

Willamette Basin Mercury TMDL

Advisory Committee Meeting Minutes

Thursday, Feb. 15, 2018, 10 a.m. to 3 p.m.
Columbia River Inter-Tribal Fish Commission
Celilo Room, 5th Floor
700 NE Multnomah St, Portland, OR 97232



State of Oregon
Department of
Environmental
Quality

- 9:45** Gather and Settle
- 10:00** Introductions and Summary of Key Issues from the Dec. 5 Meeting
Paula Calvert, DEQ
- DEQ shared the following updates with the committee:
 - The final December meeting notes are available on the Advisory Committee's webpage. DEQ received one set of comments from the committee on the draft notes.
 - The Tribes were invited to join the meeting. A representative of the Columbia River Intertribal Fish Commission is in attendance.
 - DEQ is looking into the logistics of making available the data being used for modeling.

- 10:20** Introduction to Willamette Basin Mercury TMDL Modeling
Alan Henning, EPA
- EPA spoke about respective roles of, and collaboration between, EPA and DEQ. EPA also introduced the EPA contractor, TetraTech, spoke about funding availability and provided an overview of litigation driving the 2018-2019 timeline for Willamette Basin Mercury TMDL deliverables.

- 10:30** TMDL Technical Approach
Jon Butcher, Tetra Tech
- Overview of technical approach
- Tetra Tech stated that the technical approach is similar to that of the 2006 Willamette Basin Mercury TMDL with addition of five times more data as well as use of a calibrated watershed loading model (HSPF). The watershed mass balance model connects sources of mercury to total mercury (THg) in impaired rivers and streams. The model includes a calibrated watershed model of the Willamette Basin, which was not available in 2006. The watershed model accounts for flow, sediment and nutrients. The translator model uses empirical observations to find local relationships between methyl mercury (MeHg) and THg. The food web model is the same model used in the 2006 TMDL, which has been improved with additional data collected since completion of the 2006 TMDL.
 - OR Farm Bureau requested a map of mercury impaired streams.
 - DEQ will make one available on the advisory committee website.

TMDL Program

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

Data summary

- Tetra Tech stated that there is considerably more data available compared to what was available for the 2006 TMDL.
- OR Farm Bureau: Why does sampling vary so much every year?
 - Tetra Tech: Sampling is dependent on funding levels.¹
- Clean Water Services: Do fish tissue data only represent pikeminnow?
 - DEQ: It includes other resident fish as well, such as smallmouth and largemouth bass, rainbow trout and large scale sucker. We focus on sampling resident fish species because those are the fish that reside year round in Oregon waterbodies and would be a better representative fish to assess bioaccumulation of toxins from pollutant sources in Oregon.
- City of Albany: Is there adequate data from all levels of the trophic chain?
 - Tetra Tech: Whether it is adequate is a fair question; these are the data we have available to use.
- Assn of NW Steelheaders: Do we have spatial distribution of the fish tissue data?
 - Tetra Tech: Time constraints will not allow us to assess whether MeHg is accumulating differently in different parts of the watershed or whether methylation occurs at different rates in different parts of the watershed.
- Horning Farms: Is timing of data collection is the same throughout the year?
 - OR Farm Bureau: Are you accounting for precipitation and weather pattern differences?
 - Tetra Tech: I think what we will see is that the relationship between THg and MeHg does not change much from year to year
- ODA: Isn't dissolved oxygen a factor in methylation?
 - Tetra Tech: Yes, but methylation can largely take place in soils and sediments. De-methylation can occur via ultraviolet processes.
- NW Pulp & Paper Assn: You show four data gaps on the slide, so is this a concern for TMDL development? What are the criteria for having enough data for TMDLs?
 - Tetra Tech: According to EPA, a lack of data is not an excuse not to do a TMDL. It is not going to be perfect, but we have enough data to get a good approximation.
 - DEQ: We are using the same approach that we did in 2006 but with considerably more data. It is adequate for us to move forward.

¹ Sampling conducted by DEQ is dependent on monitoring objectives and funding available to support those objectives. Mercury data is also collected as part of discrete monitoring projects. For example, DEQ's toxics monitoring program conducts sampling on a rotating basis in each of Oregon's subbasins. USGS or EPA data used in the Willamette Basin TMDL modeling may also be collected as part of a specific monitoring project, such as sampling associated with the Portland Harbor Superfund site.

Food web model

- NW Pulp & Paper Assn: Please provide a version of the “Feeding relationships in the FWM” slide that can be read more easily. Which fish included in the model are native?
 - DEQ: All slides will be made available on the advisory committee website for better viewing.
 - Weyerhaeuser: Northern pikeminnow, rainbow trout, cutthroat trout and largescale sucker are native to Oregon.
 - Tetra Tech: Let us know if there is new information about a food web model. This is the only one we have/ know about.
- ODA: Bioaccumulation increases as fish get older. Do you know how old the sampled fish were? Would magnification be skewed depending on how long the fish are exposed?
 - Tetra Tech: Mostly adults of edible age; length is included in the data and can be used as a surrogate for age. It is not that important because we are interested in the average. We are coming up with a distribution and not trying to predict what the concentration is in any particular fish at a specific time.
 - ODA: It may still be useful to know which parts of the system have the biggest problem.
- Clean Water Services: You mentioned “of edible size.” Is there a difference between that and what species are edible, e.g. people don’t really eat pikeminnow.
 - Assn of NW Steelheaders: There are a lot of people out there that eat a lot of non-trophy fish, like bass. It is an easy entry point for people, because fishing for some of these types of fish does not require a lot of gear etc.
 - Weyerhaeuser: What rate are these non-trophy fish being eaten, though? You use the data to develop a representative fish.
 - Tetra Tech: In theory, you could weigh the data based on consumption.
 - NW Pulp & Paper Assn: Recommends that EPA/DEQ/TT look back at conversations from the prior TMDL deliberations about the pikeminnow, which is at a higher trophic level, but not a commonly consumed fish. Bass is more commonly consumed; pikeminnow is an indicator species but not a target species.
 - DEQ: Oregon’s standards were developed to allow Oregonians to safely consume up to approximately 23 8-oz servings a month of any fish of any size from Oregon waters.²
- Clean Water Services: When will DEQ define a target species?
 - DEQ: We have not yet landed on a target fish species for TMDL modeling purposes. DEQ conservatively chose the northern pikeminnow as the target fish species as part of the 2006 TMDL

² Oregon’s water quality toxics standards for the protection of human health, which include the MeHg fish tissue criterion, does not distinguish between fish that are commonly eaten versus fish that are rarely eaten. This TMDL is being developed to meet the MeHg fish tissue criterion for the protection of human health, as well as the water column total mercury standard for the protection of aquatic life. It should be noted that DEQ is not re-evaluating Oregon’s fish consumption rate (i.e. 175 g/day), which was adopted by the Environmental Quality Commission and approved by EPA in 2011.

because that species had the highest bioaccumulation rate. It was not chosen based on its consumption in Oregon. The bioaccumulation factor for the target fish species is used to translate a MeHg fish tissue concentration to a MeHg water column concentration. A water column concentration may be more convenient to use in assessing whether the fish tissue criterion is being met. The process is the same as it was in 2006. We're constrained by the data we have.

- OR Farm Bureau: Is this all we will hear about this, or do we get to provide feedback on this?
 - DEQ: You will see another table like this [Who Eat's What slide] from the new dataset, but it is DEQ's administrative decision to identify a target fish.
 - Tetra Tech: The food web structure may vary less between different regions in the basin compared to the mercury translator.
- NW Pulp & Paper Assn: There are areas in the basin where there are naturally occurring high levels of mercury, e.g. cinnabar deposits, so how do these impact fish?
 - Tetra Tech: Fish are not as sensitive to mercury toxicity. The TMDL will also be developed to meet the water column criteria for the protection of aquatic life.
 - Tetra Tech: We are also looking specifically at Cottage Grove Reservoir, and we are finding that the ratio of THg to MeHg is fairly constant across regions even though inputs may be different. We are not building individual reservoir models, but we are looking at Cottage Grove to give us an idea
- Weyerhaeuser: How were the four regions or zones identified? Doesn't it make sense to make a food web model for the reservoirs?
 - Tetra Tech: They were geographically defined in the 2006 TMDL. We do not have data for all of the 13 reservoirs in the basin
- NW Pulp & Paper Assn: How will the model address the questions being asked? When does the committee get to provide input?
 - DEQ: The "Food Web Model refinement" slide is outside the scope of our current funding and the Tetra Tech contract. If additional funds become available, and depending on timing, these items may be addressed.
- MW Pulp & Paper Assn: How does this address federal reservoir contributions?
 - DEQ: These uncertainties will remain. The purpose of this committee is to provide input during implementation planning and development. The information being provided today is to keep the committee informed and be transparent about the technical approach being used, as well as data gaps and assumptions being made.
- Clean Water Services: What will DEQ do with the EPA modeling products?
 - DEQ: Model results and contributions from different sectors will be used to assign wasteload and load allocations.

- OR Farm Bureau: You are making a lot of policy calls on the uncertainties implicit in the technical approach. Assumptions made in the model will drive some of our comments on implementation.
- NW Pulp & Paper Assn requested a written record on how DEQ is going to match-up technical concerns from the model to implementation issues that come up in later discussions.

12:00 LUNCH

1:00 TMDL Technical Approach, continued
Jon Butcher, Tetra Tech

Mercury translator model

- NW Pulp & Paper Assn: What methods were used for sample collection? Were the same labs used?
 - Tetra Tech: The bulk of data was collected by DEQ and USGS, which use the EPA ultra-clean bulk method but use different labs.
- USFS: What is the spatial distribution of data?
 - Tetra Tech: Data includes sampling in headwaters down to lower watersheds. We find a lot of non-detects in data from higher up in watershed, and fewer ND's in lower parts of the watershed.
- Clean Water Services: Your conclusion is that the ratio between THg and MeHg is pretty constant, so what is your way of handling ND's?
 - Tetra Tech: It is the ratio from the non-censored data that is pretty constant.
- NW Pulp & Paper Assn: It appears that you are using different methods to address the lack of data; we need to highlight where the approach is making assumptions.
 - Tetra Tech: I agree, and assumptions will be provided and presented, in addition to the assumptions being discussed today.
 - DEQ: DEQ and EPA support the method (spatial and temporal aggregation) being used to address data availability.

Mass balance model

- Brown and Caldwell: If MS4 flows are analyzed separately with the HSPF model, that takes out most of the big cities.
 - DEQ: There will be a request going to MS4s for MS4 boundaries, amount of flow that goes to UIC's etc. so we have a better idea of flow to surface waters.
- Clean Water Services: That request will require a considerable amount of effort to provide that information. How will you handle the approach if you don't get the information you request?
 - Tetra Tech: The HSPF part of the model can be modified at a later time to accommodate these data when they're received.
- ODA: Does HSPF take stream bank erodability into account?
 - Tetra TechJon: It's in the model, but difficult to calibrate because we don't have the data. So there is uncertainty around that.
- Assn of NW SteelheadersMichael: I know of about four mines in Clackamas.

- ODA: The paper I forwarded to DEQ includes about six mines probably not currently accounted for. There was also the cement manufacturer in Durkee; their product was very high in mercury and it may have been used in the Basin for some big projects that could be significant sources of mercury.
 - DEQ: We will forward that literature to Tetra Tech.
- Clean Water Services: For POTW's, more recent permits require more sensitive methodology for sampling, so you should focus on newer data.
- ODF: Will modeling use sediment delivery or erosion rates specific to Oregon?
 - Tetra Tech: Rates will be reflective of what is in the Willamette Basin. Modeling will consider local characteristics, which include soil erodibility, hydrologic soil group, precipitation characteristics such as amount and intensity, forest types and so on.
- Brown and Caldwell: What about calibration? How can the model be completed if you still need data from MS4s?
 - Tetra Tech: There will be calibration, but it will be limited. We will compare mercury loads to well-monitored sites in the mainstem that have flow gauging and mercury data, and compare this to the mass balance model results. It will show us if we are in the ballpark. Delivery rates are calculated with the HSPF model, so it will be reflective of what is in the watershed.
 - DEQ: The basic structure of the model will not be impacted by not having all the MS4 data yet; DEQ will be able to make updates to the model once we get all the data.

2:35

Next Steps

Paula Calvert, DEQ

Action items:

- Draft meeting minutes will be shared with the committee for review and input. Final meeting minutes will be posted to DEQ's Mercury Advisory Committee webpage:
<http://www.oregon.gov/deq/wq/tmdls/Pages/willhgtmdlac2018.aspx>
- Today's presentation is available on the Advisory Committee webpage.
- DOGAMI will provide Hg mine information, including data in the Clackamas that the Assn of NW Steelheaders mentioned, to DEQ and committee.
- MS4 permittees in the Willamette Basin will expect an information request from DEQ by Feb. 16.
- Clean Water Services requested a copy of the point source data being used in the modeling. Note that DEQ anticipates posting all data used in the modeling to the mercury TMDL webpage.
- DEQ will provide a map of mercury impaired waterbodies in the Willamette Basin based on the most current Integrated Report.
- NW Pulp & Paper will provide DEQ a written request about process concerns.

Next Steps

- Next meeting is scheduled for March 21, 2018 at the Linn County Extension, Tangent, Oregon.

At the next meeting, we will hear from Designated Management Agencies and others about all the efforts that are currently underway to help reduce mercury pollutant loading in the Willamette Basin.

3:00

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Alternative formats

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