF link:
https://www.oregon.gov/deq/wq/Documents/willHgRevPubComments.pdf.

2.2. "Of the many different types of land use that exist within the Willamette Basin, forestry, agriculture, and urban uses dominate across the basin." (pg. 11) ODF Comment: Please revise this by stating that land-uses that contribute to non-point sources dominate (X%) the total land area of the Willamette Basin. Also, please define non-point sources here.

Response Text
This comment was previously submitted during the response to comment period for ODEQ's September 2019 TMDL. ODEQ revised their TMDL based on this comment as discussed in the response to public comments report under A_K#2: Suggested Change ID #270 (page 232). EPA concurs with ODEQ's response which is reflected in ODEQ's November 2019 TMDL. EPA adopted ODEQ's November 2019 TMDL as Appendix A in EPA's December 2019 TMDL.

In the Executive Summary of ODEQ's November 2019 TMDL, DEQ changed the sentence: "Of the many different types of land use that exist within the Willamette Basin, forestry, agriculture and urban uses dominate across the basin…" to: "Of the many different types of land use that exist within the Willamette Basin, forestry, agriculture and urban uses comprise most of the area within the basin. Management actions on these land uses influence the amount of mercury from these sources that reach streams and rivers in the basin." Point and non-point sources are defined in the Executive Summary of Oregon DEQ's TMDL as well. EPA concurs with ODEQs response, and no further response is needed.

Comment ID L15-2

Comment Category Nonpoint Source

Comment Text
2.3. "…for the eventual attainment of the mercury criterion and, ultimately, full restoration of the beneficial use of fish consumption and protection of aquatic life and wildlife throughout the Willamette Basin." (pgs. 11-12)

ODF Comment: It is ODFs opinion that full restoration of the beneficial use will never be achieved if the issue of the atmospheric deposition of mercury on our state from outside national and international sources is not addressed. At least, an attempt should be made to identify contamination sources within and outside of DEQs sphere of influence to help set reasonable goals for reductions by Designated Management Agencies (DMAs) here in Oregon.

Response Text
EPA acknowledges that it will be challenging to achieve fish tissue concentration targets while mercury continues to be supplied by atmospheric deposition. EPA does believe that reductions in atmospheric deposition will occur over time, as discussed in Section 7.1.1 of the EPA TMDL; however, these reductions may be slow, due in part to the re-emission of previously deposited mercury back to the atmosphere. Unfortunately, much of the atmospheric mercury pool that results in mercury deposition in Oregon arises from global sources that are outside the regulatory purview of either EPA or ODEQ. Nonetheless, Federal regulations implementing the Clean Water Act, as well as Magistrate Judge Acosta's directions for revising the TMDL, require that a TMDL be developed that is consistent with achieving water quality standards to protect designated uses (along with an additional Margin of Safety).

Comment ID L15-3

Comment Category Nonpoint Source

Comment Text
3. STREAM FLOW [Sec. 1.2.4]

ODF Comment: We appreciate the recognition that streamflow is highly modified due to dams and reservoirs with "…unintended consequences that influence water quality." We recommend that this be included in a monitoring program to better understand how this facet influences the mercury cycle in the Willamette basin.

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments, ODEQ explained that "The DMAs and responsible persons who own the largest reservoirs in the basin will conduct initial assessments and monitoring to evaluate factors that are affecting methylation rates, and then develop a plan to reduce those methylation rates. A monitoring program such as the one proposed by the commenter is a reasonable assessment approach but should not postpone taking action to reduce the methylation rate. As discussed in Sections 13, 13.6 and 14 of the TMDL/WQMP, data collection will continue and expanded to allow for further analysis to better represent mercury sources, transport and transformation mechanisms – such as methylation in reservoirs, bioaccumulation, and groundwater mercury concentrations. It is expected that the implementation of the TMDL will be further refined over time as part of an adaptive management process." EPA concurs with ODEQs response, and no further response is needed.

Comment ID L15-4

Comment Category Nonpoint Source

Comment Text
4. EXCESS LOAD [Sec. 7.2]

4.1. "DEQ decided to pool all of the HUC8 data together and calculate a single median for the existing surface water total mercury concentration for the entire Willamette Basin." (pg. 44)

ODF Comment: This is an understandable approach if you tested for and did not find differences between sample sites. If there are particular HUC 8's that are driving the mercury contamination levels in the Willamette Basin it would be important to identify those and focus recovery efforts there. The exclusion of the Coast Fork is an example. Still, it begs the question of whether mercury is a universal issue across the Willamette Basin or is driven by particular HUC 8's deserving a more site-specific

approach. ODF recommends that the core assumption of equal contributions across watersheds be checked as part of implementation monitoring plans.

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. The "single median" approach was a primary reason for EPA's disapproval of the ODEQ TMDL because it did not result in predicted achievement of water quality standards in all listed waterbody segments. EPA's TMDL, therefore, revised the allocations to ensure that water quality standards are predicted to be met in all HUC8 watersheds of the Willamette River Basin. In the November 2019 Response to Comments, ODEQ explained that "Estimation of the particular contribution among the HUC8s will be one of the objectives in the Monitoring and Assessment Strategy." EPA concurs that it would be appropriate to focus efforts on hotspots that drive mercury contamination in the Willamette River Basin and believes that ODEQ's proposed WQMP and commitment to adaptive management will help to facilitate this focus.

Comment ID L15-5

Comment Category Nonpoint Source

Comment Text
5. BENEFICIAL USES [Sec. 2]

5.1. "The revised TMDL for mercury is designed to restore the beneficial use of fishing to the Willamette River and its tributaries." (pg. 23)

ODF Comment: See Executive Summary comments, part 2.3.

Response Text
This comment was submitted by ODF on ODEQ's November 2019 TMDL and it is addressed in the responses to ODF's Executive Summary comments.

Comment ID L15-6

Comment Category Insufficient data and uncertainty in the process

Comment Text
6. SUMMARY OF MERCURY TMDL DEVELOPMENT ANDAPPROACH [Sec. 5]

6.1. Mercury TMDL Approach [Sec. 5.2]: "Within a watershed, wetlands or areas with saturated soils can often provide important locations for methylmercury production. The relative importance of internally produced (within the waterbodies and their sediments) or externally produced (within soils and groundwater prior to reaching waterbodies) sources of methylmercury has not been assessed for the Willamette Basin." (pg. 28)

ODF Comment: Some clarification as to whether the model accounted for this uncertainty, or any way to quantify this uncertainty, would be helpful. ODF recommends this as a monitoring opportunity for DEQ's implementation plan. Further, better understanding the potential linkages between carbon sources in water (dissolved organic carbon and particulate organic carbon) might be one approach to improve understanding of mercury cycling and export, particularly in the forest environment.

Response Text
The uncertainty in the models and how it was accounted for is discussed in Sections 5, 6, 7 and 11 of the ODEQ TMDL and Sections 2, 3, 4 and 5 of the TMDL Technical Support Document. This comment was initially submitted in regard to the July 2019 Public Review Draft. ODEQ added clarifying language to the noted sections of the November 2019 final ODEQ TMDL regarding the conservative assumptions throughout the TMDL evaluations to address uncertainty. ODEQ intends to use monitoring and modeling during implementation, including a better evaluation of reservoir methylation processes, to improve ODEQ's representation of mercury/methylmercury system in the Willamette Basin. In addition, ODEQ's forthcoming Assessment and Monitoring Strategy will identify approaches for continuing to improve understanding of mercury in the Willamette Basin. EPA agrees that a better understanding of organic carbon sources and cycling in water may be useful to improve understanding of mercury cycling and export in the forest environment and encourages ODF to participate in the development of the assessment and monitoring strategy.

Comment ID L15-7

Comment Category General Modeling Issues – Examples

Comment Text
7. EXPLANATION OF MODELS AND CURRENT MERCURY LOAD [Sec. 6]

7.1. Nonpoint source input data development (Sec. 6.1.4.).

ODF Comment: It isn't clear by this description of how non-point sources vs. point sources were distinguished by land-use and how non-point and point sources were teased apart in Table 6-7. Some discussion (here or elsewhere) on the connection between Table 6-7 and Table 1-3 would be beneficial for the reader.

Response Text
The comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments, ODEQ explained that "Point sources are permitted and the information associated with the permit and facility characteristics was used to calculate the point source contribution. The land use was not used to distinguish point sources from nonpoint sources." EPA notes that the land use information shown in Table 1-3 of ODEQ's November 2019 TMDL was used in the process of generating the nonpoint loading rates in Table 6-7. Specifically, the spatial coverage of land use that is summarized in Table 1-3 was used to update the HSPF watershed model, which was then used to estimate average annual surface runoff rates, groundwater discharge, and sediment erosion delivery for each land use type. The process of assigning mercury concentrations to these different loading pathways is described at length in Section 5 of the Technical Support Document (Appendix B to the EPA TMDL).

Comment ID L15-8

Comment Category Nonpoint Source

Comment Text
7.2. Groundwater [Sec. 6.1.4.3]. "As such, this resulted in large loads of total mercury (approximately 17 percent of the total source load to the stream network) estimated from groundwater contributions." (pg. 41)

ODF Comment: ODF recommends that groundwater as a mercury source be included as a key monitoring opportunity in the implementation plan.

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments, ODEQ explained that "DEQ agrees that groundwater source need to be better characterized and intends to use monitoring and modeling during implementation to improve our representation of mercury/methylmercury system in the Willamette Basin." EPA concurs with this response and no further response is needed.

Comment ID L15-9

Comment Category Nonpoint Source

Comment Text
7.3. Current total mercury load estimation [Sec. 6.2]: "The great majority of the load (greater than 95%) is from nonpoint sources…..point sources accounting for less than five percent." ODF Comment: Please be specific: 'Based on the model output, nonpoint sources contributed 95.7% of the total load and point sources contributed 4.3%.'

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments, ODEQ explained that they "…did not make this change. Specificity can imply certainty and DEQ's language comports with the acknowledged uncertainty of the modeled load estimates in a statement conflating the source categories into just two bins – nonpoint and point sources. Table 6-7, directly below the text in the comment, provides the estimated loads from all source categories modeled." EPA concurs with ODEQ's response to this comment and no further response is needed.

Comment ID L15-10

Comment Category Nonpoint Source

Comment Text
8. NONPOINT SOURCES [Sec. 9.2]

8.1. "As noted in Figures 5-17 and 5-18 of the TMDL Technical Support Document, modeling indicates that the source categories of surface runoff and sediment erosion together, contribute approximately 76 percent of the total mercury load to basin streams. These two source categories are implicated in nonpoint source load contributions due to land use management activities (agriculture, forestry, impoundments, water conveyances, background and nonMS4-permitted urban areas), as well as stormwater point source contributions. Figure 5-19 of the TMDL Technical Support Document indicates that 86 percent of surface runoff and 91 percent of sediment erosion may be affected by the natural and anthropogenic activities within the forestry, agriculture and urban development land use areas."

ODF Comment: ODF looks forward to addressing these concerns as part of the implementation plan under the FPA, both with describing its approach to sediment control and with identifying priority areas to clarify areas of uncertainty through monitoring.

Response Text
The comment was resubmitted for the EPA TMDL, although clarification had already been provided in ODEQ's Response to Comments and wording changes had been included in the final ODEQ November 2019 TMDL, which is Appendix A to the EPA TMDL.

"DEQ agrees that identifying priority areas for mercury and sediment movement is an important element of adaptive management and will help nonpoint source DMAs focus efforts and resources." EPA concurs with ODEQ's response and no further response is needed.

Comment ID L15-11

Comment Category Nonpoint Source

Comment Text
9. ALLOCATIONS [Sec. 10]

9.1. "Furthermore, the mercury reduction potential from these sources is high because some activities in the category have not implemented mercury minimization measures and the large aggregated load means that even relatively small percentage reductions would achieve larger quantitative declines in loading. As a result, a large reduction requirement was applied for nonpoint sources generally."

ODF Comment: ODF is curious about which activities in this category have not implemented mercury minimization measures that initiated this comment in the draft TMDL, especially given the linkage to sediment reduction practices. Regardless, ODF under its Forest Practices Act (FPA) administration, Oregon Plan Voluntary measures promotion, and incentive programs has engaged in a robust program to reduce and minimize sediment delivery to waters of the state for decades. We look forward to working with DEQ to report on this program in the implementation plan.

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL and was answered in ODEQ's November 2019 Response to Comments: "DEQ acknowledges that many DMAs have already been implementing programs and best management practices that reduce mercury and sediment movement in the Willamette Basin. DEQ anticipates there are different or additional measures that can be taken in order to achieve further reductions. Examples of measures that nonpoint sources can focus on include but are not limited to increased monitoring and analysis of BMP effectiveness in reducing sediment movement, increased efforts to protect and enhance riparian areas, increased efforts to reduce erosion and sediment movement from road networks. DEQ also anticipates that the Assessment and Monitoring Strategy DEQ and EPA are developing for the Willamette Basin will help to reduce uncertainty in DEQ's representation of mercury in the basin, as well as support more robust decision-making regarding implementation of the Mercury TMDL." EPA concurs with ODEQ's response, and no further response is needed.

Comment ID L15-12

Comment Category Non-point Source Load Allocations

Comment Text
9.2. Instream surrogate allocations [Section 10.3] and [Appendix H]

9.2.1. ODF Comment: These comments also cover Section 14.1.4. DEQ has already described the great level of uncertainty in determining anthropogenic versus natural sediment sources in the Willamette Basin, and the uncertainty in understanding the same for THg and MeHg. While we appreciate the level of detail provided on the THg and TSS analysis at the end of this document (Appendix H), moving to a surrogate of an already highly uncertain metric creates an unacceptable level of compounded uncertainty. The R2 values and scatter plots of log-transformed data suggest a weak correlation between THg and TSS. While adding a random effect (i.e., site) does increase the R2 value, the ecological/biochemical significance of including site as a factor in the model is unclear. Furthermore,

DEQ decided to exclude non-detect data (65% of the samples) from the surrogate analysis, while similar analyses in other studies (Eckley et al. 2018) included non-detect data. For these reasons, ODF does not support the use of TSS as a surrogate for mercury concentrations at this time given our current uncertainty of this relationship. We recommend further exploration of this proposed surrogate as part of the monitoring in the implementation plan. We look forward to supporting you in this endeavor.

Response Text
This comment was originally submitted on the July 2019 Public Review Draft of the ODEQ TMDL; however, the answer in ODEQ's Response to Comments document addressed only the final sentences of the full comment.

EPA's 2019 TMDL document does not address use of TSS as a surrogate and the EPA TMDL document only refers to TSS in the context of Reasonable Assurances, where it is noted that "ODEQ's review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading." ODEQ's TMDL, which is attached to the EPA TMDL as Appendix A, does incorporate a discussion of instream surrogate targets, in Section 10.3, and proposes TSS as a surrogate "…to supplement but not supplant the allocations and TMDL water column target for evaluating TMDL implementation effectiveness." The TSS surrogate is thus properly seen as part of the TMDL implementation strategy, which is determined by ODEQ.

In response to this comment, ODEQ revised Section 10.3 and Appendix G (formerly Appendix H) of their November 2019 TMDL with clarifications on the strong relationship ODEQ's analysis found between TSS and total mercury measurements in the Willamette River Basin. ODEQ also describes the intended use of TSS surrogate targets in Section 10.3 as one tool for evaluating TMDL implementation effectiveness.

Comment ID L15-13

Comment Category Water Quality Management Plan

Comment Text
10. WATER QUALITY MANAGEMENT PLAN [SECTION 13]

10.1. Implementation plans [Section 13.1.1]

10.1.1. "Implementation plans must be posted to a publicly accessible website, unless the DMA does not have a website."

ODF Comment: For one-stop shopping for users of information related to a TMDL, it would be more efficient for implementation plans to be posted on DEQs webpage under the relevant TMDL. It is not intuitive to look to a multitude of other agency and DMA websites for implementation plan information.

Response Text
This comment was previously submitted on ODEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments (A_K#12: Suggested Change ID #280), ODEQ agreed "…that providing copies or links to DMA plans on DEQ's website would be an improvement and will consider moving forward with this recommendation outside of the Mercury TMDL process. DEQ also concludes that it is important for DMAs to make their plans available on their own websites as they may incur traffic from online users that may not access DEQ's website." Implementation planning is outside the scope of EPA's TMDL.

Comment ID L15-14

Comment Category Water Quality Management Plan

Comment Text

10.1.2. Proposed management strategies [Section 13.3]

10.1.2.1. "For some of the DMAs, DEQ included a list of management measures as an implementation or "good practice" baseline. The list is not intended to be comprehensive or prescriptive and DMAs and responsible persons may propose alternative approaches or management strategies."

ODF Comment: If the purpose of the Implementation Plan is to describe what the final implementation measures are, it is unclear what the purpose of this section is and could be confusing for readers. For example, if a reader sees a proposed practice for a DMA identified in this section but does not see it in the final implementation plan, the reader may perceive that the implementation plan is missing this element even if the DEQ agrees with the DMA that different management practice(s) will best achieve the outcome.

Response Text

This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL in response. (A_K#13: Suggested Change ID #281). ODEQ agreed with the comment and revised language in the introductory paragraph of Section 13.3 of the ODEQ 2019 TMDL to provide more clarity about the management measures described in this section. Section 13 of the ODEQ November 2019 TMDL focuses on the WQMP which is outside the scope of EPA's TMDL.

Comment ID L15-15

Comment Category Other

Comment Text

10.1.3. Oregon Department of Forestry [Section 13.3.1.5]

10.1.3.1. ODF Rules Related to Water Quality and Erosion Control [Table 13- 4].

ODF Comment: Recommend including Reforestation (OAR 629-610- 0000 through 629-610-0090) and Afforestation rules (OAR 629-611- 0000 through 629-611-0020). ODF is also considering where and how to address fire prevention, managed fire, and wildfire as an aspect of this TMDL and is looking forward to having these discussions with DEQ.

Response Text

The comment was resubmitted for the EPA TMDL, although clarification had already been provided in ODEQ's Response to Comments and wording changes had been included in the final ODEQ November 2019 TMDL, which is Appendix A to the EPA TMDL.

In response, ODEQ included references to the cited rules in Table 13-4, of ODEQ's November 2019 TMDL which is identified as Appendix A in EPA' December 2019 TMDL.

EPA encourages ODF to work with ODEQ to incorporate aspects of fire prevention, managed fire, and wildfire in ODEQ's Water Quality Management Plan. No additional response is needed by EPA.

Comment ID L15-16

Comment Category Other

Comment Text
10.1.3.2. Table Pollutant sources and example management strategies to address sediment and mercury and supporting section language [Table 13-5].

ODF Comment: The ODF section and this table provide a good summary of our strategies, thank you. Some additional recommendations:

10.1.3.2.1. Change references to "Prescriptive rules for forest operations" to "Prescriptive and outcome-based rules for forest operations" (row 1) to better reflect the different approaches used in the FPA. Some rules are indeed prescriptive but others describe an outcome that landowners and operators can use a variety of means to achieve.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested changes. DEQ addressed the question in its response to the commenter during its Response to Comments (RTC) process. The comment focuses on TMDL implementation which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-17

Comment Category Other

Comment Text
10.1.3.2.3. Change reference to "Partnership for Forestry Education (last row)".

10.1.3.2.4. Reference to ODF Compliance Audits (rows 1 and 11). Thank you for including this important ODF program.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested change. DEQ addressed the question in its response to the commenter during its RTC process. The comment focuses on TMDL implementation which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-18

Comment Category Other

Comment Text
10.1.3.2.2. Please add a bullet to row 4 (roads) with text: "Cease active road use during wet weather when roads have deep ruts or covered by a layer of mud that results in visible increases in stream turbidity (OAR 629-625-0700).

10.1.3.2.5. Hydrologically-connected roads, potentially unstable road prisms, and metrics informing at-risk stream crossings are already included in the compliance audit protocol. Road inventories are also included as an Oregon Plan voluntary measure. We look forward to discussions with DEQ about how existing programs can address these concerns as part of the implementation plan.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested changes. DEQ addressed the question in its response to the commenter during its RTC process. The comment focuses on TMDL implementation details which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-19

Comment Category Other

Comment Text
10.1.3.2.6. For tethered logging, ODF has already created guidance for landowners and operators for the information required to support a Plan for Alternate Practice (PFAP) to operate this new cutting, and sometimes yarding, system on steep slopes. We look forward to discussing with DEQ the information provided in the PFAP and how this existing business process can address any concerns.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "DEQ agrees that existing programs may be able to facilitate and support implementation of this TMDL. DEQ also looks forward to continued collaboration between agencies." DEQ addressed the question in its response to the commenter during its RTC process. The comment focuses on TMDL implementation which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-20

Comment Category Other

Comment Text
10.1.3.2.7. "Reports or other documents used for ODF TMDL reporting should be made available on a publicly accessible website."

ODF comment: We respectfully recommend that it would be less confusing to the public consuming information about TMDLs that all supporting information be posted in a single location on the DEQ website rather than multiple agency websites.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "DEQ agrees that providing copies or links to DMA plans on DEQ's website would be an improvement and will consider moving forward with this recommendation outside of the Mercury TMDL process. DEQ also concludes that it is important for DMAs to make their plans available on their own websites as they may incur traffic from online users that may not access DEQ's website."

DEQ addressed the question in its response to the commenter during its RTC process. The comment focuses on TMDL implementation which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-21

Comment Category Other

Comment Text

10.1.4. Reservoir management [Section 13.3.1.22] 10.1.4.1. ODF Comment: ODF is interested in the recommended monitoring and calibration efforts in this section as a model for what monitoring would be of highest interest for DEQ in the non-federal forest environment. We look forward to having this discussion with DEQ.

Response Text

This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "This is one of the topics that DEQ will work to better understand during implementation through monitoring, assessment and updates to the analysis, which includes modeling. DEQ is working with EPA to develop a draft Assessment and Monitoring Strategy. DEQ will work with the DMAs, including ODF, to refine this Strategy and for identifying priorities for better understanding methylmercury and total mercury in the basin that can then be used for adaptive management of the TMDL." DEQ addressed the comment during the RTC process for its November 2019 TMDL. The specific comment pertains to details in the WQMP which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-22

Comment Category Other

Comment Text

10.1.5. Nonpoint Source DMAs and responsible persons [Section 13.4.1]

10.1.5.1. ODF Comment: ODF recognizes the 18 month timeline but also appreciates the expressed flexibility for setting specific timelines in the plan. ODF business reporting processes are currently focused on statewide or FPA administrative regions and districts: we do not currently have a mechanism to report on watershed basins. We look forward to discussions with DEQ on the most efficient and effective way to create reports that meet TMDL needs. ODF also appreciates the specific mention of adaptive management. Many of the items in the 2016 ODF Monitoring Strategy relate to issues that are likely significant for this TMDL. We look forward to discussing monitoring and adaptive management processes with DEQ for inclusion in the implementation plan. We see this same idea mentioned in the draft TMDL section "14.1.4 Evaluate implementation plans and progress".

Response Text

This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "DEQ appreciates ODF's participation and engagement during the TMDL development process and looks forward to collaborating with ODF after TMDL issuance to develop and refine monitoring and reporting approaches." The comment focuses on TMDL implementation which is not a component of EPA's TMDL. DEQ addressed the question in its response to the commenter during its RTC process. The comment is on DEQ's WQMP which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-23

Comment Category Other

Comment Text

10.1.6. Timeline for attainment of water quality standards [Section 13.5]

10.1.6.1. ODF Comment: ODF appreciates the recognition of global mercury emissions and air deposition as the primary mercury source in Oregon. While we recognize the limited regulatory sphere that DEQ has for this issue, Oregon has an opportunity to create messaging and take action on a state, regional, and national level messaging about how mercury contamination is affecting our state, our citizens, its business sectors, and its environment. We are currently taking these steps with climate change, another global issue, and mercury contamination is strongly linked with climate change in many ways (e.g., coal emissions). ODF is looking forward to discussing with DEQ about messaging and other strategies to influence state, regional, national, and global actions to reduce mercury contamination over time.

Response Text

This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the ODEQ's November 2019 Response to Comments noted that ODEQ agreed with the statement. DEQ addressed the question in its response to the commenter during its RTC process. The comment is the WQMP which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-24

Comment Category Other

Comment Text

10.1.6.2. ODF Comment: ODF also appreciates DEQs recognition that "…continued air emissions from global sources may offset these efforts". ODF recommends that DEQ engage in monitoring to track and distinguish, by monitoring and modeling, in- versus out-of-state air contamination rates in order to understand what is driving mercury contamination rates in our state. If nonpoint implementation plans are conducted in a timely fashion, the failure of recovery may not be due to these sources but due to natural runoff and erosion from unavoidable air deposition.

Response Text

This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "This is one of the topics that DEQ will work to better understand during implementation through monitoring, assessment and updates to the analysis, which includes modeling. DEQ is working with EPA to develop a draft Assessment and Monitoring Strategy to better understand the methylmercury and total mercury in the basin. The information from this Strategy will be used for adaptive management." DEQ addressed the question in its response to the commenter during its RTC process. No additional response is needed by EPA since the comment is on the WQMP.

Comment ID L15-25

Comment Category Other

Comment Text

10.1.6.3. ODF Comment: An ODF and DEQ collaborative approach to setting reasonable and attainable expectations for forest practices is the best way to avoid an adversarial approach. Developing a full accounting of the State of Oregon Department of Environmental Quality 118 mercury cycle in Oregon

will provide the best available information for responding to this issue. In the absence of information, an adaptive management approach based on monitoring is an effective way to set reasonable expectations.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "DEQ agrees and anticipates that the draft Assessment and Monitoring Strategy DEQ and EPA are developing for the Willamette Basin will help to reduce uncertainty in DEQ's representation of mercury in the basin, as well as support more robust decision-making regarding implementation of the Mercury TMDL. DEQ plans to use adaptive management during implementation of the TMDL. Use of adaptive management is briefly described in section 13.1.2 of the WQMP." The comment focuses on TMDL implementation and adaptive management, elements of DEQ's WQMP that are not part of EPA's review. DEQ addressed the question in its response to the commenter during its RTC process. No additional response is needed by EPA since the comment is on the WQMP.

Comment ID L15-26

Comment Category Other

Comment Text
10.1.6.4. ODF Comment: We recommend that references to the sphere of the FPA relating to "private" forestlands be changed to "non-federal" forestlands to account for its jurisdiction over other public lands such as those owned by the state or counties.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested revision. DEQ addressed the question in its response to the commenter during its RTC process. The comment is on the WQMP which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-27

Comment Category Other

Comment Text
10.1.7. Monitoring and evaluation [Section 13.6]

10.1.7.1. ODF Comment: ODF is curious about the "Assessment and Monitoring Strategy to Support Implementation of Mercury Total Maximum Daily Loads for the Willamette Basin" that DEQ is building with EPA. If this assessment will include expectations for non-federal forestlands, we look forward to being included in this conversation.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "Yes, DEQ will work with DMAs where possible to collect information, including monitoring data, to improve our representation of mercury/methylmercury system in the Willamette Basin. In addition, DEQ is working with EPA to develop the draft Assessment and Monitoring Strategy and will seek DMA input on this Strategy. DEQ expects the Strategy to help guide efforts on better understanding mercury in the basin." DEQ addressed the question in its response to the commenter during its RTC process. No additional response is needed by EPA since the comment is on the WQMP.

Comment ID L15-28

Comment Category Other

Comment Text
10.1.8. Costs and funding [Section 13.7]

10.1.8.1. Partial list of funding programs available in the Willamette Basin that may be used to support planning and implementation activities that benefit water quality. [Table 13-22]

ODF Comments:

10.1.8.1.1. Please add ODF to the list of agencies involved in the EQIP Program.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested revision. The comment is on the WQMP (specific TMDL implementation activities) which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-29

Comment Category Other

Comment Text
10.1.8.1.2. Please add the Emergency Forest Restoration Program (EFRP). The EFRP helps the owners of non-industrial private forests restore forest health damaged by natural disasters. The EFRP does this by authorizing payments to owners of private forests to restore disaster damaged forests. This program is implemented by the local Farm Services Agency County Committee, along with ODF and likely others, for all disasters with the exceptions of drought and insect infestations. In the case of drought or an insect infestation, the national FSA office authorizes EFRP implementation.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019). In response, ODEQ made the suggested revision. The comment is on the WQMP which is not a component of EPA's TMDL. No additional response is needed by EPA.

Comment ID L15-30

Comment Category Other

Comment Text
10.1.9. Evaluate implementation plans and progress [Section 14.1.4]

10.1.9.1. "DEQ is proposing TSS as a surrogate measure for evaluating implementation of the allocations for the mainstem Willamette River and its tributaries. TSS will be used for evaluating the effectiveness of implementation plans." ODF Comment: See ODF Comments on Section 10.3.

Response Text
This comment was previously submitted on the ODEQ Public Review Draft of the TMDL (July 2019) and the following response was provided in ODEQ's November 2019 Response to Comments: "DEQ revised Section 10.3 and Appendix H with clarifications on the strong relationship DEQ's analysis found between Willamette Basin TSS and total mercury measurements. In Section 10.3 DEQ established TSS surrogate

targets and their use, which will be used as one tool for evaluating TMDL implementation effectiveness. The use of TSS surrogate targets and other tools will also be described in the Assessment and Monitoring Strategy that is being jointly developed by DEQ and EPA, an overview of which is provided in Sections 13.6 and 14.1.6." DEQ's use of TSS as a surrogate measure is a component of implementation monitoring, a component that is not part of EPA's TMDL. DEQ addressed the question in its response to the commenter during its RTC process. No additional response is needed by EPA.

Comment ID L15-31

Comment Category General non-point sources

Comment Text

10.2. Dominance of atmospheric deposition of mercury [Section 14.2]

10.2.1. "...DEQ opted to allocate aggregated nonpoint source loads and point source wasteloads using the proportionality approach." ODF Comment: In the absence of better information, we can understand this approach. It is recommended, however, that validation monitoring of this core assumption be incorporated into monitoring plans. ODF looks forward to discussing how this may be achieved.

Response Text

EPA thanks ODF for the comment. ODEQ has indicated that it will develop a monitoring plan as part of its Water Quality Management Plan. EPA encourages ODF to participate in the stakeholder discussions leading to the development of the monitoring plan.

Author Name Lauren Haney

Organization Name ***Clackamas County Water Environment Services***

Letter ID ***L16***

Comment ID L16-1

Comment Category TMDL Implementation

Comment Text

As holders of several NPDES permits, which continue to tightly regulate any discharges that contain mercury, we want to remind EPA that the vast majority of the mercury discharged into the Willamette River and tributaries is coming from non-point sources, such as erosion of soil. According to the Oregon DEQ, all of the wastewater treatment plants combined in the entire watershed only discharge about 0.8% of the mercury in the watershed. We urge the EPA and state agencies to focus their TMDL implementation efforts on reducing these much larger sources of mercury. Even if smaller sources of mercury, like municipal storm systems, factories, and wastewater treatment plants, were to somehow eliminate their discharges of mercury, this would only yield a tiny reduction in concentration of methylmercury in the tissue of fish which live in the river and its tributaries. The amount of mercury in resident fish tissue in the Willamette River watershed will not be substantially reduced until after the largest sources of mercury have been controlled.

Response Text

EPA agrees that non-point sources, including surface runoff of atmospherically deposited mercury, sediment erosion, and resurfacing groundwater are higher contributors of mercury to waterbodies in the Willamette River Basin. Allocations established in the TMDL reflect this distribution because higher reductions are generally required for non-point sources compared to point sources. The relative contributions of point versus non-point source mercury loading, however, vary for different catchments in the Willamette River Basin. For example, NPDES permitted POTWs and industrial wastewater dischargers in the Lower Willamette contribute about 11% and NPDES permitted stormwater sources contribute about 21% of the THg load in that catchment. The TMDL is developed to attain standards in waterbodies in the Willamette River Basin. Reductions from point sources are necessary to achieve water column and fish tissue standards.

Comment ID L16-2

Comment Category Point Source Wasteload Allocations

Comment Text

Regarding the EPA's analytical approach, the DEQ's draft 2019 TMDL established the TMDL load capacity by calculating an existing Willamette basin-wide median instream total mercury concentration (1.2 ng/L) and determining that 88% reduction was needed to achieve the new TMDL's instream target of 0.14 ng/L. EPA's December 2019 draft TMDL rejected the basin-wide approach and proposed additional mercury reductions in five of the Willamette River watersheds twelve HUC 8 sub-basins (examples of HUC 8 sub-basins include the Tualatin River and the Clackamas River). The amount of flow which is generated within these twelve HUC 8 sub-basins varies greatly; in any given year, the Clackamas River generates far more acre-feet of water compared to the Tualatin River, due to the fact that the Clackamas River drains a large section of the west side of the Cascade mountains. A discharger in a HUC 8 sub-basin which possesses more clean flow from mountainous areas such as the Clackamas River will have more dilution to assist with attaining the new TMDL's instream target of 0.14 ng/L. Dischargers in

other HUC 8 sub-basins, such as the Kellogg WRRF in the "Lower Willamette", which generates much less flow that some other HUC 8 sub-basins, are penalized with very high and potentially unattainable mercury reductions. Furthermore, dischargers in some places, such as the Kellogg WRRF in the "Lower Willamette", depend on a river which already has an elevated level of instream mercury due to numerous upstream sources, and as a result, EPA proposes to apply tighter restrictions to sources who are located on the lower Willamette River. Discriminating against dischargers based on their location, such as those who are downstream in the Portland metro area, in this TMDL is unfair. The EPA should employ mercury reduction allocations that are fair and reasonable, by allocating the benefits of the total river's capacity to all dischargers equally, rather than frontloading the ability to discharge to upriver points and overburdening lower river dischargers.

Response Text
The EPA 2019 TMDL is developed to achieve the 0.14 ng/l target within each subbasin, based on reductions of existing concentrations and sources in each subbasin. It is therefore assumed in the TMDL model that the TMDL target is met at the upstream boundary of the Lower Willamette subbasin. Source reductions in the Lower Willamette, both point and nonpoint, are established to reduce sources within the Lower Willamette such that the target will be met there as well. There is no bias towards greater reduction of sources in the lower portion of the Basin, as reductions by subbasin are set to meet the TMDL target given the sources within each subbasin. All subbasins require significant reductions. Greater reductions for both point and nonpoint sources are called for where concentrations are higher, and where sector loading is higher. Point source reductions are higher in the Lower Willamette and Middle Willamette subbasins because greater overall reductions are needed throughout these subbasins, and the point source contributions are greater in these subbasins than in others. The point source relative contribution in the Lower Willamette subbasin is the highest of any subbasins, and accounts for 11% of the overall load in the catchment. Point source reductions in the Lower Willamette (65%), are less than reductions established for the nonpoint source and stormwater categories (97%).

Comment ID L16-3

Comment Category Point Source Wasteload Allocations

Comment Text
In addition, EPA's Willamette River Mercury TMDL says NPDES Permitted Major Wastewater Discharges in the Lower Willamette sub-section of the watershed shall reduce their total mercury concentration by 65%. Most of the other sources of mercury in this portion of the watershed – such as NPDES Permitted Stormwater Point Source Discharges – were also notified in the TMDL of EPA's intent to require a greater percentage reduction compared to Oregon DEQ's Nov. 22, 2019 Mercury TMDL. But EPA's TMDL notifies NPDES Permitted Industrial Dischargers that they will only need to reduce their discharges of mercury by 10% in this same HUC 8 watershed. This approach seems arbitrary in that it treats dischargers within the same sub-basin differently. The Oregon DEQ's approach was more predictable, consistent, and fair.

Response Text
Allocations in the ODEQ 2019 TMDL would not achieve the mercury target in all subbasins with mercury impaired waterbodies, therefore greater reductions were needed in order to achieve the target and meet water quality standards. In many cases the point sources are relatively small contributors, though municipal stormwater generally contributes greater loading. In some subbasins for which the TMDL target would not be achieved in the ODEQ TMDL, stormwater and other point sources are more important contributors. Given the need for an overall significant reduction in mercury loading from all

watersheds, in places where point sources were greater contributors, it was necessary to establish greater reductions from these facilities in order to meet the TMDL load capacity.

In revising the Willamette River Basin (WRB) TMDL, EPA only made changes to allocations necessary to achieve the TMDL target in each subbasin. In doing so, EPA considered both the load and discharge concentration of point sources, focusing reductions on those sources which have higher loading and/or discharge concentration. The industrial dischargers currently account for <1 % of the load in the Lower Willamette subbasin. Consequently, requiring greater reductions from this sub-sector will have very small impact on mercury loading, and EPA therefore determined to retain ODEQs Wasteload Allocation (WLA) of 10% for this sector. The POTWs on the other hand, accounted for 11% of the subbasin mercury load. Consequently, EPA increased the reduction from this sector from 10% to 65%. The nonpoint source category accounted for 68% of the load, and their reduction percent was increased from 88% to 97%.

Comment ID L16-4

Comment Category Reasonable Assurance

Comment Text

Regarding the required reductions of mercury in stormwater and wastewater discharges, it appears that the TMDL was developed based on information gathered from 2000-2006 through various sources. That data set was used to establish the baseline targets for mercury reduction that have been pursued by DEQ and regulated entities. The additional information gathered since then has been used to enhance, but not replace, that baseline set. Therefore, the rulemaking process necessarily requires that the 2006 baseline set of data be the starting point for measuring compliance with the TMDL (the “2006 Baseline”). This is not clearly stated in the TMDL. The EPA in the “Reasonable Assurances” section of the TMDL should clarify this assumption when discussing progress already made by Oregon DEQ and regulated entities in reducing mercury discharges to the river. This would more clearly support EPA’s assertion that water quality goals will be met by the actions proposed in the Oregon DEQ Water Quality Management Plan for the Willamette Mercury TMDL.

Response Text

The TMDL did include data collected between 2002-2006; however, newer data through 2019 were incorporated as shown in Figure 2-2 of the Technical Support Document. The years with the most water column THg samples were 2007, 2008, and 2014, and the year with the most fish tissue records was 2011. Recent records were also applied to quantify loads from stormwater and wastewater dischargers. For example, wet atmospheric deposition of mercury grids from 2000 to 2013 were applied in the Mass Balance Model to determine loads associated with surface runoff as discussed in Section 5.3.1 of the Technical Support Document. Records available or provided by Municipal Separate Storm Sewer Systems (MS4s), POTWs, industrial dischargers, and mines from 2002 to 2019 were used to quantify loads from those sources. Thus, data from 2002-2019 were combined to determine source loads and required reductions for both ODEQ’s TMDL and EPA’s TMDL, and this period will serve as the baseline for measuring compliance.

Author Name Sharla Moffett

Organization Name ***Oregon Business & Industry***

Letter ID ***L17***

Comment ID L17-1

Comment Category Lacks sensitivity analysis

Comment Text

OBI had significant reservations with the underlying technical analysis and the layering of conservative assumptions made by DEQ in its original TMDL and adopted by EPA in its TMDL. EPA has failed to address the numerous technical flaws with DEQ's underlying analysis, which has been the focus of substantial technical review. Oregon Farm Bureau, Oregon Forest & Industries Council and Oregon Association of Nurseries carried out considerable analyses of the modeling in the Technical Support Document, and we refer you to the complete technical comments submitted in September 2019 (attached). We would, however, like to highlight a few of the concerns:

• No sensitivity analyses were completed. This could produce a variance in the Food Web Model's (FWM) biomagnification factor resulting in unnecessarily stringent load and wasteload allocations.

Response Text

The introductory statement of this comment implies that comments contained in Oregon Farm Bureau, Oregon Forest & Industries Council and Oregon Association of Nurseries prior technical comments were not considered. Those comments summarized earlier comments from OBI, which were addressed in the ODEQ November 2019 Response to Comments document.

EPA disagrees with the statement that no sensitivity analysis was performed. The Food Web Model approach to get values of the biomagnification factor for the different fish species explicitly incorporated the variation model parameters by using the probabilistic approach in the Monte Carlo simulation, which is itself a sensitivity analysis. The model parameters and how they were simulated in the Monte Carlo application are listed in Table 3-2 in the Technical Support Document. Also, the response of the model to these variations is discussed in Section 3.6 of the Technical Support Document. Some key insights about model parameters are provided in the discussion. For example, specification of the distribution of exposure concentrations is a primary factor controlling the tails of the cumulative distribution functions used in the Food Web Model simulations.

Comment ID L17-2

Comment Category Food Web Model

Comment Text

The modeled fish tissue mercury concentrations do not appear to fully support the FWM calibration for the Northern Pikeminnow making target concentrations of Total Mercury (THg) questionable.

Response Text

This comment refers to the Technical Support Document (TSD), attached to the EPA TMDL as Appendix B.

The comment does not provide any specific detail to support the contention that the modeled concentrations "…do not appear to fully support the Food Web Model (FWM) calibration for the

Northern Pikeminnow". However, EPA acknowledges that, like any model, the FWM is an approximation of observed conditions. The FWM was calibrated by attempting to match the cumulative distribution functions generated by the FWM to those in observed data (TSD Figure 3-4) and the TSD notes that "…the fit for Northern Pikeminnow (NPM) is not perfect but is reasonable." TSD Figure 3-4 shows that the match between model and data remains within 95% confidence limits from the 50th to 70th percentile and is, thus, acceptable for the median of the distribution (50th percentile), which is the basis for estimating the THg target. TSD Figure 3-6 shows that the relationship between fish length and mercury tissue concentration is reasonably well reproduced by the model. Finally, the Bioaccumulation factor (BAF) simulated for NPM in the FWM is well within the 95% confidence limits of reported BAF values for Trophic Level 4 fish species. EPA believes that the discrepancies between the model and observed fish tissue data in the tails of the distribution are attributable to use of a steady-state bioaccumulation model to approximate the results of a dynamic relationship between exposure concentration and body burden, along with other simplifying assumptions regarding mercury uptake and depuration. These issues are discussed at length in the TSD.

EPA acknowledges that there is uncertainty in the estimated relationship between NPM tissue concentrations of mercury and exposure concentrations, but not significant bias. EPA concludes that the FWM model provides a reasonable and best-available relationship between exposure concentrations and fish tissue mercury concentrations and thus provides a reasonable basis for developing the THg targets.

Comment ID L17-3

Comment Category Applicable numeric criteria

Comment Text

The THg concentration appears to lack certainty, as alternative approaches could be employed for determining input parameters and result in a different target THg concentration.

Response Text

EPA acknowledges that the linkage analysis for the TMDL includes uncertainty, as is the case with all modeling analyses. Federal regulations require that the TMDL be developed despite uncertainty in the analysis and the presence of such uncertainty does not remove EPA's obligation to establish the TMDL at levels sufficient to meet water quality standards. As noted at 40 CFR 130.2(g), load allocations for nonpoint sources "…are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." The Clean Water Act and 40 CFR 130.7(c)(1) also require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." Different parameter values would indeed result in different target THg concentrations. This is directly addressed in Tables 3-3, 3-4, and 4-4 of the Technical Support Document, in which Monte Carlo analysis is used to present the distribution of biomagnification factors, fish tissue concentrations, and corresponding water column concentrations.

Comment ID L17-4

Comment Category Mercury Translator

Comment Text

The Mercury Translator Model introduces further uncertainty as its methodology determined a target concentration of THg in the water column from the dissolved methylmercury input parameter.

Response Text
EPA acknowledges that the translation between total mercury (THg) and dissolved methylmercury is a source of uncertainty in the TMDL calculations. The pollutant addressed by this TMDL is total mercury. However, food chain bioaccumulation, which results in elevated fish tissue concentrations of mercury, is driven primarily by dissolved methylmercury, most of which is derived from bacterial transformation of ionic mercury in the environment. It is, therefore, necessary to develop a translation between total mercury and methylmercury concentrations to establish a causal linkage between total mercury loads in the watershed and impairment based on fish tissue concentrations of mercury.

Comment ID L17-5

Comment Category Mass Balance Model/HSPF

Comment Text
The Mass Balance Model (MBM) employs an additional three models to provide input values and data comparisons for calculating present-day mercury contributions. Using modeling outputs as subsequent model inputs further compounds the magnitude of unreliability in the estimates.

Response Text
Developing a TMDL requires establishing a linkage between the impairment and the pollutant load sources causing the impairment. The linkage analysis is needed to estimate the amount of reduction in loads that would be required to achieve water quality standards. For the Willamette Mercury TMDL, the linkage between sources of total mercury load and elevated fish tissue concentrations of mercury is complex, including the release of mercury loads to waterbodies, fate and transport in the hydrologic network, transformations between total and methylmercury, entry of methylmercury into the food chain, and bioaccumulation within the food chain to higher trophic levels. EPA acknowledges that representing this complex causal chain increases uncertainty in the estimates. However, it is also necessary to represent all the links in the causal chain (to the best of current ability) to establish the TMDL. The statement that the MBM's use of "…an additional three models to provide input values…" and that this "…compounds the magnitude of unreliability in the estimates…" is misleading. Rather than using multiple linked models, EPA could have chosen to combine all of the steps in the linkage analysis in a single, unified model - which would have no impact on the total uncertainty in the estimates.

Comment ID L17-6

Comment Category Margin of Safety

Comment Text
EPA also adopted, without question, DEQ's "margin of safety." DEQ employs three distinct elements in its calculation for a margin of safety:

• The use of the Northern Pikeminnow as an efficient bioaccumulator of mercury;

• The method of calculating the Food Web Model which results in a lower value than the average concentration; and

• The use of total mercury concentrations in fish tissue rather than methylmercury in the water quality criterion.

Pursuant to 33 U.S.C. § 1313(d)(c), the margin of safety takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. It is OBI's position that DEQ's analysis is flawed and the load and wasteload allocations are far more stringent than necessary. If

EPA is going to issue its own TMDL, EPA cannot simply adopt DEQ's flawed analysis. EPA must undertake its own analysis, fully explain the rationale behind its approach and assess the likely impact that each element would have, as well as the cumulative impacts.

Response Text
The Clean Water Act and 40 CFR 130.7(c)(1) require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS can be either explicit, through allocation of a portion of the loading capacity, or implicit, through use of conservative assumptions in the TMDL analysis or in developing a TMDL target, or both.

The claim that "EPA also adopted, without question, DEQ's 'margin of safety'" is incorrect. EPA reviewed the MOS discussion provided in ODEQ's November 2019 TMDL and accepted only the first and third of the three components of the ODEQ MOS. EPA rejected the component of the MOS regarding the method of calculating the Food Web Model. However, EPA also added an additional MOS component, as described in Section 9 of the EPA TMDL:

"3. Needed reductions in loads are based on comparing water column mercury targets to ambient monitoring data. Those monitoring data are available through 2011 in only 9 of the 12 HUC8 watersheds and thus do not incorporate any reductions in mercury loading that have occurred since 2011. Data presented in ODEQ's 2019 TMDL (p. 37) indicate that mercury concentrations have been declining in more recent years (2012 – 2019) in the Tualatin and Lower Willamette subbasins."

With these modifications, EPA found that the components of the implicit MOS account for any lack of knowledge or uncertainties concerning the relationship between pollutant loading and receiving water quality and that the MOS is thus approvable.

Comment ID L17-7

Comment Category TSS as surrogate

Comment Text
EPA also adopted DEQ's use of TSS as a surrogate. The TMDL does not sufficiently explain whether TSS is the best and most accurate surrogate that could be utilized and whether other surrogate options exist. The TMDL must explain EPA's rationale for the selection of TSS as the preferred surrogate for THg.

Response Text
EPA's 2019 TMDL document does not discuss use of TSS as a surrogate. Indeed, the EPA TMDL document mentions TSS only once, in the context of Reasonable Assurances, where it is noted that "ODEQ's review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading."

ODEQ's TMDL, which is attached to the EPA TMDL as Appendix A, does incorporate a discussion of instream surrogate targets, in Section 10.3, and proposes TSS as a surrogate "…to supplement but not supplant the allocations and TMDL water column target for evaluating TMDL implementation effectiveness." The TSS surrogate is thus properly seen as part of the TMDL implementation strategy, as determined by ODEQ.

EPA does concur that TSS is an appropriate surrogate for mercury load during high TSS, high flow conditions because a large portion of the total mercury load to the waterbodies of the Willamette River basin is derived from mercury stored in the soil matrix that is delivered to the waterbodies via sediment

erosion. The empirical analysis conducted by ODEQ (Appendix G of ODEQ's November 2019 TMDL) confirms a strong correlation between TSS and total mercury concentrations. It is thus reasonable to choose TSS as a surrogate for mercury loading.

The primary reason for choosing TSS as the recommended surrogate is that it can be analyzed quickly and at low relative cost compared to the high expense and stringent analytical requirements for mercury analyses. Use of TSS as a surrogate can thus provide a cost-effective way to track progress in reducing sediment-associated mercury loads as well as to indicate potential problem areas where more expensive mercury analyses may be needed.

EPA acknowledges that surrogates other than TSS could be used in the implementation plan for the TMDL. ODEQ also evaluated use of turbidity and suspended sediment concentration (SSC) as surrogates, but reportedly selected TSS as the best surrogate choice because it combines a proven correlation to THg concentration with low cost and ease of analysis.

Comment ID L17-8

Comment Category Point Source Wasteload Allocations

Comment Text

EPA's proposed TMDL takes DEQ's already very conservative load and wasteload allocations and makes them even more stringent in several of the subbasins without any rational basis. EPA concedes that the dominant source of mercury stems from wet deposition of mercury from global anthropogenic sources. EPA and DEQ acknowledge that even the complete elimination of the estimated 4% of mercury contributed to the Willamette River and its tributaries from wastewater and municipal stormwater is unlikely to result in a measurable reduction of mercury. Nevertheless, EPA's TMDL imposes reductions on these sources that will be all but impossible to achieve. EPA's decision to impose these reductions is arbitrary and capricious and without sufficient basis to support the TMDL.

Response Text

Allocations in the ODEQ 2019 TMDL would not achieve the mercury target in all subbasins with mercury impaired waterbodies, therefore greater reductions were needed in order to achieve the target and meet water quality standards. In many cases the point sources are relatively small contributors, though municipal stormwater generally contributes greater loading. In some subbasins for which the TMDL target would not be achieved in the ODEQ TMDL, stormwater and other point sources are more important contributors. Given the need for an overall significant reduction in mercury loading from all watersheds, in places were point sources were greater contributors, it was necessary to establish greater reductions from these facilities in order to meet the TMDL load capacity.

Comment ID L17-9

Comment Category TMDL Implementation

Comment Text

OBI recognizes the significant work and staff hours that have gone into preparing the TMDL as well as DEQ's mission to protect water quality in Oregon. We remain concerned, however, that implementation of this TMDL will require businesses to dedicate valuable time, money and attention attempting to address a problem that is largely beyond their control. DEQ acknowledges that the accumulation of mercury in the Willamette Basin originates from historical anthropogenic emissions deposited into our landscape or background sources that are beyond the regulated community's control. Further, DEQ states that even the complete elimination of the estimated 4% of mercury contributed to the Willamette

River and its tributaries from wastewater and municipal stormwater is unlikely to result in measurable reduction of mercury. These factors make implementation of this TMDL quite different from those previously issued for other pollutants and other waterbodies.

Response Text
EPA appreciates the commenter's perspective and recognizes the challenges of controlling mercury as a pollutant. Global sources emit mercury that is atmospherically deposited in the Willamette River Basin; therefore, the focus of the TMDL is to control in-basin transport of mercury into waterbodies, such as reducing erosion on the landscape and using the best available management practices and treatment measures. In some subbasins point sources are relatively small contributors. In other subbasins stormwater and wastewater point sources are more important contributors. For example, about 11% of the THg load in the Lower Willamette catchment is attributed to NPDES permitted POTWs and industrial wastewater dischargers and about 21% originates from permitted urban stormwater sources. Additionally, Section 13 of ODEQ's TMDL provides examples of proven techniques for point source controls that have reduced mercury concentrations. Monitoring also shows that a combination of point and non-point source control activities have reduced mercury concentrations. Reductions from point sources are necessary to achieve water column and fish tissue standards in the waterbodies in the Willamette River Basin.

Comment ID L17-10

Comment Category TMDL Implementation

Comment Text
In this TMDL, DEQ assigned wasteload allocations of 10% for wastewater dischargers and 75% for stormwater dischargers, and a load allocation of 88% for nonpoint sources. It is difficult to fathom how these sources will achieve these massive reductions. Existing regulations already require point sources to implement practices that limit mercury transport into waterways, typically by reducing total suspended solids (TSS). Similarly, nonpoint sources also have already been implementing many, if not all, of the best practices described including protecting riparian buffers, maintaining roads and culverts, stabilizing and re-vegetating streambanks, protecting wetlands, crop rotation and grazing management.

Response Text
This comment was submitted during the public comment period for ODEQ's TMDL but was not responded to in DEQ's responses to comments. Reductions assigned as wasteload and load allocations have been revised in EPA's TMDL to ensure attainment of water quality and human health standards in the Willamette River Basin. The focus of the TMDL is to control in-basin transport of mercury into waterbodies. EPA recognizes that best management practices, such as maintaining or restoring riparian buffers along waterways, are being implemented in some areas. However, additional treatment technologies and control measures that reduce mercury loading to waterbodies will be necessary to achieve water column and fish tissue standards throughout the basin. Through DEQ's implementation of its Water Quality Management Plan (WQMP), more specifically through monitoring and adaptive management, it will become evident where greater control measures will be needed to achieve the goals of the TMDL.

Comment ID L17-11

Comment Category TMDL Implementation

Comment Text
We appreciate the inclusion of the adaptive management provisions. We expect these provisions to allow for flexibility as the TMDL is implemented and as future monitoring and research yield better data sets. An adaptive management approach is especially prudent given the size and complexity of the TMDL, and the lack of certainty with respect to data and modeling outputs.

Response Text
This comment was originally submitted during the public comment period for ODEQ's TMDL. As described in ODEQ's response to public comments, ODEQ plans to use adaptive management during the implementation of the TMDL as described in Section 13.1.2 of the WQMP. EPA's supports ODEQ's use of adaptive management for implementing the TMDL.

Comment ID L17-12

Comment Category Lacks sensitivity analysis

Comment Text
No sensitivity analyses were completed. This could produce a variance in the Food Web Model's (FWM) biomagnification factor resulting in unnecessarily stringent load and wasteload allocations.

Response Text
EPA disagrees with the statement that no sensitivity analysis was performed. The Food Web Modeling approach to get values of the biomagnification factor for the different fish species explicitly incorporated the variation model parameters by using the probabilistic approach in the Monte Carlo simulation, which is itself a sensitivity analysis. The model parameters and how they were simulated in the Monte Carlo application are listed in Table 3-2 in the Technical Support Document. Also, the response of the model to these variations is discussed in Section 3.6 of the Technical Support Document. Some key insights about model parameters are provided in this discussion. For example, specification of the distribution of exposure concentrations is a primary factor controlling the tails of the cumulative distribution functions used in the simulations. This is the information that ODEQ used to "…determine how the values of the biomagnification factor of the Food Web Model (FWM) might vary given other modeling decisions or how its variation might affect the calibration of the FWM…"

Comment ID L17-13

Comment Category Food Web Model - uncertainty regarding the target THg

Comment Text
The modeled fish tissue mercury concentrations do not appear to fully support the FWM calibration for the Northern Pikeminnow making target concentrations of Total Mercury (THg) questionable.

Response Text
EPA acknowledges that, like any model, the Food Web Model (FWM) is an approximation of observed conditions. The FWM was calibrated by attempting to match the cumulative distribution functions generated by the FWM to the cumulative distribution functions for observed data (Technical Support Document [TSD] Figure 3-4) and the TSD notes that "…the fit for NPM is not perfect but is reasonable." TSD Figure 3-4 shows that the match between model and data remains within 95% confidence limits

from the 50th to 70th percentile and is thus acceptable for the median of the distribution (50th percentile), which is the basis for estimating the THg target, while discrepancies are associated with the tails of the distribution. TSD Figure 3-6 shows that the relationship between fish length and mercury tissue concentration is reasonably well reproduced by the model. Finally, the bioaccumulation factor (BAF) simulated for NPM in the FWM is well within the 95% confidence limits of reported BAF values for Trophic Level 4 fish species. EPA believes that the discrepancies between the model and observed fish tissue data in the tails of the distribution - which are not used to set the water column target - are attributable to use of a steady-state bioaccumulation model to approximate the results of a dynamic relationship between exposure concentration and body burden, along with other simplifying assumptions regarding mercury uptake and depuration. These issues are discussed at length in the TSD.

Comment ID L17-14

Comment Category Applicable Water Quality Standards

Comment Text

The THg concentration required by DEQ appears to lack certainty, as alternative approaches could be employed for determining input parameters and result in a different target THg concentration.

Response Text

This is the same comment as L17 Comment 3. EPA acknowledges that the linkage analysis for the TMDL includes uncertainty, as the case with all modeling analyses. Federal regulations require that the TMDL be developed despite uncertainty in the analysis, and the presence of such uncertainty does not remove EPA's obligation to establish the TMDL at levels sufficient to meet water quality standards. As noted at 40 CFR 130.2(g), load allocations for nonpoint sources "…are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." The Clean Water Act and 40 CFR 130.7(c)(1) also require that TMDLs include a margin of safety "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."

Different parameter values would indeed result in different target THg concentrations. This is directly addressed in Tables 3-3, 3-4, and 4-4 of the Technical Support Document, in which Monte Carlo analysis is used to present the distribution of biomagnification factors, fish tissue concentrations, and corresponding water column concentration targets.

Comment ID L17-15

Comment Category Mercury Translator

Comment Text

The Mercury Translator Model introduces further uncertainty as its methodology determined a target concentration of THg in the water column from the dissolved methylmercury input parameter.

Response Text

EPA acknowledges that the translation between total mercury (THg) and dissolved methylmercury is a source of uncertainty in the TMDL calculations. The pollutant addressed by this TMDL is total mercury. However, food chain bioaccumulation, which results in elevated fish tissue concentrations of mercury, is driven primarily by dissolved methylmercury, most of which is derived from bacterial transformation of ionic mercury in the environment. It is, therefore, necessary to develop a translation between total mercury and methylmercury concentrations to establish a causal linkage between total mercury loads in the Basin and impairment based on fish tissue concentrations of mercury.

Comment ID L17-16

Comment Category Mass Balance Model/HSPF

Comment Text
The Mass Balance Model (MBM) employs an additional three models to provide input values and data comparisons for calculating present-day mercury contributions. Using modeling outputs as subsequent model inputs further compounds the magnitude of unreliability in the estimates.

Response Text
This is the same comment as Comment ID 5 from the same comment letter (L17). Please see that response.

Comment ID L17-17

Comment Category Margin of Safety

Comment Text
Beyond concerns with the modeling, we find the way in which DEQ has incorporated a margin of safety into the TMDL problematic. The margin of safety, as required by OAQ 340-042-0040, is intended to account for uncertainty in the data, as well as uncertainties with estimating pollutant loads, modeling water quality, and monitoring water quality.

DEQ employs three distinct elements in its calculation of a margin of safety:

• The use of the Northern Pikeminnow as an efficient bioaccumulator of mercury;

• The method of calculating the Food Web Model which results in a lower value than the average concentration; and

• The use of total mercury concentrations in fish tissue rather than methylmercury in the water quality criterion.

By layering so many conservative assumptions, DEQ has far exceeded regulatory expectations for ensuring a reasonable margin of safety. While we understand DEQ's interest in ensuring a cautious approach in the face of imperfect knowledge, we believe it is possible that the load and wasteload allocations are far more stringent than necessary and that this highly conservative approach has resulted in a significant compliance burden for regulated entities. DEQ should more fully explain the rationale behind their approach and assess the likely impact that each element would have, as well as the cumulative impacts.

Response Text
This comment is the same comment submitted on ODEQ's July 2019 Public Review Draft TMDL and does not correctly reflect the contents of either ODEQ's November 2019 TMDL or the EPA TMDL. The Clean Water Act and 40 CFR 130.7(c)(1) require that TMDLs include a margin of safety (MOS) "…which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS can be either explicit, through allocation of a portion of the loading capacity, or implicit, through use of conservative assumptions in the TMDL analysis or in developing a TMDL target, or both.

EPA reviewed the MOS discussion provided in ODEQ's November 2019 TMDL and accepted only the first and third of the proposed three components of the ODEQ MOS. EPA rejected the component of the

MOS regarding the method of calculating the Food Web Model. However, EPA also added an additional MOS component, as described in Section 9 of the EPA TMDL:

"Needed reductions in loads are based on comparing water column mercury targets to ambient monitoring data. Those monitoring data are available through 2011 in only 9 of the 12 HUC8 watersheds and thus do not incorporate any reductions in mercury loading that have occurred since 2011. Data presented in ODEQ's 2019 TMDL (p. 37) indicate that mercury concentrations have been declining in more recent years (2012 – 2019) in the Tualatin and Lower Willamette subbasins."

With these modifications, EPA found that the components of the implicit MOS account for any lack of knowledge or uncertainties concerning the relationship between pollutant loading and receiving water quality and that the MOS is thus approvable. The MOS is not unduly conservative given the many sources of uncertainty identified in the TMDL linkage analysis by this commenter and others.

Comment ID L17-18

Comment Category T SS as surrogate

Comment Text
Given the cost and complexity associated with direct monitoring of methylmercury levels in fish tissue, OBI acknowledges the practicality of employing a surrogate. While using TSS as a surrogate for assessing and monitoring THg may be effective, we question whether TSS is the best and most accurate surrogate that could be utilized when other surrogate options exist. We request that DEQ explain the selection of TSS as the preferred surrogate for THg.

Response Text
This comment summarizes an earlier comment from OBI that was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019). For the November 2019 TMDL, ODEQ revised Section 10.3 and Appendix G (formerly Appendix H in the Public Review Draft) in response to this and other related comments.

ODEQ's November 2019 Response to Comments document (Section 72) provided the following response to the earlier OBI comment: "Based on the analysis presented in Section 10 of the TMDL and Appendix H [now G], DEQ considers there to be a strong relationship between THg and TSS. Therefore, based on the relationship found between total suspended solids and total mercury, surrogate instream targets were set for reductions in high levels of TSS concentrations to reduce total mercury in stream and evaluate progress towards achieving the allocations and total mercury TMDL water column target described in the TMDL. ODEQ revised Section 10.3 and Appendix H [G] with clarifications on the intention that TSS surrogate targets will be used. The use of TSS surrogate targets and other tools will be described in the Assessment and Monitoring Strategy that is being developed, an overview of which is provided in Sections 13.6 and 14.1.6 of the ODEQ November 2019 final TMDL." The use of TSS as a surrogate for THg is a component of ODEQ's implementation strategy, which is determined by DEQ.

Comment ID L17-19

Comment Category Water Quality Management Plan

Comment Text
Finally, we have noted that DEQ is entrusting significant authority to a great variety of Designated Management Agencies (DMA), which will assume the bulk of the responsibility for preparing implementation plans for the TMDL and Water Quality Management Plan (WQMP). While we believe this strategy could be beneficial in arriving at sector-specific plans addressing unique factors and

challenges associated with each sector, we are concerned about uneven implementation. With so many DMAs involved, we fear that some implementation plans might impose more burdensome requirements than others. Because the upside outweighs the potential pitfalls, we do not suggest that this provision be modified. However, we would like DEQ to remain cognizant of the risk as the DMAs develop TMDL implementation plans.

Response Text

EPA reviewed ODEQ's Water Quality Management Plan and found it was sufficient to support Reasonable Assurances relative to nonpoint source control to meet the scope of EPA's TMDL. Section 13 of ODEQ's 2019 TMDL provides examples of required measures for the DMAs to address mercury loading from nonpoint sources of pollution. For example, within 18 months after issuance of the TMDL, DMAs must develop and submit to ODEQ TMDL implementation plans to address mercury loading through controlling erosion and runoff from their respective sector activities. However, EPA does agree with OBI that there is a risk of uneven implementation and other potential pitfalls in what, of necessity, will be a complex implementation process. In this regard, ODEQ's commitment to a 5-year review process and adaptive management in the TMDL (Section 13.4 of the DEQ TMDL, which is attachment A to the EPA TMDL) will be a key mechanism for identifying and resolving problems of uneven implementation.

Author Name Mike Brown

Organization Name ***Bureau of Land Management***

Letter ID ***L18***

Comment ID L18-1

Comment Category Background

Comment Text

The Bureau of Land Management (BLM) would like to thank the Environmental Protection Agency for the opportunity to comment on the Willamette Basin Mercury Total Maximum Daily Load (TMDL). The BLM's participation on the Willamette Basin Mercury TMDL Advisory Committee over the past two years has provided our agency with the information and context to help inform the development of this document and to continue our work with the Oregon Department of Environmental Quality (ODEQ) to maintain and improve water quality in the Willamette Basin. The BLM administers public lands in the Willamette Basin for multiple uses, including timber production, recreation, mining, and habitat management. The Resource Management Plans for Western Oregon (2016) incorporated new science, policies, and technology to protect water resources. Our rigorous environmental planning process incorporates into the design of every action measures that avoid or mitigate pollutants from entering the waters of the State of Oregon. The BLM implements a suite of site-specific and action-specific best management practices with each action to protect water resources. The BLM follows established processes to monitor project implementation and the efficacy of our protections to ensure all actions are implemented to the designed standards. The measures that the BLM takes for actions planned under the Resource Management Plans for Western Oregon (2016) greatly reduces the probability of sediment delivery to streams.

Response Text

EPA agrees that the planned water quality protection strategies are important components of the mercury TMDL Implementation, and appreciates the work done by BLM towards this effort.

Comment ID L18-2

Comment Category Analytical Framework

Comment Text

The BLM supports actions that improve water quality and reduce mercury in fish tissue. In general, the BLM supports this TMDL, however we have concerns about the additive assumptions used in the analyses and the subsequent uncertainty from which conclusions are drawn. Mercury methylation is a product of complex processes that move and transform mercury in the environment. Most of the mercury in the Willamette Basin's forested landscape is derived from air deposition. Tetra-tech's mass balance, mercury translator, and food web models do little to characterize exactly how and where inorganic mercury is methylated and the pathways for bioaccumulation. The connection between BLM management actions and methylmercury fish tissue concentrations is not clear from the modeling effort that serves as the foundation for the load allocations in this document.

Response Text

EPA acknowledges that there are multiple sources of uncertainty in the TMDL and that mercury methylation is a complex process. However, the combination of the state of the science for modeling mercury methylation and the lack of data on methylation hotspots did not allow for a process-based

representation of mercury methylation in this TMDL. This issue is discussed in Section 1.1 of the Technical Support Document (Appendix B to the EPA TMDL): "Determining the TMDL linkage between the ultimate stressor (THg loads) and the management objective (attaining acceptable fish tissue concentrations of MeHg to protect human health) is complicated because of the many intervening kinetic and transport processes. MeHg is produced under anoxic conditions, which can occur within a river or within its watershed. Within a river, MeHg production mostly occurs within the sediment, with the quiescent water of backwater channels potentially having higher rates of methylation. Within a watershed, wetlands or areas with saturated soils can often provide important locations for MeHg production. The relative importance of internally produced (within the waterbodies and their sediments) or externally produced (within soils and groundwater prior to reaching waterbodies) sources of MeHg has not been assessed for the WRB. MeHg monitoring data are available primarily from the water column. The simplified conceptual framework used in this TMDL is that the long- term average MeHg concentration in the water column depends on THg concentrations in the sediment, which in turn depend on rates of THg loading from upstream. The complex transformations between different forms of mercury are not explicitly simulated; rather, they are approximated by an empirical relationship between observed MeHg and THg in the water column…"

As stated in Section 13.6 of the November 2019 ODEQ TMDL and Water Quality Management Plan, DEQ has committed to developing an Assessment and Monitoring Strategy to Support Implementation of Mercury Total Maximum Daily Loads for the Willamette Basin. In general, this strategy will evaluate effectiveness of implementation actions and determine progress toward meeting the total mercury loading capacity of 0.14 ng/L and methylmercury fish tissue criterion of 0.040 mg/kg. Data collected as part of this strategy could potentially be used to refine the characterization of how and where inorganic mercury is methylated and the pathways for bioaccumulation, which in turn may support adaptive management to improve the effectiveness of implementation strategies over time. EPA encourages the commenter and other interested stakeholders to participate in the development of this monitoring strategy.

Comment ID L18-3

Comment Category DEQ's authority/responsibility to implement

Comment Text

The BLM, along with all other Designated Management Agencies (DMAs) worked together with ODEQ to help inform the parameters of a successful Water Quality Management Plan. We are encouraged that the EPA determined that this Water Quality Management Plan demonstrated a reasonable assurance that our proposed actions move towards the targets described in the TMDL. The BLM also looks forward to continuing our collaborative water monitoring program with ODEQ and will continue to invest resources as staffing and funding allows.

The BLM is committed to designing actions consistent with the Resource Management Plans for Western Oregon (2016) while working with the ODEQ and the partner agencies of the Willamette Basin to maintain and improve water quality. We understand how difficult this process was for all involved, and we look forward to working with the ODEQ in the coming months on the Water Quality Restoration Plan for the Willamette Basin Mercury TMDL.

Response Text

EPA appreciates the BLM's support for the TMDL and their contributions to the Water Quality Management Plan developed under ODEQ's leadership.

Author Name Dennis Hebard

Organization Name ***Private Citizen***
Letter ID ***L19***
Comment ID L19-1
Comment Category Suction Dredging

Comment Text
My name is Dennis Hebard, please accept my comments on the Willamette Basin Mercury TMDL I object to excluding small suction dredge mining in waters that are not impaired. You cannot establish a 0 WLA for streams that may or may not be covered in the future. Oregon says that they will extend the TMDL to streams if they are determined to be impaired and added to 303d listings in the future, saving having to write a new TMDL they can just be applied. The stated source is the Bohemia Mining District, while small suction dredging disturbs in-place sediments, there will be no increase in supply of sediment to the stream if the activity is conducted according to the permit. Each stream in the Upper Row River Watershed should be evaluated independent of the others as the BMD is the source and only comes down Champion Creek and into Brice creek and yet the Sharps creek watershed is not contaminated and should not be included in the dredge ban. Sharps creek and Marten creek sampling ranges from 0.04 to 0.18 mg/kg and averages 0.11mg/kg (1.0mg/kg = 1 part per million) again this is within rock and mineral we don't have elemental mercury, the actual amount of material moved in a day from a small suction dredge is less than 1 cubic yard as this does not include the rock and boulders that have to be moved by hand, we do not crush or grind, use a flare to feed the sluice box, most of the gold is small mixed with black iron sands so our concentrates are taken away from the stream to process in camp or at home. It's generally accepted by agencies from peer review (Humphreys 2005) that a small suction dredge captures 98% of mercury. Using the Sharps creek mean concentration of < 0.2 mg/kg (Hygelund et al 2001) the 2% not captured by the sluice for Sharps creek this would be less than 0.004 mg/kg. Calculating the 50 cubic yards maximum per season the amount would be less than 0.14 mg/kg lost by the dredge for the most we are allowed to move. If it was just sediment, what percentage are rocks and pebbles? Freshwater Level 2 screenings for sediment is 0.2 mg/kg, concentrations do not exceed limits (https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf) From DEQ guidance "If the maximum detected concentration is less than the default value that metal is not present in site soil above background levels then that metal is not a chemical of potential concern or potential ecological concern." Background mercury levels for soil 0.24 mg/kg (https://www.oregon.gov/deq/FilterDocs/cu-bkgrmetals.pdf) The transport and fate of mercury not removed from a stream that is Not impaired has not been studied in much detail if any.

Response Text
DEQ is not currently proposing to add Sharps Creek, Marten Creek, or other tributaries to Dorena Reservoir to the 303(d) list of waterbodies impaired by mercury. EPA does not contend that ecological risks from mercury are present within these creeks (consistent with the screening level cited in https://www.oregon.gov/deq/FilterDocs/GuidanceEcologicalRisk.pdf); however, mercury loads generated from these creeks are of concern for downstream waters.

The studies referenced in the ODEQ TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20

mg/kg mercury (Hygelund et al 2001). Sharps Creek is a tributary to Dorena Reservoir and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury. There are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury.

Author Name Dennis Hebard

Organization Name ***Private Citizen***

Letter ID ***L20***

Comment ID L20-1

Comment Category Suction Dredging

Comment Text

I object to removing the NPDES 700pm small suction dredge permit in waters that are not impaired. while small suction dredging disturbs in-place sediments, there will be no increase in supply of sediment to the stream. the NPDES does Not regulate movement of stream bed material in Oregon that is regulated by removal/fill the streams of the URRW are not ESH no permit is required for moving less than 50cy, in the NPDES the discharge is assigned a mixing zone at no time is this above the limits for mercury, turbidity or any of the defined pollutants within the permit. The stated source is the Bohemia Mining District, while small suction dredging disturbs in-place sediments, there will be no increase in supply of sediment to the stream if the activity is conducted according to the permit. Each stream in the Upper Row River Watershed should be evaluated independent of the others as the BMD is the source and only comes down Champion Creek and into Brice creek and yet the Sharps Creek watershed is not contaminated and should not be included in the dredge ban.

Response Text

ODEQ is not currently proposing to add Sharps Creek or other tributaries to Dorena Reservoir to the 303(d) list of waterbodies impaired by mercury. The studies referenced in the ODEQ TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20 mg/kg mercury (Hygelund et al 2001). Sharps Creek is a tributary to Dorena Reservoir and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury. There are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury.

Author Name Dennis Hebard

Organization Name ***Private Citizen***

Letter ID ***L21***

Comment ID L21-1

Comment Category Suction Dredging

Comment Text

We tried to tell DEQ the form of Mercury is rock and mineral-bound, samples had to be ground, a small suction dredge does not do that, little to No elemental mercury is present. “Speciation testing showed strong-complexed species (mercurous chloride) and cinnabar (HgS) both species comprised up to 96% of the mercury detected in samples” HgS made up to 64% in stream sediment, HgS is generally resistant to chemical and physical weathering at nominal pH (Gray et al. 2003) and therefore, not expected to be a primary source of dissolved Hg (II) ions in the aqueous stream and lake environment. If this type of mercury is transformed to dissolved and suspended states in our streams it would be in the water column after 50+ years of suction dredging, it is not. if activities, transport/fate from small suction dredge mining it would be detectable in the water column My comments about winter flooding moving mercury were misrepresented and rewritten. I wrote that in the Humphries 2005 Yuba dredge study the liquid mercury hot spots and sticking to clay that were actually describing mine slickens from historic mining in the Sacramento valley, but that normal bench run gravels or from a river bar in the study they conclude “it would take 1,000,000 hours using an 8” dredge to compare to the natural particulate transport during an average dry year to affect the reservoir downstream”.

Response Text

There are several papers by John Gray in 2003 that focus on mercury associated with mine waste and it is unclear which one is specifically being referred to here. Regardless, in a review of the Gray et al., 2003 publications, none of them focused on mercury speciation associated with suction dredge mining. To our knowledge, the primary scientific studies on this topic are Humphreys et al., 2005, Marvin-DiPasquale et al., 2011 and Fleck et al., 2011. These studies focus on the specific impacts of suction dredge mining and the mobilization of elemental mercury. While mercury is found in many different forms in the environment, the form of mercury that is of concern at suction dredge sites is elemental mercury. Elemental mercury is often present in areas targeted by suction dredge miners because elemental mercury was used as part of historical gold and silver mining activities. The elemental mercury from historical mining operations is typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). While suction dredging can remove a large fraction of the mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L21-2

Comment Category DEQ's authority/responsibility to implement

Comment Text

DEQ claims authority under Title 33 US Code 1313(d) But under section (d) Identification of areas with insufficient controls; maximum daily load; certain effluent limitations revision (4) Limitations on revision of certain effluent limitations.— (B) Standard attained.— For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section, or any water quality standard established under this section, or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section. Streams in the upper Row river watershed were not included in the 2006 Mercury TMDL so would be a change of the previous plan. under 33 US Code 1313(d)(4)(B) (standard attained) they can only apply antidegradation policy to them, that would limit changes to New or increased discharges, but not suction dredging under the 700pm because it is an existing permitted activity.

Response Text

EPA disagrees with the commenter's interpretation of the Clean Water Act and accompanying regulations. The cited sections say that lowering of existing water quality, even if the existing water quality exceeds levels necessary to protect the designated use, is only allowed if it is consistent with antidegradation policy designed to protect existing instream uses. See the implementing regulations at 40 CFR 131.12. These sections do not imply that more stringent requirements cannot be imposed when necessary to meet water quality standards.

EPA also disagrees with the contention that "…streams in the upper Row river watershed were not included in the 2006 Mercury TMDL." While the upper Row River and its tributaries were not identified as impaired waters in the 2006 TMDL, these are upstream of and contribute mercury load to Dorena Reservoir, which was identified as impaired. As a result, the 2006 TMDL (pages 3-33) did apply nonpoint source load allocations in the form of a 29.8% reduction in existing loads to all waters upstream of Dorena Reservoir.

Author Name Dennis Hebard

Organization Name ***Private Citizen***
Letter ID ***L22***
Comment ID L22-1
Comment Category Suction Dredging

Comment Text
I object to excluding small suction dredge mining in waters that are not impaired. The NPDES 700pm does not regulate movement of stream sediment. since you put small suction dredging in the EPA's Mercury TMDL does this mean we can bring this to a federal court? Each stream in the Upper Row River Watershed should be evaluated independent of the others as the BMD is the source and only comes down Champion Creek and into Brice creek and the Sharps creek watershed is not contaminated and should not be included in the dredge ban.

Response Text
ODEQ is not currently proposing to add Sharps Creek or other tributaries to Dorena Reservoir to the 303(d) list of waterbodies impaired by mercury. The studies referenced in the ODEQ TMDL indicate that disturbance by suction dredging increases the potential for mercury that is currently present in the sediment of streams to be uncovered, oxygenated, transformed to dissolved and suspended states, transported downstream to Dorena Reservoir and methylated. Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20 mg/kg mercury (Hygelund et al., 2001). Because Sharps Creek is tributary to Dorena Reservoir and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury, and there are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury, DEQ intends to prohibit suction dredge mining in tributaries to the reservoir to reduce permitted discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments.

Author Name Dennis Hebard

Organization Name ***Private Citizen***
Letter ID ***L23***

Comment ID L23-1

Comment Category General

Comment Text
Each stream in the Upper Row River Watershed should be evaluated independent of the others as the BMD is the source and only comes down Champion Creek and into Brice creek and the Sharps creek watershed is not contaminated and should not be included in the dredge ban.

Response Text
Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20 mg/kg mercury (Hygelund et al., 2001). Sharps Creek is a tributary to Dorena Reservoir and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury. There are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury. ODEQ's 2019 TMDL provides that upon renewal of the 700PM permit, DEQ will prohibit suction dredge mining in tributaries to the reservoir to reduce discharges of mercury and reduce methylation potential of existing mercury contamination in stream sediments. EPA's TMDL is consistent with this approach by assigning a zero WLA to the suction dredge mine industry in the Coast Fork subbasin.

Comment ID L23-2

Comment Category General Comments

Comment Text
Social and economic impacts should be looked at in any environmental regulation or rulemaking otherwise local people will be discriminated against as they are doing now. The Bohemia Mine Owners Association (est.1903) will be irreparably harmed. BMOA, it's not just the ones that mine, its whole families, BMOA not only promotes and defends our common interest, but are stewards of the lands with substantial interest invested. The reason we exist is to mine our claims and provide an opportunity for members to mine our nine common claims; these in turn involve members and family recreational opportunity. We have a mine patrol, like a neighborhood watch, including 2-way radio equipment/antenna this assists travelers, other forest users, report crimes, prevent vandalism and homeless or extended camping beyond the 14 day limit. BMOA adopted Champion Creek Road, Sharps Creek Road, Ray Nelson Bohemia Saddle Park, and Mineral Camp Park. The BMOA assists Lane County and the United States Forest Service and Bureau of Land Management in performing maintenance and litter control on the Parks and Roads, with an MOU with each agency.

Response Text
The Clean Water Act requires TMDLs to be set such that pollutant loads are less than or equal to the maximum amount that a waterbody can receive while still meeting water quality standards (through application of the loading capacity). The regulations for establishing the loading capacity do not include a consideration of social or economic impacts in determining its numeric value; however, such factors could be considered in deciding how the TMDL is divided up into load allocations and wasteload allocations for individual nonpoint and point sources of pollutant loads. The Willamette mercury TMDL

requires large reductions in all sources of mercury loading to achieve water quality standards. In developing the revised TMDL, EPA endeavored to keep as many of the assumptions regarding allocations made by ODEQ as were consistent with achieving the TMDL in all HUC8 watersheds of the basin. EPA agreed with ODEQ's conclusion that suction dredging can be a significant source of mercury loading in areas where stream sediments are contaminated with mercury as shown in the Coast Fork Subbasin. Therefore, EPA's TMDL assigns a zero WLA to the suction dredge mine industry in the Coast Fork subbasin.

Author Name Dennis Hebard

Organization Name ***Private Citizen***

Letter ID ***L24***

Comment ID L24-1

Comment Category Suction Dredging

Comment Text

Please accept attached documents in support of my objection to removing small suction dredge mining. (Three documents were attached: Suction Dredge Gold Mining … Cleaning Our Streams, One Rock at a Time (power point presentation); IDEQ Water Quality Summary Report 34; Western Mining Alliance document titled "Suction Dredging for Gold").

Response Text

We have reviewed the attached power point presentation titled: SUCTION DREDGE GOLD MINING . . . CLEANING OUR STREAMS, ONE ROCK AT A TIME, and the IDEQ report Water Quality Summary Report 34. These documents do not address the potential for mercury mobilization during the process of suction dredge mining, which is the specific impact of concern as it relates to this TMDL. The document by the Western Mining Alliance titled Suction Dredging for Gold does address mercury; however, it does not provide any information that refutes the conclusions from previous studies. These studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of the elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L24-2

Comment Category Suction Dredging

Comment Text

Attachment: Suction Dredge Gold Mining… Cleaning Our Streams, One Rock at a Time

Response Text

We have reviewed the attached power point presentation titled: SUCTION DREDGE GOLD MINING . . . CLEANING OUR STREAMS, ONE ROCK AT A TIME, the Western Mining Alliance's SUCTION DREDGING FOR GOLD, and the IDEQ report Water Quality Summary Report 34. These documents do not address the potential for mercury mobilization during the process of suction dredge mining, which is the specific impact of concern as it relates to this TMDL. The document by the Western Mining Alliance titled Suction Dredging for Gold does address mercury; however, it does not provide any information that refutes the conclusions from previous studies. These studies have found that the sediments containing

mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of the elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove a large fraction of the mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L24-3

Comment Category Suction Dredging

Comment Text
Attachment: IDEQ Water Quality Summary Report: A Recreational Suction Dredge Mining Water Quality Study on South Fork Clearwater River.

Response Text
We have reviewed the IDEQ report Water Quality Summary Report 34. This document does not address the potential for mercury mobilization during the process of suction dredge mining, which is the specific impact of concern as it relates to this TMDL. Previous studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the aquatic food web. While suction dredging can remove mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Comment ID L24-4

Comment Category Other

Comment Text
Attachment: Suction Dredging for Gold

Response Text
We have reviewed the attached power point presentation titled: SUCTION DREDGE GOLD MINING . . . CLEANING OUR STREAMS, ONE ROCK AT A TIME, the Western Mining Alliance's SUCTION DREDGING FOR GOLD, and the IDEQ report Water Quality Summary Report 34. These documents do not address the potential for mercury mobilization during the process of suction dredge mining, which is the specific impact of concern as it relates to this TMDL. The document by the Western Mining Alliance titled

Suction Dredging for Gold does address mercury; however, it does not provide any information that refutes the conclusions from previous studies. These studies have found that the sediments containing mercury from historical mining operations are typically deeply buried and would otherwise be inaccessible to natural erosion remobilization processes except during extreme hydrologic conditions (Fleck, 2011; Marvin-DiPasquale, 2011). The process of suction dredging can capture a high percentage of the elemental mercury in the sediment. However, this process can also mobilize some smaller fraction of the mercury into the water where it can be transported downstream to where conditions are more conducive to methylmercury production and accumulation in aquatic organisms can occur (Fleck, 2011; Humphreys, 2005; Marvin-DiPasquale, 2011). Without the activity of suction dredging, this fraction of mercury would have remained deeply buried in the sediment and would not have been available for uptake into the food web. While suction dredging can remove a large fraction of the mercury buried in stream sediments, the overall impact is that there is an increase in the mobility of mercury in the stream environment which can increase the availability of mercury for methylation and bioaccumulation in fish.

Author Name Salina N. Hart, P.E.

Organization Name ***U.S. Army Corps of Engineers Portland District***

Letter ID ***L25***

Comment ID L25-1

Comment Category EPA's authority to require DEQ to implement

Comment Text

The U.S. Army Corps of Engineers Portland District (Corps) appreciates the opportunity to comment on the U.S. Environmental Protection Agency's (EPA) Willamette Basin Mercury TMDL, dated December 30, 2019. The Corps supports the overall goal of reducing mercury and improving water quality in this important watershed; however, there are concerns with the proposed requirements for "Designated Management Agencies" to reduce load allocations from the impoundments they operate in the sub-basins that failed to achieve the Oregon Department of Environmental Quality's (ODEQ) 2019 TMDL targets. The development of an implementation plan requires authority and funding, which is not at the discretion of the agency. The Corps is congressionally mandated to operate its projects for the included authorized purposes (flood risk management, hydropower, fish & wildlife, water supply, irrigation, navigation, recreation). Some of the proposed actions within the TMDL would interfere with the Corps' ability to operate for these project purposes, by mandating specific actions to reduce presumed mercury loading at Corps' dams. These requirements are in direct conflict with the authorities cited by ODEQ as justification for agency compliance. Therefore, the Corps is respectfully requesting the State and EPA clarify its authority to require actions that directly interfere with the operations and traditional uses of these congressionally authorized water development projects or revise the TMDL requirements for DMAs. The Corps is receptive to working with the agencies in a collaborative effort on the role of DMAs.

Response Text

EPA thanks the U.S. Army Corps of Engineers (USACE) for their overall support for the TMDL and commitment to working with the agencies. EPA is concerned that reservoirs can play a significant role in the mobilization and methylation of mercury in the Willamette River Basin and believes that ODEQ has correctly identified USACE as a Designated Management Agency (DMA) for operation of its reservoirs. The determination and responsibilities of DMAs is a component of implementation under the discretion of ODEQ, and as such is only reviewed by EPA for the purposes of reasonable assurance. EPA is not asserting any regulatory authority to require USACE to undertake these actions. Should USACE agree to implement measures to address methylation of mercury, those actions may require authority and funding from Congress or the Department of Defense that is outside of EPA's control.

Author Name Bill Moore

Organization Name ***Oregon Department of Environmental Quality***

Letter ID ***L26***

Comment ID L26-1

Comment Category Other

Comment Text

Good afternoon, Oregon's Department of Environmental Quality appreciates the opportunity to provide the attached letter of comment on EPA's 2019 Total Maximum daily Load for Mercury in the Willamette Basin, Oregon.

Response Text

EPA appreciates ODEQ's comments. Responses to specific items are provided individually.

Comment ID L26-2

Comment Category General Comments

Comment Text

Oregon's Department of Environmental Quality appreciates the opportunity to provide this letter of comment on EPA's 2019 Total Maximum Daily Load for Mercury in the Willamette Basin, Oregon. In general, DEQ is providing comment on three overarching themes. First, EPA' s TMDL should provide adequate documentation of EPA's work, which is needed to justify the changes made to DEQ's TMDL and for readers to understand the new requirements. The document also contains multiple errors and inconsistencies with DEQ's TMDL, sections of which EPA's document refers to or incorporates by reference. Finally, EPA's proposed subbasin-specific allocations are more stringent than necessary because EPA relied on basin level assumptions and policies for development of subbasin-specific allocations, including assumptions about more recent data at the subbasin scale.

Response Text

EPA disagrees with ODEQ's characterization of the revised 2019 EPA TMDL. EPA in large part accepted the work and calculations completed by ODEQ. EPA rejected ODEQ's final TMDL allocations as these were not sufficiently stringent to achieve water quality standards in five of the HUC8 watersheds of the Willamette River Basin. Modifications to the allocations and to the margin of safety are explained in the EPA 2019 TMDL document. ODEQ subsequently requested additional documentation in the form of the spreadsheets that were used to calculate the final allocations, which EPA supplied.

This comment refers to unspecified "…multiple errors and inconsistencies with DEQ's TMDL…". These are answered separately to the extent that they are identified in separate comments within this letter.

Finally, EPA disagrees with the assertion that "…allocations are more stringent than necessary..." EPA disapproved ODEQ's 2019 TMDL on November 29, 2019 after determining that the load and wasteload allocations based on percent reductions would not achieve the TMDL target in all the subbasins addressed by the TMDL. In light of this decision, more stringent allocations that achieve the TMDL target in all the subbasins addressed by the TMDL were developed by EPA and incorporated into the final TMDL.

Comment ID L26-3

Comment Category DEQ's authority/responsibility to implement

Comment Text
The cover/signature page of EPA's TMDL states that, following incorporation of any revisions arising from public comment, EPA "intends to transmit this TMDL to the State of Oregon for incorporation into its current water quality management plan." DEQ maintains an overall water quality management plan, per CWA Section 303(d) and 40 CFR Section 130.7(d), of priority ranking of impaired waters needing a TMDL. However, per OAR 340-42, DEQ develops Water Quality Management Plans specific to each TMDL that DEQ develops that provide a framework for TMDL implementation and detailed strategies to achieve allocations, including sector or source-specific implementation plans. The process is not the same for TMDLs developed by EPA. Moreover, the WQMP was developed based on the TMDL written by DEQ. DEQ will work with EPA for incorporation of EPA's TMDL for Mercury in the Willamette Basin, Oregon into Oregon's water quality management plan under Section 303(e) of the Clean Water Act.

Response Text
EPA thanks ODEQ for noting the difference between the State's overall water quality management plan (WQMP) and the WQMP specific to the Willamette Mercury TMDL and has revised the quoted sentence to clarify this. We look forward to working with you to translate the provisions in this TMDL to your waterbody specific WQMP.

Comment ID L26-4

Comment Category General Comments

Comment Text
EPA's November 29, 2019 letter disapproved DEQ's TMDL, and EPA's December 30, 2019 TMDL includes DEQ's TMDL and Appendix A and specifically incorporates most sections by reference. DEQ found some discrepancies, as noted specifically below. The current combined format contains conflicts, lacks clarity as to which document is to be followed and requires the public to flip between documents. This makes it confusing for those subject to allocations to attempt to identify the basis of the allocations, and in some cases, the application of the allocations themselves. These conflicts should be resolved. The TMDL would benefit from being presented as a comprehensive document. These changes would provide clarity to the public regarding the regulatory requirements.

Response Text
EPA appreciates your comment and made appropriate changes to the revised final TMDL. Specific discrepancies are discussed in individual comments and responses. EPA agrees that it would be less confusing to the reader if there were a single, unified document; however, that may not be feasible, as certain portions of ODEQ's TMDL, as required under state regulations (e.g., the Water Quality Management Plan), are not requirements of the EPA TMDL but remain ODEQ's responsibility.

Comment ID L26-5

Comment Category General Comments

Comment Text
EPA should to make available to DEQ and the public EPA's 2019 Memo to File: Air Emission Hg Allocations for Revised Willamette Mercury TMDL, authored by Chris Eckley, and referenced in footnote

3 on page 3 of EPA's TMDL. It appears this memo was relied upon in EPA's increased allocation to air sources, and should be presented as part of EPA's documentation and justification for that allocation.

Response Text
The Eckley memorandum is part of EPA's administrative record for the TMDL and EPA sent the document to ODEQ as requested.

Comment ID L26-6

Comment Category TMDL Implementation

Comment Text
4. Source Categories: Section 7, Tables 2 and 3, and Appendix C of EPA's TMDL present allocations using different category names, comprised of different components and with additional categories compared to DEQ's TMDL. As a result, it is unclear how EPA's sectors and allocations matchup with DEQ's sectors and allocations which could affect DMA implementation. Most sections of DEQ's TMDL are incorporated by reference into EPA's TMDL, so clarification is needed on which EPA sector labels compare with DEQ categories. Specifically: a. EPA's TMDL contains a "Groundwater (agriculture, forest shrub, developed, other)" category, which was not included as a separate DEQ source category. Rather DEQ captured groundwater under "General Nonpoint Source and Background." Is EPA's 88% reduction for "Groundwater (agriculture, forest shrub, developed, other)" in addition to the 88% and 97% subbasin-specific "Agriculture, forest shrub, developed, other (runoff and sediment)" reductions that includes the same land managers? b. EPA's footnote 1 indicates that water impoundments and conveyances entities are included in both the "Groundwater (agriculture, forest shrub, developed, other)" and "Agriculture, forest shrub, developed, other (runoff and sediment)" categories. Whereas, DEQ captured water impoundments and conveyances entities under "General Nonpoint Source and Background." c. Does "Agriculture, forest shrub, developed, other (runoff and sediment)" align with DEQ's "General Nonpoint Source" category, excluding groundwater and background? If so, where is background captured? d. EPA's TMDL contains "Atmospheric deposition direct to water" as a distinct category. In contrast, DEQ captured atmospheric deposition direct to streams in the "General Nonpoint Source and Background" category. In addition, DEQ assigned an allocation to Atmospheric Deposition. DEQ's footnote 3 clarifies that this allocation applies to precipitation deposited mercury that generates runoff. e. EPA's TMDL assigned separate allocations to "NPDES Permitted POTW Wastewater · Discharges" and "NPDES Permitted Industrial Wastewater Discharges," yet DEQ's basin-wide aggregate allocation applies to all NPDES Permitted Wastewater Discharges.

Response Text
EPA's TMDL includes the same sources as ODEQ's TMDL, however, some allocation categories were modified. EPA made changes to EPA's TMDL so that both TMDLs and DEQ's WQMP align to clarify the differences.

Responses to sub-questions/comments A to E follow.

A. ODEQ's TMDL included a general non-point source category that included mercury associated with surface runoff, sediment, and groundwater. Given that land managers have different opportunities to control surface runoff and sediment compared to groundwater, the latter source was disaggregated for EPA's TMDL. Therefore, reductions are assigned for groundwater and reductions are assigned to land managers for surface runoff and sediment-based transport of mercury under the category titled "Agriculture, forest, shrub, developed and other (runoff and sediment)" in Table 3 of EPA's TMDL.

B. The footnote in Table 3 of EPA's TMDL is not accurate and will be updated in the revised final TMDL. The "other" category includes runoff, sediment, and groundwater from the following land uses: barren, grassland/herbaceous, pasture/hay, wetlands, and open water excluding the river network and lakes explicitly represented in the HSPF watershed model.

C. The "Agriculture, forest, shrub, developed, other (runoff and sediment)" and "Groundwater (agriculture, forest, shrub, developed, other)" categories in EPA's TMDL align with ODEQ's "General Nonpoint Sources and Background" category as discussed above in response to A. Background sources of mercury are implicitly represented in these categories. For example, soil mercury concentrations in the watershed are attributed to legacy (background) and current atmospheric deposition processes, as well as sediment erosion, fate and transport.

D. EPA's TMDL contains a category for "Atmospheric deposition direct to water", which aligns with the "Atmospheric Deposition" category under non-point sources in ODEQ's TMDL. Both TMDLs assign explicit allocations to atmospheric deposition direct to water. Atmospheric deposition of mercury that is transported to streams by surface runoff is included in the "Agriculture, forest shrub, developed, other (runoff and sediment)" category in EPA's TMDL.

E. ODEQ's TMDL included the allocations for both POTWs and industrial wastewater dischargers in the "NPDES Wastewater Point Source Discharges" category. These are represented in separate categories for EPA's TMDL, which include "NPDES Permitted POTW Wastewater Discharges" and "NPDES Permitted Industrial Wastewater Discharges" because different reductions were allocated for these sources in some catchments, such as the Middle Willamette.

Comment ID L26-7

Comment Category Inadequate data used

Comment Text

5. Allocations: Both EPA's and DEQ's TMDLs cover 12 subbasins (by HUC08) as well as Multnomah Channel and Columbia Slough. EPA's TMDL presents the rationale for revised allocations for: "Atmospheric deposition direct to water" in all subbasins; "Agriculture, forest, shrub, developed, other (runoff and sediment) in five sub basins; "NPDES Permitted Stormwater Point Source Discharges" in two subbasins; "Non-Permitted Urban Stormwater" in two subbasins; "Legacy mining" in one subasin; "NPDES Permitted POTW Wastewater Discharges" in two subbasins; and "NPDES Permitted Industrial Wastewater Discharges" in one subbasin. No information is provided on the calculations presented in each subbasin summary table. However, the subbasin-specific calculations appear to be derived from basin-wide modeling and analysis. As explained in detail in DEQ's November 22, 2019 Response to EPA Comment on Meeting WQC in All WRB HUC08s (see 3 attached), there are not sufficient data at a subbasin scale to support the development of different instream targets for each subbasin in the larger Willamette basin. While the basin-wide data, assumptions and technical decisions agreed to by DEQ, EPA and EPA's contractor were appropriate for the basin-wide approach, subbasin scale decisions require revisiting the modeling and analysis on a subbasin-by-subbasin basis. Some important considerations include updating the subbasin- specific datasets with more current data; using only the more recent data for the total mercury existing condition; devising an acceptable method for representing the subbasins without adequate data; evaluating fish species presence and use at the subbasin level; and accounting for water column data no longer being paired with fish tissue samples.

Response Text
ODEQ's November 2019 TMDL estimated TMDL allocations using a basin-wide approach. EPA reviewed this approach and determined that the basin-wide percent reduction allocations in the ODEQ TMDL would not result in meeting the TMDL target in all subbasins in the Willamette River Basin. As a result, EPA revised the allocations for five of the 12 HUC8 watersheds, as well as for the Multnomah Channel and Columbia Slough watersheds using available data for these HUCs, as explained on page 6 of the EPA TMDL.

All TMDLs must use readily available data (EPA 1991). Data collected within the subbasins are a better representation of the subbasin condition than a summary of mercury concentrations at the much larger basin scale. Because impaired segments are located within each of the five subbasins which EPA revised, it is necessary to ensure that load capacities and allocations are set at the subbasin scale in order to achieve the TMDL target using available data. Although there will always be inherent uncertainty in estimating current concentrations, for the five subbasins for which EPA revised ODEQ's allocation scheme, there is generally as much or more data available than there is for other HUCs, and there is sufficient data for characterizing existing conditions. In the Tualatin subbasin, for example, there are 239 water column THg samples available for 2002-2019. Instead of including all available data for the development of a HUC-specific loading capacity, ODEQ requested data from earlier years be removed, which EPA did for the final TMDL.

EPA agrees that collection of additional data could be used to further refine and improve subbasin-specific load allocations. It could also allow for future refinement of the analysis to reflect regional differences in food web structure and bioaccumulation patterns and, when combined with paired data on mercury exposure concentrations, enable development of subbasin-specific mercury loading targets consistent with achieving the fish tissue criterion. Such additional data collection could be addressed in ODEQ's proposed Assessment and Monitoring Strategy.

Comment ID L26-8

Comment Category Point Source Wasteload Allocations

Comment Text
6. EPA's increased point source (wastewater and stormwater) reductions are disproportionate to source contributions. While proportionality is only one consideration within a state's discretion that DEQ used in assigning allocations, lack of consideration of proportionality is inconsistent with EPA' s 2010 Guidance for Implementing the January 2001 Methylmercury Criterion and EPA's 2008 guidance "TMDLs Where Hg Loadings are Predominantly from Atmospheric Deposition."

Response Text
Relative source contributions were one of the factors which EPA considered in developing revised WLAs for wastewater and stormwater. However, there are a number of other considerations in revising allocations as well. While some sources with relatively small loading would seem to warrant lesser reductions, our analysis revealed that it simply was not feasible to achieve the TMDL target without greater reductions from even small source contributions. In addition, where atmospheric deposition to surface water was a more prominent source of loading, e.g. Lower Willamette subbasin, increased reductions in both nonpoint and point sources were needed, due the limited ability to reduce atmospheric loading direct to surface water. In the Lower Willamette, this coincided with the greatest contribution from POTWs in any subbasin, resulting in the need for greater reductions from these sources than in other subbasins. Since the relative source contributions from nonpoint and point sources varied within each subbasin, as did the current mercury concentration, the resulting point and

nonpoint source reductions also by necessity varied by subbasins. EPA strived to maintain consistency in sector specific allocations, to match the approach of the ODEQ TMDL**.**

Comment ID L26-9

Comment Category Allocations

Comment Text

7. Section 7.2.2 of EPA's TMDL assigns an allocation of 0% reduction for minor POTW and minor industrial permitted discharges. This conflicts with DEQ's TMDL in that minor industrial facilities may conduct activities with the potential to increase mercury in discharges. Because the TMDL data set includes effluent data for only about 42% of industrial facilities and flow data for even fewer, DEQ captured minor industrial facilities in the basin-wide NPDES Permitted Wastewater Discharges wasteload allocation (10% reduction), conditional to review of effluent and flow monitoring. DEQ disagrees with assigning minor industrial facilities a 0% reduction, because they have the potential to increase mercury in their discharge, and some of these e sources may require mercury reductions based on further evaluations.

Response Text

ODEQ's comments clarified a misunderstanding in EPA's review of the proposed reductions to mercury discharges from minor POTWs and minor industrial wastewater permits in ODEQ's 2019 TMDL and provided useful information about the limited data on these types of discharges and the potential for future expansion. In light of this information, EPA is deleting section 7.2.2 and EPA's TMDL reflects ODEQ's inclusion of the minor POTWs and minor industrial dischargers within the aggregate reduction WLAs for POTWs and industrial dischargers in each subbasin. This approach is reasonable given the very small cumulative contribution of these sources to the overall load (0.07%: p.48, Appendix A). If Minor facilities in the WRB increase in size to become Major facilities, the permit requirements would be expected to change to include TMDL implementation and monitoring requirements as provided in ODEQ's 2019 TMDL. To address the possibility that some of these sources may increase their mercury discharges over time, the EPA TMDL includes a 1% Reserve Capacity, consistent with the ODEQ 2019 TMDL, which may be granted to dischargers at ODEQ's discretion.

Comment ID L26-10

Comment Category Point Source

Comment Text

No data, information or rationale is provided in EPA's TMDL to support the proposed 97% mercury reduction in non-permitted stormwater discharges within the Middle Willamette subbasin (aside from a singular statement in Appendix C). The TMDL needs to include a rationale for any increased reductions.

Response Text

The loading capacities ODEQ developed were based on a basin-wide uniform reduction in THg loading of 88 percent. As discussed in EPA's TMDL this approach was not protective of water quality in HUCs that exhibit median THg concentrations that are higher than the basin-wide median concentration, including the Middle Willamette. Oregon DEQ established allocations that varied by source category, expressed as required percent reductions. For example, nonpoint source reductions were generally 88%, point source reductions were generally 10%, and regulated and unregulated stormwater reductions were 75%. EPA retained these allocations where they would achieve the TMDL target. In other subbasins, EPA revised the allocations. In doing so, EPA continued to vary reductions by source category as in the ODEQ TMDL,

but revisions were not identical in each subbasin due to differences in current concentration and the mix of sources within each subbasin. In the Middle Willamette, the ODEQ TMDL called for 75% reduction in regulated and unregulated stormwater. In EPA's TMDL, nonpoint source reductions were increased to 97% (as in the other four subbasins where revisions were necessary), Wastewater Treatment Plant (WWTP) and industrial point sources were increased to 17 – 65%, and both regulated and unregulated stormwater were increased to 97%. The increase in stormwater reductions was chosen to be consistent with the NPS reductions, and to have consistency for all stormwater sources, both regulated and unregulated, since control measures would be the same between the two categories. As noted, this allocation necessary to ensure water quality protection within each HUC in the Willamette Basin.

Comment ID L26-11

Comment Category Allocations

Comment Text

9. Section 7.2.4 of EPA's TMDL establishes a "zero WLA for the suction dredging industry in these locations" referenced in DEQ's TMDL. Section 10.2 of DEQ's TMDL prohibits permitted suction dredge mining in the tributaries to Dorena Reservoir and specifies that these reductions, though unquantifiable, will contribute to the basin-wide 10% reduction aggregated across all permitted wastewater discharges. a. Please clarify what a zero WLA means, which is a different expression than all other allocations which are expressed as reduction percentages. b. Please clarify in which source category and in which subbasin these reductions would be aggregated.

Response Text

A zero WLA means that no loading of total mercury is allowed from the source assigned the WLA. It is equivalent to a 100% reduction. EPA's TMDL incorporates by reference page 62 of ODEQ's November 2019 TMDL document, which states that the zero WLA for suction dredging will apply to "…streams that flow from the former Bohemia Mining District and are tributary to the Dorena Reservoir (including Row River, Brice Creek, Sharps Creek, and Champion Creek)." There has been some confusion regarding Sharps Creek as various commenters have contended that it does not flow from the Bohemia Mining District. EPA believes that it is appropriate to include Sharps Creek in this list. Sediment analyzed from Sharps Creek was found to have a mean concentration of 0.20 mg/kg mercury (Hygelund et al., 2001). Sharps Creek is tributary to Dorena Reservoir and Dorena Reservoir is a known area of mercury methylation, is listed for mercury on the 303(d) list of impaired waterways and has fish consumption advisories in place for mercury. There are no demonstrated methods to prevent the mobilization during suction dredge mining and subsequent methylation of mercury. All of the streams for which the zero WLA is assigned are within the Coast Fork HUC8 watershed. Because the 700PM discharge permit applies to suction dredging, reduction in THg loads from suction dredging will also be tabulated as part of the overall reduction goal for wastewater and industrial dischargers. EPA retained a 10% reduction goal for this category in the Coast Fork HUC8 watershed.

Comment ID L26-12

Comment Category TMDL Implementation

Comment Text

10. Implementation Uncertainty: a. Section 7.1.2 and Tables 2 and 3 of Section 7.4 of EPA's TMDL assigns an 88% reduction of mercury in groundwater to land managers of agriculture, forest, shrub, developed, water impoundments and water conveyance entities. The text acknowledges high uncertainty about groundwater mercury loading, but lacks data, information and any other justification

for establishing a new source category, which is not addressed in DEQ's TMDL or WQMP. An approach to implementation of this reduction is uncertain, and a better understanding of groundwater mercury and how reductions could be attained from these land managers is needed. B. Section 7.2.1 of EPA's TMDL states EPA's intention to impose greater reductions on major POTWs and industrial dischargers with the greatest contributions of mercury. However, increased reductions are applied in only two subbasins, which don't include all the higher contributing POTWs, and don't affect any operating major industrial facilities. The reductions impact five POTW s in the Middle Willamette and three POTW s in the Lower Willamette. Only one of these is a higher load contributing POTW and it appears that six of these will be expected to achieve mercury effluent concentrations below the range (1 ng/L to 5 ng/L) demonstrated by all advanced treatment technologies currently feasible at the scale of major POTW discharge. C. Section 7.2.3 of EPA's TMDL assigns a 97% reduction of mercury in permitted stormwater discharges to approximately 16 jurisdictions within the Middle Willamette and Lower Willamette sub basins without accompanying data, information or support. One third of these jurisdictions straddle multiple subbasins with different reduction requirements. Many are co-permittees, but would have different reduction requirements under the same permit, and one third have zero or very low estimated loads of mercury. D. No justification is provided in EPA's TMDL for 97% reductions from non-permitted stormwater discharges within the Middle Willamette sub basin, which appears to affect 10 small rural communities out of 61 in the entire Willamette Basin. Because all these discharges were estimated together to contribute 0.92 Kg/yr of mercury, individual contributions may be very minimal.

Response Text
EPA's TMDL specifies an 88% reduction in mercury loading from groundwater, not an 88% reduction in groundwater concentrations.

In response to specific components of this comment:

A. Available mercury monitoring records for groundwater were used to estimate loading to streams in the Willamette River Basin from groundwater. Groundwater mercury observations were limited; therefore, data collection and analysis during the implementation process will guide adaptive management strategies to protect water quality and human health. ODEQ's TMDL contained a general non-point source category that included mercury associated with groundwater ("General Nonpoint Source and Background"). This category also included loading from surface runoff and sediment. EPA's TMDL separated groundwater allocations from the allocations assigned to surface runoff and sediment because land managers have different opportunities to control surface runoff and sediment as compared to groundwater.

B. Higher reductions to POTWs and industrial dischargers were only assigned in catchments that require higher reductions from these sources to meet the TMDL targets based on the fish tissue criterion. This includes the Middle Willamette and Lower Willamette. In the latter, for example, NPDES permitted POTWs and industrial wastewater dischargers contribute about 11% of the THg load in the catchment. Multiple major POTWs in the Middle Willamette and Lower Willamette exhibited effluent mercury concentrations between 10 to 30 ng/L, whereas, several other major POTWs in the Basin exhibited effluent mercury concentrations in the much lower range of 2 to 5 ng/L. Upon renewal, DEQ will determine how to implement TMDL requirements in the effluent limits of applicable NPDES wastewater permits.

C. As discussed in ODEQ's TMDL and EPA's TMDL, the water column THg target is 0.14 ng/L. Existing median THg concentrations differ by HUC as shown in Table 1 of EPA's TMDL, therefore, different percent reductions are required for different catchments in the Basin. For a given catchment, the

allocated reduction for permitted urban stormwater is applicable to the portions of MS4s within the catchment.

D. Non-permitted urban stormwater contributes about 4% of the total load in the Middle Willamette catchment, which is higher than NPDES permitted POTW wastewater discharges and higher than NPDES permitted industrial wastewater discharges in the Middle Willamette. The reductions allocated are necessary to meet the water column concentration target of 0.14 ng/L for the TMDL that is based on the fish tissue criterion.

Comment ID L26-13

Comment Category TMDL Implementation

Comment Text

Section 7 .1.1 of EPA' s TMDL explains the rationale for assigning a 35% passive reduction of mercury deposited from global air emissions, as opposed to DEQ's allocation of 11 %. However, Table 3 presents EPA's reductions in at-source loads with a 35% reduction for air deposition direct to water only. This contrasts with the text in Section 7.1.2 and footnote 6 on page 8, which assert that reductions in wet and dry air deposition of mercury to the landscape are assumed to be 35%, which therefore, increases the effective reduction of air deposited mercury running off the landscape. As noted in Figure 5-17 of Tetra Tech's TMDL Technical Support Document, atmospheric deposition direct to streams accounts for only 1 % of the mercury contributions in the basin and "most of the sediment erosion, surface runoff, and groundwater loads (pictured as 93% collectively of the mercury contributions in the basin) originate from past atmospheric deposition of legacy emissions." Please correct the category label in all tables or clarify if the 35% reduction in atmospherically deposited mercury is intended to account for deposition everywhere or only to streams.

Response Text

The existing loads and assigned reductions in Table 2 and Table 3 of EPA's TMDL, respectively, for the category "Atmospheric deposition direct to water" are for mercury atmospherically deposited to water surfaces in the Willamette River Basin. Atmospheric deposition of mercury to the landscape that is transported to waterbodies is represented in the loads for the following categories: "Agriculture, forest, shrub, developed, other (runoff and sediment)" and "Groundwater (agriculture, forest, shrub, developed, other)". The reductions required for land managers after accounting for the 35% reduction in atmospheric deposition to the landscape, which is equivalent to the percent reduction for atmospheric deposition direct to waterbodies, are presented in Table 3. The footnote on page 8 of EPA's TMDL (#6) explains that these are not additive. It describes the computation of the cumulative reduction achieved through reductions to atmospheric deposition and land management controls.

Comment ID L26-14

Comment Category Allocations

Comment Text

12. In Section 7.2.1, EPA applied an increased subbasin-specific wasteload allocation (17% reduction) specific to major industrial facilities in the Middle Willamette subbasin. In contrast, DEQ's wasteload allocation is aggregated across the entire basin and captures all municipal, industrial and general wastewater permits to achieve a cumulative reduction of 10%. Although there are three major permitted industrial facilities in the Middle Willamette sub-basin, none of them currently operate. The TMDL needs to include an explanation and rationale for how this increased and distinct allocation will result in additional reductions in this subbasin.

Response Text
We appreciate this information. At the time the EPA TMDL was established it was not known that some of these facilities did not currently operate, but they do continue to have active NPDES discharge permits. If these facilities resume operation, the allocations established in the TMDL will ensure that the TMDL target will be achieved in this subbasin. If these facilities remain permanently closed and their NPDES permits are terminated, the loading from these facilities could be counted towards attaining the point source reductions in this subbasin, in future TMDL revisions.

Comment ID L26-15

Comment Category General Comments

Comment Text
Section 7.2.4 of EPA's TMDL references "page 62 of Appendix A in DEQ's TMDL" for specifics on "the suction dredging industry… locations" to which a zero WLA applies. However, Appendix A of DEQ's TMDL is the Tetra Tech TMDL Technical Support Document, which does not present DEQ's conclusions and does not provide information on suction mining locations on page 62. Suction mining locations in the tributaries to Dorena Reservoir are provided on page 51 of DEQ' s TMDL (not in any appendix). Please correct the reference.

Response Text
Section 7.2.4 of EPA's TMDL refers to "…suction dredge mining at locations described in the ODEQ's 2019 TMDL (p. 62, Appendix A…") This is intended to refer to Appendix A to the EPA TMDL, which consists of the ODEQ TMDL document. The list of locations is given on page 62 of the main body of ODEQ's 2019 TMDL. EPA revised the TMDL to clarify this point.

Comment ID L26-16

Comment Category General Comments

Comment Text
Section 10 of EPA's TMDL refers to DEQ's TMDL and WQMP and finds DEQ's approach to demonstrating reasonable assurance to be technically feasible and legally sufficient. However, EPA's text contains inaccuracies, which should be corrected.

A. The text incorrectly refers to Section 14 of DEQ's TMDL as including elements of the WQMP, which are in Section 13.

b. The text misstates DEQ's examples of proven techniques for reducing mercury from point sources.

i. DEQ does not rely on monitoring permitted effluent discharge as a mercury reduction technique. Rather, monitoring is used to determine the need for minimization measures. The application of minimization measures reduce mercury.

ii. DEQ does not state that application of advanced wastewater treatment accomplishes greater biosolids removal. Rather, DEQ provided an example of measured reductions of mercury in biosolids at one facility. This demonstrates that minimization measures (specifically the dental amalgam removal program) have resulted in less mercury entering the wastewater treatment facility. Importantly, this specific mercury minimization program has been implemented for more than a decade and most dental facilities in the Willamette Basin have now been addressed. Additional reductions from that source cannot be relied on to accomplish greater reductions from POTWs.

Response Text
EPA appreciates your comments and will:

- Change the reference of Section 14 to Section 13; and

- Clarify EPA's discussion of ODEQ's examples of proven techniques for reducing mercury from point sources.

Comment ID L26-17

Comment Category General Comments

Comment Text
Table 3 on page 13 of EPA's TMDL indicates that reductions are "NA" for Non-Permitted Urban Stormwater in the McKenzie subbasin. "NA" is not used for any other category or subbasin and no explanation is offered as text or notes. This designation is not reflected for the McKenzie subbasin in the unnumbered table on page 26 summarizing allocation revisions for seven subbasins. Please clarify the designation, provide a rationale for its application in only one source category in one subbasin and align the information presented in multiple tables. DEQ looks forward to EPA's response to comments and completion of the Willamette Basin Mercury TMDL revision process.

Response Text
The 75% reduction for non-permitted urban stormwater was called for in ODEQ's 2019 TMDL. EPA agreed with this reduction as reflected in Appendix C. Allocation Summary for the McKenzie - 1709004, p. 26 of EPA's TMDL. The "NA" reduction in Table 3 of EPA's TMDL was listed in error. As a conforming change, EPA replaced the "NA" in Table 3 in EPA's final TMDL and assigned a 75% reduction to non-permitted urban stormwater in the McKenzie subbasin.

Author Name Kathryn VanNatta

Organization Name ***Northwest Pulp and Paper Association***
Letter ID ***L27***

Comment ID L27-1

Comment Category Other

Comment Text
In the prior 2006 Mercury TMDL, NWPPA supported a "phased approach" with adaptive management by the Department. NWPPA believes the phased approach and additional mercury monitoring has resulted in a much larger data set and an improved scientific foundation for this revised TMDL.

Response Text
EPA agrees that a phased or adaptive management approach to TMDL implementation by ODEQ is needed and appropriate.

Comment ID L27-2

Comment Category Other

Comment Text
NWPPA supports the TMDL's scientific foundation that in-stream mercury pollution comes from a variety of sources with a majority of the mercury load contributions from air deposition sources outside the Willamette Basin and that the science of mercury methylation is still evolving.

Response Text
EPA appreciates the commenter's support of the scientific foundation applied in development of the TMDL.

Comment ID L27-3

Comment Category Other

Comment Text
NWPPA supports the TMDL's pollution prevention and minimization approach, similar to other mercury TMDLs across the nation, to comply with Oregon's exceptionally stringent methyl mercury fish tissue water quality criterion of 0.040 mg/kg (wet weight). NWPPA believes both point and non- point source contributors should be regulated via the TMDL and Water Quality Management plan through pollution prevention and minimization best management practices, to the extent practicable, by the Department or designated management agency.

Response Text
EPA appreciates the comment in support of ODEQ's pollution prevention and minimization approach proposed in the Water Quality Management Plan. EPA agrees that both nonpoint source and point source actions are needed to collectively improve water quality in the Willamette River Basin. While the TMDL is not regulatory, implementation of the Willamette TMDL is achieved through regulatory programs such as the NPDES program and Oregon's non-point source program and the WQMP for the Willamette TMDL.

Comment ID L27-4

Comment Category Other

Comment Text
Comment 4

NWPPA believes that the TMDL's conservative policy decisions and modeling assumptions, combined with an aggressive approach to pollutant prevention and minimization result in a TMDL that is very highly protective of the most sensitive beneficial use of fish consumption in addition to being highly protective of all other designated beneficial uses of waters in the Willamette Basin.

Response Text
EPA appreciates the commenter's support of the TMDL's protection of beneficial uses.

Comment ID L27-5

Comment Category Point Source Wasteload Allocations

Comment Text
NWPPA supports the aggregate 10 percent reduction total mercury target for National Pollution Discharge Elimination System (NPDES) permits with the proposed narrative waste load allocation approach for point source total mercury reductions to the extent practicable under DEQ's wastewater permit program.

NWPPA believes the 10 percent aggregate reduction of total mercury per day for all point source water permit holders is appropriate given that: 1) industrial point sources in the Willamette Basin provide 0.3 percent of the total load for mercury to the Willamette; 2) all permitted point source dischargers (NPDES and stormwater) comprise approximately 4 percent of the total mercury load; 3) the applicable water quality criterion is a methylmercury fish tissue criterion; and, 4) scientific knowledge of the Willamette Basin methylation processes are still evolving.

NWPPA strongly supports the Department's conclusion in the TMDL Draft for Public Comment, dated July 3, 2019, on page 66. As discussed in the TMDL Technical Support Document, deposition of mercury onto the Oregon landscape is the dominant source of mercury reaching Willamette Basin streams. While these deposited air emissions originate as a mix of global, national, regional and local sources, the largest portion is derived from historical deposition of global anthropogenic mercury emissions (TetraTech, 2019), or background sources outside of DEQ's control, per Oregon's definition in OAR 340-042-0030. Further, mercury loads from all permitted (wastewater and stormwater) point source discharges combined are conservatively estimated to be approximately four percent of the total load to Willamette Basin streams. As was found in the 2006 TMDL analysis, even total elimination of this estimated 1.1 percent wastewater and the 3 percent estimated municipal stormwater contributions would not result in measurable response in terms of lowered mercury in the streams, due to the far greater proportion of contributions from atmospheric deposition and nonpoint source delivery to streams, as well as the decades long lag time for measurable in-stream response. However, DEQ recognizes that, as an environmentally persistent bioaccumulative toxic substance, mercury should be eliminated from discharges to the extent practicable. Therefore, based on the Clean Water Act's allowance for aggregate or individual allocations (40 CFR 130.2(i)); EPA's Guidance for implementing the January 2001 Methylmercury WQ Criterion (2010) and EPA's Memo on Elements of Mercury TMDLs Where Mercury Loadings are Predominantly from Air Deposition (2008); precedents of EPA approved mercury TMDLs of 21 other states (dated 2001-2018); and as indicated by a rigorous scientific

evaluation, DEQ is assigning aggregate waste load allocations for municipal and industrial wastewater and municipal stormwater point source discharges. The waste load allocations that follow meet the intent of individual allocations by requiring site -specific permit requirements and monitoring with enforceable conditions, such that individual site reductions will be completed and will cumulatively add up to the aggregate percent reduction requirements by sector set by the TMDL.

Response Text
The commenter provides support for ODEQ's basin-wide aggregate waste load allocation approach of 10% reduction for point sources as presented in the ODEQ's July 2019 TMDL. As discussed in EPA's TMDL, this approach was not protective of water quality in HUCs that exhibit median THg concentrations that are higher than the basin-wide median concentration, such as the Middle Willamette. Oregon DEQ established allocations that varied by source category, expressed as required percent reductions. EPA retained these allocations where they would achieve the TMDL target. In other subbasins, EPA revised the allocations. In doing so, EPA continued to vary reductions by source category as in the ODEQ TMDL, but revisions were not identical in each subbasin due to differences in current concentration and the mix of sources within each subbasin. EPA believes this approach still allows ODEQ flexibility in determining how to implement wasteload allocations among individual permittees, within subbasin source sectors. EPA deviated from ODEQ's 10% basin-wide reduction approach to ensure the allocations were protective of water quality in all HUCs across the basin.

Comment ID L27-6

Comment Category Food Web Model - uncertainty regarding the target THg

Comment Text
NWPPA has concerns with the TMDL's conservative approach in the application of the food web model to determine an overly conservative in-stream water column target of 0.14 ng/L to meet the exceptionally stringent fish tissue criterion of 0.040 mg/kg (wet weight) methyl mercury (OAR 340- 041-8033, Table 40). The recalibrated and updated Food Web Model yields a highly conservative in-stream target of 0.14 ng/L of total mercury because: 1) various non-native species are used in the model; 2) the in-stream target is derived from the most conservative median total mercury target level of the selected fish species—that is, for the Northern Pikeminnow, which is a non-native species known to predate salmon and steelhead smolts; 3) and other conservative policy and modeling assumptions.

Response Text
The statement that the Northern Pikeminnow (Ptychocheilus oregonensis) is a non-native species is incorrect as the Northern Pikeminnow is native to the Columbia River and its tributaries. (See A.M. Garcia, 2014, Northern Pikeminnow, Ptychocheilus oregonensis, Northern Squawfish at https://depts.washington.edu/oldenlab/wordpress/wp-ontent/uploads/2015/09/Ptychocheilus_oregonensis_Martinez_2014.pdf and L.M. Page and B.M. Burr, 2011, A Field Guide to Freshwater Fishes of North America North of Mexico.) In any case, the TMDL target is based on a fish tissue concentration for the protection of human health, so it would not matter if a species was non-native as long as it was present in the Willamette River Basin and potentially subject to consumption by anglers. Selection of the target based on the most conservative calculation from the studied fish species is consistent with the directions from Magistrate Judge Acosta to update the 2006 TMDL, which also relied on the most conservative fish species, with new data and incorporating the new mercury fish tissue criterion. The calculated in-stream target of 0.14 ng/L is very low primarily because the Oregon Administrative Rules revised the fish tissue target criterion from 0.35 mg/kg to 0.040 mg/kg (OAR 340-041-8033, Table 30).

Comment ID L27-7

Comment Category Margin of Safety

Comment Text

NWPPA believes the implicit Margin of Safety is appropriate and the use of the Reserve Capacity for future point source growth/expansion should be allowed without additional regulatory restrictions because the TMDL's conservative policy choices are highly protective of beneficial uses. These highly conservative policy choices, modeling assumptions and mercury transportation assumptions are used throughout the Food Web Model, Mass Balance and Translator models as noted in the Tetra Tech Technical Support Document.

Discussion

NWPPA is concerned with the compounded conservatism of the policy choices and assumptions used in the models leading to overly conservative outcomes and unduly stringent regulatory approaches. Mercury load reduction efforts should be common sense minimization efforts similar to other TMDLs across the nation, to the extent practicable, given that the majority of mercury loading comes from air deposition.

Response Text

This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL. EPA agrees with the commenter that an implicit margin of safety is appropriate. However, EPA's TMDL (Section 9) rejected one of the three components of the margin of safety proposed by ODEQ and instead added another element "Needed reductions in loads are based on comparing water column mercury targets to ambient monitoring data. Those monitoring data are available through 2011 in only 9 of the 12 HUC8 watersheds and thus do not incorporate any reductions in mercury loading that have occurred since 2011. Data presented in ODEQ's 2019 November TMDL (Figure 7-3, p. 37) indicate that mercury concentrations have been declining in more recent years (2012 – 2019) in the Tualatin and Lower Willamette subbasins." EPA agrees that reserving an allocation for future growth or expansions is considered good practice and retained the 1% allocation for Reserve Capacity proposed by ODEQ, portions of which may be granted to dischargers by ODEQ at its discretion. ODEQ made changes in the November 2019 TMDL in response to this comment, as described in the ODEQ Response to Comments (VN#8: Suggested Change ID #350). Therein ODEQ clarified that "…additional regulatory restrictions…" are not proposed in the TMDL for use of reserve capacity for new or expanded point sources. Rather, Section 12 of the ODEQ TMDL states that allocation of a portion of the 1% reserve capacity requires prior "…demonstration of effluent condition and implementation of DEQ approved mercury minimization measures,…" which are the same requirements applied to implementation of the wastewater and stormwater aggregated point source sector wasteload allocations. EPA understands the commenter's concern about mercury load reduction efforts needing to be common sense minimization efforts. As part of ODEQ's WQMP planning process, individual implementation plans will be established.

Comment ID L27-8

Comment Category TMDL Implementation

Comment Text

NWPPA believes the future implementation activities by DEQ and Designated Management Agencies should focus on pollution prevention as regulatory agencies make policy decisions implementing the TMDL and Water Quality Management Plan.

Suggested Remedy

The Department and Designated Management Agencies should focus on adaptive management and allow best management practices already in place designed to reduce anthropogenic mercury loads. The draft TMDL on page 66 addresses that fact that additional analysis reduced the estimated amount of total mercury contributed by point sources in the 2019 draft TMDL from the prior 2006 TMDL.

Response Text
This comment was previously submitted on DEQ's July 2019 Public Review Draft of the TMDL. In the November 2019 Response to Comments (VN#9: Suggested Change ID #351), ODEQ provided the following response, with which EPA concurs: "Response: As noted in Section 13.6, DEQ intends to apply adaptive management principles toward achievement of TMDL goals, informed by the monitoring and evaluation strategy. DEQ clarifies that the referenced statements on page 66 were not conclusions that management actions have resulted in reduced mercury loads in the basin since the 2006 TMDL. Rather, the revised evaluations were more robust and included more data, which allowed for more accurate estimates of mercury loads. The current estimated loads from municipal and industrial point sources are lower than the 2006 estimates, but this does not necessarily indicate loads from these sources were reduced due to application of management measures since 2006. Additional analysis and information is needed for evaluating the effects of implementation on mercury in the basin. DEQ acknowledges that there are stakeholders from multiple sectors, representing varied land uses and sources of mercury, that have already been implementing strategies and actions that are protective of water quality. DEQ anticipates that continued as well as increased efforts to protect water quality will help the basin reach water quality goals for mercury and other TMDL pollutants."

Comment ID L27-9

Comment Category TMDL Implementation

Comment Text
NWPPA believes the Department should continue to leverage new scientific findings to objectively consider whether reducing total mercury has a linear effect on reducing methyl mercury in fish tissue in Willamette Basin fish species and whether the very low proposed modeled target of 0.14 ng/L of instream total mercury can be met. This information (or lack of information) should also be considered when determining the length of time needed to comply with the water quality criterion.

Suggested Remedy

The Department's mercury reductions must be fact checked during TMDL implementation by analyzing methylmercury in fish tissue. Measuring methyl mercury in fish tissue is the correct evaluation factor for complying with the water quality criteria under the Clean Water Act. Without a significant breakthrough in the mechanistic understanding of the factors controlling methylation in the ambient environment there is no remedy to the relationship dilemma between total and methyl mercury. Significant scientific questions remain, including what is the spatial distribution of methylation and does methylation follow temporal (e.g., seasonal) patterns? As the science of mercury methylation processes and mercury transport expands, the Department should use adaptive management for monitoring and adjust the TMDLs best management practices for pollution minimization accordingly.

Response Text
This comment was received during the public comment phase for ODEQ's TMDL. ODEQ provided the following response:

"Thank you for your comment. DEQ will conduct monitoring during implementation to not only measure progress to improving total mercury levels in the water and methylmercury concentration in fish tissue, but will also work with partners and DMAs to conduct studies to better represent the processes influencing methylmercury in fish tissue in the Willamette Basin. DEQ is working with EPA to develop a draft Assessment and Monitoring Strategy that could provide this information. DEQ will work with DMAs for refinement of the draft Strategy and its implementation.:." In another response, ODEQ indicated that it planned to use adaptive management during implementation of the TMDL as described in the WQMP, which also describes proposed monitoring to fill data gaps and better characterize sources.

Comment ID L27-10

Comment Category TMDL Implementation

Comment Text
The Department uses literature values for some point source and non-point source mercury loading values.

Suggested Remedy

As future monitoring yields additional mercury loading data, the Department must use adaptive management and adjust accordingly the TMDLs best management practices for pollution minimization.

Response Text
Literature values were used appropriately to estimate loads from certain point and nonpoint sources when direct monitoring data were not available. This question was submitted previously on ODEQ's July 2019 Public Review Draft of the TMDL and a response was provided in ODEQ's November 2019 Response to Comments (VN#12: Suggested Change ID #354). In that response, ODEQ indicated that it planned to use adaptive management during implementation of the TMDL as described in the WQMP, which also describes proposed monitoring to fill data gaps and better characterize sources.

Comment ID L27-11

Comment Category TSS as surrogate

Comment Text
NWPPA objects the use of Total Suspended Solids (TSS) as a surrogate for measuring mercury and the possible unintended consequences of using TSS as a surrogate for mercury transportation over land into water. NWPPA questions the level of current scientific knowledge regarding: 1) TSS transport contributing to in-stream concentrations of total mercury; 2) the relationship of TSS to methylation processes; and 3) whether a linear cause-and effect relationship exists between TSS and methyl mercury concentrations in Willamette Basin fish tissue.

Discussion

NWPPA has concerns with the reliance on TSS as a surrogate for measuring compliance with methyl mercury reductions in fish tissue. NWPPA questions the scientific relationship between TSS as a surrogate for total mercury transport from land into the Willamette river system. NWPPA believes the scientific relationship is unproven between TSS transport contributing to total mercury loading in the Willamette Basin and the assumption is also unproven that reductions of TSS will result in attainment in the near future of the methylmercury fish tissue water quality criterion. DEQ has already reduced Total Suspended Solid (TSS) benchmarks in 1200-Z Industrial Stormwater Permits in the 2017-2018 permit revision. While we agree TSS reduction is a regulatory tool to reduce soil transport into a river system,

the relationship and timing between TSS load reductions resulting in reductions to methylmercury reductions in fish tissue remains unproven.

Suggested Remedy

NWPPA asks for a written response regarding the Department's plans for future scientific study and baseline validation of TSS as it relates to total mercury transport into river systems and the scientific relationship of TSS reductions contributing to attainment of the 0.040 mg/kg (wet weight) methylmercury water quality criterion.

Response Text
This comment was originally submitted in response to ODEQ's Public Review Draft of the TMDL (July 2019) and refers to ODEQ's Appendix H in the Public Review Draft, which is now Appendix G to the revised ODEQ TMDL. For the November TMDL, ODEQ revised Section 10.3 and Appendix G (formerly Appendix H in the Public Review Draft) in response to this and other related comments.

EPA's 2019 TMDL document does not discuss use of TSS as a surrogate and mentions TSS only once, in the context of Reasonable Assurances, where it is noted that "ODEQs review focuses on water quality trends in TSS loading which ODEQ intends to associate with mercury loading." ODEQ's TMDL, which is attached to the EPA TMDL as Appendix A, does incorporate a discussion of instream surrogate targets, in Section 10.3, and proposes TSS as a surrogate "…to supplement but not supplant the allocations and TMDL water column target for evaluating TMDL implementation effectiveness." The TSS surrogate is thus properly seen as a part of the TMDL implementation strategy which is determined by ODEQ. Note that ODEQ has proposed TSS as a surrogate for the loading of particle-associated total mercury and not as a direct surrogate for methylmercury concentration in water or fish tissue. Erosion of soils is only one of several pathways for mercury loading to waterbodies in the Willamette River Basin. No linear cause-and-effect relationship is proposed between TSS and methylmercury concentrations in fish.

EPA does not believe there is any plausible reason to doubt the relationship between TSS loading and mercury loading. The empirical analysis conducted by ODEQ (Appendix G of ODEQ's November 2019 TMDL) confirms a strong correlation between TSS and total mercury concentrations during times of high TSS loading. It is thus reasonable to choose TSS as a surrogate for mercury loading. Atmospheric deposition of mercury results in elevated concentrations of mercury in surface soils, and erosion of soils will thus transport mercury to streams. EPA encourages NWPPA to participate in the stakeholder process for development of ODEQ's monitoring and assessment plan, which may provide a venue to conduct additional studies to evaluate TSS as a surrogate.

Comment ID L27-12

Comment Category TSS as surrogate

Comment Text
Comment 12

NWPPA asks that facilities with 1200-Z Industrial Stormwater permits be able to prove compliance with the TMDL's proposed TSS surrogate for methyl mercury in fish tissue by alternative compliance methods until the relationship between TSS and mercury has been scientifically evaluated.

Suggested Remedy

As noted in Comment 11, NWPPA is concerned and questions the level of scientific knowledge of TSS loading contributing to exceedances of methyl mercury fish tissue criterion and asks for further scientific

study to establish a surrogate relationship between TSS loading and methylmercury in Willamette Basin fish tissue.

Response Text

This comment refers to ODEQ's proposed use of TSS as a surrogate for mercury monitoring to estimate loading as part of the implementation plan associated with the TMDL. The same comment was submitted for the Public Review Draft of ODEQ's TMDL. In response to this comment, ODEQ clarified that the TMDL TSS surrogate is not being applied as a compliance point in NPDES permits. Rather, based on the relationship found between TSS and total mercury, surrogate instream targets were set for reductions in high TSS concentrations to reduce total mercury in waterbodies in the Willamette River Basin. In addition, the TSS surrogate was to be used to evaluate progress towards achieving the allocations and total mercury water column target for the TMDL. These reductions of TSS are expected to reduce total mercury loads that occur during high precipitation events and high flows. ODEQ revised Section 10.3 and Appendix H in response to this and other comments regarding the TSS surrogate. Those changes are incorporated in Appendix A to EPA's TMDL.

Author Name Brent Stevenson

Organization Name ***Santiam Water Control District***

Letter ID ***L28***

Comment ID L28-1

Comment Category TMDL Implementation

Comment Text

The Santiam Water Control District ("SWCD") is an Oregon water control district operating under the power and authority granted to water control districts by Oregon Revised Statutes, Chapter 553 ("Statutory Authority"). SWCD is controlled by a board of directors comprised of local farmers. SWCD provides irrigation water to agricultural patrons in the Willamette Basin along the North Santiam River. SWCD holds water rights to irrigate over 17,000 acres.

The SWCD water conveyance facilities ("SWCD facilities") run approximately 118 miles and consist primarily of open canals located on rights-of-way across the agricultural lands of district members. SWCD does not own or control land that discharges into the SWCD Facilities. SWCD does not hold legal control over water quality discharges into SWCD facilities.

Response Text

A similar comment was submitted on ODEQ's July 2019 Public Review Draft of the TMDL (Comment 76 in ODEQ's November 2019 Response to Comments). EPA recognizes that the SWCDs do not have regulatory control over land that discharges into SWCD facilities. However, as noted by ODEQ in the November Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system." EPA supports ODEQ's identification of SWCD and Water Conveyance Entities (WCEs) as DMAs or responsible persons. EPA also supports DEQ's commitment to work with DMAs and "responsible persons" to help develop their TMDL implementation plans for achieving the goals of this TMDL.

Comment ID L28-2

Comment Category TMDL Implementation

Comment Text

SWCD understands that development of a TMDL is a complex process and appreciates the work DEQ has invested in preparing the Draft TMDL. Brent Stevenson, SWCD District Manager, is a member of the TMDL Advisory Committee. SWCD has committed resources to meaningful participation in the DEQ administrative process surrounding the Draft TMDL. During this public process, SWCD and other agricultural water districts have consistently expressed concern over the Draft TMDL "responsible person" designation.

III. SWCD Interest in the Draft TMDL.

The Draft TMDL designates SWCD as a "responsible person" obligated to implement management strategies and develop sector-specific implementation plans. SWCD has several concerns with this

designation. First, SWCD and many other water conveyance entities ("WCEs") do not perform activities that contribute mercury to waterbodies. Instead, WCEs merely transport water. SWCD is limited by its Statutory Authority, which does not grant SWCD regulatory authority over the water quality of third-party discharges into SWCD Facilities. Other agencies and jurisdictions control and regulate water quality entering SWCD Facilities. Therefore, SWCD cannot perform the obligation to implement the management strategies required by the Draft TMDL. The unspecific and undefined "responsible person" designation imposes a compliance obligation without extending the corresponding control over the factors necessary to achieve compliance. Therefore, the legal disconnect of the Draft TMDL codifies environmental decline by agency order while exposing "responsible persons" to unbound legal risk and potentially infinite administrative burden. The Draft TMDL proposes a legal mechanism that would assure mercury water quality standards are not attained because the regulated entities upon which it relies cannot perform the proposed obligations. Because of this threatened harm to SWCD operations and SWCD members, SWCD has an immediate and important interest in the draft TMDL.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and minor changes were made in the ODEQ November 2019 TMDL in response. The comment focuses on the validity of WCEs being identified as "responsible persons" with implementation responsibilities, a subject not within the scope of EPA's TMDL. EPA recognizes that the SWCDs do not have regulatory control over land that discharges into SWCD facilities. However, as noted by DEQ in the November Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system."

Comment ID L28-3

Comment Category TMDL Implementation

Comment Text
The Draft TMDL fails to clearly distinguish "responsible person" obligations from DMA obligations. The Draft TMDL states that a "responsible person" is "an entity identified in a TMDL that has responsibility to meet assigned allocations and/or surrogate measures. DMAs and "responsible persons "are responsible for implementing management strategies and developing and revising sector-specific or source-specific implementation plans, unless otherwise indicated in the WQMP." DEQ's administrative rules do not differentiate between a "responsible person" and a DMA. The rules do not define the term "responsible person." The rules define a DMA in OAR 340-042-0030(2) as "a federal, state or local governmental agency that has legal authority over a sector or source contributing pollutants, and is identified as such by the Department of Environmental Quality in a TMDL". SWCD holds no such legal authority.

Obliquely, the Draft TMDL distinguishes WCEs (as a sub-group of "responsible persons") from DMAs by acknowledging that unlike DMAs, WCEs do not have the regulatory authority to assert legal controls over mercury in their facilities. This leads to the conclusion that "responsible persons" are entities without regulatory authority which are nonetheless required to meet the requirements placed on DMAs (DMAs which, unlike SWCD, have actual regulatory authority over a sector of activity.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and minor changes were made in the ODEQ November 2019 TMDL to clarify the definition of "responsible persons". The comment focuses on the need to clarify the difference between the obligations of a "responsible person" and a "DMA", a subject not within the scope of EPA's TMDL. EPA recognizes that the SWCD does not have regulatory control over land that discharges into SWCD facilities. However, as noted by DEQ in the November 2019 Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system." In the ODEQ November 2019 TMDL, ODEQ provides that over the next two years ODEQ will work directly with responsible persons to determine implementation planning and reporting requirements for each system. EPA supports ODEQ's approach to work with WCEs as responsible persons to develop appropriate implementation plans for achieving the goals of the TMDL.

Comment ID L28-4

Comment Category TMDL Implementation

Comment Text
The Draft TMDL fails to clearly define the role of Santiam Water Conveyance District (SWCD). SWCD is named once in the Draft TMDL -Appendix E, under the heading "DMA Name." Appendix E also categorizes SWCD as a "water conveyance" type of "DMA Category." The Draft TMDL notes that "Appendix E . . . lists the WCEs that DEQ has identified as other persons." Communications from DEQ indicate that the agency intends to designate SWCD, along with the other "water conveyance" entities, not as a Designated Management Agency ("DMA"), but as a "responsible person." The Draft TMDL must clearly define SWCD's role in order for SWCD to be able to comply. A failure to provide such definition exposes SWCD to potentially open ended and arbitrary DEQ enforcement and penalties. This would render the requirements void for vagueness.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL. In its response, DEQ did agree "…that the column header in the table shown in Appendix E is inaccurate and the column header was revised to reflect responsible persons as well as Designated Management Agencies. EPA concurs with DEQ's change to its November 2019 TMDL which identifies the WCEs as responsible persons.

Comment ID L28-5

Comment Category TMDL Implementation

Comment Text
SWCD does not have regulatory authority over the water quality of discharges into SWCD Facilities.

The Draft TMDL appears to require SWCD to control mercury within SWCD Facilities as if SWCD had the statutory authority and the regulatory control held by a DMA. SWCD holds no such legal control. Water control districts, such as SWCD, have the authority granted by the Oregon Legislature, specifically, ORS Chapter 553. ORS Chapter 553 does not grant SWCD the authority to regulate agricultural return flow water quality or the water quality of other parties discharging into SWCD Facilities. The Draft TMDL

acknowledges that WCEs do not have the regulatory authority to assert legal control over mercury levels in their facilities, yet the Draft TMDL still assigns a regulatory obligation and the corresponding legal exposure to those entities; the same requirements the Draft TMDL would impose upon DMAs holding actual legal control.

DEQ claims WCEs have "direct control over land or water management activities affecting mercury loading to rivers and streams." Accordingly, DEQ expects WCEs to "[m]anage upland conveyance system infrastructure, for example, roads, pumps, etc. to prevent soil erosion, and sediment delivery to waterbodies." SWCD does not have control over the uplands from which return flows and stormwater originate. SWCD does not have control over the private landowner conveyances that discharge into SWCD Facilities. SWCD does not have control over private and municipal roads that create run-off discharged into SWCD Facilities.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL in response.

EPA recognizes that the SWCDs do not have regulatory control over land that discharges into SWCD facilities. However, as noted by ODEQ in the November Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example, implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system." EPA concurs with ODEQ's approach in identifying water conveyances as DMAs or responsible persons.

Comment ID L28-6

Comment Category TMDL Implementation

Comment Text
DEQ's designation of water conveyance entities as "responsible persons "in the Draft TMDL is overbroad, has no legal basis, and improperly shifts a regulatory burden from DEQ.

DEQ lists all WCEs in the Willamette Basin as "responsible persons "in the Draft TMDL without basing the designation on any WCE-shared mercury producing activity. DEQ also fails to identify WCEs by type (irrigation, water control, etc.) by primary purposes, or by actual entity activities. DEQ appears to have listed every entity that potentially falls within the undefined "water conveyance entity" term without any developed basis for inclusion.

DEQ does not point to any specific sediment or erosion-initializing activities performed by all the listed WCEs. The only "activity" in which all listed WCEs engage is the transport of water. For example, one listed WCE operates a closed (piped) water conveyance system, another does not hold water rights, and another pumps water from one end of a natural waterbody to the other without changing the composition of the conveyed water.

WCEs should not adopt management responsibilities under the TMDL because they are not "sources" of mercury pollution and because they cannot regulate or otherwise control any sector of mercury pollution. DEQ has provided no other basis for which it can impose requirements on WCEs under the TMDL. Under OAR 340-042-0030 a "Source" is defined as "any process, practice, activity or resulting condition that causes or may cause pollution or the introduction of pollutants to a waterbody." The

WCEs identified in the Draft TMDL have no common process, practice, or activity beyond the mere transport of water. The conveyance of water does not create mercury. Instead, the pollutant is discharged by the lands draining into conveyance facilities.

DEQ will rely upon its "Decision Tree" (not included with the Draft TMDL or in the materials for public comment) to determine the planning and reporting requirements of WCEs. But the Decision Tree does not accommodate or consider whether the subject WCE introduces or controls the introduction of mercury into the waterbodies–there is no administrative step where DEQ evaluates whether a WCE performs a sediment or erosion-initializing activity. Rather, the Decision Tree's threshold question is whether WCE return flows enter waters of the state. Such an evaluation is at once insufficient and unnecessary. It is insufficient to determine whether the WCE has any control over the pollutant level and it is unnecessary if cases where the WCE operates a closed conveyance environment and in all cases where the facilities are not the source of the pollutant.

Designation of all WCEs as responsible persons, without any basis showing they either contribute, or can control the contribution of, the pollutant which the TMDL regulates, is overbroad and outside the lawful scope of the TMDL. Further, DEQ is improperly shifting its own burden to show an entity is jurisdictional to the WCEs by requiring WCEs to prove out of TMDL regulation rather than DEQ providing evidence that they should be regulated.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL in response.

EPA recognizes that the SWCD does not have regulatory control over land that discharges into SWCD facilities. However, as noted by ODEQ in the November Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example, implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system." EPA concurs with ODEQ's approach in identifying water conveyances as DMAs or responsible persons.

In ODEQ's November 2019 TMDL (incorporated as Appendix A to the EPA TMDL), ODEQ removed references to the "Decision Tree" for WCEs and instead provided a detailed list of expectations in Table 13-21, "Milestones and timelines for DEQ to work with water conveyance entities to plan and carry out implementation of the 2019 Willamette Basin Mercury TMDL." EPA supports DEQ's responses to the commenter.

Comment ID L28-7

Comment Category Non-point Source Load Allocations

Comment Text
The Draft TMDL does not distinguish the wasteload allocations for WCEs from upland agricultural activities.

The TMDL is required to identify pollutant sources, estimate the amount of actual pollutant loading from these sources and establish wasteload and load allocations for these sources. The Draft TMDL identifies only one wasteload allocation for "General Nonpoint Source and Background" which includes Forestry, Agriculture, Water Impoundments, Water Conveyance Entities, Non-Permitted Urban Stormwater, and

Atmospheric Deposition. The Draft TMDL does not estimate the amount of pollutant loading from WCEs as a group, or from the WCEs that deliver irrigation water to agriculture ("Irrigation Entities"). The Draft TMDL does not distinguish among types of agricultural sources–specifically, the modeling data does not allocate mercury between the activities of Irrigation Entities and upland agricultural activities. The Draft TMDL modeling data also fails to separate naturally occurring and background sources of mercury from other sources of mercury. Accordingly, Irrigation Entities are grouped with upland agricultural operations and with non-agricultural runoff from urban non-MS4 stormwater.

The Draft TMDL states that WCEs are only responsible for their activities and not for upland return flows. However, because the Draft TMDL does not set a load allocation for either upland exempt agricultural activities or for Irrigation Entities' activities (whatever those may be) there is no mechanism for determining which entities are meeting, or failing to meet, mercury reductions.

Instead, as proposed, compliance will be based on the performance of the mandated management activities by Irrigation Entities, such as the requirement to manage "upland conveyance system infrastructure, for example, roads, pumps, etc. to prevent soil erosion, and sediment delivery to waterbodies." As discussed above, SWCD and other Irrigation Entities do not have the regulatory authority to implement this management strategy. The Draft TMDL allocates mercury load so broadly across so many sectors and activities that WCEs could never demonstrate any diminution in mercury loading. Therefore, the Draft TMDL sets up the plan in general, and the WCEs in particular, for failure because the Draft TMDL would impose compliance measures the agency cannot quantify and the WCEs cannot meet.

Response Text

EPA's TMDL (Table 3) establishes load allocations for nonpoint sources as percent reductions relative to existing loads. These percent reductions are applicable to general categories of loading pathways, such as mercury associated with sediment erosion from agriculture. As noted at 40 CFR 130.2(g), load allocations for nonpoint sources "…are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading." The percent reduction targets are applicable to these land management activities at the spatial scale of HUC8 watersheds in the Willamette River Basin. Converting these generalized percent reduction targets to specific actions to be undertaken by DMAs and responsible persons, including WCEs, will be accomplished through the Water Quality Management Plan (WQMP). The WQMP is the responsibility of ODEQ and is not an EPA-reviewable component of the TMDL itself. WQMP expectations for WCEs are described in Section 13.3.1.23 of the ODEQ TMDL document, which states that "…these systems are included as responsible persons… because maintenance and management of these systems can impact sediment transport and erosion." In other words, ODEQ has reserved the right to identify specific requirements for WCEs if it is determined that they are significant contributors to mercury loading in the Willamette River Basin. As stated on p. 112 of the ODEQ TMDL, "DEQ will collaborate with watershed partners… to conduct outreach and education to water conveyance entities over the next two years. DEQ will also work individually with owners and operators of water conveyance systems to gather information and better characterize their potential to discharge or have return flows to the Willamette Basin river network and determine what management and reporting strategies are relevant to their specific operations and maintenance activities."

Comment ID L28-8

Comment Category Water Quality Management Plan

Comment Text

Other agencies and jurisdictions hold regulatory authority over water quality discharged into SWCD Facilities and those entities are the proper parties to implement TMDL management plans.

In contrast to SWCD's lack of regulatory authority over water quality, there are several state agencies with authority to control the entities that discharge into SWCD Facilities and with authority over activities in the SWCD Facilities. For example, Oregon Department of Agriculture ("ODA"), has regulatory control over agricultural activities through the Agricultural Water Quality Management Act. ODA has authority to develop Agricultural Water Quality Management Area Plans based on the load allocation to agricultural sources. The Draft TMDL properly identifies ODA as a DMA with regulatory control over a sector of activities. Oregon Department of State Lands ("DSL") has regulatory control over certain activities within water conveyance systems. The Draft TMDL properly designates DSL as a DMA with regulatory control over a sector of activities. Not only does the Draft TMDL acknowledge that water conveyance entities do not have regulatory power, it acknowledges that their conveyance facilities are in fact regulated by other entities designated as DMAs: "[w]ater conveyance systems, including those that are managed for irrigation and drainage, are currently regulated by multiple state and federal agencies, including Oregon Water Resources Department, DSL, USACE, and DEQ's own 401 water quality certification program."

Other entities control the water quality of the non-agricultural stormwater discharged into SWCD Facilities impacting mercury load. Marion County and DEQ issue permits for stormwater discharges into SWCD Facilities without the permission of SWCD. SWCD Facilities also suffer the discharge of unauthorized stormwater from other local jurisdictions. Those entities, parties discharging into SWCD Facilities, are the proper parties for the Draft TMDL to assign responsibility for water quality management activities and the reduction of the mercury load entering SWCD Facilities because those entities are the source of the pollutant or have the land use controls over the source of the pollutant.

Response Text

This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and minor changes were made in the ODEQ November 2019 TMDL in response. Determining TMDL implementation responsibilities is outside the scope of EPA's TMDL. Through ODEQ's WQMP implementation process, ODEQ will work with DMAs and responsible persons to determine the appropriate roles and responsibilities of the SWCD and WCEs in implementing the TMDL.

Comment ID L28-9

Comment Category Water Quality Management Plan

Comment Text

The Draft TMDL management responsibilities are unduly burdensome and duplicative.

SWCD does not have the resources to implement extensive management strategies imposed on responsible persons by the Draft TMDL. SWCD employs a district manager, an office manager, two full time field technicians, and a part-time GIS technician. SWCD finances are limited to the assessments and charges it imposes on its patrons. The Draft TMDL would impose an unfunded mandate on SWCD. For example, SWCD would have to"[c]onduct education and outreach to water users and upland agricultural and urban landowners that discharge to system." SWCD does not have the staff to organize and perform

regular outreach activities or to prepare educational materials. SWCD would need to hire staff or a third-party entity to perform the educational obligations already delegated to other state entities.

The Draft TMDL's imposition of these management responsibilities on SWCD duplicates the obligations already placed upon other agencies and jurisdictions with existing programs in place for the same target population. For example, ODA has existing, well-developed outreach programs for agricultural water users. Municipalities, such as Marion County, have water quality programs including stormwater management plans and resident informational programs. These entities have the sources to develop meaningful and effective outreach programs and the expertise with water quality controls particular to their constituents, which are the same landowners and entities discharging mercury into SWCD Facilities. DEQ should not reasonably expect SWCD to develop better programs than DEQ and sister agencies charged with the very responsibility it now seeks to impose upon SWCD. DEQ should not require SWCD to implement burdensome and duplicative actions.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL in response. Determining TMDL implementation responsibilities is outside the scope of EPA's TMDL. ODEQ will determining the roles and responsibilities of the SWCD and WCEs in implementing the TMDL through its WQMP process.

Comment ID L28-10

Comment Category TMDL Implementation

Comment Text
In order to resolve the issues raised above, the Draft TMDL should incorporate water conveyance entities delivering irrigation water under ODA's DMA jurisdiction

ODA is the proper DMA to manage agriculture and Irrigation Entities. Instead of listing Irrigation Entities as stand-alone "responsible persons, "the Draft TMDL should require ODA to manage Irrigation Entities activities concurrently with other agricultural activities under its existing Agricultural Water Quality Management Act and its mercury-specific DMA management authority ("ODA Management Plans").

ODA and DEQ have an existing relationship in which ODA implements water quality management plans for agricultural areas. The two agencies work together to complete biennial reviews of ODA's Agricultural Water Quality Management Plans in the Upper, Middle and Lower Willamette Basin areas.12Irrigation Entities currently work with their local Soil and Water Conservation Districts to improve water quality through the Oregon Department of Agriculture's Agricultural Water Quality Management Program. Under that program, a Local Advisory Committee ("LAC"), or regional team of stakeholders, meets annually to go over new water quality data, discuss areas that need improvement, and coordinate implementation of these improvements. Irrigation Entities are part of this established and well-developed program. In fact, many local farmers are both LAC members and Irrigation Entity board members. Irrigation Entity staff members are also often members of the LACs. Most of the adopted area plans include specific references to irrigation, ditch cleaning and return flows, because these are all agricultural activities. Inclusion of the Irrigation Entities in the ODA management process supports the argument below that the Irrigation Entities are part of ODA's jurisdiction under the Agricultural Water Quality Management Act. The integration of ODA management, Irrigation Entities, and farmers suggests that the most successful option to pursue water quality success is to incorporate WCEs within the ODA Management Plans.

Effective water quality improvements cannot come from water conveyance activities alone, but from water conveyance activities in coordination with farm and other agricultural activities. For example, Irrigation Entities, with ODA's regulatory support, can identify areas in their systems adversely impacted by return flows and then coordinate with the contributing agricultural sources to address the problem. Alone, the Irrigation Entities cannot require the actual pollutant source to modify its activities. Therefore, if Irrigation Entities are stand-alone "responsible persons", as contemplated in the Draft TMDL, they will be ineffective at improving water quality. The Draft TMDL should instead integrate Irrigation Entities under ODA's Management Plans.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and changes were made in the ODEQ November 2019 TMDL in response. Implementation planning is outside the scope of EPA's TMDL. ODEQ will determining the roles and responsibilities of the SWCD and WCEs in implementing the TMDL through its WQMP process.

Comment ID L28-11

Comment Category Reasonable Assurance

Comment Text
The Draft TMDL fails to demonstrate "reasonable assurance" that "responsible persons" have the actual or legal capacity to implement prescribed management plans.

The Draft TMDL's WQMP must meet the requirement of OAR 340-042-0040(4)(l) to include a "reasonable assurance that management strategies and sector-specific or source-specific implementation plans will be carried out through regulatory or voluntary actions." OAR 340-042-0030(9) defines the term "Reasonable Assurance" as "a demonstration that a TMDL will be implemented by federal, state or local governments or individuals through regulatory or voluntary actions including management strategies or other controls." The Draft TMDL fails to meet the reasonable assurance requirement because it relies on the implementation of sector-specific management plans by "responsible persons" lacking regulatory authority to implement those plans. The Draft TMDL cannot provide reasonable assurances because "responsible persons" have no legal authority to perform the contemplated obligations and therefore, the plan will fail to achieve water quality goals.

The Reasonable Assurances section of the Draft TMDL claims that a "high likelihood of implementation is demonstrated. . ." However, the Draft TMDL fails to cite any legal basis by water conveyance entities (WCEs) may implement several of the required management activities. Despite the legal vacuum created by the proposal, the Draft TMDL offers no other evidence to support the counter-intuitive "high likelihood" conclusion. Because the "responsible person" has no legal authority to compel the performance required to achieve compliance, there are no reasonable assurances that the sector-specific management strategies and implementation plans dependent on WCEs will be performed. DEQ's reliance on Santiam Water Control District (SWCD) and similarly- situated water districts to implement management plans outside of their authority will result in the failure to attain and maintain water quality standards. In the alternative, in order to meet the reasonable assurance requirement, the Draft TMDL should recognize Irrigation Entities under the regulatory umbrella of the ODA Management Plans and align obligations with parties holding the legal authority to perform those obligations.

ORS 568.912(2) grants ODA control over "landowners" (defined to include an operator, such as SWCD) "located within an area subject to a water quality management plan to perform those actions on the landowner's land necessary to prevent and control water pollution from agricultural activities and soil

erosion. “The term “Agricultural Activities” may include (but are not limited to) “Construction or maintenance of any works or facilities . . . . Agricultural and cropping practices; or. . .. Any other measure or avoidance necessary for the prevention or control of water pollution of the waters of the state.”

SWCD performs maintenance of irrigation facilities on the SWCD Facilities running through and serving agricultural lands. Therefore, the maintenance of irrigation facilities is an agricultural activity. While ODA has expressed concern that this language does not encompass Irrigation Entities, and while ODA presently appears inclined to shift administrative responsibility, the legislature may readily clarify the Agricultural Water Quality Management Act to expressly address ODA authority over Irrigation Entities.

If DEQ does not incorporate water conveyance entities into the ODA Management Plans, the agency must address the Draft TMDL deficiencies in some other way. If the Draft TMDL requires water conveyance entities to regulate mercury within their facilities, the legislature must grant the water conveyance entities regulatory authority to do so(e.g., authority over activities on private property discharging water (of any type) into SWCD Facilities). Alternatively, if the Draft TMDL intends water conveyance entities to be responsible only for managing their own activities, the agency must develop a data system that differentiates between upland agricultural activities and water conveyance maintenance activities for the purpose of clarifying that a “responsible person” is not responsible for the impacts of discharges made by other parties over whom the “responsible person” exercises no legal control.

Response Text

This comment was originally submitted on July 2019 Public Review of the ODEQ TMDL and reflects a misunderstanding on the roles and responsibilities of WCEs under the WQMP. These roles and responsibilities were clarified in modifications incorporated into the November 2019 final ODEQ TMDL (incorporated as Appendix A to the EPA TMDL).

In their November 2019 Response to Comments on the Public Review Draft of the ODEQ TMDL, ODEQ provided the following response to similar comments:

“In establishing a TMDL, OAR 340-042-0040(4)(l)(G) states that ODEQ will include a WQMP that includes: identification of persons, including Designated Management Agencies (DMAs), responsible for implementing the management strategies and developing and revising sector-specific or source- specific implementation plans. This rule provides that while a WQMP can designate DMAs it can also identify other persons with a role in implementation. Additionally OAR 340-042-0080(4) states that persons identified in the WQMP must prepare an implementation plan. Implementation plans from sources must provide measures to reduce pollutant loading, not to remedy pollution that the source does not contribute to or control.”

“The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system. DEQ agrees that management activities already regulated for the protection of water quality, for example dredge and fill permits administered by the USACE and DSL which have a DEQ 401 Water Quality Certification, will comply with this TMDL.”

“DEQ agrees that collaborative partnerships are an important component of TMDL implementation; specifically, DEQ identifies in section 13.3.1.21 our commitment to collaborating with Oregon

Department of Agriculture and Oregon Water Resources Congress to conduct outreach and education over the next two years to water conveyance entities. These outreach and education efforts will help to provide additional clarity about TMDL requirements for responsible persons. DEQ encourages OWRC, their members, other water conveyance entities and watershed partners to work with DEQ to coordinate implementation planning efforts over the next two years and then to remain implementation partners moving forward."

"All water conveyance entities named as responsible persons in the TMDL are required to implement the TMDL. Over the next two years DEQ will work directly with responsible persons to determine implementation planning and reporting requirements using available information about the characteristics of each system. DEQ believes this tailored approach will help to better define implementation strategies and goals that include the varied attributes of water conveyance systems in the basin."

EPA supports DEQ's collaborative approach to work with the WCEs as responsible persons to develop and implement strategies and goals that support the overall goals of the TMDL.

Comment ID L28-12

Comment Category Water Quality Management Plan

Comment Text
SWCD appreciates the opportunity to comment on the Draft TMDL and to explain why DEQ should remove SWCD and other WCEs from the list of "responsible persons" in the Draft TMDL.

Response Text
This comment was originally submitted on ODEQ's July 2019 Public Review Draft of the TMDL and minor changes were made in the ODEQ November 2019 TMDL in response. The decision on how SWCD and other WCEs are defined for implementing the TMDL is outside of the scope of EPA's TMDL. EPA does recognize that the SWCD does not have regulatory control over land that discharges into SWCD facilities. However, as noted by ODEQ in the November Response to Comments, "The TMDL WQMP requires water conveyance entities to implement management strategies and actions that are specific to the parts of the system that are owned and/or operated by the water conveyance entity, for example implementation of best management practices to reduce sediment movement when canals and ditches are cleaned or dredged. Water conveyance entities have the legal ability to implement best management practices that pertain to maintenance activities on their system." EPA supports ODEQ's approach to work with DMAs and "responsible persons" to help develop their TMDL implementation plans.

Author Name Joy Archuleta

Organization Name ***U.S. Forest Service***
Letter ID ***L29***

Comment ID L29-1

Comment Category DEQ's authority/responsibility to implement

Comment Text

We appreciate the opportunity to review and provide comment on the Environmental Protection Agency's (EPA) Total Maximum Daily Load for Mercury in the Willamette Basin. The USDA Forest Service (USFS) is committed to protecting and restoring Oregon's waters, as demonstrated by decades of science-based conservation and management of some of the State's most important watersheds. We are committed to full implementation of the Clean Water Act and appreciate the opportunity to comment. We recognize this as an opportunity to meet State and Federal water quality rules and regulations in a proactive and collaborative manner. Water quality protection on USFS land has significantly improved in the last 20 years since implementation of aquatic conservation strategies commonly known as the Northwest Forest Plan, PACFISH and INFISH, which amended the national forest land and resource management plans in both Oregon and Washington. Water quality Best Management Practices (BMPs) for land management activities have been a regional requirement since the 1980s. Our updated national BMP program requires use of standardized monitoring protocols with an emphasis on identifying corrective actions and adaptive management needed to maintain and improve performance on water quality protection. Our 2019 Memorandum of Understanding (MOU) with Oregon Department of Environmental Quality (DEQ) strives to meet all state water quality standards and TMDLs. My staff has worked diligently in partnership with DEQ to develop a draft Water Quality Management Plan (WQMP) that defines a framework of management actions to reduce runoff and erosion from federal forest lands. We are committed to continue working hand-in-hand with DEQ on a water quality implementation plan with measurable objectives and associated timelines for implementing BMPs to reduce mercury transport and improve water quality.

Response Text

EPA appreciates this statement of support from the U.S. Forest Service (USFS) and acknowledges the significant work that USFS has undertaken in protecting and restoring Oregon's waters. EPA encourages USFS to continue to work with DEQ to develop and refine a WQMP that defines a framework of management actions to reduce runoff and erosion from federal forest lands.

Comment ID L29-2

Comment Category Insufficient data and uncertainty in the process

Comment Text

We are however, requesting further clarification on the EPA's sediment erosion calculations. The EPA's TMDL establishes a 97% reduction level for five subbasins, whereas, the analysis demonstrated the needed reductions varied between subbasins with a range from 89% to 97%. We would appreciate further explanation on why the reduction level of 97% was extrapolated across these five subbasins as well as the need for sediment erosion and surface runoff reductions to correlate when modeling depicted otherwise. A 97% reduction in sediment erosion is significantly different than an 89% reduction which was near the benchmark established in the DEQ analysis.

Response Text
The rationale for assigning 97% reductions to erosion-associated mercury loads in some HUC8 subbasins is explained on page 8-9 of the EPA TMDL. The reduction of 88% proposed in the ODEQ TMDL is not sufficient to attain the TMDL fish tissue targets in five HUC8 watersheds. The EPA analysis suggested that reductions ranging from 89% to 97% would be needed to achieve targets in these watersheds. EPA established a 97% reduction for these watersheds primarily to maintain a consistent allocation for similar land uses across these watersheds. Having a consistent allocation goal can simplify implementation planning, and development of specific BMPs, where land uses cross multiple watersheds, such as in forested landscapes. It can also establish an even playing field, so to speak, where there are different landowners in different watersheds for a particular industry. We note that the ODEQ TMDL allocations applied a consistent nonpoint source allocation across all subbasins. We have attempted to continue that approach in the EPA TMDL, though it is challenging to do so given the varying land uses in each subbasin, and varying subbasin mercury concentrations. Applying a 97% reduction to these five subbasins we feel provides a consistent allocation and is protective for all.

Comment ID L29-3

Comment Category DEQ's authority/responsibility to implement

Comment Text
Thank you for the opportunity to comment. We look forward to continuing to work collaboratively and proactively with EPA and DEQ staff to improve water quality in the State. If you have questions please contact Joy Archuleta, Regional Water Quality and Water Rights Program Manager at (503) 808-2696 or joy.archuleta@usda.gov.

Response Text
EPA appreciates this statement of support from the U.S. Forest Service representative.