APPENDIX A TEMPERATURE WATER QUALITY STANDARDS FOR THE COLUMBIA AND LOWER SNAKE RIVERS

Temperature Water Quality Standards for the Columbia, Lower Columbia and Lower Snake Rivers

The purpose of this memo is to identify the temperature water quality standards (WQS) for the Columbia and Lower Snake Rivers within the geographic scope of the TMDL and upstream of the TMDL in Idaho, whether or not those WQS are used to develop the TMDL, including those WQS that have been federally promulgated or adopted by the five governments with jurisdiction over these rivers: Confederated Tribes of the Colville Reservation, Spokane Tribe of Indians, Idaho, Oregon, and Washington. Identifying the applicable WQS is the first step in understanding the extent and frequency of impairments, and in developing in-stream water quality targets that can be used to measure water quality improvement.

The temperature WQS have been developed by the five governments to protect the most sensitive aquatic life designated uses in the Columbia and Lower Snake Rivers, such as *salmonid spawning, rearing and migration.* The WQS are often complex to interpret and complicated to compare. For example, eleven different numeric criteria between 11 °C and 22 °C apply at various locations in the river system at various times, and are designed to protect a variety of aquatic life uses. These numeric criteria often have different averaging periods (e.g., 7-Day Average Daily Maximum, Daily Average) and/or temporal ranges (e.g., Oct 1 – Mar 31, June 1 – Sept 1).

In order to clearly identify the applicable criteria and uses, EPA has compiled and organized the temperature WQS into fourteen different jurisdictional reaches (Reaches A-N). These reaches are illustrated in Figure 1 and summarized in Table 1. A detailed description of each applicable standard is included in Sections 1-3. Section 4 contains a month-by-month summary of the temperature WQS for each reach, allowing for a side-by-side comparison of WQS in adjacent river reaches throughout the year.

Navigating this Document

Figure 1 (P. 3) displays the locations of each of the state and tribal jurisdictions along the Columbia and Snake Rivers (Reaches A-N). The map legend contains the following information for each of the fourteen jurisdictional reaches: Jurisdiction, River Name, and River Miles. As an example, an Oregon reach for the lower Columbia River, identified as “Reach H”, which extends from river mile 309 to river mile 0, is labeled this way in the Figure 1 legend: H_OR_Columbia_RM309_RM0. Table 1 (P. 4) summarizes the temperature WQS for each of the fourteen jurisdictional reaches (Reaches A-N).

In the following sections, the jurisdictional reaches (Reaches A-N) are presented in greater detail, divided into the following three sections based on geography:

- Section 1. Columbia – Canadian border to the WA-OR border (RM 745 – RM 309) (P. 6)
- Section 2. Lower-Columbia – WA-OR border to the Pacific Ocean (RM 309 – RM 0) (P. 13)

- Section 3. Lower-Snake – Salmon River to the Columbia River confluence (RM 188 – RM 0) (P. 18)

Each section contains detailed information about each applicable temperature WQS, including reach description, designated uses, numeric criterion, supplementary provisions, narrative and natural conditions provisions. Supplementary provisions are not standalone provisions but when they are combined with other WQC, they establish the desired condition of the waterbody.

In Section 4, all numeric criteria for each river reach are compiled (individual rows) in Table 2, starting from the Canadian border and moving downstream, for each month (individual columns). This allows for a side-by-side comparison of temperature WQS as they apply throughout the year, in those reaches with adjacent jurisdictions (P. 25). The numeric criteria are illustrated geographically in Figure 2.

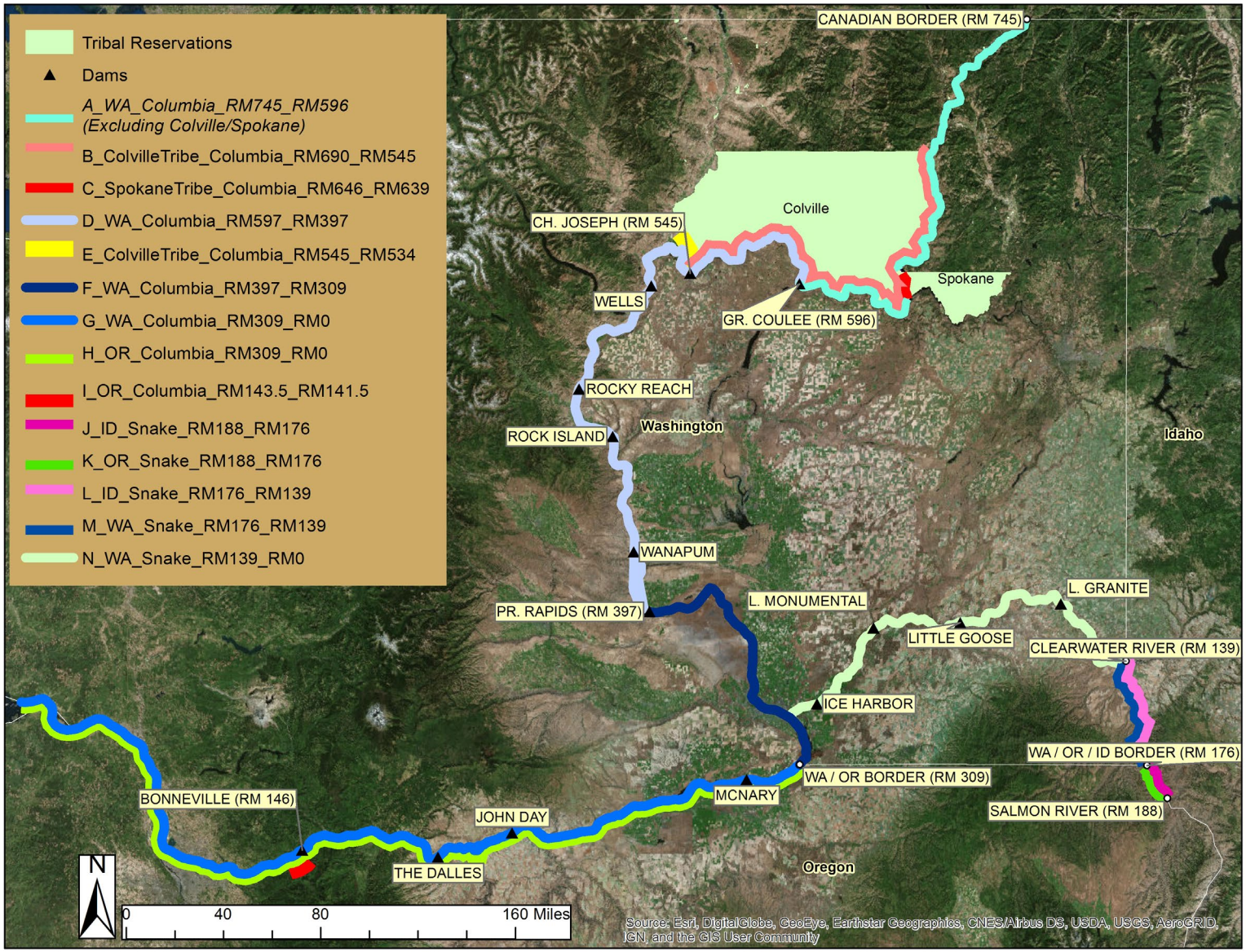

Figure 1: Columbia and Snake River Temperature WQS Jurisdictions and River Miles. Source: WA River Miles and Reservations from ECY, Dams from ACE, OR/ID River Miles from R10 GIS Team. Map created by Martin Merz, EPA R10.

Table 1: Summary of temperature WQS for the Columbia and Snake Rivers, including aquatic life uses, numeric criteria and narrative provisions.

Map	Jurisdiction	River Miles	Supplementary & Narrative Provisions	Numeric Criterion	Aquatic Life Use
A	*Washington*	*Canadian Border (745) to Grand Coulee Dam (596) (excluding RM 646.5-639)*	*0.3°C[1] Natural Conditions, Downstream Standards*	*16°C 7-DADM*	*Core Summer Salmonid Habitat*
B	*Colville Tribe*	*N. Reservation Boundary (690) to Chief Joseph Dam (545)*	*Natural Conditions*	*16°C 1-DMax[2] (CTCR 4-8)*	*Class I*
				18°C 1-DMax[3] (40 CFR 131.35)	*Class II*
C	*Spokane Tribe*	*Reservation Boundary (646.5) to Reservation Boundary (639)*	*No Natural Conditions*	*16.5°C 7-DADM (June 1 - Sept 1); 13.5° C 7-DADM (Sept 1 – Oct 1 & April 1 – June 1); 11°C 7-DADM (Oct 1 – March 31)*	*Class AA*
D	*Washington*	*Grand Coulee Dam (596) to Priest Rapids Dam (397)*	*0.3°C[1] Natural Conditions, Downstream Standards*	*17.5°C 7-DADM*	*Salmonid spawning, rearing and migration*
E	*Colville Tribe*	*Chief Joseph Dam (545) to Okanogan River (534)*	*Natural Conditions*	*18°C 1-DMax[4] (40 CFR 131.35 & CTCR 4-8)*	*Class II*

[1] A measurable change for temperature is an increase of 0.3°C or greater [173-201A-320]
[2] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[3] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[4] Averaging period not provided – interpreted as daily maximum (*1-DMax*)

Map	Jurisdiction	River Miles	Supplementary & Narrative Provisions	Numeric Criterion	Aquatic Life Use
F	*Washington*	*Priest Rapids Dam (397) to WA/OR Border (309)*	*0.3°C[1] Natural Conditions, Downstream Standards*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*
G	*Washington*	*WA/OR Border (309) to Pacific Ocean (0)*	*0.3°C[1] Natural Conditions, Downstream Standards*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*
H	*Oregon*	*WA/OR Border (309) to Pacific Ocean (0)*	*Cold Water Refugia; HUA of 0.3°C*	*20°C 7-DADM*	*Salmon and Steelhead Migration Corridors*
I	*Oregon*	*Ives Island (143.5) to Beacon Rock (141.5)*	*HUA of 0.3°C*	*13°C 7-DADM (Oct 15th – Mar 31st)*	*Salmon and Steelhead Spawning through Fry Emergence*
J	*Idaho*	*Salmon River (188) to OR/WA/ID border (176)*	*Natural Conditions*	*22°C 1-DMax & 19°C MDA*	*Cold Water Aquatic Life*
K	*Oregon*	*Salmon River (188) to OR/WA/ID border (176)*	*Cold Water Refugia; HUA of 0.3°C*	*20°C 7-DADM*	*Salmon and Steelhead Migration Corridors*
				13°C 7-DADM (Oct 23rd – April 15th)	*Salmon and Steelhead Spawning through Fry Emergence*

Map	Jurisdiction	River Miles	Supplementary & Narrative Provisions	Numeric Criterion	Aquatic Life Use
L	*Idaho*	*OR/WA/ID border (176) to Clearwater River (139)*	*Natural Conditions*	*22°C 1-DMax & 19°C MDA*	*Cold Water Aquatic Life*
M	*Washington*	*OR/WA/ID border (176) to Clearwater River (139)*	*0.3°C[1]; Natural Conditions, Downstream Standards*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*
N	*Washington*	*Clearwater River (139) to Snake Mouth (0)*	*0.3°C[1]; Natural Conditions, Downstream Standards*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*

Section 1. Columbia River Temperature Water Quality Standards

The Columbia is defined in this document as that portion of the river that extends from the Canadian border to the Washington-Oregon border (RM 745 – RM 309). Section 1 describes each jurisdictional reach on the Columbia – including aquatic life designated uses, numeric temperature criterion, and applicable narrative provisions.

Reach A:

Map	Jurisdiction	River Miles	Narrative provisions	Numeric Criterion	Aquatic Life Use
A	*Washington*	*Canadian Border (745) to Grand Coulee Dam (596) (excluding Spokane/Colville 646.5 – 639)*	*Natural Conditions, Downstream Standards*	*16°C 7-DADM*	*Core Summer Salmonid Habitat*
Reach Description: *Columbia River in Washington from Canadian Border (RM 745) to Grand Coulee Dam (RM 596). This most upstream reach of the Columbia River in Washington is designated as Core Summer Salmonid Habitat. Washington State waters are adjacent to the Colville Tribal waters (Reach B) for portions of this reach. The Colville and Spokane Tribes share sole jurisdiction from RM 646.5 – RM 639. Canadian waters are Immediately upstream; Washington State waters (Reach D) and the Colville Tribal waters (Reach E) are immediately downstream.*					
Designated Use: *Core Summer Salmonid Habitat* is the Aquatic Life Use. Additional uses include Extraordinary primary contact recreation; Water Supply uses (domestic, industrial, agricultural & stock water); and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics).[5]					
Numeric Criterion: 16°C 7-DADM.[6] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[7]					
Narrative Provisions: • Upstream actions must be conducted in manners that meet downstream water body criteria. • At the boundary between water bodies protected for different uses, the more stringent criteria apply.[8]					
Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater. [9]					

[5] [WAC 173-201A-602]
[6] [WAC 173-201A-200. Table 200(1)(c)]
[7] [WAC 173-201A-200 (1)(c)(iii)]
[8] [WAC 173-201A-260(3)(b) and (d)]
[9] [WAC 173-201A-320]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[10]

When the background condition of the water is cooler than the criteria in Table 200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows:[11]

- Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[12] as measured at the edge of a mixing zone boundary.[13]
- Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F).[14]

Natural Condition > Criterion (or within 0.3): "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[15]

When a water body's temperature is warmer than the criteria in Table 200(1)(c) (or within 0.3°C (0.54°F) of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C.[16]

Reach B:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
B	*Colville Tribe*	*N. Reservation Boundary (690) to Chief Joseph Dam (545)*	*Natural Conditions*	*16°C 1-DMax*[17] *(CTCR 4-8)*	*Class I*
				18°C 1-DMax[18] *(40 CFR 131.35)*	*Class II*

Reach Description: *This upstream reach of Colville Tribal waters extends from the Northern Reservation Boundary (RM 690) to Chief Joseph Dam (RM 545). It is designated as Class I in CTCR 4-8 and as Class II in 40 CFR part 131.35[19]. The Colville Tribal waters are adjacent to either Washington State waters (Reach A) or the Spokane Tribal waters (Reach C). Washington State waters are immediately upstream (Reach A); and Washington State waters (Reach D) and Colville Tribal waters (Reach E) are immediately downstream.*

[10] [WAC 173-201A-020]
[11] [WAC 173-201A-200 (1)(c)(ii)]
[12] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[13] [WAC 173-201A-200 (1)(c)(ii)(A)]
[14] [WAC 173-201A-200 (1)(c)(ii)(B)]
[15] [WAC 173-201A-020]
[16] [WAC 173-201A-200 (1)(c)(i)]
[17] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[18] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[19] 40 CFR part 131.35 does not provide specific classifications for the Columbia River reaches it identifies in paragraph (h) and therefore these reaches are classified here as Class II, the class assignment for waters without specific classifications [40 CFR 131.35(g)(8)].

40 CFR Part 131.35	Colville Tribal Law and Order Code Part 4-8
Designated Uses: *Class II (Excellent)* Water supply (domestic, industrial, agricultural); Stock watering; Fish and shellfish (Salmonid migration, rearing, spawning, and harvesting; other fish migration, rearing, spawning, and harvesting); Wildlife habitat; Ceremonial and religious water use; Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment); Commerce and navigation.[20, 21]	**Designated Uses:** *Class I (Extraordinary)* Water supply (domestic, industrial, and agricultural); Stock watering; Fish and shellfish (Salmonid migration, rearing, spawning, and harvesting; other fish migration, rearing, spawning, and harvesting); Ceremonial and religious water use; Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment); Commerce and navigation.[22, 23]
Criterion: Shall not exceed **18.0°C** [1-DMax][24] due to human activities.[25]	**Criterion:** shall not exceed **16.0°C** [1-DMax][26] due to human activities.[27]
Natural Condition < Criterion: temperature increases shall not, at any time, exceed t=23/(T+5).[28, 29]	**Natural Condition < Criterion:** temperature increases shall not, at any time, exceed t=23/(T+5) [30, 31]
Natural Condition > Criterion: No temperature increase will be allowed which will raise the receiving water by greater than 0.3°C [1-DMax][32, 33]	**Natural Condition > Criterion:** No temperature increase will be allowed which will raise the receiving water by greater than 0.3°C [1-DMax][34, 35]

[20] [40 CFR 131.35(g)(8)]
[21] [40 CFR 131.35(f)(2)]
[22] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-8)(a)]
[23] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(a)(2)]
[24] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[25] [40 CFR 131.35(f)(2)(ii)(D)]
[26] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[27] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(a)(3)(F)]
[28] For purposes hereof, "t" represents the permissive temperature change across the dilution zone; and "T" represents the highest existing temperature in this water classification outside of any dilution zone [40 CFR 131.35(f)(2)(ii)(D)(2)].
[29] [40 CFR 131.35(f)(2)(ii)(D)]
[30] For purposes hereof, "t" represents the permissive temperature change across the dilution zone; and "T" represents the highest existing temperature in this water classification outside of any dilution zone [CTCR 4-8-6 (a)(3)(F)(ii)].
[31] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(a)(3)(F)]
[32] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[33] [40 CFR 131.35(f)(2)(ii)(D)(1)]
[34] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[35] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(b)(3)(F)(i)]

Reach C:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
C	*Spokane Tribe*	*Reservation Boundary (646.5) to Reservation Boundary (639)*	*No Natural Conditions*	*16.5°C 7-DADM (June 1 - Sept 1); 13.5° C 7-DADM (Sept 1 – Oct 1 & April 1 – June 1); 11°C 7-DADM (Oct 1 – March 31)*	*Class AA*
Reach Description: *Columbia River in Spokane Tribal Waters from the upstream Reservation boundary (RM 646.5) to the Downstream Reservation boundary (RM 639). It is designated as Class AA. Spokane Tribal waters are adjacent to Colville Tribal waters (Reach B) in this reach; Colville Tribal waters (Reach B) and Washington State waters (Reach A) are immediately upstream; Washington State waters (Reach A) and Colville Tribal waters (Reach B) are immediately downstream.*					
Designated Uses: *Class AA (Extraordinary).* Primary contact ceremonial and spiritual; Cultural; Water supply (domestic, industrial, agricultural); Stock watering; Fish and shellfish, including: Salmonid migration, rearing, spawning, and harvesting. Other fish migration rearing, spawning, and harvesting. Clam, and mussel rearing, spawning, and harvesting. Mollusks, crustaceans and other shellfish rearing, spawning, and harvesting. Primary contact recreation; and Commerce and navigation. [36]					
Criterion: Not to exceed a 7-day average of the daily maximum temperature values greater than **16.5°C** from June 1 to September 1. Not to exceed a 7-day average of the daily maximum temperature values greater than **13.5°C** between September 1 and October 1 and between April 1 and June 1, and not to exceed **11°C** from October 1 to April 1.[37]					
Natural Condition < Criterion: The antidegradation policy and implementing method shall be consistent with Section 316 of the Clean Water Act, as amended [33 U.S.C. § 1326][38]					
Natural Condition > Criterion: No Natural Condition Criterion					

[36] [Spokane Tribe of Indians Surface Water Quality Standards March 7, 2003 (9)(1)(b)]
[37] [Spokane Tribe of Indians Surface Water Quality Standards March 7, 2003 (9)(1)(c)(4)]
[38] [Spokane Tribe of Indians Surface Water Quality Standards March 7, 2003S (4)(4)]

Reach D:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
D	*Washington*	*Grand Coulee Dam (596) to Priest Rapids Dam (397)*	*Natural Conditions*	*17.5°C 7-DADM*	*Salmonid spawning, rearing and migration*
Reach Description: *Columbia River in Washington from Grand Coulee Dam (RM 596) to Priest Rapids Dam (RM 397). It is designated for Salmonid spawning, rearing and migration. Washington State waters are adjacent to Colville Tribal waters (Reaches B & E) for portions of this reach; Colville Tribal waters (Reach B) and Washington State waters (Reach A) are immediately upstream; Washington State waters are immediately downstream (Reach E).*					
Designated Use: *Salmonid spawning, rearing and migration*; Primary Contact Recreation; Water Supply uses (domestic, industrial, agricultural & stock water); and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics)[39]					
Numeric Criterion: 17.5°C 7-DADM.[40] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[41]					
Narrative Provisions: • Upstream actions must be conducted in manners that meet downstream water body criteria. • At the boundary between water bodies protected for different uses, the more stringent criteria apply.[42]					
Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater.[43]					

[39] [WAC 173-201A-602]
[40] [WAC 173-201A-200. Table 200(1)(c)]
[41] [WAC 173-201A-200 (1)(c)(iii)]
[42] [WAC 173-201A-260(3)(b) and (d)]
[43] [WAC 173-201A-320]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[44]

When the background condition of the water is cooler than the criteria in Table 200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows[45]:

- Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[46] as measured at the edge of a mixing zone boundary.[47]
- Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F).[48]

Natural Condition > Criterion (or within 0.3): "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[49]

When a water body's temperature is warmer than the criteria in Table 200(1)(c) (or within 0.3°C (0.54°F) of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C[50]

[44] [WAC 173-201A-020]
[45] [WAC 173-201A-200 (1)(c)(ii)]
[46] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[47] [WAC 173-201A-200 (1)(c)(ii)(A)]
[48] [WAC 173-201A-200 (1)(c)(ii)(B)]
[49] [WAC 173-201A-020]
[50] [WAC 173-201A-200 (1)(c)(i)]

Reach E:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
E	*Colville Tribe*	*Chief Joseph Dam (545)* *to* Okanogan River (534)	*Natural Conditions*	*18°C 1-DMax*[51] (40 CFR 131.35 & CTCR 4-8)	*Class II*
Reach Description: *This downstream reach of Colville Tribal waters extends from Chief Joseph Dam (RM 545) to the Okanogan River (RM 534), adjacent to the upstream reach of Colville Tribal waters (Reach B). This downstream reach of Colville Tribal waters is designated as Class II in CTCR 4-8 and in 40 CFR part 131.35*[52]*.Colville Tribal waters are adjacent to Washington State waters (Reach D); Washington State (Reach D) and Colville Tribal waters (Reach B) are immediately upstream; Washington waters (Reach D) are immediately downstream.*					
40 CFR Part 131.35 and Colville Tribal Law and Order Code Part 4-8					
Designated Uses: *Class II (Excellent).* Water supply (domestic, industrial, and agricultural); Stock watering; Fish and shellfish (Salmonid migration, rearing, spawning, and harvesting; other fish migration, rearing, spawning, and harvesting; crayfish rearing, spawning, and harvesting); wildlife habitat; Ceremonial and religious water use; Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment); Commerce and navigation.[53, 54, *55, 56*]					
Criterion: shall not exceed **18°C** [1-DMax][57] due to human activities.[58, 59]					
Natural Condition < Criterion: temperature increases shall not, at any time, exceed t=28/(T+7).[60, 61, 62]					
Natural Condition > Criterion: No temperature increase will be allowed which will raise the receiving water by greater than 0.3°C [1-DMax][63, 64, 65]					

[51] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[52] 40 CFR part 131.35 does not provide specific classifications for the Columbia River reaches it identifies in paragraph (h) and therefore these reaches are classified here as Class II, the class assignment for waters without specific classifications [40 CFR 131.35(g)(8)].
[53] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-8)(a)]
[54] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(b)(2)]
[55] [40 CFR 131.35(g)(8)]
[56] [40 CFR 131.35(f)(2)]
[57] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[58] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(b)(3)(F)]
[59] [40 CFR 131.35(f)(2)(ii)(D)]
[60] For purposes hereof, "t" represents the permissive temperature change across the dilution zone; and "T" represents the highest existing temperature in this water classification outside of any dilution zone [CTCR 4-8-6 (b)(3)(F)(ii)].
[61] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(a)(3)(F)]
[62] [40 CFR 131.35(f)(2)(ii)(D)]
[63] Averaging period not provided – interpreted as daily maximum (*1-DMax*)
[64] [Confederated Tribes of the Colville Reservation Tribal Water Quality Standards September, 2010 (4-8-6)(b)(3)(F)(i)]
[65] [40 CFR 131.35(f)(2)(ii)(D)(1)]

Reach F:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
F	*Washington*	*Priest Rapids Dam (397) to WA/OR Border (309)*	*Natural Conditions*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*

Reach Description: *Columbia River in Washington from Priest Rapids Dam (RM 397) to WA/OR Border (RM 309). This reach of the Columbia River is designated for Salmonid spawning, rearing and migration. Washington State waters are not adjacent to other waters for this reach; Washington State (Reach D) is immediately upstream Oregon (Reach H) and Washington (Reach G) waters are immediately downstream.*

Designated Use: *Salmonid spawning, rearing and migration*; Primary contact recreation; Water Supply uses (domestic, industrial, agricultural & stock water) and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics).[66]

Numeric Criterion: Temperature shall not exceed a 1-day maximum (1-DMax) of **20.0°C** due to human activities.[67] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[68]

Narrative Provisions:

- Upstream actions must be conducted in manners that meet downstream water body criteria.
- At the boundary between water bodies protected for different uses, the more stringent criteria apply.[69]

Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater.[70]

[66] [WAC 173-201A-602]
[67] [WAC 173-201A-602 – Columbia River Note 2]
[68] [WAC 173-201A-200 (1)(c)(iii)]
[69] [WAC 173-201A-260(3)(b) and (d)]
[70] [WAC 173-201A-320]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[71]
[…] nor shall such temperature increases, at any time, exceed t = 34/(T + 9) [Columbia River Note 2].[72]
When the background condition of the water is cooler than the criteria in Table 200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows[73]:

- Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[74] as measured at the edge of a mixing zone boundary [General provision][75]
- Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F) [General provision][76]

Natural Condition > Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[77]
When natural conditions exceed a 1-DMax of 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed t = 34/(T + 9)[78]

[71] [WAC 173-201A-020]
[72] [WAC 173-201A-602 – Columbia River Note 2]
[73] [WAC 173-201A-200 (1)(c)(ii)]
[74] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[75] [WAC 173-201A-200 (1)(c)(ii)(A)]
[76] [WAC 173-201A-200 (1)(c)(ii)(B)]
[77] [WAC 173-201A-020]
[78] [WAC 173-201A-602 – Columbia River Note 2]

Section 2. Lower Columbia River Temperature Water Quality Standards

The lower Columbia is defined in this document as that portion of the Columbia that extends from the Washington-Oregon border to the river mouth (RM 309 – RM 0). Section 2 describes each jurisdictional reach on the lower Columbia – including aquatic life designated uses, numeric temperature criterion, and applicable narrative provisions.

Reach G:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
G	*Washington*	*WA/OR Border (309) to Pacific Ocean (0)*	*Natural Conditions*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*
Reach Description: *Columbia River in Washington from WA/OR border (RM 309) to the river mouth at the Pacific Ocean (RM 0). This reach of the Columbia River in Washington is designated for Salmonid spawning, rearing and migration. Washington waters are adjacent to Oregon waters (Reaches H & I); immediate upstream jurisdiction belongs to Washington State (Reach F).*					
Designated Use: *Salmonid Spawning, Rearing, and Migration*; Primary Contact Recreation; Water Supply uses (domestic, industrial, agricultural & stock water); and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics).[79]					
Numeric Criterion: Temperature shall not exceed a 1-day maximum (1-DMax) of **20.0°C** due to human activities.[80] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[81]					
Narrative Provisions: • Upstream actions must be conducted in manners that meet downstream water body criteria. • At the boundary between water bodies protected for different uses, the more stringent criteria apply.[82]					
Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater. [83]					

[79] [WAC 173-201A-602]
[80] [WAC 173-201A-602 – Columbia River Note 1]
[81] [WAC 173-201A-200 (1)(c)(iii)]
[82] [WAC 173-201A-260(3)(b) and (d)]
[83] [WAC 173-201A-320]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[84]

[…] nor shall such temperature increases, at any time, exceed 0.3°C due to any single source or 1.1 C due to all such activities combined [Columbia River Note 1][85]

When the background condition of the water is cooler than the criteria in Table200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows[86]:

- Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[87] as measured at the edge of a mixing zone boundary [General provision][88]
- Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F) [General provision][89]

Natural Condition > Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[90]

When natural conditions exceed a 1-DMax of 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed 0.3°C due to any single source or 1.1 C due to all such activities combined.[91]

Reach H:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
H	*Oregon*	*WA/OR Border (309) to Pacific Ocean (0)*	*Cold Water Refugia; Human Use Allowance; Protecting Cold Water*	*20°C 7-DADM*	*Salmon and Steelhead Migration Corridors*
Reach Description: *Columbia River in Oregon from WA/OR border (RM 309) to mouth at Pacific Ocean (RM 0). The entire reach is designated by Oregon for salmon and steelhead migration corridors. Oregon State waters are adjacent to Washington state waters (Reach G) for the entire*					

[84] [WAC 173-201A-020]
[85] [WAC 173-201A-602 – Columbia River Note 1]
[86] [WAC 173-201A-200 (1)(c)(ii)]
[87] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[88] [WAC 173-201A-200 (1)(c)(ii)(A)]
[89] [WAC 173-201A-200 (1)(c)(ii)(B)]
[90] [WAC 173-201A-020]
[91] [WAC 173-201A-602 – Columbia River Note 1]

reach; and one other Oregon standard (Reach I) applies for a portion of this reach; Washington State waters are immediately upstream (Reach F).
General Designated Use: Public Domestic Water Supply; Private Domestic Water Supply; Industrial Water Supply; Irrigation Livestock Watering; Fish & Aquatic Life; Wildlife & Hunting; Fishing; Boating; Water Contact Recreation; Aesthetic Quality; Hydro Power (only RM 86-309); Commercial Navigation & Transportation.[92]
Aquatic Designated Use: *Salmon and Steelhead Migration Corridors*[93]; *Shad and Sturgeon Spawning and Rearing* (RM 203 – RM 147 only).[94]
Numeric Criterion: The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed **20.0°C** (68.0 degrees Fahrenheit).[95]
Narrative Provisions: Cold Water Refugia[96]. In addition, these water bodies must have cold water refugia that's sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Seasonal Thermal Pattern. The seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern.[97]
Supplementary Provision. Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:[98] […] Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.[99]
Current Conditions < Criterion: Protecting Cold Water. Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.[100]

[92] [OAR 340-041-0101 – Table 101A]
[93] [OAR 340-041-0101 – Table 101B]
[94] [OAR 340-041-0101 – Table 101B]
[95] [OAR 340-041-0028(4)(d)]
[96] Cold Water Refugia" means those portions of a water body where or times during the diel temperature cycle when the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well-mixed flow of the water body. [OAR 340-041-0002]
[97] [OAR 340-041-0028(4)(d)]
[98] [OAR 340-041-0028(12)]
[99] [OAR 340-041-0028(12)(B)]
[100] [OAR 340-041-0028(11)(a)]

A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:[101] If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or[102] If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.[103] The cold water protection narrative provisions in subsection (a) do not apply if:[104] [see standards document for details][105, 106, 107]
Natural Condition > Criterion: No Natural Conditions Criterion

Reach I:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
I	*Oregon*	*Ives Island (143.5) to Beacon Rock (141.5)*	*Human Use Allowance*	*13°C 7-DADM (October 15th – March 31st)*	*Salmon and Steelhead Spawning through Fry Emergence*
Reach Description: *Columbia River in Oregon from Ives Island (RM 143.5) to Beacon Rock (RM 141.5). This Columbia River reach is designated as Salmon and Steelhead Spawning through Fry Emergence. Oregon state waters are adjacent to Washington state waters (Reach G) and another Oregon Standard (Reach H); Washington (Reach G) and Oregon (Reach H) waters are immediately upstream and downstream.*					
Aquatic Designate Use: *Salmon and Steelhead Spawning through Fry Emergence*.[108]					

[101] [OAR 340-041-0028(11)(b)]
[102] [OAR 340-041-0028(11)(b)(A)]
[103] [OAR 340-041-0028(11)(b)(B)]
[104] [OAR 340-041-0028(11)(c)]
[105] [OAR 340-041-0028(11)(c)(A)]
[106] [OAR 340-041-0028(11)(c)(B)]
[107] [OAR 340-041-0028(11)(c)(C)]
[108] [OAR 340-041-0101 – Table 101B]

Numeric Criterion: The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed **13.0°C** (55.4 degrees Fahrenheit) at the times indicated on these maps and tables.[109]; From Table: (October 15th – March 31st).[110]

Section 3: Lower Snake River Temperature Water Quality Standards

The lower Snake is defined in this document as that portion of the Snake that extends from the Salmon River to the river mouth, where the Snake River flows into the Columbia River (RM 188 – RM 0). Section 3 describes each jurisdictional reach on the lower Snake – including aquatic life designated uses, numeric temperature criterion, and applicable narrative provisions.

Reach J:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
J	*Idaho*	*Salmon River (188) to OR/WA/ID border (176)*	*Natural Conditions*	*22°C DM & 19°C MDA*	*Cold Water Aquatic Life*
Reach Description: *Snake River in Idaho from the Salmon River (RM 188) to OR/WA/ID border (RM 176). This reach of the Snake river is designated by Idaho for cold water aquatic life. Idaho State waters are adjacent to Oregon State waters (Reach K) in this reach; Idaho State and Oregon State are immediately upstream; Idaho State waters (Reach L) and Washington State waters (Reach M) are immediately downstream.*					
Designated Use: *Cold Water Aquatic Life*; Primary Contact Recreation; Domestic Water Supply.[111]					
Numeric Criterion: Water temperatures of **twenty-two (22) degrees C** or less with a maximum daily average of no greater than **nineteen (19) degrees C**.[112]					

[109] [OAR 340-041-0028(4)(a)]
[110] [OAR 340-041-0101 – Table 101B]
[111] [IDAPA 58.01.02 – Table 2]
[112] [IDAPA 58.01.02 – Section 250 (2)(b)]

Narrative Provisions: Natural Background Conditions [refer to] [t]he physical, chemical, biological, or radiological conditions existing in a water body without human sources of pollution within the watershed. Natural disturbances including, but not limited to, wildfire, geologic disturbance, diseased vegetation, or flow extremes that affect the physical, chemical, and biological integrity of the water are part of natural background conditions. Natural background conditions should be described and evaluated taking into account this inherent variability with time and place.[113]

Temperature: The wastewater must not affect the receiving water outside the mixing zone so that:[114]

a. The temperature of the receiving water or of downstream waters will interfere with designated beneficial uses.[115]

b. Daily and seasonal temperature cycles characteristic of the water body are not maintained.[116]

d. If the water is designated for cold water aquatic life, seasonal cold water aquatic life, or salmonid spawning, the induced variation is more than plus one (+1) degree C.[117]

*[*NOTE: IDEQ deleted this provision (d) from their WQS in 2012 and submitted to EPA for review in 2013. EPA has not yet acted on this, therefore it is still in effect for CWA purposes]*

Natural Conditions < Criterion: Criterion applies

Natural Condition > Criterion: When natural background conditions exceed any applicable water quality criteria set forth in Sections 210, 250, 251, 252, or 253, the applicable water quality criteria shall not apply; instead, there shall be no lowering of water quality from natural background conditions. Provided, however, that temperature may be increased above natural background conditions when allowed under Section 401.[118]

Section 401 reads:
Temperature: The wastewater must not affect the receiving water outside the mixing zone so that:[119]

c. If temperature criteria for the designated aquatic life use are exceeded in the receiving waters upstream of the discharge due to natural background conditions, then wastewater must not raise the receiving water temperatures by more than three tenths (0.3) degrees C.[120]

[113] [IDAPA 58.01.02 – Section 10 (63)]
[114] [IDAPA 58.01.02 – Section 401(1)]
[115] [IDAPA 58.01.02 – Section 401(1)(a)]
[116] [IDAPA 58.01.02 – Section 401(1)(b)]
[117] [IDAPA 58.01.02 – Section 401(1)(d) (IAC 2011)]
[118] [IDAPA 58.01.02 – Section 200 (9)]
[119] [IDAPA 58.01.02 – Section 401(1)]
[120] [IDAPA 58.01.02 – Section 401(1)(c)]

Reach K:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
K	*Oregon*	*Salmon River (188) to OR/WA/ID border (176)*	*Cold Water Refugia; Human Use Allowance*	*20°C 7-DADM*	*Salmon and Steelhead Migration Corridors*
				13°C 7-DADM (Oct 23 – April 15)	*Salmon and Steelhead Spawning through Fry Emergence*
Reach Description: *Snake River in Oregon from Salmon River (RM 188) to OR/WA/ID Border (R 176). This reach of the Snake river is designated by Oregon for salmon and steelhead migration corridors, and for part of the year is designated for salmon and steelhead spawning through fry emergence. Oregon State waters are adjacent to Idaho State waters (Reach J) in this reach; Idaho and Oregon state waters are immediately upstream; Idaho (Reach L) and Washington (Reach M) state waters are immediately downstream.*					
General Designated Use: Public Domestic Water Supply; Private Domestic Water Supply; Industrial Water Supply; Irrigation Livestock Watering; Fish & Aquatic Life; Wildlife & Hunting; Fishing; Boating; Water Contact Recreation; Aesthetic Quality; Hydro Power (only RM 86-309); Commercial Navigation & Transportation.[121]					
Aquatic Life Designated Uses: **i)** *Salmon and Steelhead Migration Corridors* **ii)** *Salmon and Steelhead Spawning through Fry Emergence*					
Numeric Criterion: **i) 20°C** 7-DADM.[122] **ii) 13°C** 7-DADM[123] (Oct 23 – April 15)[124]					
Supplementary Criterion: Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:[125] […] Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.[126]					

[121] [OAR 340-041-0121 – Table 121 A]
[122] [OAR 340-041-0028(4)(d)]
[123] [OAR 340-041-0028(4)(a)]
[124] [OAR 340-041-0121 – Table 121B]
[125] [OAR 340-041-0028(12)]
[126] [OAR 340-041-0028(12)(B)]

Narrative Provisions: Cold Water Refugia.[127]In addition, these water bodies must have cold water refugia that's sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Seasonal Thermal Pattern. The seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern.[128]
Current Conditions < Criterion: Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.[129] A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:[130] If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or[131] If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach[132] The cold water protection narrative provisions in subsection (a) do not apply if:[133] [see standards document for details][134, 135, 136]
Natural Condition > Criterion: No Natural Conditions Criterion

[127] Cold Water Refugia" means those portions of a water body where or times during the diel temperature cycle when the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well-mixed flow of the water body. [OAR 340-041-0002]
[128] [OAR 340-041-0028(4)(d)]
[129] [OAR 340-041-0028(11)(a)]
[130] [OAR 340-041-0028(11)(b)]
[131] [OAR 340-041-0028(11)(b)(A)]
[132] [OAR 340-041-0028(11)(b)(B)]
[133] [OAR 340-041-0028(11)(c)]
[134] [OAR 340-041-0028(11)(c)(A)]
[135] [OAR 340-041-0028(11)(c)(B)]
[136] [OAR 340-041-0028(11)(c)(C)]

Reach L:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
L	*Idaho*	*OR/WA/ID border (176) to Clearwater River (139)*	*Natural Conditions*	*22°C 1-DMax & 19°C MDA*	*Cold Water Aquatic Life*

Reach Description: *Snake River in Idaho from WA/OR/ID Border (RM 176) to Clearwater River (RM 139). This reach of the Snake River is designated by Idaho for cold water aquatic life. Idaho state waters are adjacent to Washington state waters (Reach M) in this reach; Idaho (Reach J) and Oregon (Reach K) waters are immediately upstream; Washington State waters (Reach N) are immediately downstream.*

Designated Use: *Cold Water Aquatic Life*; Primary Contact Recreation; Domestic Water Supply.[137]

Numeric Criterion: Water temperatures of **twenty-two (22) degrees C** or less with a maximum daily average of no greater than **nineteen (19) degrees C**.[138]

Narrative Provisions: Natural Background Conditions [refer to] [t]he physical, chemical, biological, or radiological conditions existing in a water body without human sources of pollution within the watershed. Natural disturbances including, but not limited to, wildfire, geologic disturbance, diseased vegetation, or flow extremes that affect the physical, chemical, and biological integrity of the water are part of natural background conditions. Natural background conditions should be described and evaluated taking into account this inherent variability with time and place.[139]

Temperature: The wastewater must not affect the receiving water outside the mixing zone so that:[140]

a. The temperature of the receiving water or of downstream waters will interfere with designated beneficial uses.[141]

b. Daily and seasonal temperature cycles characteristic of the water body are not maintained.[142]

d. If the water is designated for cold water aquatic life, seasonal cold water aquatic life, or salmonid spawning, the induced variation is more than plus one (+1) degree C.[143]

*[*NOTE: IDEQ deleted this provision (d) from their WQS in 2012 and submitted to EPA for review in 2013. EPA has not yet acted on this, therefore it is still in effect for CWA purposes]*

Natural Conditions < Criterion: Criterion Applies

[137] [IDAPA 58.01.02 Table 2]
[138] [IDAPA 58.01.02 – Section 250 (2)(b)]
[139] [IDAPA 58.01.02 – Section 10 (63)]
[140] [IDAPA 58.01.02 – Section 401(1)]
[141] [IDAPA 58.01.02 – Section 401(1)(a)]
[142] [IDAPA 58.01.02 – Section 401(1)(b)]
[143] [IDAPA 58.01.02 – Section 401(1)(d) (IAC 2011)]

Natural Condition > Criterion: When natural background conditions exceed any applicable water quality criteria set forth in Sections 210, 250, 251, 252, or 253, the applicable water quality criteria shall not apply; instead, there shall be no lowering of water quality from natural background conditions. Provided, however, that temperature may be increased above natural background conditions when allowed under Section 401.[144]

Section 401 reads:
Temperature: The wastewater must not affect the receiving water outside the mixing zone so that:[145]

> c. If temperature criteria for the designated aquatic life use are exceeded in the receiving waters upstream of the discharge due to natural background conditions, then wastewater must not raise the receiving water temperatures by more than three tenths (0.3) degrees C.[146]

Reach M:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
M	*Washington*	*OR/WA/ID border (176) to Clearwater River (139)*	*Natural Conditions*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*

Reach Description: *Snake River in Washington from WA/OR/ID Border (RM 176) to Clearwater River (RM 139). This reach of the Snake River is designated for salmon spawning, rearing and migration. Washington State waters are adjacent to Idaho State waters (Reach L) in this reach; Idaho State (Reach J) and Oregon State (Reach K) waters are immediately upstream; Washington State waters (Reach N) are immediately downstream.*

Designated Use: *Salmonid Spawning, Rearing, and Migration*; Primary Contact Recreation; Water Supply uses (domestic, industrial, agricultural & stock water); and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics).[147]

Numeric Criterion: Temperature shall not exceed a 1-day maximum (1-DMax) of **20.0°C** due to human activities.[148] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[149]

[144] [IDAPA 58.01.02 – Section 200 (9)]
[145] [IDAPA 58.01.02 – Section 401(1)]
[146] [IDAPA 58.01.02 – Section 401(1)(c)]
[147] [WAC 173-201A-602]
[148] [WAC 173-201A-602 – WRIA 35 Note 2(b)]
[149] [WAC 173-201A-200 (1)(c)(iii)]

Narrative Provisions:

- Upstream actions must be conducted in manners that meet downstream water body criteria.
- At the boundary between water bodies protected for different uses, the more stringent criteria apply.[150]

Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater.[151]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[152]

[…] nor shall such temperature increases, at any time, exceed 0.3°C due to any single source or 1.1°C due to all such activities combined [WRIA 35 Note 2(b)][153]

When the background condition of the water is cooler than the criteria in Table200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows[154]:

- Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[155] as measured at the edge of a mixing zone boundary [General provision][156]
- Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F) [General provision][157]

Natural Conditions > Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[158]

When natural conditions exceed a 1-DMax of 20.0°C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed 0.3°C due to any single source or 1.1°C due to all such activities combined.[159]

[150] [WAC 173-201A-260(3)(b) and (d)]
[151] [WAC 173-201A-320]
[152] [WAC 173-201A-020]
[153] [WAC 173-201A-602 – WRIA 35 Note 2(b)]
[154] [WAC 173-201A-200 (1)(c)(ii)]
[155] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[156] [WAC 173-201A-200 (1)(c)(ii)(A)]
[157] [WAC 173-201A-200 (1)(c)(ii)(B)]
[158] [WAC 173-201A-020]
[159] [WAC 173-201A-602 – WRIA 35 Note 2(b)]

Reach N:

Map	Jurisdiction	River Miles	Narrative Provisions	Numeric Criterion	Aquatic Life Use
N	*Washington*	*Clearwater River (139) to Snake Mouth (0)*	*Natural Conditions*	*20°C 1-DMax*	*Salmonid spawning, rearing and migration*
Reach Description: *Snake River in Washington from Clearwater River (RM 139) to Mouth (RM 0). This reach of the Snake River in Washington is designated for salmonid spawning, rearing and migration. Idaho State (Reach L) and Washington State (Reach M) waters are immediately upstream; Washington State (Reach F) waters are immediately downstream, at the confluence with the Columbia River.*					
Designated Use: *Salmonid Spawning, Rearing, and Migration*; Primary Contact Recreation; Water Supply uses (domestic, industrial, agricultural & stock water); and Miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating & aesthetics).[160]					
Numeric Criterion: Temperature shall not exceed a 1-day maximum (1-DMax) of 20.0°C due to human activities.[161] Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.[162]					
Narrative Provisions: • Upstream actions must be conducted in manners that meet downstream water body criteria. • At the boundary between water bodies protected for different uses, the more stringent criteria apply.[163]					
Supplementary Provision: A measurable change for temperature is an increase of 0.3°C or greater.[164]					

[160] [WAC 173-201A-602]
[161] [WAC 173-201A-602 – WRIA 35 Note 2(a)]
[162] [WAC 173-201A-200 (1)(c)(iii)]
[163] [WAC 173-201A-260(3)(b) and (d)]
[164] [WAC 173-201A-320]

Natural Condition < Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[165] […] nor shall such temperature increases, at any time, exceed t = 34/(T + 9) [WRIA 35 Note 2(a)].[166] When the background condition of the water is cooler than the criteria in Table 200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows[167]: • Incremental temperature increases from individual point source activities must not exceed 28/(T+7)[168] as measured at the edge of a mixing zone boundary [General provision][169] • Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not exceed 2.8°C (5.04°F) [General provision][170]
Natural Conditions > Criterion: "Natural conditions" are defined as the surface water quality that was present before any human-caused pollution.[171] When natural conditions exceed a 1-DMax of 20.0°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed t = 34/(T + 9)[172]

Section 4: Comparing Water Quality Standards for Each Reach

Table 2 is designed to highlight jurisdictional WQS changes (upstream/downstream or left bank/right bank) for each geographic reach of the Columbia and Snake Rivers. For the ten river reaches where WQS from two jurisdictions apply, those standards are placed side by side in Table 2. Because some WQSs are established for specific times of the year, Table 2 includes a column for each month. Averaging periods are displayed using asterisks that are explained at the bottom of the table. In limited situations, the most stringent numeric standards are readily identified and are highlighted green. In many cases, numeric standards have different averaging periods, and site-specific data are required in order to identify the most stringent standard. In these situations, multiple numeric standards are highlighted green. Numeric standards that are obviously less stringent are highlighted in red. In Figure 2, the numeric criteria are illustrated geographically.

[165] [WAC 173-201A-020]
[166] [WAC 173-201A-602 – WRIA 35 Note 2(a)]
[167] [WAC 173-201A-200 (1)(c)(ii)]
[168] "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge. [WAC 173-201A (1)(c)(ii)(A)]
[169] [WAC 173-201A-200 (1)(c)(ii)(A)]
[170] [WAC 173-201A-200 (1)(c)(ii)(B)]
[171] [WAC 173-201A-020]
[172] [WAC 173-201A-602 – WRIA 35 Note 2(a)]

Table 2: Mainstem temperature WQS for the Columbia, Lower Columbia and Lower Snake Rivers.

	Reaches	River Miles	River	Jurisdiction			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Columbia	A	745 - 690	C	WA			16 7-DADM (WA)											
	AB	690 - 646.5	C	WA	Colville		16 DM (COL) – 18 DM (COL) – 16 7-DADM (WA)											
	BC	646.5 - 639	C	Colville	Spokane		16 DM (COL) 18 DM (COL) 11 7-DADM (SP)			16 DM (COL) 18 DM (COL) 13.5 7-DADM (SP)		16 DM (COL) 18 DM (COL) 16.5 7-DADM (SP)			16 DM (COL) 18 DM (COL) 13.5 7-DADM (SP)	16 DM (COL) 18 DM (COL) 11 7-DADM (SP)		
	AB	639 - 596	C	WA	Colville		16 DM (COL) – 18 DM (COL) – 16 7-DADM (WA)											
	BD	596 - 545	C	WA	Colville		16 DM (COL) – 18 DM (COL) – 17.5 7-DADM (WA)											
	DE	545 - 534	C	WA	Colville		18 DM (COL) – 17.5 7-DADM (WA)											
	D	534 - 397	C	WA			17.5 7-DADM (WA)											
	F	397 - 309	C	WA			20 DM (WA)											
Lower C	GH	309 – 143.5	C	WA	OR		20 DM (WA) – 20 7-DADM (OR)											
	GHI	143.5 - 141.5	C	WA	OR	OR	20 DM (WA) 13 7-DADM (OR)			20 DM (WA) 20 7-DADM (OR)						20 DM (WA) 13 7-DADM (OR) (after Oct 15th)		
	GH	141.5 - 0	C	WA	OR		20 DM (WA) – 20 7-DADM (OR)											
Snake	JK	188 - 176	S	OR	ID		19 MDA & 22 DM (ID) 13 7-DADM (OR) (until April 15th)				19 MDA (ID) & 22 DM (ID) 20 7-DADM (OR)					19 MDA & 22 DM (ID) 13 7-DADM (OR) (after Oct 23rd)		
	LM	176 - 139	S	WA	ID		22 DM & 19 MDA (ID) – 20 DM (WA)											
	N	139 - 0	S	WA			20 DM (WA)											

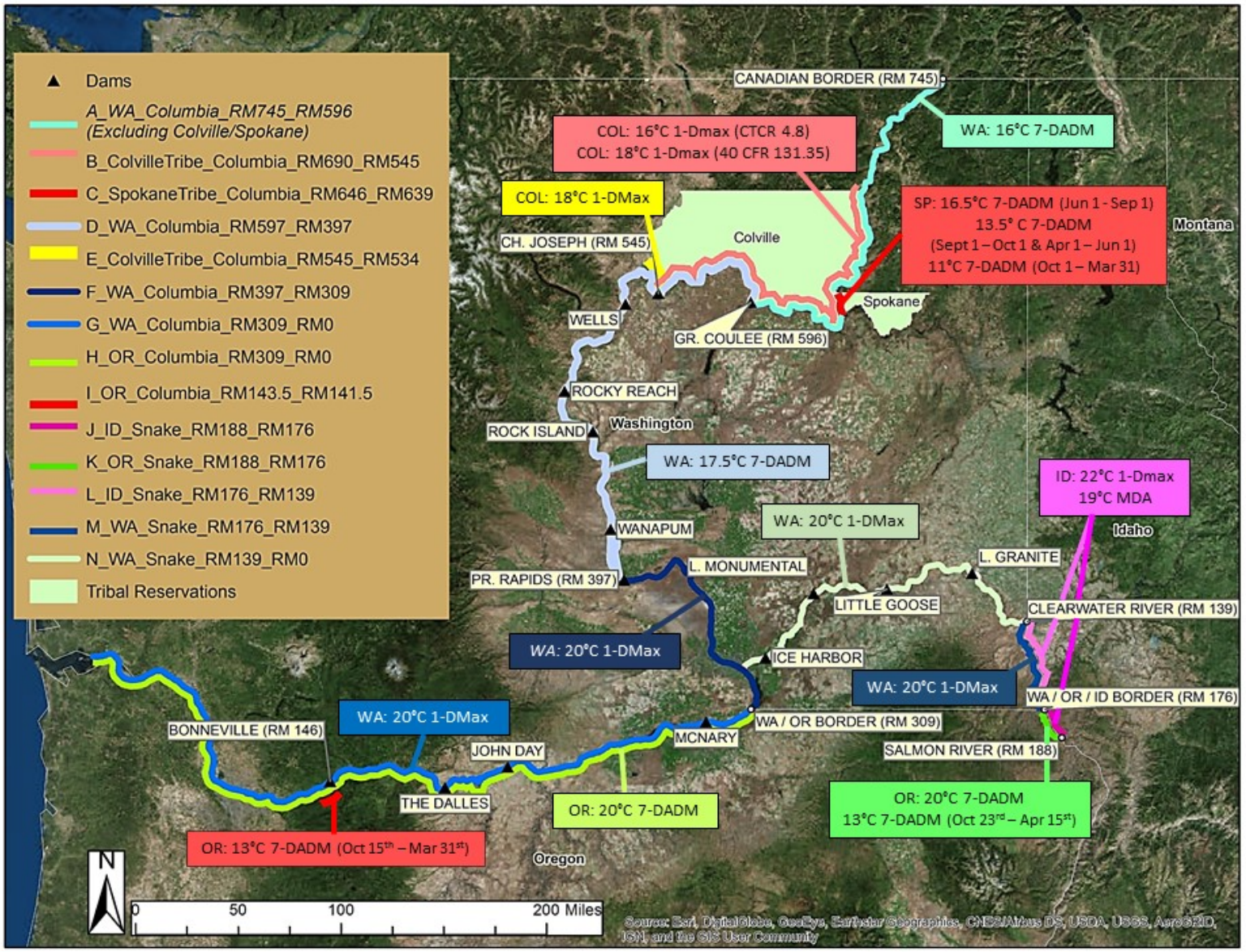

Figure 2: Columbia and Snake River Temperature WQS Jurisdictions, River Miles and Numeric Criteria. Source: WA River Miles and Reservations from ECY, Dams from ACE, OR/ID River Miles from R10 GIS Team. Map created by Martin Merz, EPA R10.