

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STATEMENT OF BASIS**

PERMITTEE:	University of Montana
FACILITY NAME AND ADDRESS:	Flathead Lake Biological Station 32125 Bio Station Lane Polson, Montana 59860
PERMIT NUMBER:	MT-0023388
RESPONSIBLE OFFICIAL:	Eric Anderson, Maintenance Supervisor (406) 250-0911 eric.anderson@umontana.edu
FACILITY CONTACT:	Eric Anderson, Maintenance Supervisor Flathead Lake Biological Station 32125 Bio Station Lane Polson, Montana 59860
PERMIT TYPE:	Wastewater Treatment Plant- Indian Country Minor Permit, Permit Renewal State (Renewal)
TYPE OF TREATMENT:	Activated Sludge, Extended Aeration, Disinfection (Chlorine), Discharge to Surface Water
FACILITY LOCATION:	Flathead Lake Biological Station Wastewater Treatment Facility. NE ¼ of Section 4, Township 24N, Range 19W and SE ¼ of Section 32, Township 25N, Range 19W Latitude 47.876713 N, Longitude 114.031529 W Flathead Reservation, Lake County, Montana
DISCHARGE LOCATION(S):	Latitude 47.877041 N, Longitude 114.034871 W
RECEIVING WATER:	Flathead Lake

1. INTRODUCTION

This statement of basis is for the renewal of the National Pollutant Discharge Elimination System (NPDES) Permit for the University of Montana's (UM) Flathead Lake Biological Station (FLBS) wastewater treatment facility (WWTF). The WWTF and its discharge are located within the boundaries of the Flathead Reservation which is home to the Confederated Salish and Kootenai Tribes (CSKT). The CSKT have been approved by the Environmental Protection Agency (EPA) for "Treatment as a State". The CSKT's water quality standards (WQS) have been approved by EPA.

EPA Region 8 is the permitting authority for facilities located in Indian country, as defined in 18 U.S.C. § 1151, located within Region 8 states and supports implementation of federal environmental laws consistent with the federal trust responsibility, the government-to-government relationship, and the EPA's 1984 Indian Policy.

2. BACKGROUND INFORMATION

FLBS is a field research and education facility of the University of Montana located at Yellow Bay within Flathead Lake, Montana. FLBS works on environmental issues worldwide and focus on the limnology of the Flathead River-Lake ecosystem. FLBS academics emphasize field studies of Rocky Mountain biota, landscapes and communities.

2.1 Facility Description

This Permit is for the discharge from the WWTF that treats the domestic wastewater from the approximate 30 faculty and staff who work at the FLBS, plus approximately 70 attendees at conferences and educational courses held at the facility during the spring and summer. The FLBS, which is operated by the University of Montana, is located on the east shore of Flathead Lake in northwestern Montana within the exterior boundary of the Flathead Reservation. The facility discharges domestic wastewater only. The WWTF is located on the grounds of the FLBS and discharges to Flathead Lake under water at an unknown depth approximately one hundred sixteen (116) feet off shore. The design flow of the WWTF is 0.033 million gallons per day/~40,000 gallons per day. WWTF flows have averaged at 2,000 gallons per day during the winter months (November – March) when just staff and faculty are at the site and about 5,000 gallons per day during the summer months (April – October) when there are conferences, visitors and students at the site daily.

Figure 1. Aerial Image of Flathead Lake Biological Station



2.2 Treatment Process

The WWTF is an activated sludge package plant operated to promote denitrification through turning the aeration on and off. The cycling of aeration promotes nitrogen removal by creating aerobic and anaerobic conditions. The aeration is followed by chemical precipitation for sludge removal, a trickling filter, chlorine disinfection, de-chlorination and discharge. After chemical precipitation, the sludge goes through a gravity thickening process and then is bagged for landfill disposal. Because flows are so much lower than the design flow, wastewater is treated and discharged as a batch, so there is not continuous discharge to the lake. Over the past year, the Effluent samples for Biochemical Oxygen Demand (BOD) are taken just prior to chlorination, samples for Total Suspended Solids (TSS), total phosphorus, total nitrogen, and *Escherichia coli* (*E. coli*) are taken just after chlorination. Samples for Total Residual Chlorine (TRC) are taken just after dechlorination.

3. WATER QUALITY CONSIDERATIONS

3.1 Description of Receiving Water

Flathead Lake is within the jurisdictional boundaries of both the state of Montana and CSKT Reservation and, thus, is subject to the water quality standards of both jurisdictions.

The portion of Flathead Lake within the Flathead Reservation is classified by the Tribe as A-1. Waters classified A-1 must be maintained suitable for drinking, culinary, and food processing purposes after conventional treatment for removal of naturally present impurities. Water quality is to be suitable for bathing, swimming and recreation; wildlife (birds, mammals, amphibians and reptiles); the growth and propagation of salmonid fishes and associated aquatic life; and agricultural and industrial water supply purposes. Flathead Lake is classified for the following designated uses:

- Agriculture
- Aquatic Life
- Drinking Water
- Primary Contact Recreation

The Flathead Lake waterbody was listed on the state of Montana's 303(d) list in 1996 and 2000 as impaired for Aquatic Life: Fish, Shellfish, and Wildlife Protection and Propagation.

In 2001, in collaboration with the CSKT and EPA, Montana DEQ developed, and the EPA approved, the Nutrient Management Plan and TMDL for Flathead Lake. The TMDL established a 15% reduction in the nitrogen and phosphorus loads discharged in 2000. The Tribes have not set a numeric standard for total phosphorus.

4. PERMIT HISTORY

4.1 Plant Performance and Compliance History

The WWTF's previous Permit included total nitrogen (TN) and total phosphorus (TP) limits based on a 15% reduction in the loads discharged by the WWTF in 2000. Because of the variability in flows and concentrations, the limits were in pounds per year. The 2012 permit specified a TP limit of

2.0 lbs/yr based on the 2007 – 2011 permit cycle maximum reported TP. Limits for TN were set at 154 lbs/year. The limits went into effect July 1, 2012.

From 2011 to 2016, effluent from the WWTF averaged 0.17 mg/L for TP, with an average flow of 2,980 gal/day, and discharged loads ranging from 0.23 lbs/yr to 1.33 lbs/yr, with an excursion of 8.77 lbs of P in late 2016. According to the Facility, the large discharge occurred due to pump failures in September and December.

The Permittee reported a maximum loading range of total N during the previous Permit cycle of approximately 31 to 129 lbs/year through nitrogen treatment and therefore appears to be meeting the 15% reduction goal for TN.

Until the TMDL sets individual point source reduction targets or the Tribes set numeric criteria, the previous limit of 2.0 lbs/yr TP will be used in the renewed Permit. The 154 lbs/year limit for TN set in the previous Permit will remain in the renewed Permit. If the TMDL and allocations are refined in a Phase II TMDL, the Permit may be reopened and TN and TP limits will be adjusted accordingly.

4.2 Past Discharge Data

The data in Table 1 is collected from discharge monitoring report (DMR) data submitted to the EPA from July 31, 2012 through April 30, 2017. Table 1 shows the average and maximum pollutant values calculated from the DMR data.

Table 1. Discharge Data for MT-0023388 ICIS database 7/31/12 - 04/30/17					
Parameter	Range	Average	Permit Limit(s)	Number of Data Points	Number of Exceedances
Biological Oxygen Demand (BOD ₅), mg/L	0.1 – 1.8	0.7	30/45 <u>a/</u>	58	0
Total Suspended Solids (TSS), mg/L	0 – 4.3	---	30/45 <u>a/</u>	58	0
<i>E. coli</i> , # organisms/100 mL	0 – 0.1	---	32/50 <u>b/</u>	58	0
pH, standard units	6.5 – 8.3	---	6.5 - 9.0	58	0
Oil and grease, mg/L	0	---	10	58	0
Total Nitrogen, mg/L	1.73 - 23.59	11.15	154 <u>c/</u>	58	0
Total Phosphorus, mg/L	0.003 – 3.9	0.17	2.0 <u>c/</u>	58	1
Total Residual Chlorine, mg/L	0 – 0.1	0.09	0.019 <u>d/</u>	58	0*

a/ 30-Day Average/45-Day Average

b/ Limitations are 30-day and 7-day geometric means.

c/ Annual Load in lbs

d/ Daily Maximum

* In the previous Permit, the minimum limit of analytical reliability in the analysis of total residual chlorine was in compliance if reported values were less than 0.10 mg/L. The updated reporting values for the current Permit cycle will be required to report to 0.05 mg/L.

5. EFFLUENT LIMITATIONS

5.1 Technology Based Effluent Limitations

The Secondary Treatment regulations at 40 C.F.R. §133.102 establish the minimum level of treatment for Publicly Owned Treatment Works (POTWs). To be considered a POTW, the treatment works must be owned by a state or municipality (as defined by section 502(4) of the CWA). Flathead Lake Biological Station wastewater treatment facility is not a POTW. However, the WWTF utilizes the same technology as many POTWs and therefore based on professional judgment (PJ), the secondary treatment standards of 40 C.F.R. Part 133 will be applied. Based on this regulation, the minimum level of effluent quality for secondary treatment is 30-day average concentrations of BOD₅ and TSS that do not exceed 30 mg/L and 7-day average concentrations of these parameters that do not exceed 45 mg/L. In addition, the Secondary Treatment Regulations require a minimum 85 percent removal of BOD₅ and TSS as a 30-day average. The secondary treatment regulations also provide a limit for pH to be maintained between 6.0 and 9.0. The limit for pH contained in the Permit is and will continue to be more stringent than required by the secondary treatment regulations for protection of tribal water quality standards. According the Tribe's Water Quality Standards, in waters classified A-1 such as Flathead Lake, pH must be within the range of 6.5 to 8.5.

The percent removal requirements for BOD₅ and TSS required by 40 C.F.R. §§133.102(a)(3) and (b)(3) are not included in this Permit because the facility is not a continuous discharger. Compliance with percent removal requirements generally is based on influent and effluent data taken at approximately the same time. The WWTF's holding tank will discharge intermittently and the duration of each discharge is proposed to be less than one week. The hydraulic residence time is typically greater than 30 days. The percent removal requirement is based on a 30-day average, but for this treatment system, influent and effluent samples collected within a given 30-day period are not representative of the same wastewater. It is infeasible to calculate the 30-day average percent removal, based on the operation of the treatment system.

The effluent limitations and the basis for the limitations are given in the table below:

Table 2. Final Effluent Limitations					
Effluent Characteristic	30-Day Average	7-Day Average	Daily Maximum	Annual Load	Basis <u>a</u> /
BOD ₅ , mg/L <u>b</u> /	30	45	NA	NA	Previous Permit TBEL
Total Suspended Solids, mg/L <u>c</u> /	30	45	NA	NA	Previous Permit TBEL
<i>E. coli</i> , no./100 mL <u>d</u> /	32		50	NA	CSKT WQS
Total Phosphorus as P, lbs/yr	NA	NA	NA	2	Previous Permit TMDL
Total Nitrogen as N, lbs/yr <u>e</u> /	NA	NA	NA	154	Previous Permit TMDL
Total Residual Chlorine, mg/L <u>f</u> /	NA	NA	0.019	NA	Previous Permit WQS

The pH of the discharge shall not be less than 6.5 or greater than 8.5 at any time. <u>g/</u>	WQS
There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall there be a discharge which causes a visible sheen in the receiving waters. The concentration of oil and grease in any single sample shall not exceed 10 mg/L.	Previous Permit

a/ The bases of the effluent limitations are given below:

“Previous Permit” refers to limitation in the previous permit. The NPDES regulations for reissued permits (40 C.F.R. § 122.44(l)(1)) require that when a permit is renewed or reissued, interim limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit unless the circumstances on which the previous permit was issued have materially and substantially changed since the previous permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 C.F.R. § 122.62.

“TBEL” refers to technology based effluent limitations. These are permit limits for a pollutant that are based on the capability of a treatment to reduce the pollutant to a certain level.

“TMDL” refers to Total Maximum Daily Load. See Section E.

“WQS” refers to effluent limitations based on water quality standards. See Section E.

b/ The limits for biochemical oxygen demand (BOD₅) are the same as 40 C.F.R. §133.102(a).

c/ The limits for Total Suspended Solids (TSS) are the same as 40 C.F.R. §133.102(b).

d/ The limits for *E. coli* apply year-round.

e/ Pounds of total nitrogen discharged per month will be calculated by multiplying the average monthly flow times the average monthly concentrations of total nitrogen and total phosphorus. The amount discharged per year will be the sum of the pounds discharged each month.

f/ For this Permit, the minimum limit of analytical reliability in the analysis of total residual chlorine is considered to be 0.05 mg/L. For calculating averages and reporting on the Discharge Monitoring Report (DMR), analytical values less than 0.05 mg/L shall be considered zero and in compliance with the Permit limits.

g/ The limits for pH are based on tribal water quality standards.

5.2 Major Changes from the Previous Permit

Total Residual Chlorine

Chlorine is added to the discharge for disinfection. Residual chlorine in the discharge is of potential concern to aquatic life. The previous Permit has a final daily maximum Permit limit of 0.019 mg/L. The daily maximum and 30-day average limits will be maintained in the current Permit.

For this Permit, the minimum limit of analytical reliability in the analysis of total residual chlorine is 0.05 mg/L. For calculating averages and reporting on the Discharge Monitoring Report (DMR), analytical values less than 0.05 mg/L shall be considered zero and in compliance with the Permit limits.

pH

According the CSKT's Water Quality Standards, in waters classified A-1 such as Flathead lake, pH must be within the range of 6.5 to 8.5, therefore the new Permit limits will be adjusted accordingly.

6. SELF-MONITORING REQUIREMENTS

Samples will be collected just prior to chlorination for BOD and after chlorination for TSS, total phosphorus and nitrogen, and *E. coli*. TRC shall be collected after dechlorination.

Effluent Characteristic	Frequency	Sample Type <u>a/</u>
Flow, MGD	Weekly	Instantaneous
BOD ₅ , mg/L	Monthly	Grab
TSS, mg/L	Monthly	Grab
<i>E. coli</i> , no./100 mL <u>b/</u>	Monthly	Grab
Total Phosphorus, mg/L	Weekly	Grab
Nitrite + Nitrate as N, mg/L	Weekly	Grab
Total Kjeldahl Nitrogen as N, mg/L	Weekly	Grab
Total Nitrogen, mg/L	N/A	Calculated <u>c/</u>
Total Residual Chlorine, mg/L	Weekly	Grab
pH, standard units	Monthly	Grab

a/ See Definitions, Part 1.1 of the permit for definition of terms.

- b/ Monitoring for *E. coli* applies year-round.
- c/ Calculated as the sum of nitrite + nitrate as nitrogen and Total Kjeldahl Nitrogen (TKN) concentrations.

Total Nitrogen and total phosphorus loads for the previous month shall be reported on the Electronic Discharge Monitoring Report.

7.1 Biosolids

Any collected screenings, grit, solids, sludge, or other pollutants removed in the course of treatment shall be buried or disposed in a manner consistent with all applicable federal and tribal regulations (i.e., 40 C.F.R. Part 257, 40 C.F.R. Part 258, 40 C.F.R. Part 503) and in a manner so as to prevent any pollutant from entering any waters of the United States or creating a health hazard.

7.2 Whole Effluent Toxicity Monitoring (WET)

WET testing will not be required at this facility. The WWTF receives only domestic flow and receives no discharge from industrial users.

7. FACILITY INSPECTION REQUIREMENTS

On a monthly basis, unless otherwise modified in writing by the EPA, the permittee shall inspect its wastewater treatment facility. The permittee shall maintain all records in electronic or paper format obtained during the inspection.

8. REPORTING REQUIREMENTS

Reporting of Monitoring Results: With the effective date of this Permit, the Permittee must electronically report monthly discharge monitoring reports (DMR) on a quarterly frequency using NetDMR. Electronic submissions by permittees must be sent to EPA Region 8 no later than the 28th of the month following the completed reporting period. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at <https://netdmr.zendesk.com/home>.

In addition, the Permittee must submit a copy of the DMR to the CSKT. Currently, the Permittee may submit a copy to the CSKT by one of three ways: 1. a paper copy may be mailed. 2. The email address for CSKT may be added to the electronic submittal through NetDMR, or 3. The Permittee may provide CSKT viewing rights through NetDMR.

9. ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, "listed" species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical ("critical habitat"). See 16 U.S.C. § 1536(a)(2), 50 C.F.R. Part 402. When a Federal agency's action "may affect" a protected species, that agency is required to consult with the FWS, depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 C.F.R. § 402.14(a)).

According to the U.S. Fish and Wildlife Service, IPaC Planning and Conservation Tool at <https://ecos.fws.gov/ipac/>, Table 7 lists the federally listed threatened, endangered and candidate species and proposed and designated critical habitat found in Lake County on the Flathead Reservation in Montana.

Table 7: Threatened, Endangered, and Candidate Species on the Flathead Reservation			
Common Name	Scientific Name	Listing Status	Habitat
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	Threatened	Yellow-billed Cuckoos use wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes.
Bull Trout	<i>Salvelinus confluentus</i>	Threatened; Critical Habitat	Clark Fork, Flathead, Kootenai, St Mary, and Belly River basins; cold water rivers and lakes. Lake area specified as critical habitat.
Grizzly Bear	<i>Ursus arctos horribilis</i>	Threatened	Resident, transient; Alpine/subalpine coniferous forest
Canada Lynx	<i>Lynx canadensis</i>	Threatened	Resident; western Montana-montane spruce/fir forests. Surrounding area specified as critical habitat.
Spaldings's Campion (or "catchfly")	<i>Silene spaldingii</i>	Threatened	Upper Flathead River Fisher river drainages; Tobacco Valley – open grasslands with rough fescue or bluebunch wheatgrass
Water Howellia	<i>Howellia aquatilis</i>	Threatened	Wetlands; Swan Valley, Lake and Missoula Counties
Wolverine	<i>Gulo gulo luscus</i>	Threatened	High elevation alpine and boreal forests that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season

Conclusion

EPA finds the issuance of this Permit is not likely to adversely affect any of the species listed by the US Fish and Wildlife Service under the Endangered Species Act. The finding is based upon the following: (1) the renewed permit is for an existing facility; (2) effluent limits are protective of water quality.

Renewal of this permit and continuation of the effluent discharge to Flathead Lake will have no effect on the Yellow-Billed Cuckoo, Grizzly Bear, Canada Lynx, Spalding's Catchfly, Water Howellia or Wolverine. This is because this is a discharge of treated wastewater to the subsurface of Flathead Lake. Because of the discharge location it will have no impact to the Yellow-Billed Cuckoo's woodland and dense thicket habitat, the Grizzly Bear, Canada Lynx and Wolverine's forested mountain habitat, nor the wetlands and open grasslands where the Water Howellia and Spalding's Catchfly are found. The quality of the discharge is such that it maintains the current water quality of Flathead Lake and thus will not adversely affect the threatened mammals and bird listed above if they consume water from the lake. Discharges from this facility are expected to not adversely affect the Bull Trout based on controls which protect the lake from the discharge of chlorine, limit pH values to be protective of aquatic life and limit BOD and TSS discharges which are designed to protect aquatic life.

Prior to public notice, a copy of the draft Permit and this Statement of Basis was sent to the USFWS requesting concurrence with the EPA's finding that reissuance of this NPDES Permit (MT-0023388) for the Flathead Lake Biological Station is Not Likely to Adversely Affect any of the species listed as threatened or endangered for Lake County by the USFWS under the Endangered Species Act nor their critical habitat.

On July 17, 2018, the USFWS concurred with the EPA's conclusion that the described project will not adversely affect listed species.

10. NATIONAL HISTORIC PRESERVATION REQUIREMENTS

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. EPA has evaluated its planned reissuance of the NPDES permit for the Facility to assess this action's potential effects on any listed /eligible historic properties or cultural resources. EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this permit is a renewal and will not be associated with any new ground disturbance or changes to the volume or point of discharge.

EPA sent an offer of consultation to the CSKT providing the tribe an opportunity to comment and provide information to the EPA on March 16, 2017. Kyle Felsman, the Tribal Historic Preservation Officer, responded with no comments on May 15, 2017.

11. MISCELLANEOUS

The effective date of the permit and the permit expiration date will be determined at the time of issuance. The permit will be issued for a period of approximately five years but not to exceed five years.

Permit Writer: Brent Truskowski, November 2017

Permit Contact: VelRey Lozano, 303-312-6128

ADDENDUM:

PUBLIC NOTICE AND RESPONSE TO COMMENTS

The permit and statement of basis were public noticed in the Daily Interlake on August 17, 2018. No comments were received during the public notice period.