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Date: 11/10/2023
To: City of Gresham Planning Commission
From: Stacey Reed, PWS, Senior Wetland Scientist
Project Name: Veranda Master Plan and Subdivision
AKS Job No.: 9804
Project Site: 7928 SE 190th Drive, Gresham, Multnomah County

Subject: **Responses to City of Gresham Materials provided on October 13 and November 3, 2023; City of Gresham File Number SD/MIS 20-26000343 (MPLAN 21-00652)**

This memo provides responses to comments provided in the following submittals: 1. Pacific Habitat Services (PHS) August 23, 2023 Review of AKS Locally Significant Wetland Report; 2. City of Gresham's September 1, 2023 Natural Resource Program Manager Review of AKS's May 24, 2023 Submittals for Veranda; 3. GSI Water Solutions Inc (GSI) September 1, 2023 Review of AKS Report ESRA-PV Mitigation Plan Technical Memorandum; and 4. GSI's October 31, 2023 Veranda Subdivision Wetland 1: Hydrogeologic Intperpretation and Review of Geotechnical Investigation.

I have thoroughly reviewed all technical reports and opinions and considered each item closely. These submittals do not provide evidence to disprove the data and analysis showing that Wetland 1 does not provide water cooling benefit to Kelley Creek. Based on my analysis, I stand by my professional evaluation and determination that Wetland 1 does not provide a water cooling improvement to Kelley Creek <u>because there is no water in Wetland 1 during the warm months</u>.

According to Oregon's Department of State Lands, a wetland is an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Oregon Administrative Rule 141-086-0330(8)). As wetland scientists, we look for wetland hydrology to confirm that an area is sufficiently saturated or inundated to support vegetation typically adapted for life in saturated soil conditions. Water needs to be present within the surface foot (12 inches) for it to have wetland hydrology. Water below 12-inches is not associated with wetlands. All wetlands on the Veranda site are only seasonally saturated, meaning they only have hydrology in the surface 12-inches during the early growing season (March-April), which confirms their jurisdictional status. When the soil in the surface 12-inches of a wetland soil goes dry in the summer, these wetlands are still considered jurisdictional wetlands, but they seasonally lack hydrology to provide water cooling improvement to Kelley Creek.

Wetland 1 hydrology is only present within the surface foot during the cooler months, when water temperatures in Kelley Creek do not likely exceed DEQ's water quality temperature threshold of 18 degrees Celsius / 64.4 degrees Fahrenheit (defined under Oregon Administrative Rule Chapter 340 Division 41 Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon listed under 340.041.0028.4.c "*seven-day average maximum temperature of a stream identified as having salmon and trout rearing and migration use on a subbasin maps may not exceed 18.0 degrees Celsius or 64.4 degrees Fahrenheit*"). Kelley Creek on the Veranda project site is not mapped on OAR 340-041-0340 Figure 340B

for Salmon and Steelhead Spawning Use Designations (see attached OAR 340-041-0340). OAR 340-041-0028(5) for unidentified (mapped) tributaries that are not identified on Fish Use Designation Maps, applies to criteria applicable to the nearest downstream water body depicted on the applicable map, but does not apply to the "Salmon and Steelhead Spawning Use Designations" map (see attached OAR 340-041-0028). Oregon Department of Environmental Quality's 2022 Integrated Report for Water Quality Standards maps the Johnson Creek sub-watershed unit as being impaired for spawning temperature; however, Kelley Creek at the project site is not mapped for exceeding spawning temperature criteria (https://hdcgcx2.deq.state.or.us/Html5Viewer211/?viewer=wqsa). Therefore, it is my professional opinion the seven-day average maximum temperature exceedance criteria of 64.4 degrees Fahrenheit is the temperature threshold to evaluate on whether Wetland could provide water quality temperature improvement to Kelley Creek.

Wetland 1 does not have wetland hydrology after early May in normal precipitation years. All data available indicates that Wetland 1 does not store water during the warm summer months. In addition, Wetland 1 does not possess any wetland characteristics known to provide cooling functional opportunity (woody vegetation, prolonged surface saturation). The City claims that we have provided speculative statements that are not backed by field collected data on surface flows, groundwater flows, or temperature data. The information presented below has been provided to the City and explains how our documented site specific evidence shows Wetland 1 does not provide water cooling benefits to Kelley Creek.

1. PHS August 23, 2023 Memo Responses

ORWAP Score inconsistencies:

We respect Pacific Habitat Services (PHS) as wetland scientists. However, in this case, we stand behind our ORWAP scores which are based on several site visits, including two site visits in March and May 2023 with an Oregon Department of State Lands (DSL) wetland biologist. PHS's limited number of site visits (only one site visit made) matters. Per ORWAP, wetland attributes that contribute to the Water Cooling Function Score include the items listed below. These attributes are most accurately assessed and scored over several site visits.

- Hydro period (ORWAP Question F3) – PHS scored this as a temporary hydroperiod (surface water consistently present for minimum 1-4 consecutive weeks). PHS provided photos of individual days only, which show surface water *after rain events*. The photos they provide correlates to an ephemeral hydroperiod (surface water present immediately after a rain event), *not* a temporary hydroperiod. Thus, it appears that in the absence of data from more site visits, they incorrectly jumped to the conclusion that the surface water observed was evidence of a temporary hydroperiod. In contrast, AKS data from several site visits shows a lack of continuous surface water after rain ceases. This data is reinforced by lack of physical site conditions associated with continuous surface water including: soil cracking, algal matting, drainage patterns, and other secondary indicators (no evidence of sustained ponding on historic aerials). The Schott wetland delineation report also supports this analysis. It classifies Wetland 1 as *seasonally saturated.* It does not classify the wetland as *seasonally inundated*. The Schott report only stated shallow flow

was present in the ditch portion of Wetland 1, not elsewhere in the wetland, on March 26, 2019. That same flow was absent in April 2018.

- Outflow duration (ORWAP Question F31)- PHS states outflow discharge from Wetland 1 is present for a minimum 14 days; however, there is no evidence to support this. Again, AKS site visits document that there is only ephemeral discharge from Wetland 1 (surface outflow <14 days, not consistently for two weeks).
- Groundwater strength evidence (ORWAP Question F37)- AKS's scores were confirmed during several site visits documenting that Wetland 1 lacks hydrology within the surface foot during the warm months. Wetland 1 is located on a slope and lacks long water retention times. Water exits the wetland quickly and is generally present only after rainfall events.

AKS did not provide evidence to show lack of surface water discharges during warm months:

- The attached photo pages illustrate the lack of wetland hydrology in Wetland 1 on 10/19/2022; 5/1/2023; 5/11/2023; and 8/4/2023. See also the Castle Rose (another wetland scientist who visited the site in 2021) site photos from July 2021.
- The City photos do not document discharge flow for more than 2 consecutive weeks (required to show a temporary hydro period) during the early growing season. They only snapshot flows on March 26, 2019 and March 20, 2017 (these are two years apart). Their photos supports an ephemeral hydro period, not a temporary hydro period.
- Precipitation information provided with the City's 5/4/2022 photo showing discharge from Wetland 1 does not interpret the entire rainfall history before the day this photo was taken. PHS fails to mention that above average and normal rainfall was recorded in the Gresham Area prior to that photo. According to the National Weather Service (NWS) Troutdale Airport station, 3.24 inches of rain was recorded within two weeks prior and 1.45 inches was recorded five days prior, on 4/30/2022 (see attached NWS rainfall data). This is above normal and above average rainfall conditions for this time of year. During the month of April 2022, the Gresham area received over 8-inches of rainfall which is also above normal and average (as shown in Table 2 of PHS Memo). This City's 5/4/2022 photo does not represent Wetland 1 during "normal" precipitation conditions.

2. City of Gresham Natural Program Manager Sept 1, 2023 memo responses

Wetland ORWAP Score Concerns:

- Page 4 item #3 of the ORWAP manual specifically states "…some of the information ORWAP requires may not be accurately determinable during a single visit to a wetland, particularly if that visit occurs outside the early growing season…." I spoke with Paul Adamus, the ORWAP author. He pointed this out, commenting that AKS scores evaluated over several site visits will be more accurate than a single site visit during early February, which is when PHS conducted its single site visit.
- We understand ORWAP was not intended to document whether a wetland provides a water cooling benefit, but the science behind which wetland characteristics "provide water cooling functions" is meaningful. Wetland 1 does not possess the characteristics that allows for opportunity for water cooling benefit.

SE 190th Drive Fish Barrier Concerns:

- The Johnson Creek Watershed Council September 5, 2023 letter included in the October 13, 2023 Planning Commission hearing packet documents the culvert under SE 190th Drive as being "0% passable." While we understand there is a goal to replace this culvert at some time in the future, we are unaware of current funding or a current project that would support this effort to create fish passage at SE 190th Drive prior now. Regardless, the Veranda project will IMPROVE the quality of the riparian area adjacent to Kelley Creek above SE 190th Drive. Installing plantings now will ensure a shade canopy will be present, providing cooling benefits to Kelley Creek, when the culvert under SE 190th Drive is replaced with a migratory fish passable structure.
- Critical ESA habitat is mapped downstream of SE 190th Drive, but as mentioned in the AKS May 2023 Memo, the project will avoid impacts to Kelley Creek and all floodplain wetlands (both upstream and downstream of SE 190th).
- Cutthroat trout are not currently listed as a state or federal threatened or endangered species in Kelley Creek. Only Lahontan cutthroat trout are ESA-listed in Oregon. According to ODFW, Lahontan cutthroat trout are only known to occur in Eastern Oregon. Regardless, we agree that native cutthroat trout habitat should be preserved. The project will not have a negative impact on native cutthroat trout habitat. The project avoids impacts to Kelley Creek and floodplain wetlands. The voluntary riparian enhancement will IMPROVE native cutthroat trout habitat by offering shade plantings to help cool water temperatures during the summer months. One of the most efficient methods to maintain low stream temperatures is to reduce heat loading from solar radiation (Leinenbach et. Al 2013), since solar radiation is a major contributor to stream warming (Poole et al 2001). Improving riparian conditions along Kelley Creek will reduce the amount of solar radiation otherwise allowed to contact the stream over time, providing improved stream temperatures and improved fish habitat.
- Stormwater management for the project meets the requirements of the City's Stormwater Manual and is designed to reduce total suspended solids (TSS) by 70% as well as treating other pollutants of concern identified by Oregon DEQ in the Total Maximum Daily Loads (TMDLs) established for the pertinent waterways.

In-Channel Ponds Downstream of Project Site:

- The reason that AKS included this information was to illustrate that existing heat sink features were present when DEQ made it 2020 water temperature 303d listing.
- The applicant acknowledges and appreciates the significant effort of the Johnson Creek Inter-Jurisdictional committee's ongoing efforts to restore habitat along Kelley Creek. This is why the Veranda project provides a total of 12.82 acres of riparian enhancement, which includes 8 acres of voluntary riparian enhancement to support improved water quality temperatures in Kelley Creek.

Claims that Wetland 1 meets Mandatory Local Significance Criteria Statements:

- We don't disagree that all wetlands matter, and their functions should be replaced to ensure no-net loss of wetland functions in the State of Oregon. However, existing wetland functions does matter at some level, as wetlands with existing higher functional opportunity are harder to replace (or take longer to replace). Per state and federal guidance, wetlands providing lower

functional rating are assumed to have functions that can be replaced. This is why DSL and USACE created a function-based mitigation framework to replace the prior area-based (i.e. acre for acre) mitigation framework. The new framework provides a mechanism to mitigate for wetland functional loss so as to allow for public projects that cannot avoid wetland impacts.

- No trees are present within any of the Veranda wetlands. Therefore, the project will not result in temporal loss of shade. The project provides increased shade benefit by voluntarily planting 17,000 native trees and shrubs.
- The project will not impact floodplain wetlands, which are the resources identified for protection in City's Pleasant Valley Volume 2 Comprehensive Plan.
- The applicant discussed and met with City staff on several occasions regarding geotechnical excavations to assess groundwater conditions at the Veranda site.
- Monty Hurley (AKS Principal and Senior Engineer) and Stacey Reed discussed geotechnical excavation pit methodology as an option with Walter Burt from GSI on July 26, 2023. His recommendation for several piezometers in and around wetland was costly and would take over a year to develop. More importantly, the focus of this proposed methodology appeared to be to evaluate groundwater movement on the site, not wetland hydrology. It was our understanding from our call, that Walt acknowledged geotechnical test pit excavations was an alternate way to document the location of groundwater during the summer months.
- The applicant considered the use of piezometers (a tool for measuring the presence/absence of groundwater). However, piezometers are not always accurate and require diligent monitoring and data analysis over a minimum of one full year. The existing wetland determination data collected by AKS in 2022 and 2023 and by Schott in 2018 and 2019 documents the location of the groundwater table within the Veranda wetlands over several years. In addition, the Hardman Geotechnical test pits dug during August 2023 document that the water table drops below the bottom of Kelley Creek during the summer months. Even though August 2023 was a dry precipitation year, geotechnical test pit #5 still shows the water table was well below the surface foot of Wetland 1. Therefore, there is no potential for Wetland 1 to provide water cooling benefits to Kelley Creek when it is experiencing elevated temperatures during the summer months because the wetland is dry.

Preliminary Veranda Site Plan- Stormwater Pond and Eastern Drainage Buffer Concerns:

- The City references a geotechnical report documenting slope instability north of Kelley Creek on the Panza property. The Veranda project will require an updated geotechnical engineer to review flow control manholes and discharge points to ensure site suitability. Design adjustments will be made if necessary to ensure slope stability.
- The City states there is a section in the 2001 Pleasant Valley Concept Plan that requires a 200 foot wide buffer adjacent to the eastern drainage on the Veranda property. However, we could not find this information in the 2001 Concept Plan. The eastern drainage is an intermittent stream draining 70 acres and is therefore defined as a Secondary Primary Protected Water Feature, requiring a maximum 50 foot-wide buffer.
- According to Article 3 General Terms Section 3.0130 HCA, ESRA, Floodplain, Article 5 Terms and Definitions, a Water Quality Resource Area (vegetated corridor buffer) is defined under Metro Code Sections 3.07.310-3.07.370. Based on this Metro criteria, the width of the vegetated corridor buffer is determined based on the adjacent slope measurement. If the slopes adjacent to

Secondary Protected Water Features (intermittent streams draining 50-100 acres) are less than 25-perecent, the vegetated corridor buffer is 15 feet. If the adjacent slopes are greater than 25-percent, the vegetated corridor buffer is a maximum of 50 feet.

- Per Section 4.1437.E Uses Allowed Under Prescribed Conditions of Pleasant Valley Plan District, new roadways are allowed within ESRA-PV.

ESRA-PV Buffer Mitigation Concerns:

- The City claims it will take 15-25 years to shade Kelley Creek. We do not disagree, but the current conditions lack shade. Therefore, the Veranda project will provide a water cooling benefit versus leaving the site in its current degraded condition without a plan to provide enhanced riparian conditions in the future.
- We were unaware of the recorded easement on the Panza property at time of the May 2023 submittal. The applicant still has offered to pay for 3.18 acres of voluntary enhancement efforts on the Panza property so that the City can use funding to provide the needed enhancement elsewhere on Kelley Creek. Or, if the City already has funding to provide enhancement on this site, the applicant will support riparian enhancement efforts elsewhere on Kelley Creek or an alternate site selected by City. Regardless, the applicant is fully committed to providing voluntary riparian enhancements to offer actual water cooling benefits to Kelley Creek.
- We can revise the riparian planting plan to only include low-growing shrubs on top of the wastewater line and stormwater conveyance. It is a common practice to provide ecological benefit near utilities/infrastructure.
- The City claims they already planted the northern portion of the Veranda project site in 2019. Per AKS photos, the northern side of Kelley Creek on Veranda property was NOT planted by City. Only adjacent northern parcel was planted in 2019 as part of the City's riparian enhancement project. Areas immediately adjacent to Kelley Creek on the Veranda project site require shade benefit.
- We appreciate the City aspires to improve conditions on the Vernada site; however, the City doesn't own this land. Through approval of this project, applicant will conduct this enhancement as part of DSL/USACE wetland mitigation plan.

Wetland Mitigation Concerns:

- According to City staff, no impact to wetlands are allowed under the Pleasant Valley Plan District code. This makes the property undevelopable. There are no practical alternatives to avoid impacts to Wetland 1. If this project is not approved, the City will lose the opportunity to have a project that directly results in water cooling improvement to Kelley Creek through over 12 acres of riparian enhancement (including removal of existing structures immediately adjacent to the creek) AND replace and improve wetland functions on-site and within the watershed.
- Currently, there is no wetland mitigation bank serving the project site with sufficient available credits. Therefore, off-site mitigation is the only option to compensate for unavoidable project wetland impacts. According to state and federal regulation, wetland mitigation MUST occur within Lower Willamette Watershed (HUC 4), which includes Johnson Creek Watershed (see attached Watershed Map). Per Watershed Map the majority of the required mitigation area is located within City limits. Under Oregon Administrative Rule (OAR) 141-085-0680 (2) wetland mitigation must 1. Replace functions lost; 2. Provide local replacement for locally important functions; 3. Enhance, restore, or create wetlands and are self-sustaining minimizing long-term

maintenance needs; and 4. Ensure the siting of the mitigation considers local watershed needs and priorities.

- Therefore, this project will not result in wetland functions lost within the watershed. Rather, wetland functions will be replaced with higher functioning characteristics, potentially providing an improved functional benefit to Gresham resources.

AKS Concluding Statements- Evidence Veranda Wetlands do not provide water cooling benefit:

- Wetland hydrology is defined as when soils within the surface foot (top 12 inches) are saturated. Wetland hydrology is not present in Wetland 1 during the warm summer months.
- The issue is not whether groundwater can provide water cooling benefit, but whether Wetland 1 provides water cooling benefit during the time it has hydrology (when the wetland has water within 12 inches of surface).
- The question to answer is: Does Kelley Creek receive a real-time cooling benefit from Wetland 1 at any time during the year?
- The answer is no, because when Wetland 1 has wetland hydrology (real-time cooling opportunity) the water temperature in Kelley Creek is likely already below DEQ's 64 degree Fahrenheit threshold. The water in the wetland during the cooler months may discharge via a surface connection after heavy rain events, but it doesn't provide a cooling *benefit* because the creek's baseline temperature is at or below the threshold parameter.
- In the warmer months, the answer is also no because there is no water in Wetland 1 to cool the creek in real-time. Cooling from any groundwater that is disconnected from Wetland 1 does not meet the definition for wetland cooling. And as documented in the August 4, 2023 test pit, groundwater is well below Wetland 1.
- According to OAR 340-041-0340, water quality temperature in the Willamette Basin must be managed to protect the designated beneficial uses shown in Table 340A.
- According to OAR 340-041-0340 Figure 340A, Kelley Creek is mapped in the Willamette Basin for salmon and trout rearing and migration.
- According to OAR 340-041-0028(4)(C), streams mapped for salmon and trout rearing and migration temperature are not to exceed 64.4 Fahrenheit over a seven day average. City Natural Resource staff agrees with this mapping and temperature criteria (see Bullet F Page 5 in Kathy Majidi's September 1, 2023 memorandum to Jim Wheeler, Planning Manager; Exhibit P of October 23, 2023 Planning Commission Packet).
- The portion of Kelley Creek on the Veranda project site is NOT mapped on OAR 340-041-0340 Figure 340B for Salmon and Steelhead Spawning Use Designations in the Willamette Basin; therefore, the October 15-May 15 designation doesn't apply (see attached OAR 340-041-0340 mapping).
- Oregon DEQ's Temperature Water Quality Standards Implementation, A DEQ Internal Management Directive Section 2.3 specifically states "The critical time period for the year round criteria is typically the warmest summer months". DEQ defines summer months as between June 1 through September 30.
- Warmer months are when there is an opportunity to provide water quality improvements. When the air temperatures rise above 55 deg Fahrenheit, it is potentially warm enough to affect water temperatures. Below 55 deg Fahrenheit, the water temperature within Kelley Creek is likely already cool, not requiring improvement.

- Per National Weather Service (NWS) weather data, on average, air temperatures in Gresham start rising above 55 deg Fahrenheit around mid-May. This is consistent with air temperatures recorded during AKS site visits on May 1 and 11, 2023.

3. GSI September 1, 2023 *Review of AKS Report ESRA-PV Mitigation Plan Technical Memo* responses

This GSI memo misinterprets the objective. The question is not whether the site has shallow groundwater discharge. The question is whether the *wetland* discharges (meaning groundwater present within surface 12-inches) contribute to water cooling benefit.

Hydrologic framework discussion:

- We don't disagree. Groundwater feeds Kelley Creek.
- For wetlands, however, the water table is within the surface foot.
- The conveyor belt analogy is not relevant to wetland hydrology. It describes groundwater movement.

Comments on AKS assertions:

- GSI Point 1 acknowledges that the groundwater table drops below wetland criteria during the summer.
- GIS Point 2- ORWAP considers the presence of perennial springs upslope of site as a cool water source that may feed wetlands during warm summer months. The lack of perennial springs upslope Veranda wetlands is meaningful.
- Point 3- Groundwater may continue to discharge into Kelley Creek, depending on the gradient between groundwater levels and Kelley Creek. The groundwater table drops below the surface foot (below wetland hydrology criteria)- meaning the wetland is not providing inputs to Kelley Creek during the summer. Moreover, any groundwater present in the summer is not coming from or present in the wetland.

Claims voluntary woody vegetation enhancement will not provide direct water cooling benefit:

- It is well-documented that riparian enhancements will provide shade over the water, preventing solar radiation and warming during the warm summer months. References listed below support woody vegetation enhancements will cool stream temperatures during summer months.
    - City of Portland-Johson Creek Watershed documents high temperature due to lack of riparian canopy- https://www.portland.gov/bes/protecting-rivers-streams/portlands-watersheds/johnson-creek
    - Johnson Creek Watershed council July 20, 2022 letter included as City testimony states that "Our council has planted hundreds of thousands of trees in the riparian areas in Johnson Creek Watershed, with the goal of reducing stream temperature, which on some days in the summer can be lethally high for ESA-listed salmonids"
    - OAR 340-041-0028 documents surface water temperatures increased by reducing stream shading.
    - The Willamette Partnership developed a protocol for quantifying thermal benefits of riparian shade to calculate thermal load reductions (i.e. shade

potential) – referred to as "Shade-a-lator". This analysis was done by documenting existing and future vegetation. It is based on DEQ Analytical Methods for Dynamic Open Channel Heat and Mass Transfer, Methodology for Heat Source Model Version 7.0, Updated February 12, 2003.

Veranda project will alter groundwater discharge to Kelley Creek:

- The local wetland significance criteria at hand speaks only to wetlands and whether a wetland provides cooling benefit, not groundwater.
- The bypass line will collect surface water runoff (not groundwater) which is currently sheet flow to an existing outfall on SE 190th Drive. The bypass line will not impact groundwater flow.

4. GSI October 31, 2023 *Veranda Subdivision Wetland 1: Hydrologic Interpretation and Review of Geotechnical Investigation* responses

This GSI memo claims that Wetland 1 provides "a disproportionately large contribution of cool water to Kelley Creek in the dry season months than abutting non-wetland areas because it concentrates and holds water, which allows the water more time to infiltrate into the subsurface".

- Our site specific data collected documents this statement to be inaccurate. The wetland lacks water starting in May, after heavy rains subside. This was documented by data collected in 2018 and 2019 by Schott and Associates and during AKS 2022 and 2023 site visits, with which DSL concurred.
- Further, site specific information on soils mapped on the Veranda site described in Ecological Engineering, LLC's November 2023 memo document that soils on the Veranda site (both wetlands and adjacent upland areas) do not have the capacity to store water that could be released from a wetland during the summer and early fall months.
- GSI claims that water emerges from the wetland during the dry season. There is no site specific data to support this claim. We have documentation illustrating to the contrary. No water is present within Wetland 1 during the dry season.
- The GSI memo describes groundwater movement, not wetland hydrology. The issue is whether a wetland is locally significant, not the impact of site development on groundwater.

Attachments:
Representative Photo Pages
Watershed Map
NWS Troutdale Airport Station Precipitation Data for April and May 2022
DEQ Chapter 340 Division 41 Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon
Oregon Administrative Rule 340-041-0028

Photo A. View of Wetland 1 on Oct 19, 2022.

Photo B. View of roadside culvert on October 19, 2022. No surface water flow was present.

Photo C. View of Wetland 1 on December 2, 2022. Recorded air temperature in Gresham high 44 deg F

Photos taken by AKS Staff

Photo D. View of Wetland 1 on December 2, 2022.

Photo E. View of Wetland 1 on February 16, 2023. Recorded air temp 51 deg F.

Photo F. View of Wetland 1 on March 10. Recorded high air temp 50 deg F

Photos taken by AKS Staff

Photo G. View of Wetland 1 on March 10, 2023. Recorded air temp 50 deg F.

Photo H. View of Wetland 1 on May 1, 2023. Recorded air temp 60 deg F.

Photo I. View of Wetland 1 on May 11, 2023. Recorded air temp 80 deg F.

Photo J. View of Geotech test pit on August 4, 2023 documenting no groundwater table within 17 feet below surface.

Photos taken by AKS Staff

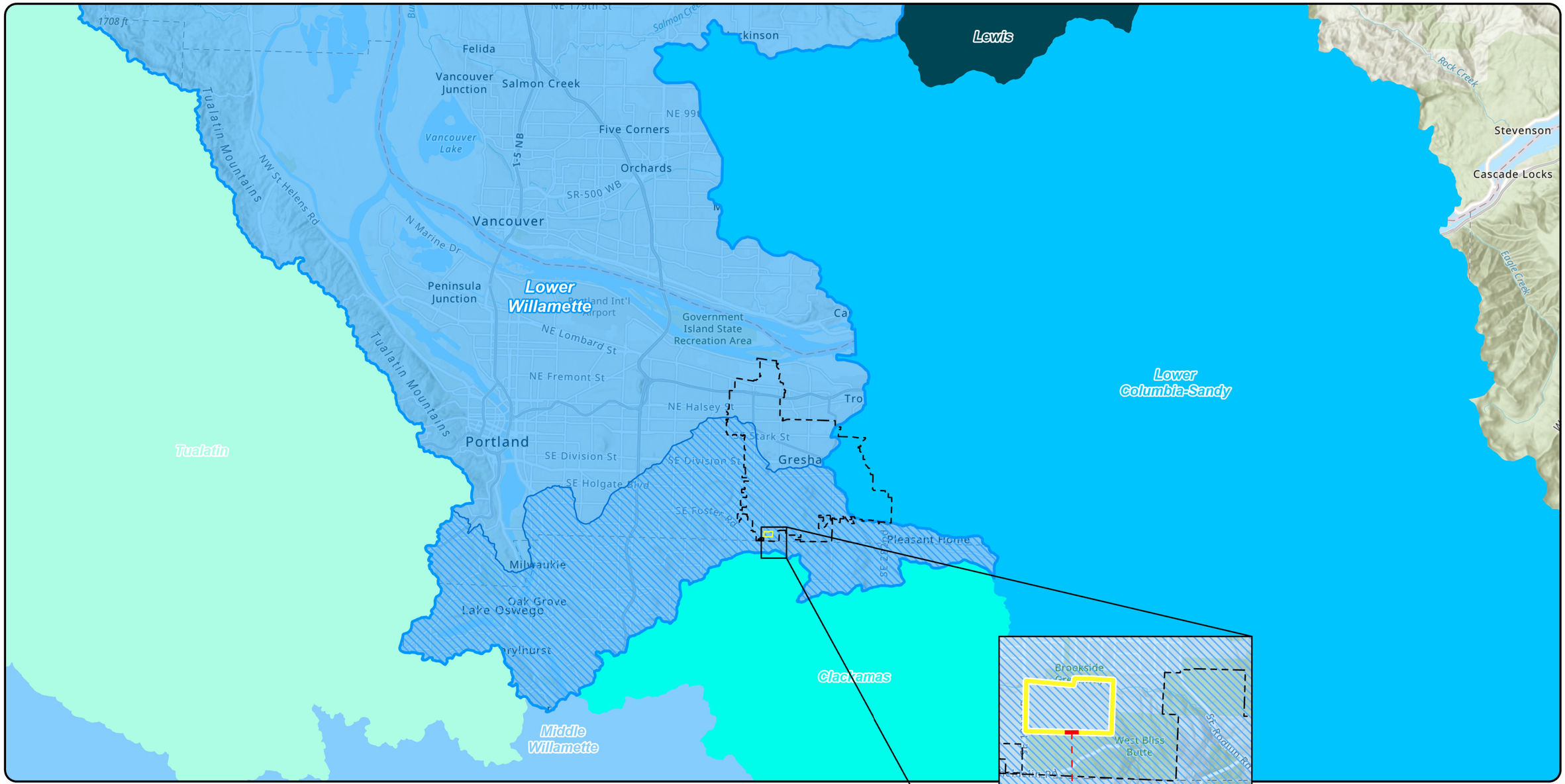
7928 SE 190th DR —Photo Points

Wetland A from ditch perspective looking northwest

Surface flow observed in January 2021. No other surface water observed March through October (years 2018, 2019, 2020, 2021)

P4 is just south of P5 photo and is an excavated collection point

	Project	***NOTES***	***Date***
CASTLE-ROSE ENVIRONMENTAL	Veranda Wetland Delineation 7928 SE 190th Dr Gresham, OR		See photo captions



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Source: Basemap obtained from ESRI, ArcGIS Online. HUC and Taxlots data obtained from Metro Data Resource Center (RLIS).

Legend

- Site
- City of Gresham

HUC 5 - Watersheds

- Johnson Creek

HUC 4 - Sub-basins

- Lower Willamette

Watershed Map

Veranda
Pleasant Valley, OR

N

0 10,000 20,000
Feet

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12965 SW Herman RD, STE 100
Tualatin, OR 97062
P:503.563.6151 | aks-eng.com

Print Date: 10/18/2023

Project: 9804

Climatological Data for TROUTDALE, OR - April 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-04-01	57	37	47.0	7	0	0.00	0.0	0
2022-04-02	59	37	48.0	8	0	T	0.0	0
2022-04-03	58	39	48.5	9	0	S	0.0	0
2022-04-04	56	40	48.0	8	0	M	0.0	0
2022-04-05	54	39	46.5	7	0	0.82A	0.0	0
2022-04-06	54	32	43.0	3	0	0.06	0.0	0
2022-04-07	M	M	M	M	M	0.00	0.0	0
2022-04-08	69	45	57.0	17	7	0.00	0.0	0
2022-04-09	57	41	49.0	9	0	S	0.0	0
2022-04-10	53	39	46.0	6	0	M	0.0	0
2022-04-11	47	31	39.0	0	0	1.80A	M	M
2022-04-12	45	31	38.0	0	0	0.12	M	M
2022-04-13	44	33	38.5	0	0	0.73	0.0	0
2022-04-14	47	34	40.5	1	0	0.61	0.0	0
2022-04-15	50	32	41.0	1	0	0.26	0.0	0
2022-04-16	52	34	43.0	3	0	S	0.0	0
2022-04-17	51	36	43.5	4	0	M	0.0	0
2022-04-18	55	37	46.0	6	0	0.28A	0.0	0
2022-04-19	51	41	46.0	6	0	0.54	0.0	0
2022-04-20	47	41	44.0	4	0	0.28	0.0	0
2022-04-21	48	43	45.5	6	0	0.37	0.0	0
2022-04-22	61	37	49.0	9	0	0.18	0.0	0
2022-04-23	61	37	49.0	9	0	S	0.0	0
2022-04-24	64	36	50.0	10	0	M	0.0	0
2022-04-25	70	37	53.5	14	4	0.05A	0.0	0
2022-04-26	55	41	48.0	8	0	0.66	0.0	0
2022-04-27	58	42	50.0	10	0	0.01	0.0	0
2022-04-28	58	41	49.5	10	0	S	0.0	0
2022-04-29	53	42	47.5	8	0	M	0.0	0
2022-04-30	57	44	50.5	11	1	1.45A	0.0	0
Average|Sum	54.9	37.9	46.4	194	12	8.22	0.0	0.0

Climatological Data for TROUTDALE, OR - May 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-05-01	59	44	51.5	12	2	S	0.0	0
2022-05-02	63	46	54.5	15	5	M	0.0	0
2022-05-03	58	47	52.5	13	3	0.24A	0.0	0
2022-05-04	57	41	49.0	9	0	0.01	0.0	0
2022-05-05	71	42	56.5	17	7	0.02	0.0	0
2022-05-06	57	47	52.0	12	2	T	0.0	0
2022-05-07	61	47	54.0	14	4	1.68	0.0	0
2022-05-08	55	38	46.5	7	0	T	0.0	0
2022-05-09	50	39	44.5	5	0	0.16	0.0	0
2022-05-10	55	39	47.0	7	0	0.07	0.0	0
2022-05-11	61	38	49.5	10	0	T	0.0	0
2022-05-12	61	43	52.0	12	2	0.00	0.0	0
2022-05-13	53	36	44.5	5	0	S	0.0	0
2022-05-14	57	38	47.5	8	0	M	0.0	0
2022-05-15	70	48	59.0	19	9	M	0.0	0
2022-05-16	67	53	60.0	20	10	1.32A	0.0	0
2022-05-17	65	42	53.5	14	4	0.00	0.0	0
2022-05-18	63	45	54.0	14	4	0.27	0.0	0
2022-05-19	61	44	52.5	13	3	0.09	0.0	0
2022-05-20	55	44	49.5	10	0	0.06	0.0	0
2022-05-21	60	39	49.5	10	0	S	0.0	0
2022-05-22	71	41	56.0	16	6	M	0.0	0
2022-05-23	73	46	59.5	20	10	0.00A	0.0	0
2022-05-24	70	50	60.0	20	10	0.00	0.0	0
2022-05-25	66	52	59.0	19	9	0.19	0.0	0
2022-05-26	71	52	61.5	22	12	0.02	0.0	0
2022-05-27	71	53	62.0	22	12	0.08	0.0	0
2022-05-28	61	49	55.0	15	5	S	0.0	0
2022-05-29	59	48	53.5	14	4	M	0.0	0
2022-05-30	58	47	52.5	13	3	M	0.0	0
2022-05-31	63	47	55.0	15	5	0.79A	0.0	0
Average|Sum	62.0	44.7	53.3	422	131	5.00	0.0	0.0

Department of Environmental Quality

Chapter 340

Division 41
WATER QUALITY STANDARDS: BENEFICIAL USES, POLICIES, AND CRITERIA FOR OREGON

340-041-0340
Basin-Specific Criteria (Willamette): Beneficial Uses to Be Protected in the Willamette Basin

(1) Water quality in the Willamette Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 340A (August 2005).

(2) Designated fish uses to be protected in the Willamette Basin are shown in Figures 340A (November 2003) and 340B (August 2005).

[NOTE: View a PDF of Figures and Tables by clicking on "Tables" link below.]

[ED. NOTE: To view attachments referenced in rule text, click here for PDF copy.] (pgs. 2-6 of this document)

Statutory/Other Authority: ORS 468.020, 468B.030, 468B.035 & 468B.048
Statutes/Other Implemented: ORS 468B.030, 468B.035 & 468B.048
History:
DEQ 5-2020, minor correction filed 02/03/2020, effective 02/03/2020
DEQ 13-2019, amend filed 05/16/2019, effective 05/16/2019
DEQ 2-2007, f. & cert. ef. 3-15-07
DEQ 17-2003, f. & cert. ef. 12-9-03

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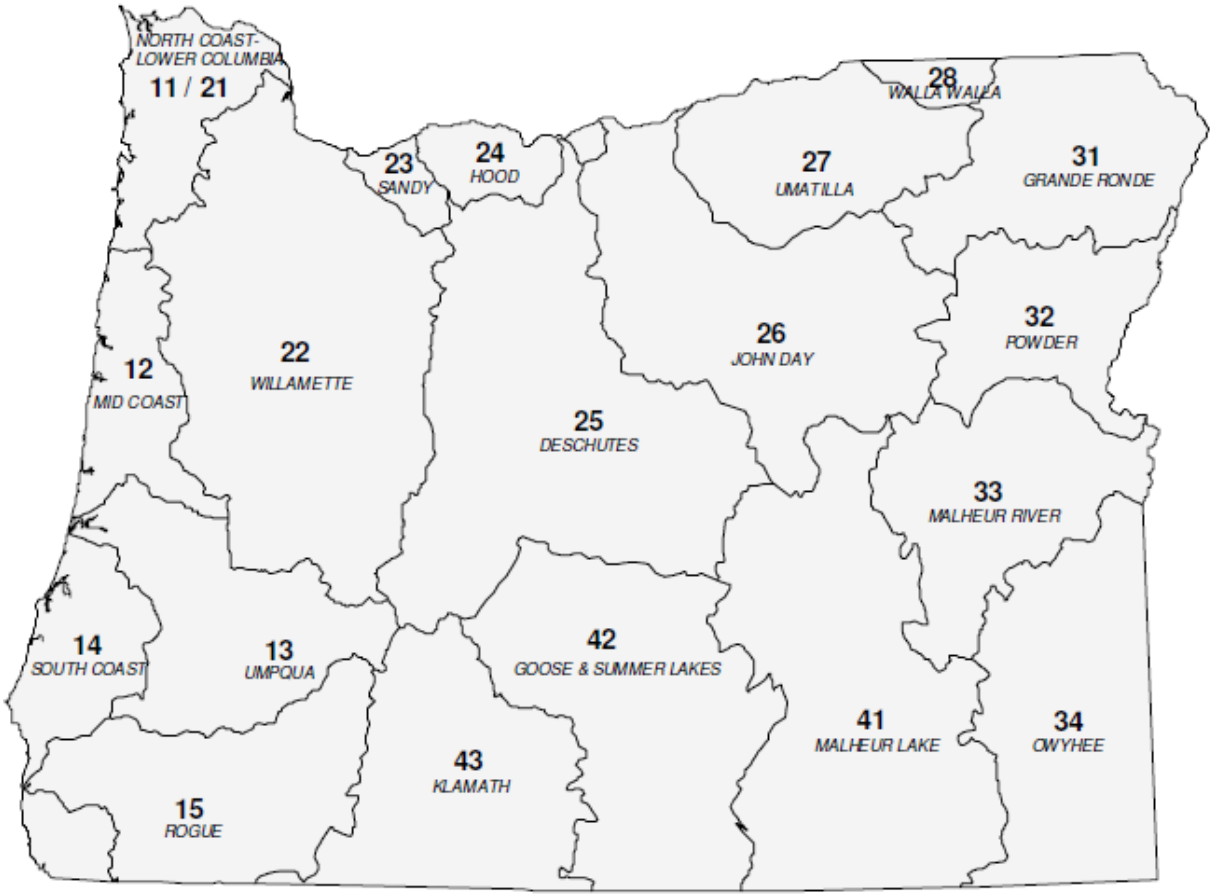
State of Oregon Department of Environmental Quality

OAR 340-041-0340 – Tables and Figures

Figure 1: Oregon Basin Index Map



Basin Name	Basin #	OAR #
DESCHUTES	25	340-041-0130
GOOSE & SUMMER LKS	42	340-041-0140
GRANDE RONDE	31	340-041-0151
HOOD	24	340-041-0160
JOHN DAY	26	340-041-0170
KLAMATH	43	340-041-0180
MALHEUR LAKE	41	340-041-0190
MALHEUR RIVER	33	340-041-0201
MD COAST	12	340-041-0220
NORTH COAST-LWR COL	11-21	340-041-0230
OWYHEE	34	340-041-0250
POWDER	32	340-041-0260
ROGUE	15	340-041-0271
SANDY	23	340-041-0286
SOUTH COAST	14	340-041-0300
UMATILLA	27	340-041-0310
UMPQUA	13	340-041-0320
WALLA WALLA	28	340-041-0330
WILLAMETTE	22	340-041-0340

OAR 340-041-0340
Table 340A
Designated Beneficial Uses
Willamette Basin

Beneficial Uses	Willamette River Tributaries						Main Stem Willamette River			
	Clackamas River	Molalla River	Santiam River	McKenzie River	Tualatin River	All Other Streams & Tributaries	Mouth to Willamette Falls, Including Multnomah Channel	Willamette Falls to Newberg	Newberg to Salem	Salem to Coast Fork
Public Domestic Water Supply[1]	X	X	X	X	X	X	X	X	X	X
Private Domestic Water Supply[1]	X	X	X	X	X	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X	X	X	X	X	X
Irrigation	X	X	X	X	X	X	X	X	X	X
Livestock Watering	X	X	X	X	X	X	X	X	X	X
Fish & Aquatic Life[2]	X	X	X	X	X	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X	X	X	X	X	X
Fishing	X	X	X	X	X	X	X	X	X	X
Boating	X	X	X	X	X	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X	X	X[3]	X	X	X
Aesthetic Quality	X	X	X	X	X	X	X	X	X	X
Hydro Power	X	X	X	X	X	X	X	X		
Commercial Navigation & Transportation							X	X	X	

[1] With adequate pretreatment and natural quality that meets drinking water standards.

[2] See also Figures 340A and 340B for fish use designations for this basin.

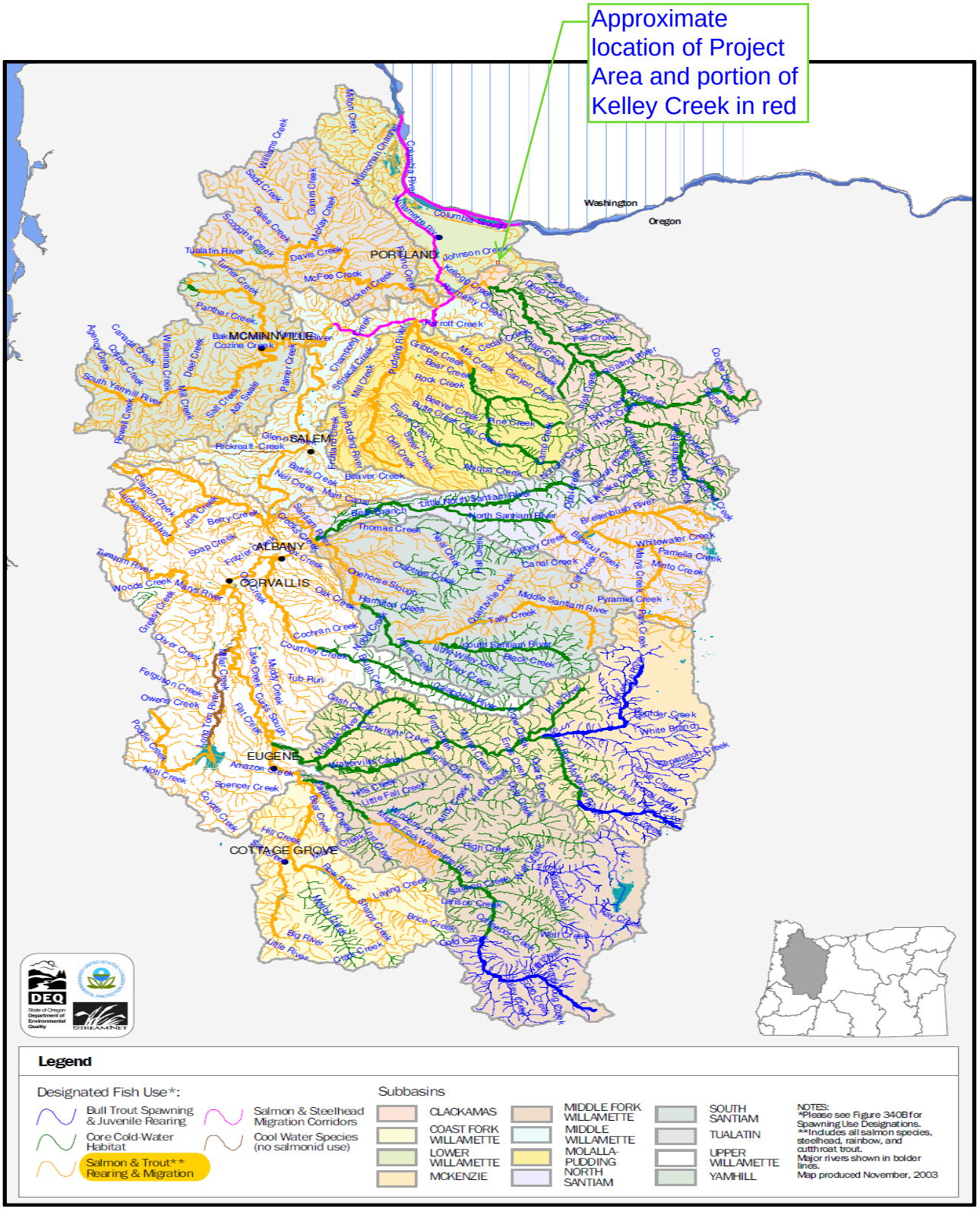
[3] Not to conflict with commercial activities in Portland Harbor.

Table produced August, 2005

State of Oregon Department of Environmental Quality

OAR 340-041-0340 – Figure 340A

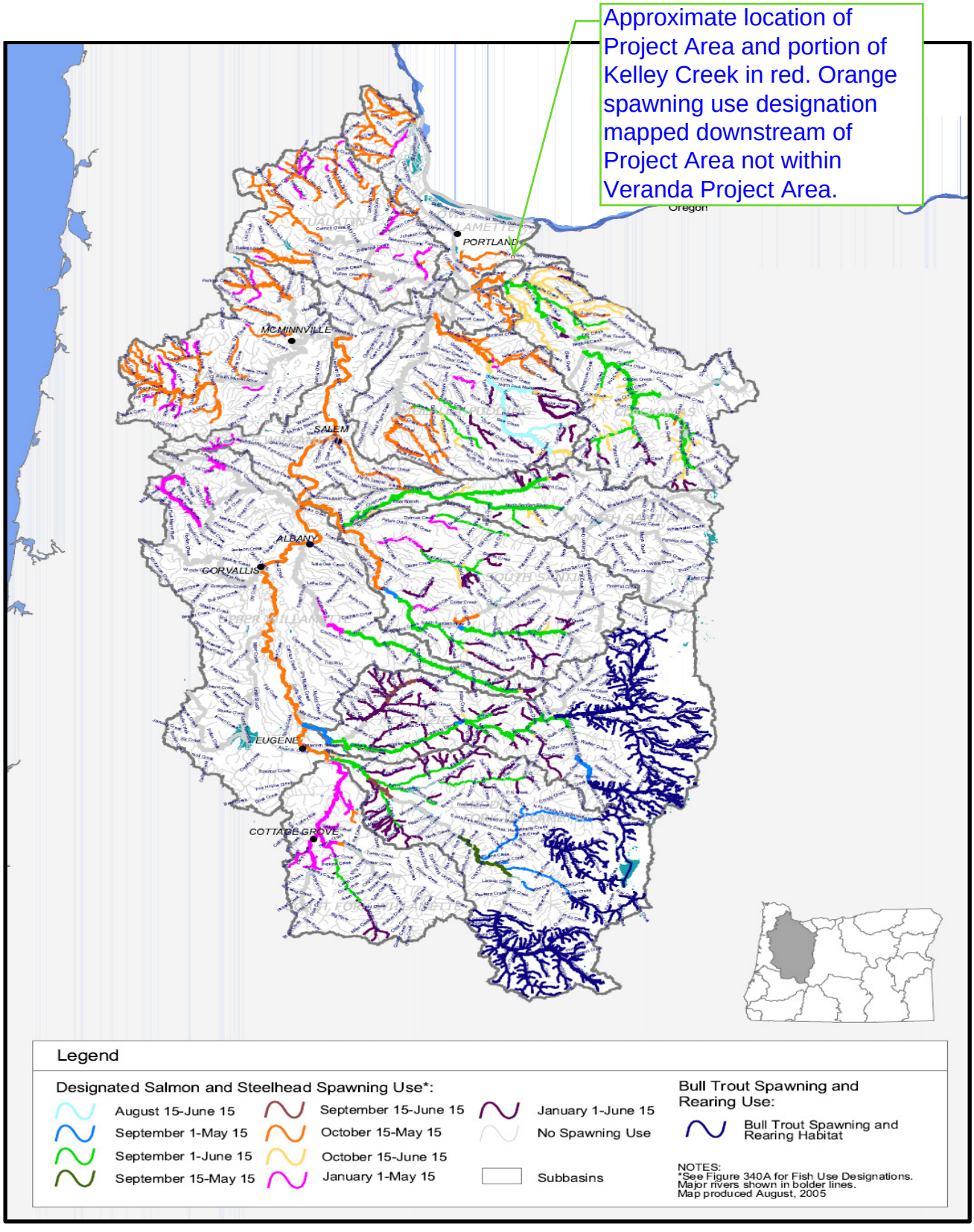
Fish Use Designations* - Willamette Basin, Oregon



State of Oregon Department of Environmental Quality

OAR 340-041-0340 – Figure 340B

Salmon and Steelhead Spawning Use Designations*
Willamette Basin, Oregon



Department of Environmental Quality

Chapter 340

Division 41
WATER QUALITY STANDARDS: BENEFICIAL USES, POLICIES, AND CRITERIA FOR OREGON

340-041-0028
Temperature

(1) Background. Water temperatures affect the biological cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations throughout the State. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows, and stream velocity, volume, and flow. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals.

(2) Policy. It is the policy of the Commission to protect aquatic ecosystems from adverse warming and cooling caused by anthropogenic activities. The Commission intends to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities. The Commission recognizes that some of the State's waters will, in their natural condition, not provide optimal thermal conditions at all places and at all times that salmonid use occurs. Therefore, it is especially important to minimize additional warming due to anthropogenic sources. In addition, the Commission acknowledges that control technologies, best management practices and other measures to reduce anthropogenic warming are evolving and that the implementation to meet these criteria will be an iterative process. Finally, the Commission notes that it will reconsider beneficial use designations in the event that man-made obstructions or barriers to anadromous fish passage are removed and may justify a change to the beneficial use for that water body.

(3) Purpose. The purpose of the temperature criteria in this rule is to protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.

(4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:

Kelley Creek on the Veranda site is NOT mapped on Figure 340B.

(a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;

(b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to 340-041-340: Figures 130A, 151A, 160A, 170A, 180A, 201A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);

(c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);

Kelley Creek on the Veranda site is mapped on Figure 340A for having salmon and trout rearing and migration use

(d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have cold water refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;

(e) The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 121B, 140B, 190B, and 250B, and Figures 180A, 201A, 260A and 310A may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit);

(f) The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130B, 151B, 160B, 170B, 180A, 201A, 260A, 310B, and 340B, may not exceed 12.0 degrees Celsius (53.6 degrees Fahrenheit). From August 15 through May 15, in bull trout spawning waters below Clear Creek and Mehlhorn reservoirs on Upper Clear Creek (Pine Subbasin), below Laurance Lake on the Middle Fork Hood River, and below Carmen reservoir on the Upper McKenzie River, there may be no more than a 0.3 degrees Celsius (0.5 Fahrenheit) increase between the water temperature immediately upstream of the reservoir and the water temperature immediately downstream of the spillway when the

ambient seven-day-average maximum stream temperature is 9.0 degrees Celsius (48 degrees Fahrenheit) or greater, and no more than a 1.0 degree Celsius (1.8 degrees Fahrenheit) increase when the seven-day-average stream temperature is less than 9 degrees Celsius.

(5) Unidentified Tributaries. For waters that are not identified on the "Fish Use Designations" maps referenced in section (4) of this rule, the applicable criteria for these waters are the same criteria as is applicable to the nearest downstream water body depicted on the applicable map. This section (5) does not apply to the "Salmon and Steelhead Spawning Use Designations" maps.

(6) Natural Lakes. Natural lakes may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of a natural lake is the same as its natural thermal condition.

(7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.

(8) Natural Conditions Criteria. Where the department determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based criteria in section (4) of this rule, the natural thermal potential temperatures supersede the biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body.

NOTE: On August 8, 2013, the Environmental Protection Agency disapproved rule section OAR 340-041-0028(8). Consequently, section (8) is no longer effective as a water quality criterion for purposes of CWA Section 303(c) and it cannot be used for issuing certifications under CWA Section 401, permits under CWA Section 402, or total maximum daily loads under CWA section 303(d).

(9) Cool Water Species.

(a) No increase in temperature is allowed that would reasonably be expected to impair cool water species. Waters of the State that support cool water species are identified on subbasin tables and figures set out in OAR 340-041-0101 to 340-041-0340; Tables 140B, 190B and 250B, and Figures 180A, 201A and 340A.

(b) See OAR 340-041-0185 for a basin specific criterion for the Klamath River.

(10) Borax Lake Chub. State waters in the Malheur Lake Basin supporting the Borax Lake chub may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the natural condition.

(11) Protecting Cold Water.

(a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.

(b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:

(A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or

(B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.

(c) The cold water protection narrative criteria in subsection (a) do not apply if:

(A) There are no threatened or endangered salmonids currently inhabiting the water body;

(B) The water body has not been designated as critical habitat; and

(C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.

(12) Implementation of the Temperature Criteria.

(a) Minimum Duties. There is no duty for anthropogenic sources to reduce heating of the waters of the State below their natural condition. Similarly, each anthropogenic point and nonpoint source is responsible only for controlling the thermal effects of its own discharge or activity in accordance with its overall heat contribution. In no case may a source cause more warming than that allowed by the human use allowance provided in subsection (b) of this rule.

(b) Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:

(A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or

(B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

(C) Point sources must be in compliance with the additional mixing zone requirements set out in OAR 340-041-0053(2)(d).

(D) A point source in compliance with the temperature conditions of its NPDES permit is deemed in compliance with the applicable criteria.

(c) Air Temperature Exclusion. A water body that only exceeds the criteria set out in this rule when the exceedance is attributed to daily maximum air temperatures that exceed the 90th percentile value of annual maximum seven-day average maximum air temperatures calculated using at least 10 years of air temperature data, will not be listed on the section 303(d) list of impaired waters and sources will not be considered in violation of this rule.

(d) Low Flow Conditions. An exceedance of the biologically-based numeric criteria in section (4) of this rule, or an exceedance of the natural condition criteria in section (8) of this rule will not be considered a permit violation during stream flows that are less than the 7Q10 low flow condition for that water body.

(e) Other Nonpoint Sources. The department may, on a case-by-case basis, require nonpoint sources (other than forestry and agriculture), including private hydropower facilities regulated by a 401 water quality certification, that may contribute to warming of State waters beyond 0.3 degrees Celsius (0.5 degrees Fahrenheit), and are therefore designated as water-quality limited, to develop and implement a temperature management plan to achieve compliance with applicable temperature criteria or an applicable load allocation in a TMDL pursuant to OAR 340-042-0080.

(A) Each plan must ensure that the nonpoint source controls its heat load contribution to water temperatures such that the water body experiences no more than a 0.3 degrees Celsius (0.5 degree Fahrenheit) increase above the applicable criteria from all sources taken together at the maximum point of impact.

(B) Each plan must include a description of best management practices, measures, effluent trading, and control technologies (including eliminating the heat impact on the stream) that the nonpoint source intends to use to reduce its temperature effect, a monitoring plan, and a compliance schedule for undertaking each measure.

(C) The Department may periodically require a nonpoint source to revise its temperature management plan to ensure that all practical steps have been taken to mitigate or eliminate the temperature effect of the source on the water body.

(f) Compliance Methods. Anthropogenic sources may engage in thermal water quality trading in whole or in part to offset its temperature discharge, so long as the trade results in at least a net thermal loading decrease in anthropogenic warming of the water body, and does not adversely affect a threatened or endangered species. Sources may also achieve compliance, in whole or in part, by flow augmentation, hyporheic exchange flows, outfall relocation, or other measures that reduce the temperature increase caused by the discharge.

(g) Release of Stored Water. Stored cold water may be released from reservoirs to cool downstream waters in order to achieve compliance with the applicable numeric criteria. However, there can be no significant adverse impact to downstream designated beneficial uses as a result of the releases of this cold water, and the release may not contribute to violations of other water quality criteria. Where the Department determines that the release of cold water is resulting in a significant adverse impact, the Department may require the elimination or mitigation of the adverse impact.

(13) Site-Specific Criteria. The Department may establish, by separate rulemaking, alternative site-specific criteria for all or a portion of a water body that fully protects the designated use.

(a) These site-specific criteria may be set on a seasonal basis as appropriate.

(b) The Department may use, but is not limited by the following considerations when calculating site-specific criteria:

(A) Stream flow;

(B) Riparian vegetation potential;

(C) Channel morphology modifications;

(D) Cold water tributaries and groundwater;

(E) Natural physical features and geology influencing stream temperatures; and

(F) Other relevant technical data.

(c) DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.

(d) Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected.

[ED. NOTE: Tables referenced are available from the agency.]

Statutory/Other Authority: ORS 468.020, 468B.030, 468B.035 & 468B.048
Statutes/Other Implemented: ORS 468B.030, 468B.035 & 468B.048
History:

DEQ 35-2018, minor correction filed 04/02/2018, effective 04/02/2018
DEQ 1-2015, f. & cert. ef. 1-7-15
DEQ 5-2013, f. & cert. ef. 6-21-13
DEQ 10-2011, f. & cert. ef. 7-13-11
DEQ 2-2007, f. & cert. ef. 3-15-07
DEQ 1-2007, f. & cert. ef. 3-14-07
DEQ 17-2003, f. & cert. ef. 12-9-03

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