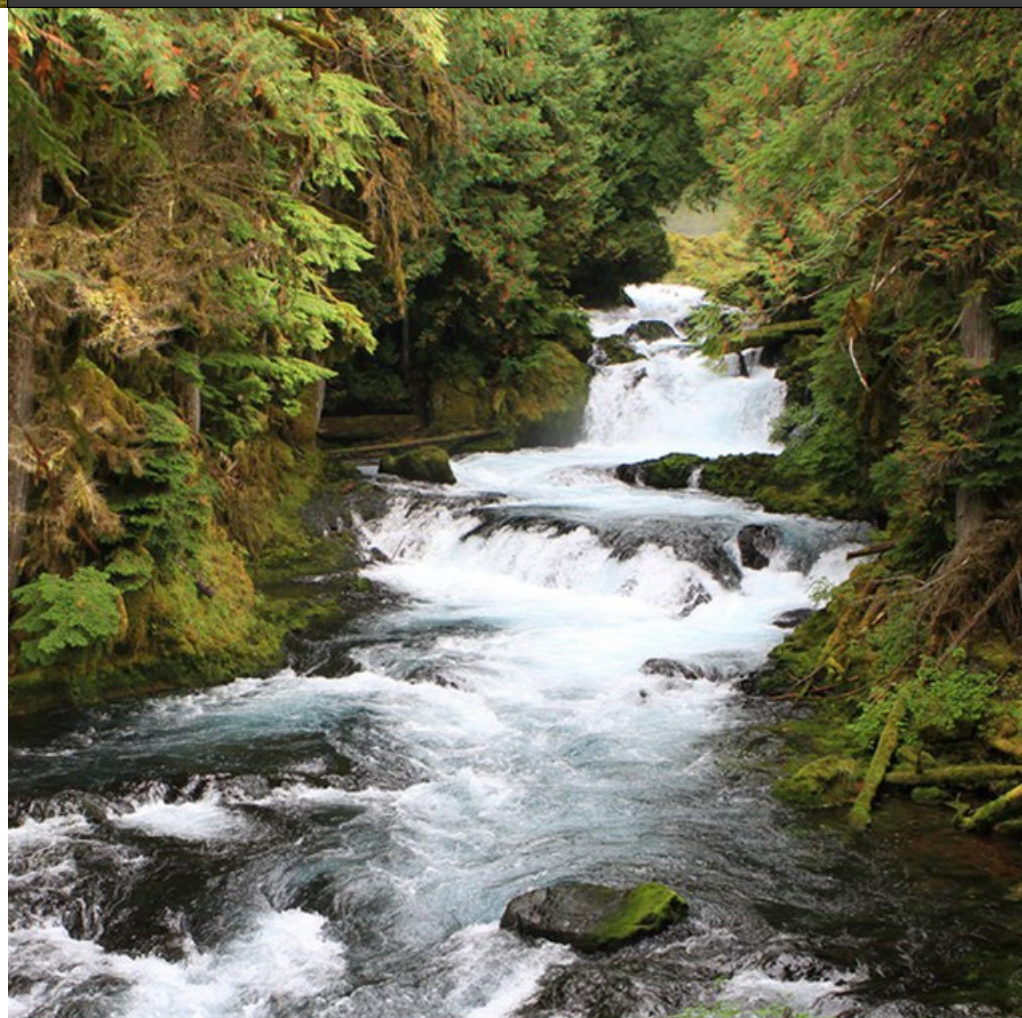
Total Maximum Daily Loads for the Willamette Subbasins

Response to Public Comments

Temperature

May 2025



State of Oregon
DEQ Department of Environmental Quality

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1. Introduction

This response to public comments document addresses comments and questions received on the proposed rule amendment for the Willamette Subbasins Temperature Total Maximum Daily Loads (TMDL) and Water Quality Management Plan (WQMP). The TMDL and WQMP were revised to add temperature TMDLs for the Willamette River and major tributaries. The individuals and organizations shown in Table 1 provided comments on the Draft TMDL and WQMP during the public comment period which was held from August 9 through October 14, 2024. DEQ held a public hearing On September 17, 2024. Comments received during the public comment period and public hearing have been reviewed by DEQ and are addressed in this document to the best extent possible. Comments that resulted in modifications to the TMDL, WQMP, or technical support documents are noted. In total there were 79 unique comments from 12 entities. DEQ made modifications based on 47 of the comments.

Table 1: Commenters who provided comments during the public comment period on the August 2024 Draft Temperature Total Maximum Daily Loads (TMDL) and Water Quality Management Plan (WQMP) for the Willamette Subbasins.

Commenter #	Commenter	Commenter Tag
1	Bonneville Power Administration	BPA
2	City of Albany	City of Albany
3	City of Corvallis	City of Corvallis
4	City of Salem	City of Salem
5	Confederated Tribes of Grand Ronde	CTGR
6	EPA	EPA
7	Lane County	Lane County
8	North Clackamas Watersheds Council	NCWC
9	Oregon Association of Clean Water Agencies	ACWA
10	Trout Unlimited	Trout Unlimited
11	WaterWatch of Oregon	WaterWatch
12	Willamette River Keeper	WRK

2. Comments from: Bonneville Power Administration

BPA #1

Description: Process - Public comment extension request

Comment: Request an extension of the public comment period for the Willamette River Mainstem and Major Tributaries Temperature TMDL Replacement, which currently closes on September 23, 2024.

Response: Request for public comment period extension granted.

BPA #2

Description: TMDL - HUA - NPS - Minimum Duties provision

Comment: The TMDL allocates 0.00°C to dam and reservoir operations but provides upward of 0.05°C to water management activities and water withdrawals, upwards of 0.02°C to solar loading from existing transportation corridors, existing buildings, and existing utility infrastructure, and an exception for the PGE Willamette Falls Hydroelectric Project, which was assigned a load allocation of 0.10°C. In Section 9.1.5.1, Equation 9-3, the TMDL states that the minimum duties provision in OAR 340-041-0028(12)(a) is justification for the 0.00°C allocation. However, the TMDL does not explain how the minimum duties provision is not also applicable to the other nonpoint anthropogenic sources that received a portion of the human use allowance.

Dam and reservoir operations should receive a portion of the human use allowance allocation. Bonneville requests that DEQ describe why this sector was not given a portion of the allocation in the revised TMDL. DEQ responded to a similar March 15 comment from Bonneville by stating that allocations must add up to the total loading capacity, and DEQ is not required to specify how load allocations are to be met. However, DEQ did not provide any explanation on how it assigned the 0.00°C allocation to dam and reservoir operations, but not other sources, from the starting point of the minimum duties provision.

Response: DEQ's rationale for human use allowance assignment to nonpoint source categories is summarized in TSD Section 9 and 9.1. Additional narrative was added to section 9.1 to improve explanation of the allocation approach for dam and reservoir operations and other nonpoint sources.

DEQ and EPA are required to update the temperature TMDLs because they were based, in part on the Natural Conditions Criterion, a section of the temperature standard that was subject to litigation and disapproved by EPA. The current temperature standard does not allow allocations to be based on an HUA increase above the natural condition temperatures. Instead, allocations must be based on an HUA increase above the applicable biologically based numeric criteria. Similarly, the minimum duties provision at OAR 340-041-0028(12)(a) states that anthropogenic sources are only responsible for controlling the thermal effects of their own discharge or activity in accordance with their overall heat contribution. For dam and reservoir operations, DEQ is interpreting this provision to mean that on days when temperatures upstream of the reservoir exceed the applicable numeric criteria plus assigned human use allowance, the dam and reservoir operations must not contribute any additional heat. When this occurs, the HUA is zero relative to the upstream temperatures ensuring dam operators are only responsible for temperature increases caused by the dam and reservoir operations. The explanation of how DEQ implements the minimum duties provision relative to dam and reservoir operations was added into TSD Section 4.11. DEQ developed the surrogate measure temperature target for dam and reservoir operations to be consistent with the minimum duties provision.

The human use allowance assigned to PGE Willamette Falls project and River Mill dam were revised from the draft TMDL. DEQ increased the HUA for River Mill to be consistent with the 2006 TMDL since our analysis shows there is sufficient assimilative capacity in the Clackamas River and Lower Willamette River to do so. DEQ updated the TMDL TSD accordingly. Modeling analysis completed by USGS (Rounds, 2010) found the temperature impacts from large USACE dam and reservoir operations shift temperatures patterns causing cooler 7DADM temperatures

in the summer relative to no dam temperatures, and warmer 7DADM temperatures in the fall and early spring. The 7DADM warming in the fall can be more than 5 degrees Celsius and persist far downstream. Based on this analysis, DEQ concluded that the existing operations at large dam and reservoirs likely attain the HUA and equivalent load allocation assignment in the summer, but not in the fall or early spring. DEQ did not increase the human use allowance for USACE dams and reservoirs in the fall because there is insufficient assimilative capacity available downstream. The zero HUA assigned to USACE dam and reservoirs is consistent with the allocation assigned in the 2006 TMDL. In the 2006 TMDL, the HUA assignment to USACE dams was zero. The temperature targets for the USACE reservoirs were based on the natural thermal potential temperatures upstream of the reservoirs, resulting in no warming above the natural condition downstream of the dams.

Changes were made based on this comment.

BPA #3

Description: TMDL/WQMP - Reservoirs: Generalization of Temperature Control

Comment: Bonneville also requests DEQ become familiar with WVS operations because the application of the temperature water quality criteria is oversimplified and not aligned with the WVS obligation to operate the dams to protect Endangered Species Act (ESA)listed fish. The TMDL TSD Section 7.2 includes “Management and operation of dams and reservoirs to minimize temperature warming,” as a necessary component for achieving TMDL allocations. However, nowhere in the TMDL and related documents is there an acknowledgement of important factors such as seasonally appropriate dam releases conducted to improve habitat for ESA-listed fish under the existing National Marine Fisheries Service Biological Opinion. An additional example is the strategic release of warm water that occurs at Cougar Dam and Detroit Dam during the warm season for the benefit of fall water temperatures.

DEQ’s response to a similar March 15 comment requested constraints be stated in the implementation plan. DEQ seems to confuse BMP implementation with operations for ESA-listed fish, so Bonneville requests acknowledgement in the TMDL or WQMP that operations, such as those conducted for improving conditions for ESA-listed fish, may preclude attainment of the load allocation.

Response: The DEQ uses water quality standards to assess whether the quality of Oregon’s rivers and lakes is adequate for fish and other aquatic life, recreation, drinking, agriculture, industry and other uses. The Clean Water Act requires Oregon to adopt water quality standards to protect these beneficial uses of the state’s waters and set criteria to protect those uses. Oregon submits standards to the EPA for approval. The DEQ is required to set standards for multiple beneficial uses, and these standards can be more protective of water quality. The DEQ is not able to exempt DMAs and responsible persons from TMDL and WQMP requirements. DEQ must develop temperature TMDLs based on the current water quality standards and set allocations such that they add up to the Loading Capacity defined in OAR 340-042-0040(4)(d) and 40 CFR 130.2(f) as the amount of a pollutant or pollutants that a waterbody can receive and still meet water quality standards. The DEQ has provided allocations that add up to the Loading Capacity and will meet the current water quality standards.

BPA #4

Description: TMDL/WQMP - Reservoirs: Controlling Water Temperature via Operational Strategies

Comment: The WQMP Section 5.3.7 states that if large dam owners contribute warming in comparison to upstream temperatures, they are "to include structural and operational strategies for mitigating temperature increases" in their implementation plan if they are not able to show that water released does not contribute to downstream exceedances of water quality standards.

In DEQ's response to Bonneville's March 15 comments, DEQ stated in regard to TMDL implementation plans, "Once operational constraints have been described, then operational latitude can also be described. DEQ expects that operational strategies to reduce temperature impacts will be identified within the constraints described in an implementation plan. If no operational latitude exists, then this should be explicitly stated in the implementation plan."

Based on this response, Bonneville understands DEQ to mean that it will accept a description of realistically implementable operations, if any, that fit within the confines of operational and budgetary constraints, for mitigating temperature increases. If this was not DEQ's intent, Bonneville requests DEQ clarify what it expects in an implementation plan.

Response: The BPA is correct that operational constraints should be described in an implementation plan. The BPA is also correct that a description of realistically implementable operations should be included in an implementation plan. As outlined in Section 5.3.12, budgetary constraints should be included in a fiscal analysis of the resources needed to develop, execute and maintain the programs and projects described in implementation plans. As BPA develops its implementation plan, the DEQ recommends consulting with a basin coordinator to answer more specific questions about information to include in an implementation plan.

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3. Comments from: City of Albany

City of Albany #1

Description: Supports the comments submitted by ACWA

Comment: Albany is a member of the Oregon Association of Clean Water Agencies (ACWA) and supports the comments submitted by ACWA in response to the proposed amended temperature TMDL.

Response: Thank you for your comment. Please refer to Oregon ACWA's comments for DEQ responses.

City of Albany #2

Description: TMDL replacement projects was confusing and made for a difficult review

Comment: The process by which DEQ approached the TMDL replacement projects was confusing and made for a difficult review. DEQ first updated and adopted the Willamette Subbasin temperature TMDL and then combined the documents to include the mainstem and major tributaries which made the changes from the previous mainstem documents difficult to track and was very confusing. While the additional time for public comment is appreciated, the timelines for the temperature TMDL replacement project has not been adequate for thoughtful review.

Response: DEQ appreciates this comment and agrees that the compressed court ordered schedule is challenging for DEQ, EPA, and interested parties. The Willamette was split into two waves of the court ordered project TMDLs: Willamette Subbasins approved by EPA in September 2024, and Willamette Mainstem and Major Tributaries that will be submitted to EPA for action by February 28, 2025.

DEQ decided to amend the Willamette Subbasins rule to include the Mainstem and Major Tributaries. This action supports any future rulemakings by making it easier to amend one rule, as necessary, and combining the TMDLs and Water Quality Management Plans into one rule supports cohesive implementation planning for Designated Management Agencies and interested parties that have operations in both areas.

City of Albany #3

Description: TSD - Point of maximum impact

Comment: Figures 10-13, 10-14, and 10-15 in the Technical Support Document show significant increases in modeled stream temperatures between approximately river miles 114 and 109, more than 4 miles downstream of Albany and ATI discharges. DEQ states that the point of maximum impact (POMI) for point sources is in this location, just upstream of the confluence of the Santiam River (river mile 109). It was explained by DEQ during a RAC meeting that the sharp increase in modeled temperature in this segment of the upper Willamette is not due to another point source discharge as it appears but is the result of the cumulative effects modeling, yet details were not provided. Most all the other river segments show a steep increase in temperature at a point discharge and then trend in a gradual decline after the discharge. The 2006 Temperature TMDL also had the point of maximum impact near this location downstream of the former IP/Weyerhaeuser discharge. This mill facility no longer exists, and its discharge permit has long been closed by DEQ. As a non-conservative pollutant, the temperature profile of the river shown at this location cannot be justified without some unidentified additional heat load.

Response: Temperature impacts of point sources reach a maximum between RM 115 and 109 (the confluence of the Santiam River). DEQ verified that the model does not contain the former Albany IP/Weyerhaeuser discharge. In order to understand why temperature impacts increase in this area, in spite of the absence of large point sources in the immediate area, the following additional modeling scenarios were performed: 1) a scenario with only McKenzie River thermal loads including the IP Springfield Paper Mill industrial discharge, 2) a scenario with only the Metropolitan Wastewater Management Commission (MWMC, Cities of Eugene and Springfield) municipal discharge, and 3) a scenario with only Cascade Pacific Pulp and GP Halsey Mill

industrial discharges. IP Springfield, MWMC, and combined Cascade Pacific and GP discharges comprise the largest thermal loads to the system. The modeling showed that MWMC impacts are more longitudinally variable than the impacts of other discharges, which contributes to cumulative impacts that reach a maximum downstream from RM 115. This is also the cause of a similar delta T increased between RM 164 and 149. TSD Appendix M Section 3.4 has been revised to describe additional analyses performed and insights obtained from the analyses.

Changes were made based on this comment.

City of Albany #4

Description: TMDL - ATI Millersburg discharge location

Comment: The ATI Millersburg discharge shares an outfall with the Albany-Millersburg WRF to the Willamette River. The river mile in Table 7-1 for ATI Millersburg should be corrected to river mile 118 (not river mile 2). Additionally, Figures 10-13, 10-14, and 10-15 in the Technical Support Document should be updated to show that the ATI discharge is located at river mile 118 (not river mile 119).

Response: The river mile for ATI Millersburg in TSD Table 7-1 was updated to river mile 118. The river mile was also added and corrected in TSD Appendix D. The TMDL WLA model had Albany-Millersburg WRF discharging at RM 118.8 and the ATI Millersburg as discharging at RM 117.7, rather than both discharging at the same location. The plots presented how the discharges were modeled. The WLA model was rerun with both discharges at RM 118.8. This modeling showed that the maximum cumulative impacts of point sources at the point of maximum impact are the same regardless as to whether AMWRF is modeled as discharging at RM 118.8 and ATI modeled as discharging at RM 117.7 or both discharges are modeled as discharging at RM 118.8. Because both facilities discharge from the same outfall, DEQ added a note to the TMDL that states “ATI Millersburg and Albany-Millersburg Water Reclamation Facility discharge to the same outfall, but each holds an individual NPDES permit and is assigned its own thermal WLA. These two WLAs may either be addressed individually with the facilities’ permits or may be combined as the sum of the two WLAs and addressed as a single WLA”. Regarding differences between RM 118.8 and RM 118, river miles may vary depending on how river miles are measured. River miles determined by digitizing when developing models may differ from historic river miles. While historic estimates or river mile may indicate RM 118 as the location of the discharge, digitization of the river channel for modeling showed the location of AMWRF as RM 118.8.

Changes were made based on this comment.

City of Albany #5

Description: TMDL - WLA end dates

Comment: Table 9-12 for Albany-Millersburg WRF and Adair Village STP the WLA period end dates for November should be 11/15 (not 11/30).

Response: The end dates of WLAs for Albany-Millersburg WRF and Adair Village STP have been changed from 11/30 to the 11/15 end date of the critical period.

Changes were made based on this comment.

City of Albany #6

Description: Effective shade revision process

Comment: DEQ conducted a vegetation height and shade gap analysis within many DMA jurisdictions and lists the percent shade gap between the current and target effective shade. DMAs cannot verify the data or analysis that was used or evaluate if the targets are achievable. What will be the process if DMAs review the site-specific data that DEQ used and determine that the effective shade gaps listed in the TMDL should be revised?

Response: DMAs may complete their own shade gap analyses using the methods outlined in the TMDL (Section 9.1.5.2) and WQMP (Section 5.3.4.1). Analyses submitted to DEQ will be reviewed and based on review may result in changes to the target effective shade values and shade gap values presented in the TMDL. Changes to target effective shade values may result in redistribution of the sector or source responsible for excess load reduction.

City of Albany #7

Description: TMDL - Individual WLAs for small sources is burdensome

Comment: The City of Albany maintains a 200-J filter backwash permit for its drinking water treatment plant and has been assigned a thermal waste load allocation (WLA) for this minor discharge instead of being included in a “bubble allocation” for small sources as it was in the 2006 TMDL. This approach of assigning and complying with individual WLAs for small sources like water treatment plants and minor wastewater treatment plants is overly burdensome and will not result in meaningful change in water quality.

Response: The City of Albany Drinking Water Treatment Plant currently covered by the 200-J permit discharges to the Calapooia River. The Calapooia River was addressed as part of the first phase of temperature TMDLs for the Willamette Subbasins and is not included in the current rulemaking for the mainstem Willamette River and major tributaries. Therefore, DEQ is unable to consider modifications to the wasteload allocation for this facility.

DEQ’s analysis shows some of the 200-J general permit registrants, including City of Albany’s drinking water treatment plant, have reasonable potential to increase stream temperature above the criteria, particularly on streams with very low flow rates. For this reason, those NPDES permittees were assigned a waste load allocation in the TMDL. EPA and state regulations require that TMDLs assign an allocation if an entity or activity is identified as a potential source of pollutants. In cases where a 200-J registrant does not discharge or was estimated to have a de minimis temperature impact (<= 0.005 deg-C above the applicable criteria at critical conditions) those registrants were not considered significant sources and not assigned a waste load allocation. All but one of the 200-Js discharging to waters included in the Willamette River

and major tributaries TMDL were determined to have de minimus temperature impact and were not assigned a WLA. This analysis and determination were not documented in the draft TSD so we added narrative to explain.

The 2006 TMDL bubble allocation grouped many general permit categories and minor individual permittees under a single thermal limit. The approach assumed a standardized effluent discharge and thermal load for each small source. For any NPDES permit renewal, permit discharge limits must be consistent with the assumptions and requirements of an applicable TMDL. A single thermal load for multiple facilities calculated using a standardized effluent discharge can limit the number of general permit registrants to no more than the number discharging at the time the TMDL was developed. The allocation approach for 100-J registrants in the updated temperature TMDL includes a dedicated human use allowance assignment and a maximum upper limit on the number of new registrants per AU to ensure attainment with the HUA cumulatively. This aspect works like the bubble allocation. DEQ does not think a similar approach is feasible for other general permits or small individual permittees due to the wide range of effluent discharge rates and other permitting aspects. In the case of the 200-J general permit, the total number of registrants is likely to increase in the future as there are multiple pending applications.

Changes were made based on this comment.

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4. Comments from: City of Corvallis

City of Corvallis #1

Description: TMDL - City of Corvallis notes a small difference between the current load and the flow-based TMDL WLAs during the summer

Comment: The TMDL assessment shows the discharge would be able to meet the draft WLAs based on 2014- 2023 data provided to DEQ as part of this assessment; however, there is limited cushion between current thermal loads and the flow based TMDL WLAs during the summer months. The difference was particularly noticeable in 2015 and 2021, characterized by warm, dry spring and summer months (see Figure 1 and Figure 2*). Both figures present the 7-day average Excess Thermal Load (ETL), the minimum (i.e., 7QI0-based) WLAs, and the flow-based WLAs for 2015 and 2021.

The cushion (i.e., the difference between the minimum WLAs and the ETLs) was as low as 29 Mkcal/day in 2015 and 15 Mkcal/day in 2021 during the summer months. These allocations suggest that the Corvallis STP facility may be unable to accommodate flow increases and thermal loads associated with near-term growth in the service area.

*See Figure 1 and Figure 2 in submitted comment letter

Response: DEQ revised wasteload allocations for the City of Corvallis STP using the most recent 9 years of available data (2014-2022) and applied a 10% adjustment factor. 2023 data

were not available. Spring spawning, summer non-spawning, and fall spawning period assigned human use allowances were changed to 0.017, 0.017, and 0.048 degrees Celsius respectively. Additional modeling was performed to evaluate cumulative effects of these changes along with a change in WLAs for the City of Salem Willow Creek STP. The revised wasteload allocations result in additional temperature warming in the Willamette River. The additional warming was addressed by reducing the portion of the HUA set aside as reserve capacity. Now, a minimum of 0.02 degrees Celsius of reserve capacity remains in Willamette River reaches downstream from these point sources.

Changes were made based on this comment.

City of Corvallis #2

Description: TMDL - Request that DEQ use the critical delta T based on 2014-23 data

Comment: An evaluation was conducted to determine the critical delta T values based on the 10-year data set using the DEQ approach to develop the Human Use Allowance. Table 1* presents the draft TMDL HUA, critical delta T values based on 2014-23 data, and recommended HUA with an allowance for near-term growth.

The City of Corvallis requests that DEQ use the critical delta T based on 2014-23 data, including a 10% allowance to account for near-term growth, which would result in waste load allocations achievable in the near term. Therefore, the City of Corvallis requests that DEQ establish the HUA and associated waste load allocations based on the 10-year data set to better account for variability and include an allowance for near-term growth (1).

*See Table 1 in submitted comment document.

1. The City of Corvallis assumes an annualized 0.732% growth rate to project and plan for the community's future. Using this method, Corvallis has a projected population of 65,823 in 2036. Corvallis needs 177 new housing units per year every year until 2036 to meet the demands of our projected population growth and per Executive Order 23-04, Corvallis needs 500 new housing units per year to meet production goals. Sources: Portland State Population Estimates, Corvallis 2016 Urbanization Study.

Response: DEQ revised wasteload allocations for the City of Corvallis STP using the most recent 9 years of available data (2014-2022) and applied a 10% adjustment factor. 2023 data were not available. Spring spawning, summer non-spawning, and fall spawning period assigned human use allowances were changed to 0.017, 0.017, and 0.048 degrees Celsius respectively. Additional modeling was performed to evaluate cumulative effects of these changes along with a change in WLAs for the City of Salem Willow Creek STP. The revised wasteload allocations result in additional temperature warming in the Willamette River. The additional warming was addressed by reducing the portion of the HUA set aside as reserve capacity. Now, a minimum of 0.02 degrees Celsius of reserve capacity remains in Willamette River reaches downstream from these point sources.

Changes were made based on this comment.

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5. Comments from: City of Salem

City of Salem #1

Description: TMDL - Establish the HUA and associated wasteload allocations for the Willow Lake WPCF based on the 10-year data set

Comment: Section 9.2: Point Source Wasteload Allocations in the Technical Support Document states that DEQ's approach to point sources that discharge to the Willamette River or major tributaries was to estimate the maximum current thermal loads of each discharge during spring spawning, summer non-spawning, and fall spawning periods. Evaluations were performed to determine whether the individual or cumulative impacts of current thermal loads exceed acceptable levels. In most cases, it was determined that thermal WLAs could be set equal to or slightly greater than current maximum thermal loads.

During the TMDL development period, the City provided DEQ with effluent flow and effluent temperature data from 2019 -2023. Based on this data and the approach specified in Section 9.2 of the Technical Support Document, wasteload allocations were proposed for the Willow Lake WPCF. The following table presents the assigned human use allowance (HUA), the maximum 7-day average Excess Thermal Load (ETL) from the Willow Lake WPCF, and the minimum variance (i.e., difference) between the 7-day average flow-based wasteload allocations and the 7-day average ETLs for the spring, summer and fall periods:

Table 1: 7-day Average Excess Thermal Load (ETL) and Minimum Variance (2019-2023 data)
[See table in submitted comment document]

A review of the thermal loads based on the 2019-2023 data shows that the discharge should be able to meet the proposed wasteload allocations during the spring, summer and fall time periods. The critical time period is during the summer where there isn't much of a cushion between the proposed wasteload allocations and the thermal loads from the Willow Lake WPCF. To better understand the variability associated with effluent flows and temperatures, and assess the City's ability to meet the proposed wasteload allocations, effluent flow and temperature data over a 10-year period (2014- 2023) were reviewed. The results of the assessment are presented in the table below:

Table 2: 7-day Average Excess Thermal Load (ETL) and Minimum Variance (2014 - 2023 data)
[See table in submitted comment document]

The data continues to show that the primary period of concern is the summer period. With the inclusion of the 10-year data set, the results show that the 7-day average ETLs from the Willow Lake Facility are higher, and the City would have a reduced cushion (minimum variance) when compared to the 5-year data set during the summer. Based on the assessment of the 10-year data set, the City is concerned that the proposed wasteload allocations based on the 5-year data set does not account for variations in climatic conditions.

Additionally, the City is concerned that the proposed wasteload allocations do not account for near-term growth forecasted for the Willow Lake service area. The table below shows the impact of near-term growth that results in a 15% (i.e., 4.5 MGD) increase in effluent flow on ETLs from the Willow Lake WPCF and the associated cushion based on the 10-year data set:

Table 3: 7-day Average Excess Thermal Load and Minimum Variance (2014-2023 data) [See table in submitted comment document]

Based on the 10-year data set and the forecasted near-term growth in the service area, the Willow Lake WPCF would not be able to consistently meet the proposed wasteload allocations during the summer rearing period. The City conducted an evaluation to determine the HUA based on the 10-year data set using the approach that DEQ used to develop the HUA. The table below presents the calculated HUA based on the 10-year data set, the effluent flow and temperature associated with the calculated HUA, and the recommended HUA, which includes an allowance for near-term growth.

Table 4: Calculated and Recommended HUA (2014 - 2023 data) [See table in submitted comment document]

Use of the 10-year data set along with a 15% increase to account for near-term growth and uncertainty would result in wasteload allocations that would be achievable for the near-term. Even with these minor adjustments in wasteload allocations, the City will need to consider thermal load reduction or thermal load offset strategies to continue to meet the wasteload allocations in the long-term.

We urge DEQ to establish the HUA and associated wasteload allocations for the Willow Lake WPCF based on the 10-year data set to better account for climatic variability and to include an allowance for near-term growth. We are submitting an MS Excel file with the City's 10-year effluent flow and temperature data, along with the HUA calculation for your review.

Response: DEQ revised wasteload allocations for the City of Salem Willow Creek STP using the most recent 10 years of available data (2014-2023) and applied adjustment factors of 15% during the spring and 10% during the summer and fall. Additional modeling was performed to evaluate cumulative effects of these changes along with a change in WLAs for the City of Corvallis STP. While the changes result in reductions in reserve capacity, a minimum of 0.02 degrees Celsius of reserve capacity remains in Willamette River reaches downstream from these point sources. The use of adjustment factors of more than 10% for the City of Salem Willow Creek STP during the summer and fall would result in reserve capacity of less than 0.02 degrees Celsius. Therefore, assigned human use allowances for the City of Salem Willow Creek STP for spring spawning, summer non-spawning, and fall spawning periods were changed to 0.026, 0.039, and 0.094 degrees Celsius, respectively.

Changes were made based on this comment.

City of Salem #2

Description: TMDL - Use a portion of the reserve capacity to define the HUA for the Willow Lake WPCF

Comment: Table 9-11 of the draft Willamette Temperature TMDL presents the HUA assignments for source categories on the Willamette River. In the segment where the Willow Lake WPCF discharges, there is a reserve capacity of 0.04°C. We request that DEQ use a portion of the reserve capacity to define the HUA for the Willow Lake WPCF.

Response: A portion of the human use allowance formally assinged to reserve capacity in the public comment draft TMDL has been provided to the City of Salem Willow Creek STP to increase the wasteload allocations. DEQ revised wasteload allocations for the City of Salem Willow Creek STP using the most recent 10 years of available data (2014-2023) and applied adjustment factors of 15% during the spring and 10% during the summer and fall. Additional modeling was performed to evaluate cumulative effects of these changes along with a change in WLAs for the City of Corvallis STP. The revised wasteload allocations result in additional temperature warming in the Willamette River. The additional warming was addressed with reserve capacity. A minimum of 0.02 degrees Celsius of reserve capacity was kept as reserve in Willamette River reaches downstream from these point sources. The use of adjustment factors of more than 10% for the City of Salem Willow Creek STP during the summer and fall would result in reserve capacity of less than 0.02 degrees Celsius. Therefore, assigned human use allowances for the City of Salem Willow Creek STP for spring spawning, summer non-spawning, and fall spawning periods were changed to 0.026, 0.039, and 0.094 degrees Celsius, respectively.

Changes were made based on this comment.

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6. Comments from: Confederated Tribes of Grand Ronde

CTGR #1

Description: The draft TMDLs lack reasonable assurances

Comment: A TMDL must include a water quality management plan ("WQMP"), which provides the framework of management strategies to attain and maintain water quality standards. The WQMP must describe reasonable assurances that management strategies and implementation plans will be carried out through regulatory or voluntary actions. To establish reasonable assurances, DEQ must determine that the practices capable of reducing thermal loads "exist, are technically feasible, and have a high likelihood of implementation."

DEQ has not demonstrated that there is a high likelihood of implementation to reduce thermal loads. First, it is unreasonable to assume that voluntary landowner actions will meet the shade targets, especially without strong financial incentives. DEQ admits that there has been "a lack of implementation of area plans to achieve TMDL allocations and there are no or few assurances that voluntary landowner action will be able to bridge the gap between current and needed riparian condition and function." DEQ does not adequately explain why landowners will voluntarily restore riparian vegetation.

Second, it is unreasonable to assume that new implementation plans for designated management agencies ("DMAs") will be effective. For example, the Oregon Department of Agriculture ("ODA") has not been able to adequately incorporate or implement water quality priorities identified in the 2006 TMDL. DEQ proposes that ODA draft a new implementation plan, but does not explain how a new plan will solve the implementation problem.

DEQ should revise the draft TMDLs to include reasonable assurances that shade targets will be met. Revisions should include strict oversight of ODA and other DMAs to ensure implementation.

Response: DEQ agrees that ODA's current implementation of agricultural water quality rules and area plans are not adequate in all locations to provide the streamside vegetation requirements and targets that are necessary to meet TMDL effective shade targets, load allocations and temperature water quality standards. DEQ thinks that the new requirement, first outlined in the Willamette Subbasins Temperature TMDL (Aug. 6, 2024), for ODA to complete a temperature-specific TMDL implementation plan and reporting requirement will increase the rate of streamside plantings on agricultural lands and improve tracking of progress over time.

DEQ also believes that requiring ODA and other DMAs with large jurisdictional footprints (ODF, USFS, and BLM) to complete a shade gap analysis for areas not covered by DEQ shade gap models, and a streamside evaluation will help these DMAs identify key areas lacking in shade and subsequently prioritize streamside restoration efforts so that on the ground improvements can be obtained more quickly. Additionally, these four DMAs will be required to participate in the development and implementation of a monitoring strategy to assess current conditions and provide information necessary to demonstrate progress toward meeting load allocations as outlined in the WQMP.

DEQ recognizes that ODA may need to revise agricultural water quality rules in order to meet their obligations under the TMDL if voluntary landowner participation does not increase. A temperature-specific implementation plan will help ODA and DEQ better assess whether clearly stated measurable objectives for on the ground improvements are progressing over time. As stated in the Memorandum of Agreement between DEQ and ODA (2023), DEQ will initiate the petition process outlined in statute (ORS 568.930 and OAR 340-42-0080(3)) for specific circumstances where DEQ determines that agricultural water quality rules and plans are not adequate to achieve the load allocation.

CTGR #2

Description: The timeline for implementation of management strategies is too lengthy and uncertain

Comment: According to the WQMP, estimated timelines to meet water quality standards are primarily based on streamside planting activities. The plan relies on responsible persons, including DMAs, to establish commitments for streamside planting and protection in TMDL implementation plans. DEQ acknowledges that based on the number of stream miles requiring restoration and the pace of restoration logged, restoration rates will need to accelerate. Yet the timelines prescribed do not reflect an accelerated pace.

DEQ expects responsible persons to meet 10 percent of shade targets across the basin every ten years beginning in 2030 and to meet all shade targets in 96 years. DEQ also acknowledges that meeting shade targets on all waterbodies "may not be possible" and that significant uncertainty exists in meeting timelines for establishing shade.

Grand Ronde recognizes that meeting shade targets takes time, but the implementation timeline in the draft TMDLs is not aggressive enough and too uncertain to address the serious temperature problems.

Response: Once fully implemented, the management strategies and programs outlined in the WQMP provide reasonable assurance that the allocations will be met over time through regulatory or voluntary actions. The timelines identified in the WQMP are based on an estimate of how long it may take for overstory trees to mature and provide streamside shade. These timelines contain significant uncertainty due to a lack of available data on current streamside shading, vegetation growth rates for specific species under a range of conditions, and previous restoration rates. DEQ acknowledges that many factors will likely impact streamside shade at specific locations in a watershed, however DEQ believes that new requirements, such as the streamside evaluation requirement for DMAs, will support identification of improved measurable objectives and result in accelerated implementation of on the ground activities that improve streamside shade. Additional strategies beyond riparian vegetation planting and management are referenced in the WQMP (Table 2) and are also expected to support attainment of temperature standards over time.

CTGR #3

Description: TMDL - DEQ does not properly account for climate change impacts

Comment: While there is no agreed-upon methodology for incorporating climate change predictions into TMDLs, EPA encourages “water quality authorities to consider climate change impacts when developing wasteload and load allocations in TMDLs where appropriate.” Consideration of climate change impacts is appropriate in this case. Our rivers, including the Willamette River, are rapidly warming due to climate change. Climate change impacts include increased ambient air temperature, reduced snowpack, and shade reduction caused by forest fires.

Response: DEQ updated the TMDL to clarify how climate change sources were accounted for in the TMDL. TMDL section 9.1.1 was updated to clearly state that temperature impacts associated with climate change sources are assigned a zero HUA. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The TSD narrative states:

“Past climate change impacts have contributed to stream temperature warming (See TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources.”

Changes were made based on this comment.

CTGR #4

Description: TMDL - DEQ does not properly account for climate change impacts - Seasonal Variation

Comment: A TMDL must account for seasonal variation and critical conditions in stream flow, sensitive beneficial uses, pollutant loading, and water quality parameters.

DEQ did not account for predicted climate change effects when assessing seasonal variation. The best available scientific data demonstrates that climate change is decreasing streamflows, increasing seasonal stream temperatures, and harming salmon and steelhead. Upper Willamette River Chinook salmon and Upper Willamette River steelhead are currently listed under the Endangered Species Act ("ESA") and climate change will put these cold-water species at further risk.

DEQ should revise the draft TMDLs to analyze and provide modeling on climate change impacts to ESA-listed Chinook salmon and steelhead.

Response: DEQ addressed temperature impacts from past and future climate change as part of the TMDL load allocation. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. Climate change sources in Oregon were assigned a zero HUA. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. WQMP Sections 2.4 and 7.1 were also updated.

In addtion, DEQ completed a literature review to assess climate change-driven stream temperature impacts. The review was included with the draft TMDL as TSD Appendix G. We added additional information about stream temperature impacts from future climate change sources.

The TMDL seasonal variation and critical low flows analysis incorporates the effects of climate change on river flows and stream temperatures to date. The seasonal variation analysis is used to identify the period when temperature standards are exceeded and TMDL allocations apply. The findings of this analysis show that in the mainstem Willamette River upstream of Newberg, the critical period is April 1 - November 15. This is a change from the 2006 TMDL which established the critical period as April 1 – Oct 31. In setting the critical period DEQ grouped temperature data by the first and second half of each month. The month was split on the 15th with the first group including all results measured on the 1st through the 14th day and the second group including all results measured on the 15th through the end of the month. During these periods, if approximately 2% to 100% of the observations exceeded the criteria that period was included in the critical period.

Based on the information summarized in Appendix G, we think the TMDL critical period will adequetly address future stream temperature increases caused by climate change. The Oregon Coastal model (which includes the Willamette Basin) devleped by Issak et al 2017 predicts an average August stream temperature increase of about 1.1°C and 2.0°C by 2040 and 2080, respectively. Based on current river temperatures outside of the TMDL critical period (December

through March) this predicted increase is unlikely to warm the Willamette River and major tributaries enough to cause frequent temperature standard exceedances. In addition, the magnitude of the temperature increase is expected to be largest in the summer and smaller during the winter, spring and fall. It is also uncertain if long term trends in river temperatures in a regulated system such as the Willamette River will respond in a similar manner as unregulated systems. The studies reviewed show regulated systems have both cooling and warming long term trends. For these reasons, we believe the current TMDL critical period for the Willamette River and major tributaries will address future stream temperature increases from climate change.

Changes were made based on this comment.

CTGR #5

Description: TMDL - DEQ does not properly account for climate change impacts - Human Use Allowance

Comment: DEQ should allocate part of the Human Use Allowance to climate change.

Response: TMDL section 9.1.1 was updated to state that temperature impacts associated with climate change sources are assigned a zero HUA. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The updated TSD narrative states:

“Past climate change impacts have contributed to stream temperature warming (see TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources.”

Changes were made based on this comment.

CTGR #6

Description: TMDL - DEQ does not properly account for climate change impacts - Margin of Safety

Comment: A TMDL must include a margin of safety, which accounts for a lack of knowledge or uncertainty. A margin of safety can be expressed “either explicitly, as a portion of the

allocations, or implicitly, by incorporating conservative assumptions into the analyses." Despite admitting that some effects of climate change are unknown, DEQ failed to account for climate change in the margin of safety.

DEQ should revise the draft TMDLs to include an explicit load allocation in the margin of safety to account for climate change.

Response: DEQ addressed temperature impacts from climate change as part of the TMDL load allocation. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. TMDL section 9.1.1 was updated to clearly state that temperature impacts associated with climate change sources are assigned a zero HUA. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The TSD narrative states:

"Past climate change impacts have contributed to stream temperature warming (See TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources."

Changes were made based on this comment.

CTGR #7

Description: TMDL - DEQ should evaluate the heat impacts of major dams

Comment: The TMDL does not adequately consider the temperature impacts of major dams and reservoirs operated by the U.S. Army Corps of Engineers ("Corps"), especially due to the rapidly changing future of reservoir management. We expect the Corps to complete a 30-year management plan for the Willamette Valley System in 2025 and NOAA Fisheries will complete a Biological Opinion ("BiOp") by the end of 2024. The plan and BiOp will likely increase the use of deep drawdowns to promote juvenile salmon outmigration. Congress has also instructed the Corps to evaluate deauthorizing hydropower.

While there is still uncertainty about future dam operations, the TMDL should consider the likely scenarios and build in the ability to modify load allocations. DEQ recognizes that "dams of all sizes can increase stream temperatures." The large Corps dams and reservoirs have a strong influence on temperature. Grand Ronde would like to explore how DEQ and EPA can evaluate the water quality impacts of dam operations moving forward.

For the reasons outlined above, Grand Ronde would like to engage Oregon DEQ in consultation regarding the Draft TMDL, in order to address Tribal concerns and protect Tribal rights and interests in the fish, wildlife, and water resources of the Willamette River and Basin.

Response: We agree the USACE dams have a significant impact on temperature. DEQ relied upon USGS's modeling to quantify the temperature impacts from the USACE dams (see TSD Section 7.2.2). The TMDL provided a high-level summary of USGS's modeling results. DEQ added additional context and results from the UGSG study to the TSD.

State and federal rules do not allow modification of TMDL load allocations after the TMDL has been adopted by EQC and approved by EPA. To revise an allocation or human use allowance assignment requires reopening the TMDL, conducting a public process, adoption by EQC (for a rule), and approval by EPA. Water quality trading is allowed if all the requirements in OAR 340-039 are met. A trading plan does not modify an allocation but provides flexibility in achieving the allocation.

DEQ met with the Confederated Tribes of Grand Ronde on January 17, 2025 to hear concerns regarding the draft TMDL.

Changes were made based on this comment.

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7. Comments from: EPA

EPA #1

Description: TMDL - Edits to Table 4-2

Comment: In Table 4-2 of the TMDL, the EPA recommends clarifying the applicable standards and most sensitive use by identifying the fish use subcategories associated with the numeric criteria excerpted from OAR 340-041-0028(4)(a)-(f) and modifying or removing the "Most sensitive beneficial use" column. While aquatic life is the most sensitive use for temperature, the most sensitive fish use subcategory varies by waterbody and often season depending on the designated uses, but that is not clear in the existing table and may be easier to convey in the text. For example, for the Human Use Allowance, salmonid and steelhead spawning is identified as the most sensitive use but that depends on the designated uses and seasonality.

Response: We removed the "Most sensitive beneficial use" column from TMDL Table 4-2 and clarified in text that aquatic life use is the most sensitive use for temperature.

Changes were made based on this comment.

EPA #2

Description: TSD - Include the temperature targets for Rickreall Creek and Long Tom River in Appendix D

Comment: On the Fish Use Designation tab in TSD Appendix D, the Temp_YearRound criterion column for the Long Tom River (OR_SR_1709000301_02_103791) states “cool water species narrative”, and for the portion of Rickreall Creek where the cool water species narrative applies, values are presented that do not correspond to the targets presented in the TMDL. Although ODEQ’s translation of the cool water species narrative criteria into targets do not cleanly align with the use categories presented in Appendix D, the Appendix is a good summary of the applicable criteria and targets for the TMDL. The EPA recommends denoting the temperature targets for Rickreall Creek and Long Tom River in Appendix D.

Response: In the Fish Use Designation tab in TSD Appendix D, we added the cool water species TMDL targets for the Rickreall Creek AU (OR_SR_1709000701_02_104591) and for the Long Tom River AU (OR_SR_1709000301_02_103791). We also added a new column to clarify the year round fish use designation and added cool water species for the applicable AUs on Rickreall Creek and the Long Tom River. While making these changes we noticed and corrected use designation errors on a few other AUs. To further improve clarity on the applicable criteria and instream temperature targets, DEQ added a section to the TMDL (Section 4.2) and TSD (Section 4.13) summarizing the numeric temperature targets applicable in the TMDL project area, which includes the human use allowance. We think this table, the information provided in TSD Appendix D, and the available GIS layers summarized in TSD Appendix H provide a way for EPA to identify the applicable criteria and instream target for any waterbody location in the Willamette Subbasins TMDL project area.

Changes were made based on this comment.

EPA #3

Description: Discrepancies between the TMDL document and TSD (a)

Comment: The following comment pertain to discrepancies between the TMDL document and TSD that appear to relate to updates that were not made to one or the other when content was added to the Willamette Subbasins TMDL for the Willamette River Mainstem and Major Tributaries Project Area.

It appears the point source facility count was not revised to include the facilities discharging to AUs in the Willamette River Mainstem and Major Tributaries project area within the TSD. For example, the TMDL says 121 individual dischargers whereas the TSD says 69. Also, for clarity, the EPA recommends that the individual permit for Portland International Airport be included in the tally of individual permittees even though it is treated like a stormwater-only source for the wasteload allocation and that the facilities that are still pending coverage be presented in the summary but excluded from the tally of individual permittees.

Response: DEQ updated the point source count in the TMDL and TSD so they are consistent. Portland International Airport is included in the tally of individual NPDES permittees and we excluded pending NPDES permits. The revised narrative in the TMDL now says, “There are 113 domestic or industrial facilities with an individual NPDES permit within the Willamette Subbasins. In addition, there are 8 facilities that have submitted individual NPDES permit applications for discharge to waters in the Willamette Subbasins. 112 of the permitted facilities and all 8 of the facilities with pending permits were identified as potential sources of thermal load (Table 7-1).” A similar revision was included in TSD Section 7.1.1.

Changes were made based on this comment.

EPA #4

Description: Discrepancies between the TMDL document and TSD (b)

Comment: TSD Sections 2.3 and 9.4.1.1 say there are 202 large instream dams, whereas the WQMP and TMDL were updated to 206.

Response: The number of large dams identifed in TSD Sections 2.3 and 9.4.1.1 have been updated accordingly. There are 206 large instream dams located within the Willamette Subbasins temperature TMDL project area.

Changes were made based on this comment.

EPA #5

Description: Discrepancies between the TMDL document and TSD (c)

Comment: The TMDL document and TSD both state cumulative effects model analyses were completed for point sources discharging to the Molalla, Pudding, and McKenzie Rivers but do not include other modeled waters added as part of the Willamette River Mainstem and Major Tributaries project (e.g., Sections 9.2 and 10.1). Additionally, within the TSD, Section 9.2 reflects the HUA-based approach to wasteload allocations used for sources discharging to AUs in the Willamette Subbasins and Willamette River Mainstem and Major Tributaries project areas, but Section 10.1 was not updated to reflect the approach used for the Willamette River Mainstem and Major Tributaries project area and only focuses on the 0.75 deg-C based approach used for the Willamette Subbasins project area. The EPA recommends that revisions be made so the TMDL and TSD consistently reflect the modeling and allocation approaches used for both project areas.

Response: Changes were made to TSD Sections 9.2 and 10.1 to document the HUA approach to wasteload allocations and describe cumulative effects modeling analyses for point sources discharging to Willamette River Mainstem and Major Tributaries project.

Changes were made based on this comment.

EPA #6

Description: Provide additional source assessment information for the Willamette Mainstem in the TSD

Comment: TSD Sections 7.2.1-7.2.18 discuss water quality and shade model summaries relative to various source categories for waters from the Subbasins TMDL but except for the addition of channel simplification (Section 7.2.4), it was not revised to include modeling summaries associated with the Willamette River Mainstem and Major Tributaries project. The

EPA acknowledges model summaries are included in Appendix M, but particularly since some sources of thermal loading (such as consumptive use) were only incorporated into some models and modeling results are collectively intended to inform the source assessment at the project scale, it is difficult to fully understand the range and magnitude of thermal loading contributed by background and anthropogenic sources within the project area without some consolidated discussion of sources and all model findings. The EPA requests that some of the source assessment information gleaned from the models used for the Willamette River Mainstem and Major Tributaries project area be incorporated into Section 7.2 of the TSD.

Response: Additional language and model summary results has been added to the TSD and corresponding sections in the TMDL. TSD Section 7.2.2 Dams and Reservoirs, already provides summaries of USGS study results on Willamette River Mainstem and Major Tributaries dams and reservoirs operated by USACE and PGE on downstream water temperature. DEQ provided additional context and obtained USGS model results to summarize temperature impacts that contributed to criteria exceedances for each river. A table summarizing maximum 7DADM increases from background nonpoint sources was added into Section 7.2.1. DEQ used CE-QUAL-W2 models developed by Rounds (2010) as the best estimate of background temperatures for the Willamette mainstem and major tributaries. These models characterize temperatures with no point source discharges, restored vegetation, and no dams. The year 2001 models were used. An additional section, Section 7.2.19, was added to provide additional information specific to the Willamette Mainstem. This includes information on the sensitivity of Willamette River temperature to flow, upper boundary (reservoir) temperature, stream shading, and background nonpoint source temperature increases.

Changes were made based on this comment.

EPA #7

Description: TMDL - Strike the terminology "narrative wasteload allocation."

Comment: Section 7.1 of the TMDL concludes stormwater permits are unlikely to contribute to exceedances of the temperature standard, but Section 9.1.2 of the TMDL states they have narrative wasteload allocations based on following existing permit requirements and loads, and similar language is used for 100-J permittees, which do have the potential to exceed the temperature standard. The EPA recommends striking the terminology "narrative wasteload allocation"; the information associated with the narrative wasteload allocations is relevant for the assumptions and requirements of the TMDL needed to implement NPDES permits but is not an appropriate characterization of wasteload allocations.

Response: The term "narrative wasteload allocation" has been replaced with "wasteload allocation" in the TMDL and TSD.

Changes were made based on this comment.

EPA #8

Description: TMDL - Add information regarding the requirements and assumptions for general permittees

Comment: The EPA recommends that ODEQ add some additional information to the TMDL regarding the requirements and assumptions for general permittees, such as the type of permit conditions expected to mitigate thermal loading and support the TMDL objective of restoring beneficial uses.

Response: DEQ added additional information into the TMDL and TSD to improve the documentation of our analysis and findings regarding general permit registrants. The review and analysis resulted in modifications to the human use allowance assigned to 100-Js on certain Willamette River AUs and a WLA for a 200-J registrant (North Clackamas County Water Commission) on the Clackamas River. Additional documentation was added to the TSD for other general permit categories and registrants that did not receive a WLA.

Changes were made based on this comment.

EPA #9

Description: TSD - Additional explanation of flow estimation approach

Comment: In TSD Tables 6-2 and 6-3, it is unclear what approach was used for flow estimation for the Willamette River AUs where multiple gages are cited, and the EPA recommends some additional explanation in these instances.

Response: The narrative in section 6.4, point 1, located just above Tables 6-2 and 6-3 summarize how multiple gages are used to calculate 7Q10s. This narrative was improved to provide additional explanation. That narrative now says: For some ungaged reaches, it was possible to estimate the daily mean flow using nearby gages located upstream, downstream, or on tributaries. The daily mean flows at the ungagged reach were estimated by summing or subtracting the daily mean flows from the gaged locations as appropriate. For example, the daily mean flow on a mainstem river downstream of a major tributary is not gaged but can be estimated by summing the daily mean flow from a gage on the tributary and a gage on the mainstem river upstream of the major tributary. Flow records needed to be available from all gages on the same day, otherwise the flow rate on that day was recorded as missing. Daily mean flows for the ungaged reach were calculated first, prior to the 7Q10 calculation using DFLOW.

Changes were made based on this comment.

EPA #10

Description: TMDL - Re-examine the critical periods for consistency with described approach

Comment: TMDL Section 5 describes the critical period for downstream waters being applied to upstream waters if downstream monitoring sites have longer exceedance periods relative to

upstream waters. This is also cited as a margin of safety to ensure warming of upstream waters does not contribute to downstream exceedances, however, this approach does not appear to be consistently applied. For example, in Table 5-1, inclusion of “all waters” in Subbasins such as the Coast Fork Willamette, Upper Willamette, McKenzie River, and Middle Willamette are identified as having a critical period starting May 1, whereas a downstream major tributary has a critical period starting April 1. The EPA recommends adjusting the re-examining the critical periods for consistency with described approach and adding additional clarification to the TMDL in situations where deviations to this approach were used.

Response: Additional clarification has been provided to both the TMDL and TSD. The third paragraph of TMDL Section 5 has been revised to the following: “The critical period is based on the frequency and period when 7DADM stream temperatures exceed the applicable temperature criteria. DEQ uses the critical period to determine when allocations apply. In setting this period, DEQ relied upon monitoring sites with the longest period of exceedance and frequency of exceedance. When downstream monitoring sites have longer exceedance periods relative to upstream waters, the longer period is used as the critical period for upstream waterbodies when the downstream waterbodies were not modeled; or if the model shows thermal loads to upstream waterbodies contribute to temperature criteria exceedances in downstream waterbodies. For example, the period of exceedance for the lower McKenzie River based on temperature data from the lower McKenzie River is May 1 to October 31 (TSD Section 5). However, the period of exceedance for the Willamette River downstream from the confluence of the McKenzie River is April 1 to November 15. Since lower McKenzie River point sources, including IP Springfield, contribute to temperature criteria exceedances in the Willamette River, the McKenzie River critical period for which WLAs apply is set to April 1 to November 15. This ensures warming of upstream waters does not contribute to downstream exceedances.”

Changes were made based on this comment.

EPA #11

Description: TMDL - Clarify margin of safety

Comment: In TMDL Section 9.2, the last implicit margin of safety is that “the nonpoint source HUA allocation will be implemented by assessing the cumulative warming of a waterbody by all nonpoint sources.” This doesn’t appear to be a margin of safety because the HUA provision at OAR 340-041-0028(12)(b) states that nonpoint sources should be considered cumulatively. The EPA recommends deleting this margin of safety or clarifying how the approach is a margin of safety.

Response: We removed the statement. The intended meaning is better explained by the bullet direclty above this one. That bullet says:

The sum of individual human use allocations was used to assess cumulative attainment across the entirety of a given AU. This method does not account for longitudinal instream heat dissipation downstream from each thermal source. Thus, the total thermal load and corresponding temperature increase is likely to result in a maximum temperature increase of less than 0.3°C.

Changes were made based on this comment.

EPA #12

Description: TMDL/TSD - Add additional discussion on factors that influenced the allocations

Comment: In TSD Appendix M, the summary of HUA allocations in Table 4-1 does not include solar loading from other non-point sources. Although the HUA-based allocation is 0, the EPA recommends adding it to the table for clarity. Also, the HUA-based allocations for consumptive use and for solar loading to existing infrastructure are more variable for waters in the Willamette River Mainstem and Major Tributaries project area versus the Willamette Subbasins project area, and besides the adjustment to the consumptive use to HUA-based allocation on Willamette River AUs due to the PGE Willamette Falls Project allocation, it is unclear in TSD Appendix M or other TMDL documents what other factors influenced the allocations. The EPA recommends adding some additional discussion to Section 9.1 of the TMDL or TSD, and potentially TSD Appendix M.

Response: Several changes have been made to TMDL, TSD, and TSD Appendix M Table 4-1: 1. The thermal loading category "Solar loading from other non-point sectors" has been added with an HUA assignment of 0.00 degrees Celsius for all mainstem Assessment Units. 2. HUA assignments for "Consumptive use water management activities and water withdrawals" have been revised to 0.02 degrees Celsius for all AUs. 3. HUA assignments for "Solar loading from existing transportation corridors, existing buildings, and existing utility infrastructure" have revised to 0.03 degrees C for AUs upstream from Newberg Pool (upstream from RM 51) and 0.02 degrees C for Newberg Pool and Willamette River downstream from Willamette Falls. 4. HUA assignments for other sources were revised, including point sources and PGE's River Mill dam and Willamette Falls projects. 5. TMDL tables in Section 9.1.1 have been revised accordingly and additional explanatory language has been added to TSD Section 9.1-9.3 and TSD Appendix M. The plots and narratives in TSD Section 10 were also revised to reflect the HUA changes and more clearly explain attainment results.

Changes were made based on this comment.

EPA #13

Description: TMDL - Document compliance with the water quality standards in TMDL section 10

Comment: TSD Appendix M extensively documents ODEQ's cumulative effects analyses not just as they pertain to compliance with the Columbia and Lower Snake Rivers Temperature TMDL but also relative to the effect of Willamette River tributaries on the mainstem. EPA recommends the analyses done to evaluate compliance with the water quality standards and protect downstream waters be more explicitly referenced within Section 10 of the TMDL.

Response: Narrative in TSD Section 10 was revised and an additional section, Section 10.3 Willamette River and major tributary assimilative capacity, was added to the TSD to summarize

the attainment analysis. The revised analysis did require some changes to reserve capacity assginments to account for the wrming from tributary sources. The TMDL HUA tables were revised with explanatory narrative added into the TMDL reserve capacity Section 9.1.6.

Changes were made based on this comment.

EPA #14

Description: TMDL - Clarify approach for AUs where natural lakes narrative is applicable

Comment: Although there are currently no Category 5 listings for lakes where the natural lakes narrative is the applicable criterion, they are within the scope of the TMDL and it is unclear how the loading capacity and load allocation to background sources are intended to be calculated for relevant assessment units identified in the TMDL Scope tab of Appendix D.

Response: Edits were made in the TMDL and TSD to clarify how to calculate the loading capacity and allocations for waters where the natural lakes criterion apply. Language was also added into the TSD to clarify where the natural lakes criterion applies (Appendix D) and the procedures DEQ will use to implement this narrative criterion (Section 4.7).

Changes were made based on this comment.

EPA #15

Description: TMDL - TSD Complete sentence in Section 10.1.7

Comment: The end of the following sentence in Section 10.1.7 (p. 235) appears incomplete adding additional context to the end of the sentence that states “Impacts in the middle Willamette River between RM 85 upstream from Salem and Willamette are less. “

Response: Revisions were made to TSD Section 10.1.7 in order to address the comment and to provide updated information on revised wasteload allocations.

Changes were made based on this comment.

EPA #16

Description: TSD - Correct target dates

Comment: In the heading for Figures 4-4 and 4-5 of the TSD, the date periods for the target are not contiguous and it appears to be a typo, as it is correct in TSD Section 4.8.4 and TMDL Section 4.2.1. One target is cited as applying from June 1 to October 14 and the other from November 1 to June 14.

Response: We have corrected the figure captions to the correct temperature target periods for the Long Tom River. The temperature targets are 24.0 C from June 15 to October 31 and 18.0 C from November 1 to June 14.

Changes were made based on this comment.

EPA #17

Description: TSD - Missing AUs in TSD Table 9-4

Comment: TSD Table 9-4 is missing the receiving water AU IDs for newly added facilities.

Response: Receiving water AU IDs were added for these facilities.

Changes were made based on this comment.

EPA #18

Description: TSD - Fix inconsistent count of category 5 AUs

Comment: The summary of unique AUs with Category 5 impairments on TSD page 6 does not match Appendix D, which identifies 257 and not 253.

Response: The count of Category 5 listings and the count of unique AUs with Category 5 impairments has been updated in TSD section 2.1. The updated counts were also added to TMDL section 2. In total, the TMDL applies to 958 unique assessment units, of which 258 are Category 5 temperature impaired. Some of these assessment units have both year-round and spawning use designations impaired. If both use designations are impaired, it is counted as two Category 5 303(d) listings. Therefore, the TMDL addresses a total of 329 Category 5 temperature listings identified in the 2022 Integrated Report. These counts are consistent with the information presented in TSD Appendix D.

Changes were made based on this comment.

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8. Comments from: Lane County

Lane County #1

Description: WQMP - shade gap analysis

Comment: Lane County would like to request that key submittals outlined in Table 8 of the Draft Water Quality Management Plan (WQMP) be offset by at least 6 months to provide time for submittals to be developed in a complete and thorough manner. For example, extending the submittal timeline for a project plan and description of the assessment methodology to be used

to complete a shade gap analysis from 18 months to 24 months after EQC adoption of amendment to the Willamette Subbasins TMDL. Our reasoning for this request is based on our observation that Table 8 of the WQMP states DMAs have 18 months after EQC adoption of the amendment to the Willamette Subbasins TMDL to provide 1) an updated implementation plan, and 2) a project plan and description of the assessment methodology to be used to complete a shade gap analysis. Having key submittals due at the same time presents a specific challenge to DMAs with limited resources and large areas of jurisdictional control such as Lane County. While section 5.3.8 of the WQMP provides the option for DMAs to propose alternate timelines for meeting key submittals through the approval of DEQ, it's unclear what criteria DEQ will use to approve or disapprove proposed alternatives.

Response: The only DMAs that must complete a shade gap analysis are 1) USFS, BLM, ODF, and ODA; and 2) DMAs that have a DEQ-assessed shade gap but do not want to incorporate it into their streamside evaluation. These DMAs must complete their own shade gap analyses using the methods outlined in the TMDL (Section 9.1.5.2) and WQMP (Section 5.3.4.1), according to the timelines established in the WQMP (Table 8). DEQ provides some flexibility for DMAs to propose timelines for implementation; however, DMAs that must complete a shade gap analysis (as described in 1 and 2 above) must submit their assessment methodology for review within 18 months of EQC adoption of the amendment to the Subbasins Temperature TMDL.

DEQ Basin Coordinators will work closely with DMAs to identify appropriate methodologies for completing streamside evaluations. Basin Coordinators also expect to provide outreach and education through webinars and meetings with DMAs to share examples of different methods and approaches that will work for DMAs with varying levels of resources and capacity.

The language in Section 5.3.8 is not intended to invite DMAs to propose alternate timelines. DEQ expects all DMAs to meet the timelines outlined in Table 8 thus DEQ has not developed specific criteria for approving alternate timelines. This language is meant to point to DEQ's adaptive management process, which may allow for adjustments based on factors such as evaluations of implementation progress.

Lane County #2

Description: WQMP - streamside evaluation

Comment: Lane County would like to request guidance material on streamside evaluation expectations. For example, additional references, documentation, or procedures documents that provide examples of acceptable streamside evaluations and options for conducting streamside evaluations through both office or field processes. Our request stems from Section 5.3.2 of the WQMP that states DMAs that are required to submit an implementation plan must complete a streamside evaluation and account for shade gap results in their streamside evaluation. While section 5.3.4.1.1-2 of the WQMP provides a description of acceptable assessment methodologies for shade gap analyses, similar references are not provided for streamside evaluations in section 5.3.2. Acceptable methodologies for streamside evaluations remain unclear, particularly in regard to how these evaluations could be completed both in the office or the field. Reference material would provide clarification, allow DMAs to have a better understanding of resource needs, and provide more accurate estimates of timelines.

Response: DEQ expects that DMAs will utilize a variety of methodologies to complete the streamside evaluation, depending on many factors including location, amount of riparian area under DMA jurisdiction, and the availability of DEQ shade gap analysis results. DEQ believes that DMAs are best positioned to assess the staff time and resources required, based on their unique circumstances.

DEQ Basin Coordinators will collaborate closely with DMAs to identify appropriate methodologies for completing streamside evaluations. Additionally, Basin Coordinators will provide outreach and education through webinars and meetings to share examples of different methods and approaches that will work for DMAs with varying levels of resources and capacity.

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9. Comments from: North Clackamas Watersheds Council

NCWC #1

Description: WQMP - DMAs working with NGOs to achieve load reductions

Comment: We are in favor of adoption of the draft rule. However, the rule doesn't provide direction for how NGOs can partner with the responsible Designated Management Agencies (DMAs) to achieve temperature and bacteria reduction goals.

Response: Thank you for your support of the TMDL. DEQ agrees that watershed partners such as NGOs are important to the successful implementation of TMDLs. While DEQ does not direct DMAs to work with NGOs in this TMDL, we strongly encourage DMAs to partner with interested parties within the watershed. Many DMAs point to successful collaborations with NGOs, including watershed councils, in existing implementation plans. DEQ also supports collaboration through existing programs, including but not limited to our participation in the OWEB grant review process, the Pesticide Stewardship Partnership Program, DEQ's NPS 319 grant program, and Volunteer Monitoring program, as well as the Supplemental Environmental Projects offered through DEQ's Office of Compliance and Enforcement.

NCWC #2

Description: TMDL - point source wasteload allocations in Clackamas Subbasin

Comment: We find it challenging to affect temperature reduction in watersheds like ours without regulations that include point-source temperature reduction requirements.

Response: DEQ appreciates all your efforts to improve watersheds. We recognize it may be difficult to implement projects when there is a perception that point sources do not have similar temperature reduction requirements. Some NPDES facilities assigned a wasteload allocation in Willamette Subbasins temperature TMDL discharge thermal loads that exceed the assigned TMDL wasteload allocation and thus will require reduction. However, many point sources

addressed by the TMDL do not require reduction below current thermal loads because their loading attains the assigned human use allowance (warming limits prescribed in the temperature water quality standard). Nonpoint sources, on the other hand, have widespread temperature impacts to waters in the Willamette Basin and do not meet the assigned human use allowance limit, by a wide margin, in nearly all waters evaluated by DEQ. Nonpoint sources are the primary contributor to temperature criteria exceedances and therefore DEQ believes should be the primary focus for pollutant reduction efforts.

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10. Comments from: Oregon Association of Clean Water Agencies

ACWA #1

Description: TMDL - Critical period and Seasonal Variation changes and TSD

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #7—Critical Period. DEQ made changes to the Seasonal Variation and Critical Period and Technical Support Document. Similar types of changes should be made for Mainstem data.

Response: DEQ reviewed the designated critical periods for the mainstem project area and updated the critical periods for the Clackamas River, Multnomah Channel, and a small section of the Willamette River between the Yamhill River and Chehalem Creek. On the Clackamas River, the critical period was updated from April 1 - November 15 to April 15 - October 31. This change was made to reflect the period of exceedance in the Clackamas River and Willamette River downstream of the Clackamas. The longer critical period in the spring and fall is not necessary to minimize downstream temperatures warming because there is not an exceedance to the 20 deg-C migration corridor in the Willamette River during those periods. The Multnomah Channel critical period was updated from June 1 - September 30 to May 1 - October 31. The applicable temperature criteria on Multnomah Channel is the 18 deg-C salmon and trout rearing and migration criteria, but DEQ mistakenly evaluated the critical period using the 20 deg-C migration corridor criteria. Limited temperature data were available on Multnomah Channel so temperaure data just upstream at USGS station 14211720 on the Willamette River at Portland were used to estimate the critical period in Multnomah Channel. On the Willamette River the critical period from Yamhill Creek to Chehalem Creek was updated from June 1 – September 30 to April 1 – November 15. In the critical period Table 5-1, DEQ corrected the description of where the 20 deg-C migration corridor applies, which shifted the critical period assigned to the migration corridor downstream. The 20 deg-C migration corridor applies on the Willamette River downstream of Chehalem Creek, not the Yamhill River as previously stated in Table 5-1.

Changes were made based on this comment.

ACWA #2

Description: TMDL - Rename Table 7-1 and Table 7-3. Correctly name the tables for the Mainstem

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #8; ACWA #10—Rename Table 7-1 and Table 7-3. Please correctly name the tables for the Mainstem.

Response: The referenced tables, now numbered as Table 7-1 and Table 7-4, retain the same captions used in the final August 2024 TMDL document and do not need further revision. The caption and reference to the project area as Willamette Subbasins, is still accurate. The Willamette Subbasins TMDL is being amended to incorporate the mainstem Willamette River and major tributaries.

ACWA #3

Description: TMDL - MS4 - Clarify the findings on thermal load potential contributions from MS4s

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #9—Update narrative in TMDL Section 7.1. Please make the same change.

Response: The narrative in the TMDL rule Section 7.1 was simplified and updated to include industrial wastewater general permit categories. The more detailed language in the public comment draft was moved to the TSD Section 7.1 unchanged. TMDL section 7.1 now says:

Other registrants to the industrial wastewater or stormwater general permits will not contribute to exceedances of the applicable temperature criteria based on the permit requirements, available dilution, or frequency and magnitude of discharge (see TSD Section 7.1). Therefore, no additional TMDL requirements are needed to control temperature, other than those included in the current NPDES permits. More specific wasteload allocations can be considered if subsequent data and evaluation demonstrates a need and if reserve capacity is available.

Changes were made based on this comment.

ACWA #4

Description: TMDL - WLA compliance

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #20; ACWA #21; ACWA #22; ACWA #23—DEQ was asked to consider pathways to meeting WLAs through use of reserve capacity, HUA allocations, updating 7Q10 WLA and other options. DEQ is encouraged to consider a similar look at the Mainstem permittees and DMAs to enable TMDL WLA compliance.

Response: DEQ increased the portion of the human use allowance and wasteload allocation for some facilities to minimize or eliminate non-compliance days. DEQ increased the human use allowance for City of Salem Willow Creek STP (78140) and City of Corvallis STP (20151). DEQ also updated the WLA analysis to reflect the combined discharge of ATI Millersburg and Albany-Millersburg Water Reclamation Facility. The WLAs were not changed, but a note was added to clarify that the two WLAs may either be addressed individually with the facilities' permits or may be combined and addressed as a single WLA. A WLA was included for City of Eugene Public Library (112467). This discharge was missed in our previous review. DEQ also revaluated the human use allowance assignments and WLAs for general permits registrants to the 100-J and 200-J. The human use allowance for general permit registrants were increased on certain Willamette River AUs and the entire Clackamas River AU. A WLA for North Clackamas County Water Commission (110117) was added to Table 9-12 as the analysis found it was a potential source. DEQ added additional information into the TMDL and TSD to improve the documentation of our analysis of various NPDES permitted facilities on the waters associated with the Willamette River and major tributaries. This includes documentation for general permit categories and registrants that did not receive a WLA.

Changes were made based on this comment.

ACWA #5

Description: TMDL - Shade - State that DEQ will work with DMAs to restore riparian vegetation and shade loss caused by natural disturbance

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #28—Additional language was added regarding the treatment of natural disturbance impacts. The same language should be included for the Mainstem.

Response: The recommended natural disturbance language is unchanged from the final August 2024 TMDL document, other than it is now located in Section 9.1.5.3. This language applies to the mainstem reaches. No revision was made.

ACWA #6

Description: WQMP - Edit Table 2 to replace solar radiation with temperature as the pollutant of concern

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #31—Replace the term “solar radiation” with “heat (thermal loading)” as the pollutant of concern. Please make the same change.

Response: Thank you for the comment. Table 2 previously updated in response to Subbasins TMDL comments.

ACWA #7

Description: WQMP - Water Withdrawals - Incorporate framework for additional means for achieving temperature compliance through recycled water offsets to withdrawals

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #32; ACWA #33; ACWA #34, ACWA #35; ACWA #36—DEQ acknowledged the value of using recycled water as an offset and would consider assigning temperature credits with sufficient documentation. DEQ also recognized the use of aquifer storage and recovery systems to reduce water withdrawals and dam and reservoir management strategies for improving the thermal regime. These strategies should be encouraged and elaborated upon for the Mainstem. While DEQ does not plan to develop a framework for DMAs to obtain thermal “credits” for implementing these strategies at this time, DEQ is encouraged to consider developing a credit system in the future. See a further example of a request for “giving credit where credit is due” in Section C below, paragraph 5.

Response: Thank you for your comment. DEQ acknowledges the benefits of using recycled water from municipal wastewater treatment facilities. While a framework is not provided through this WQMP, recycled water may be permitted by DEQ for use in beneficial purposes that are protective of human health, the environment, and provide a resource benefit.

ACWA #8

Description: WQMP - Implementation Responsibility - Remove or correct the jurisdictional acreage calculated for each DMA

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #38—Removed or corrected jurisdictional acreage calculated for each DMA. DEQ corrected a formatting error and updated to the correct values. The same approach should be used for the Mainstem.

Response: Thank you for your comment. DEQ used the same approach, which is described in the TSD.

ACWA #9

Description: WQMP - Implementation Plans - Amend FPA to require protection and restoration of previously impacted riparian areas

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #40—Removed sentence regarding the Forest Practices Act. Remove the sentence for the Mainstem also.

Response: Thank you for your comment. The sentence cited in your comment was previously removed in response to comments received on the Subbasins Temperature TMDL.

ACWA #10

Description: WQMP - Implementation Plans - Add Yes/No responses to decision support tree

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #43—Yes/No responses added to Implementation Plan decision support tree. Please do the same again.

Response: Thank you for your comment. Decision support tree previously updated to include yes/no indicators in response to Subbasins TMDL comments.

ACWA #11

Description: WQMP - Shade Gap Analysis - State which DMAs do not have a shade gap analysis and Section 5.3.3 - Explain what is meant by a "slope buffer width zone"

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

ACWA #44-ACWA #58—DEQ made changes or added language, corrected data, clarified legends/maps, updated instructions; added GIS layers for clarity, etc. Similar improvements to the Mainstem should be made.

Response: Thank you for your comment. Clarifications about shade gap analysis requirements were previously made in response to Subbasins TMDL comments.

ACWA #12

Description: TMDL - WLA - Use a bubbled allocation approach for small sources similar to what was done in the 2006 TMDL

Comment: A. Bubble Allocation Approach for Small Facilities. ACWA #26 requested that DEQ consider use of a bubbled allocation approach for small sources similar to what was done in the 2006 TMDL. The approach was successful and created less of a burden on both the smaller sources and DEQ. In its response, DEQ rejected the approach for the Subbasin Temperature TMDL but reasoned that "the 2006 temperature TMDL [bubble allocation approach] applied to the mainstem of the Willamette River, not the tributaries." The concern mentioned was that many of the streams discharged into by the small sources had "very low flow rates". Now that the Mainstem is the discussion, there would seem to be good reason to reconsider the bubble allocation approach. DEQ outlined an approach in its response that it states "works similar to the bubble allocation used in the 2006 temperature TMDL." That may be the case, but why not use the approach that has a proven track record and is already in use on the Mainstem?

Response: The 2006 TMDL bubble allocation grouped many general permit categories and minor individual permittees under a single thermal limit. The approach assumed a standardized effluent discharge and thermal load for each small source. For any NPDES permit renewal, permit discharge limits must be consistent with the assumptions and requirements of an applicable TMDL. A single thermal load for multiple facilities calculated using a standardized effluent discharge can limit the number of general permit registrants to no more than the number discharging at the time the TMDL was developed. The allocation approach for 100-J registrants in the updated temperature TMDL includes a dedicated human use allowance assignment and a maximum upper limit on the number of new registrants per AU to ensure attainment with the HUA cumulatively. This aspect works like the bubble allocation. DEQ does not think a similar approach is feasible for other general permits or small individual permittees due to the wide range of effluent discharge rates and other permitting aspects. In the case of the 200-J general permit, the total number of registrants is likely to increase in the future as there are multiple pending applications. And since most of the 200-Js discharging to waters included in the Willamette River and major tributaries TMDL were determined to have a de minimus temperature impact, a WLA was not assigned.

ACWA #13

Description: WQMP - Water Quality Trading/Shading Requirements.

Comment: B. Water Quality Trading/Shading Requirements. ACWA continues to be appreciative of DEQ's longstanding and consistent support of the use of water quality trading. In response to a concern raised by ACWA (#15), DEQ updated the WQMP to explicitly recognize water quality trading as a TMDL compliance option. ACWA's concerns are not in regards to DEQ's support of water quality trading but rather if there is anything left to trade under a TMDL where there is a zero allocation for non-point sources and a 100% shading requirement. Section 2.6 of the TMDL addresses Water Quality Trading Opportunities. Both DEQ and ACWA recognize that water quality trading remains an important tool to achieving the goals of the TMDL and accelerating the rate of effective shade restoration in the Willamette Basin Mainstem, Tributaries, and Subbasins). The draft TMDL presents language which could use clarification to avoid misinterpretation, unintended consequences, and inadvertent preclusion of water quality trading. ACWA has the following comments on Section 2.6: Amend sentence "DEQ encourages Willamette Basin DMAs to develop water quality trading plans…" to "DEQ encourages Willamette Basin DMAs and NPDES-permitted point sources to develop water quality trading plans…" to ensure the intent for water quality trading is not limited to DMAs. Amend/edit sentence "Trading is allowed statewide so long as the requirements of OAR 340-039 are met" to "Trading is allowed statewide provided the requirements of OAR 340-039 are met under the following understanding of baseline conditions per OAR 340-039-0030(j) under this TMDL:

•Notwithstanding any DMA adopted regulations to achieve targets under this TMDL, water quality trading is allowed provided the DMA has not yet reached the 100% shade target assessment year as established in Table 3. •DMAs may adopt non-regulatory approaches to meet shade targets, especially on private lands, provided the DMA demonstrates ability to meet the shade targets presented in Table 3, and those non-regulatory approaches shall not be deemed baseline conditions under OAR 340-039-0030(j). •DMAs are encouraged to accelerate the rate of effective shade restoration via programs that incentivize conservation easements, public-private partnerships, and water quality trading projects as part of their TMDL Implementation Plans."

Response: The DEQ appreciates ACWA bringing attention to the fact that water quality trading is allowed statewide under OAR 340-039. Regarding the first requested update, the WQMP will be updated to state that NPDES permittees are encouraged to develop trading plans. Regarding the second requested update, baseline requirements are set at the time of trading project initiation. The DEQ is not able to pre-approve an interpretation of baseline conditions ahead of receiving a trading plan. As the ACWA may be aware, a required component of a trading plan is a description of the trading baseline under OAR 340-039-0025(5)(a).

OAR 340-039-0030 lists the regulatory requirements that must be included in the determination of baseline for projects. These include the rules of ODA and ODF regarding nonpoint source management. When an applicant or permittee submits a water quality trading plan for DEQ review the trading plan must include a determination of baseline through a list and description of applicable regulatory requirements that apply within the trading area. This baseline determination is subject to DEQ approval in its review of the trading plan. DEQ must also provide an opportunity for public comment on the trading plan prior to DEQ approval. The

trading rules also require that a trading plan be revised if there is a change in circumstances that affects a trading plan element, which includes baseline.

Changes were made based on this comment.

ACWA #14

Description: TMDL - Data Quality

Comment: C. Data Quality. The need for quality data has been a continuing comment from ACWA but is important enough to reiterate. The EQC expressed surprise at the special meeting held to adopt the Subbasin Temperature TMDL about how old some of the data sets were. The question was whether some of the data from 2004 and 2006 in the appendices were actually the most recent available data sets. The DEQ response, to paraphrase, was that due to the need to meet Court-ordered deadlines to finish the TMDLs, DEQ is in a position that it needs to move ahead with whatever data is available, even if seemingly out of date. DEQ emphasized that it does make a call for data but in the end, it must use what it has. No doubt DEQ agrees with ACWA that the TMDLs will only be as accurate as the underlying data relied upon. One ACWA member reported that the results of DEQ's thermal load analysis did not align with any data they had on record. DEQ has been willing to review newly submitted data, which is appreciated.

However, we are concerned that not all DMA's have had the opportunity to compare the results of DEQ's analysis with the most recent data collected. While the arithmetic associated with the thermal load allocations is not particularly complex, the explanation provided in the Waste Load Allocation Approach Technical Support Document (March 2024) is not clear on several items, such as the application of 7-day running averages. This can lead to calculation errors that could cause DMAs to perform faulty thermal load self-analyses. To eliminate such errors, DEQ should consider providing a WLA calculation spreadsheet to DMAs, similar to the Reasonable Potential Analysis (RPA) spreadsheet posted on DEQ's website. Where applicable, DEQ should consider using 10 years of data in the analyses. A dry winter in 2014/2015 resulted in low river flows and high river temperatures the following summer. River flows were below the 7Q10 level on numerous occasions. Incorporating this data would result in more conservative analyses and may be more representative of future ambient conditions.

As another example of data that does not seem to add up, Some DMAs have implemented programs that curtail effluent discharge or reduce withdrawals. Examples include wastewater treatment plant effluent reuse and aquifer storage and recovery (ASR) for potable water, respectively. As the approach to thermal allocations is largely based on existing thermal discharges, DMAs that have taken past measures to reduce their discharges are not being credited for their efforts. Figures 10-13, 10-14, and 10-15 in the Technical Support Document show significant increases in modeled stream temperatures between approximately river miles 114 and 109, more than 4 miles downstream of Albany and ATI discharges. DEQ states that the point of maximum impact (POMI) for point sources is in this location, just upstream of the confluence of the Santiam River (river mile 109). It was explained by DEQ during a RAC meeting that the sharp increase in modeled temperature in this segment of the upper Willamette is not due to another point source discharge as it appears but is the result of the cumulative effects modeling, yet details were not provided. Most all the other river segments show a steep increase in temperature at a point discharge and then trend in a gradual decline after the discharge. The 2006 Temperature TMDL also had the point of maximum impact near this

location downstream of the former IP/Weyerhaeuser discharge. This mill facility no longer exists, and its discharge permit has long been closed by DEQ. As a non-conservative pollutant, the temperature profile of the river shown at this location cannot be justified without some unidentified additional heat load.

ACWA asks that prior to finalizing this TMDL, and as the next round of TMDLs are developed, that DEQ take a deep dive into the data and initiate more robust efforts to call for data updates. Using the most recent data and applying the data to appropriately fit river conditions is critical. ACWA would be happy to assist DEQ on an outreach plan if DEQ thinks that would help.

Response: Completing the temperature TMDL replacements within the court ordered schedule has been challenging and we appreciate ACWA and other interested parties' participation in the process, despite the challenge posed by the accelerated pace. DEQ and EPA have submitted a motion to the court requesting an extension to the deadlines.

Thank for you sharing additional data with DEQ. DEQ supports using additional data, as much as time and resources allow, if it improves TMDL analysis. We appreciate your suggestion to distribute a template WLA analysis spreadsheet. There are a variety of approaches to the WLA analyses, and we sometimes don't use a spreadsheet, but we do have a template spreadsheet and have used it for the replacement temperature TMDL projects. DEQ would be happy to share this with ACWA and any other interested party. We are also happy to provide completed spreadsheets when they are available. DEQ did share the WLA analysis spreadsheets with some of the NPDES permittees (including ACWA members) during development of the Lower Columbia-Sandy Subbasin and Willamette Subbasins temperature TMDLs.

DEQ reviewed the model and the temperature increases downstream of Albany that were discussed at the RAC meeting. Temperature impacts of point sources reach a maximum between RM 115 and 109 (the confluence of the Santiam River). DEQ verified that the model does not contain the former Albany IP/Weyerhaeuser discharge. In order to understand why temperature impacts increase in this area, in spite of the absence of large point sources in the immediate area, the following additional modeling scenarios were performed: 1) a scenario with only McKenzie River thermal loads including the IP Springfield Paper Mill industrial discharge, 2) a scenario with only the Metropolitan Wastewater Management Commission (MWMC, Cities of Eugene and Springfield) municipal discharge, and 3) a scenario with only Cascade Pacific Pulp and GP Halsey Mill industrial discharges. IP Springfield, MWMC, and combined Cascade Pacific and GP discharges comprise the largest thermal loads to the system. The modeling showed that MWMC impacts are more longitudinally variable than the impacts of other discharges, which contributes to cumulative impacts that reach a maximum downstream from RM 115. This is also the cause of a similar delta T increased between RM 164 and 149. TSD Appendix M Section 3.4 has been revised to describe additional analyses performed and insights obtained from the analyses.

Changes were made based on this comment.

ACWA #15

Description: TMDL - Providing Adequate Capacity for Growth.

Comment: D. Providing Adequate Capacity for Growth. Oregon continues to grow, in many cases in exactly the communities that are included in this TMDL. These communities have been dealing with growth issues for years, always needing to stay one step ahead. Governor Kotek's aggressive plan to add 30,200 housing units per year for the next ten years to meet the need to house unhoused people, resolve current housing shortages and meet future demand due to population growth will further tax these communities. While the plan is statewide, it is most likely that much of the focus will be the Willamette Valley and will especially impact the jurisdictions subject to the Mainstem Temperature TMDL.

DEQ must consider the impact on temperature that this near-term and future growth will have. ACWA refers DEQ to comments #7, #11, #12, #13, #14, #15, #17, and #18. Review of these comments would suggest that DEQ needs to sharpen its pencil to consider use of HUA, reserve capacity, and matching WLAs to specific use periods (i.e., spawning, core cold water, rearing, and migration) to better reflect actual conditions to make allocated loads achievable. ACWA notes DEQ's terse response to ACWA #13 that "DEQ is not required to identify in a TMDL how the allocated loads are to be achieved. It is DEQ's expectation, per OAR 340, division 42, that DMAs or responsible person evaluate their operations and propose management strategies in their TMDL implementation plans that will show achievement of allocations." The ask is not that DEQ identify for DMAs how to allocate loads to meet the TMDL. The ask is that the TMDL be calculated in such a way that compliance is possible. Neglecting to provide flow-based WLAs matched to critical time periods and not adequately recognizing the impact of growth will make providing compliant TMDL implementation plans in some cases beyond challenging. DEQ needs to calculate the HUA to allow for near- and long-term growth, consider using a portion of the reserve capacity where necessary, and adequately reflect critical time period variations.

In addition, without rewriting the entirety of the comment, please refer to ACWA's Comment Letter dated March 1, 2024, pp.4-11, Section 9. Allocation, Reserve Capacity and Margin of Safety, which describe the above strategies to address growth in greater detail. Worth repeating is the opening paragraphs of the comment:"'OAR 304-042-0040(5) and (6) describe the potential factors of consideration for determining and distributing these allocations of the allowable pollutant loading capacities…Factors to consider in allocation distribution may include: source contributions; costs of implementing management measures; ease of implementation; timelines for attaining water quality standards; environmental impacts of allocations; unintended consequences; reasonable assurance of implementation; and any other relevant factor.'

As currently crafted, the draft TMDL documents appear to be based on modeling and mathematical analysis, without consideration of the factors cited above. The basis or reasoning for allocations to the source categories is not explained in the TMDL, nor is there an analysis of the allocations with respect to these factors. From this TMDL will come permit requirements that must be met and compliance measures that must be implemented. The considerations noted above must be considered with due diligence in the development of this TMDL and WQMP in order to create a realistic framework for achieving the temperature targets. That means that permit and TMDL implementation plan requirements must be feasible, implementable, cost-effective, and within the resource capacity of permittees and DMAs.

Our comments regarding DEQ's source category allocations directly relate to the factors listed above. DEQ needs to re-evaluate its recommended allocations through the lens of all the factors of consideration included in OAR 304-042-0040 (5) and (6) and provide greater clarity and transparency as to its conclusions. Our comments below should alert the Department to significant issues related to costs of implementation, unintended consequences, negative

environmental impacts of allocations, and lack of reasonable assurance of implementation. All of these will have a ripple effect impacting the attainment of water quality standards."

One additional point is important to call attention to and provide a great deal of well-earned credit to DEQ. In many instances, DEQ offers in its response to comments regarding particularly challenging circumstances that it "will work with the cities to implement the TMDL and assist to the best of our ability in identifying different pathways that will achieve water quality standards." See, e.g., DEQ Response to ACWA #23. In several of the changes made in response to the Subbasin Temperature TMDL, DEQ clearly demonstrated how open and willing it is to consider and, when appropriate, resolve potential compliance issues. ACWA members subject to this TMDL look forward to DEQ's continued sharing of expertise in identifying pathways to meet TMDL WLAs and achieve water quality standards.

Response: ACWA references multiple comments submitted to DEQ on the August 2024 draft Willamette Subbasins temperature TMDL. We considered each of these comments and responded to them in the context of the Mainstem Willamette and Major Tributaries project area. The title of the original comment has been included for context.

#7 TMDL - Critical Period - Add table summarizing the critical periods of specific waterbodies.

Tables summarizing the critical periods were added to the previous TMDL in response to this comment. The critical period tables remain in the amended Willamette Subbasins TMDL.

#11 TMDL - HUAs - Re-evaluate allocations based on cost, ease, unintended consequences, and lack of reasonable assurance of implementation.

The factors that DEQ considered for distribution of allocations are identified in the TMDL Technical Support Document sections 9, 9.1 and 9.2. These sections were updated to provide additional explanation for allocation assignments in the mainstem project area. Note that OAR 304-042-0040(6) identifies factors DEQ or the EQC may consider when distributing wasteload and load allocations. DEQ or EQC is not required to consider or evaluate all the factors listed.

#12 TMDL - HUA - Provide justification and reasoning for HUA allocations that vary across subbasins and from 2006 TMDL.

DEQ's rationale for the human use allowance assignments is summarized in the TMDL Technical Support Document sections 9, 9.1 and 9.2. These sections were updated to provide additional explanation for allocation assignments in the mainstem project area.

#13 TMDL - HUAs - Justify the allocation of 0.0 degC of warming to nonpoint source solar loading.

DEQ's rationale for the 0.0 deg-C human use allowance assignment to nonpoint sources of solar loading (except streamside vegetation reduction caused by existing infrastructure), was previously added to TSD section 9.1. DEQ's rationale for this HUA assignment has not changed for the Mainstem Willamette and major tributaries, although the narrative included in the TSD was revised slightly for clarity.

#14 TMDL - HUA - Allocate 0.02 deg C of the HUA to solar loading from nonpoint sources.

See our response to #13. The rationale is provided in TSD section 9.1.

#15 TMDL - HUA - Provide allocations to nonpoint source solar loading so that water quality trading can be a compliance strategy.

DEQ does not believe that the way the human use allowance was assigned to nonpoint sources of solar loading limits the ability of point sources to participate in water quality trading.

#17 TMDL - WLA - Include wasteload allocations for each use period.

The wasteload allocations for most point sources included in the Mainstem Willamette and Major Tributaries project area have separate HUA assignments for each use period.

#18 TMDL - Ensure that non-discharge period in NPDES permit matches the TMDL time period.

DEQ reviewed the NPDES permits for facilities that currently do not discharge. We did not identify any discrepancies with the allocation period and did not make any changes to the WLAs based on this review.

#23 TMDL - WLA - Conduct compliance assessment on ability of facilities to meet WLAs and allocate reserve capacity if needed DEQ increased the portion of the human use allowance and wasteload allocation for some facilities to minimize or eliminate non-compliance days.

DEQ increased the human use allowance for City of Salem Willow Creek STP (78140) and City of Corvallis STP (20151). DEQ also updated the WLA analysis to reflect the combined discharge of ATI Millersburg and Albany-Millersburg Water Reclamation Facility. The WLAs were not changed, but a note was added to clarify that the two WLAs may either be addressed individually with the facilities' permits or may be combined and addressed as a single WLA. A WLA was included for City of Eugene Public Library (112467). This discharge was missed in our previous review. DEQ also revaluated the human use allowance assignments and WLAs for general permit registrants to the 100-J and 200-J. The human use allowance for general permit registrants were increased on certain Willamette River AUs and for the entire Clackamas River AU. A WLA for North Clackamas County Water Commission (110117) was added to Table 9-12 as the analysis found it was a potential source. DEQ added additional information into the TMDL and TSD to improve the documentation of our analysis of various NPDES permitted facilities on the waters associated with the Willamette River and major tributaries. This includes documentation for general permit categories and registrants that did not receive a WLA.

Changes were made based on this comment.

ACWA #16

Description: WQMP - OWRD as a DMA

Comment: E. OWRD as a DMA. OWRDs role in ensuring sustainable stream flows is undeniable. OWRD should be listed as a DMA in the WQMP and it must play a key role if temperature targets are to be met. See ACWA #39. DEQ offers to "work with OWRD to evaluate ways in which the agencies can further partner in efforts to increase flows to improve water temperature" and suggest the possibility of a future MOU or MOA. The when and how of this hope is far less certain of success than taking the needed step to identify OWRD as a DMA. DEQ reasons that OWRD has a unique role that does not involve land management. Land

management should not be the distinguishing factor used to designate a DMA. Rather it should be the capacity or ability to address, or not address, pollutants in such a way there is a potential for water quality impairment. Certainly, the activities of OWRD in managing stream flows has such a potential. Flow management will be an essential component of management strategies in the WQMP. If OWRD withdrawals result in significant temperature impacts and reduce flow, DMA flow management strategies may be unworkable.

Response: DEQ acknowledges OWRD's role in governing the allocation of water rights in Oregon, and that water withdrawals can have a significant impact on stream temperature (see Technical Support Document Section 7.2.3 Water Management and Withdrawals and in the TSD Appendix A, Section 4: Model Scenario Results). OWRD's role as the state agency that administers the laws governing the allocation of water rights can be distinguished from the roles of other state agencies that have regulatory authority managing activities and uses of property that contribute to water quality impairments, such as ODA and ODF. OWRD's unique role does not include regulating activities that affect riparian conditions or the authority to implement riparian management strategies to meet effective shade targets, which are the basis of the load allocations assigned to nonpoint sources. Therefore, DEQ has determined that collaborating with OWRD, including through an inter-agency MOU/MOA, rather than naming OWRD as a DMA, will be a more effective way of supporting efficient water use and managing water according to established water right regulations.

Currently, DEQ can recommend denial of new water right applications as part of OWRD Division 33 reviews, as well as recommend flow mitigation for new water use permits to offset potential impacts to water quality for waterbodies impaired for flow-related parameters, such as temperature. DEQ also continues to actively support ODFW's applications to OWRD for instream water rights to protect against future water use permit applications on specific stream reaches. DEQ and OWRD also collaborate on implementation of priority strategies from the statewide Integrated Water Resources Strategy.

Following the EQC adoption of this TMDL rule, DEQ will evaluate how a MOU or MOA with OWRD could focus resources to more effectively manage water and water rights under OWRD's existing authorities.

ACWA #17

Description: TMDL - Site specific effective shade surrogate measure targets to meet nonpoint source load allocations for DMAs

Comment: F. TMDL Document: Table 9-18 includes Site specific effective shade surrogate measure targets to meet nonpoint source load allocations for DMAs in all model areas in the Willamette Subbasins. This table includes a column that reflects Total Kilometers Assessed for each DMA. Some of the numbers in this column are hard to understand and seem questionable. For example, for Oregon City it shows 0.7 km assessed while Oregon City clearly has more kilometers of open channel water bodies in the Willamette Basin. Many of these numbers seem questionable, including those for other DMAs. Please provide a map to clarify the areas that were assessed. This is important given that the shade gap values may be the focus for compliance, and if the shade gap value is not representative of all waterbodies, it may not be an appropriate target to apply to our streamside evaluations.

Response: The extent of the shade model on the Willamette River does not extend downstream of Willamette Falls. This is why there is a short model reach within the city limits of Oregon City. We are unsure what other DMAs have questionable model extent numbers but in review of the models and GIS extents, we did not identify any errors with the extents. With that said, should an error be found in the future the TMDL includes an equation and provision to allow recalculation of the mean shade targets (TMDL Section 9.1.5.2, Equation 9-4). The shade targets can also be recalculated to accommodate changes in ownership or jurisdictional boundaries over time.

Figure 6-2 in the public comment draft TSD section 6 shows a map of the temperature and shade model extents. It is difficult to see that the shade model extent on the Willamette River ends at Willamette Falls because of the overlay with the CE-QUAL-W2 temperature model extent. The CE-QUAL-W2 model extends all the way to the mouth of the Willamette River, unlike the shade model. We have replaced this map with two separate maps to fix this issue. One map shows the temperature model extents and the second shows the shade model extents. The model extents are also included with the GIS features distributed with the TMDL and on the interactive TMDL map (TSD Appendix H). We also improved the documentation of the shade models by including model extent maps for each river, model setup information, and shade result plots for each model into TSD Appendix A, Sections 3.14 and 4.15.

Changes were made based on this comment.

ACWA #18

Description: WQMP - Section 5 comments

Comment: F. WQMP: Section 5.3.1 of the WQMP: Last sentence appears to be missing a word after the term “responsible person’s”. This sentence is unclear. Please reword to “Implementation plans must identify all streamside areas or streamside activities within a DMA’s jurisdiction or responsibility.”

Section 5.3.2 of the WQMP: First paragraph is missing the word “of” in front of the term measurable objectives.

Section 5.3.4.1 of the WQMP: Last sentence of the first paragraph. Please add the word “example” in front of methods. It is not explicitly clear that all three of these methods are not specifically required for conducting a streamside shade gap analysis. Clarification is needed to more explicitly show these are options.

Response: Thank you for your review. Punctuation has been edited to reflect suggested changes. No clarification was added to section 5.3.4.1, as the numbered list in this section clearly identifies that another method can be used with DEQ approval.

Changes were made based on this comment.

ACWA #19

Description: TMDL - Share Heat Source and TTools work arounds with ACWA

Comment: ACWA will not repeat its previous comments here in detail but is confirming the DEQ responses that appear to have been addressed proactively by DEQ. The numbering is consistent with the numbering (for ACWA comments) in the DEQ response to public comments to the Subbasin Temperature TMDL in the EQC packet, Attachment F.

As an aside, the response to ACWA #47 states that "DEQ can share [Heat Source Tool model] work arounds with ACWA if needed." Please share these work arounds with ACWA.

Response: DEQ contacted ACWA to share the information. The documentation describing the work arounds is also part of the Heat Source version 8 download available on DEQ's website. The updated version of TTools that works with Python 3 (ArcPro 3.x +) is also posted there. See https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Tools.aspx.

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11. Comments from: Trout Unlimited

Trout Unlimited #1

Description: WQMP - Support for Mainstem TMDL

Comment: We are pleased to see the following in the August 2024 Willamette River Mainstem Plan: 1. Cold water refuge protection and restoration (section 5.3.6) applicable to designated management agencies (DMAs) in the lower 50 miles of the mainstem. 2. Flow management in the plan (section 2.2) including the pursuit of instream water right transfers and leases as a management strategy for addressing temperature impairments. 3. Guidance on addressing agricultural water quality issues in (section 5.2.2) noting that ODA's existing regulatory program and focus on voluntary restoration efforts isn't likely to address existing temperature impairments. 4. Streamside buffers (section 5.3.3) suggesting 120-foot riparian buffers may be necessary when DMAs do not assess exact shading requirements necessary on site-specific places.

Thank you for the opportunity to comment in support of the proposed Willamette River Mainstem and Major Tributaries Temperature TMDL Management Plan.

Response: Thank you for your comment in support of the proposed Willamette River Mainstem and Major Tributaries Temperature TMDL and Water Quality Management Plan.

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12. Comments from: WaterWatch of Oregon

WaterWatch #1

Description: TMDL - Quantification of Water Management and Heat Loads

Comment: We appreciate the express recognition that water management activities and water withdrawals contribute to the failure of the designated water bodies to comply with water quality criteria. We also appreciate the specific load allocations recognizing the need to quantify the impacts of water management and water withdrawals and to limit or reduce the heat loads caused by those activities such that they do not impact water temperature beyond a specific amount that, in theory and assuming all other impacts are contained within their waste load and load allocations, will ensure attainment of water quality standards for temperature.

Response: The DEQ appreciates the comment.

WaterWatch #2

Description: TMDL - Assess Withdrawal Contribution to Exceedances

Comment: Given express allocations of loading capacity to water management, the draft TMDL documents should include an assessment of the extent to which current water withdrawals contribute to exceedances of water quality criteria relative to the proposed load allocations, and should include a plan for determining in the future (by surrogate measure or otherwise) whether heat loads contributed by water management and withdrawals are within the load allocations or, if not, the extent to which they are not. OWRD has legal authority over water management and water withdrawals in the basin. OWRD can influence the water-temperature impact of water management and water withdrawals in many ways, including but not limited to: (a) by adequately conditioning (e.g., by requiring temperature mitigation) or not issuing permits for new water withdrawals and storage that will contribute to warming in the designated waterways; (b) by requiring better measurement and reporting of water withdrawals and water storage to ensure withdrawals and storage are within legal limits; (c) by enforcing laws against withdrawing water without a permit and/or withdrawing more water than legally allowed under a permit or water right; (d) by enforcing instream water rights to protect instream flows; (e) by ensuring forfeiture of unused water rights to prevent resumption of discontinued withdrawals at a future date; and (f) by requiring water conservation and management plans prepared by cities and irrigation districts to demonstrate stronger efforts to conserve water and reduce water withdrawals and possibly convert more water rights to instream rights.

Response: DEQ has established methods for determining the thermal loads contributed by water management and withdrawals and for assessing whether those thermal loads attain Human Use Allowance allocations. DEQ assessed the impact of water withdrawals on stream temperature for four of the modeled streams in the Willamette Subbasins Temperature TMDL project area. This assessment is summarized in Technical Support Document Section 7.2.3 and in Appendix A, Section 4: Model Scenario Results. In Johnson Creek we evaluated stream temperature response to water withdrawals and found that a 4% reduction of natural streamflow

resulted in a stream temperature increase equal to the portion of the Human Use Allowance allocated to water withdrawals (0.05°C). In the Molalla River we evaluated stream temperature response to removing water withdrawals entirely and found that withdrawals were responsible for a 1.50°C temperature increase at the point of maximum impact. In the Pudding River we evaluated stream temperature response to removing water withdrawals entirely and found that withdrawals were responsible for a 4.01°C temperature increase at the point of maximum impact. In Thomas Creek we evaluated stream temperature response to removing water withdrawals entirely and found that withdrawals were responsible for a 1.83°C temperature increase at the point of maximum impact. Due to time and resource constraints, it was not possible to model the temperature impact of water withdrawals for all waters in the TMDL project area. The model analysis that was completed is sufficient to establish that water withdrawals can a cause temperature increase. To clarify potential temperature impacts are not limited to only waters modeled, additional narrative has been added to the Technical Support Document to summarize that temperature impacts can occur from water management and water withdrawals.

In the Willamette Subbasins Water Quality Management Plan, DEQ considers the flow-related strategies in Table 2 and described narratively in Section 2.2 as strategies and practices that should receive special focus during TMDL implementation plan development. These strategies are not exhaustive. DEQ's expectation is that other water management and withdrawal strategies can also be implemented or explored. DEQ can currently recommend denial of new water right applications without full temperature mitigation as part of Oregon Water Resources Department Division 33 reviews. In addition, DEQ can recommend flow mitigation to offset potential impacts to water quality for waterbodies impaired for flow-related parameters, such as temperature.

Changes were made based on this comment.

WaterWatch #3

Description: TMDL - NPS Allocation Unrealistic

Comment: Elimination of allocations for other nonpoint sources of heat, apparently to make room the allocations to water management and on the premise that those contributions can be eliminated completely, does not seem realistic.

Response: The TMDL implementation framework identified in the Water Quality Management Plan and directly discussed in Section 7 (Reasonable Assurance of Implementation) detail the accountability framework that DEQ will rely upon to ensure that nonpoint source load reductions will be achieved.

DEQ's rationale for assigning a zero human use allowance to certain nonpoint source categories is summarized in TSD Section 9 and 9.1.

For clarification purposes, a zero human use allowance, which corresponds to a zero load allocation expressed as an excess load, is not the same as elimination of allocations. Eliminating an allocation under the Clean Water Act implies removal of the allocation assignment and the TMDL requirement to meet a specific pollutant loading limit. A zero human use allowance means the activities and operations of those nonpoint source categories cannot

result in an increase to the 7-day average daily maximum river temperatures when the river exceeds the applicable temperature criteria. Those source categories may still have a thermal discharge or conduct activities in a way that does not increase 7-day average daily maximum water temperatures. Achievement may also come via water quality trading as long as the requirements listed under OAR 340-39 are met.

WaterWatch #4

Description: WQMP - water management and withdrawal strategies

Comment: Management strategies for limiting the impact of water management and water withdrawals are too limited and too general. The potential for acquisition of water rights for instream use is likely to be extremely limited relative to the scale of the problem and new instream water rights will have low priority relative to more "senior" out of stream uses. Among other things, the strategies should include requiring full temperature mitigation for current and future water withdrawals (including permitted but undeveloped withdrawals) whenever possible, including on applications for extension of time to develop unused water use permits and on applications for permits and certifications associated with development and/or continuation of water withdrawals (e.g., removal-fill permits and water quality certification for water withdrawal and/or water-use infrastructure).

Response: The WQMP includes strategies other than those that increase streamside shade (including flow augmentation and channel morphology-related restoration) in the table of priority management strategies because DEQ recognizes the importance of these strategies in reducing stream temperatures. However, the listed strategies are not exhaustive, and it is DEQ's expectation that other water management and withdrawal strategies will be implemented or explored to meet the load allocation. DEQ will continue to encourage DMAs to consider all alternative strategies for inclusion in DMA implementation plans. DEQ will continue to assess implementation compliance with the TMDL through DMA tracking and reporting on DEQ-approved implementation plans in the coming years. Any future evaluation of progress toward meeting effective shade targets will include an evaluation of other implementation efforts that have been completed to improve stream temperatures.

The Oregon Water Resources Department administers the laws governing the allocation of surface and groundwater quantity. As a member of OWRD's Division 33 Interagency Review Team, DEQ can recommend flow mitigation to offset potential impacts to water quality for waterbodies impaired for flow-related parameters, such as temperature. The process for water right reviews is established in OWRD's rules.

WaterWatch #5

Description: WQMP - ODA Role

Comment: We appreciate the acknowledgement that ODA regulation is not achieving water quality objectives and that more needs to be done on private agricultural lands.

Response: The DEQ appreciates the comment.

WaterWatch #6

Description: DMAs - Implementation Plans from Water Users

Comment: Major water withdrawers and permit holders should also be responsible persons required to prepare implementation plans to show how withdrawals will be reduced or eliminated or to show how temperature impacts from continuing withdrawals will be offset.

Response: The Oregon Water Resources Department administers the laws governing surface and groundwater use. ORS 536.220 authorizes a single state agency, the Water Resources Commission, to formulate and implement an integrated, coordinated state water resources policy. Whereas the commenter advocates regulating water use based on withdrawal size (e.g., "major water withdrawers"), current water law regulates water use based on the date of original application of water use (e.g., priority date). OWRD works with some agricultural and municipal water suppliers to prepare water management and conservation plans as a proactive evaluation of the management and conservation measures that suppliers can undertake. For these reasons, DEQ does not intend to add water right holders to the list of responsible persons in the WQMP.

WaterWatch #7

Description: TMDL - Consider Impacts from In-Channel Reservoirs

Comment: The TMDL documents do not give adequate consideration to the cumulative impact of numerous small, in-channel reservoirs that add heat through increased thermal exposure of the water through pooling and expanded surface area. In addition to identified reservoirs that are not required to monitor temperature impacts, OWRD routinely permits reservoirs under thresholds for dam safety (which can be unlimited in size if the dam is less than 10 feet high) with limited storage seasons that cannot practicably be enforced and with conditions that are not adequate to prevent the reservoirs from increasing stream temperatures. This further illustrates why OWRD should be a DMA under the TMDL.

Response: The TMDL considers the impact of small, in-channel reservoirs to the extent that TMDL modeling includes empirical data from watersheds containing small in-channel reservoirs. The commenter refers to the impracticality of monitoring and enforcing conditions on the thousands of small inline ponds that exist throughout the Willamette basin, and the DEQ shares this concern. WaterWatch is encouraged to share this concern with the OWRD.

WaterWatch #8

Description: TMDL/TSD - Climate Change Effects

Comment: The TMDL documents should include in the modeling and loading analysis, and in the allocations, the estimated future effects of climate change on stream flows, air temperatures and water temperatures.

Response: DEQ completed a literature review to assess climate change-driven stream temperature impacts. The review was included with the draft TMDL as TSD Appendix G. We added additional information about stream temperature impacts from future climate change sources. TMDL section 9.1.1 was updated to clearly state that temperature impacts associated with climate change sources are assigned a zero HUA. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The updated TSD narrative states:

"Past climate change impacts have contributed to stream temperature warming (see TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources."

Changes were made based on this comment.

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13. Comments from: Willamette River Keeper

WRK #1

Description: WQMP - Wildfire and timeline to meet shade targets

Comment: DEQ also failed to account for increasing wildfires caused by climate change, which will delay, if not prevent, the shade targets from being met. The rate of wildfires has been increasing and will continue to increase as temperatures rise. Experts predict that "[b]y 2040, the region should anticipate a 400-500% increase in the number of acres burned annually and summer flows in the Willamette River and other waterways reduced by 4-60%."2 As shade coverage declines due to wildfires and summer flows are reduced, the stream temperatures will continue to rise, yet DEQ does not take this climate change-driven increase in wildfires into consideration. The only mention DEQ makes of the affects wildfires and other natural disturbances on shade targets is inadequate. "DEQ acknowledges that factors such as climate change and local geology, geography, soils, climate, legacy impacts, wildfires and floods may hinder achieving the target effective shade. No enforcement action will be taken by DEQ for reductions in effective shade caused by natural disturbances. Where natural disturbances have occurred, DEQ expects responsible persons including DMAs to assess and prioritize these areas for streamside restoration following an event." DEQ's failure to acknowledge that wildfires and climate change will absolutely reduce riparian shade coverage and not having a plan in

place for these reductions other than an expectation that these areas will be assessed and prioritized is DEQ brushing off its duties and deciding that it will be someone else's problem when it happens. DEQ does not have a timeline for when responsible persons are expected to replant these areas and doesn't explain how prioritizing these burned areas will not affect other areas that will still need to be planted. Does DEQ expect responsible persons to increase planting activities after these events or is DEQ okay with pushing shade targets past the 96-year timeline that the draft currently has in place?

To start with, DEQ needs to include conservative assumptions for wildfires in the draft TMDL and account for them when creating a timeline for meeting shade targets. The timeline should require shade targets to be met sooner than the current 2120 timeline to account for the likelihood that at least some shade benefits will be lost due to wildfires and will need to be replaced.

Response: The timelines identified in the WQMP are based on a general timeline of how long it takes for overstory trees to mature and provide streamside shade. Once fully implemented, the management strategies and existing programs outlined in the WQMP provide reasonable assurance that the allocations will be met over time through regulatory or voluntary actions. DEQ acknowledges that many factors, including wildfires, will likely impact streamside shade at specific locations in a watershed; however, streamside restoration and protective measures are expected to increase overall shade in the basin. Additional strategies referenced in the Water Quality Management Plan (Table 2) are also expected to support attainment of temperature standards over time.

WRK #2

Description: TMDL - Account for climate change

Comment: WRK recognizes that no agreed upon methodologies for incorporating climate change predictions into TMDLs exist yet. However, this lack of consensus does not excuse DEQ failing to incorporate climate change predictions at all into its assessment of loading capacity, underlying wasteload allocations and load allocations, margin of safety, or implementation strategies. DEQ's use of a stationary climate is directly opposed to EPA's recognition that TMDLs built upon steady-state assumptions are no longer accurate. "While many temperature TMDLs have been established, the supporting analyses have generally assumed a stationary climate under which historical data on flow and air temperature can serve as an adequate guide to future conditions. Projected changes in climate over the 21st century contradict this assumption. Air temperature is expected to increase in most parts of the US, accompanied in many areas by seasonal shifts in the timing and amount of precipitation, which in turn will alter stream flow."

EPA has noted that "climate change may alter attainability of some designated uses and parameters related to water quality standards (e.g., lower streamflow may increase stream temperature) and recommends that 'TMDLs and water quality standards should be examined to ensure that these remain protective of aquatic life uses under changing climatic conditions.'" While EPA recognizes that most TMDLs do not take climate change considerations into account and it would be infeasible to re-open every TMDL to incorporate climate change considerations, DEQ has already re-opened this temperature TMDL and it is irresponsible and illogical to continue to ignore climate change in the TMDL that will likely be most affected by changing

climactic conditions. EPA has offered to collaborate to "further incorporate consideration of the impacts of changing climate conditions," including considering "the impact of changing environmental conditions when developing and implementing TMDLs…" Additionally, EPA encourages "water quality authorities to consider climate change impacts when developing wasteload and load allocations in TMDLs where appropriate." Scientific evidence shows that stream temperatures in the Willamette River subbasins will increase because of climate change.

Because the draft TMDLs do not make any reasonable attempt to incorporate projected climate change impacts into their analyses, allocations, or assumptions regarding implementation effectiveness, the draft TMDLs rely on steady-state assumptions and, therefore, they are built to fail. As a result, the draft TMDLs will not attain and maintain water quality, as required by rule. As EPA is prioritizing climate change in its own operations, it is time for DEQ to be proactive and truly consider climate change when updating TMDLs. Rising air temperatures can directly lead to rising water temperatures which can then decrease dissolved oxygen and increase nutrients in waterbodies, harming the beneficial uses of these water systems and increasing harm to federally listed fish species.

Response: DEQ identified climate change as a source of temperature warming and addressed temperature impacts from past and future climate change as part of the TMDL load allocation. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. Climate change sources in Oregon were assigned a zero HUA. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1.

In addition, DEQ completed a literature review to assess climate change-driven stream temperature impacts. The review was included with the draft TMDL as TSD Appendix G. We added additional information about stream temperature impacts from future climate change sources.

Changes were made based on this comment.

WRK #3

Description: TMDL - Climate change for seasonal variation and critical conditions

Comment: DEQ did not account for predicted climate change effects when assessing seasonal variation and critical conditions in violation of the TMDL rule. This rule requires DEQ to "account[] for seasonal variation and critical conditions in stream flow, sensitive beneficial uses, pollutant loading and water quality parameters so that water quality standards will be attained and maintained during all seasons of the year." The best available scientific data demonstrates that climate change is decreasing stream flows, warming air temperatures, increasing stream temperatures, and harming salmon and steelhead. These impacts will continue to intensify. DEQ failed to account for these changes in the draft TMDL despite overwhelming scientific evidence that these seasonal variations and critical conditions are changing due to climate change. The Oregon Climate Change Research Institute's Oregon Climate Assessment found that "temperature in Oregon is projected to increase on average by 5°F by the 2050s and 8.2°F by the 2080s, with the greatest seasonal increases in summer. Additionally, the "frequency,

duration, and intensity of extreme heat events is expected to increase throughout the state during the twenty-first century," as well as the frequency of droughts and wildfires. Strangely, it does not appear that DEQ used this assessment when updating the TMDL, despite this being a state sponsored assessment required under Oregon House Bill 3543.

Response: DEQ addressed temperature impacts from past and future climate change as part of the TMDL load allocation. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. Climate change sources in Oregon were assigned a zero HUA. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The TSD narrative states:

"Past climate change impacts have contributed to stream temperature warming (See TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources."

In addition, DEQ completed a literature review to assess climate change-driven stream temperature impacts. The review was included with the draft TMDL as TSD Appendix G. We added additional information about stream temperature impacts from future climate change sources. We agree OCCRI's Climate Assessment is an excellant summary of climate change impacts and risks. The assessment was not included in our review because it does not focus on how the various climate change impacts (i.e. air temperature increases, changes in stream flow, and other factors) translate to stream temperature change.

The TMDL seasonal variation and critical low flows analysis incorporates the effects of climate change on river flows and stream temperatures to date. The seasonal variation analysis is used to identify the period when temperature standards are exceeded and TMDL allocations apply. The findings of this analysis show that in the mainstem Willamette River upstream of Newberg, the critical period is April 1 - November 15. This is a change from the 2006 TMDL which established the critical period as April 1 – Oct 31. In setting the critical period DEQ grouped temperature data by the first and second half of each month. The month was split on the 15th with the first group including all results measured on the 1st through the 14th day and the second group including all results measured on the 15th through the end of the month. During these periods, if approximately 2% to 100% of the observations exceeded the criteria that period was included in the critical period.

Based on the information summarized in Appendix G, we think the TMDL critical period will adequetly address future stream temperature increases caused by climate change. The Oregon Coastal model (which includes the Willamette Basin) devleped by Issak et al 2017 predicts an average August stream temperature increase of about 1.1°C and 2.0°C by 2040 and 2080,

respectively. Based on current river temperatures outside of the TMDL critical period (December through March) this predicted increase is unlikely to warm the Willamette River and major tributaries enough to cause frequent temperature standard exceedances. In addition, the magnitude of the temperature increase is expected to be largest in the summer and smaller during the winter, spring and fall. It is also uncertain if long term trends in river temperatures in a regulated system such as the Willamette River will respond in a similar manner as unregulated systems. The studies reviewed show regulated systems have both cooling and warming long term trends. For these reasons, we believe the current TMDL critical period for the Willamette River and major tributaries will address future stream temperature increases from climate change.

The TMDL allocations account for changes in river flow rates. The thermal allocations in the TMDL are expressed as an excess thermal load, which quantifies the allowed thermal load associated with a temperature increase above the applicable temperature criteria. The excess thermal load approach incorporates river flow into the loading equation. Changes in the river flow can increase (or decrease) the thermal loading value but does not increase the amount of allowed temperature warming above the criteria from heat pollution. Consistent with the temperature standard, the amount of heat pollution is measured by the portion of the human use allowance assigned to a facility or source category. DEQ uses the 7Q10 statistic to calculate the allocations at critical low flows. 7Q10 is the lowest average flow of a stream over a 7-day period that occurs once every 10 years on average. The flow record used to calculate the 7Q10 varies by location but generally the last 10-20 years of available data were used for the TMDL. In the case of NPDES permits, the TMDL authorizes permit writers to recalculate the 7Q10 allocation to account for better estimates using updated data or seasonally appropriate information. The 7Q10 is typically revaluated when a permit is renewed. This gives DEQ a tool to adapt to long term trends in 7Q10 flows.

Changes were made based on this comment.

WRK #4

Description: TMDL - Climate change impacts on federally listed fish

Comment: “Climate change is affecting the timing of seasonal events in the life cycle of some plants and animals, and the viability of some species. Projected decreases in freshwater flows and connectivity are likely to decrease survival and growth of salmon. Projected increases in temperature and changes in precipitation also may have negative effects on some protected species.” DEQ ignored the existential risk that climate change poses to Upper Willamette River spring Chinook and steelhead, which are listed as “threatened” species under the Endangered Species Act (“ESA”).

These species are threatened with extinction, in part due to thermal pollution. Oregon Department of Fish & Wildlife (“ODFW”) has explained that climate change will increase stream temperatures and put cold-water species at increased risk. ODFW and the National Marine Fisheries Service summarized some of these risks in the Upper Willamette River Conservation and Recovery Plan for Chinook and Steelhead (the “Recovery Plan”). For example, the Recovery Plan summarizes findings made by the OCCRI and the Climate Leadership Initiative for the Willamette Basin on future climate change effects. As summarized in the Recovery Plan, these findings showed a moderate decrease in historical summer flows, which are influenced by

decreased snowpack, earlier snowmelt, and higher air temperatures. Because of these changes, there may be lower base flows and longer low flow periods, which warm water temperatures. As a result, threatened Chinook salmon and steelhead could face more direct and indirect mortality and avoid habitat that has become too warm. Additionally, modeling consistently showed annual average increases in temperature under all warming scenarios. DEQ has a responsibility under the ESA to conserve and recover listed species, and failing to account for climate change in the temperature TMDL will not prevent increased stream temperatures which will then lead to increased mortality for listed species. This is in direct odds with the ESA and will increase the likelihood of extinction for these fish species.

Response: While the goals of the ESA are supported by TMDL implementation and the protection of beneficial uses of water bodies, DEQ's TMDL development process is not directly regulated by the ESA. DEQ's responsibility, as directed by Oregon law and delegated by EPA, is to implement the federal Clean Water Act and Oregon's water pollution control laws. DEQ addressed temperature impacts from past and future climate change as part of the TMDL load allocation. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. Climate change sources in Oregon were assigned a zero HUA. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1.

Changes were made based on this comment.

WRK #5

Description: TMDL - Climate change decreased streamflows

Comment: Even though climate change will decrease stream flows, DEQ failed to account for this when updating the temperature TMDL. In fact, DEQ emphasizes that maintenance of minimum instream flows is needed to attain the TMDL allocations, but then doesn't go into how that will be possible when stream flows decrease, except to say that "restoration of stream flows may require establishing instream water rights." Without a plan of action, DEQ cannot set targets for acquiring water rights to be converted to instream uses and will quickly fall behind what is needed due to this failure to plan for known effects of climate change. Already, DEQ does not plan to meet temperature water quality standards until 2120, and that is without accounting for the decreasing stream flows expected due to climate change. While the timeline is unacceptably long, the failure to account for decreasing stream flows while noting how important they are to maintain is irresponsible and unrealistic. DEQ must revise the draft TMDLs to account for declining stream flows, otherwise the draft TMDLs will not attain and maintain water quality standards, as required by rule.

Response: The TMDL allocations account for changes in river flow rates. The thermal allocations in the TMDL are expressed as an excess thermal load, which quantifies the allowed thermal load associated with a temperature increase above the applicable temperature criteria. The excess thermal load approach incorporates river flow into the loading equation. Changes in the river flow can increase (or decrease) the thermal loading value but does not increase the amount of allowed temperature warming above the criteria from heat pollution. Consistent with the temperature standard, the amount of heat pollution is measured by the portion of the human

use allowance assigned to a facility or source category. DEQ uses the 7Q10 statistic to calculate the allocations at critical low flows. 7Q10 is the lowest average flow of a stream over a 7-day period that occurs once every 10 years on average. The flow record used to calculate the 7Q10 varies by location but generally the last 10-20 years of available data were used for the TMDL. In the case of NPDES permits, the TMDL authorizes permit writers to recalculate the 7Q10 allocation to account for better estimates using updated data or seasonally appropriate information. The 7Q10 is typically revaluated when a permit is renewed. This gives DEQ a tool to adapt to long term trends in 7Q10 flows.

WRK #6

Description: TMDL - assign HUA to climate change

Comment: Because the draft TMDL does not assign any portion of the HUA to climate change, DEQ is over-assigning loading capacity and instead of meeting water quality standards, the river will continue to warm and water quality standards will continue to be exceeded. Therefore, DEQ should follow its own advice by assigning a portion of the HUA to climate change and allocating a portion of the loading capacity to that background source.

Response: TMDL section 9.1.1 was updated to state that temperature impacts associated with climate change sources are assigned a zero HUA. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The TSD narrative states:

“Past climate change impacts have contributed to stream temperature warming (See TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources.”

Changes were made based on this comment.

WRK #7

Description: TMDL - Account for climate change in margin of safety

Comment: DEQ should have included an explicit load allocation for climate change in the margin of safety because climate change will undeniably cause warming impacts, and an

explicit allocation would be transparent to the public. At the very least, conservative assumptions should have been made to account for climate change.

Response: DEQ identified climate change as a source of temperature warming and addressed temperature impacts from past and future climate change as part of the TMDL load allocation. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. Climate change sources in Oregon were assigned a zero HUA. DEQ updated the TMDL and TSD to make this clearer and explain how climate change sources were accounted for. WQMP Sections 2.4 and 7.1 were also updated. Further explanation of the allocation and HUA assignment was added into the TSD section 9.1. The updated TSD narrative states:

"Past climate change impacts have contributed to stream temperature warming (see TSD Appendix G). Climate change as a source category is separated into nonpoint sources located in Oregon and nonpoint sources outside of Oregon. Stream temperature warming from climate change pollutants outside of Oregon is a background source under OAR 340-042-0030(1) because DEQ or another Oregon state agency does not have authority to regulate those sources. Climate change sources in Oregon were assigned a zero HUA as the vast majority of the climate change causing pollutants emanate from outside of Oregon. Climate change sources outside of Oregon along with other background sources were assigned a bulk nonpoint source load allocation equivalent to the applicable temperature criteria. As summarized in Section 7.2.1, some of the rivers modeled show thermal loading from background sources contribute to exceedances of the applicable temperature criteria. Reductions from background sources will be required to attain the applicable temperature criteria. This reduction will likely include climate change sources."

In addition, DEQ completed a literature review to assess climate change-driven stream temperature impacts. The review was included with the draft TMDL as TSD Appendix G. We added additional information about stream temperature impacts from future climate change sources.

Changes were made based on this comment.
