UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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To: NPDES Permit Writers in the Columbia and Snake River Basin

From: Martin Merz – EPA Region 10
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Date: Updated August 1, 2025

Subject: Accessing and Tracking Reserve Capacity and WLAs in the Columbia and Lower Snake River TMDL for Temperature

Background

- The Columbia and Lower Snake River TMDL for temperature (EPA, 2021) assigned a reserve capacity to be accessed by existing point sources that require a higher wasteload allocation (WLA) and new facilities that require a WLA.
- The TMDL describes reasons why facilities may access the reserve capacity, including new or additional information on effluent flow and/or temperature, expanded needs due to growth that are expected to occur during the permit cycle, or new facilities that did not receive a WLA in the TMDL.
- The TMDL assigns reserve capacity to 17 individual reaches delineated by river mile. Most reaches are delineated between dams, with two additional reaches between the most downstream dam, Bonneville Dam, and the mouth of the Columbia River.
- WLAs assigned to facilities that no longer need their WLA will be returned to the reserve capacity for that reach.

This memo describes:

- Steps for permit writers on whether and how to access reserve capacity;
- Steps for permit writers on how to communicate if a facility no longer needs their WLA;
- How Oregon DEQ, Washington Department of Ecology, and EPA will work together to manage requests for reserve capacity; and
- How EPA will track the reserve capacity;
- Attachments:
    - Reserve capacity tables
    - E-mail template for reserve capacity requests
    - Excerpt from the 2021 Columbia and Lower Snake Rivers Temperature TMDL

Permit Writers: Steps to Access Reserve Capacity for a Facility

1. Evaluate facility need for heat limit higher than the WLA.
    a. Has the facility requested a higher heat limit? Has the permit writer determined a higher heat limit is needed? Why?
    b. Does it meet one of the following criteria?
        i. new or additional information on effluent flow and/or temperature
        ii. expanded needs due to growth that are expected to occur during the permit cycle
        iii. new facility that did not receive a WLA in the TMDL
    c. If yes, document and move to Question 2.
2. Evaluate the amount of reserve capacity that is needed.
    a. What has the facility requested for a new or increased WLA?
    b. Are the increased flows or temperatures reasonable?
    c. If additional capacity is needed for growth, is that occurring within the permit cycle? If yes, continue. If no, do not grant reserve capacity.
    d. Determine the amount of reserve capacity that must be accessed.
        i. Multiply effluent flow (MGD) x temperature (°C) X (conversion factor)
        ii. Determine the heat load needed from the reserve capacity, by subtracting current WLA from proposed WLA. If the facility is new, the entire heat load is taken from the reserve.
3. Check the reserve capacity available in the reach.
    a. See Attachment 1 of this memo to determine the reach the facility discharges to and the amount of reserve capacity available.).
    b. Determine whether the requested reserve capacity is less than 10% of the total reserve capacity available in that reach. This threshold affects the level of inter-agency review (see next section).
4. Email the TMDL and NPDES permitting contacts at EPA, ODEQ, Ecology notifying them that you plan to access the reserve, using the template in Attachment 2.

Permit Writers: Notifying Oregon DEQ, Ecology, and EPA if a Facility Does Not Need a WLA

1. If a facility no longer needs their WLA (e.g., facility no longer operating or discharging), the permit writer will notify EPA and cc: Oregon DEQ and Ecology with the permit name, number, and WLA.
2. EPA will add the WLA back to the reserve capacity in the reach, update Attachments 1 and 2, and share the updated memo with Oregon DEQ, Ecology, and EPA in the TMDL and NPDES programs.

Oregon DEQ, Ecology and EPA Coordination

1. Reviewing reserve capacity requests
    a. If the amount requested is less than 10% of the remaining reserve capacity in the reach, no further action is needed.
    b. If the amount is greater than 10% of the remaining reserve capacity in the reach, EPA, Oregon DEQ, and Ecology will respond within 14 days of notification to approve the use of reserve capacity or elevate concerns to water program managers in each agency.
    c. At any time, any of the agencies may request further information or a meeting to discuss any reserve allocation request.

EPA

1. Tracking reserve allocations and WLAs
    a. EPA will maintain and update Attachment 1, which tracks the reserve allocations in each reach and assignments to sources (Attachment 1) .
    b. EPA will notify Oregon, Washington, and EPA in the NPDES programs within 30 days after each reserve allocation has been granted and keep documentation of the reserve allocation requests and changes to WLAs.
    c. EPA, Oregon, and Washington NPDES programs will share information with TMDL program counterparts.
2. Memo updates
    a. EPA will maintain and update the memo with any procedural changes.
    b. EPA will post the updated memo at (https://www.epa.gov/columbiariver/tmdl-temperature-columbia-and-lower-snake-rivers).

Attachment 1

Table 1: Modified WLAs since TMDL Issuance

Review Date	Facility Name	Permit Number	Location (RM)	Original WLA (kcal/day)	New WLA (kcal/day)	Change to Reserve (kcal/day)	Prior Reserve in Reach (kcal/day)	Remaining Reserve in Reach (kcal/day)
12/30/22	Pacific Seafood-Warrenton Facility (formerly Pacific Surimi)	OR0055002 (formerly OR0034657)	10	$3.54x10^7$	$4.22x10^7$	$-0.68x10^7$	$4.8x10^9$ (June-Sept) $4.8x10^9$ (Oct)	$4.8x10^9$ (June-Sept) $4.8x10^9$ (Oct)
08/01/25	Pateros POTW	WA0020559	524	$8.91x10^6$	$1.13x10^7$	$-2.43x10^6$	$4.8x10^9$ (June-Sept) $2.0x10^9$ (Oct)	$4.8x10^9$ (June-Sept) $2.0x10^9$ (Oct)

Table 2: Current Reserve Allocations

Reserve Reach	River Miles	Initial Reserve Allocation (June – September)	Remaining Reserve Allocation (June – September)	Initial Reserve Allocation (October)	Remaining Reserve Allocation (October)
		(kcal/day)		(kcal/day)	
COLUMBIA RIVER					
Grand Coulee	**738-591**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Chief Joseph	**591-544**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Wells	**544-512**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Rocky Reach	**512-472**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Rock Island	**472-453**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Wanapum	**453-413**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
Priest Rapids	**413-396**	**$4.8x10^9$**	**NA**	**$2.0x10^9$**	**NA**
McNary	**396-291**	**$4.8x10^9$**	**NA**	**$4.8x10^9$**	**NA**
John Day	**291-215**	**$4.8x10^9$**	**NA**	**$4.8x10^9$**	**NA**

Dalles	**215-189**	**$4.8x10^9$**	**NA**	**$4.8x10^9$**	**NA**
Bonneville	**189-140**	**$4.8x10^9$**	**NA**	**$4.8x10^9$**	**NA**
RM42	**140-42**	**$4.8x10^9$**	**NA**	**$4.8x10^9$**	**NA**
RM0	**42-0**	**$4.8x10^9$**	**$4.8x10^9$**	**$4.8x10^9$**	**$4.8x10^9$**
SNAKE RIVER					
Lower Granite	140-107	$4.8x10^9$		$4.8x10^9$	
Little Goose	107-70	$4.8x10^9$		$4.8x10^9$	
Lower Monumental	70-40	$4.8x10^9$		$4.8x10^9$	
Ice Harbor	40-0	$4.8x10^9$		$4.8x10^9$	

Note: River Miles are referenced to RBM10 model structure

Attachment 2

Email to: [EPA WA and OR NPDES Coordinators, ODEQ NPDES Contact, Ecology NPDES Contact] (wu.jennifer@epa.gov, basu.bilin@epa.gov, zach.loboy@deq.oregon.gov, lfri461@ecy.wa.gov)

Subject: Accessing Reserve Capacity, Columbia River Temperature TMDL, [insert permit name, permit number]

[Ecology/EPA/ODEQ] is requesting to access [insert amount in kcal/day] of the reserve capacity in [insert river reach facility is discharging to] for assignment to [insert facility name, permit number]. The facility requires a reserve capacity because [insert reason]. The amount of the reserve capacity we are requesting is [less than or greater than] 10% of the current reserve capacity in the reach. Documentation of the rationale and calculations is attached and will also be included in the permit fact sheet. [Attach document]

Attachment 3

Point Source Chapter Excerpt from Columbia and Lower Snake River Temperature TMDL

The following is copied directly from the 2021 TMDL issued by EPA

NPDES Permitted Point Sources

The NPDES point sources discharging directly to the mainstems of Columbia and lower Snake Rivers are allocated a temperature increase of 0.1°C, or one third of the 0.3°C allowable temperature increment for all sources. EPA used RBM10, with data from 2011 – 2016, to estimate the impacts of current non-stormwater point source discharges at each target site. NPDES permitted stormwater discharges are discussed separately in Section 6.5.3.

Using RBM10, EPA estimates that the greatest cumulative temperature impact of these sources during the critical period of June through October, after full dilution with the receiving water, is less than 0.1°C, if current sources continue discharging their existing heat loads. Because additional heat loading from point sources can be allowed within the 0.1 °C allocation, EPA has designated relatively small loadings throughout the TMDL area as reserve allocations for new sources, future growth, and wasteload allocation adjustments based on new information. The cumulative impact of the point sources and the reserve allocations in the summer is constrained to a 90^{th} percentile temperature increase of 0.1°C. The reserve allocations are described in detail in Section 6.5.4.

As noted in Section 6.3, wasteload allocations are expressed as heat loads (kcal/day) because many point source facilities can manage effluent flow to reduce the impact of their discharge on the receiving water. In expressing the wasteload allocation as heat loads, the TMDL gives point sources the flexibility to manage temperature and/or effluent flow to achieve their wasteload allocations. The individual WLAs, used as inputs to the model and necessary to achieve the 0.1°C aggregate allocation, are provided in ***Table 6-11*** through ***Table 6-13***. EPA used facility-specific design flow and maximum temperature data (or temperatures representative of the industry sector if effluent data were not available) to derive wasteload allocations for each facility using the following equation:

$$\text{Heat Load (kcal/day)} = \text{Flow (mgd)} \times \text{Temperature (°C)} \times 3.78\text{x}10^{6} \qquad \text{(Equation 6-1)}$$

The assumptions of the modeling assessment can be considered in determining how to translate the TMDL wasteload allocations into permit limits. In the model, a point source is input as a continuous heat load; this is analogous to a source discharging continuously at its monthly average permit limit. Collectively, if all the sources discharge this load on average, the cumulative wasteload allocation for point sources will be achieved.

Permit limits must be consistent with the assumptions and requirements of a TMDL [40 CFR 122.44(d)(1)(vii)(B)]. Given the modeling assumptions, permit writers may translate wasteload allocations to monthly average permit limits. WLAs apply from June 1 through October 31 to all facilities discharging to the Columbia and Snake rivers upstream of Columbia River mile 141.5. Below river mile 141.5, the WLAs apply to discharges from June 1 through September 30. Considerations for permit writers when implementing the TMDL WLAs are included in Appendix J. The appendix also includes recommendations for potential future coordination among Oregon Department of Environmental Quality, Washington Department of Ecology, and EPA regarding management of the reserve allocation and any potential point source trading.

Table 6-11 through ***Table 6-13*** are organized according to the NPDES program designation for major[1] and minor permits (EPA 1990). For discharges to the Columbia River, major facilities are listed in ***Table 6-11*** and minor facilities are listed in ***Table 6-12***. Discharges to the lower Snake River are listed in ***Table 6-13***. The agency responsible for issuing each NPDES permit is indicated by two letters preceding the permit number (e.g., "WA0020621" was issued by Washington), except for EPA-permitted facilities, which are identified by footnotes. These tables include point sources with existing NPDES permits, as well as sources that have applied for and are expected to receive NPDES permits.

Table 6-1 WLAs for "Major facility" NPDES permitted facilities on the Columbia River

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Wenatchee	WA0023949	466.6	5.5	26.2	5.44E+08
E Wenatchee Sewage Treatment Plant (STP)	WA0020621	465.7	3.0	26.2	2.97E+08
Alcoa Wenatchee	WA0000680	455.2	5.5	25.6	5.31E+08
Columbia Generating Sta / Energy Northwest	WA0025151	351.8	9.4	35.9	1.27E+09
Richland STP	WA0020419	337.1	11.4	29.4	1.27E+09
Kennewick Wastewater Treatment Plant	WA0044784	328.0	12.2	27.0	1.24E+09
Pasco	WA0044962	327.6	10.8	27.3	1.11E+09
Agrium Hedges	WA0003699	323.3	0.03	17.2	1.95E+06
Agrium Kennewick	WA0003671	322.6	23.4	30.8	2.72E+09
Agrium Finley	WA0003727	321.5	18.9	27.2	1.94E+09
Packaging Corporation of America	WA0003697	316.0	37.5	37.1	5.25E+09
The Dalles STP	OR0020885	186.5	4.2	27.0	4.23E+08
Hydro Extrusion USA, LLC	OR0001708	186.0	6.0	34.0	7.70E+08
Hood River OR STP	OR0020788	165.0	2.0	27.0	2.04E+08
Georgia Pacific / GP Consumer Operations LLC	WA0000256	120.0	76.0	37.7	1.08E+10
Gresham OR Wastewater Treatment Plant (WWTP)	OR0026131	117.5	15.9	23.9	1.44E+09
Marine Park / Vancouver Marine Park Reclamation Facility	WA0024368	109.2	16.1	25.1	1.53E+09
Portland STP OR	OR0026905	105.5	150.0	24.9	1.41E+10
Vancouver Westside STP	WA0024350	105.1	28.3	26.0	2.78E+09
Salmon Creek STP	WA0023639	96.0	17.0	23.3	1.50E+09
Boise/St Helens OR STP	OR0020834	86.0	12.7	28.5	1.37E+09
Dyno Nobel Inc.	OR0001635	82.0	24.6	34.0	3.16E+09
Emerald Kalama Chemical	WA0000281	74.0	15.0	34.7	1.97E+09
Steelscape, Inc.	WA0040851	72.2	0.2	35.0	2.38E+07

[1] Major municipal dischargers include all facilities with design flows of greater than one million gallons per day and facilities with EPA/state-approved industrial pretreatment programs. Major industrial facilities are determined based on specific ratings criteria developed by EPA or are classified as such by EPA in conjunction with the state (EPA 1996).

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Westrock Longview	WA0000078	67.4	57.0	38.4	8.28E+09
Three Rivers Regional	WA0037788	66.0	26.0	32.5	3.19E+09
Nippon Dynawave Packaging Corporation	WA0000124	64.0	79.6	45.0	1.35E+10
Millenium Bulk Terminals	WA0000086	63.0	6.6	28.9	7.25E+08
Port of St. Helens	OR0034231	53.0	3.3	32.0	3.99E+08
GP Wauna OR Mill	OR0000795	42.0	39.6	35.4	5.29E+09
Astoria OR STP	OR0027561	18.0	6.2	25.0	5.85E+08

Table 6-2 WLAs for "Minor facility" NPDES permitted facilities located on the Columbia River

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Avista – Kettle Falls	WA0045217	702.4	0.34	32.2	4.12E+07
Coulee Dam Electric Facility (WA)[2,3]	WA0026867	596	178.0	16.8	1.13E+10
Grand Coulee WWTP[2]	WA0044857	596.6	0.3	24.1	2.73E+07
City of Coulee Dam[2]	WA0020281	596.0	0.5	23.9	4.51E+07
Interior, Reclamation[2]	WA0024163	596.0	0.018	24.7	1.68E+06
Colville Confederated Tribes[2]	WAG130016	580.0	4.86	16.8	3.08E+08
Confederated Tribes of the Colville Reservation[2]	WAG130025	580.0	25.4	16.8	1.61E+09
Chief Joseph Dam[2,3]	WA0026891	545	92.5	18.2	6.36E+09
Chelan Fruit Cooperative Pateros South Plant	WAG435265	--	0.2	18.8	1.42E+07
Wells Fish Hatchery	WAG135009	--	36.2	17.7	2.42E+09
Bridgeport STP	WA0024066	543.7	0.36	24.2	3.33E+07
Brewster	WA0021008	529.8	0.61	26.0	5.99E+07
Pateros STP	WA0020559	524.1	0.10	24.0	8.91E+06
Wells Dam	WA0991031	515.5	28.5	35.4	3.81E+09
Chelan Fruit Cooperative Beebe Plant	WAG435270	--	0.2	23.7	1.79E+07
Chelan POTW	WA0020605	503.5	2.6	25.0	2.49E+08
Entiat STP	WA0051276	485.0	0.15	26.0	1.47E+07
Rocky Reach Dam	WA0991033	473.5	34.3	27.0	3.50E+09
Stemlit Growers Euclid	WAG435172	--	0.1	26.1	9.87E+06
Stemlit Growers Olds Station 2	WAG435157	--	0.1	21.3	8.05E+06
Eastbank Hatchery	WAG135011	--	29.5	17.5	1.95E+09
Chelan Hatchery	WAG135006	--	17.3	17.5	1.14E+09

[2] EPA is the NPDES permitting agency.
[3] The NPDES permit application has been submitted.

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Tree Top Inc Wenatchee	WA0051527	470.8	0.18	26.6	7.03E+07
Naumes Processing / Keyes Fibre Corp	WA0051811	470.5	1.4	24.7	1.32E+08
Lineage Logistics	WA0052400	466.8	1.9	24.7	1.74E+08
KB Alloys/ AMG Al North Amer.	WA0002976	458.5	0.3	40.0	4.53E+07
Specialty Chemical	WA0002861	456.3	0.35	16.1	2.13E+07
City of Rock Island	WA0501487	455.9	0.34	20.5	2.62E+07
Rock Island Dam	WA0991032	453.5	26.9	26.0	2.64E+09
Crescent Bar WWTP	WA0991013	440	0.06	26.0	5.89E+06
Vantage STP	WA0050474	420.6	0.09	26.1	8.57E+06
Wanapum Dam	WA0991028	416	29.8	30.0	3.38E+09
Priest Rapids Dam	WA0991029	397	27.8	29.2	3.07E+09
Priest Rapids Hatchery	WAG137013	397	76.5	19.8	5.72E+09
Twin City Foods Kennewick	WA0021768	328.3	0.01	24.4	7.37E+05
Sanvik Metals	WA0003701	321.0	0.24	37.8	3.45E+07
McNary Dam (OR)[3]	ODEQ	291	28.8	26.0	2.83E+09
Richland Water Treatment Plant	WAG645000	--	0.8	23.9	7.23E+07
Umatilla STP	OR0022306	285.0	1.1	26.1	1.08E+08
Oregon Fish and Wildlife (Umatilla Hatchery)	ORG137011	275	7.1	17.5	4.71E+08
Oregon Fish and Wildlife (Irrigon Hatchery)	ORG137017	275	18.1	16.6	1.13E+09
Arlington STP	OR0020192	238.0	0.13	25.0	1.18E+07
John Day Project (WA)[2,3]	WA0026832	214	51.9	21.4	4.19E+09
John Day Dam (OR)[3]	ODEQ	214	68.5	27.1	7.01E+09
Biggs OR WWTP	OR0041246	205.5	0.039	26.1	3.79E+06
Wishram POTW	WA0051292	200.9	0.10	23.9	8.75E+06
The Dalles Dam (WA)[2,3]	WA0026701	190	39.5	26.9	4.01E+09
Underwood Fruit & Warehouse	WAG435043	--	0.0014	12.7	6.72E+04
Dalles/Oregon Cherry OR	OR0000736	189.5	0.74	23.0	6.43E+07
Oregon Cherry (Riverside)	OR0000116	189.5	3.24	24.0	2.94E+08
Lyle POTW	WA0050482	183.2	0.098	23.9	8.84E+06
Mosier OR	OR0028045	174.5	0.085	25.6	8.22E+06
SDS Lumber	WA0051152	170.2	25.0	29.4	2.78E+09
Bingen STP	WA0022373	170.2	0.8	24.0	7.25E+07
Spring Crk Natl Fish Hatchery[2]	WAG130006	165.0	5.1	16.8	3.25E+08
Cascade Locks OR STP	OR0041271	148.2	0.49	28.0	5.21E+07

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Stevenson STP	WA0020672	150.0	0.45	27.4	4.66E+07
Oregon Fish and Wildlife (Bonneville Fish Hatchery)	ORG130001	143	32.0	15.5	1.87E+09
Tanner Creek Water Treatment Plant – USACE	OR0022624	146.1	0.1	22.0	8.31E+06
North Bonneville STP	WA0023388	144.0	0.25	20.1	1.90E+07
Bonneville Dam (OR)[3]	OR0034355	141.5	28.5	24.1	2.59E+09
Bonneville Project (WA)[2,3]	WA0026778	141.5	25.1	24.4	2.31E+09
Multnomah Falls OR Lodge STP	OR0040410	135.9	0.5	31.6	5.97E+07
Washougal STP	WA0037427	123.5	2.2	24.1	2.04E+08
Camas STP	WA0020249	121.2	6.1	25.5	5.87E+08
Toyo Tanso USA OR	OR0034916	118.1	0.2	25.3	1.91E+07
Port of Portland	OR0000060	116.9	3.0	20.0	2.27E+08
Knife River Corporation – NW	OR0044652	116.7	9.0	25.0	8.50E+08
Sundial Marine Construction & Repair, Inc.	OR0044601	116.7	0.022	24.7	2.01E+06
Portland Water Bureau	OR0031135	115.0	4.2	20.0	3.13E+08
River Road Generating Plant	WA0040932	103.2	0.7	38.5	9.45E+07
Columbia River Carbonates	WA0039721	83.5	0.31	14.1	1.67E+07
Kalama STP	WA0020320	75.0	0.8	23.9	7.22E+07
Port of Kalama	WA0040843	72.2	0.02	24.7	1.86E+06
Riverwood OR Mobile Home Park / Magar E Mager	OR0031143	70.6	0.013	24.0	1.18E+06
Rainier OR STP	OR0020389	67.0	1.0	25.0	9.35E+07
Stella STP	WA0039152	56.4	0.0035	23.9	3.16E+05
PGE Beaver OR	OR0027430	53.0	1.4	35.0	1.90E+08
Cathlamet STP	WA0022667	32.0	0.38	24.0	3.47E+07
Bio-Oregon Protein	OR0000612	10.8	0.52	28.0	5.50E+07
Pacific Surimi Co., Inc.	OR0034657	10.0	0.38	24.7	3.54E+07
Fort Columbia State Park	WA0038709	10.0	0.005	20.5	3.87E+05
Warrenton WWTP	OR0020087	7.8	1.0	24.2	9.14E+07
Point Adams Packing Co. / California Shellfish Co.	OR0000868	6.6	0.68	12.8	3.31E+07
Bell Buoy Crab Co. (Now South Bend Products LLC)	WA0000159	6.0	0.2	18.4	1.39E+07
Ilwaco STP	WA0023159	2.0	1.0	23.0	8.77E+07
Jessies Ilwaco Fish Co.	WA0000361	2.0	0.75	18.3	5.18E+07

Table 6-3 WLAs for "Minor facility" NPDES permitted facilities located on the lower Snake River

Facility Name	Permit Number	Location (RM)	Flow (MGD)	Temp (°C)	WLA (kcal/day)
Clarkston STP	WA0021113	138.0	2.2	27.4	2.28E+08
Lower Granite Dam and Locks (WA)[2,3]	WA0026794	106	27.6	21.6	2.25E+09
Little Goose Lock and Dam (WA)[2,3]	WA0026786	69	40.7	21.0	3.23E+09
Lyon's Ferry (hatchery)	WAG137006	59.1	91.9	16.8	5.84E+09
Lower Monumental Lock and Dam (WA)[2,3]	WA0026808	41	26.9	21.8	2.21E+09
Ice Harbor Lock and Dam (WA) [2,3]	WA0026816	9	39.2	23.8	3.52E+09

There are no major NPDES facilities on the lower Snake River within the TMDL study area. Two major facilities are located just upstream of the TMDL study area: Clearwater Paper and the City of Lewiston. One minor facility, the City of Asotin, is also located upstream. Loading assumptions for these facilities are included in the model scenarios for estimation of point source impact and allocation (0.1°C gross impact) to ensure that the boundary conditions account for these nearby sources (***Table 6-14***). The future NPDES permit conditions for these facilities should be consistent with these assumptions; future permit conditions should also apply relevant temperature standards and mixing zone requirements at the point of discharge. This TMDL does not preclude future assessment approaches and decisions by the NPDES permitting program.

Table 6-4 Modeled point sources located outside TMDL study area not receiving WLAs

Facility Name	Permit Number	Location RM	Flow (MGD)	Temp (°C)
Clearwater Paper	ID0001163	139.3	44.7	33.0
City of Lewiston	ID0022055	140.1	5.7	23.6
City of Asotin	WA0020818	145.0	0.16	23.8

Table 6-15 identifies NPDES facilities in the study area that are not assigned a WLA. EPA believes these facilities either do not discharge heat during the critical season, or there is inadequate information to determine a WLA. This list includes some facilities authorized to discharge into the TMDL study area under an industrial general permit. Examples of industrial general permits include Confined Animal Feeding Operations (CAFOs), in-stream placer mining, pesticide discharge, fruit packer, seafood processing, net pen aquaculture, fish hatchery permits, 500J boiler boildown, 1700A washwater, 400J log ponds, and 1500A petroleum hydrocarbon cleanup permits. In the future, if it is determined that these facilities are a heat load source of concern, the permitting authorities will work with the permittees to access a portion of the reserve allocation (if available) to receive a WLA (Appendix J).

Table 6-5 NPDES permitted facilities not receiving WLAs

Facility Name	Permit Number	Additional Information
Pacific Aquaculture Incorporated[2]	WA0026328	Net pen aquaculture general permit; Assumed to not discharge heat
Pacific Aquaculture Incorporated[2]	WA0026336	Net pen aquaculture general permit; Assumed to not discharge heat
Faith Frontier Ministries[2]	WA0026379	Net pen aquaculture general permit; Assumed to not discharge heat
Pacific Aquaculture Incorporated[2]	WA0026719	Net pen aquaculture general permit; Assumed to not discharge heat
Piezometer Installation and Hyporheic Studies, U.S. Department of Energy[2]	WA0026859	Assumed to not discharge heat
Pacific Aquaculture Incorporated[2]	WAG130027	Net pen aquaculture general permit; Assumed to not discharge heat

Facility Name	Permit Number	Additional Information
PCL Construction Services[2]	WAR12AO9I	Assumed not to discharge heat
Chelan Fruit Cooperative Chelan Station	WAG435269	Fruit packer general permit; Have not been discharging
Gee Whiz II, LLX Orondo Plant	WAG435162	Fruit packer general permit; Have not been discharging
Chelan Falls Rearing Facility Hatchery	WAG137019	Upland fish hatchery general permit; Operates in Mid-Winter to mid-April during non-critical time period
Oregon Parks and Recreation Department	ORG387007	Filter backwash permit; No flow information
City of Dalles	ORG387005	Filter backwash permit; No flow information
Pacific Coast Seafoods Company LLC	ORG520001	Seafood processing general permit; No flow information
Astoria Pacific Seafoods LLC	ORG520007	Seafood processing general permit; No flow information
Fishhawk Fisheries, Incorporated	ORG520011	Seafood processing general permit; No flow information
Bornstein Seafoods, Incorporated	ORG520014	Seafood processing general permit; No flow information
Flint Group Packaging Inks North America LLC	ORG250003	Cooling water permit; No flow information

1.1.1 NPDES Permitted Stormwater

Stormwater discharges designated as point sources to the Columbia and lower Snake Rivers are regulated by the NPDES programs at ODEQ, Ecology, and EPA. Each of these three agencies has issued NPDES general stormwater permits for municipal, industrial, and construction stormwater discharges. Temperature TMDLs developed by ODEQ and Ecology have not considered stormwater discharges a significant source of heat load during the summer critical period, primarily because of minimal precipitation in most of the Pacific Northwest - including the TMDL area - during the summer and early fall. For example, in the Klamath River temperature TMDL, ODEQ estimated that stormwater discharge from one industrial facility results in a change in temperature of 0.0001°C or less (ODEQ 2019).

EPA estimated impacts from stormwater to confirm that stormwater discharges are negligible. A summary of results is provided below, and details of the analysis are provided in Appendix D.

Because the estimated temperature impacts from these sources are negligible, as explained below, EPA has not assigned a WLA to point source stormwater discharges in this TMDL and has determined that no heat limits are needed in stormwater permits. The permits and number of facilities covered by each general permit, summarized in ***Table 6-16*** and ***Table 6-17***, fall into the following categories:

- Municipal Separate Storm Sewer System (MS4) Permits. Municipalities that need to obtain an MS4 permit are classified as either "Phase I" or "Phase II." Phase I MS4s cover areas with populations greater than 100,000 and regulated Phase II (or "small") MS4s typically serve populations less than 100,000. There are multiple MS4 permits within the TMDL area that discharge directly to the Columbia and lower Snake Rivers. (see ***Table 6-16***).
- Industrial stormwater permits are used to authorize stormwater discharges from specific industrial activities. There are approximately 334 industrial stormwater permittees in the TMDL area that discharge directly to the Columbia and lower Snake Rivers.
- Construction stormwater permits are used to authorize stormwater discharges for construction projects that disturb one or more acres. Because construction projects are transitory, the number and location of

construction stormwater permittees varies from year to year. The issuing agency and number of open permits (as of January 2020) are listed in ***Table 6-17***. Please refer to the following databases for current permit information:

ODEQ: www.deq.state.or.us/wq/sisdata/sisdata.asp
Ecology: apps.ecology.wa.gov/paris/PermitLookup.aspx

Table 6-6 MS4 NPDES permits on the Columbia and lower Snake River

City	Permittee	Type	Permit Number
Columbia River			
Pasco, WA	Pasco City	Municipal SW Phase II Eastern WA General Permit (GP)	WAR046503
Kennewick, WA	Kennewick City	Phase II Eastern WA GP	WAR046005
Richland, WA	City of Richland	Phase II Eastern WA GP	WAR046006
	Port of Benton	Phase II Eastern WA GP	WAR046203
	WSU Tri Cities	Phase II Eastern WA GP	WAR046207
	West Richland City	Phase II Eastern WA GP	WAR046007
Wenatchee, WA	Chelan County	Phase II Eastern WA GP	WAR046002
	Chelan County PUD No 1	Phase II Eastern WA GP	WAR046208
	Wenatchee City	Phase II Eastern WA GP	WAR046011
	Wenatchee Valley College	Phase II Eastern WA GP	WAR303571
East Wenatchee, WA	East Wenatchee City	Phase II Eastern WA GP	WAR046012
	Eastmont Metropolitan Park District	Phase II Eastern WA GP	WAR046200
Washougal, WA	Clark County	Phase I GP	WAR044001
	Washougal City	Phase II Western WA GP	WAR045023
Camas, WA	Clark County	Phase I GP	WAR044001
	Camas City	Phase II Western WA GP	WAR045004
Vancouver, WA	Clark County	Phase I GP	WAR044001
	Clark College	Phase II Western WA GP	WAR045212
	Port of Vancouver	Phase II Western WA GP	WAR045201
	Vancouver City	Phase II Western WA GP	WAR045022
	WSU Vancouver	Phase II Western WA GP	WAR045716
Longview, WA	Cowlitz County Consolidated Diking 1	Phase II Western WA GP	WAR045204
	Longview City	Phase II Western WA GP	WAR046208
	Longview School District	Phase II Western WA GP	WAR046012
	Lower Columbia College	Phase II Western WA GP	WAR046200
Portland, OR	Portland, City of	Individual Phase I MS4	ORS108015
Fairview, OR	Multnomah County	Individual Phase I MS4	ORS120542
	Gresham, City of; Fairview, City of	Individual Phase I MS4	ORS108013
Gresham, OR	Gresham, City of; Fairview, City of	Individual Phase I MS4	ORS108013
Troutdale, OR	Multnomah County	Individual Phase I MS4	ORS120542
	Troutdale, City of	Phase II GP	ORS110793
Wood Village, OR	Multnomah County	Individual Phase I MS4	ORS120542
	Wood Village, City of	Phase II GP	ORS098909

City	Permittee	Type	Permit Number
Snake River			
Clarkston, WA	Clarkston City	Phase II Eastern WA GP	WAR046502

Table 6-7 ***Construction and industrial*** stormwater NPDES permits on the Columbia and lower Snake Rivers

Agency Issuing Permit	Permit Name & Description	Approximate Number of Permittees within TMDL area
EPA	Construction General Permit (as modified June 2019) covers Indian Country within Washington (WAR10I000) and Oregon (ORR10I000); and areas in Washington subject to construction activity by a Federal Operator (WAR10F000)	16
Oregon	Construction General Permits covers activity on Oregon lands (1200-C, 1200-CA, and 1200-C(AGENT))	232
Washington	Construction General Permit covers activity on Washington lands, excluding activity by a Federal Operator (WAR300000)	17
Oregon	Industrial Stormwater Permits (1200-Z and 1200-A)	298
Washington	Industrial Stormwater Permit (WAR1200000)	36

Temperature data collection is not typically required by general stormwater permits, so it was not possible for EPA to characterize the potential temperature impacts from stormwater discharges by assessing existing data as EPA did for the individual NPDES permits discussed in Section 6.5.2. Consequently, EPA evaluated impacts from stormwater on heat using analyses similar to those conducted for other temperature TMDLS in the Pacific Northwest (e.g., ODEQ's Upper Klamath and Lost Subbasins Temperature TMDLs, 2019).

As discussed in Appendix D, EPA estimated the heat loading from stormwater for each of the reaches in the TMDL area. The most urbanized portions of the TMDL are in and around the Tri-Cities (between Priest Rapids and the lower Snake River confluence) and Portland (Bonneville to the coast). EPA estimated the potential impact of stormwater in these two reaches to be a maximum increase in the temperature of the Columbia River of 0.0066°C (July) and 0.0045°C (August) from Priest Rapids to the Snake River confluence (Tri-Cities); and 0.0072°C (July) and 0.0088°C (August) from Bonneville to the coast (Portland). In the remainder of the reaches, the estimated temperature increases are significantly less, ranging from 0°C to 0.0003°C. Because the estimated temperature impacts from these sources are negligible and intermittent, EPA has not assigned a WLA to stormwater sources in this TMDL. It is assumed that stormwater discharges will continue at current levels and that no heat limit is necessary for stormwater permits.

If additional data indicate that any of the various sources of stormwater are a significant source of thermal loading, then the States or EPA may access a portion of the reserve allocation within the appropriate reach to explicitly account for continued discharge from stormwater facilities.

1.1.2 Reserve Allocations

A reserve allocation is a portion of the loading capacity that is reserved for future use. EPA used RBM10, with data from 2011 to 2016, to determine the reserve allocation at each target site. The initial model scenario for the existing NPDES facilities with no reserve allocation estimated a maximum temperature impact of approximately 0.08°C at the critical location (RM 42). EPA is reserving the remainder of the 0.1°C point source allocation for future use for the following purposes:

- Future growth;
- New point source dischargers of heat;

- Adjustments to the calculated WLAs if, for example, the data that EPA considered during TMDL development are not representative of the existing discharge; and
- All other nonpoint sources on the mainstems that were not considered during TMDL development.

To calculate the reserve allocation, a heat load was inserted in the model at the midpoint of each TMDL reach/impoundment and two additional reaches in the lower Columbia River that bracket the location of maximum impact (RM42 for existing discharges for most of the summer/fall).
The model was then run iteratively, increasing the reserve heat load until the maximum cumulative impact equaled 0.1°C. The resulting reserve load for each reach is $4.8x10^9$ kcal/day. This loading is equivalent to a 49 mgd discharge at 26°C and similar to the heat load discharged by the largest individual point sources in the study area. The three critical locations for impact from the full allocated loading (existing discharges plus the reserve loading in each reach) are the Priest Rapids and McNary target sites and the RM42 assessment location. All of the Snake River target sites approach the allowable 0.1°C impact in September with application of the uniform reserve loading. There is an exception to the application of a uniform reserve loading over the assessment period. In October, the reserve heat loading must be lower ($2.0x10^9$ kcal/day) in the reaches of the Columbia River upstream of the Priest Rapids target site to meet the allowable 0.1°C impact.

The reserve allocations are provided in ***Table 6-18***, and model results showing the combined temperature impacts of the wasteload allocations and reserve allocations are provided in ***Table 6-19*** and ***Table 6-20***.

Table 6-8 Reserve Allocations

Reserve Reach	River Miles	Reserve Allocation (June – September)	Reserve Allocation (October)
		(kcal/day)	(kcal/day)
COLUMBIA RIVER			
Grand Coulee	738-591	$4.8x10^9$	$2.0x10^9$
Chief Joseph	591-544	$4.8x10^9$	$2.0x10^9$
Wells	544-512	$4.8x10^9$	$2.0x10^9$
Rocky Reach	512-472	$4.8x10^9$	$2.0x10^9$
Rock Island	472-453	$4.8x10^9$	$2.0x10^9$
Wanapum	453-413	$4.8x10^9$	$2.0x10^9$
Priest Rapids	413-396	$4.8x10^9$	$2.0x10^9$
McNary	396-291	$4.8x10^9$	$4.8x10^9$
John Day	291-215	$4.8x10^9$	$4.8x10^9$
Dalles	215-189	$4.8x10^9$	$4.8x10^9$
Bonneville	189-140	$4.8x10^9$	$4.8x10^9$
RM42	140-42	$4.8x10^9$	$4.8x10^9$
RM0	42-0	$4.8x10^9$	$4.8x10^9$
SNAKE RIVER			
Lower Granite	140-107	$4.8x10^9$	$4.8x10^9$
Little Goose	107-70	$4.8x10^9$	$4.8x10^9$

Lower Monumental	70-40	$4.8x10^9$	$4.8x10^9$
Ice Harbor	40-0	$4.8x10^9$	$4.8x10^9$

Note: River Miles are referenced to RBM10 model structure

Table 6-9 Estimated impacts of point source wasteload allocations and reserve allocations to the Columbia River (2011 – 2016)

		Estimated Increase in Temperature (°C)									
		Mean					90th Percentile				
Location	**RM**	**June**	**July**	**Aug**	**Sept**	**Oct**	**June**	**July**	**Aug**	**Sept**	**Oct**
Lake Roosevelt	639	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00
Grand Coulee	595	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.01
Chief Joseph	546	NA	0.01	0.01	0.01	0.01	NA	0.02	0.01	0.02	0.02
Wells	515	NA	0.03	0.02	0.03	0.03	NA	0.04	0.03	0.05	0.05
Rocky Reach	474	0.04	0.03	0.02	0.03	0.03	0.06	0.04	0.03	0.05	0.04
Rock Island	453	0.05	0.04	0.04	0.05	0.05	0.08	0.06	0.05	0.08	0.07
Wanapum	416	0.06	0.05	0.04	0.06	0.05	0.08	0.06	0.06	0.08	0.08
Priest Rapids	397	0.07	0.05	0.05	0.07	0.07	0.10	0.07	0.06	0.10	0.10
McNary	291	0.08	0.06	0.05	0.07	NA	0.10	0.07	0.06	0.09	NA
John Day	216	0.07	0.05	0.04	0.04	NA	0.08	0.06	0.05	0.05	NA
Dalles	192	0.07	0.05	0.04	0.05	NA	0.08	0.06	0.05	0.06	NA
Bonneville	146	0.07	0.05	0.04	0.05	0.07	0.08	0.06	0.05	0.06	0.08
RM 42	42	0.08	0.07	0.06	0.08	NA	0.09	0.08	0.07	0.09	NA
RM 21	21	0.08	0.07	0.06	0.08	NA	0.09	0.08	0.06	0.09	NA

NA – Not applicable. River is not impaired at this target site/month

Table 6-10 Estimated impacts of point source wasteload allocations and reserve allocations to the Snake River (2011 – 2016)

Location	RM	Estimated Increase in Temperature (°C)							
		Mean				90th Percentile			
		June	July	Aug	Sept	June	July	Aug	Sept
Lower Granite	107	0.03	0.03	0.05	0.06	0.04	0.05	0.06	0.08
Little Goose	70	0.04	0.04	0.04	0.06	0.05	0.05	0.05	0.08
Lower Monumental	41	0.05	0.03	0.03	0.05	0.06	0.05	0.04	0.07
Ice Harbor	6	0.06	0.04	0.04	0.06	0.08	0.07	0.05	0.08

The reserve will be managed by the three permitting authorities (EPA, Washington, and Oregon) during implementation, which will include establishing a process for granting a portion of the reserve to individual point sources and maintaining a system to track its usage over time.