Response to Comments on the Re-Proposed Draft NPDES Permit for the City of Sandpoint

June 2018

Overview

The most recent NPDES permit for the City of Sandpoint WWTP was issued on September 5, 2017, became effective on December 1, 2017, and will expire on November 30, 2022.

On October 6, 2017, the Idaho Conservation League (ICL) filed a petition for review of the permit with the EPA's Environmental Appeals Board (EAB).[1] The issue on appeal was whether it was appropriate for the EPA to accept the total phosphorus mixing zone size condition in the Idaho Department of Environmental Quality's (IDEQ's) Clean Water Act 401 certification. The interim and final effluent limits for total phosphorus were stayed pending the appeal; all other aspects of the permit went into effect.

On January 9, 2018, the EPA provided notice to the EAB and ICL that it was withdrawing the permit's interim and final effluent limits for total phosphorus as P (TP) because the EPA had failed to address ICL's comment concerning the use of the State of Idaho's 2015 Mixing Zone Policy. The notice stated that the EPA would prepare a new draft permit addressing the withdrawn portions of the permit. The remaining uncontested portions of the permit remain in effect. See 40 CFR 124.19(j).

On February 23, 2018, the EPA issued a new draft permit, which addressed the withdrawn TP limits in light of ICL's comments regarding the use of the 2015 mixing zone policy. The public comment period for the new draft permit closed on March 26, 2018. The EPA received comments on the new draft permit from ICL.

Response to Comments

Comment #1

We thank the Environmental Protection Agency (EPA) and Idaho Department of Environmental Quality (DEQ) for their patience and work reviewing the law and policy regarding mixing zone rules in Idaho. This process exemplifies the great care Idahoans have for protecting the quality of all the waters in this State. The thoroughness with which the permitting agencies and general public have pursued examining this permit will undoubtedly ensure the protection of the Pend Oreille River.

Response #1

Thank you for your comment.

[1] The petition for review and related documents are available on the EPA's website, here: https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Dockets/NPDES+17-06

Comment #2

EPA's re-proposal of total phosphorus (TP) effluent limits in the NPDES Draft Permit, City of Sandpoint, Idaho, #ID0020842, issued in February 2018, violates the Clean Water Act, 33 U.S.C. §1251 et seq., because the permit authorizes total phosphorus effluent limits based on mixing zones that utilize 47% and 60% of the Pend Oreille River's stream flow volume.

Idaho's EPA-approved Mixing Zone Policy restricts DEQ to authorizing mixing zones that include no more than 25% of the stream flow volume of the discharge-receiving water body. Accordingly, EPA cannot approve and issue the City of Sandpoint WWTP's NPDES permit, as drafted, because it violates this mixing zone restriction in Idaho's EPA-approved Water Quality Standards.

It is critical that EPA base its approval and issuance of this NPDES permit on the correct application of Idaho's EPA-approved Mixing Zone Policy because the precedent will impact water quality throughout Idaho and influence effluent limits for all NPDES permits EPA issues going forward.[2]

25% Maximum Mixing Zone Principle

One of Idaho's four EPA-approved principles for designing mixing zones in flowing receiving water states:

> "Mixing zones in flowing receiving waters are to be limited to the following… The mixing zone is not to include more than twenty-five (25%) of the volume of the stream flow."

IDAPA 58.01.02.060.e.iv. (2014).

As an EPA-approved Idaho Water Quality Standard, this rule precludes DEQ from defining mixing zones that include more than 25% of the stream flow volume. DEQ will consider the 25% maximum mixing zone principle when defining a mixing zone, according to Idaho's EPA-approved Mixing Zone Policy. No EPA-approved regulatory provision in Idaho's Water Quality Standards grants DEQ the discretion to define a mixing zone that exceeds 25% of the stream flow volume, as EPA and DEQ claim.

At page 9 of EPA's Fact Sheet for Re-Proposal of Total Phosphorus Limits, EPA summarizes its basis for approving and issuing the re-proposed total phosphorus limits for the City of Sandpoint WWTP (City), stating:

> "…the mixing zones authorized by IDEQ in its certification of the City of Sandpoint permit are consistent with the State's prior Mixing Zone Policy, which remains in effect for Clean Water Act purposes and which allows IDEQ [to] authorize mixing zones larger than 25% of the stream flow volume."

EPA's statement above is mistaken. Idaho's EPA-approved Mixing Zone Policy has no provision, which authorizes DEQ to design a mixing zone that exceeds 25% of the stream flow volume. EPA's statement above is based on a flawed interpretation of Idaho's EPA-approved Mixing Zone Policy that is not authoritative in this instance.

[2] Although DEQ is seeking authorization from EPA to administer the NPDES permitting program for the State of Idaho, DEQ's request may not be approved by EPA, so EPA's decision in this case remains significant and important.

EPA inappropriately interpreted and applied Idaho's EPA-approved Mixing Zone Policy on the basis of DEQ guidance documents. The DEQ guidance documents cited by EPA do not have the force or effect of a rule and do not supersede state or federal statutes and regulations effective for Clean Water Act purposes. The primary authority defining the meaning of Idaho's EPA-approved Mixing Zone Policy is the plain language of the EPA-approved policy.

Furthermore, EPA also inappropriately relied on DEQ's interpretation of Idaho's EPA-approved Mixing Zone Policy. At page 8 of EPA's Fact Sheet for Re-Proposal of Total Phosphorus Limits, EPA cited DEQ's response to comments regarding the City's 401 Certification, stating:

> "DEQ's interpretation of the prior provisions also allowed [DEQ] to vary from the 25% limit on mixing zones, but only if the mixing zone still ensured protection of uses."

DEQ's interpretation of Idaho's EPA-approved Mixing Zone Policy provided above is erroneous and simply not supported by the plain language of the effective rules. Indeed, a DEQ "Response to Comments" cannot supersede the plain language of the effective rules.

Request

ICL requests:

1. DEQ revise its 401 Certification for the City's NPDES permit to limit any mixing zone for total phosphorus to no more than 25% of the stream flow volume of the Pend Oreille River, as measured or estimated at the City's outfall location.

2. EPA recalculate the total phosphorus effluent limits and revise the City's NPDES permit according to a mixing zone for total phosphorus that includes no more than 25% of the stream flow volume of the Pend Oreille River, as measured or estimated at the City's outfall location.

Response #2

As explained in the fact sheet for the new draft permit, dated February 23, 2018, (2018 Fact Sheet) the mixing zones authorized by IDEQ in its certification of the City of Sandpoint permit are consistent with the State's prior Mixing Zone Policy, which remains in effect for Clean Water Act purposes and which allows IDEQ to authorize mixing zones larger than 25% of the stream flow volume. In addition, the mixing zones authorized by IDEQ for TP do not cause unreasonable interference with beneficial uses.

The EPA-approved mixing zone policy states that "In defining a mixing zone, the Department will **consider** the following principles...." One of the principles set forth states that "the mixing zone is not to include more than twenty-five percent (25%) of the volume of the stream flow." (IDAPA 58.01.02.060.01, 2014, emphasis added). Thus, IDEQ must "consider" limiting the mixing zone to 25% of the stream flow, but may choose to authorize a larger mixing zone if such larger mixing zone would protect the waterbody's beneficial uses.

The EPA has not interpreted and applied the prior Mixing Zone Policy solely based on IDEQ guidance documents. Rather, ever since the prior Mixing Zone Policy was approved in 1996, it has been IDEQ's interpretation and the EPA's understanding of IDEQ's interpretation that the "principles" listed under IDAPA 58.01.02.060.01 (2014) were not binding (EPA 1996). IDEQ has reaffirmed this interpretation of the prior Mixing Zone Policy in draft guidance (IDEQ 2008), in supporting documentation for its revised mixing zone rule (IDEQ 2016), in its response to comments on its Clean Water Act Section 401

certification of this permit (IDEQ 2017), and in its authorizations of mixing zones for other permits, such as the 52.5% mixing zone for phosphorus for the City of Idaho Falls (IDEQ 2012).

The Clean Water Act Section 401 certification of this permit, in which IDEQ authorized mixing zones, is final and was not re-opened for public review and comment concurrently with the re-proposed draft permit.

The EPA cannot recalculate the phosphorus effluent limits according to a mixing zone for TP that includes no more than 25% of the stream flow volume of the Pend Oreille River, because Idaho's mixing zone policy reserves the authority to determine the applicability of a mixing zone, and to determine its size, for IDEQ, and, as explained above, the mixing zones authorized by IDEQ are consistent with the State's EPA-approved mixing zone policy.

Comment #3

Critical Low Flow

The critical low flow used to calculate total phosphorus effluent limits, as well as the other effluent limits identified in the City's permit, should be adjusted downward to account for tributary water flow into the Pend Oreille River that is downstream of the City's outfall location. The associated effluent limits should also be adjusted accordingly.

EPA calculated the critical low flow of the Pend Oreille River, at the City's point of discharge, by subtracting the flow from the Priest River from the flow in the Pend Oreille River at Newport, WA.[3] However, there are at least 20 tributaries to the Pend Oreille River and two municipal discharge inflows downstream of the City's point of discharge. The flows of these tributaries and municipal discharges were "baked in" to the EPA's critical low flow estimates. In other words, the critical low flow estimated for the City's point of discharge is artificially high.

While it may be that the tributaries and municipal discharges into the Pend Oreille River downstream from the City's point of discharge contribute a small volume of water compared to the flow of the Pend Oreille River, the City's point of discharge and existing conditions in the Pend Oreille River create extremely poor circumstances for dispersing phosphorus and other effluent. In fact, at page 21 of DEQ's 401 Certification issued on February 23, 2016, DEQ states:

> "The point of discharge is in a slack water area [ ] does not benefit from the main river flow during summer pool conditions. Increasing the amount of phosphorus as illustrated in Image 2, even by a relatively small amount, greatly increases the size of the plume during low flow conditions."

Given the sensitivity of the Pend Oreille River in which the City discharges, we request EPA collect, and estimate as needed, stream flow data for the tributaries between the USGS gage station at Newport, WA and the City's point of discharge. DEQ likely possesses stream flow data for these tributaries as part of its BURP data inventory.[4] These flows should then be subtracted from the critical low flow EPA used

[3] See EPA Revised Fact Sheet, City of Sandpoint Wastewater Treatment Plant, April 19, 2016 at C-1.

[4] Less recent flow data for some of the smaller tributaries to the Pend Oreille River is also available in the Portland State University Report: Idaho Pend Oreille River Model: Model Development and Calibration (2006) available at https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1153&context=cengin_fac.

to calculate effluent limits in the City's NPDES permit, and the effluent limits should be adjusted accordingly.

Response #3

The EPA agrees that, in addition to the Priest River, there are other tributaries and point sources to the Pend Orielle River between Sandpoint's discharge location and the USGS stream gauge at Newport. However, the EPA believes that the critical low flows estimated in the 2016 fact sheet are nonetheless reasonable.

Drainage Area

The drainage area of the ungauged tributaries that were not accounted for in the estimation of the critical low flows at the City of Sandpoint's discharge location is small relative to the drainage area of the Pend Oreille River at the point of discharge. Thus, the error in the estimated flow rates resulting from these ungauged tributaries is likely to be small as well.

The drainage area of Lake Pend Oreille is 22,900 square miles.[5] Since Sandpoint's outfall is located immediately downstream of the outlet from Lake Pend Oreille, this is a reasonable estimate of the drainage area of the Pend Oreille River at the point of discharge as well.

The drainage areas of the Pend Oreille River at the Newport stream gauge (station #12395500) and of the Priest River at the gauge near Priest River (12395000) are 24,200 and 902 square miles, respectively.[6,7] The EPA subtracted the daily Priest River flows from the daily flows of the Pend Oreille River at Newport to estimate the flow rate of the Pend Oreille River upstream from the Priest River, and, in turn, to calculate critical low flow statistics. Thus, the effective drainage area reflected in the EPA's estimated critical low flow rates is 24,200 – 902 = 23,298 square miles. This is 398 square miles or 1.7% more than the drainage area at the point of discharge (22,900 square miles).

When two sites are on the same stream and the drainage areas are similar, the stream flow at an un-gauged site may be estimated using the ratio of the drainage areas of the ungauged site and a gauged site (Hortness 2006). Thus, based on the drainage area ratio, the error resulting from not including the flows of small tributaries to the Pend Oreille River when estimating flow rates is about 1.7%.

Measured Tributary Flows

As suggested by the commenter, the EPA searched Idaho DEQ's Beneficial Use Reconnaissance Program (BURP) Viewer for flow data for the ungauged tributaries on the Pend Oreille River between Sandpoint's discharge and the stream gauge at Newport. The EPA also searched for flow data for these tributaries in the USGS's National Water Information System (NWIS) database[8], the Water Quality Portal[9], and Legacy STORET[10].

Except for the Priest River, none of the tributaries to the Pend Oreille River in Idaho have gauging stations providing daily flow measurements. Initially, the EPA located a total of 27 flow measurements

[5] https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=12392500
[6] https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=12395500
[7] https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=12395000
[8] https://waterdata.usgs.gov/id/nwis/sw
[9] https://www.waterqualitydata.us/portal/
[10] https://www3.epa.gov/storet/legacy/gateway.htm

on 14 streams. If the stream flow was measured at more than one location on a given stream, only the data from the locations closest to the Pend Oreille River were used. Data for streams that did not have a clear connection to the Pend Oreille River were not considered. After filtering the data, 20 flow measurements on 11 streams remained. The flow measurements were found in the BURP Viewer and in NWIS.

The EPA expressed the measured tributary flows as percentages of the Pend Oreille River flow (after subtracting the Priest River flow) on the days that the tributary flows were measured. If there were multiple suitable tributary flow measurements, the EPA used the arithmetic average of the percentages.

The results are summarized in

Table 1, below:

Table 1: Tributary Flow Contributions

Stream	Average Tributary Flow (CFS)	Number of Tributary Flow Measurements	Average Percentage of PDO River Flow
Cocolalla Creek	3.4	1	0.0202%
Hoodoo Creek	2.84	4	0.0234%
Hornby Creek	8.39	6	0.0362%
Johnson Creek	0.46	1	0.0029%
Manley Creek	1.3	1	0.0028%
Riley Creek	1.06	1	0.0083%
Smith Creek	0.19	1	0.0015%
Syringa Creek/Chuck Slough	4.00	2	0.0134%
Unnamed Tributary (2012SCDAA009)	0.6	1	0.0018%
Unnamed Tributary (2012SCDAA010)	0.08	1	0.0002%
Unnamed Tributary (2012SCDAA037)	1.57	1	0.0123%
Total	**23.9**	**20**	**0.123%**

As shown in Table 1, the 11 tributaries for which the EPA could locate flow data contributed 0.12% of the flow in the Pend Oreille River, on the days that the tributary flows were measured.

CE-QUAL-W2 Model Calibration Report

As noted by the commenter, the *Idaho Pend Oreille River Model: Model Development and Calibration* report ("CE-QUAL-W2 Model Calibration Report") includes some information about tributary flows in Table 3, on Pages 26 and 27. The flow data for tributaries (other than the Priest River) is summarized in

Table 2, below.

Table 2: Tributary Flows from CE-QUAL-W2 Calibration Report

Stream Name	Flow (m3/s)	Flow (CFS)
Alder Creek	0	0
Carr Creek	0.039	1.38
Cocolalla Creek	0.049	1.73
Hornby Creek	0.024	0.85
Manley Creek	0.02	0.71
Strong Creek	0.003	0.11
Unnamed Tributary (segment 63)	0	0.00
Unnamed Tributary (segment 135)	0.005	0.18
Unnamed Tributary (segment 143)	0.001	0.04
Unnamed Tributary (segment 152)	0.003	0.11
Unnamed Tributary (segment 208)	0.004	0.14
Total Tributary Flow (except Priest R)	**0.148**	**5.23**

The CE-QUAL-W2 Model Calibration Report states that the flows of the small streams were characterized by only one flow measurement, and the report does not specify when these measurements were taken. Since the tributary flow measurements may not have been taken during a low flow period, it is reasonable to compare the tributary flow rates from the report to the harmonic mean flow, as opposed to the 30-day, 10-year low flows used to calculate the TP effluent limits. As stated in the 2016 fact sheet on Page C-2, the harmonic mean flow of the Pend Oreille River is 16,800 CFS (EPA 2016). Thus, the combined flow rates of the tributaries listed in Table 3 of the CE-QUAL-W2 Model Calibration Report (except for the Priest River) account for 0.03% of the flow in the Pend Oreille River.

Point Sources

As pointed out by the commenter, the City of Dover and the City of Priest River also discharge wastewater to the Pend Oreille River upstream of the Newport stream gauge. The design flow rates of the Dover and Priest River WWTPs are 0.18 and 0.5 mgd, respectively. The flows measured at the Newport stream gauge would also be influenced by discharges from the Sandpoint WWTP itself, and its design flow is 5.0 mgd. The total design flow of these POTWs is thus 5.68 mgd, or 8.8 CFS. This is equivalent to 0.05% of the harmonic mean river flow. Adding this to the flows from the tributaries, as quantified above, results in a total contribution from tributaries and point sources of 0.08 – 0.17% of the river flow, depending on whether the tributary flows are quantified using BURP and NWIS data or the CE-QUAL-W2 Calibration Report.

Conclusion

As explained above, the error in the EPA's estimated flow rates for the Pend Oreille River resulting from the exclusion of small tributaries and point sources to the Pend Oreille River between the point of discharge and the Newport stream gauge is between 0.08% and 1.7%, depending on the method of estimation.

As explained on Page 97 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD) (EPA 1991), the steady state modeling techniques used in the reasonable potential analysis and effluent limit calculations for the City of Sandpoint permit are inherently conservative, since they apply a combination of worst-case assumptions which each have a low probability of occurrence and therefore an even lower probability of occurring simultaneously. As explained in the 2016 fact sheet at Page E-3, it is conservative to use a 30-day low flow to calculate water quality-based effluent limits for a criterion which is averaged over several months (EPA 2016). Thus, the EPA believes the small amount of error in the critical low flow estimates is acceptable and that the TP effluent limits are nonetheless protective.

Comment #4

Phosphorus Dispersion During Winter Drawdown

We request EPA use a more conservative critical low flow for the Pend Oreille River based on the impact of low water levels in the Pend Oreille River during winter drawdown. We are concerned that the flow of the Pend Oreille River may not be as high nor effectively disperse phosphorus during low water levels in the winter time.

Stream flow in the shallow areas of the Pend Oreille River tends to be lower compared to the deeper portions. And, the City's diffuser only extends 925 feet into a segment of the Pend Oreille River that spans 1.8 miles in width. So, during winter drawdown, the diffuser may be located in a shallow portion of the river with far less stream flow. In lieu of accurate data, EPA should use a more conservative critical low flow in recognition of the effects of dam operations at Albeni Falls Dam on effluent dispersion at the City's outfall location.

Response #4

The commenter is correct that the elevation of Lake Pend Oreille and the Pend Oreille River is lower during the winter, due to regulation by the Albeni Falls Dam. Specifically, the mean water elevation of Lake Pend Oreille is about 2,054 feet above mean sea level (AMSL) from November – April, whereas, during the summer, the water level is just above 2,062 feet AMSL.[11] However, since the water level of the lake and river as well as the flow rate of the river are regulated by the Albeni Falls Dam, the water elevation is not predictive of the river flow rate. The phosphorus effluent limits for the winter (October – May) are based on the 30-day, 10-year low flow of the Pend Oreille River for that season, which is an appropriately conservative flow statistic for the purposes of calculate effluent limits for TP.

Based on as-built drawings of the diffuser, the EPA estimates that, during the winter, when the water level is about 2,054 feet AMSL, the diffuser is about 6.5 feet deep, with the near end about 400 feet from the bank and the far end about 564 feet from the bank.

Even if the mixing properties of the discharge are less favorable during the winter than during the summer, this is immaterial for the purposes of calculating TP effluent limits. The TP discharged by the City will exert its greatest impact upon water quality during the summer, when water temperatures are warmer and more sunlight is available. In addition, as explained in the 2016 fact sheet, modeling using the CE-QUAL-W2 model, which simulates changes in water elevation, showed that the City of Sandpoint's discharge of phosphorus, combined with the discharges from other point sources to the Pend Oreille River (the City of Priest River and the City of Dover), would not cause violations of the State

[11] http://www.nws.usace.army.mil/Portals/27/docs/civilworks/locks_dams/albenifalls/140825%20AFD%20summary%20hydrograph%20updated.pdf

of Idaho's water quality criteria for DO or pH, and that periphyton accumulations and water column chlorophyll a concentrations are below nuisance thresholds (Cope 2015). Therefore, the critical low flow that was used to calculate TP effluent limits during the winter does not need to be changed.

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