DISCUSSION DRAFT: FOR REVIEW ONLY JULY 2022

Discussion Draft: Use Attainability Analysis for Aquatic Life Use Designations

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3.1.1 Description and Justification

DEQ is updating the location of Bull Trout spawning and juvenile rearing use upstream tributaries to those streams, to align with the USFWS final critical habitat rule. These waters are being updated to core cold water habitat or redband trout use because the USFWS determined they are not Bull Trout spawning habitat and did not designate them as critical habitat in the final federal rule. ODFW agrees that these reaches are not current or potential bull trout spawning and rearing habitat. These corrections are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." The final USFWS critical habitat designations were based on the best available local information regarding physical habitat characteristics that support Bull Trout spawning use. USFWS biologists determined that these streams are not suitable habitat essential for Bull Trout spawning and rearing. DEQ is also adding Bull Trout spawning use in approximately 35 miles of streams in response to the 2015 Biological Opinion from U.S. Fish and Wildlife Service.

Compared to other salmonids, Bull Trout have narrow habitat requirements that influence their distribution and abundance. They are typically found in cold headwaters and are seldom found in waters where temperatures exceed 15 to 18 °C (59 to 64 °F). In addition, they require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and, because they are adfluvial, unblocked migratory corridors. Watersheds must have specific physical characteristics to provide successful spawning and rearing habitat. Because they spawn in cold headwaters, they have a longer egg incubation time than other salmonids. Activities that affect channel stability or alter stream flow may decrease egg and young juvenile survival.[1]

When DEQ developed Oregon's fish use designation maps in 2003, the U.S. Fish and Wildlife Service had published draft proposed critical habitat for the Klamath River and Columbia River Bull Trout populations.[2] Due to the court-imposed deadline, DEQ had to designate uses as part of the temperature standard revisions before USFWS could finalize their Bull Trout critical habitat rule. As a result, DEQ included the draft proposed critical habitat with the expectation that we would revise our use designations to align with the final federal critical habitat rule when it was completed. [3] In its letter approving the fish

[1] See discussion of Bull Trout habitat characteristics on page 53 of U.S. Fish and Wildlife Service 2014. Biological Opinion/Letter of Concurrence/Conference Concurrence on US EPA Approval of Oregon Water Quality Standards for Temperature and Intergravel Dissolved Oxygen. FWS reference: 01EOFWO0-2014-F-0087. Oregon Fish and Wildlife Office. Portland, OR. 303 pp.

[2] 67 Federal Register 71235. November 29, 2002.

[3] See DEQ 2003. EQC Staff Report, Rule Adoption: Water Quality Standards, Including Temperature Criteria, OAR Chapter 340, Division 41, December 4, 2003 EQC Meeting, Attachment H: A Description of the Informatino and Methods Used to Delineate the Proposed Beneficial Fish Use Designations for Oregon's Water Quality Standards. 5 pp.

use designations, EPA acknowledged the intent to align Bull Trout spawning uses with the final federal critical habitat rule once it was available.[4]

USFWS published a final Bull Trout critical habitat rule in 2010.[5] In the justification for its final rule, USFWS noted that it designated critical habitat for spawning and rearing habitat in "stream reaches and associated watershed areas that provide all habitat components necessary for spawning and juvenile rearing for a local Bull Trout population."[6] The critical habitat includes currently occupied habitat as well as additional habitat for species recovery that is not currently occupied. USFWS included proposed 2002 critical habitat designation for all reaches they thought warranted further review. The critical habitat designated in USFWS's final rule resulted from further evaluation and input from a peer review panel, as well as technical input from States and other partners, to incorporate site-specific biological expertise with Bull Trout.[7] In some cases, waters proposed as critical habitat in the draft rule were not included as critical habitat for Bull Trout in the final rule. In other cases, streams that were proposed as critical spawning and rearing habitat (SR), were instead designated as foraging, migration, and overwintering habitat (FMO) in the final rule. U.S. Fish and Wildlife Service has provided any available site-specific information regarding changes to Bull Trout spawning and rearing critical habitat designation between the proposed 2002 rule and final 2010 rule. Some changes were noted on US FWS "Change to Critical Habitat Form," whereas others were based on best professional judgment of federal and state fish biologists with knowledge of Bull Trout life stage requirements and presence.

DEQ cross-checked waters that were not included in the final Bull Trout critical habitat designation with ODFW data on current and potential Bull Trout spawning habitat. DEQ is only proposing to update the Bull Trout spawning use designation for those streams that are not federal critical habitat for Bull Trout spawning *and* that ODFW does not consider either **current** Bull Trout spawning habitat in ODFW's Fish Habitat Distribution Database (FHD) or is not considered **potential** spawning habitat necessary for recovery. For example, Strawberry Creek in the John Day Basin was removed in the final critical habitat rule, but ODFW still considers the stream and its tributaries as potential habitat. As a result, DEQ is not proposing to update the Bull Trout spawning use in these waters.

DEQ is also correcting the spawning designation for tributaries that were designated for Bull Trout spawning in 2003 only because they are upstream of spawning waters. In these cases, there was no Bull Trout spawning habitat in the tributary itself based on the ODFW fish habitat distribution database or the final critical habitat rule. They were designated only because they are upstream of reaches that were proposed as critical habitat.

USFWS provided the following specific information regarding why waters were removed as critical habitat in the final rule.

Grande Ronde Basin (See Figure 3-3)

[4] EPA 2004, Support Document for EPA's Action Reviewing New Or Revised Water Quality Standards for the State of Oregon. March 2, 2004. p.82

[5] 75 Federal Register 63898. October 18, 2010.

[6] USFWS 2010. Bull Trout Critical Habitat Final Rule Justification. Idaho Fish and Wildlife Office, Boise, Idaho, Pacific Region, Portland, OR. 1035 pp. The portions of the document relevant to the corrections to the designation include those for the Upper Willamette Critical Habitat Unit (starting on page 217), Klamath River Basin CHU (p. 303), John Day River CHU (p. 371), Umatilla River CHU (p. 397), Walla Walla River CHU (p. 409), Grande Ronde River CHU (p. 447), Powder River CHU (p. 511), and Malheur River CHU (p. 587).

[7] See Final Critical Habitat rule *at* 75 FR 63899 and 63902.

Catherine Creek. Designation changed from SR to FMO based on professional opinion of Paul Boehne (fish biologist, U.S. Forest Service) combined with known Bull Trout distribution.[8]

Powder River Basin (See Figure 3-3)

Salmon, Pine, Rock & Big Muddy Creeks.
The lower reaches of these four creeks were included as draft critical habitat for bull trout spawning in the USFWS 2002 proposed critical habitat rule. However, ODFW has not identified these areas as current, potential or, importantly, historic Bull Trout spawning habitat . There are small higher elevation reaches of these creeks that support Bull Trout spawning. However, given the location of these streams in a low elevation, arid and warm alluvial valley, it is unlikely that stream restoration would result in attainment of Bull Trout spawning. The physical conditions of these streams would not support such use. USFWS noted that it was unlikely that restoration was attainable because of alterations to the stream channels and water withdrawals for agriculture.

USFWS provided the following information to support removal of these reaches in the final Critical Habitat rule:

1. Bull Trout occupancy of these streams is extremely limited & uncertain, with no connectivity.
2. These are small, isolated, relatively low-elevation drainages with very limited Bull Trout spawning habitat potential and no opportunities for expansion.
3. Lower sections of these creeks run through a broad alluvial valley (Baker Valley) where the channels have been highly altered by surrounding agricultural land uses. Many reaches are entirely devoid of riparian overstory & most of the streamflow is diverted for irrigation in the summer months. Restoration of the lower reaches of these creeks would be difficult to achieve because they run through a large number of private farms & ranches, which rely on the creek's water to irrigate their fields.

As a result of the limited potential, degraded condition and difficult topographic and landownership situation, these streams were not considered essential for Bull Trout recovery. [9]

John Day Basin (See Figure 3-4)

Canyon Creek. Canyon Creek was proposed as unoccupied spawning critical habitat in the proposed 2002 Critical Habitat rule. The likely reason it was not designated critical habitat after further analysis is that the last time bull trout was detected in the stream was in 1985 in a diversion trap in the upper basin. No bull trout has been detected since despite continued stream restoration work in the basin, which has a water diversion and temperature and urbanization issues.[10] ODFW also does not consider these waters as habitat for reintroduction and does not identify them as potential habitat.

Granite Creek and tributaries to Granite Creek. Granite Creek was initially included as unoccupied critical habitat based on Buchanan, et al. 1997, which showed these streams as

[8] Sausen, Gretchen A. *Personal communication.* December 16, 2021.
[9] Sausen, Gretchen A. *Personal communication.* December 16, 2021.
[10] Gunckel, Stephanie. *Personal communication.* March 18, 2021, citing the 2002 Proposed Critical Habitat Rule (67 Federal Register 71235. November 29, 2002) and Buchanan, D.V., M. L. Hanson and R. M. Hooton. 1997. Technical Report: Status of Oregon's Bull Trout. U.S. Bonneville Power Administration, Report Number DOE/BP-34342-5.

historic habitat. (*Note:* the map cited in the USFWS change form only shows Granite Creek as historic habitat, but does not differentiate whether it was historic for spawning, rearing, or resident adult bull trout.) It was changed from spawning and rearing Bull Trout habitat to FMO habitat due to documented migratory presence based on the USFWS Bull Trout Biological Opinion for the North Fork John Day (2003).[11]

Malheur Basin (See Figure 3-4)

Little Malheur River and tributaries. Buchanan, et al (1997) cites a 1967 US Forest Service report noting occasional Bull Trout in the Little Malheur. USFWS agreed to propose the area as critical habitat in response to public comments. However, this reach was not designated critical habitat in the final rule based on the professional opinion of USFWS biologists. USFWS has not been able to provide DEQ specific data or documents explaining their decision.[12]

Umatilla/Walla Walla Basin (Figure 3-5)

Walla Walla River, NF Walla Walla River, Dorothy Ditch. These waters are not currently spawning habitat according to either USFWS or ODFW. This reach was not designated a critical habitat in the final rule based on the professional opinion of USFWS biologists. USFWS has not been able to provide DEQ specific data or documents explaining why it was proposed critical habitat or their decision not to designated it in the final rule.[13]

Willamette Basin (Figure 3-6)

Middle Fork Willamette River upstream of Hill Creek Lake. Historic data indicate Bull Trout use these waters as migratory habitat, rather than spawning habitat. ODFW observed a Bull Trout near the confluence of the McKenzie and the Willamette in 2004 indicating FMO use.[14] USFWS has not been able to provide DEQ any additional information as to why these waters were initially proposed as critical habitat for spawning.[15]

Figures 3-1 – 3-6 indicate the waters where the Bull Trout spawning designation is being corrected to show the reach is not spawning habitat, as described in this section. An inventory of streams where Bull Trout spawning use is being corrected is included in Appendix D.

[11] Streif, Bianca. 2004. "Changes to Critical Habitat form: Granite Creek."
[12] Gunckel, Stephanie. *Personal communication.* March 18, 2021.
[13] Gunckel, Stephanie. *Personal communication.* March 18, 2021.
[14] Streif, Bianca. 2004. "Changes to Critical Habitat form: Middle Fork Willamette River."
[15] Gunckel, Stephanie. *Personal communication.* March 18, 2021.

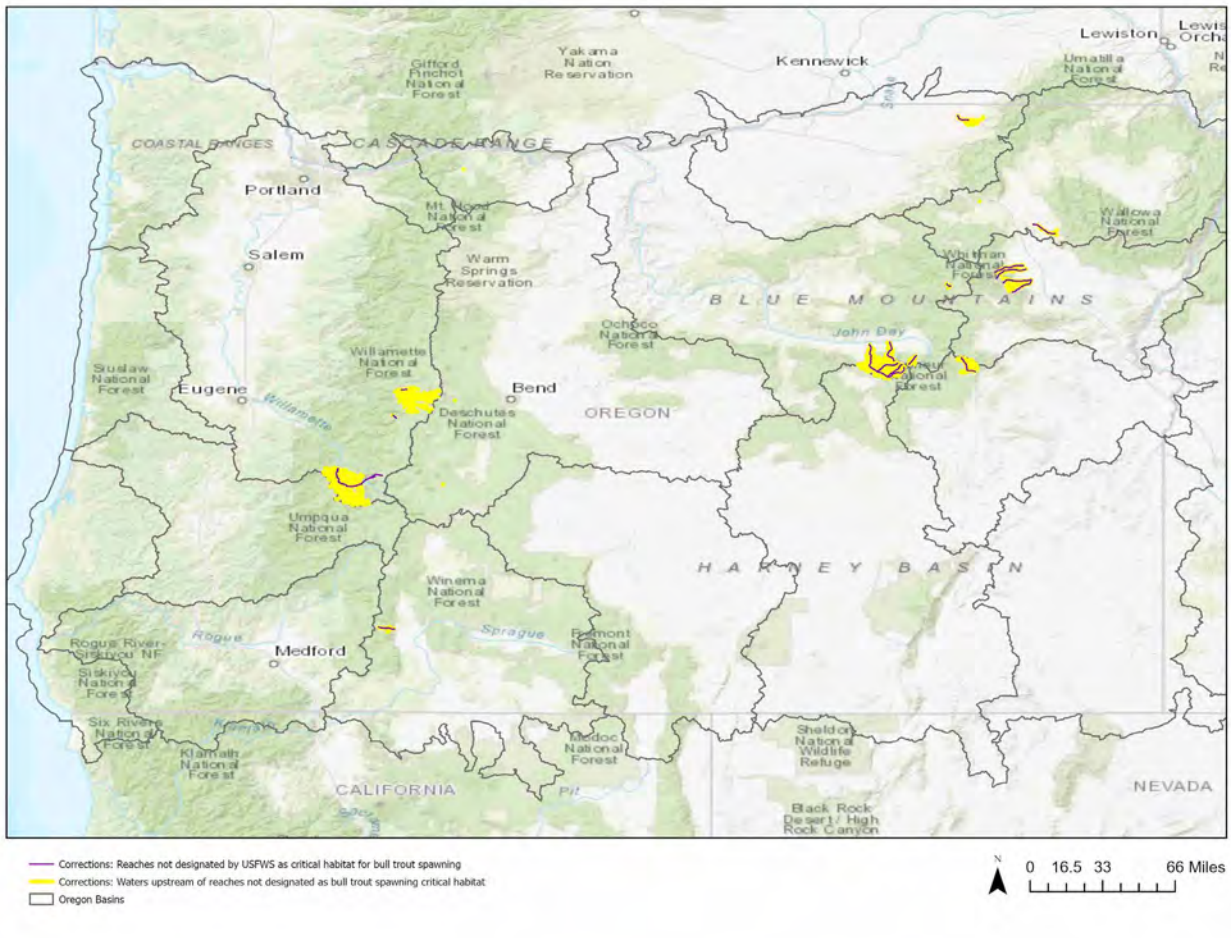

Figure 3-1. Statewide map showing corrections to Bull Trout spawning and rearing use to align with the USFWS final critical habitat rule. Purple lines indicate the reaches that were proposed as spawning habitat in the draft rule but were not designated critical habitat in the final rule. Yellow lines indicate all reaches that were not identified as Bull Trout spawning habitat, but were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

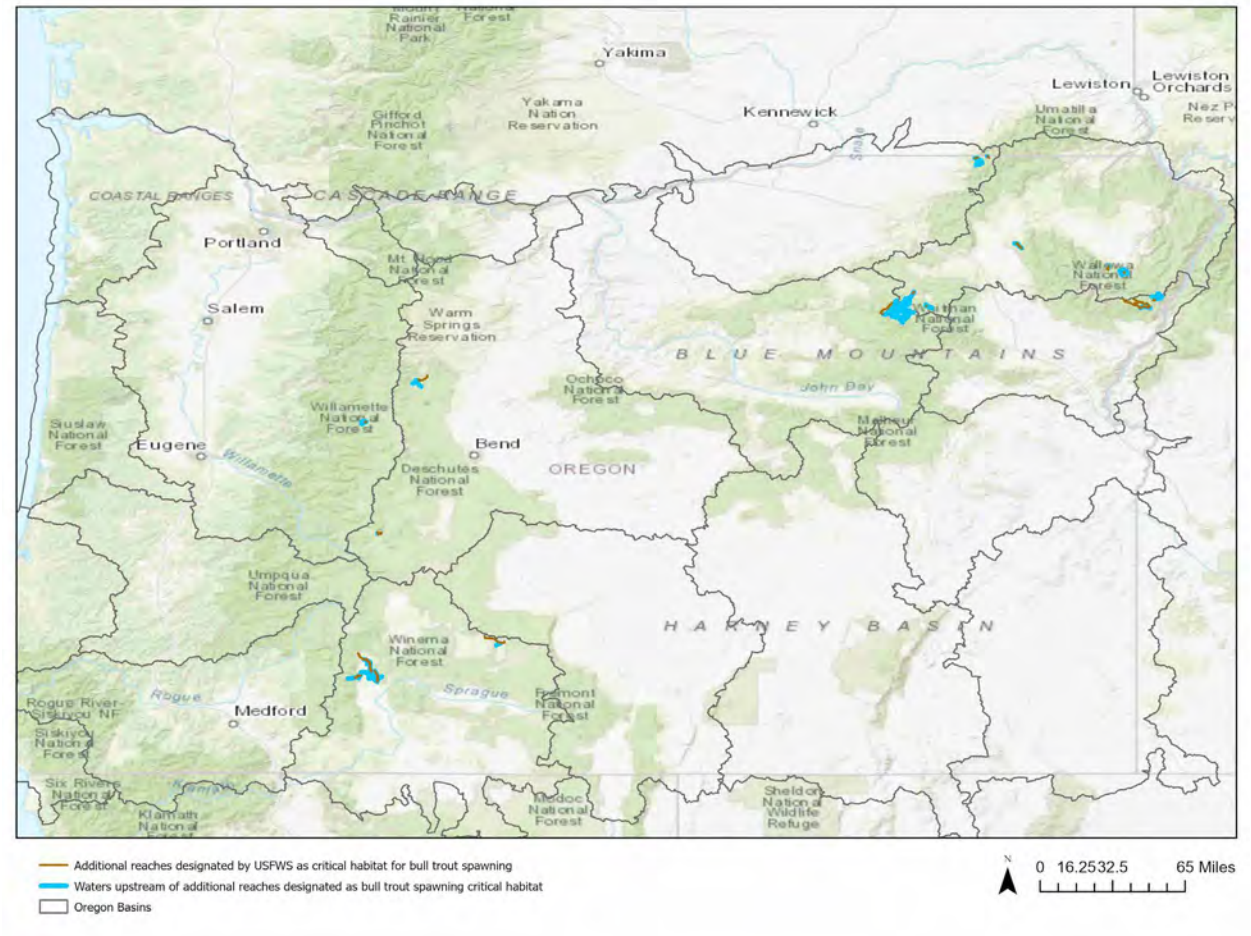

Figure 3-2 Statewide map showing additions to spawning and rearing use due to the USFWS final critical habitat rule. Brown lines indicate additional reaches that were added to designated Bull Trout spawning habitat in the final critical habitat rule. Blue lines indicate additional reaches upstream of the Bull Trout spawning to be designated for the 'Bull Trout Spawning & Juvenile Rearing' use subcategory by DEQ.

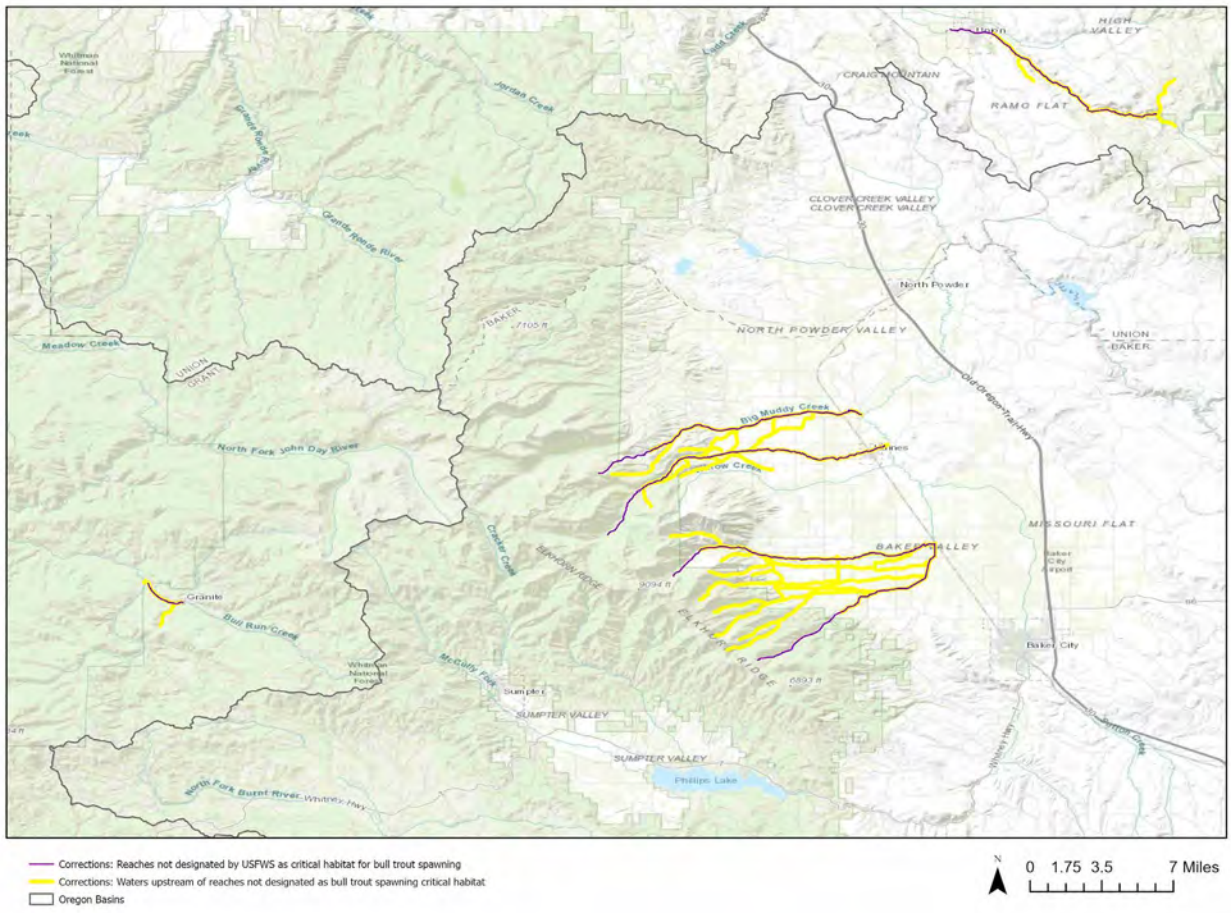

Figure 3-3. Corrections to Bull Trout spawning and rearing use resulting from changes in the USFWS final critical habitat rule, Grande Ronde and Powder River Basins. Purple lines indicate the reaches that were proposed as spawning habitat in the draft rule but were not designated critical habitat in the final rule. Yellow lines indicate all reaches that were not identified as Bull Trout spawning habitat, but were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

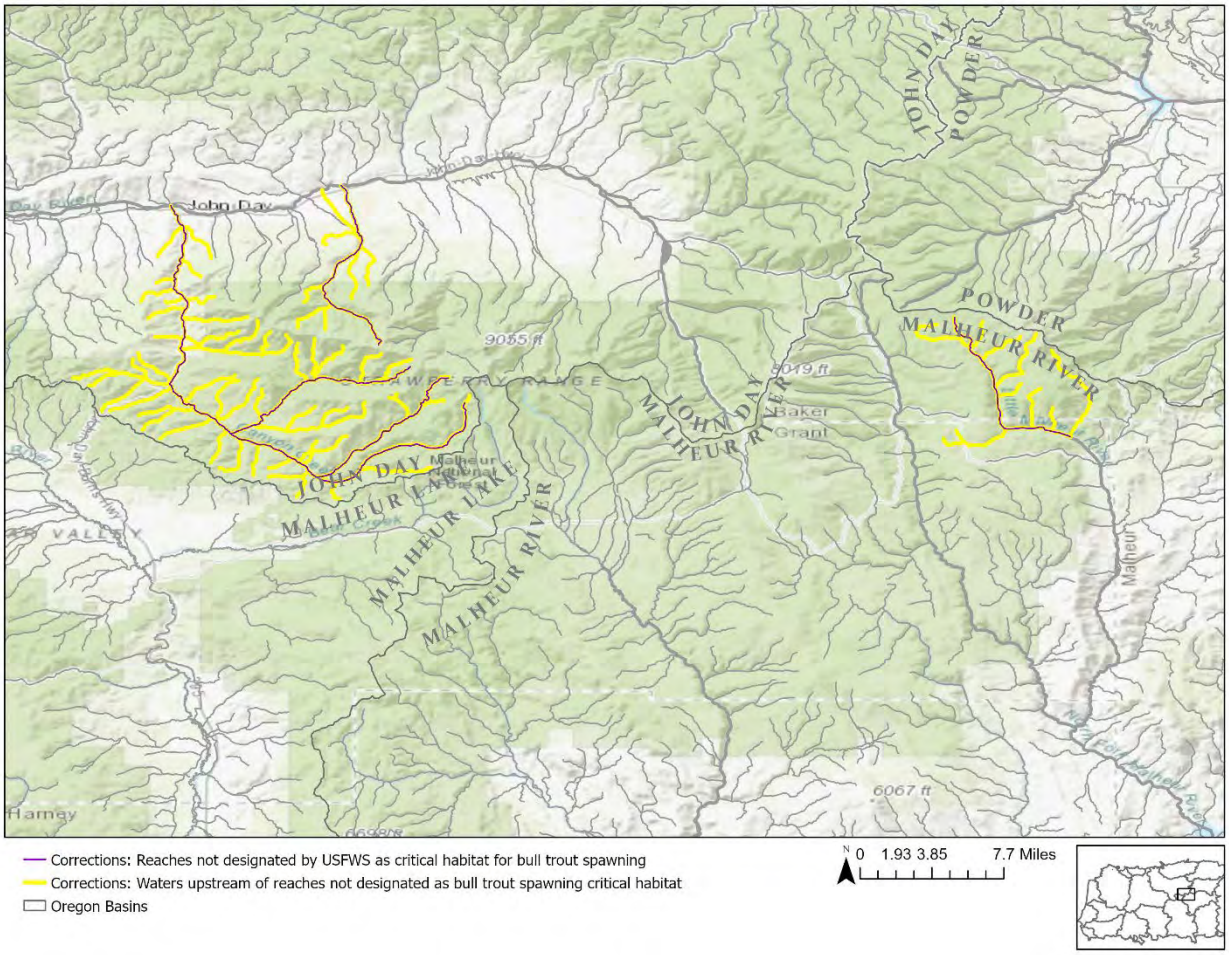

Figure 3-4. Corrections to Bull Trout spawning and rearing use resulting from changes in the USFWS final critical habitat rule, John Day and Malheur River Basins. Purple lines indicate the reaches that were proposed as spawning habitat in the draft rule but were not designated critical habitat in the final rule. Yellow lines indicate all reaches that were not identified as Bull Trout spawning habitat, but were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

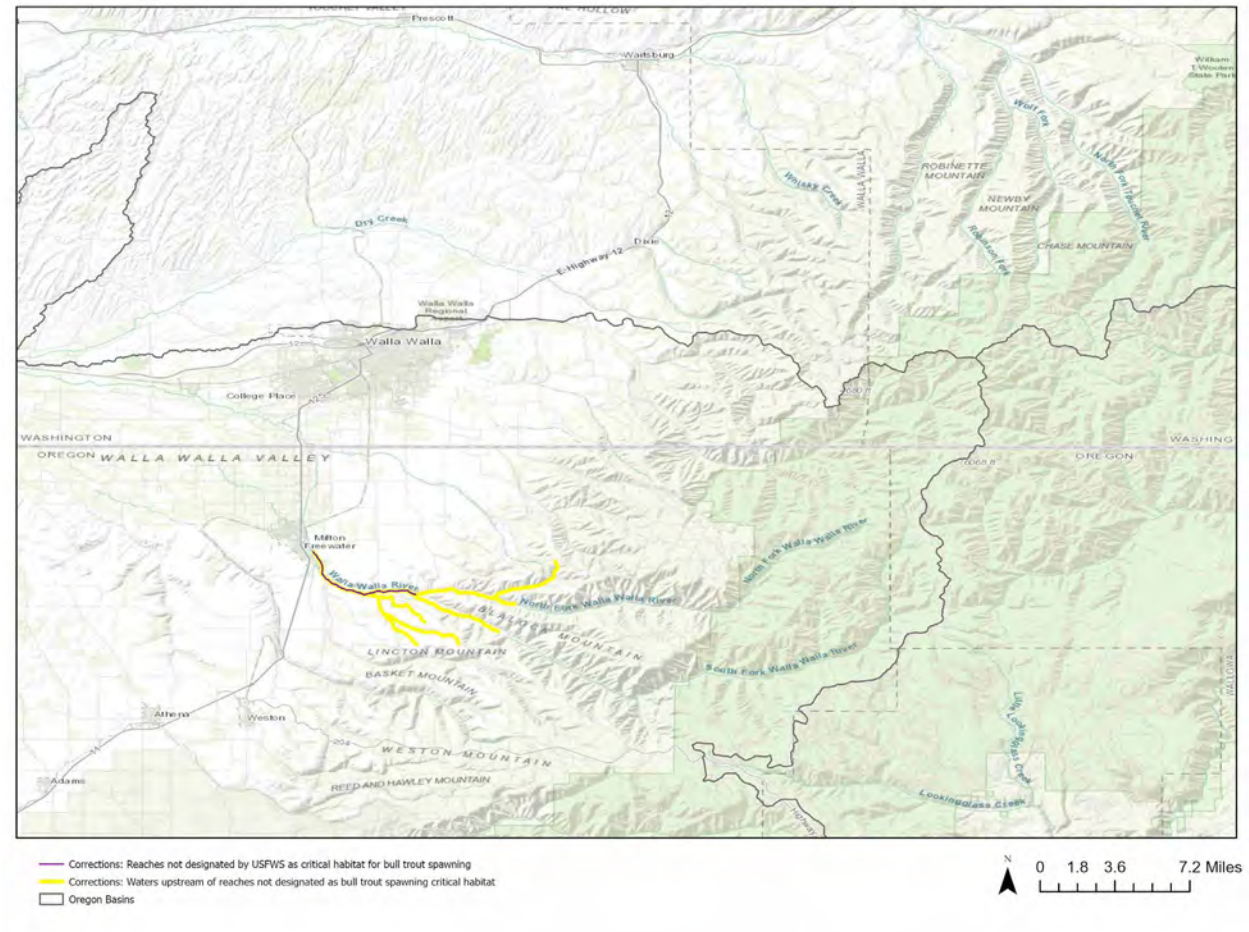

Figure 3-5. Corrections to Bull Trout spawning and rearing use resulting from changes in the USFWS final critical habitat rule, Umatilla River Basin. Purple lines indicate the reaches that were proposed as spawning habitat in the draft rule but were not designated critical habitat in the final rule. Yellow lines indicate all reaches that were not identified as Bull Trout spawning habitat, but were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

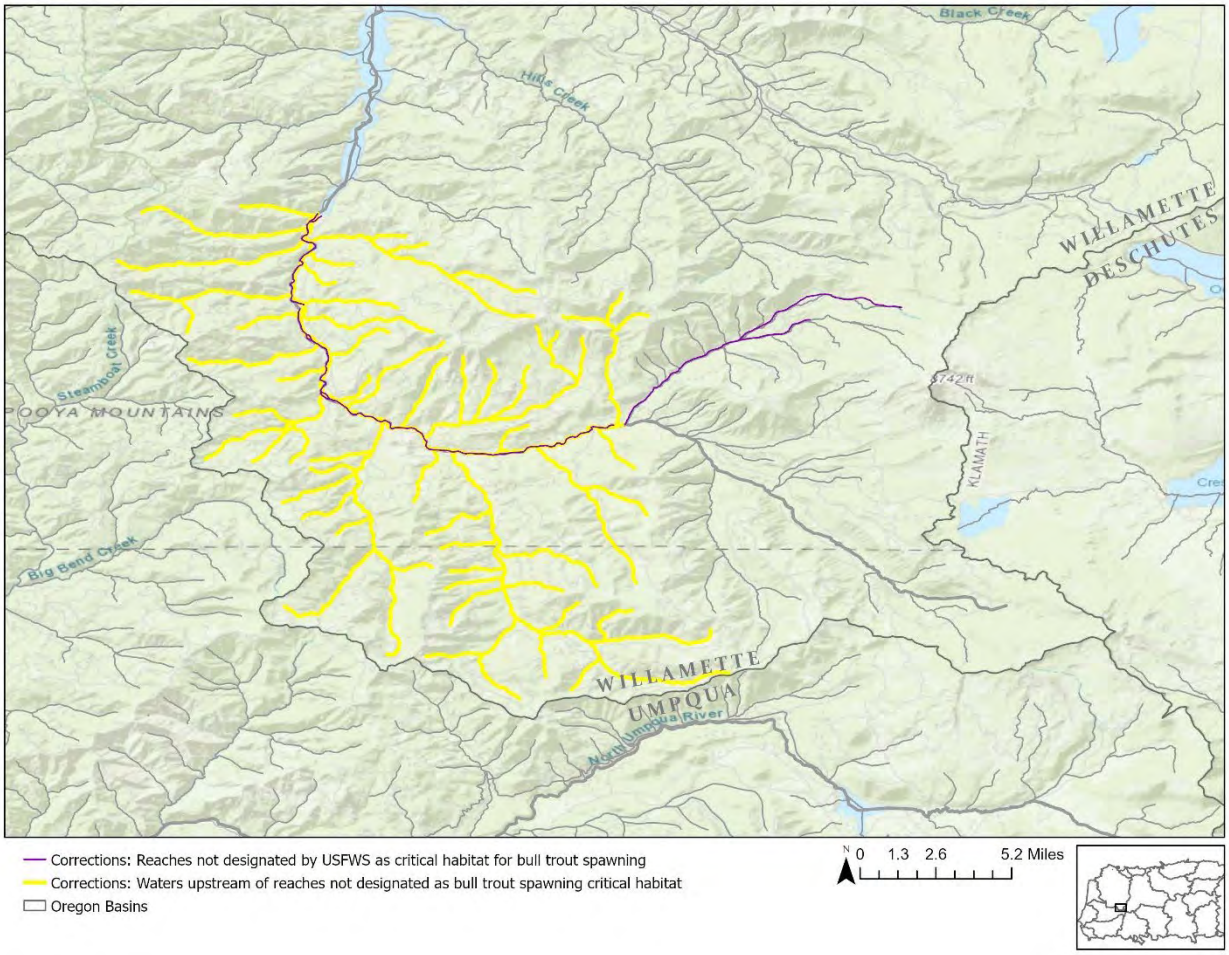

Figure 3-6. Corrections to Bull Trout spawning and rearing use resulting from changes in the USFWS final critical habitat rule, Middle Fork Willamette River, Willamette River Basin. Purple lines indicate the reaches that were proposed as spawning habitat in the draft rule but were not designated critical habitat in the final rule. Yellow lines indicate all reaches that were not identified as Bull Trout spawning habitat, but were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

3.1.2 Highest Attainable Use

1. Except in the Powder River Basin, all waters where Bull Trout spawning use is being corrected are proposed for designation as core cold water habitat, which protects sub-adult and adult Bull Trout use and FMO critical habitat. Core cold water habitat is the next most stringent use after Bull trout spawning.
2. In the Powder River Basin, all waters where Bull Trout spawning is being corrected are proposed for designation as Redband Trout use because they are not identified as either spawning or FMO habitat in the USFWS final critical habitat rule or by ODFW. Because the basin does not have salmon or steelhead, redband trout is the next highest use.

3.2 Reclassification of Bull Trout spawning use based on changes to the ODFW Fish Habitat Database for current or potential habitat

3.2.1 Description and Justification

DEQ is proposing to update Bull Trout spawning use to core cold water use in several waters based on changes to the ODFW Fish Habitat Database for current or potential habitat. DEQ is refining the spatial extent of the use based on the best available information from ODFW and the Bull Trout Working Group regarding the location of current or potential Bull Trout spawning habitat. These updates occur in the Deschutes, Klamath, and Willamette River basins. DEQ also is updating the use in some waters currently designated for less stringent uses to Bull Trout spawning use because ODFW has determined they are current or potential Bull Trout spawning habitat.

Bull Trout have narrow habitat requirements that influence their distribution and abundance. They are typically found in cold headwaters and are seldom found in waters where temperatures exceed 15 to 18 °C (59 to 64 °F). In addition, they require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and, because they are adfluvial, unblocked migratory corridors. Watersheds must have specific physical characteristics to provide successful spawning and rearing habitat. Because they spawn in cold headwaters, they have a longer egg incubation time than other salmonids. Activities that affect channel stability or alter stream flow may decrease egg and young juvenile survival.[16]

Refinement to Bull Trout spawning use in Deschutes River Basin (Metolius River/Lake Billy Chinook)
DEQ is proposing to update aquatic life subcategories in an approximately one mile stretch of Lake Billy Chinook and three small tributaries to Lake Billy Chinook from Bull Trout spawning use to Core Cold Water Use (Figure 3-7). This refinement is justified under 40 CFR 131.10(g), Factor 4: "Dams, diversions or other types of hydrologic modifications preclude attaining the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way which result in attainment of the use."

In 2003, DEQ designated Bull Trout spawning habitat in the Metolius River. The spawning habitat began just upstream of Lake Billy Chinook, based on ODFW data. At the time, ODFW did not have accurate information regarding the location where the Metolius arm of Lake Billy Chinook ended and where the Metolius river began. As a result of improved surveying, the location of suitable spawning habitat in ODFW's distribution database has shifted slightly upstream, resulting in a correction to the designation (Figure 3-7). In the case of the Metolius arm of Lake Billy Chinook, the influence of the reservoir reaches approximately one mile further upstream than previously estimated. DEQ is updating the extent of Bull Trout Spawning use so that it does not include this one mile stretch of the reservoir, which does not have appropriate habitat conditions to support Bull Trout spawning. It also will not include three small tributaries (Spring Creek, Street Creek and an unnamed tributary) that were initially designated to provide cold water to the downstream spawning habitat. These tributaries are no longer are upstream of spawning habitat, nor are they current, potential, or historical Bull Trout spawning habitat.

Bull Trout spawning is not an existing use in this reach of Lake Billy Chinook. Lake Billy Chinook was created by construction of the Round Butte Dam in 1964. There was no intention to designate reservoirs for Bull Trout spawning use in 2003, due to improper substrate, flow and depth. The reach was designated for Bull Trout spawning because ODFW did not have complete data regarding the upstream extent of the reservoir. Had ODFW had the correct data in 2003, this reach would not have been designated initially.

It is not feasible to modify operations in the dam that would result in the one mile stretch of Lake Billy Chinook where DEQ is refining the use. Portland General Electric and the Confederated Tribes of the Warm Springs Reservation of Oregon, which jointly own and operate the Round Butte Dam, constructed

[16] See discussion of Bull Trout habitat characteristics on page 53 of U.S. Fish and Wildlife Service 2014. Biological Opinion/Letter of Concurrence/Conference Concurrence on US EPA Approval of Oregon Water Quality Standards for Temperature and Intergravel Dissolved Oxygen. FWS reference: 01EOFWO0-2014-F-0087. Oregon Fish and Wildlife Office. Portland, OR. 303 pp.

a selective water withdrawal tower in 2010. The withdrawal tower creates currents that allow salmon and steelhead into collection facilities so they can be transported around the dams. Moreover, the facility pulls water so that the water released below the dam matches conditions that would be expected absent the dam, while continuing to allow electricity generation.[17] As a result of these efforts, the Dam received Low Impact Hydropower Institute Certification.[18] It is not feasible to restore the waterbody to its original condition, as the reservoir, the largest hydropower complex completely in Oregon, is needed to provide energy to Oregon residences and businesses.

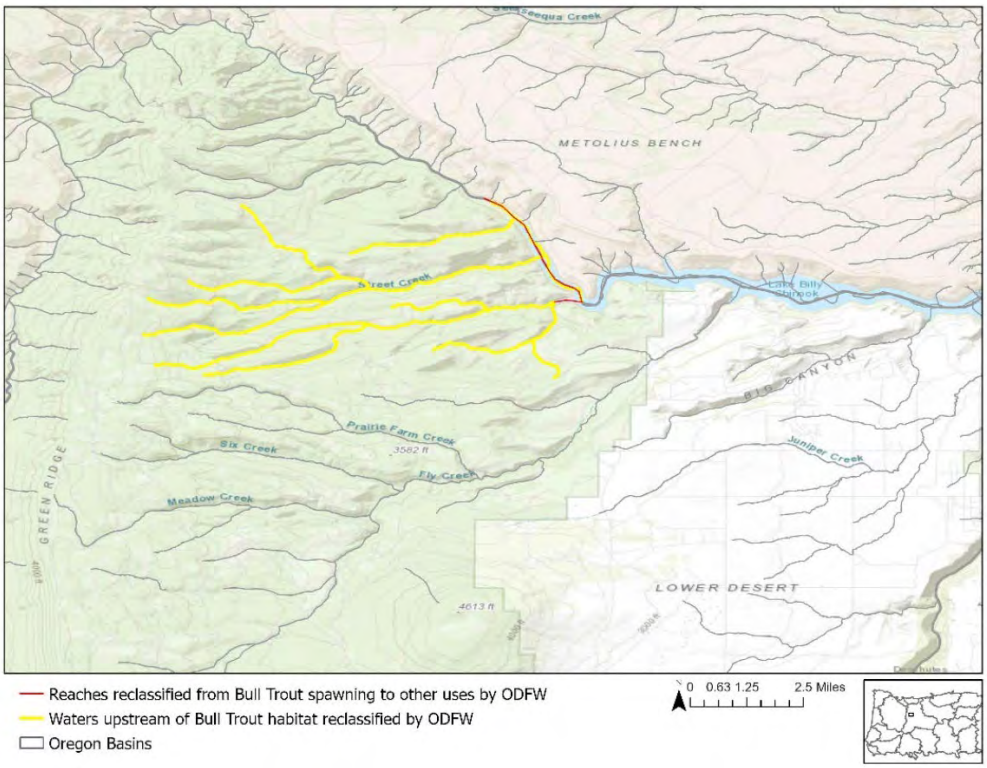

Figure 3-7. Refinements to Bull Trout Spawning Use in the Deschutes Basin (Lake Billy Chinook). Orange lines indicate the reaches that ODFW no longer considers Bull Trout spawning habitat. Yellow lines indicate reaches that were designated by DEQ only because they were upstream of the proposed Bull Trout spawning habitat.

Updates to Bull Trout spawning use in streams and natural lakes in the Upper Deschutes River Basin due to physical conditions preclude attaining the use

DEQ is updating certain waters in the Upper Deschutes River basin from Bull Trout spawning use to Core Cold Water Use (Figure 3-8). These are justified under 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." Habitat requirements for Bull Trout spawning are described in the introduction to Section 3.2.1.

These waters are not currently Bull Trout spawning habitat. ODFW considered these waters as potential Bull Trout spawning habitat in 2003. The Bull Trout Working Group, which includes ODFW and Forest

[17] https://assets.ctfassets.net/416ywc1laqmd/3XGy89Dj28GqLCJzh8jzDa/362c67509c368b5d871e6be4eb42c1d6/selective-water-withdrawal-tower.pdf. Visited April 12, 2022

[18] https://lowimpacthydro.org/lihi-certificate-25-pelton-round-butte-project-oregon/. Visited April 12, 2022.

Service biologists who are local experts on Bull Trout in the Deschutes Basin, determined that Bull Trout spawning is not attainable in two streams, Whitefish Creek and North Davis because there is insufficient or intermittent flow which does not support the adfluvial life history of the Bull Trout.

ODFW provided the following supporting information from the Bull Trout workgroup regarding why the physical conditions of these streams and reservoirs do not support Bull Trout spawning[19]:

Whitefish Creek – While the water is sufficiently cold, there is not enough water to support Bull Trout spawning. Because Bull Trout are adfluvial, they require unblocked migratory corridors. The naturally low flow of North Davis Creek would not support Bull Trout as they grow to maturity and it would hinder downstream migration.

North Davis Creek - North Davis Creek flows intermittently, which precludes Bull Trout spawning. Because Bull Trout are adfluvial, they require unblocked migratory corridors. The intermittent flow of North Davis Creek would not support Bull Trout as they grow to maturity, nor would it allow downstream migration.

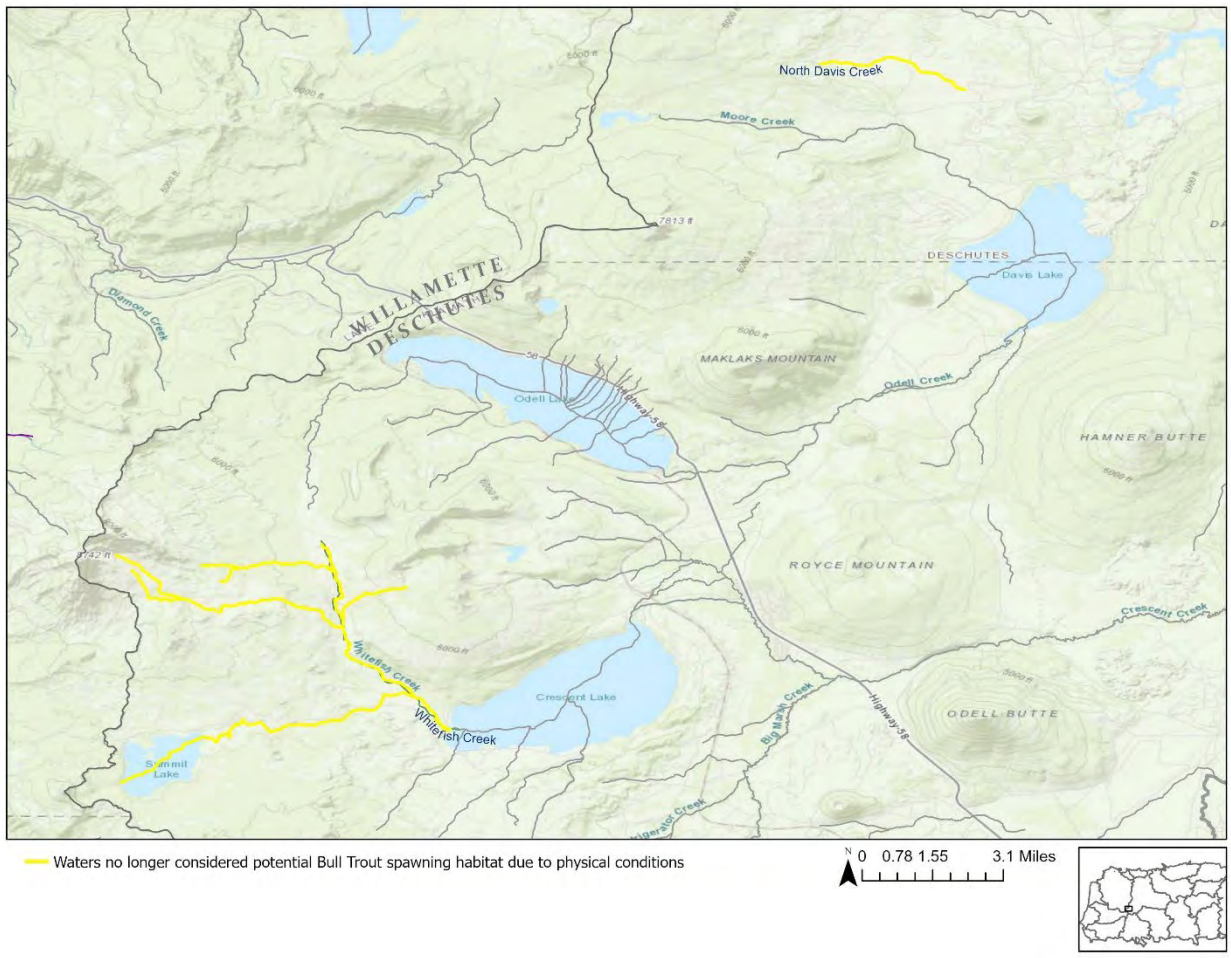

Figure 3-8. Waters that cannot attain Bull Trout Spawning Use due to physical conditions, Upper Deschutes Basin.

[19] Gunckel, Stephanie. Notes from Bull Trout Working Group meeting. {Date}

In addition, the Bull Trout Working Group determined that Bull Trout spawning use is not attainable in two natural lakes, Odell Lake and Crescent Lake in the Upper Deschutes watershed (See Figure 3-11). As noted in the introduction to this chapter, to support spawning, Bull Trout require stable stream channels, clean spawning and rearing gravel, complex and diverse cover. Such conditions do not exist in natural lakes and, thus, spawning is not attainable in such conditions. These lakes may support Bull Trout foraging, rearing and migration, which is protected by the Core Cold Water use, the highest attainable use for these waters.

Updates to Bull Trout spawning use in reservoirs in the Upper Deschutes River Basin because dams prevent attainment of the use and cannot be restored or modified in a way that would result in attainment of the use.

DEQ is updating uses in the Wickiup Reservoir and Crane Prairie Reservoir (See Figure 3-9) from Bull Trout Spawning Use to Core Cold Water Use. These updates are justified under 40 CFR 131.10(g), Factor 4: "Dams, diversions, or other types of hydrologic modifications preclude attaining the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way which would result in attainment of the use.

The Bureau of Reclamation constructed the Wickiup Dam on the Deschutes River in 1949, creating Wickiup Reservoir. Local irrigation districts built the Crane Prairie Dam on the Deschutes River in 1922, which was then rebuilt by the U.S. Bureau of Reclamation in 1940. Both reservoirs are primarily used for irrigation by several irrigation districts and for recreation.

The irrigation districts that receive water from the two reservoirs are parties to the Deschutes River Habitat Conservation Plan, which was approved by the Fish and Wildlife Service on December 31, 2020.[20] The HCP modifies operations on these and other reservoirs on the Deschutes River, to support threatened and endangered species, including the Bull Trout, Steelhead, Sockeye Salmon, and the Oregon Spotted Frog.

Specifically, under the HCP, operation of Crane Prairie Reservoir has been modified to improve conditions for Oregon spotted frogs including year-round minimum and maximum water surface elevations for the reservoir. These operations maintain water depths in emergent wetlands that the spotted frogs depend on for reproduction and survival. Similarly, timing and volume of releases from Wickiup Reservoir are adjusted under the HCP to support breeding, juvenile rearing and overwintering of the spotted frog.

As noted in the introduction to this chapter, to support spawning, Bull Trout require stable stream channels, clean spawning and rearing gravel, complex and diverse cover. Such conditions do not exist in reservoirs and, thus, spawning is not attainable in such conditions. Moreover, it is not feasible to restore Wickiup Reservoir and Crane Prairie Reservoir to their original conditions or operate modification in a way which would attain Bull Trout Spawning Use. It is not feasible to restore or modify the waterbody in a way which would attain the Bull Trout spawning criterion, because doing so would prevent the irrigation districts from their legal duty to deliver irrigation water to their patrons. Moreover, doing so would prevent the districts from meeting their obligations under the HCP.

Finally, it is likely that even full removal of the reservoir would not result in attainment of the Bull Trout Spawning use. As noted in the section below, temperature modeling indicates that peak 7-DADM temperatures in the Upper Deschutes River do not maintain the 12℃ temperature even in the absence of reservoirs.

[20] https://www.fws.gov/project/deschutes-river-basin-habitat-conservation-plan.

Updates to Bull Trout spawning use in streams in the Upper Deschutes River Basin due to natural occurring pollutant concentrations that prevent attainment of the use

DEQ is updating uses in streams in the Upper Deschutes River Basin from Bull Trout spawning use to Core Cold Water Use (Figures 3-9 and 3-10). DEQ also is updating waters upstream of all these waters that were designated for Bull Trout spawning use in order to provide cold water to these waters. These reclassifications are justified under 40 CFR 131.10(g), Factor 1: "Naturally occurring pollutant concentrations prevent attaining the use." Habitat requirements for Bull Trout spawning are described in the introduction to Section 3.2.1.

These waters are not currently Bull Trout spawning habitat, but were identified in the ODFW Fish Habitat Database as potential Bull Trout spawning habitat in 2003, or were upstream waters designated to protect potential Bull Trout spawning habitat. The Bull Trout Working Group, which includes ODFW and Forest Service biologists who are local experts on Bull Trout in the Deschutes Basin, determined that the Bull Trout spawning use is not attainable due to naturally occurring temperatures in these waters.

Upper Deschutes River and tributaries, not including Crane Prairie Reservoir, and Wickiup Reservoir (Figure 3-9). Temperature modeling indicates that the Bull Trout spawning criterion is not attainable in these waters, even absent the presence of reservoirs and with full flow. In a 2008 report, modeling conducted using Heat Source on behalf of DEQ in the mainstem Deschutes River (Figure 3-10). Under the "Natural Flow" scenario that was modeled, which assumes no reservoirs (including Wickiup Reservoir), peak 7-DADM temperatures do not attain the 12°C temperature that supports Bull Trout spawning throughout the river, including in its headwaters in Lava Lake and even in the absence of Wickiup Reservoir.

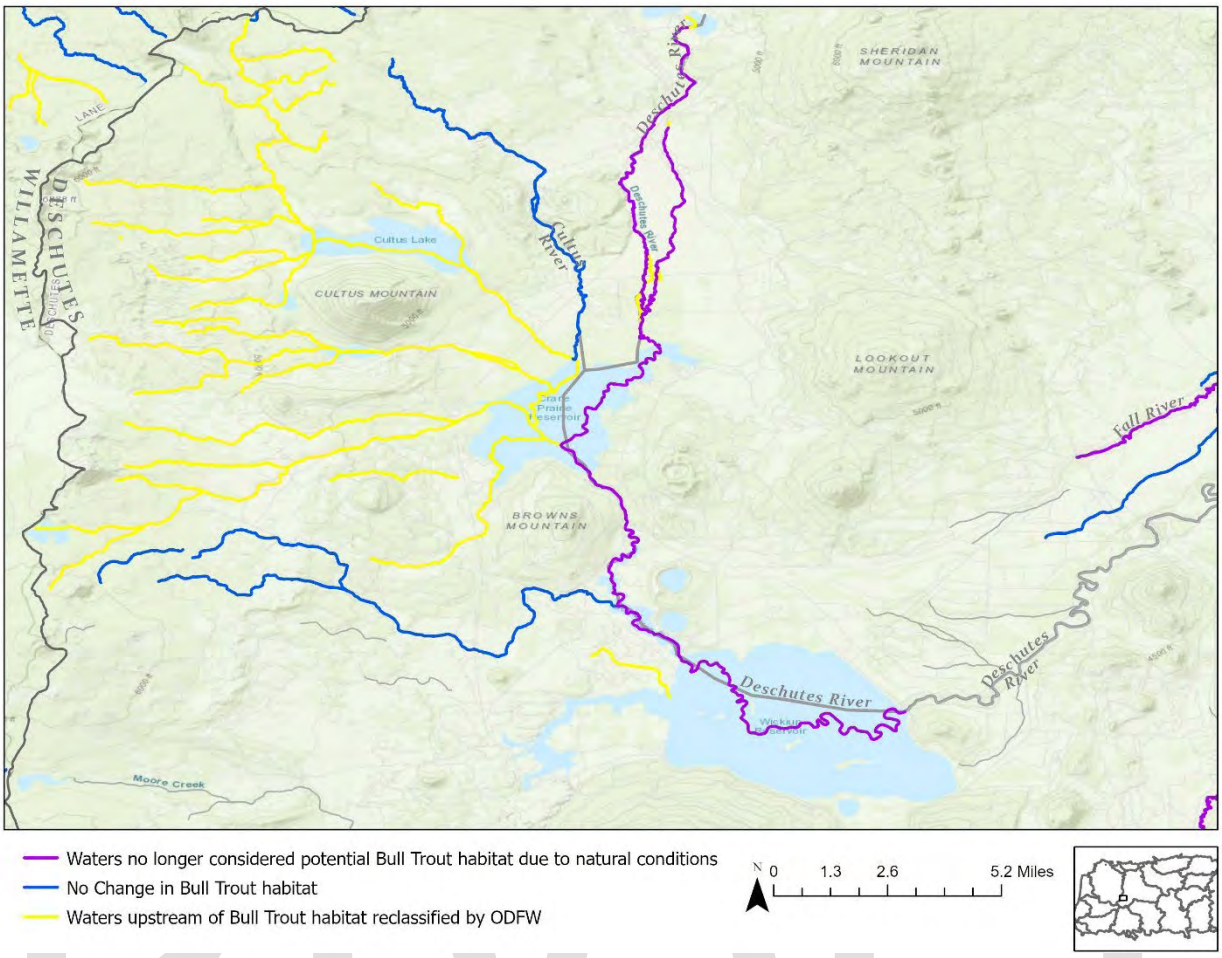

Figure 3-9. Waters that cannot attain Bull Trout Spawning Use due to natural conditions, Upper Deschutes River.

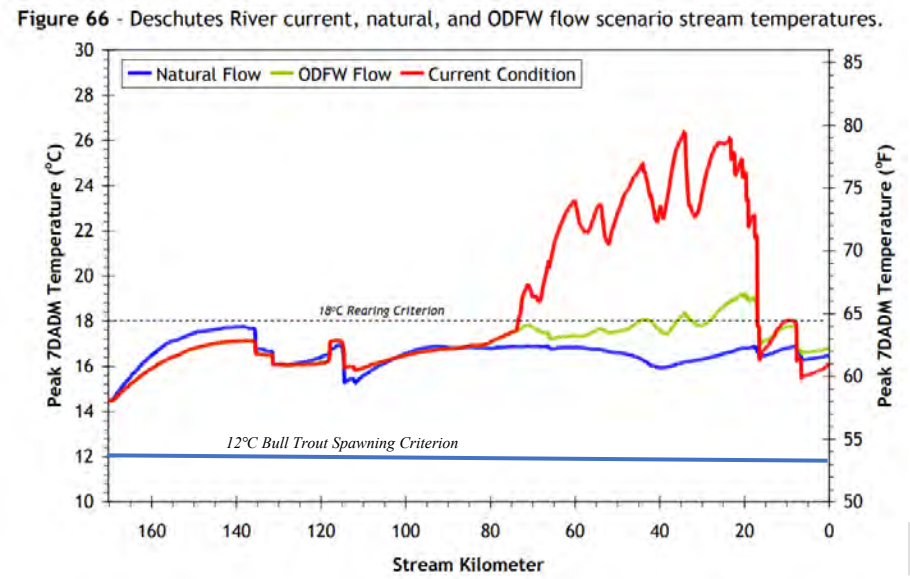

Figure 3-10. Temperature modeling for the Deschutes River. Excerpted from Watershed Sciences, Inc. and MaxDepth Aquatics, Inc. 2008. Deschutes River, Whychus Creek, and Tumalo Creek Temperature Modeling. Prepared for Oregon DEQ. 93 pp.

Crescent Creek (Figure 3-11).[21] The Bull Trout Work Group determined that temperatures in Crescent Creek is not suitable for Bull Trout spawning. Crescent Creek is the outlet to Crescent Lake, a large natural lake lying high on the east slope of the Cascades at an elevation of 4839 feet. The lake and its drainage basin are entirely within the Deschutes National Forest. It is a landscape blanketed with a thick coniferous forest of both fir and pine species, except for areas of rock outcrops at higher elevations.

Water quality in Crescent Lake is excellent and it is distinctly oligotrophic. The lake is sometimes exposed to strong winds, which help produce a relatively deep (50 to 60 feet) thermocline during summer stratification. {DEQ will provide information about water temperature when it becomes available.}

Portions of Odell Creek downstream of Odell Lake (Figure 3-11). The Bull Trout Work Group determined that temperatures in portions of Odell Creek directly downstream of Odell Lake are not suitable for Bull Trout spawning in these waters. The Work Group retained other waters downstream of Maklaks Creek and a nearby unnamed tributary as potential Bull Trout spawning habitat; these waters will remain designated for Bull Trout spawning.

Odell Lake is a moderately large, deep natural lake located in the Oregon Cascades Range, adjacent to Willamette Pass. The lake is relatively deep and was formed as a glacial trough during the recent ice-age, approximately 11,000 years ago). Three major tributaries and a number of intermittent streams flow into Odell Lake and surface water discharges through the outlet at Odell Creek on the east end.

Peak summer surface temperatures in Odell Creek do not support Bull Trout spawning, because it is fed by naturally high temperatures in Odell Lake. A 2004 DEQ study measured lake temperatures at several depths, including a depth of 1 meter using thermistors in the west, center, and east sides of the lake. Peak temperatures measured above 20°C on the east side of the lake (Figure 3-12), far above the 7-DADM of 12 °C needed to support Bull Trout spawning. This conclusion is supported by the Bull Trout Working Group, which determined that Odell Creek in this reach is not potential Bull Trout spawning habitat.

[21] Information taken from Johnson, et al. 1985. *Atlas of Oregon Lakes.*

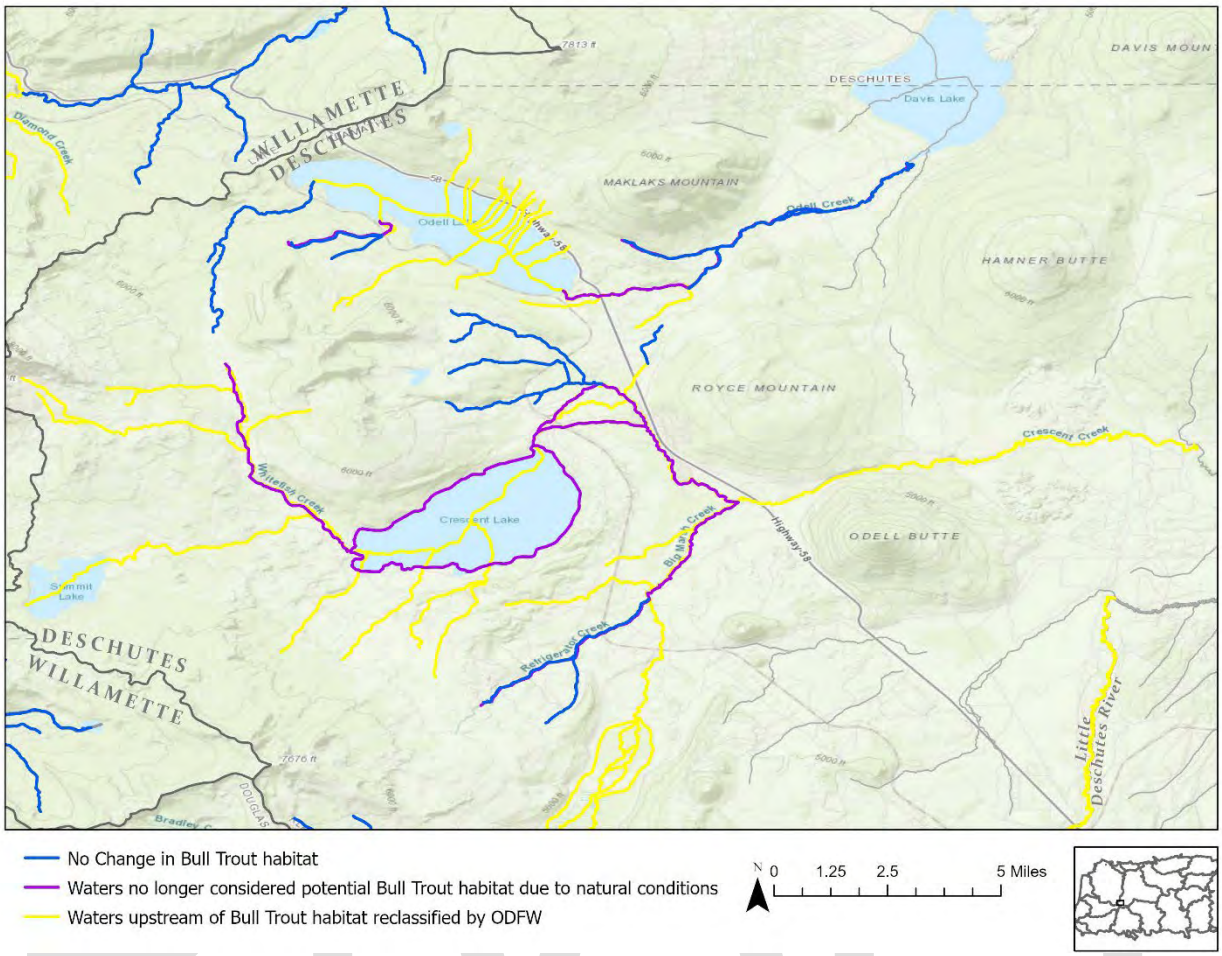

Figure 3-11. Waters that cannot attain Bull Trout Spawning Use due to naturally occurring temperatures. Upper Deschutes Watershed.

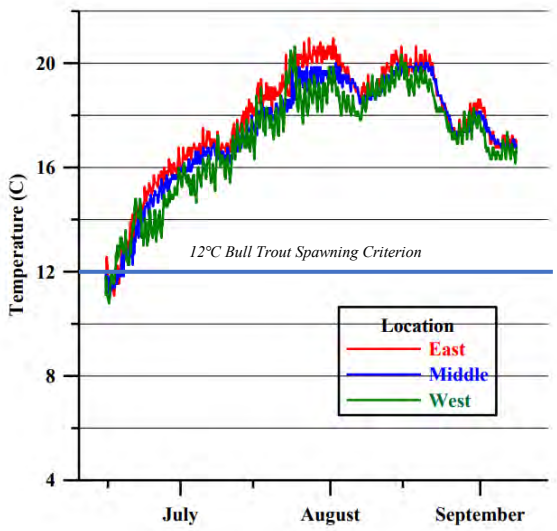

Figure 3-12. Surface temperatures in Odell Lake, 2004. Excerpted from Eilers, J.M., B.J Eilers, K. Moster, A. St. Armand. 2006 (Revised). An Analysis of Current and Historic Conditions in Odell Lake in Support of a TMDL Nutrient Loading Assessment. Report prepared for RTI International through MaxDepth Aquatics, Inc. and Carollo Engineers.

Reclassification of Bull Trout spawning use in Klamath River Basin (Sycan River Core Area)

DEQ is proposing to update Bull Trout spawning use in Sycan Marsh and River and Long Creek in the Sycan River Core Area of the Klamath River basin (Figure 3-13) to Core Cold Water Use. This update is justified under 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." In 2003, DEQ designated these waters for Bull Trout spawning based on the best information available at the time regarding spawning distribution in the area. Since then, ODFW expended significant effort to monitor bull trout in relation to migratory behavior and brook trout (a competitor to Bull Trout) distribution.[22] Updating Long Creek to Core Cold Water Use is consistent with the US Fish and Wildlife Service final critical habitat rule, which designates Long Creek as FMO habitat.

[22] Gunckel, Stephanie, ODFW/USFWS Bull Trout liaison. *Personal communication.* May 26, 2022.

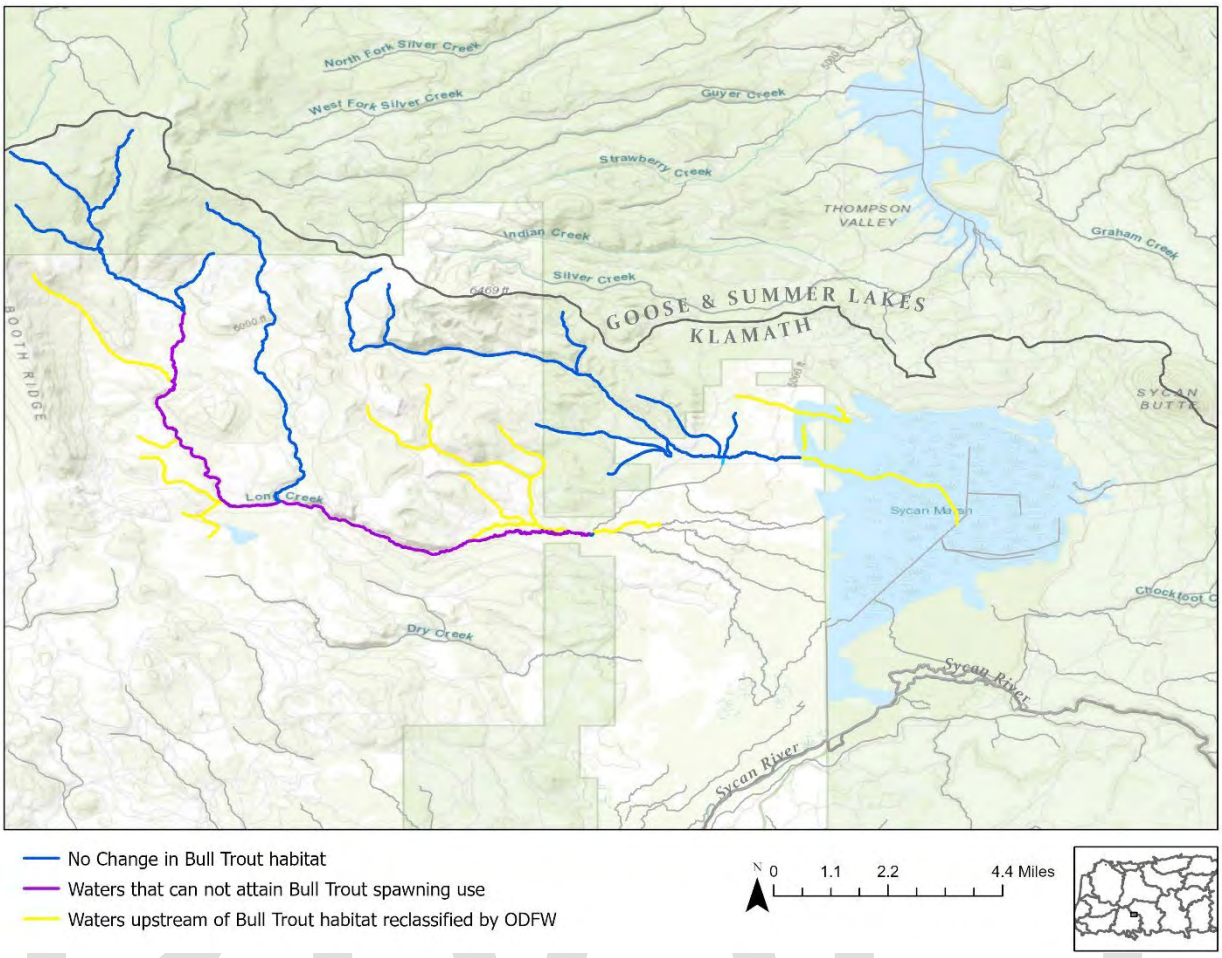

Figure 3-13. Waters that cannot attain Bull Trout Spawning Use, Sycan River Core Area, Klamath Basin. Yellow lines indicate waters that are no longer considered potential habitat by ODFW. Blue lines indicate waters that will remain designated for Bull Trout Spawning Use.

Updates to Bull Trout spawning use in Klamath River Basin (SF Sprague River)

DEQ is reclassifying the South Fork Sprague River and its tributaries from Bull Trout spawning use to Core Cold Water Use (Figure 3-14). These reclassifications are justified under 40 CFR 131.10(g), Factor 1: "Naturally occurring pollutant concentrations prevent attaining the use." Bull Trout spawning and juvenile rearing use is not attainable in the waters of the South Fork Sprague River and its tributaries due to naturally occurring high temperatures.

These waters are not currently Bull Trout spawning habitat, nor is Bull Trout an existing use. ODFW classified these waters as potential Bull Trout spawning habitat in 2003. The Bull Trout Working Group did not consider the South Fork Sprague River as potential Bull Trout spawning habitat because thermal conditions are not suitable for Bull Trout spawning. DEQ temperature modeling, conducted for the 2002 Upper Klamath Lake Drainage Temperature TMDL, supports the conclusion. Modeling indicates that the majority (more than 85%) of the South Fork Sprague River has a maximum system potential temperature greater than 12.0 ℃ (53.6 ℉) (Figure 3-15)

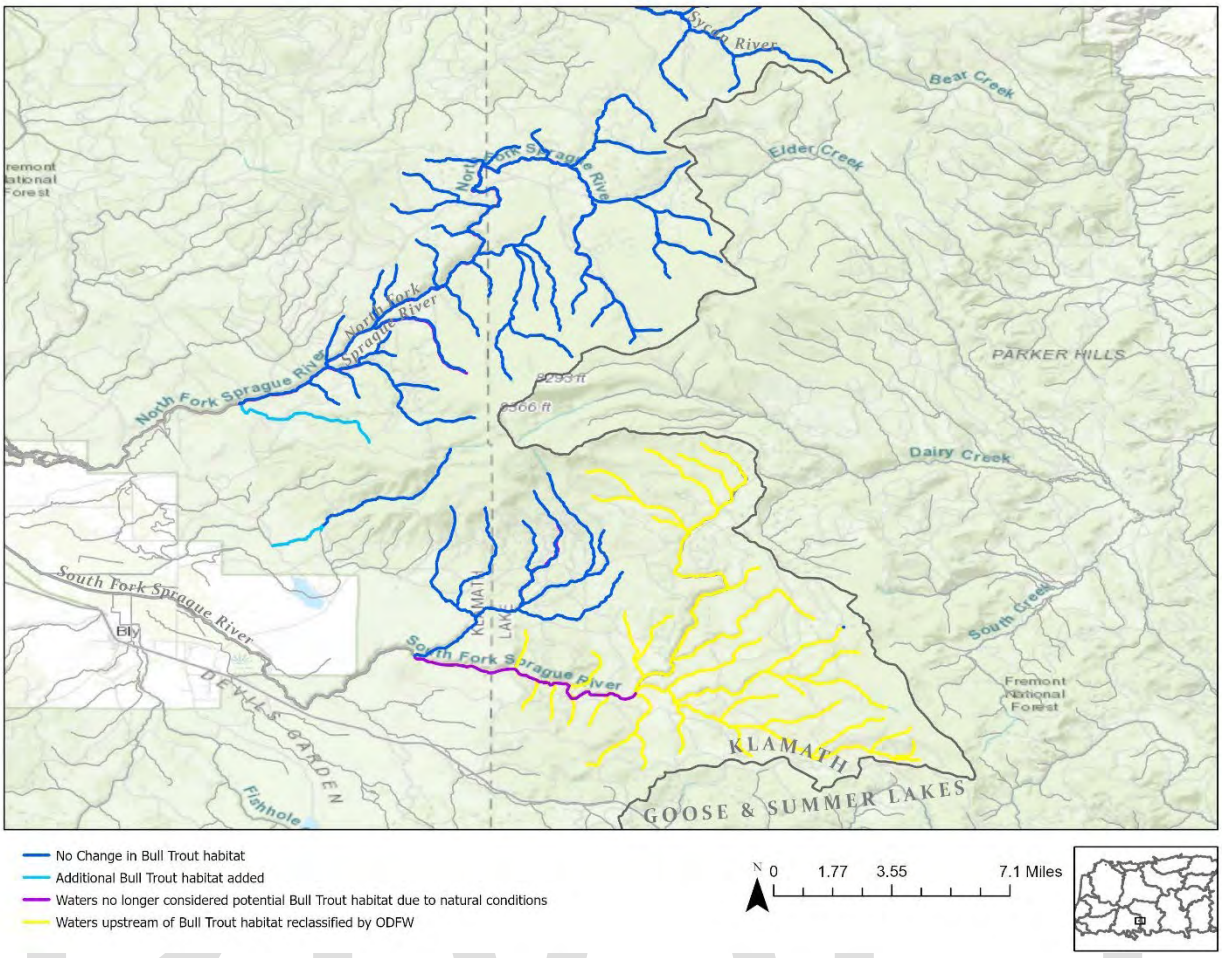

Figure 3-14. Updates to Bull Trout Spawning Use, South Fork Sprague River, Oregon. Purple lines indicate waters that ODFW no longer considers potential Bull Trout spawning habitat because natural conditions do not support attainment of the Bull Trout spawning use. Yellow lines indicate waters ODFW no longer considers potential Bull Trout Spawning habitat. Dark blue lines are waters where Bull Trout spawning use is not changing. Light blue lines indicate waters DEQ is proposing to add to Bull Trout Spawning Use based on new information from ODFW.

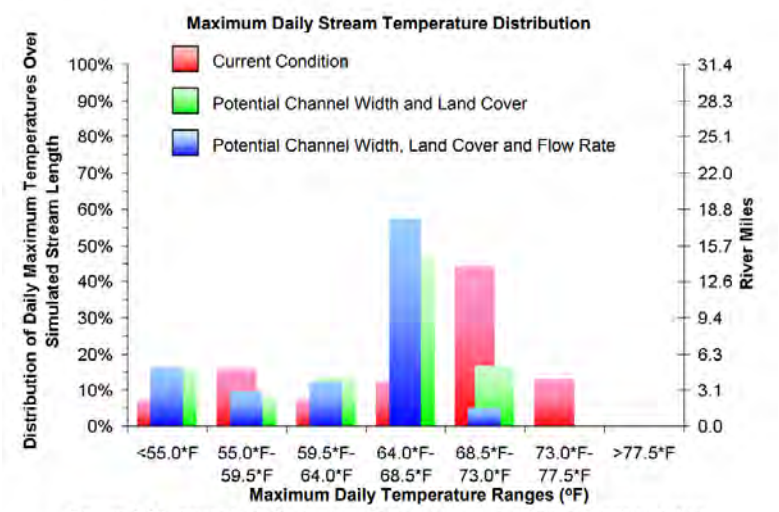

Figure 3-15. Modeled system potential temperature, South Fork Sprague River. Source: Oregon DEQ. 2002. Upper Klamath Lake Drainage Total Maximum Daily Load (TMDL) and Water Quality Management Plan (WQMP).

Reclassification of Bull Trout spawning use in the McKenzie River Watershed, Willamette River Basin

DEQ is proposing to reclassify Bull Trout Spawning use in the mainstem McKenzie River between its confluence with the South Fork McKenzie River and its confluence with Lost Creek, as well as Horse Creek and its tributaries other than Separation Creek and its tributaries (Figure 3-16). These refinements are justified under 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

In 2003, these streams were identified as "primarily spawning" in the ODFW FHD. However, these streams have coarse substrates, strong flows, and very little holding water that support spawning Bull Trout. ODFW district and research staff have conducted spawning surveys around the basin and never documented spawning activity in these sections of the river. Moreover, the ODFW Bull Trout Working Group determined that these streams do not serve as potential habitat for future restoration. As a result, the "primarily spawning" designation was reclassified to "primarily rearing"[23] This designation is consistent with the USFWS Critical Habitat rule, which classifies these waters as critical habitat for foraging, migration, and overwintering, but not for spawning and rearing.[24]

[23] *Pers. Comm.*, Stephanie Gunckel, Statewide Bull Trout Coordinator, Oregon Department of Fish and Wildlife, April 1, 2022.

[24] [24] USFWS 2010. Bull Trout Critical Habitat Final Rule Justification. Idaho Fish and Wildlife Office, Boise, Idaho, Pacific Region, Portland, OR. 1035 pp. Discussion of streams included as FMO habitat in the Upper Willamette Critical Habitat Unit start on p. 217.

[24] See Final Critical Habitat rule *at* 75 FR 63899 and 63902.

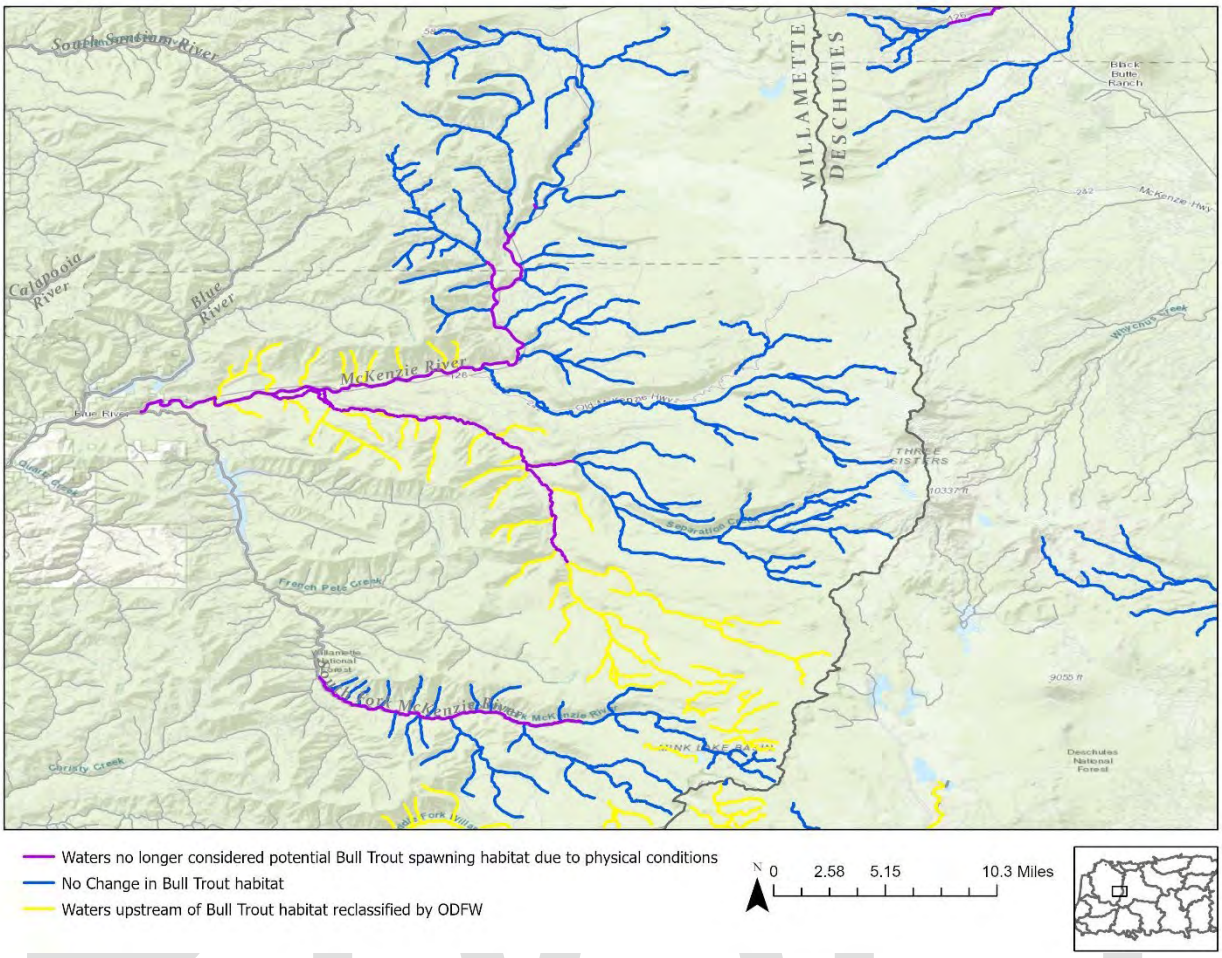

Figure 3-16. Updates to Bull Trout spawning use in the McKenzie subbasin (Willamette Basin). Purple lines indicate waters where ODFW reclassified Bull Trout spawning habitat to Bull Trout rearing habitat because physical conditions do not support Bull Trout spawning. Yellow lines indicate waters that were classified as Bull Trout spawning in 2003 because they were upstream of waters ODFW no longer classifies as spawning.

Re-classification of Bull Trout spawning use in Willamette River Basin (NF MF Willamette River to Waldo Lake and Salt Creek)

DEQ is reclassifying the North Fork Middle Fork Willamette River and its tributaries, including Salt Creek, from Bull Trout spawning use to Core Cold Water Use (Figure 3-17). These reclassifications are justified under 40 CFR 131.10(g), Factor 2: "Naturally occurring pollutant concentrations prevent attaining the use." These waters are too warm to support Bull Trout Spawning, even under system potential conditions.

Bull Trout spawning is not an existing use in these waters. DEQ designated these waters as Bull Trout spawning habitat in 2003, because ODFW considered them as potential Bull Trout spawning habitat based on the best available information. As a result of having better information, the Bull Trout Working Group determined that Bull Trout spawning is not attainable in these waters, because naturally occurring temperatures cannot support the use.[25]

[25] Gunckel, Stephanie. *Notes from Oregon Bull Trout Working Group.* Sent to ODEQ April 11, 2022.

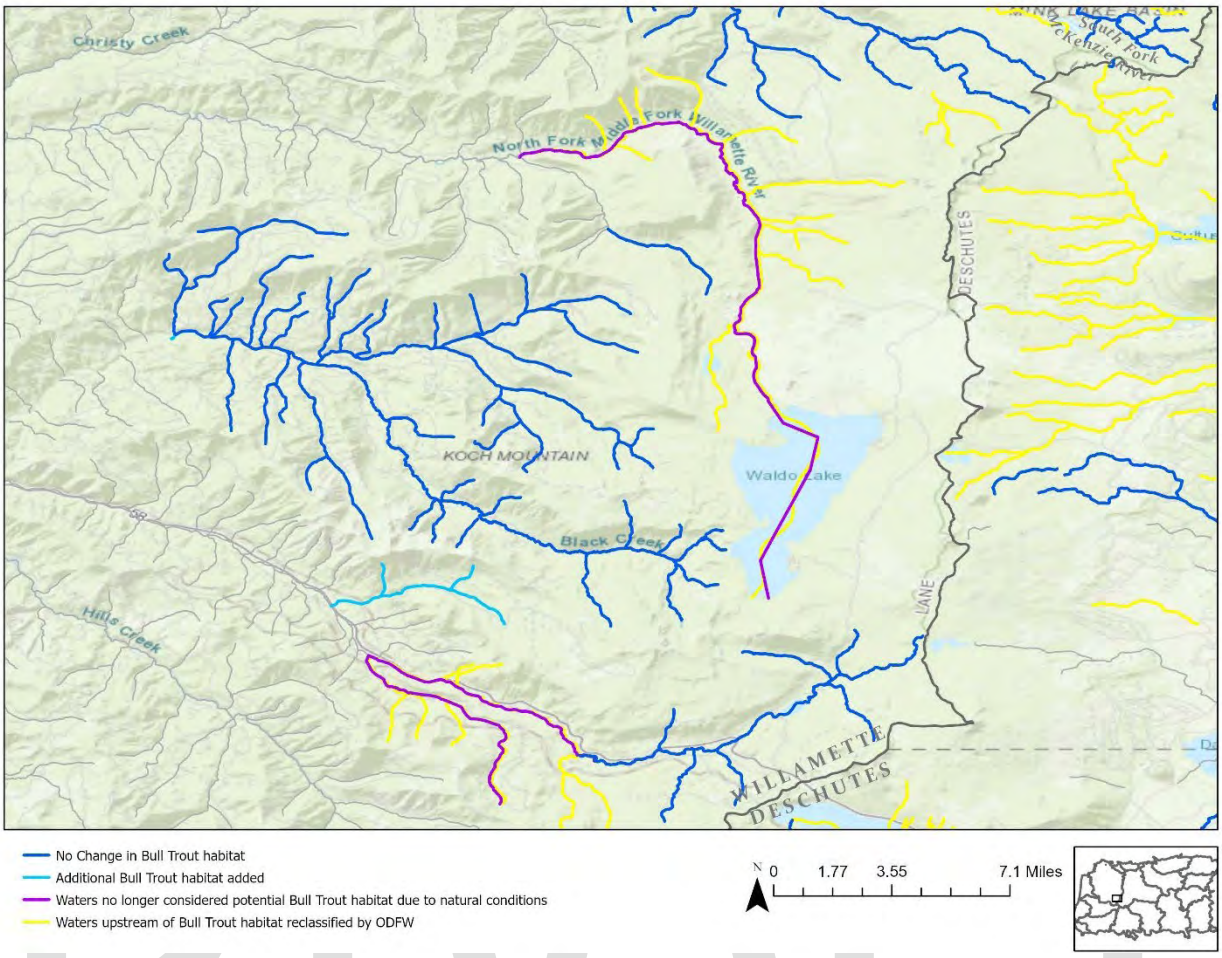

Figure 3-17. Updates to Bull Trout spawning use in the North Fork Middle Fork Willamette River subbasin (Willamette Basin). Purple lines indicate waters that ODFW no longer considers potential Bull Trout spawning habitat because natural conditions do not support attainment of the Bull Trout spawning use. Yellow lines indicate waters that were classified as Bull Trout spawning in 2003 because they were upstream of those waters. Dark blue lines indicate waters that will remain designated for Bull Trout spawning use.

3.2.2 Highest attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for all waters described here is core cold water habitat, which is the most stringent use besides Bull Trout Spawning and protects sub-adult and adult Bull Trout use and other cold water biota. This use is associated with the most stringent year-round temperature criterion, other than Bull Trout spawning.

4 Changes to Seasonal Salmon and Steelhead Spawning Use

4.1 Corrections due to change in GIS hydrography from StreamNet to NHD

4.1.1 Description and Justification

Many small changes to the seasonal salmon and steelhead spawning use designations result from a change in the GIS hydrography base layers DEQ uses for mapping Oregon's streams. Oregon is transitioning its aquatic life use designations from the StreamNet hydrography used in 2003 (1:100,000 scale) to the Oregon Geospatial Framework standard of NHD-High Resolution National Hydrography Data Set (1:24,000 scale). In 2003, DEQ and its partners did not have the ability to split segments in the StreamNet hydrography to match the extent of ODFW's spawning habitat. If even a small portion of spawning habitat overlapped with a segment, the entire segment was classified as spawning habitat on DEQ's maps. Now that DEQ is using the NHD High Resolution hydrography that contains finer segmentation, use maps can more accurately depict the spawning reach endpoint specified by ODFW (Figure 4-1). The actual upstream extent of spawning habitat has not changed in these streams from that identified in 2003.

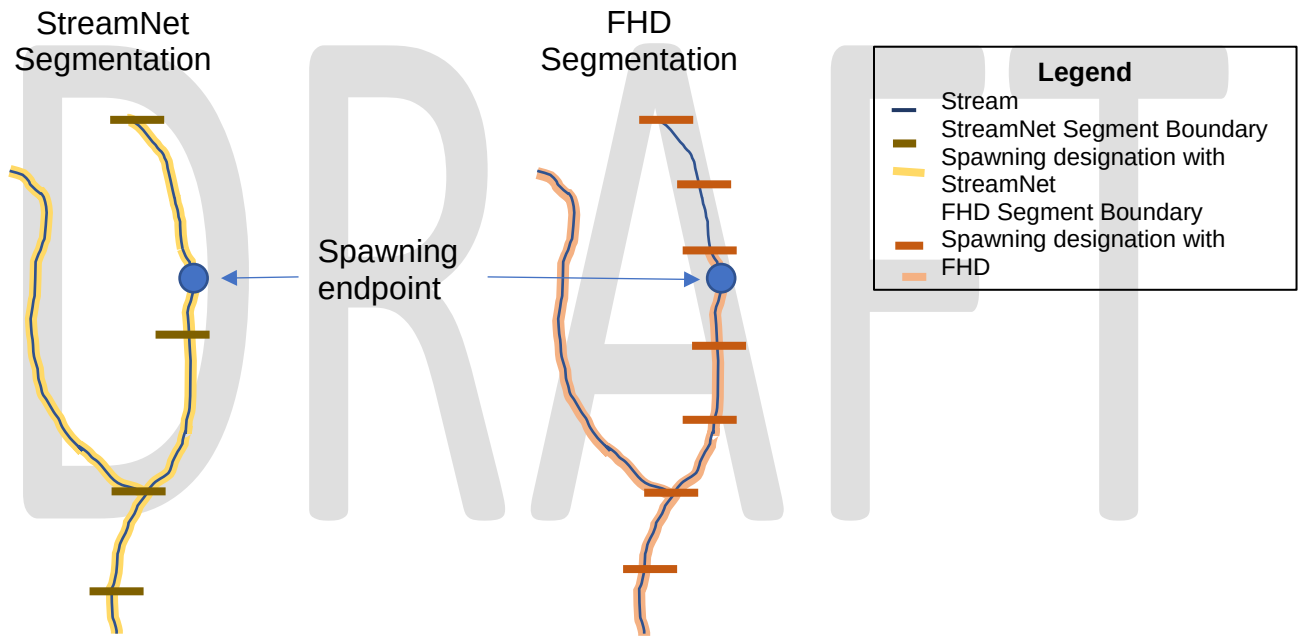

Figure 4-1. Example depiction of spawning endpoints using StreamNet (1:100000 scale) vs. NHD (1:24000 scale). The ODFW endpoint has not changed but use designation maps can now more accurately match the data.

These corrections to salmon and steelhead spawning use are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." Spawning use is not attainable in these waters either because they lack the physical habitat features required for spawning or because they are not accessible due to a natural barrier.

When surveying salmon spawning habitat, in addition to identifying spawning fish, ODFW considers physical habitat characteristics of spawning habitat. This information is provided on spawning survey evaluation forms used in the field by ODFW biologists. Forms include an evaluation of upstream migration barriers, spawning gravel ranking (from "none" to "high") and distribution, and a habitat ranking, which considers gravel size, quantify, flow, abundance, tail outs, and gradient. The form also includes a space for general comments about habitat.[26] At some point in the headwaters of every

[26] Oregon Department of Fish and Wildlife. 2016. Oregon Adult Salmonid Inventory and Sampling (OASIS) Project: Salmon Spawning Survey Procedures Manual. 110 pp. Spawning survey and instructions found on page 37.

watershed, the streams will become too steep, shallow, or narrow to support salmon and steelhead spawning. This information is compiled and considered by professional fish biologists to identify the upstream extent of spawning habitat.

In some cases, upstream spawning habitat endpoints coincide with locations identified in ODFW's database on fish passage barriers. These barriers may be natural, such as waterfalls or steep gradients, or manmade, such as culverts. In streams where manmade blockages, such as culverts or dams, block fish passage to salmon and steelhead spawning habitat that occurs upstream, DEQ is not proposing to revise the spawning use. It may be feasible to replace the culvert and restore passage in the future through ODFW's fish passage barrier program, thus allowing spawning further upstream. In these waters, it makes sense to maintain spawning use and the associated temperature and dissolved oxygen criteria in order to protect the water quality in such waters as future spawning habitat.

The resultant change in the spawning use maps does not remove a use from the waterbodies or a segment, but corrects the spatial extent of suitable spawning habitat, which is now possible due to the improved GIS hydrography. Spawning is not an existing use in these reaches based on the best ODFW information.

4.1.2 Highest attainable use

In waters where the seasonal salmon and steelhead spawning use does not occur and is being corrected, the year-round use remains the designated use. To the extent that the year-round use has changed in any of these streams or stream segments, those changes are documented in the appropriate sections of this document.

Maps and a table with an inventory of stream reaches for which salmon and steelhead spawning designations have been corrected due to improved hydrography is included in Appendix XX, including the year-round use that remains in place for these waterbodies. DEQ has included an example map here (Figure 4-2 showing corrections due to the change in hydrography in the Rogue Basin) for illustrative purposes.

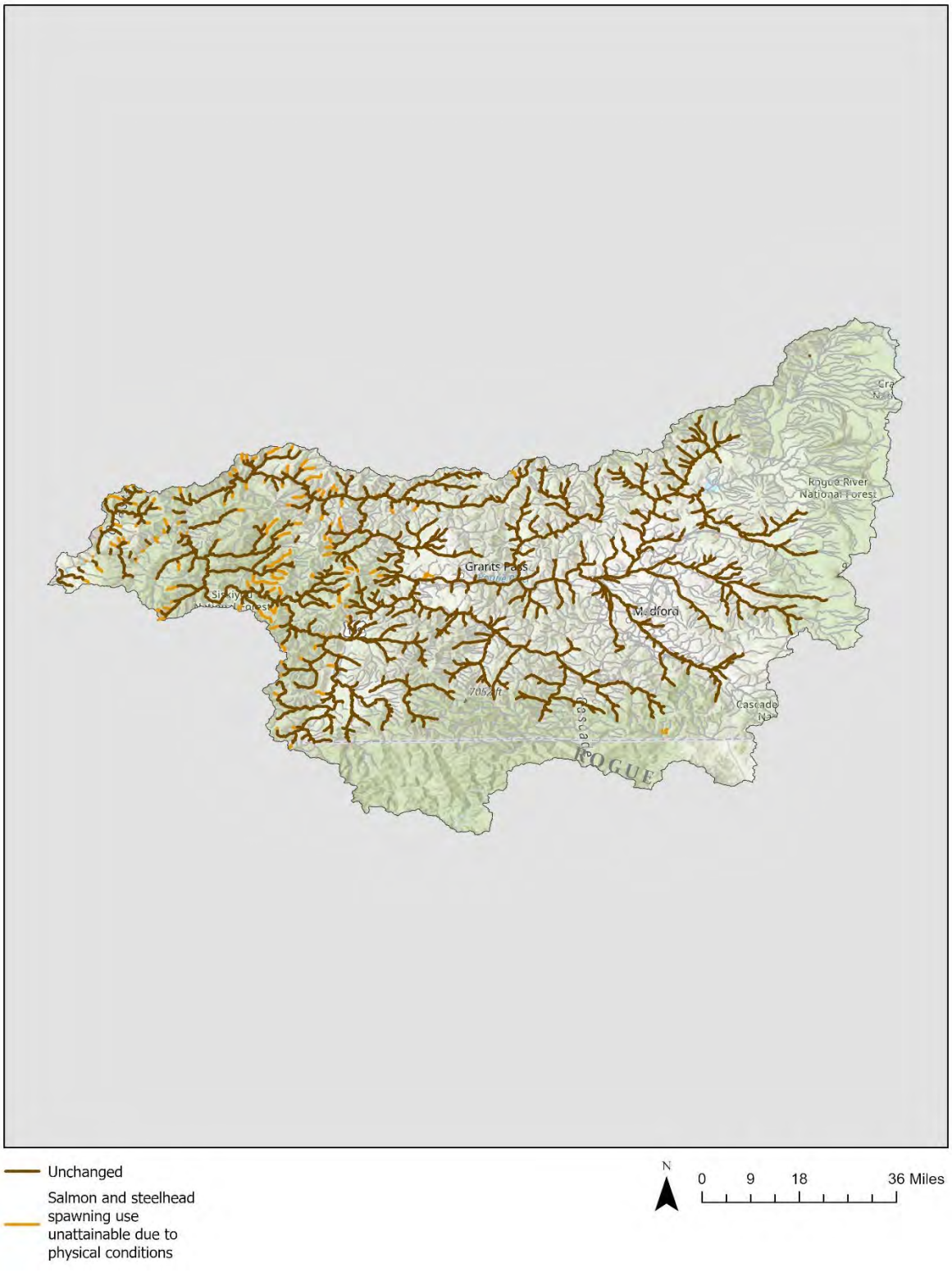

Figure 4-2. Map depicting corrections (orange lines) to spawning extent resulting from improved hydrography in Rogue River Basin, Oregon and where spawning isn't attainable due to physical conditions.

4.2 Corrections to salmon and steelhead spawning use due to improved mapping of estuarine waters and tidally influenced freshwaters

4.2.1 Description and Justification

DEQ is correcting the geographic extent of spawning use initially designated in 2003 that are located within estuarine and tidally influenced reaches. These corrections are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." There was no intention in 2003 to designate reaches below head of tide for spawning use. Spawning is not an existing use in these reaches, nor is it an attainable use in these reaches because habitat conditions do not support salmon and steelhead spawning, unless in site-specific cases it is identified as spawning habitat by ODFW in the current FHD. In 2003, when DEQ developed the use maps, there was insufficient information to accurately delineate the full extent of tidal influence, so in some cases it was estimated by ODFW. As a result, several reaches were designated for spawning use in error that are not spawning habitat.

Now ODFW and DEQ use the Coastal and Marine Ecological Classification Standard (CMECS) to identify estuarine waters and tidally influenced reaches. CMECS is a federal classification standard developed jointly by the USGS, NOAA, and the EPA to delineate estuary zones and is used to implement multiple coastal management programs by state and local agencies[27]. Additional information is provided in the ODEQ document titled *Methods for Delineating Estuarine Water Type for Mapping Beneficial Uses and Applying Criteria (2017).* The CMECS categories "Estuarine Coastal", "Estuarine Coastal – Diked", "Estuarine Open Water", and "Estuarine Open Water Subtidal" include brackish waters of varying depth with a salinity gradient greater than 0.5 parts per trillion at least 90% of the time. DEQ uses these categories to define the extent of estuarine waters. CMECS also identifies the extent of tidally influenced freshwaters and occurrence of fine/silty substrates in Oregon.

Salmon and steelhead spawning is precluded in tidally influenced waters for several reasons. Because stream reaches influenced by tides will have slowed flow velocities, or even no or reserved flow, during a significant portion of each day, they tend to be depositional reaches. Therefore, the substrate is generally sand, fines or soft mud, rather than the gravel substrate needed for redd construction. Moreover, sand and sediment deposition can clog redds, decreasing dissolved oxygen needed for embryo survival.[28] The riffle habitats needed for spawning are not present and flow velocities in tidal waters are not sufficient to aerate redds. Salmonid redds are typically bowl-shaped depressions with a deeper, more abrupt depth gradients at the leading edge (upstream), gradually tapering to shallower depths on the tail end (downstream). This redd geometry facilitates intrusion of oxygenated water from the overlying flow into the redd and its gravels (Figure 4-3). The slack water or flow reversal that occurs in a tidally influenced river or stream, does not achieve the flow conditions necessary to adequately circulate the redd and intergravel water. In addition, estuarine waters and marine waters are generally lower in dissolved oxygen than free flowing upland waters.

[27] See https://iocm.noaa.gov/cmecs/ and https://www.coastalatlas.net/documents/cmecs/PhaseI/EPSM_CoreGISMethods.pdf for additional information.

[28] Burril, S.E., Zimmerman, C.E., and Finn, J.E., 2010, Characteristics of fall chum salmon spawning habitat on a mainstem river in Interior Alaska: U.S. Geological Survey Open-File Report 2010-1164, 20 p.

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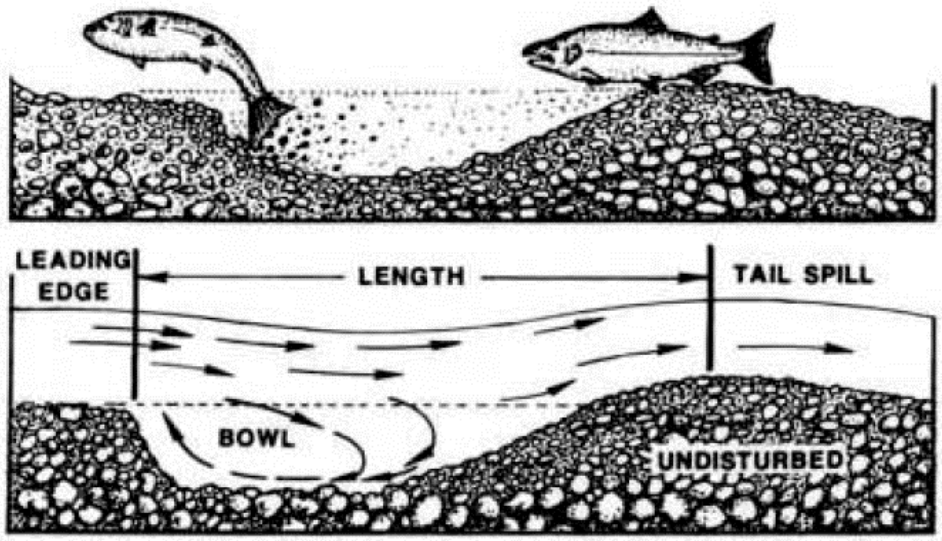

Figure 4-3. From: Lorenz and Eiler 1989. Spawning habitat and redd characteristics of Sockeye Salmon in the Glacial Taku River, British Columbia and Alaska. Transactions of the American Fisheries Society, 118: 495-502

Maps showing waters where the spatial extent of salmon and steelhead spawning designations have been corrected due to improved ability to delineate tidally influenced waters are included here in Figures 4-4 – 4-19.

4.2.2 Highest Attainable Use

In estuarine and tidally influenced waters where salmon and steelhead spawning use is being updated, the current or updated year-round use (per this rulemaking) will be the designated use. For most of these waters, the year-round use is salmon and steelhead rearing and migration. In waters within the geographic boundary of a bay, the year-round use is "oceans and bays" for purposes of applying the temperature standard. For estuarine or marine waters, the year-round use is estuarine waters aquatic life, or marine waters aquatic life for purposes of applying the dissolved oxygen standard. An inventory of all streams where designations are corrected is included in Appendix XX, including information regarding the year-round use of these waterbodies.

Figure 4-4. Estuarine waters and tidally influenced freshwaters where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year-round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-5. Estuarine waters and tidally influenced freshwaters in Young's Bay where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-6. Estuarine waters and tidally influenced freshwaters in Necanicum River Estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year-round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-7. Estuarine waters and tidally influenced freshwaters in Nehalem River Estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-8. Estuarine waters and tidally influenced freshwaters in Tillamook Bay where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

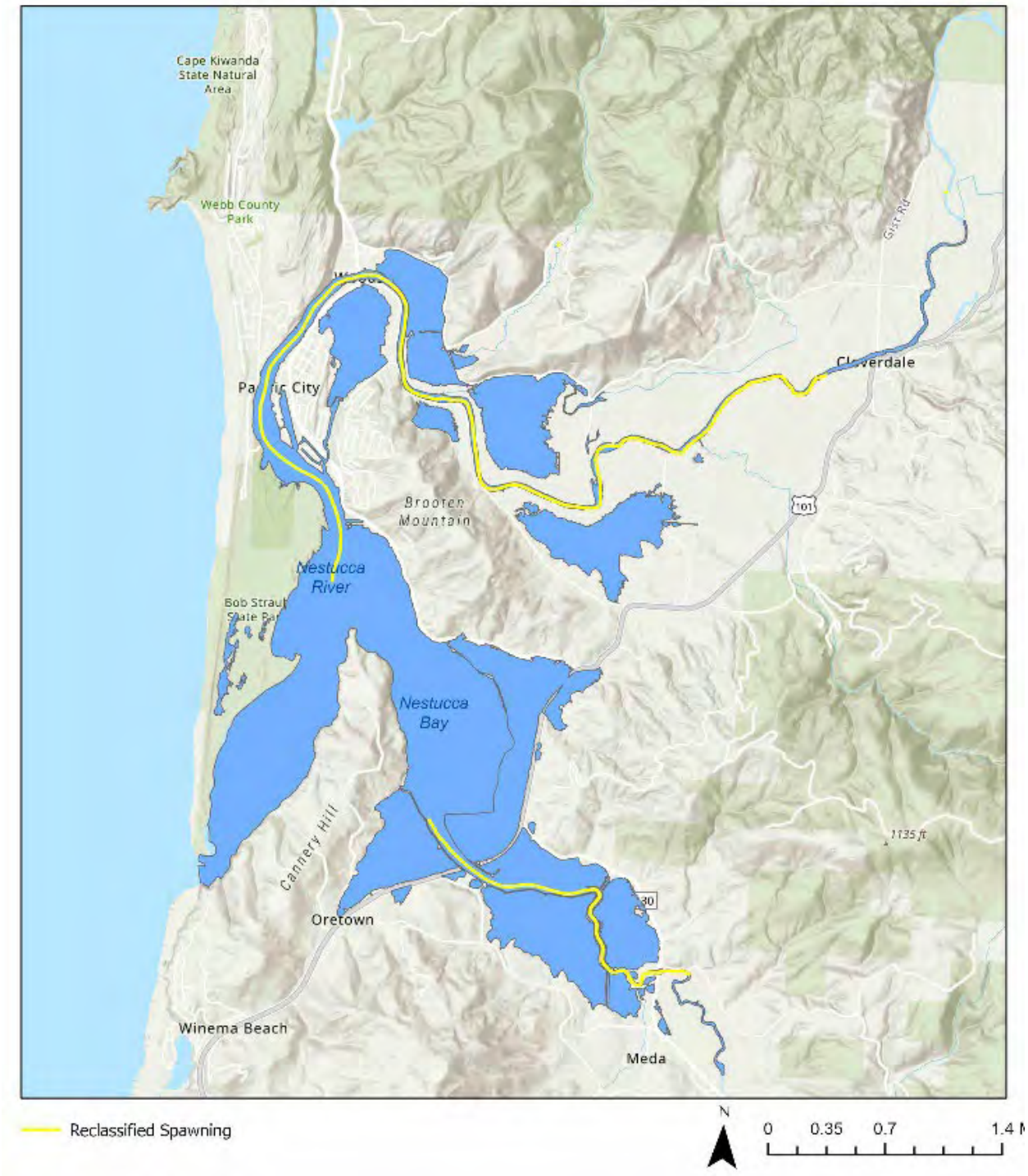

Figure 4-9. Estuarine waters and tidally influenced freshwaters in Nestucca Bay where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

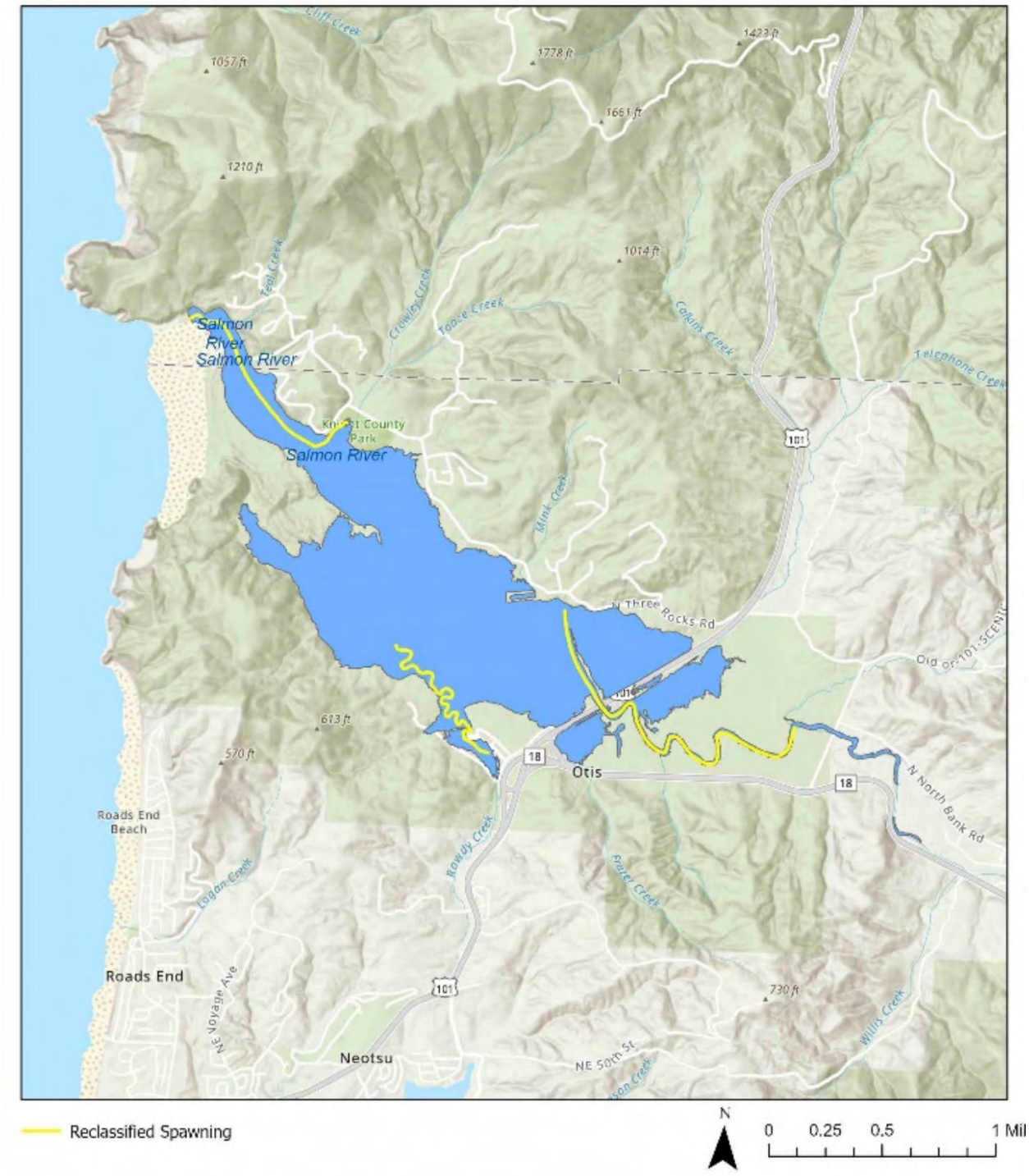

Figure 4-10. Estuarine waters and tidally influenced freshwaters in Salmon River Estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-11. Estuarine waters and tidally influenced freshwaters in Siletz Bay where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-12. Estuarine waters and tidally influenced freshwaters in Yaquina Bay and River estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

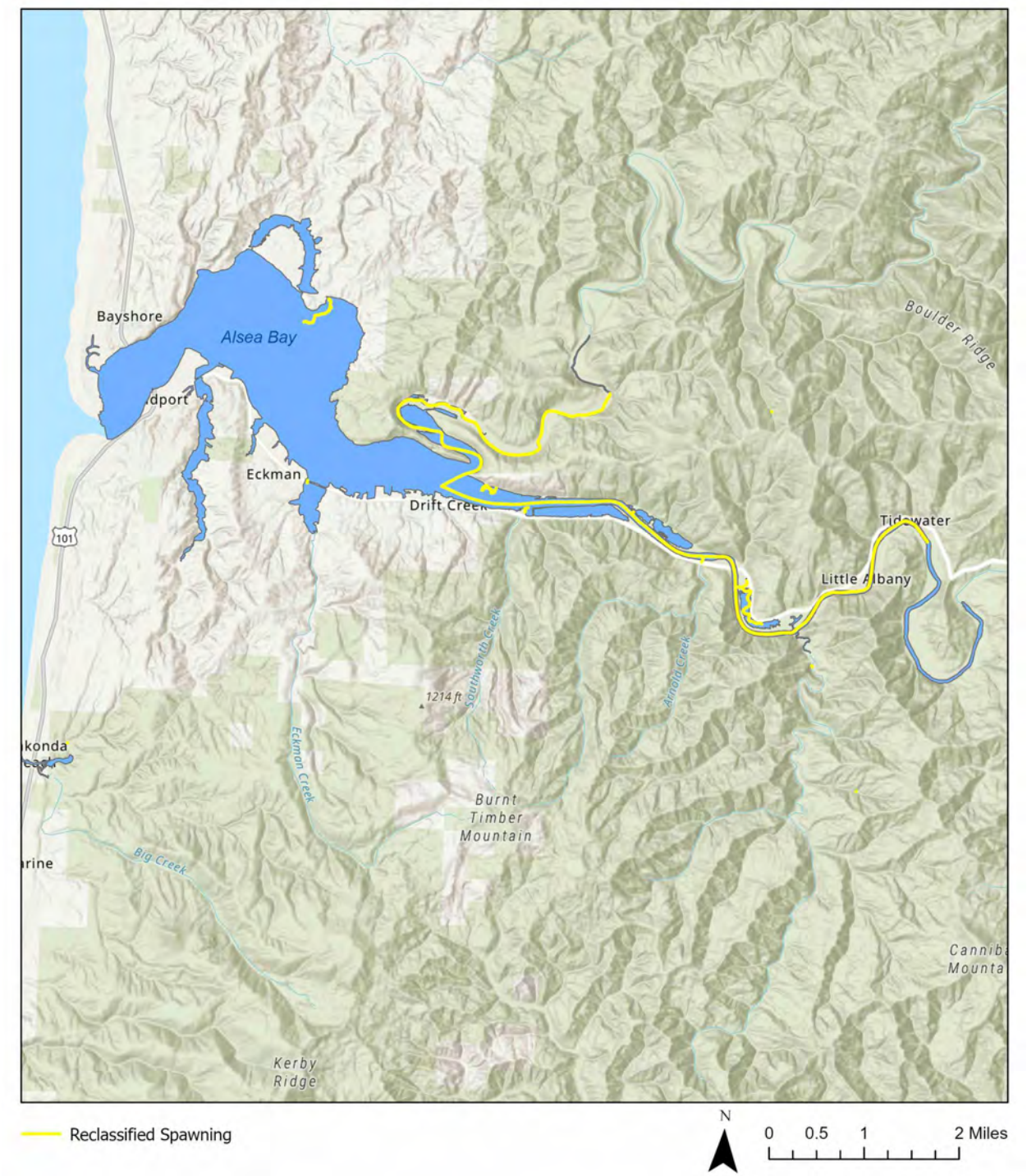

Figure 4-13. Estuarine waters and tidally influenced freshwaters in Alsea Bay and River estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

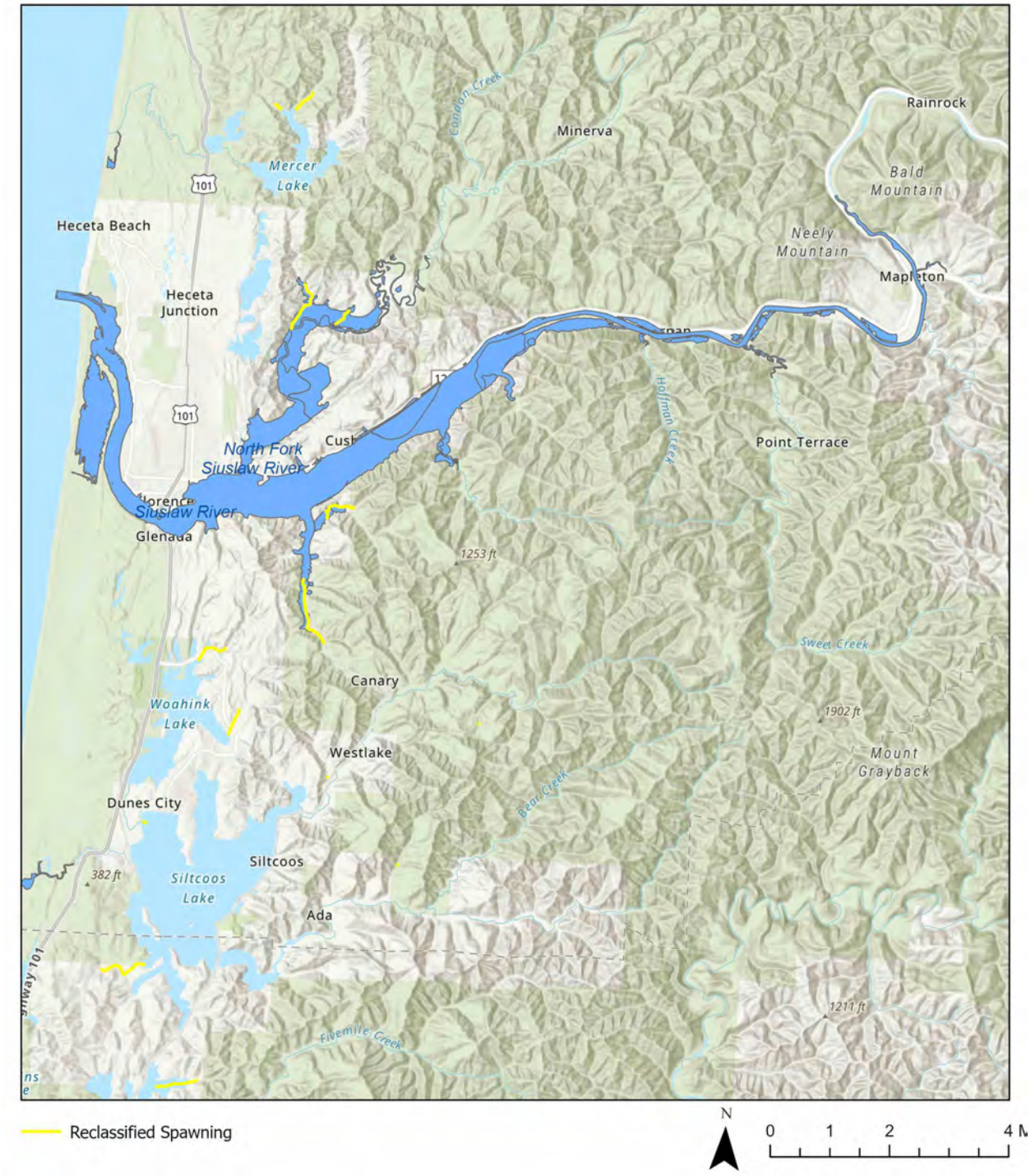

Figure 4-14. Estuarine waters and tidally influenced freshwaters in Siuslaw River Estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-15. Estuarine waters and tidally influenced freshwaters in Umpqua River estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

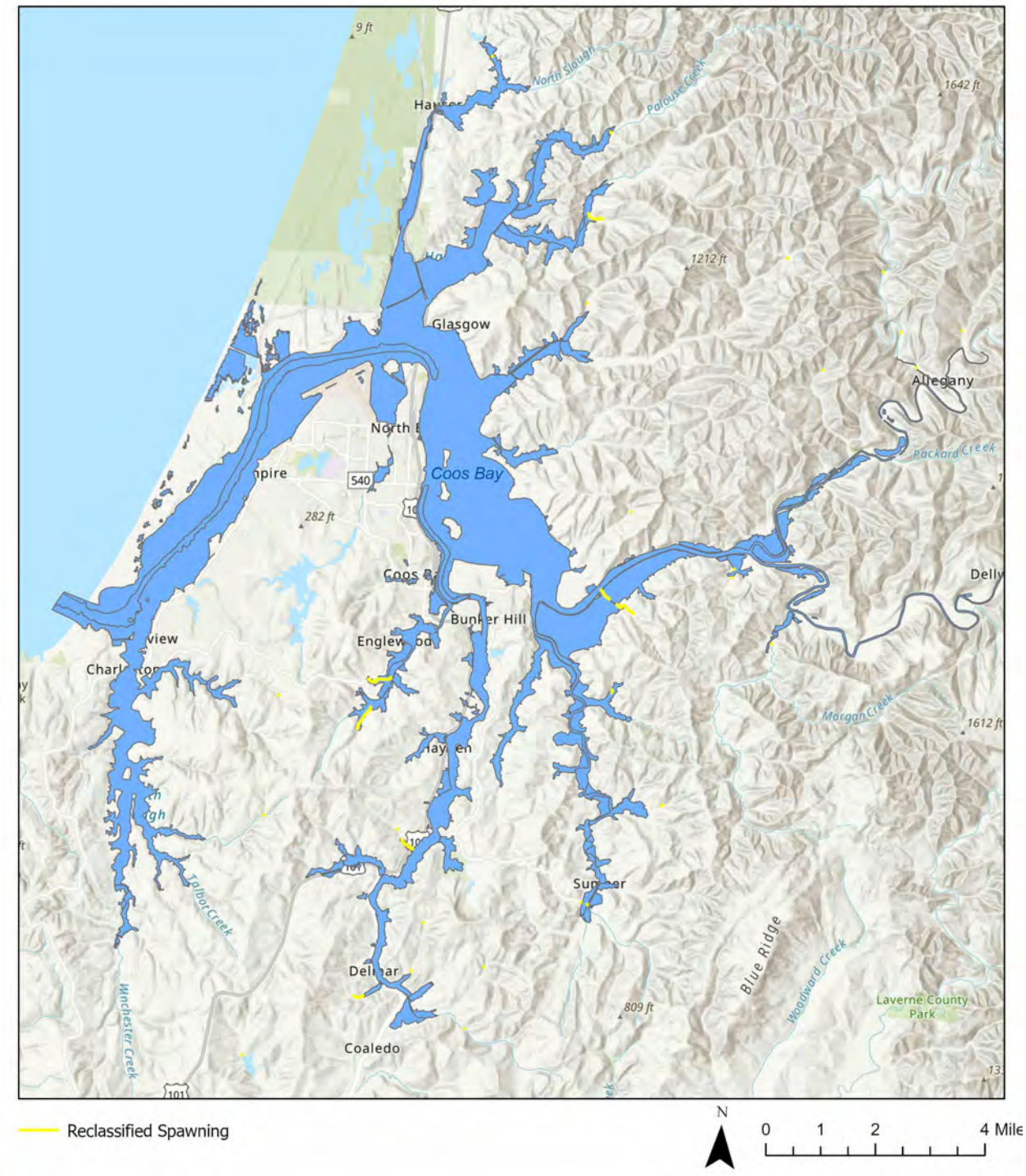

Figure 4-16. Estuarine waters and tidally influenced freshwaters in Coos Bay where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

Figure 4-17. Estuarine waters and tidally influenced freshwaters in Coquille River estuary where salmon and steelhead spawning is not a use. The spawning use designations are being updated to a year round use. Waterbodies depicted in yellow are within the boundary of estuarine waters and not identified by ODFW as spawning habitat by salmonid species.

4.3 Spatial refinements to salmon and steelhead spawning use based on changes to ODFW Fish Habitat Database

4.3.1 Description and Justification

DEQ is proposing to make numerous refinements to the spatial extent of salmon and steelhead spawning use designations based on ODFW data that has been updated since 2003. These refinements are based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

Since DEQ initially designated salmon spawning habitat in 2003, ODFW has done additional surveying of spawning habitat and adjusted the upstream extent of spawning habitat in many streams. When surveying salmon spawning habitat, in addition to identifying spawning fish, ODFW considers physical habitat characteristics of spawning habitat. This information is provided on spawning survey evaluation forms used in the field by ODFW biologists. The biologists evaluate spawning gravel ranking (from "none" to "high") and distribution, a habitat ranking (which considers gravel size, quantify, abundance, tail outs, and gradient) and upstream barriers. They also provide general comments about habitat.[29] This information is compiled and considered by professional fish biologists to identify upstream spawning habitat endpoints. Beyond these endpoints, habitat is either not suitable for spawning because of habitat characteristics (e.g., flow, lack of substrate), or not accessible as a result of natural passage barriers, such as waterfalls, or anthropogenic passage barriers, such as culverts.

Where culverts fully or partially block fish passage to upstream salmon and steelhead spawning habitats, DEQ is not revising the spawning use. Such waters may be restored in the future through ODFW's fish passage barrier program, thus opening up potential spawning habitat further upstream. In these waters, it makes sense to maintain spawning use and the associated temperature criteria in order to protect such waters as potential spawning habitat.

The additional survey work by ODFW has resulted in refining the extent of salmonid spawning habitat in many streams based on best available information. In some cases, ODFW fish biologists have determined that habitat characteristics, such as flow, substrate, or the presence of a natural barrier to spawning, do not (and did not previously) support salmon and steelhead spawning. In others, ODFW biologists have expanded areas where habitat is conducive to spawning. DEQ has adjusted its salmon and steelhead spawning maps based on this best available information from ODFW.

Maps indicating where DEQ is proposing refinements to the spatial extent of salmon spawning use based on updated information is included in Figures 4- to 4- .

[29] Oregon Department of Fish and Wildlife. 2016. Oregon Adult Salmonid Inventory and Sampling (OASIS) Project: Salmon Spawning Survey Procedures Manual. 110 pp. Spawning survey and instructions found on page 37.

Figure 4-18. Spatial refinements to salmon and steelhead spawning use, North Coast Basin. Purple Lines are waters that DEQ is proposing to add to spawning use. Orange lines are waters designated as spawning habitat in 2003, but no longer considered spawning habitat due to physical conditions that prevent spawning from occurring. Brown lines are waters where spawning use is not changing.

4.3.2 Highest attainable use

The year-round use will apply in streams where DEQ is proposing *de minimis* spatial refinements to the spawning use. The year-round use for these streams is either the currently designated use or an updated use designated through this rulemaking. For the streams described in this section, the year-round uses are either core cold water habitat, salmon and steelhead rearing and migration, or Bull Trout spawning and rearing use. An inventory of streams where DEQ is proposing *de minimis* spatial refinements to spawning use and the year-round use of those streams is included in Appendix XX.

4.4 Refinements to temporal extent of seasonal salmon and steelhead spawning use based on changes to ODFW Fish Habitat Database timing tables or the use designation methodology

4.4.1 Description and Justification

In 2003, when initially designating aquatic life use sub-categories specific to the water quality standard for temperature, DEQ designated year-round uses, such as Bull Trout spawning, salmon and trout rearing and migration, and cool water species uses. In known spawning areas, DEQ also designated seasonal salmon and steelhead spawning use, which is protected by a 13.0 °C criterion (measured as a 7-day average daily maximum).

The timing of upstream migration from the ocean is a hereditary trait of Pacific salmon that has developed through natural selection over generations[30]. Conditions thought to trigger upstream migration may include day length, river temperature and flow. [31] River temperature in mainstem streams are thought to be important for triggering upstream migration of Chinook salmon[32]. Migration into low-order channels typically occurs during periods of higher flow, often correlated with the first fall rains. [33]

The start of spawning in 2003 was based on the ODFW life-stage activity-timing database available at the time or a default date to simplify the number of spawning date ranges. The database shows salmon or steelhead spawning through egg incubation for each species and each timing unit (Figure 4-19). Sometimes this resulted in more than 30 different spawning date ranges for one administrative basin. Because this approach seemed overly complicated to designate and implement, and because DEQ and EPA assumed that the 13° spawning criterion would be attainable in all waters by October 15, DEQ applied a simplification procedure developed by the Interagency Team in 2003 to designate spawning use for more generalized time periods rather than the specific dates used in ODFW's life stage activity timing tables (see Figure 4-20 for examples).

[30] Quinn, TP. 2018. The behavior and ecology of Pacific salmon and trout. 2nd edition. Seattle, WA: University of Washington Press.

[31] Dusek Jennings, E. and A. N. Hendrix. 2020. Spawn Timing of Winter-run Chinook in the Upper Sacramento River. San Francisco Estuary and Watershed Science. 18(2). 16 pp.

[32] Bergendorf, D. 2002. The Influence of In-stream Habitat Characteristics on Chinook Salmon (*Oncorhynchustshawytscha*). Report prepared for Northwest Fisheries Science Center, National Oceanic and Atmospheric Association. Seattle, WA. 46 pp.

[33] Beechie T, Moir H, Pess GR. 2008. Hierarchical physical controls on salmonid spawning location and timing. American Fisheries Society Symposium 65:83–101.

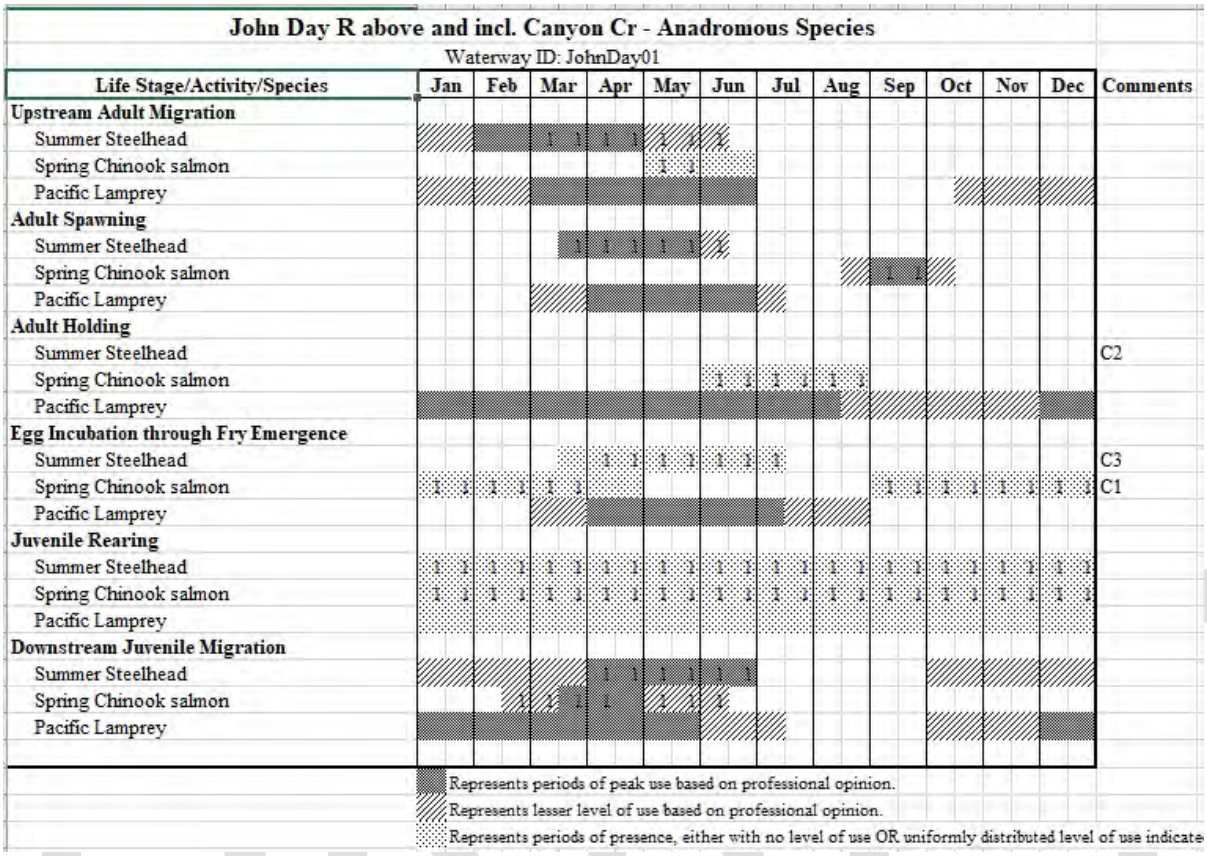

Figure 4-19. Example ODFW spawning timing table.

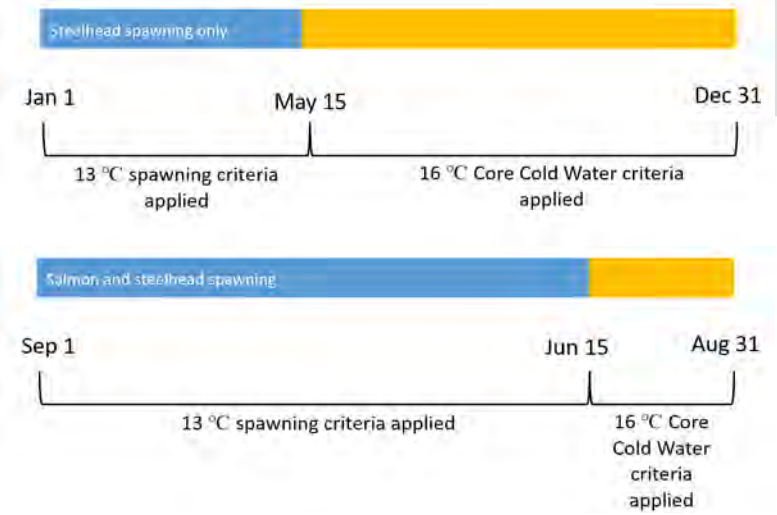

Figure 4-20. Examples of salmon and steelhead spawning use timing, John Day River from Canyon Creek to Indian Creek (upper graphic) and from Indian Creek to Reynolds Creek (lower graphic)

DEQ is proposing numerous refinements to the timing of salmon and steelhead spawning use designations. These refinements reflect revisions to the timing tables for salmon and steelhead spawning in ODFW's Fish Habitat database based on best available information, as well as revisions to the decision rules for timing of salmonid spawning designation. The resulting changes to the spawning use maps do not remove an existing use – rather, they more accurately characterize the actual timing of when spawning through egg incubation occurs.

Refinements to timing of salmon and steelhead use due to changes in ODFW data. Since DEQ initially designated salmon and steelhead spawning use in 2003, ODFW has conducted additional surveying of spawning habitat. This additional survey work has resulted in refining timing tables that identify when spawning occurs for Coho, Chinook, Sockeye and Chum Salmon and steelhead (see example timing table, Figure 4-X). The timing tables are based on documented and undocumented occurrences of spawning based on surveys and professional opinion regarding the ability of streams to support spawning due to physical characteristics, such as flow. In some cases, ODFW has extended spawning beginning and end dates; in other cases, ODFW has shifted beginning spawning dates later or end dates to earlier. The timing data is by timing unit, which can be a relatively large scale, rather than by reach. If spawning occurs in the timing unit it will be noted even though some reaches may begin later or end earlier.

Refinements to timing of salmon and steelhead use due to changes in decision rules that more accurately reflect ODFW data. Some refinements to salmon and steelhead spawning use timing will result from revisions to decision rules. DEQ has decided to use the improved ODFW timing data to designate more accurately the start date of spawning use.

Refinements to spawning start date due to changes in decision rules. In 2003, DEQ used a default start date of no later than October 15. This was done to simplify the number of date ranges. The October 15 date was based primarily on information about Fall Chinook spawning available at the time. There was an assumption, absent wide availability of fall temperature data for waterbodies across the state, that most waterbodies in Oregon would attain the spawning criterion by this date. With the increased availability and accuracy of spawning timing available from ODFW, DEQ analyzed actual start timing for spawning of native salmon populations and found the Oct. 15 is approximately the median start date for salmon populations across the state. Many populations of salmon including fall Chinook, and especially Coho and Chum, average a start date of Nov. 1 start or later. As noted above, the timing of spawning is a hereditary trait of salmon. In some cases, this timing may be influenced by changes in flow, temperature, or day length.

To leverage increased availability of information on the actual start of spawn timing for salmon populations since 2003, DEQ is proposing to start spawning in reaches where salmon spawning occurs on the actual start of peak spawning use or two weeks after the start of lesser use, whichever is earlier according to ODFW's updated timing table information, but no later than Nov. 1.

Refinements to spawning end date due to changes in decision rules. DEQ has revised the spawning end date for salmon (fall spawning) populations where steelhead are not present. DEQ specified the end of periods when salmon & steelhead spawning criteria would apply to reaches where spring spawning populations (winter /summer steelhead) occurred until May 15, or until June 15 if the reaches were also designated for the Core Cold-Water use subcategory. However, using ODFW's improved habitat distribution data and life-stage timing information, DEQ has identified multiple reaches where spring spawning populations do not co-occur with fall spawning populations. Therefore, the spawning criteria dates extend several months beyond the end of incubation for fall-spawning salmon in those waterbodies.

DEQ is proposing to apply a spawning use end date of April 30 in these reaches to better match the spawning and incubation timing of fall spawning populations (salmon) when these are the only species that spawn in the reach. Analysis of statewide timing of egg incubation through fry emergence in ODFW's 2022 timing table database showed the emergence for fall-spawning salmon populations Chinook, Chum, Coho, and Sockeye Salmon, is concluded before April 30.

The updates to spawning timing corrects the temporal extent of the spawning, egg incubation and emergence life stages based on the best ODFW information. Maps indicating where DEQ is proposing

updates to the temporal extent of salmon spawning use based on updated information is included in Figures 4- to 4- .

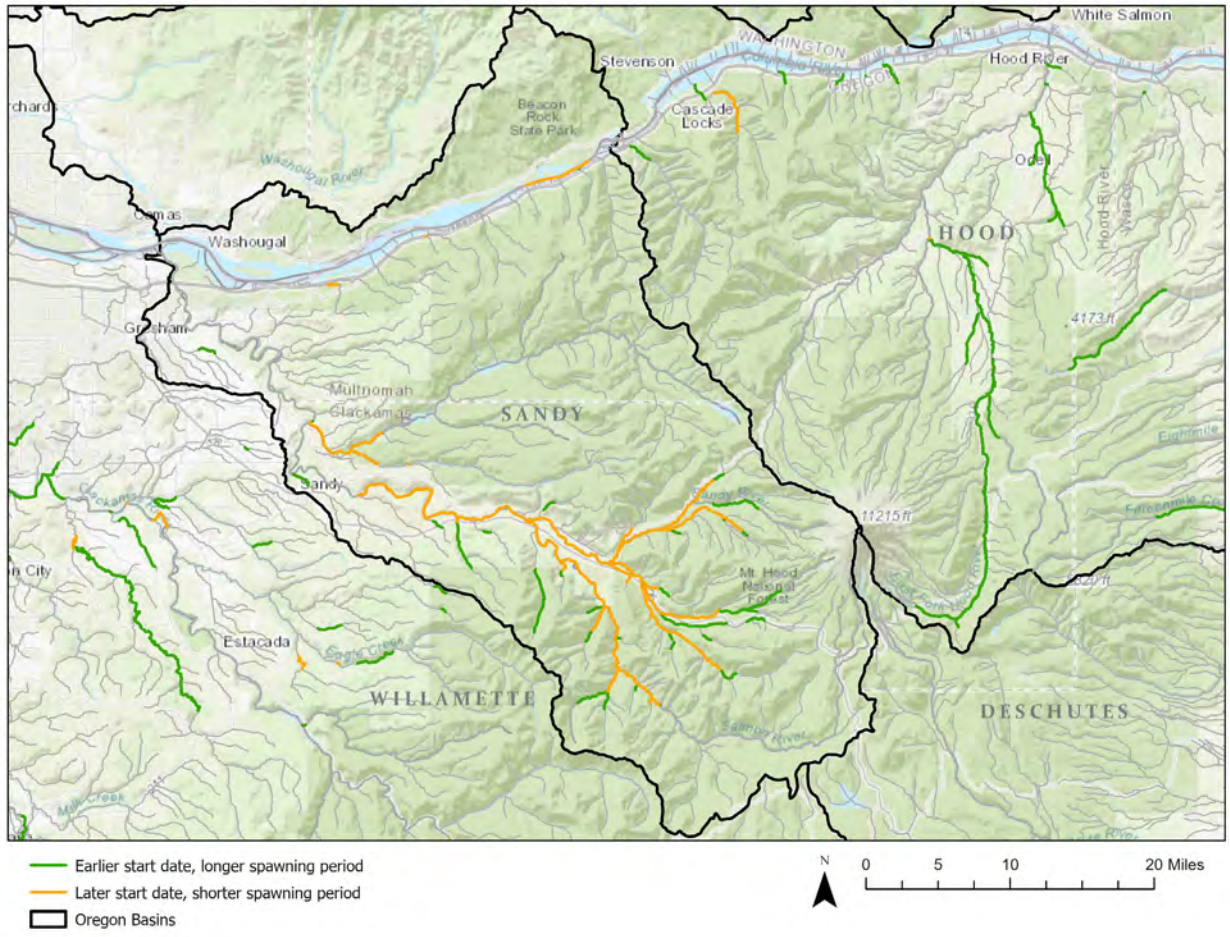

Figure 4-21. Refinements to Temporal Extent of Spawning, Sandy Basin.

4.4.2 Highest attainable use

The year-round use will apply in streams where and when DEQ is proposing temporal refinements to the seasonal spawning use. For example, if the spawning start date has been refined from October 15 to November 1, the year-round use will continue to apply in the stream until November 1.

5 Updates to Core Cold Water Use

5.1 Updates to core cold water use related to changes to "early" Chinook spawning

5.1.1 Description and Justification

DEQ is updating the use in certain waters of the state from Core Cold Water Use to Salmon and Trout Rearing and Migration use. This update is justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection

uses." Specifically, the physical conditions in these waters do not support early Spring Chinook spawning, one of the triggers for Core Cold Water use designation.

These waters were initially classified as Core Cold Water use in 2003 because the best available data indicated that they were waters where either: 1.) Spring Chinook salmon spawning occurs early (prior to September 15), or 2.) were upstream of such waters and were not designated for the more stringent Bull Trout Spawning and Juvenile Rearing Use. Updated data from ODFW indicate that Spring Chinook spawning does not occur at all in these waters. See Figures 5-1 and 5-2. In addition, temperature data from the NorWeST database indicates that these waters cannot attain 16℃ (Table 5-1).

The timing of the spawning designation in DEQ's spawning use maps was based on the ODFW life-stage activity-timing database available at the time. The database shows salmon or steelhead spawning through egg incubation and emergence for each species and each timing unit. In some waters updates to Core Cold Water Use reflect revisions to the timing tables for Chinook Salmon spawning in ODFW's Fish Habitat database based on best available information. In other waters, updates reflect revisions to the Fish Habitat Database indicating that Spring Chinook Salmon spawning does not occur at all. DEQ has retained Core Cold Water Use in streams where data indicates they currently attain 16 ℃.

The location and timing of upstream migration from the ocean is a hereditary trait of Pacific salmon that has developed through natural selection over generations[34]. It is well known that most salmon migrate to their natal streams to spawn. Conditions thought to trigger upstream migration may include day length, river temperature and flow. [35] River temperature in mainstem streams are thought to be important for triggering upstream migration of Chinook salmon[36]. This is particularly true for Spring Chinook salmon, which typically spawn in late summer and early fall. Spring Chinook hold throughout the summer near their spawning habitat, and so are the first anadromous species to initiate spawning when thermal conditions are right in the fall. The lack of early Spring Chinook spawning indicates that annual stream temperatures are not likely to meet the definition for the Core Cold Water designation because streams remaining at or below 16°C throughout the summer should support spawning earlier in the season.

[34] Quinn, TP. 2018. The behavior and ecology of Pacific salmon and trout. 2nd edition. Seattle, WA: University of Washington Press.
[35] Dusek Jennings, E. and A. N. Hendrix. 2020. Spawn Timing of Winter-run Chinook in the Upper Sacramento River. San Francisco Estuary and Watershed Science. 18(2). 16 pp.
[36] Bergendorf, D. 2002. The Influence of In-stream Habitat Characteristics on Chinook Salmon (*Oncorhynchustshawytscha*). Report prepared for Northwest Fisheries Science Center, National Oceanic and Atmospheric Association. Seattle, WA. 46 pp.

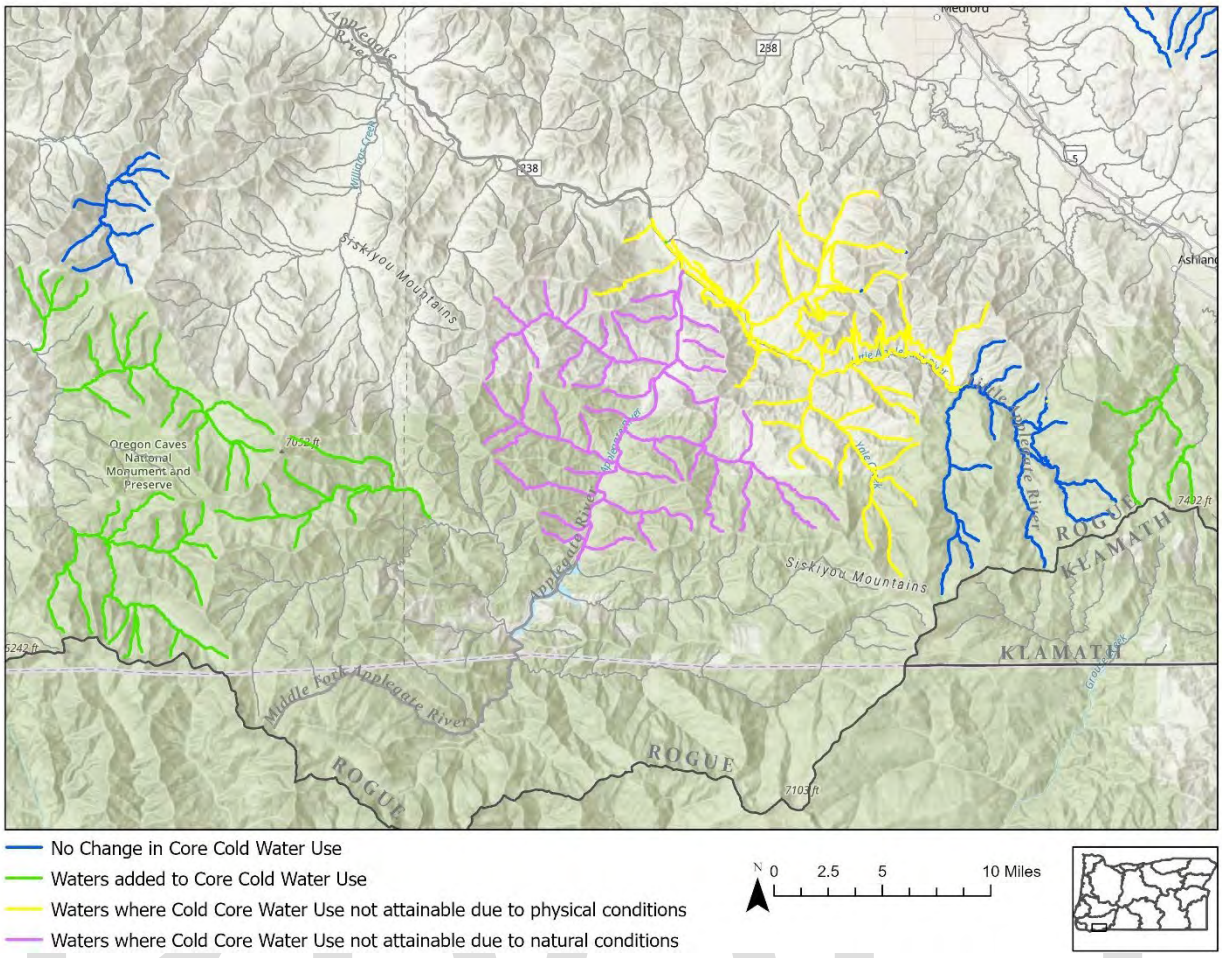

Figure 5-1. Updates to CCW Use, Little Applegate River, Rogue River Basin (Yellow). {Updates to CCW Use in the Mainstem Applegate (purple) are discussed in Section 5.4)

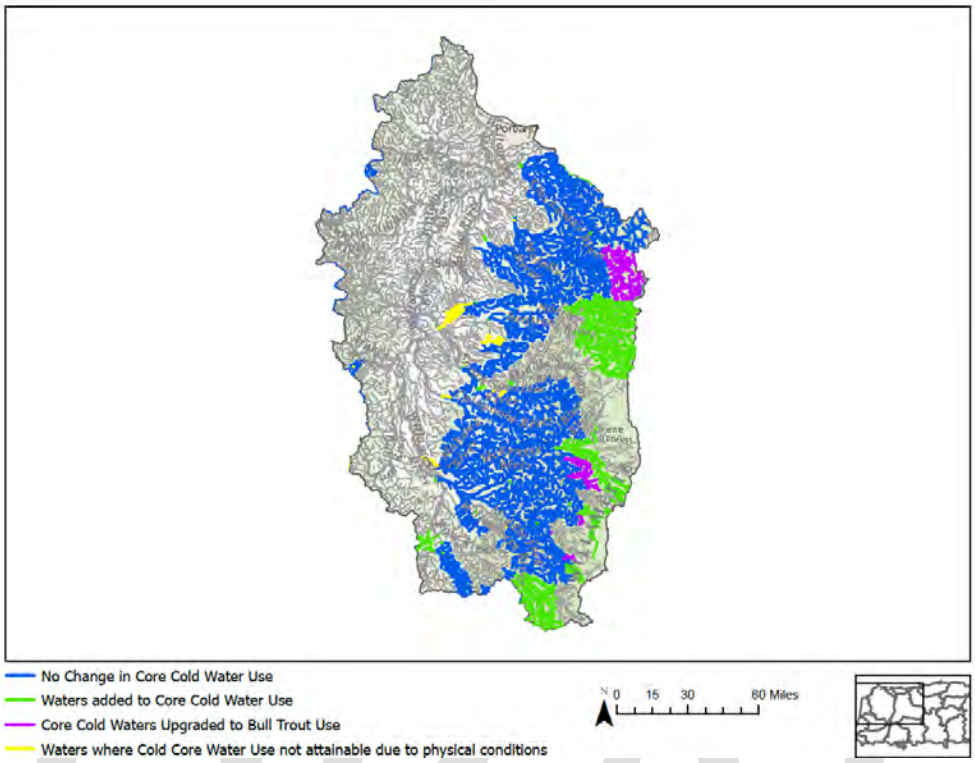

Figure 5-2. Updates to CCW Use, Willamette Basin.

Table 5-1. Weekly Maximum Temperature for waters that do not support early Spring Chinook spawning (Source: NoRWeST Database)

NorWeST ObsPred ID	Station Name	Year sampled	Maximum Weekly Average T (°C)
Rogue Basin Waters			
1829	Grouse Creek	1998	20.6
1830	Little Applegate River	1998	23.0
1836	Yale Creek	1998	16.4
2215	Little Applegate River	1999	17.4
2216	Little Applegate River	1999	19.5
2220	Sterling Creek	1999	21.1
2225	Little Applegate River	1999	17.5
5949	Glade Creek	1993	16.5
Willamette Basin Waters			
1702	McKenzie River	1995	20.2
3261	McKenzie River	2002	21.3
4345	McKenzie River	2006	21.8
1960	Roaring River	1999	15.4
2338	Roaring River	2000	16.3
2992	North Santiam River	2001	22.1
2637	North Santiam River	2000	20.5
2996	North Santiam River	2001	21.8
2638	North Santiam River	2000	20.6
2585	North Santiam River	2000	16.3
2634	North Santiam River	2000	21.3
2993	North Santiam River	2001	22.2
2796	North Santiam River	2001	22.2
3270	North Santiam River	2002	21.0

5.1.2 Highest attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use in the waters described here is salmon and trout rearing and migration. Criteria associated with this use designation protect waters that provide suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout, and upstream adult pre-spawn migration for salmon and steelhead. This use designation also protects other cold-water biota that co-occur with salmonid fishes.

An inventory of waters where Core Cold Water Use is being updated as described in this section is included in Appendix X.

5.2 Updates to Core Cold Water Use in "Anchor Habitat"

5.2.1 Description and Justification

DEQ is updating Core Cold Water Use to rearing and migration use in several waters in the North Coast and Mid Coast Basins. DEQ designated these waters for Core Cold Water use in 2003 because they were described as "anchor habitat" in an Ecotrust study. [37] These updates are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

In 2003, when DEQ first developed aquatic life subcategory maps, ODFW had less data regarding salmonid uses in Oregon's North Coast and, to a lesser extent, Mid Coast Basins. As a result, DEQ relied on information in a study developed by Ecotrust and the Wild Salmon Center: "A salmon conservation strategy for the Tillamook and Clatsop State Forest." (Referred to hereafter as the "Anchor Habitat study.")

The Anchor Habitat study identified waters as core juvenile rearing habitat for Coho Salmon, Steelhead and Chinook Salmon in the Tillamook and Clatsop State Forests. The purpose behind the Ecotrust study was to protect the most critical areas for production of salmon in the Clatsop and Tillamook State Forests, while allowing for some timber harvest. Ecotrust also provided DEQ with GIS files showing anchor habitat in the Siuslaw River basin, although these areas were not discussed in the Ecotrust study.[38] The habitat identified in the Ecotrust study did not classify salmonid life stages consistently with the decision rules for core cold water use (i.e., the habitat supports early Spring Chinook spawning or Bull Trout FMO habitat). Some waters were considered anchor habitat because they had high productivity values that support salmonid rearing. Neither thermal condition nor thermal potential of these waters was part of EcoTrust's habitat evaluation. These waters are more appropriately protected with the Salmonid Rearing and Migration criterion of 18°C, as colder waters protected by the CCW criterion would have lower productivity values (e.g., have fewer prey for fish).

Since 2003, ODFW has collected more information about salmonid life stages in the North Coast and Siuslaw River basin. DEQ is relying on this best available information to protect streams with Core Cold Water use. In some waters that were originally designated because they were included in Ecotrust's Anchor Habitat database, temperature data analyzed as part of the use update process indicates that 16 °C is attainable. Early Spring Chinook spawning habitat is also indicated in some of these waters, such as

[37] Ecotrust, Oregon Trout, and The Wild Salmon Center. 2000. A salmon conservation strategy for the Tillamook and Clatsop State Forest.

[38] Steinback, Chris, Ecotrust. *Personal communication with ODEQ*, October 30, 2003.

North Fork Wolf Creek and Lousignant Creek in the North Coast Basin. In either of these types of waters, Core Cold Water remains the designated use. In waters where data indicates 16 °C is not attainable, DEQ is proposing to update the Core Cold Water use to rearing and migration use, as described in Section 5.2.2. Temperature data for these streams is included in Table 5-2.

5.2.2 Highest attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for all waters described here is salmon and trout rearing and migration. Criteria associated with this use designation protect waters that provide suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout, and upstream adult pre-spawn migration for salmon and steelhead. This use designation also protects other cold-water biota that co-occur with salmonid fishes.

An inventory of waters where Core Cold Water Use is being updated as described in this section is included in Appendix X.

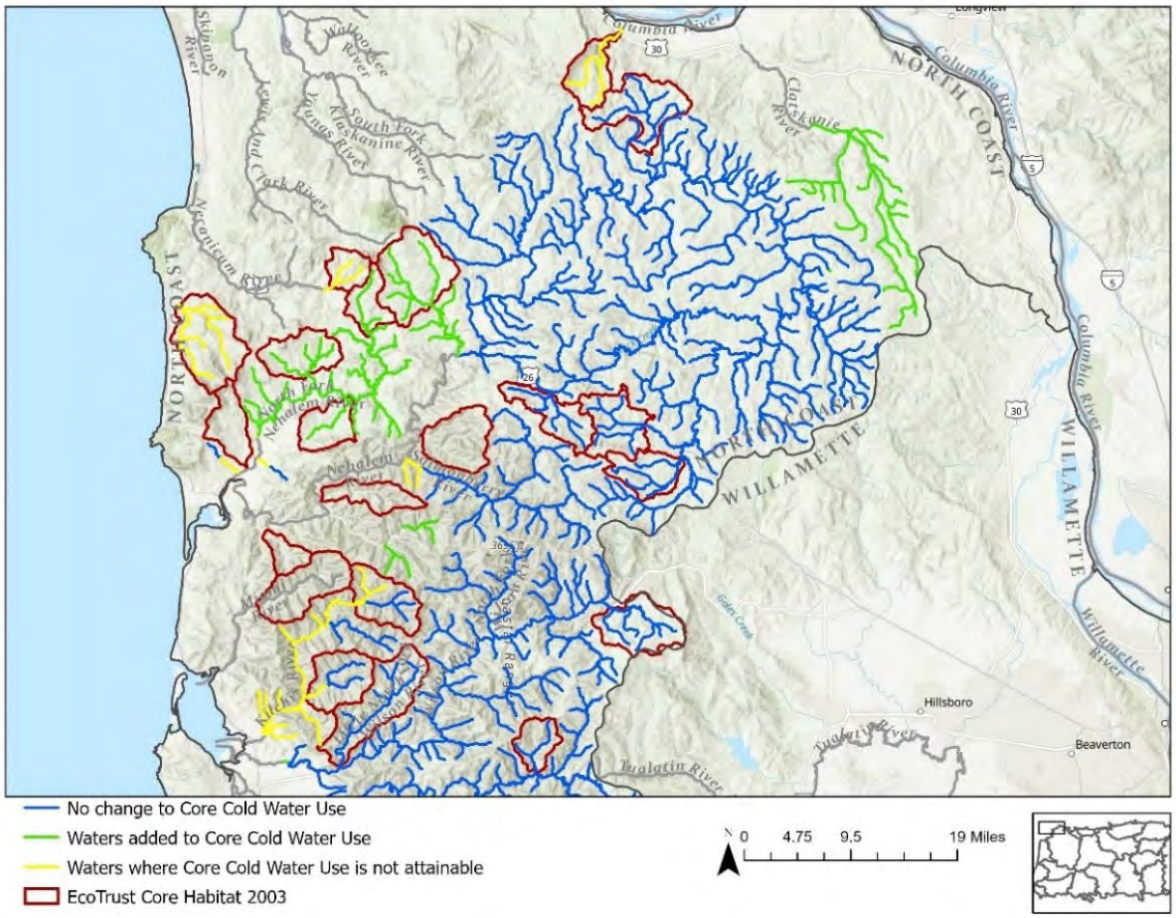

Figure 5-3. Updates to CCW Use, North Coast Basin.

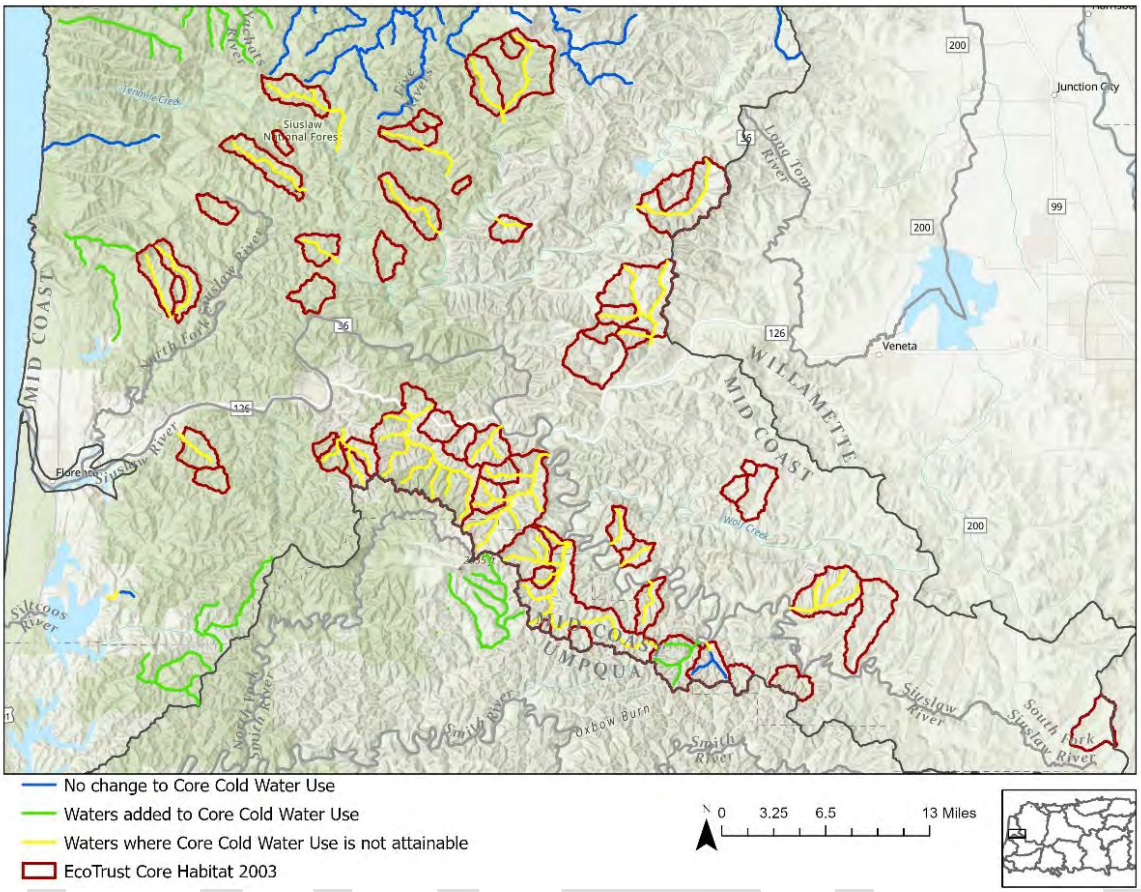

Figure 5-4 Updates to CCW Use, Mid-coast Basin

Table 5-2. NorWest Maximum Weekly Temperatures in Anchor Habitat waters where Core Cold Water Habitat is being updated to Salmon and Trout Rearing and Migration

NorWeST ObsPred ID	Station Name	Year sampled	Maximum Weekly Average T (°C)
North Coast Waters			
2852	Plymptom Creek	2001	16.3
2426	Necanicum River @ Highway 26 and Necanicum Highway	2001	17.8
1949	Gravel Creek at Nehalem River	1999	15.9
3288	Salmonberry River at Nehalem River	2002	20.6
3644	Salmonberry River at Nehalem River	2003	21.9
2491	Little South Fork Kilchis River	2000	14.6
1741	Coal Creek @ Kilchis River	1998	17.2
1748	Kilchis River	1998	22.5
2320	Kilchis River	2000	21.8
3901	Kilchis River	2004	22.2
1920	Nestucca River @ Cloverdale	1999	20.5
2297	Nestucca River @ Cloverdale	2000	21.9
2788	Nestucca River @ Cloverdale	2001	21.3
MidCoast Waters			
6258	Drift Creek (Alsea Watershed)	1994	23.9
6317	Drift Creek (Alsea Watershed)	1995	22.4
6244	Uncle Creek at Condon Creek	1994	16.6

6469	Uncle Creek at Condon Creek	1998	17.5
2496	Condon Creek	2000	17.5
6206	Condon Creek	1994	18.8
6668	Condon Creek	2002	21.3
6452	Elk Creek @ Indian Creek	1998	20.2
4464	Rogers Creek	2009	19.5
6342	Rogers Creek	1996	19.6
6299	North Fork Indian Creek	1995	19.4
6357	Failor Creek	1996	22.6
6286	Failor Creek	1995	20.1
6345	Failor Creek	1996	20.6
6848	Failor Creek	2005	18.0
6859	Fawn Creek	2005	17.1
6499	Deadwood Creek	1999	19.0
6886	Deadwood Creek	2005	18.0
3215	Fish Creek	2001	18.1
3558	Fish Creek	2002	19.1
3552	Chickahominy Creek	2002	20.3
6615	Karnowsky Creek	2001	16.0
6660	Karnowsky Creek	2002	16.2
6726	Karnowsky Creek	2003	13.7
6772	Karnowsky Creek	2004	15.6
6815	Karnowsky Creek	2005	13.8
6371	Karnowsky Creek	1996	20.2
6923	Karnowsky Creek	2007	17.8
6643	Karnowsky Creek	2001	16.6
6704	Karnowsky Creek	2002	16.2
6755	Karnowsky Creek	2003	20.2
6969	Karnowsky Creek	2009	16.4
6797	Karnowsky Creek	2004	22.5
6951	Karnowsky Creek	2008	18.2
6979	Karnowsky Creek	2009	15.5
6955	Karnowsky Creek	2009	16.8
6919	Karnowsky Creek	2007	14.8
6619	Karnowsky Creek	2001	16.1
6667	Karnowsky Creek	2002	15.4
6743	Karnowsky Creek	2003	31.3
6956	Knowles Creek	2009	14.9
7000	Knowles Creek	2011	14.1
2183	Knowles Creek	1999	13.3
2675	Knowles Creek	2000	15.9
6344	Knowles Creek	1996	18.8
6502	Knowles Creek	1999	16.2
6560	Knowles Creek	2000	15.9
6631	Knowles Creek	2001	15.0
6688	Knowles Creek	2002	16.0
6785	Knowles Creek	2004	16.5
6847	Knowles Creek	2005	16.2
6936	Knowles Creek	2008	15.3
6363	Knowles Creek	1996	22.4
6947	Knowles Creek	2008	25.3
6983	Knowles Creek	2009	19.8
7023	Knowles Creek	2011	16.5

6521	Knowles Creek	1999	18.5
6592	Knowles Creek	2000	19.6
6647	Knowles Creek	2001	19.5
6761	Knowles Creek	2003	20.5
6808	Knowles Creek	2004	21.4
6871	Knowles Creek	2005	19.7
6905	Knowles Creek	2006	23.3
6973	Knowles Creek	2009	22.4
7015	Knowles Creek	2011	25.2
3223	Whittaker Creek	2001	19.4
3570	Whittaker Creek	2002	19.8
3214	Esmond Creek	2001	18.8
3557	Esmond Creek	2002	19.7
3562	Haight Creek	2002	17.9
3213	Dogwood Creek	2001	17.7
3556	Dogwood Creek	2002	18.8

5.3 Updates to Core Cold Water Use in waters that do not support Bull Trout Foraging, Migration, and Overwintering or Rearing Habitat Use in the summer.

5.3.1 Description and Justification

DEQ is updating Core Cold Water use in many waters because the best available information indicates they do not support Bull Trout foraging, migration, and overwintering. These updates are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

5.3.1.1 Updates to Waters not supporting Bull Trout foraging and migration or rearing habitat use in the summer

When DEQ developed Oregon's fish use designation maps in 2003, the U.S. Fish and Wildlife Service had published draft proposed critical habitat for the Klamath River and Columbia River Bull Trout populations. Critical habitat was proposed for Bull Trout spawning and rearing, which correspond to the Bull Trout Spawning and Rearing Use, and foraging, migration and overwintering (FMO).[39] In FMO habitat, DEQ designated FMO habitat for Core Cold Water use if ODFW timing tables indicate that such use, or rearing use occurs during the summer. Due to the court-imposed deadline, DEQ had to designate uses as part of the temperature standard revisions before USFWS could finalize their Bull Trout critical habitat rule. As a result, DEQ included the draft proposed critical habitat with the expectation that we would revise our use designations to align with the final federal critical habitat rule when it was completed. [40] In its letter approving the fish use designations, EPA acknowledged the intent to align uses with the final federal critical habitat rule once it was available.[41]

[39] 67 Federal Register 71235. November 29, 2002.

[40] See DEQ 2003. EQC Staff Report, Rule Adoption: Water Quality Standards, Including Temperature Criteria, OAR Chapter 340, Division 41, December 4, 2003 EQC Meeting, Attachment H: A Description of the Information and Methods Used to Delineate the Proposed Beneficial Fish Use Designations for Oregon's Water Quality Standards. 5 pp.

[41] EPA 2004, Support Document for EPA's Action Reviewing New Or Revised Water Quality Standards for the State of Oregon. March 2, 2004. p.82

USFWS describes FMO habitat as follows:

> "Relatively large streams and mainstem rivers, including lakes or reservoirs, estuaries, and nearshore environments, where subadult and adult migratory bull trout forage, migrate, mature, or overwinter. This habitat is typically downstream from spawning and rearing habitat and contains all the physical elements to meet critical overwintering, spawning migration, and subadult and adult rearing needs. Although use of foraging, migrating, and overwintering habitat by bull trout may be seasonal or very brief (as in some migratory corridors), it is a critical habitat component."[42]

The final USFWS critical habitat designations were based on the best available local information regarding physical habitat characteristics that support Bull Trout foraging, migration and overwintering. In the final critical habitat rule, USFWS biologists determined that these streams are not suitable habitat essential for Bull Trout foraging, migration and overwintering, and ODFW biologists concur that such use does not occur during the summer. DEQ is proposing to update CCW designation for those streams that both USFWS *and* ODFW do not consider **current** or **potential** Bull Trout FMO or rearing habitat during the summer (Figures 5-5 and 5-6), and where temperature data indicate that the CCW criterion of 16 ℃ isn't attainable as a 7-day average daily maximum (Table 5-3).

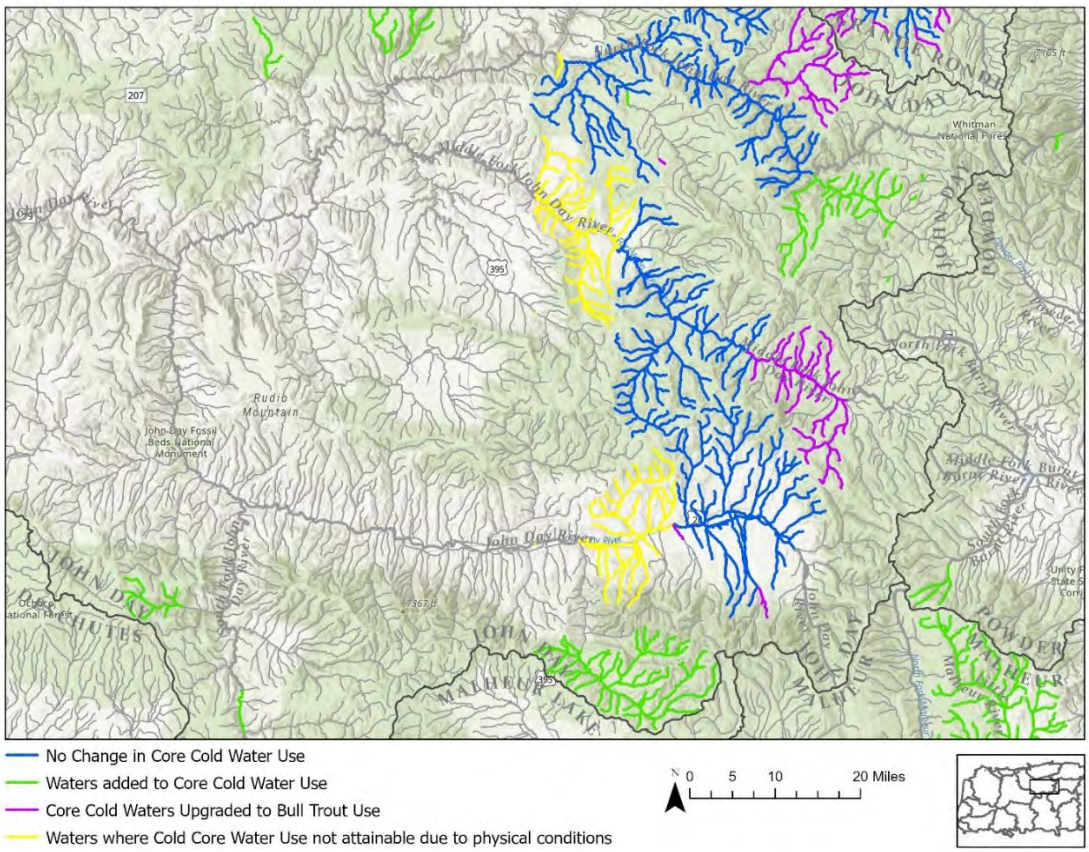

Figure 5-5. Updates to Core Cold Water Use, John Day River Basin, Oregon

[42] See page 32 of U.S. Fish and Wildlife Service. 2010. Bull Trout Critical Habitat Justification: Rationale for Why Habitat is Essential, and Documentation of Occupancy. U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office (Boise, Idaho), Pacific Region (Portland, OR). 1035 pp.

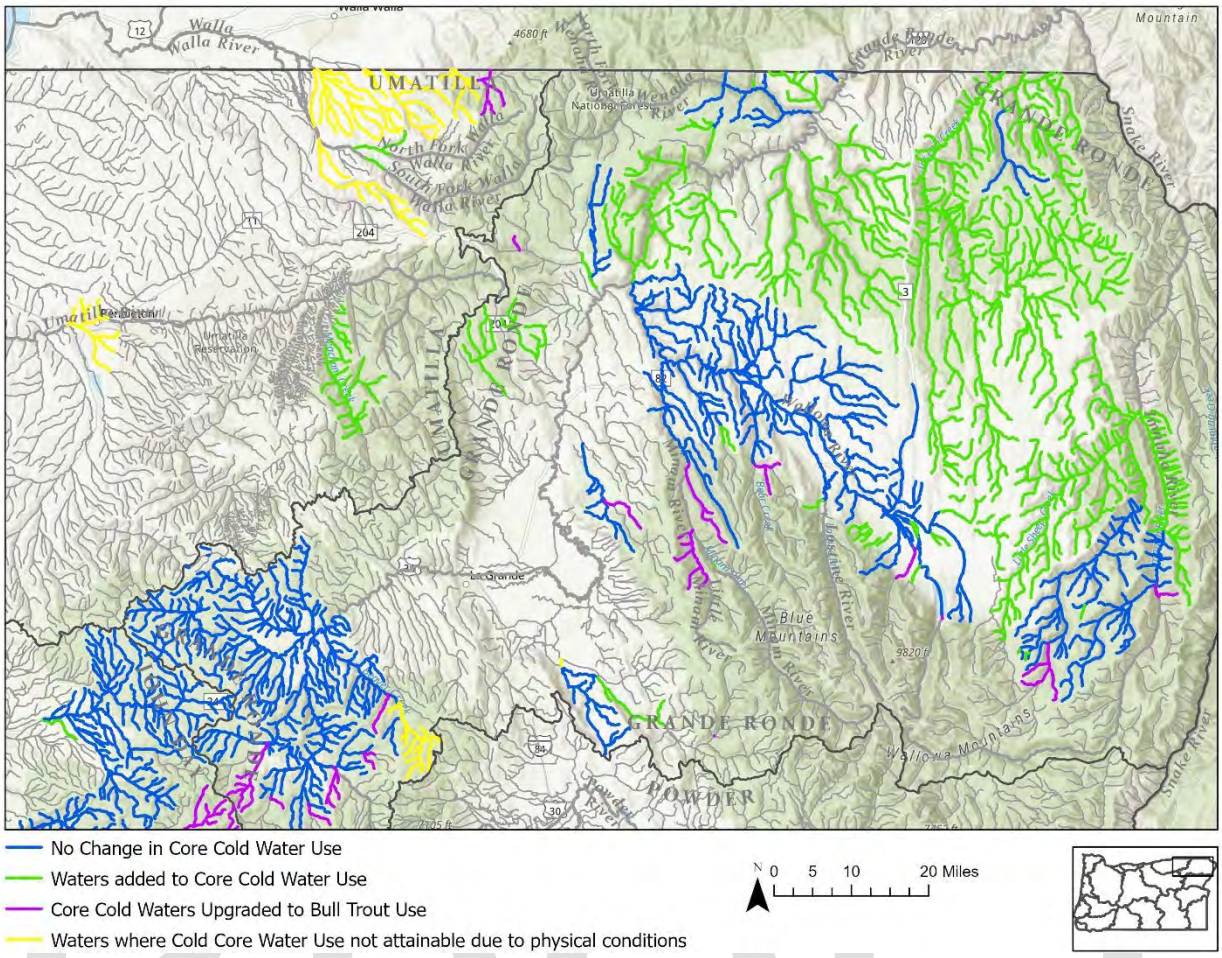

Figure 5-6. Updates to Core Cold Water Use, Umatilla and Grand Ronde Basins.

Table 5-3. Weekly Maximum Temperatures for Waters That Do Not Support Bull Trout FMO Use During the Summer.

NorWeST ObsPred ID	Station Name	Year sampled	Maximum Weekly Average T (°C)
Umatilla Basin Waters			
3137	Umatilla River	1999	24.2
3165	Umatilla River	2000	29.8
3192	Umatilla River	2001	29.8
3216	Umatilla River	2002	31.5
3246	Umatilla River	2003	31.1
3300	Umatilla River	2004	30
3350	Umatilla River	2005	29.8
3399	Umatilla River	2006	31.5
3442	Umatilla River	2007	31.1
3478	Umatilla River	2008	30.2
3504	Umatilla River	2009	31.7
3526	Umatilla River	2010	29.6
3548	Umatilla River	2011	26.6
3173	Umatilla River	2000	26.7
3363	Umatilla River	2005	27.8

Walla Walla Basin Waters			
3105	Couse Creek	1998	27.5
3120	Couse Creek	1999	21.9
8605	Walla Walla River	2004	20.5
8610	Walla Walla River	2005	20.3
8615	Walla Walla River	2006	21.8
8627	Walla Walla River	2008	19.2
8635	Walla Walla River	2009	19.7
8660	Walla Walla River	2010	18.7
8666	Walla Walla River	2011	17.9
8608	Mill Creek	2005	16.0
8613	Mill Creek	2006	17.6
8619	Mill Creek	2007	17.6
8625	Mill Creek	2008	16.3
8633	Mill Creek	2009	16.8
Grand Ronde Basin Waters			
7996	Beaver Creek	1995	22.3
8044	Beaver Creek	1997	21.7
1890	Beaver Creek	2000	18.6
3007	Beaver Creek	2010	16.6
8210	Beaver Creek	2002	22.6
8257	Beaver Creek	2003	23.2
7959	Beaver Creek	1993	25.1
7979	Beaver Creek	1994	18.6
8017	Beaver Creek	1996	18.6
8048	Beaver Creek	1997	18.9
8084	Beaver Creek	1998	18.6
8113	Beaver Creek	1999	17.3
8173	Beaver Creek	2001	18.6
8214	Beaver Creek	2002	19.1
8261	Beaver Creek	2003	20.8
8305	Beaver Creek	2004	20.2
8382	Beaver Creek	2006	18.3
8422	Beaver Creek	2007	17.6
8461	Beaver Creek	2008	17.3
8496	Beaver Creek	2009	18.8
8536	Beaver Creek	2010	17.4
8577	Beaver Creek	2011	17.0
2772	Beaver Creek	1994	18.6
2785	Beaver Creek	1997	19.4
2791	Beaver Creek	1998	19.1
2796	Beaver Creek	1999	17.6
2814	Beaver Creek	2001	19.7
2833	Beaver Creek	2002	18.9
2849	Beaver Creek	2003	20.2
2863	Beaver Creek	2004	20.0
2900	Beaver Creek	2006	18.3
2913	Beaver Creek	2007	17.6
John Day Basin Waters			
7032	Little Indian Creek	1995	20.9
7068	Little Indian Creek	1996	20.2
7111	Little Indian Creek	1997	20.7
7163	Little Indian Creek	1998	21.4

7290	Little Indian Creek	2000	21.2
7431	Little Indian Creek	2002	22.9
7519	Little Indian Creek	2003	22.1
7598	Little Indian Creek	2004	21.3
7665	Little Indian Creek	2005	20.6
7729	Little Indian Creek	2006	22.9
7775	Little Indian Creek	2007	22.1
7814	Little Indian Creek	2008	19.8
7859	Little Indian Creek	2009	21.7
7901	Little Indian Creek	2010	19.4
7942	Little Indian Creek	2011	18.7
622	Middle Fork John Day River	2003	31.3
663	Middle Fork John Day River	2004	28.2
710	Middle Fork John Day River	2007	32.1
788	Middle Fork John Day River	2009	27.9
1209	Middle Fork John Day River	2011	25.8
787	Middle Fork John Day River	2009	28.9
564	Middle Fork John Day River	2002	30.3
6748	Slide Creek	2005	25.8
6907	Slide Creek	2010	25.2
5243	Slide Creek	1998	21.1
2192	Slide Creek	2002	21
5275	Slide Creek	1999	17.5
5326	Slide Creek	2000	19.4
5386	Slide Creek	2001	19.2
5299	Rice Creek	1999	14.8
5355	Rice Creek	2000	15.4
5412	Rice Creek	2001	14.8

5.3.1.2 Updates to Waters in the lower Hood River Basin Where Core Cold Water Use is Not an Existing Use and Which Do Not Support Bull Trout FMO Use

DEQ is proposing to update CCW designation for three tributaries to the Hood River: Indian Creek, Cedar Creek, and an unnamed tributary (NHD reachcode 17070105000864) (Figure 5-7). These three tributaries enter Hood River within four miles of its mouth on the Columbia River.

In 2003, DEQ mistakenly designated these three tributaries for CCW use because they are upstream of Hood River, which USFWS considers FMO habitat to its mouth. Upstream tributaries support Bull Trout FMO use in the Hood River by providing cold water fed by glacial melt from Mt. Hood. The physical conditions of three downstream tributaries do not support Bull Trout FMO use and have not since 1975. All three have headwaters in agricultural or urban areas in the lower Hood River Valley, which are naturally warmer. Their relative flow volume and attainable temperature regime means they have minimal to no impact on the temperature of the mainstem Hood River, and only for a limited portion of the bull trout habitat. In 2003, similar streams, such as Catherine Creek in the Grand Ronde basin that fed lower portions of Bull Trout FMO habitat were not designated for CCW because they do not provide a crucial role in ensuring waters stay cold to protect Bull Trout FMO use. Temperature data indicates that Indian Creek does not attain the CCW criterion of 16.0 °C (Table 5-1). Indian Creek has lower elevation headwaters west of Hood River, travels through agricultural land, and then flows through the city of Hood River before entering Hood River at approximately river mile 1.5. Temperature data is not available for the other two tributaries. However, these tributaries do not have suitable conditions to support Bull Trout spawning. The unnamed tributary is likely itinerant or a buried stream; a stream channel is not noticeable in aerial photography of the urban area where it appears in the GIS maps. Cedar Creek is a 2.5 kilometer

stream that begins near the Ken Jernstedt Airfield in Hood River and runs along a divide between an urban and agricultural area before entering Hood River at approximately river mile 2.5.

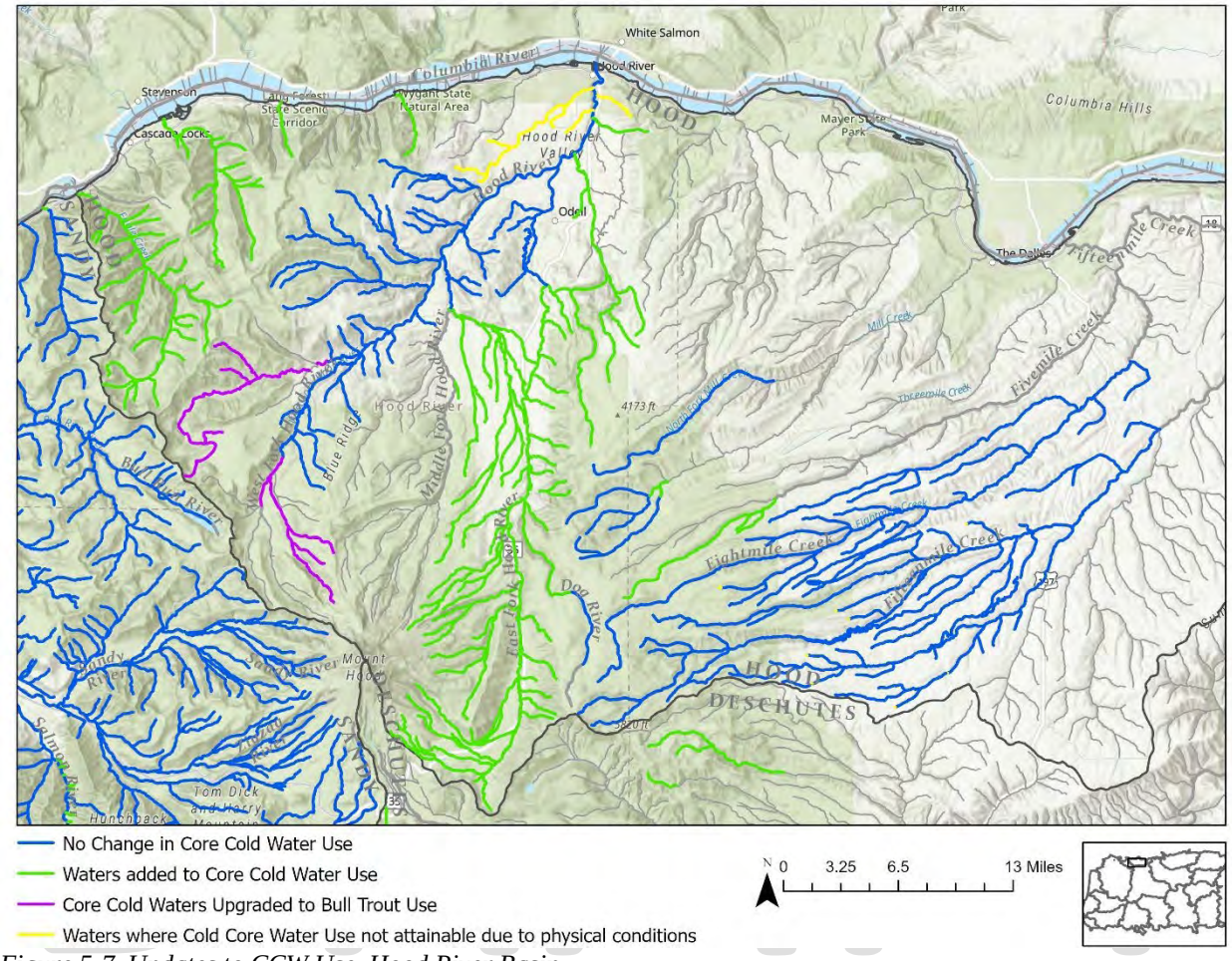

Figure 5-7. Updates to CCW Use, Hood River Basin.

Table 5-4. Measured Peak Weekly Average Temperatures, Indian Creek, Hood River Basin, Oregon

Station Number and Name	Sampling year	Peak Weekly Average T (°C)
2179 – Indian Creek at Hood River	2002	18.4
2051 – Indian Creek (near Eliot Park)	2001	17.8
1781 – Indian Creek (near Eliot Park)	1999	17.2
2227 – Indian Creek (near Golf Course)	2002	18.1
1789 – Indian Creek (near Alameda Road)	1999	17.2

5.3.2. Highest Attainable Use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for all waters described here is salmon and trout rearing and migration. Criteria associated with this use designation protect waters that provide suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout, and upstream adult pre-spawn migration for salmon and steelhead. This use designation also protects other cold-water biota that co-occur with salmonid fishes.

An inventory of all waters where CCW Use is being updated to Salmon and Trout Rearing and Migration Use as described in this section is included in Appendix X.

5.4 Updates to Core Cold Water Use in the North Fork Smith River Basin and Applegate River

5.4.1 Description and Justification

DEQ is updating Core Cold Water use in the waters of the North Fork Smith River basin and the mainstem Applegate River downstream of Applegate Lake to Salmon and Steelhead Rearing and Migration (Figure 5-7). These updates are justified based on 40 CFR 131.10(g), Factor 1: "Naturally occurring pollutant concentrations prevent attaining the use."

5.4.1.1 North Fork Smith River Basin

The North Fork Smith River is a Wild and Scenic River. Approximately 1/3 of the NF Smith River Basin watershed lies within the Kalmiopsis Wilderness Area. The Forest Service has designated the rest of the watershed as a Late-Successional Reserve, to protect and enhance conditions of late-successional and old-growth forest ecosystems. About 80% of the Late-Successional Reserve area is classified as a roadless area where timber harvest is prohibited with very limited exceptions. Forest Service management goals prohibit mineral extraction and tree harvest in the watershed except for train maintenance and public safety, and road development for maintenance. As a result of these protections, the watershed is a Wilderness with almost no anthropogenic influence beyond limited recreational use. DEQ designated all waters of the watershed as the state's first Outstanding Resource Water in 2017.

In 2003, DEQ designated the North Fork Smith River as Core Cold Water Use. At the time, DEQ did so because ODFW data and information indicated that Spring Chinook Salmon spawned prior to September 15, one of the triggers for designated waters as Core Cold Water. Based on current ODFW information, there is some uncertainty regarding whether Spring Chinook Salmon spawn in these waters and if they, do when the spawning begins. It is a warm, semi-arid climate.

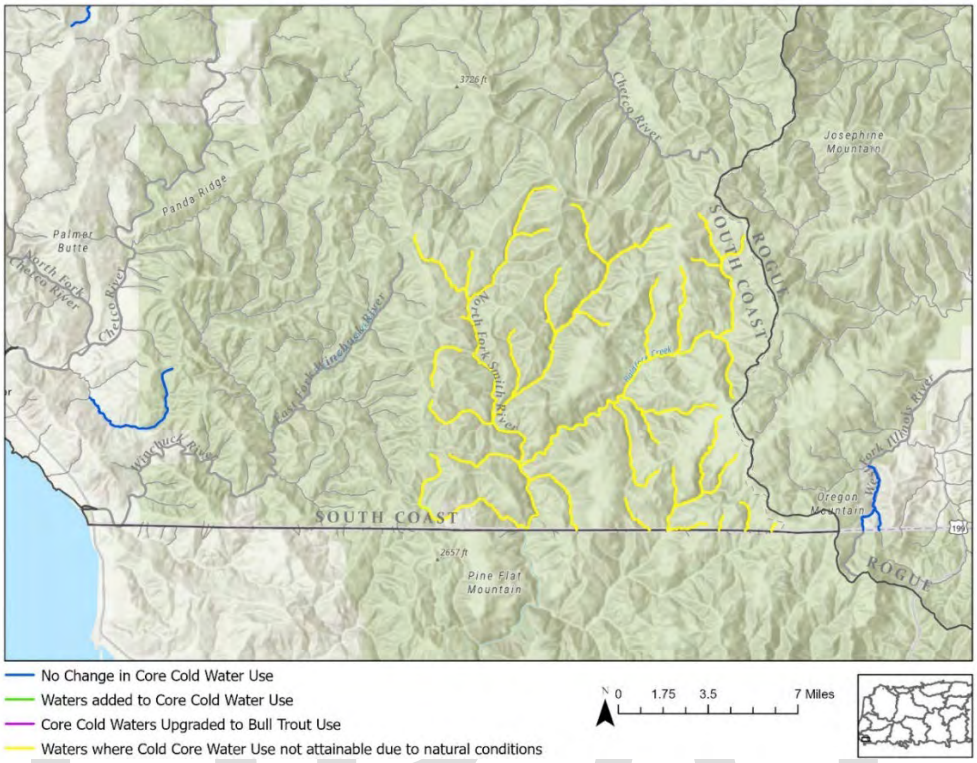

Figure 5-8. Updates to CCW Use, North Fork Smith River and tributaries, South Coast Basin

Temperatures in many waters of the North Fork Smith River watershed cannot attain the Core Cold Water Criterion of 16 °C. DEQ analyzed available summer temperature data taken at various locations within the North Fork Smith River watershed (Table 5-2).

As highlighted in Table 5-5, peak weekly maximum temperatures throughout the NF Smith Watershed exceed the core cold water criterion of 16.0 °C in almost all locations and years where the NorWeST had temperature data. In many locations, peak temperatures exceed numeric criteria for salmon and trout rearing and migration (18.0 °C). Because there is virtually no land use in the watershed apart from low-impact recreation, such as hiking and kayaking, these data are indicative of natural conditions.

Table 5-5. Peak Weekly Maximum Temperature, North Fork Smith River and Tributaries

Station ID	Station Name	Years sampled	Maximum Weekly Average T (°C)
2966	Baldface Creek	1994	26.3
2967	Baldface Creek	2001	18.4
2968	Baldface Creek	2001	17.4
2969	Baldface Creek	2001	19.2
5331	Baldface Creek (upper)	2006	13.7
5327	NF Smith River at Baldface Creek	2014	21.3
5332	NF Smith River below Hardtack Creek	2014	20.3
5344	NF Smith River above Acorn Creek	2014	18.6
5361	Horse Creek	2014	16.7
5374	NF Smith River at California Border	2015	24.3
5390	Cedar Creek	2015	18.8
5392	Acorn Creek	2015	17.7
5396	Cedar Creek	2000	12.3
5362	Cedar Creek	1999	14.1

5.4.1.2 Mainstem Applegate River and Tributaries

In 2003, DEQ designated the mainstem Applegate River downstream of Applegate Lake, and tributaries to the Applegate River, as Core Cold Water Use. At the time, DEQ did so because ODFW data and information indicated that Spring Chinook Salmon spawned prior to September 15, one of the triggers for designated waters as Core Cold Water. Based on current ODFW information, there is some uncertainty regarding whether Spring Chinook Salmon spawn in these waters and if they, do when the spawning begins.

Based on modeling conducted in the Applegate Temperature TMDL, natural thermal potential temperatures in the mainstem Applegate River cannot attain 16 ℃ (60.8 ℉) along its entire length, except in its headwaters.[43] Based on this modeling, the Core Cold Water Use cannot be attained in the Applegate River downstream of the Applegate Reservoir, the downstream end of which is approximately RM 45.5.

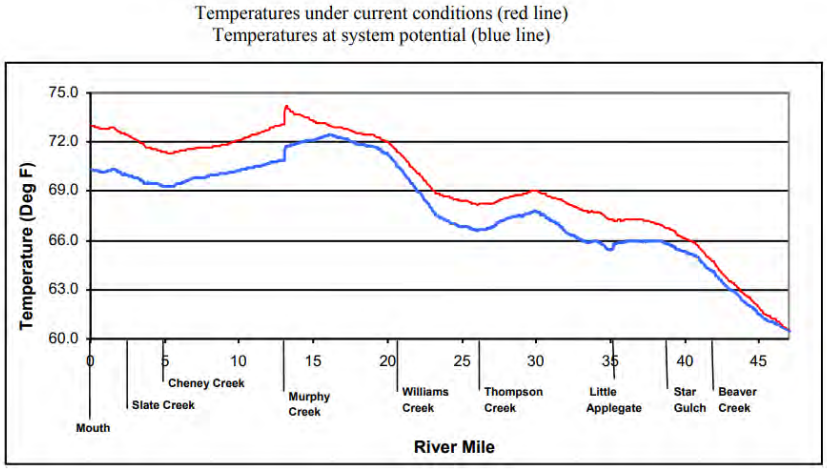

Figure 5-9. System potential temperatures, Applegate River. Source: Applegate Subbasin TMDL (2003), p. 31.

[43] Oregon DEQ. 2003. Applegate Subbasin TMDL. Available at: https://www.oregon.gov/deq/FilterDocs/rogueappletmdl.pdf.

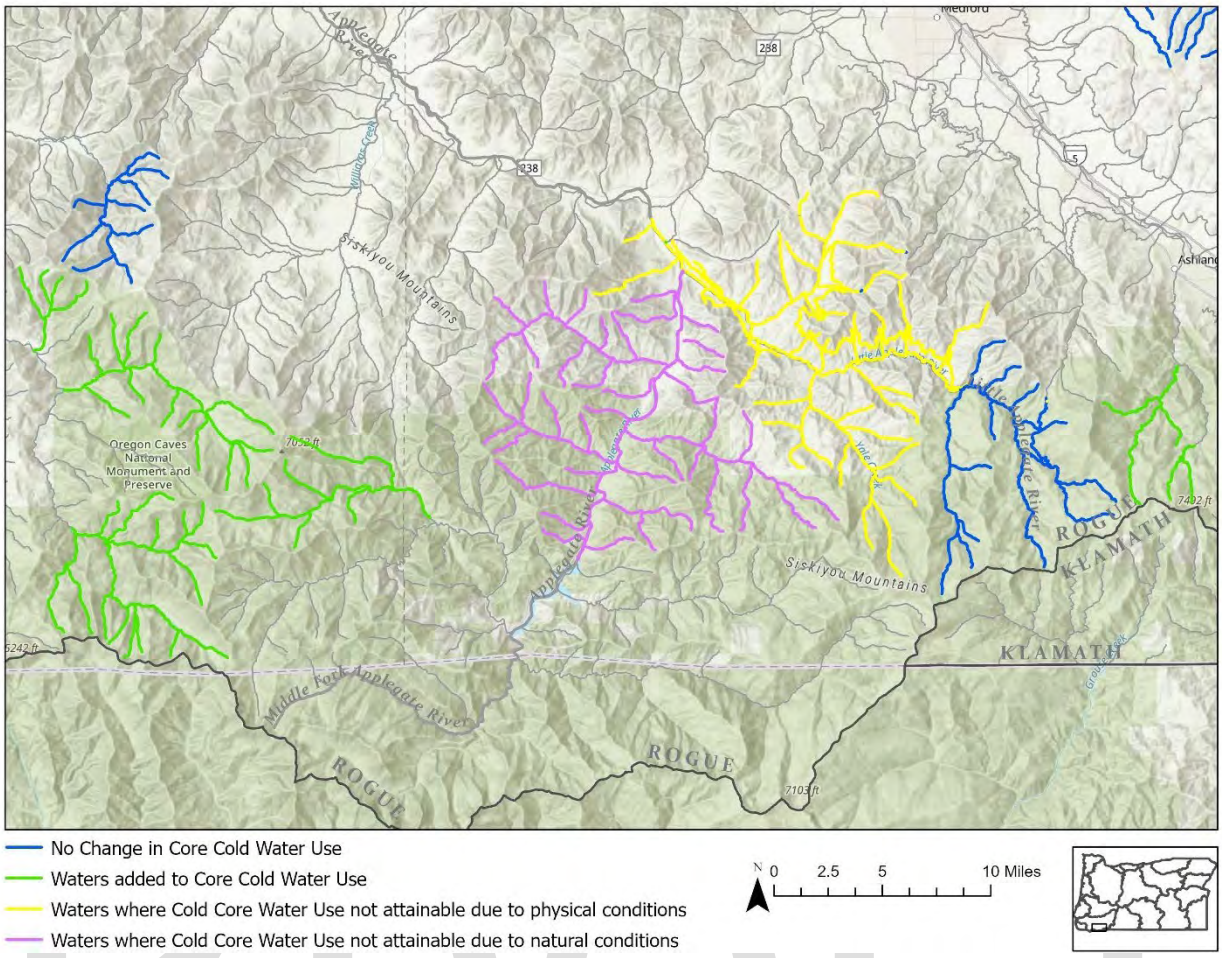

Figure 5-10. Waters where Core Cold Water Use is Not Attainable Due to Natural Conditions, Applegate River (Purple), Rogue River Basin. Updates to Core Cold Water Use in the Little Applegate River is discussed in Section 5.1.

5.4.2 Highest Attainable Use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for all waters described here is salmon and trout rearing and migration. Criteria associated with this use designation protect waters that provide suitable rearing habitat for salmon, steelhead, rainbow trout, and cutthroat trout, and upstream adult pre-spawn migration for salmon and steelhead. This use designation also protects other cold-water biota that co-occur with salmonid fishes. In headwater locations that currently meet Core Cold Water criteria, such as Cedar Creek and upper Baldface Creek, DEQ designation of salmon and trout rearing and migration downstream will ensure protection of these colder upstream locations.

6 Changes to 'salmon and trout rearing and migration use'

DEQ is updating salmon and trout rearing and migration use in a few waters in the state. These waters include several in the Walla Walla Basin, Multnomah Channel and the lower Santiam River in the Willamette Basin and D River in the Mid Coast Basin. Each area is addressed separately below

6.1 Updates to Salmon and Trout Rearing and Migration Use in the Walla Walla Basin

6.1.1 Description and Justification

DEQ is updating salmon and trout rearing and migration use in several lower tributaries of the Walla Walla River that are located in Oregon (Figure 6-1)[44]. This update is based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

In 2003, DEQ designated these waters for salmon and trout rearing and migration because the mainstem Walla Walla River, downstream of these waters, is considered habitat for steelhead. However, these lower tributaries do not support steelhead spawning, rearing, or migration according to ODFW's FHD. Like other anadromous salmonids, steelhead require cold water, free-flowing water, and clean gravel for spawning. The area where DEQ is updating the use, located primarily west and south of Milton-Freewater, is arid and summer temperatures are warm. Many of the waters run through agricultural areas, are intermittent or are irrigation ditches or canals. As a result, these waters do not support steelhead rearing, migration, or spawning.

6.1.2 Highest attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for these waters is "redband trout." There is no steelhead rearing and migration use in these waters. The resident trout in these waters is redband trout, as is the case in many eastern Oregon waters, as opposed to rainbow or coastal cutthroat trout. ODFW FHD data categorizes Dry Creek and Pine Creek, two of the major tributaries in this area, as foraging, migration and overwintering habitat for Redband Trout. The Redband Trout use and associated temperature criterion of 20 ℃ is appropriate to protect this use.

[44] Administratively, these waters are included as part of the Umatilla Basin (OAR 340-041-0310).

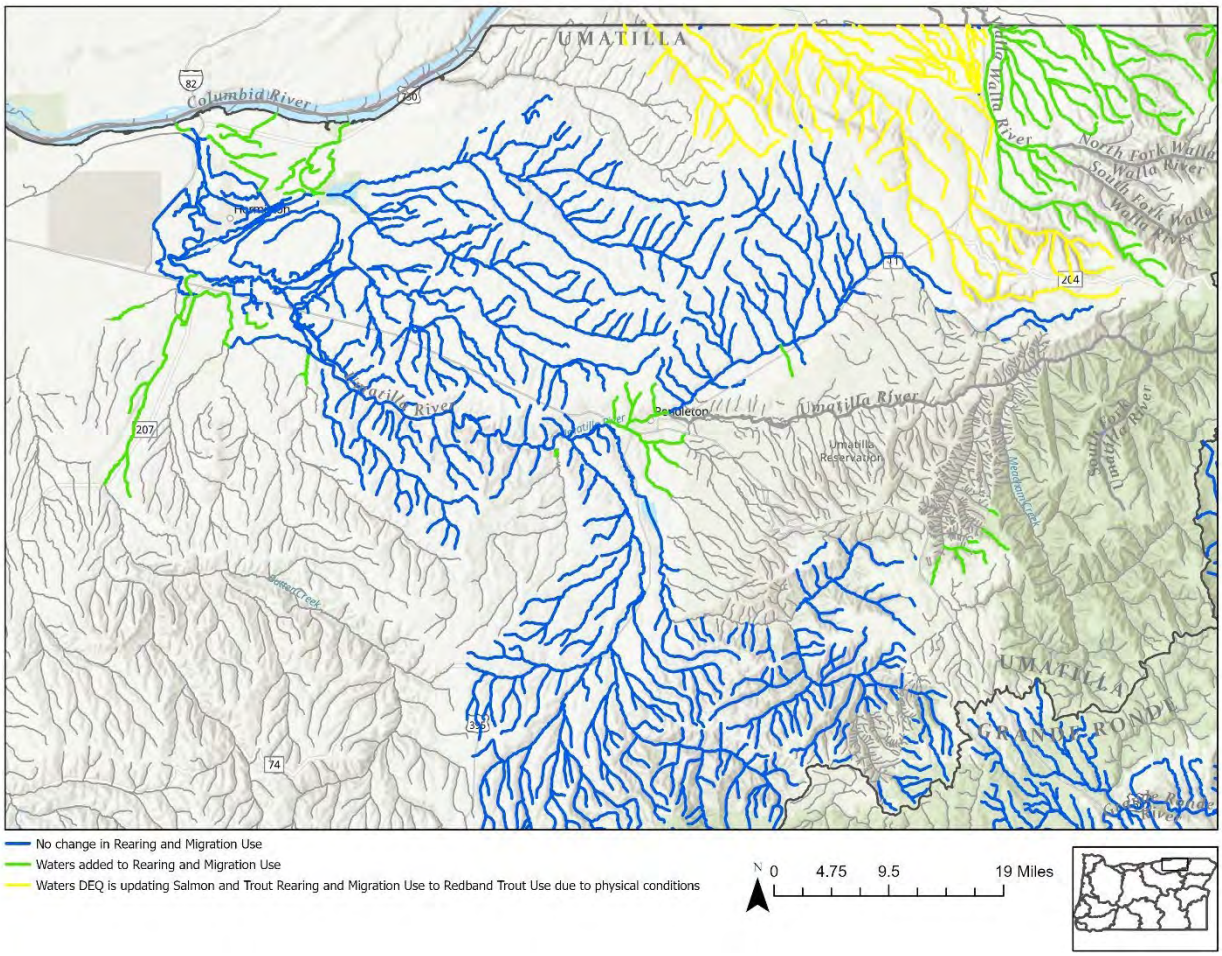

Figure 6-1. Waters DEQ is updating from Salmon and Trout Rearing and Migration use to Redband Trout use, Walla Walla Basin.

6.2 Update to Salmon and Trout Rearing and Migration Use in the Santiam River

6.2.1 Description and Justification

DEQ is updating Salmon and Trout Rearing and Migration use in the lower approximately 9.8 miles of the Santiam River to Migration Corridor use (Figure 6-2). This update is justified based on 40 CFR 131.10(g), Factor 1: "Natural occurring pollutant concentrations prevent attaining the use."

The natural thermal potential for this reach of the Santiam River was modelled for the Willamette Basin TMDL[45] This modeling determined that under system potential, the reach naturally exceeds 18°C in July and August up to river mile 9.8 (Figure 6-3). As a result, the Santiam River cannot attain the Rearing and Migration Use. ODFW data indicates there is no spawning or rearing use in the summer.

[45] Oregon DEQ, 2006. Willamette Basin Total Maximum Daily Load, Chapter 4: Willamette Basin Temperature TMDL. The modeling for this particular scenario looked at the impact of achieving system potential conditions without changing upper boundary flow rates or temperatures. These compare model calculated temperatures for 2002 system potential conditions to model calculated temperatures for 2002 current conditions. Figure 6.1 shows system potential assuming no point sources. See discussion in Willamette Temperature TMDL, page 4-158 and forward. See page 4-160.

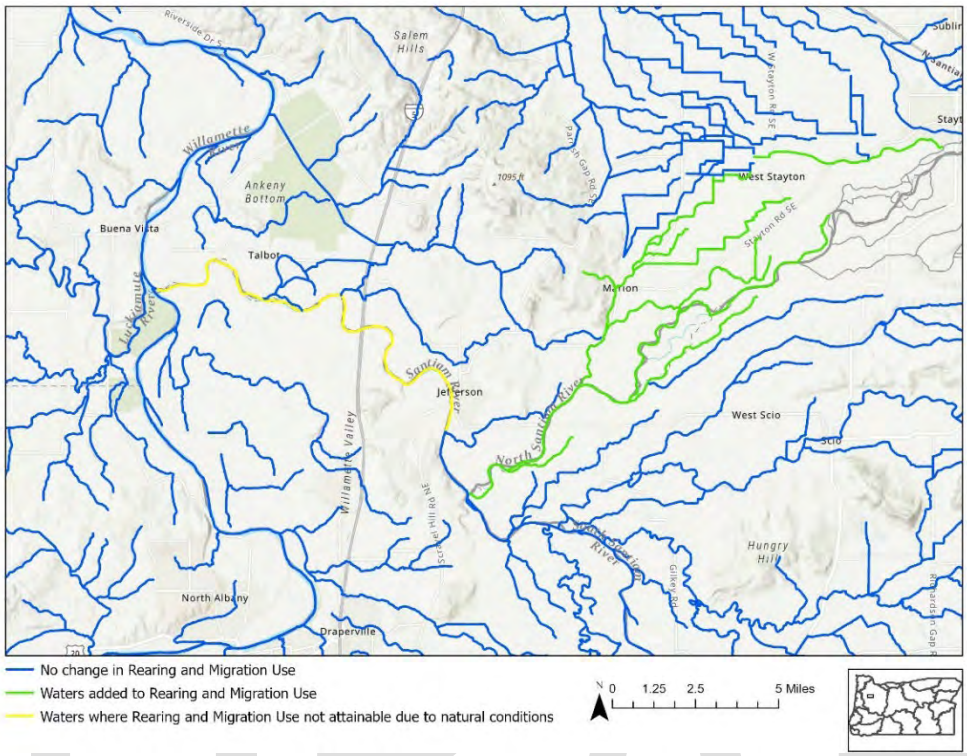

Figure 6-2. Waters that cannot attain salmon and trout rearing and migration use, Santiam River, Willamette Basin.

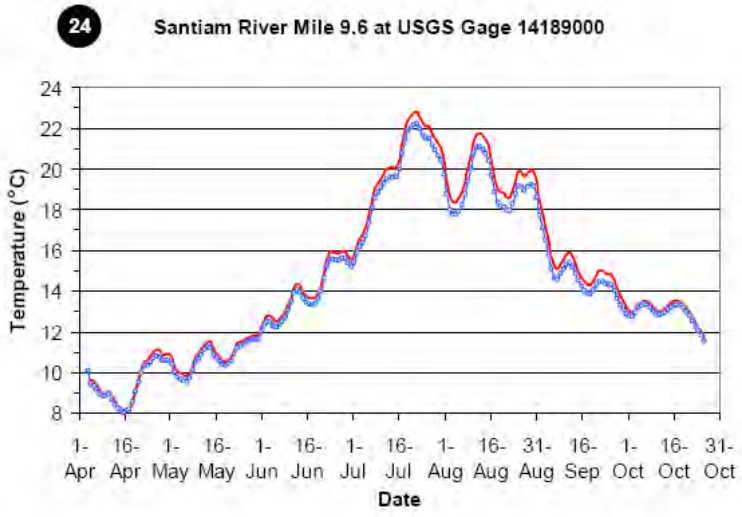

Figure 6-3. 2003 temperatures (Red) and System Potential Temperatures (Blue), Santiam River Mile 9.6. Sources: Willamette Basin Temperature TMDL (2006).

6.2.2 Highest attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for these waters is “migration corridor.” The “migration corridor” use is a seasonal cold-water use, meaning it is not optimal salmonid rearing or holding habitat during the warm summer months. Anadromous or adfluvial species migrate through and may rear in these reaches, primarily during other

times of the year. There may be some cold-water fish use during the summer, such as juvenile rearing or out migration, but these are not spawning streams and do not provide optimal juvenile rearing conditions during the summer. The presence of native cool water species , such as speckled dace, redside shiner, largescale sucker and mountain sucker, also supports a migration corridor designation. It is important to protect existing habitat heterogeneity and cold-water refuges in these reaches.

6.3 Update to Salmon and Trout Rearing and Migration Use in D River

6.3.1 Description and Justification

DEQ is updating salmon and trout rearing and migration use in the D River, Mid Coast Basin to migration corridor use. This update is justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses." Specifically, the short length of the river prevents salmon and trout rearing use the criterion is designed to protect. Moreover, temperature data indicate that the salmon and trout rearing use temperature criterion of 18°C is unattainable.

D River is a 440 foot river leading from Devil's Lake in Lincoln City to the Pacific Ocean. The river runs under U.S. Highway 101 before crossing a beach area and entering the ocean. Current NorWeST temperature observations indicate the reach exceeds 18°C as an August mean. These warm temperatures are the result of the D River draining a large, eutrophic lake. The reach contains no salmonid holding, migration, spawning, or egg incubation through fry emergence use in July and August.

Given the short length of the river, no restoration would be capable of cooling the warm lacustrine waters that feed the river enough to attain the 18°C criterion needed to support salmon and trout rearing and migration.

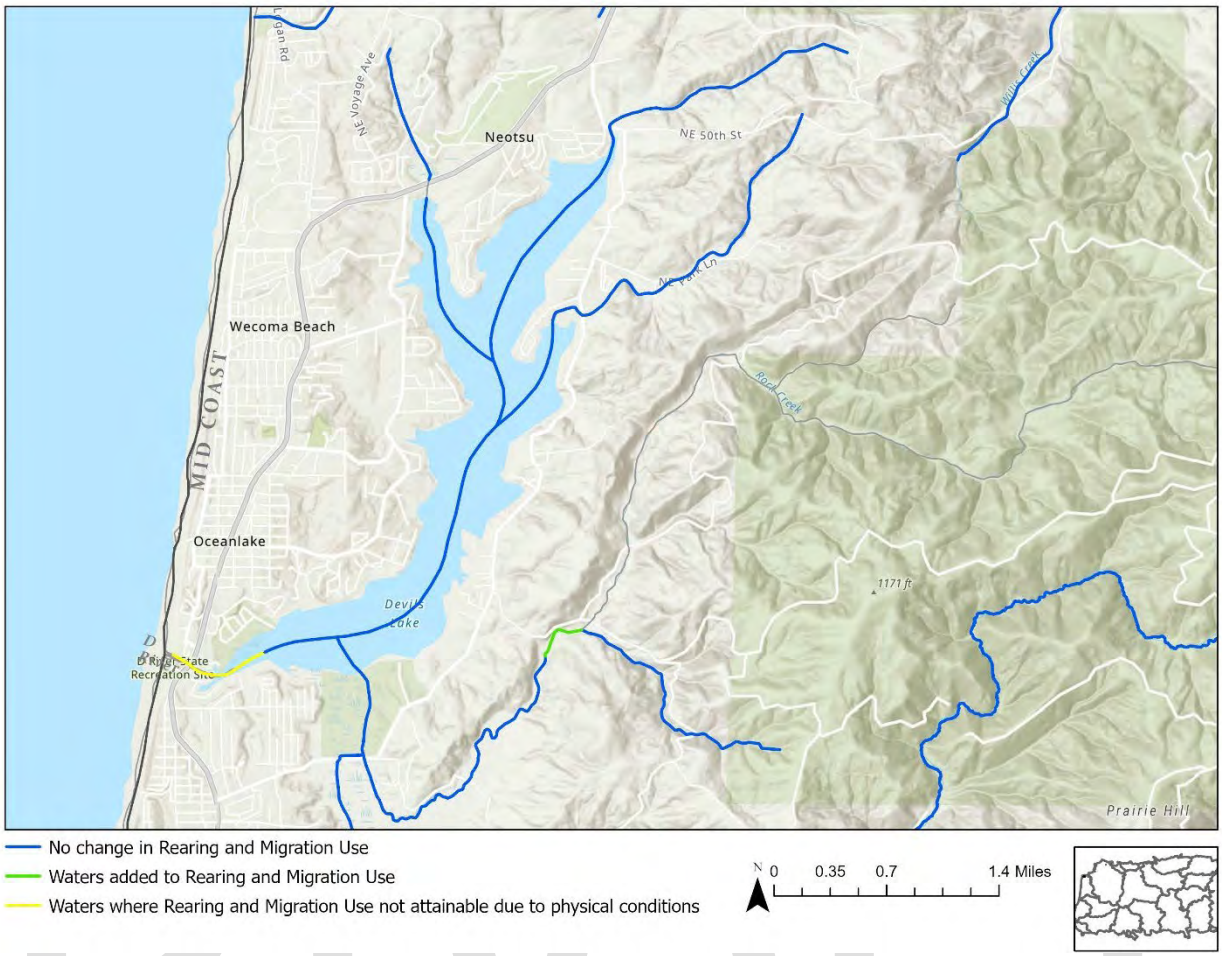

Figure 6-4. Waters that cannot attain salmon and trout rearing and migration use, D River, Mid Coast Basin.

6.3.2 Highest Attainable Use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for these waters is "migration corridor." The "migration corridor" use is a seasonal cold-water use, meaning it is not optimal salmonid rearing or holding habitat during the warm summer months. Anadromous or adfluvial species migrate through or use this reach, primarily during other times of the year. This is not a spawning stream and does not provide optimal juvenile rearing conditions during the summer.

6.4 Update to 'Salmon and Trout Rearing and Migration Use' in Multnomah Channel

6.4.1 Description and Justification

DEQ is updating Salmon and Trout Rearing and Migration use in Multnomah Channel and Scappoose Bay, located near the confluence of the Willamette and Columbia Rivers, to Migration Corridor use (Figure 6-5). This update is justified based on 40 CFR 131.10(g), Factor 1: "Natural occurring pollutant concentrations prevent attaining the use."

Current temperatures exceed 18-20°C as mean August maximum temperatures.[46] The current water temperatures of these reaches are the same as the nearby Willamette River and Columbia River, which are designated migration corridor use. These reaches were not modeled in the 2006 Lower Willamette basin TMDL. No third party models of restored thermal potential specific to these reaches were identified at this time. However, these reaches receive water from both the Willamette River and Columbia River, where TMDL modeling indicates natural thermal potential exceeds 18°C in July and August (Figures 6-6 to 6-9) and the designated aquatic life use is for Salmon and Steelhead Migration Corridor. The data and modeling demonstrate that salmon and trout rearing and migration use is not attainable in Multnomah Channel and Scappoose Bay.

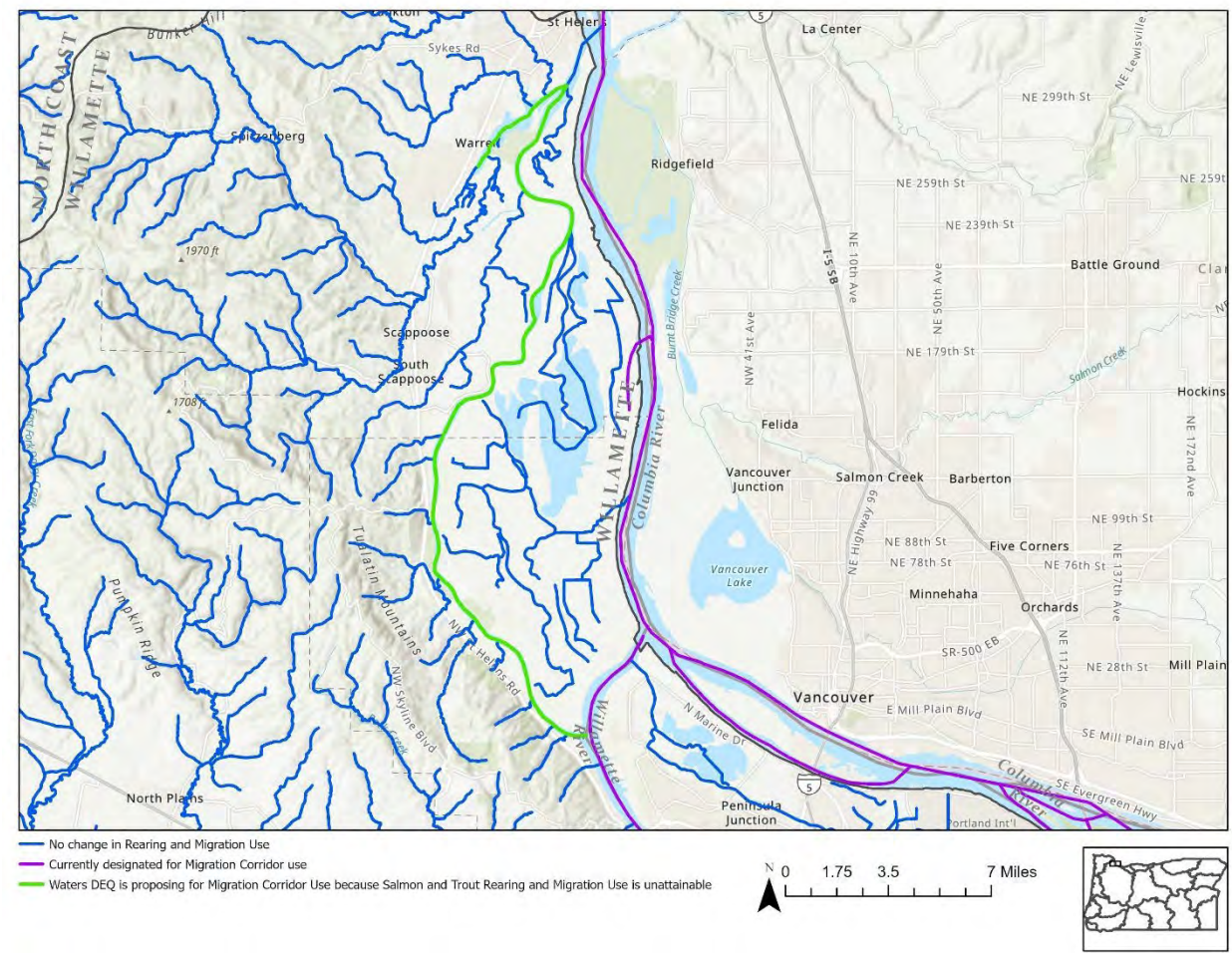

Figure 6-5. Waters that cannot attain salmon and trout rearing and migration use, Multnomah Channel and Scappoose Bay, Willamette Basin.

[46] U.S. EPA, 2017. Memorandum: *Evaluation of the potential cold water refugia created by tributaries within the Lower/Middle Columbia River based on "NorWeST" temperature modeling project, February 21, 2017.*

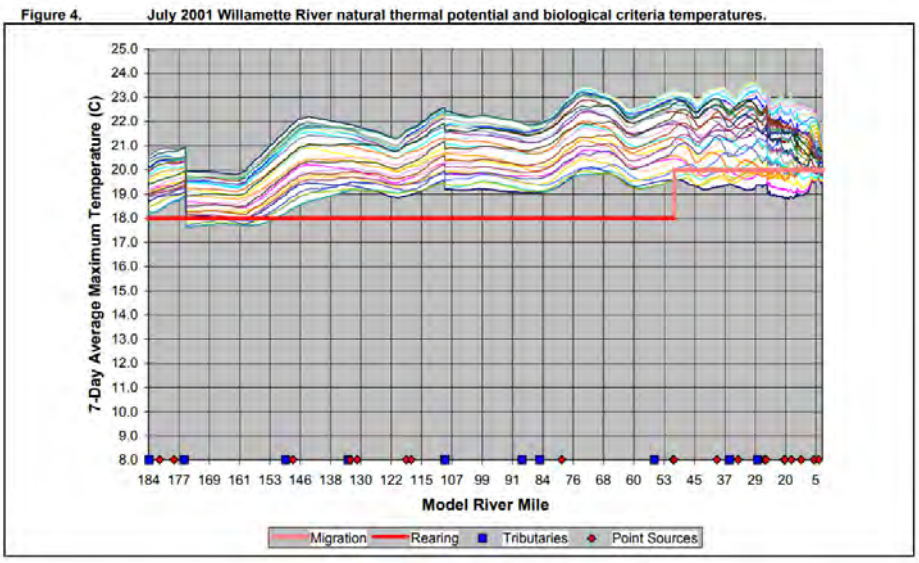

Figure 6-6. Natural thermal potential scenarios, Willamette River, July 2001. Source: Oregon DEQ. 2006. Willamette River Temperature TMDL.

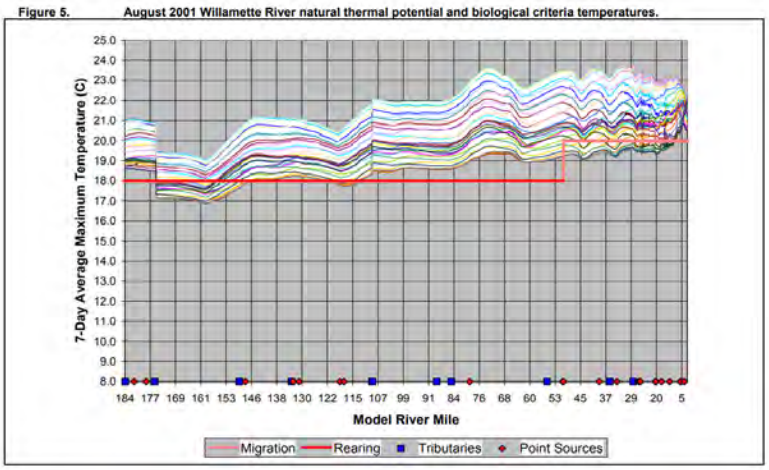

Figure 6-7. Natural thermal potential scenarios, Willamette River, August 2001. Source: Oregon DEQ. 2006. Willamette River Temperature TMDL.

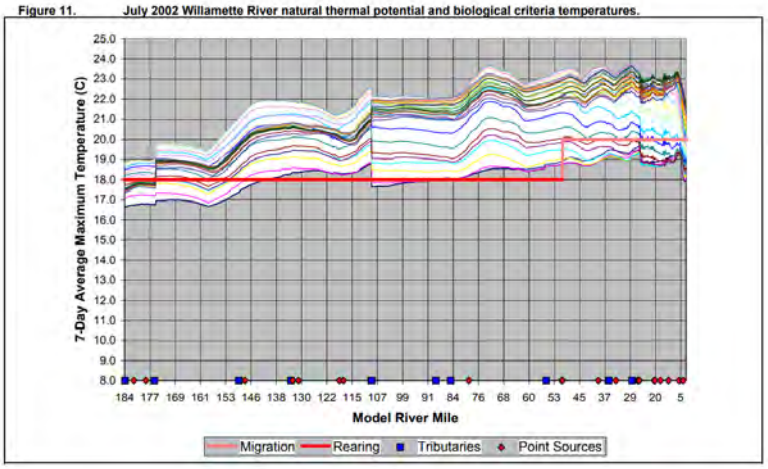

Figure 6-8. Natural thermal potential scenarios, Willamette River, July 2002. Source: Oregon DEQ. 2006. Willamette River Temperature TMDL.

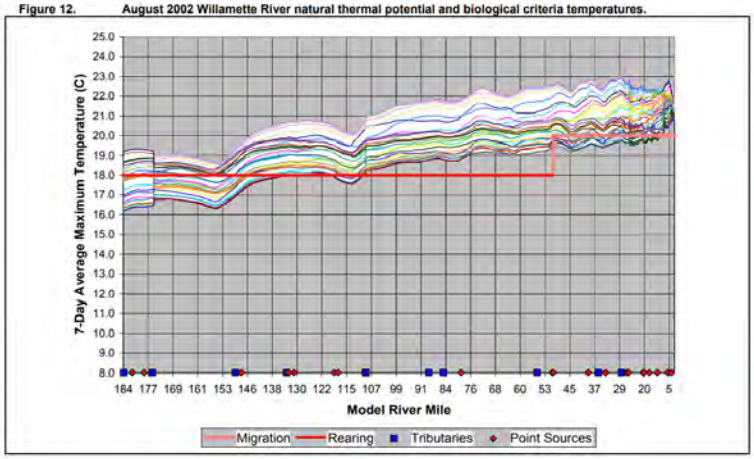

Figure 6-9. Natural thermal potential scenarios, Willamette River, August 2002. Source: Oregon DEQ. 2006. Willamette River Temperature TMDL.

6.4.2 Highest Attainable Use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for these waters is "migration corridor." The "migration corridor" use is a seasonal cold-water use, meaning it is not optimal salmonid rearing or holding habitat during the warm summer months. Anadromous or adfluvial species migrate through or use some of these reaches, primarily during other times of the year. There may be some cold-water fish use during the summer, such as juvenile rearing or out migration, but these are not spawning streams and do not provide optimal juvenile rearing conditions during the summer. The presence of native cool water species, including white sturgeon and largescale sucker, as well as smallmouth bass[47] also supports a migration corridor designation. It is important to protect existing habitat heterogeneity and cold-water refuges in these reaches.

7 Updates to 'Redband Trout' and 'Lahontan cutthroat trout' uses

7.1.1 Description and Justification

DEQ is updating numerous waters in the Klamath, Goose and Summer Lakes, Malheur Lake, Malheur River, Owyhee, and Powder River Basins from Redband Trout Use to Cool Water Species Use. These updates are justified based on 40 CFR 131.10(g), Factor 5: "Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality preclude attaining aquatic life protection uses."

In 2003, ODFW had little information regarding the distribution of redband trout or cool water species in Oregon, particularly for the inland basins of Oregon. The previous focus was on anadromous fish and ESA listed species. As a conservative assumption, DEQ broadly designated entire administrative basins for redband trout with the intention of updating these uses when ODFW had better information about their distribution. Since 2003, ODFW has significantly improved its understanding of distribution of redband trout, including timing of when redband trout occurs in various waters. DEQ is proposing to update the use maps according to ODFW's database. Specifically, DEQ is updating redband trout either because: 1) redband trout does not exist in certain waters where salmonids do not reside (Figures 7-1 – 7-3); or 2) redband trout do not reside in naturally warm waters during peak summer months because they migrate to cooler upstream waters during that time (Figure 7-4 – 7-7).

Redband trout include several subspecies of *Oncorhynchus mykiss*, or rainbow trout, that live in the interior of many western states. Interior redband live above anthropogenic or natural barriers where anadromous migration is not possible.[48] They also occur in interior closed basins with no connection to the ocean that do not have anadromous fish. In montane waters of the interior Columbia River Basin, redband trout prefer pools, rather than flowing waters. In lowland desert waters, redband trout prefer shaded and cooler reaches of stream.[49] Redband can have adfluvial, fluvial or resident life histories depending on their location.

In the areas where salmonids do not reside, physical conditions, such as natural barriers or the presence of isolated basins prevent such areas from supporting salmonid use. Waters where redband trout do not

[47] See discussion of the smallmouth bass as filling in the niche of other native cool water species in the TSD for this rulemaking.

[48] U.S. Forest Service. 2016. Conservation Strategy for Interior Redband (*Oncorhynchus mykiss subsp.*) in the States of California, Idaho, Montana, Nevada, Oregon and Washington.

[49] Discussion on page 7 of 2016 Conservation Strategy cited above.

reside during peak summer months are in lower elevation desert streams; the natural warmer temperatures of these streams do not support redband trout during these months; consistent with redband trout life history, during the summer, the fish migrate further upstream to cooler waters.

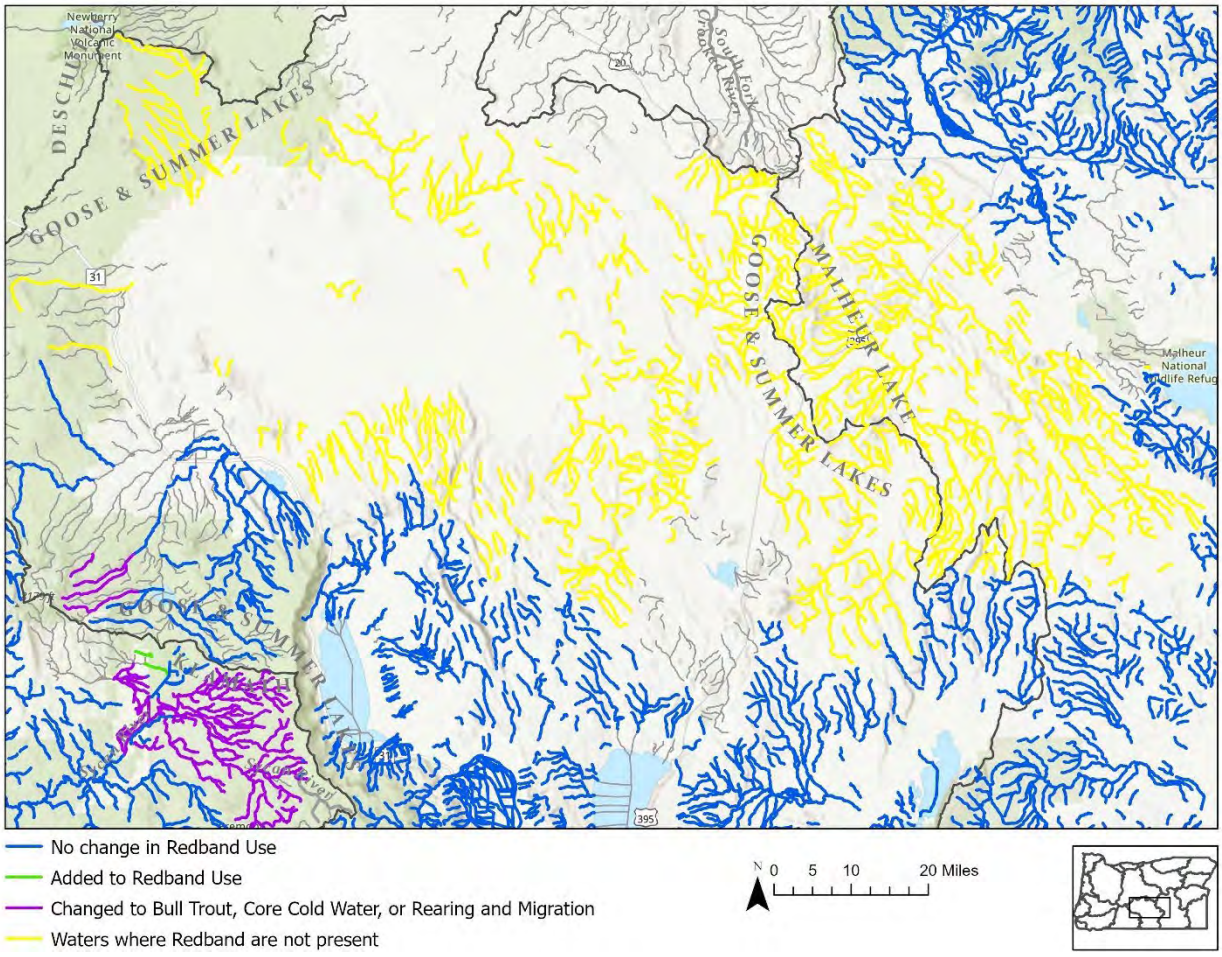

Figure 7-1. Waters where salmonids are not present, Goose & Summer Lakes Basin.

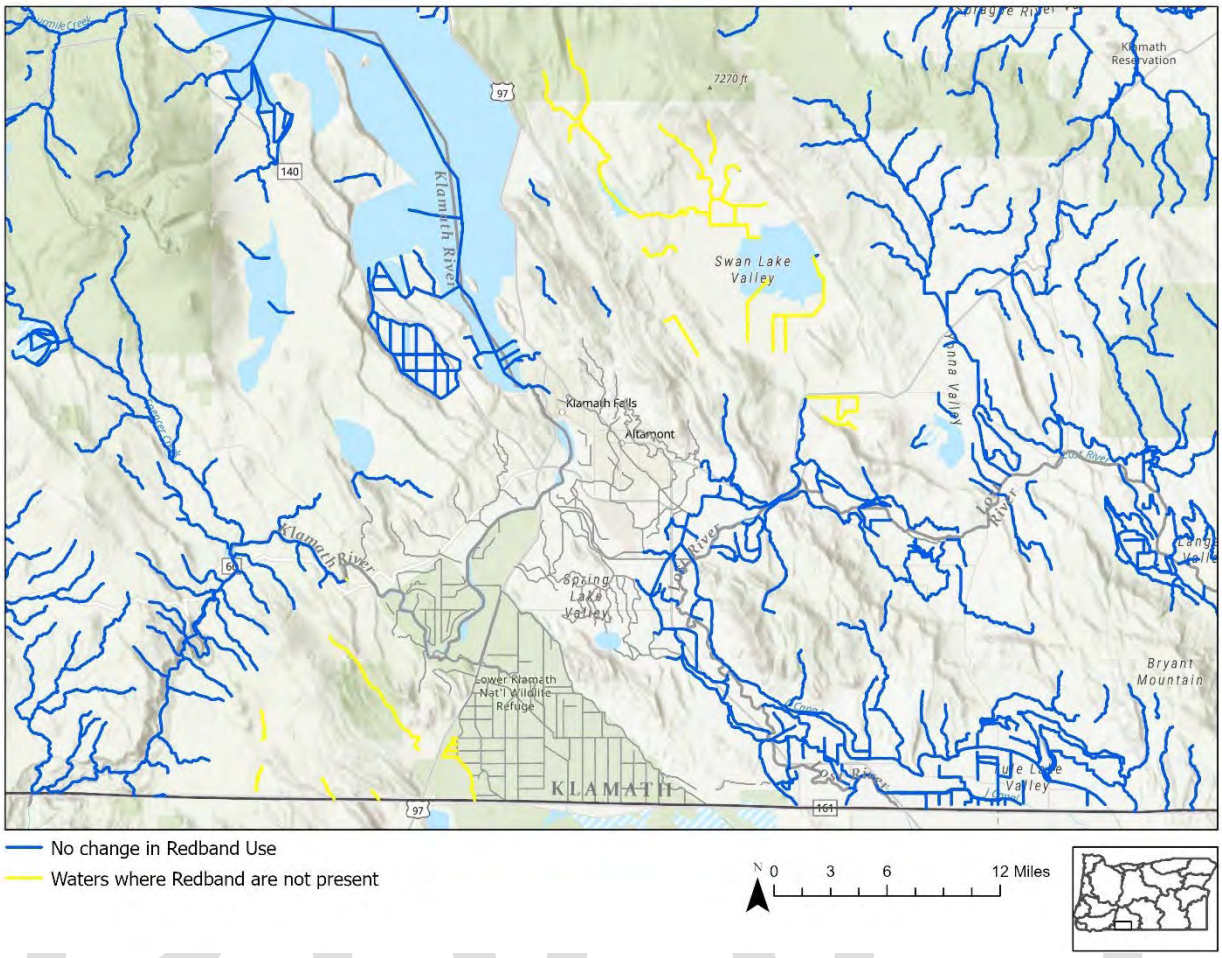

Figure 7-2. Waters where salmonids are not present, Klamath Basin.

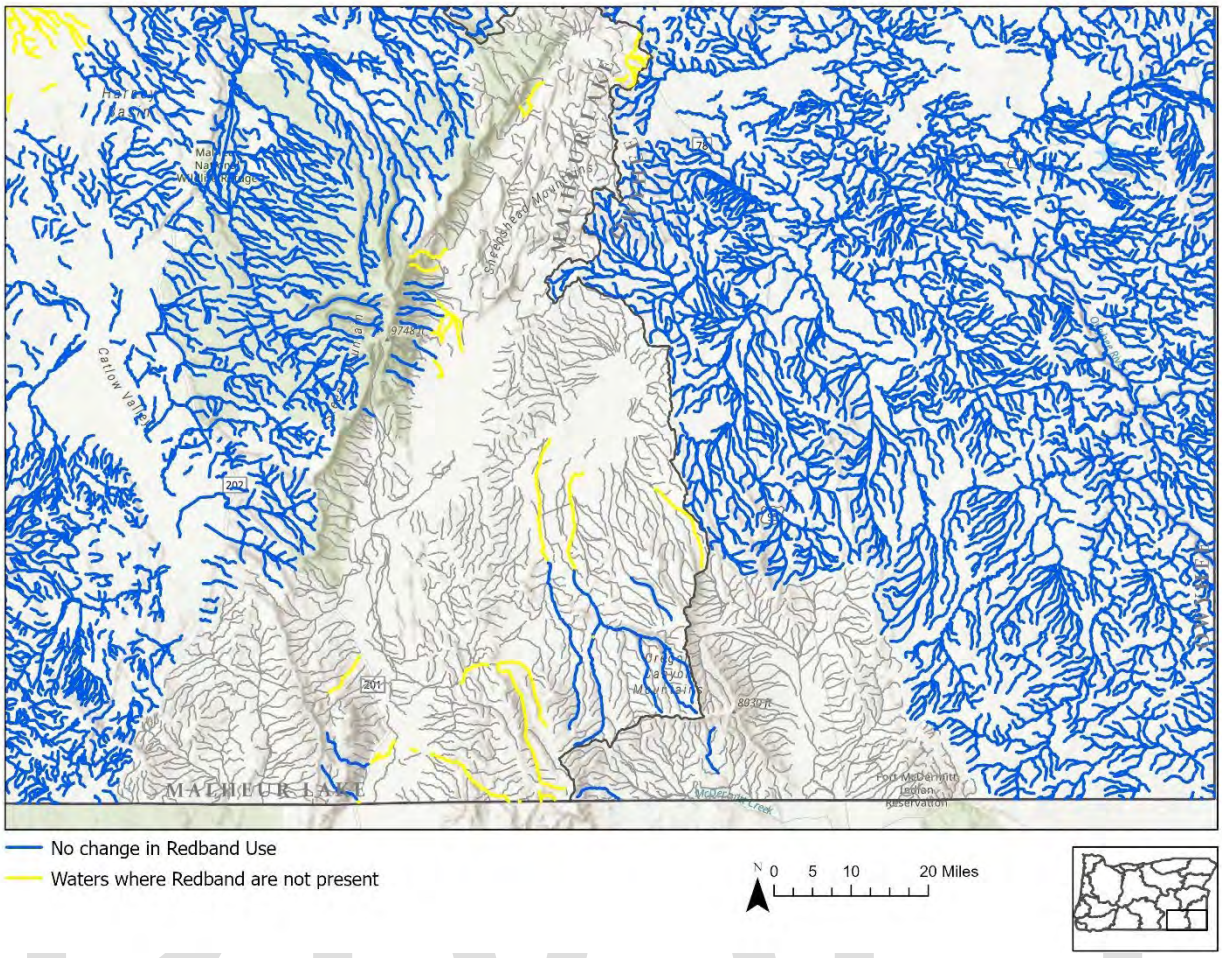

Figure 7-3. Waters where salmonids are not present, Malheur Lake Basin

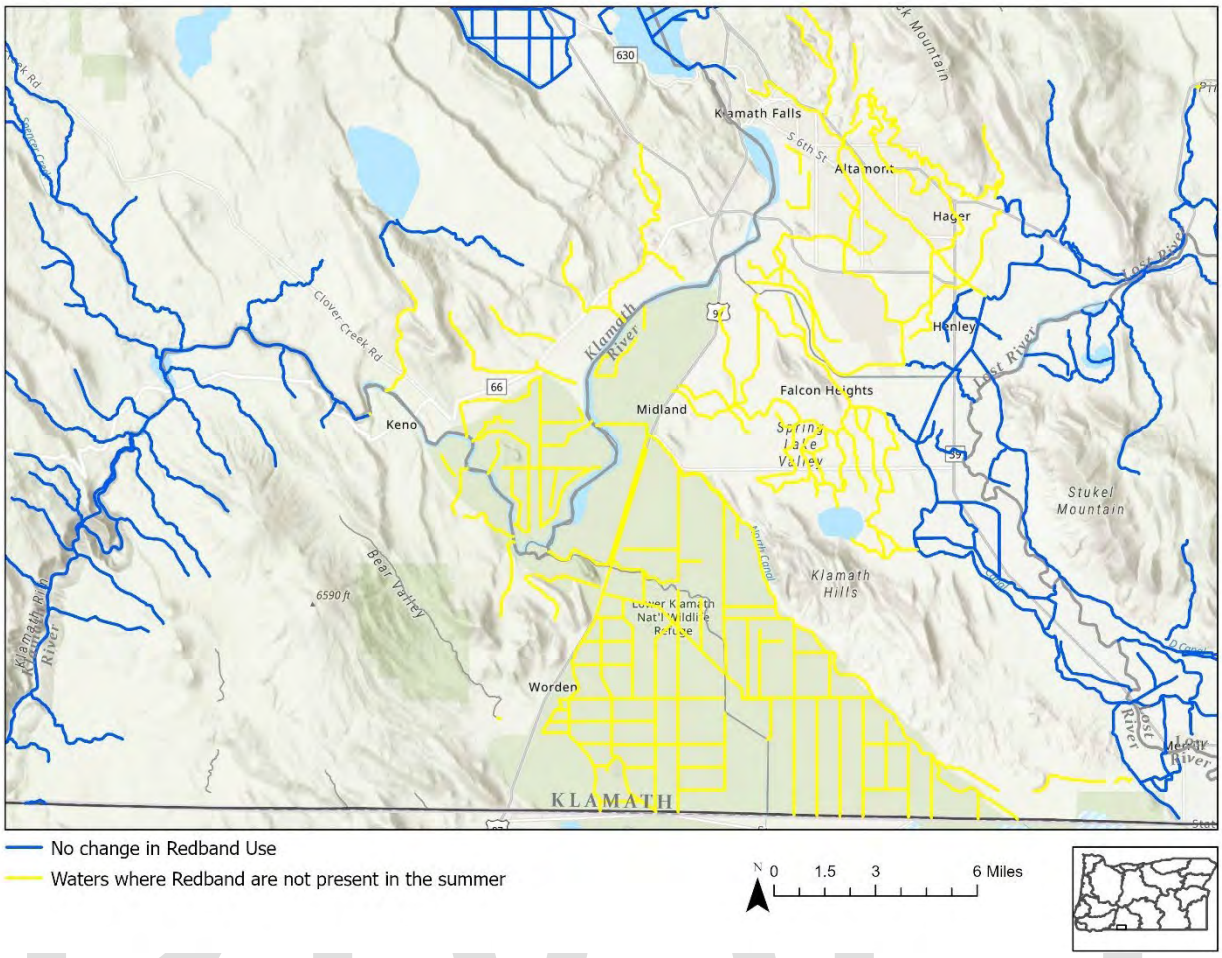

Figure 7-4. Waters where Redband Trout are not present during the summer, Klamath Basin.

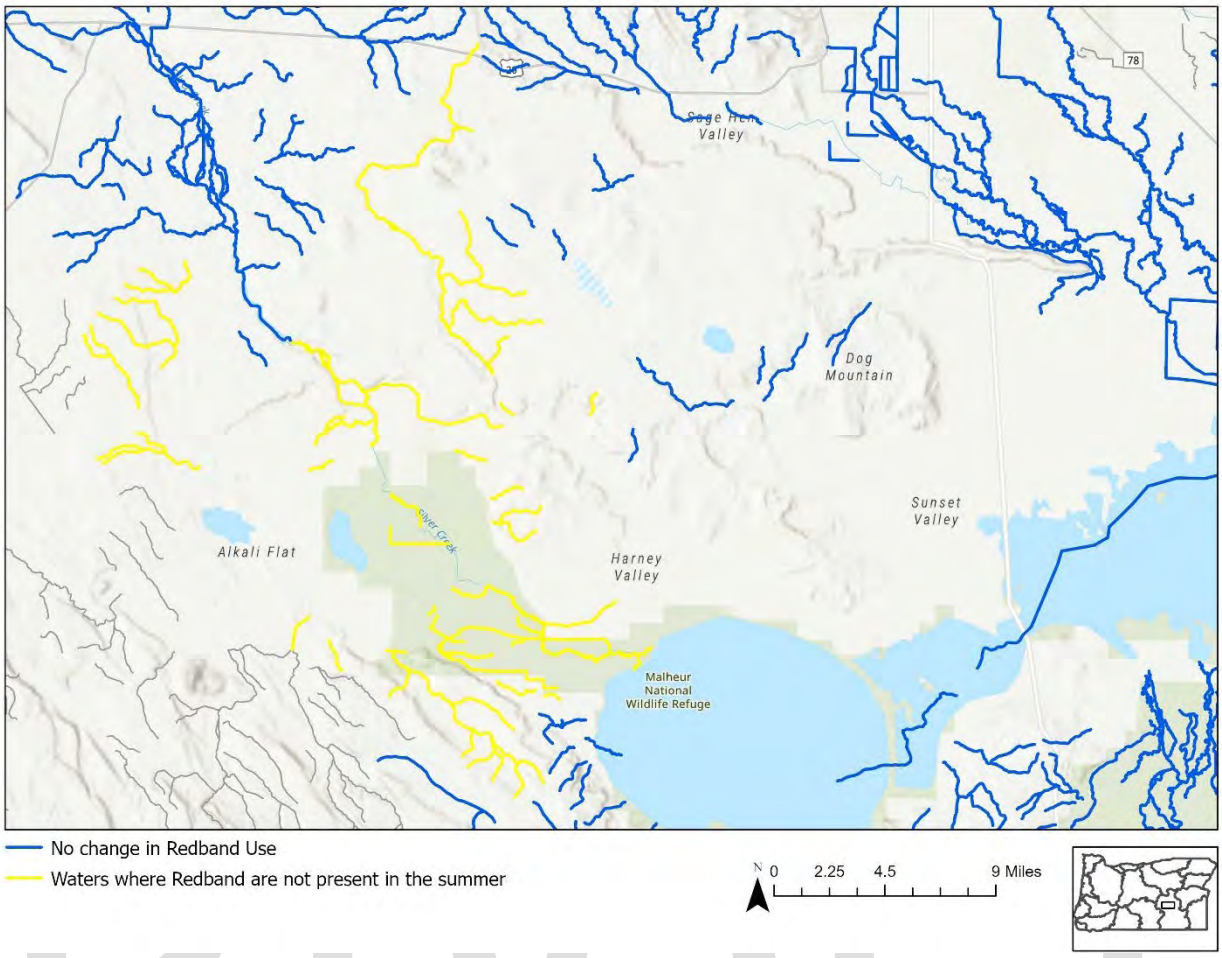

Figure 7-5. Waters where Redband Trout are not present during the summer, northern Malheur Lake Basin.

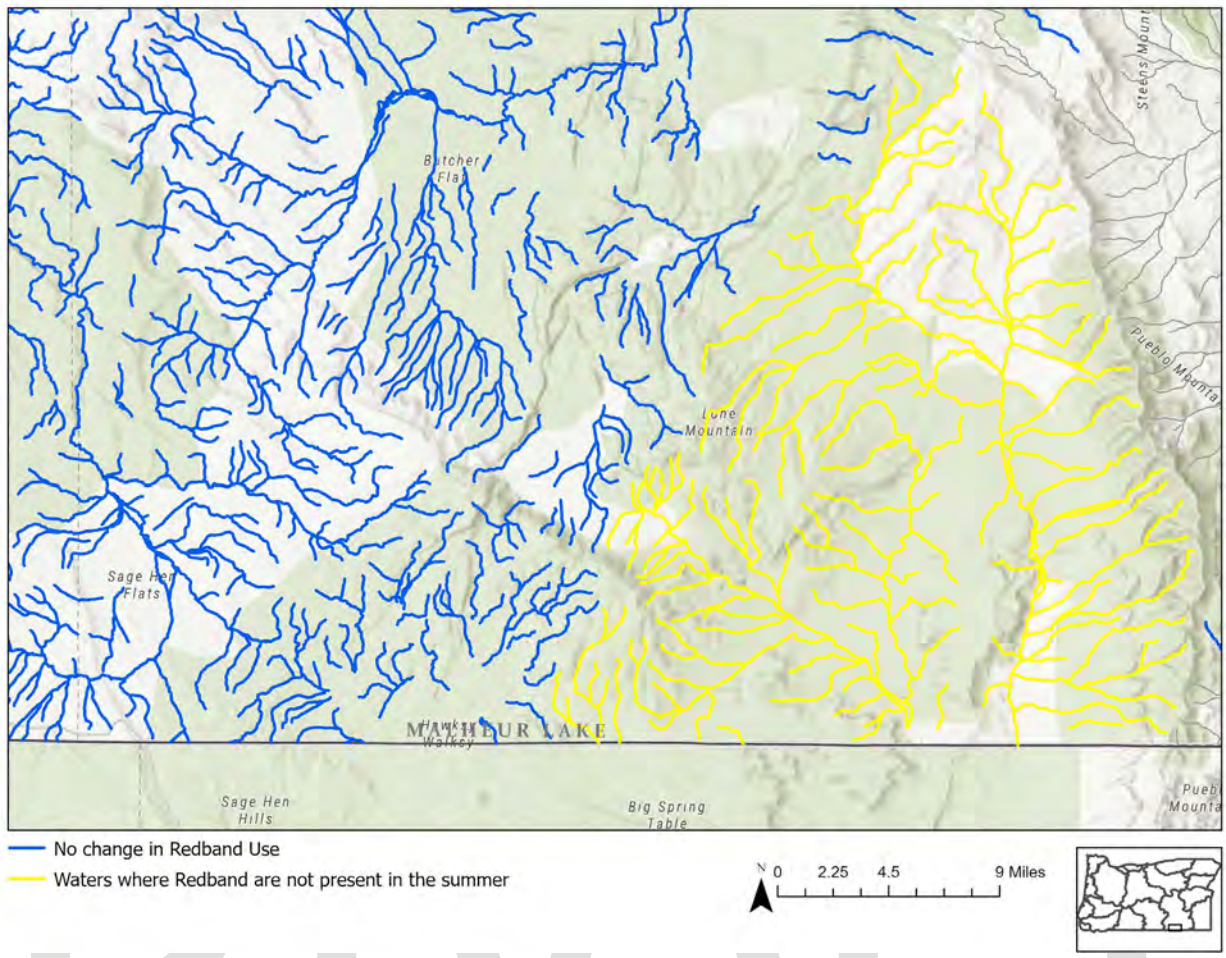

Figure 7-6. Waters where Redband Trout are not present during the summer, Malheur Lake Basin.

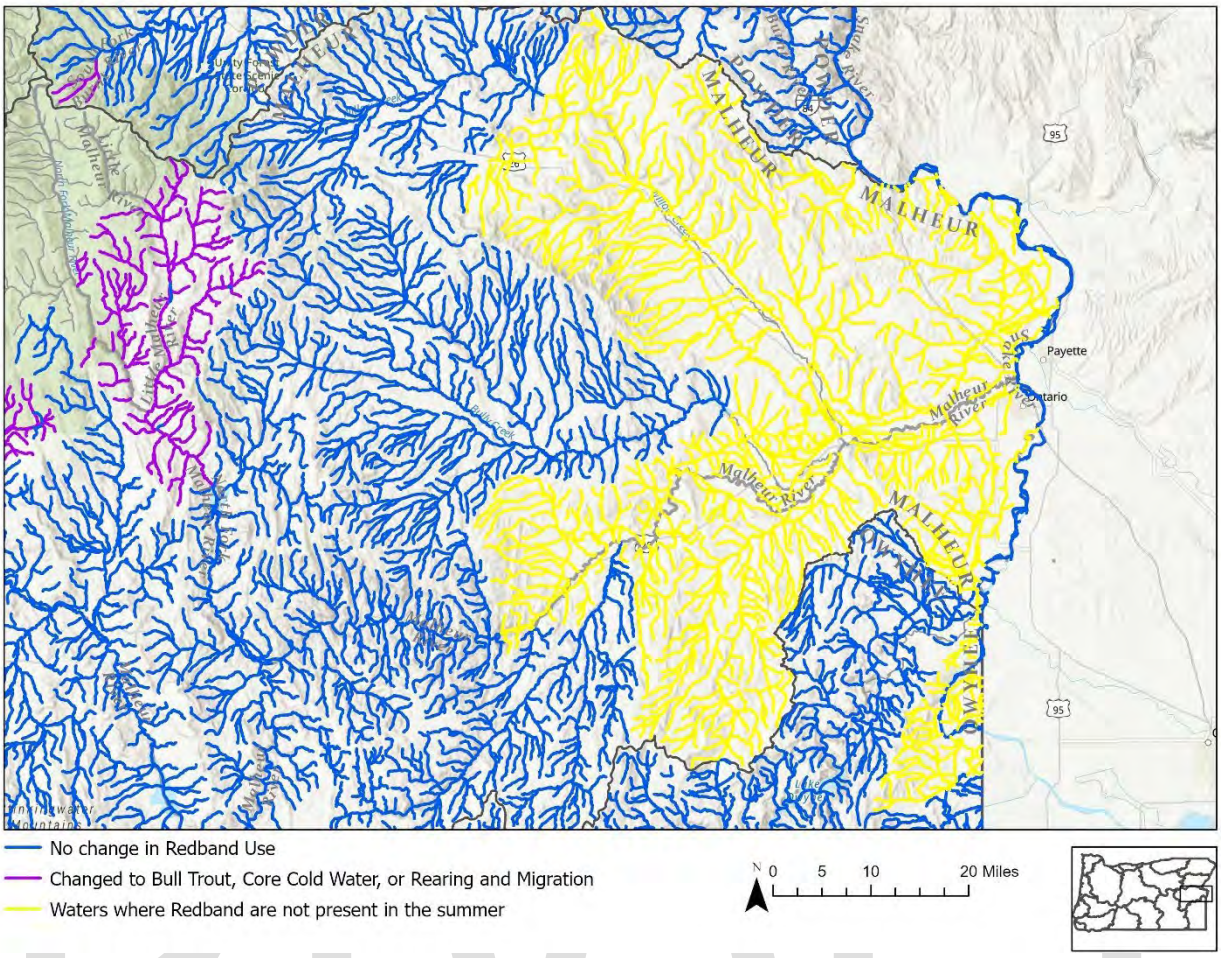

Figure 7-7. Waters where Redband Trout are not present during the summer, Malheur Lake Basin.

7.1.2 Highest Attainable use

Based on the best available data and the decision rules used for this rulemaking, the highest attainable year-round use for these waters is cool water species. This is consistent with the decision rules developed for designating cool water species, which is any waters not identified as primary migration or rearing habitat for any resident or anadromous salmonid fish in July or August, unless ODFW identifies the waters as having salmon or steelhead “primary migration” use. This is the same “decision rule" that was used for the 2003 fish use designations. The cool water species use subcategory, as used in the temperature standard, includes aquatic organisms that either have a wider temperature tolerance range than cold-water organisms or are physiologically restricted to cool waters, including but not limited to, native sturgeon, Pacific lamprey, suckers, chub, sculpins and certain other species of cyprinids (minnows). Bass are also cool or warm water species that are not native but have been stocked and are fished in some Oregon waters. DEQ uses the absence of cold water species, such as salmonids, during July or August to indicate cool waters reaches. In addition, DEQ uses the ODFW FHD data where it identifies cool water species as the primary use or shows no salmonid use. DEQ may also use the presence of other cool water dependent fish, amphibians, or invertebrate species to support the designation for cool water species use.