Fact Sheet

**The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:**

City of Winchester Wastewater Treatment Plant

Public Comment Start Date: January 29, 2020
Public Comment Expiration Date: February 28, 2020

Technical Contact: Jamey L. Stoddard
(206) 553-6110
800-424-4372, ext. 6110 (within Alaska, Idaho, Oregon and Washington)
stoddard.jamey@epa.gov

The EPA Proposes to Reissue NPDES Permit

The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

401 Water Quality Certification
Section 401 of the Clean Water Act (CWA) requires the State in which the discharge originates to certify that the discharge complies with the appropriate sections of the CWA, and with any appropriate requirements of State Law. This facility is located on the Nez Perce Reservation of the Nez Perce Tribe of Indians. Since this facility discharges to tribal waters and the Tribe does not have Treatment as a State (TAS) from the EPA for purposes of the Clean Water Act, the EPA is the certifying authority. The EPA is taking comment on the EPA's intent to certify this permit.

Public Comment

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at:
https://www.epa.gov/npdes-permits/about-region-10s-npdes-permit-program

US EPA Region 10
1200 Sixth Avenue, Suite 155, WD 19-C04
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

US EPA Region 10
950 West Bannock, Suite 900
Boise, Idaho 83702
(208) 378-5746

Acronyms

1Q10	1 day, 10-year low flow
7Q10	7-day, 10-year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30-day, 10-year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
C BOD_5	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment

EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC_{50}	Concentration at which 50% of test organisms die in a specified time period
LD_{50}	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
Ml	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration

NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet

WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Background Information

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Table 1. General Facility Information

NPDES Permit #:	ID0020184
Applicant:	City of Winchester, Idaho
Type of Ownership	Publicly-owned treatment works (POTW)
Physical Address:	570 North Shore Road Winchester, Idaho 83555
Mailing Address:	P.O. Box 245 Winchester, Idaho 83555
Facility Contact:	Mike Haight Operator 208-924-5358
Facility Location:	Latitude: 46.237896 Longitude: -116.624155
Receiving Water	Lapwai Creek, Nez Perce Reservation, Idaho
Facility Outfall	Latitude: 46.238053 Longitude: -116.619131

B. Permit History

The most recent NPDES permit for the City of Winchester was issued on January 14, 2013, became effective on March 1, 2013, and expired on February 28, 2018. An NPDES application for permit issuance was submitted by the permittee on September 11, 2017. The EPA determined the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively continued and remains fully effective and enforceable.

C. Tribal Coordination and Consultation

The EPA consults on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Meaningful tribal consultation is an integral component of the federal government's general trust relationship with federally recognized tribes. The federal government recognizes the right of each tribe to self-government, with sovereign powers over their members and their territory. Executive Order 13175 (November 2000) entitled "Consultation and Coordination with Indian Tribal Governments" requires federal agencies to have an accountable process to assure meaningful and timely input by tribal officials in the development of regulatory policies on

matters that have tribal implications and to strengthen the government-to-government relationship with Indian tribes. In May 2011, the EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" which established national guidelines and institutional controls for consultation.

The Winchester wastewater treatment plant (WWTP) is located on the Nez Perce Reservation of the Nez Perce Tribe of Indians. Consistent with the Executive Order and EPA tribal consultation policies, the EPA coordinated with the Nez Perce during development of the draft permit and is inviting the Tribe to engage in formal tribal consultation prior to final permit action.

II. Facility Information

A. Treatment Plant Description

Service Area

The City of Winchester (City) owns, operates, and maintains the WWTP in Winchester, Idaho. The service area includes the City of Winchester and its resident population of approximately 308 people. There are no industrial dischargers and the collection system has no combined sewers.

Treatment Process

The design flow of the facility is 0.03 mgd. The actual reported flows from the facility range from 0.01 to 0.08 mgd on an average monthly basis and 0.018 to 0.15 on a maximum monthly basis, indicating a possible problem with inflow and infiltration within the collection system. The facility uses activated sludge with UV disinfection, with chlorination used as a backup method during periods of high flow. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendices A and B, respectively. Because the design flow is less than 1 mgd, the facility is considered a minor facility.

Effluent Characterization

To characterize the effluent, the EPA evaluated the facility's application form, discharge monitoring report (DMR) data, and additional data provided by Winchester. The effluent quality is summarized in Table 2. Data are provided in Appendix B.

Table 2. Effluent Characterization

Parameter	Units	Maximum	Minimum
Biochemical Oxygen Demand (BOD_5)	mg/L	20	2
Total Suspended Solids (TSS)	mg/L	54	1
Total Ammonia (as N)	mg/L	3.8	0
Dissolved Oxygen (DO)	mg/L	5.2	1.4
pH	S.U.	8.6	6.5
Temperature	deg. C	19.1	7.5

E. coli bacteria	#/100 mL	960	2
Total Residual Chlorine	mg/L	0.9	0

Source: DMR data 3/1/2013 through 1/1/2019

Compliance History

A summary of effluent violations is provided in Table 3. *Summary of Effluent Violations (2004-2018).*

Additional compliance information for this facility, including compliance with other environmental statutes, is available on Enforcement and Compliance History Online (ECHO). The ECHO web address for this facility is: https://echo.epa.gov/detailed-facility-report?fid=ID0020184&sys=ICP

Table 3. Summary of Effluent Violations (ECHO accessed 8/20/2019)

Parameter	Limit	Units	Number of Instances
Oil and grease	No visual	N/A	5
Floating solids, waste or visible foam	No visual	N/A	10
Solids, total suspended	Percent Removal	Min Percent Removal	3
Solids, total suspended	Weekly Average	mg/L	1
Solids, total suspended	Monthly Average	mg/L	1
Solids, total suspended	Weekly Average	lb/day	1
Solids, total suspended	Monthly Average	lb/day	1
BOD_5	Percent Removal	Min Percent Removal	1
BOD_5	Weekly Average	mg/L	1
BOD_5	Weekly Average	lb/day	1
Chlorine, total residual	Daily Max	lb/day	1
Chlorine, total residual	Monthly Average	lb/day	1
Chlorine, total residual	Daily Max	µg/L	1
Chlorine, total residual	Monthly Average	µg/L	1
E. coli bacteria	Instantaneous Max	Count/100 mL	4
E. coli bacteria	Monthly Geomean	Count/100 mL	1
Ammonia	Monthly Average	lb/day	1
Ammonia	Monthly Average	mg/L	1

The EPA conducted an inspection of the facility in August 2019. The inspection encompassed the wastewater treatment process, records review, operation and maintenance, and the collection system. The inspection identified two minor areas of concern related to permit compliance.

III. Receiving Water

In drafting permit conditions, the EPA must analyze the effect of the facility's discharge on the receiving water. The details of that analysis are provided later in this Fact Sheet. This section summarizes characteristics of the receiving water that impact that analysis.

A. Receiving Water

The City of Winchester is located approximately 30 miles southeast of Lewiston, Idaho, and sits on the north shore of Winchester Lake. The outfall is located in a spillway, through which Winchester Lake drains into Lapwai Creek in southeast Winchester. Lapwai Creek is a tributary to the Clearwater River. The point of discharge is within the Lower Clearwater sub-basin (HUC 17060306). In 1910, the headwaters of Lapwai Creek were dammed to produce Winchester Lake. The lake is a man-made reservoir and was originally formed to serve as a mill pond. The City of Winchester and its discharge are located within the exterior boundaries of the Nez Perce Reservation.

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. 40 CFR 122.4(d) requires that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The facility discharges to Lapwai Creek within the exterior boundaries of the Nez Perce Reservation as established by the 1863 Treaty with the Nez Perce. The outfall is also within the boundaries of Winchester Lake State Park. Winchester Lake State Park is held in fee ownership by the State of Idaho. The discharge is about 30 miles upstream of the State of Idaho boundary. The Nez Perce Tribe has not applied for the status of Treatment as a State (TAS) from the EPA for purposes of the Clean Water Act. When the Nez Perce Tribe is granted TAS, and when it has Water Quality Standards (WQS) approved by the EPA, those tribal WQS will be used for determining effluent limitations. In the meantime, the Idaho WQS were used as reference for setting permit limits to protect tribal waters and the downstream waters in the State of Idaho.

C. Designated Beneficial Uses

This facility discharges to Lapwai Creek in the Clearwater subbasin (USGS HUC17060306). Lapwai Creek (from Winchester Lake to Sweetwater Creek) is protected for the following designated uses (IDAPA 58.01.02.120.08):

- cold water aquatic life

- primary contact recreation

In addition, Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

D. Water Quality

The water quality for the receiving water is summarized in Table 4.

Table 4. Receiving Water Quality Data

Parameter	Units	Percentile	Value	Source
Temperature	°C	95th	15.2	Permittee Monitoring Data
pH	Standard units	5th – 95th	8.3	Permittee Monitoring Data
Source: Data collected by permittee 2006-2008				

E. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment."

Section 303(d) of the CWA requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

Lapwai Creek is not listed as water quality limited at the point of discharge (https://mapcase.deq.idaho.gov/wq2016/default.html). According to Idaho's 2016 Integrated Report (303(d) List), the stretch of Lapwai Creek from Winchester Lake to Sweetwater Creek fully supports the cold water aquatic life beneficial use, and has not been assessed for primary contact recreation.

F. Low Flow Conditions

Between March 2006 and June 2008, the facility conducted quarterly monitoring of the flow in the Lapwai Creek spillway above the influence of the facilities discharge. No flow was recorded over the spillway during four quarters so the low flow was established at zero for the previous permit and will remain zero for this reissuance.

IV. Effluent Limitations and Monitoring

Table 5 presents the existing effluent limits and monitoring requirements in the 2013 Permit. Table 6 presents the proposed effluent limits and monitoring requirements in the draft permit.

Table 5. 2013 Permit - Effluent Limits and Monitoring Requirements

Effluent Limitations and Monitoring Requirements							
Parameter	**Effluent Limitations**				**Monitoring Requirements**		
	Average Monthly Limit	**Average Weekly Limit**	**Max Daily Limit**	**Instantaneous Maximum Limit**	**Sample Location**	**Sample Frequency**	**Sample Type**
Flow, mgd	--	--	--	--	Effluent	5/week	Measured
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	--	--	Influent and Effluent	1/month	Grab
	7.5 Lbs/day	11.3 Lbs/day					
	≥85% removal	---	---	---	% removal	1/month	Calculation[1]
Total Suspended Solids (TSS)	30 mg/l	45 mg/l	---		Influent and Effluent	1/month	Grab
	7.5 Lbs/day	11.3 Lbs/day					
	≥85% removal	---	---	---	% removal	1/month	Calculation[1]
E. Coli Bacteria[2,3]	126/100 ml	---	---	406/100 ml	Effluent	5/month	Grab
Total Residual Chlorine [3,4] (if chlorine is used in the treatment process)	9.0 µg/L	---	18.1 µg/L	---	Effluent	5/week	Grab
	0.002 Lbs/day	---	0.004 Lbs/day	---			Calculation
Total Ammonia (as N)	1.3 mg/L	---	3.1 mg/L	---	Effluent	2/month	Grab
	0.3 lbs/day	---	0.8 lbs/day	---			
pH, s.u.	Between 6.5—9.0						Grab
Temperature, °C	---	---	---	---	Effluent	1/month	Grab
Dissolved Oxygen, mg/L	---	---	---	---	Effluent	1/week	Grab

Nitrate plus Nitrite as N,	---	---	---	---	Effluent	2/year	Grab
Total Kjeldahl Nitrogen, mg/L	---	---	---	---	Effluent	2/year	Grab
Total Phosphorus as	---	---	---	---	Effluent	2/year	Grab
Oil and Grease, mg/L	---	---	---	---	Effluent	1/month	Visual
Floating Solids or Visible Foam					Effluent	1/month	Visual

1. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.
2. The average monthly *E. Coli* bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3-7 days within a calendar month. See Part V for a definition of geometric mean.
3. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2 and III.G.
4. The effluent limits for chlorine are not quantifiable using EPA approved analytical methods. EPA will use 50 µg/L (the Minimum Level) as the compliance evaluation level for chlorine. The permittee will be in compliance provided the average monthly and maximum daily total chlorine residual concentrations are at or below the compliance evaluation level of 50 µg/L, with an average monthly and maximum daily loading at or below 0.013 lbs/day.

Table 6. Draft Permit - Effluent Limits and Monitoring Requirements

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type
Parameters with Effluent Limits							
Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	--	Influent and Effluent	1/month	Grab
	lbs/day	7.5	11.3	--			Calculation[1]
BOD_5 Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
Total Suspended Solids (TSS)	mg/L	30	45	--	Influent and Effluent	1/month	Grab
	lbs/day	7.5	11.3	--			Calculation[1]
TSS Percent Removal	%	85 (minimum)	--	--	--	1/month	Calculation[2]
E. coli [3]	CFU/ 100 ml	126	--	406 (instant. max) [4]	Effluent	5/month	Grab
Total Residual Chlorine (if used in the treatment process)	µg /L	9.0	--	18.1[4,5]	Effluent	5/week	Grab
	lbs/day	0.002	--	0.004[4]			Calculation[1]
pH	std units	Between 6.5 – 9.0			Effluent	1/week	Grab
Total Ammonia (as N)	mg /L	1.3	--	3.1[4]	Effluent	2/month	Grab
	lbs/day	0.3	--	0.8			Calculation[1]
Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.2 of this permit				1/month	Visual Observation
Report Parameters							
Flow	mgd	Report	--	Report	Effluent	5/week	Measurement
Temperature	ºC	--	Report	Report	Effluent	1/week	Grab
Nitrate plus Nitrite as N, mg/L	---	---	---	---	Effluent	1/month	Grab
Total Kjeldahl Nitrogen, mg/L	---	---	---	---	Effluent	1/month	Grab
Total Phosphorus as P, mg/L	---	---	---	---	Effluent	1/month	Grab
Oil and Grease, mg/L	---	---	---	---	Effluent	1/month	Visual
Floating Solids or Visible Foam					Effluent	1/month	Visual

Parameter	Units	Effluent Limitations			Monitoring Requirements		
		Average Monthly	Average Weekly	Maximum Daily	Sample Location	Sample Frequency	Sample Type

Notes
1. Loading (in lbs/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in mgd) for the day of sampling and a conversion factor of 8.34. For more information on calculating, averaging, and reporting loads and concentrations see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
2. Percent Removal. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month using the following equation:
3. (average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration x 100. Influent and effluent samples must be taken over approximately the same time period.
4. The average monthly E. coli bacteria counts must not exceed a geometric mean of 126/100 ml based on a minimum of five samples taken every 3 - 7 days within a calendar month. See Part VI of this permit for a definition of geometric mean.
5. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Paragraph I.B.0 and Part III.G of this permit.
   The limits for chlorine are not quantifiable using EPA-approved analytical methods. The minimum level (ML) for chlorine is 50 µg/L for this parameter. The EPA will use 50 µg/L as the compliance evaluation level for this parameter. The permittee will be compliance with the total residual chlorine limitations if the average monthly and maximum daily concentrations are less than 50 µg/L and the average monthly and maximum daily mass loadings are less than 0.002 and 0.004 lbs/day, respectively. For purposes of calculating the monthly averages, see Paragraph I.B.9 of this permit.

A. Basis for Effluent Limits

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

B. Pollutants of Concern

Pollutants of concern are those that either have technology-based limits or may need water quality-based limits. The EPA identifies pollutants of concern for the discharge based on those which:

- Have a technology-based limit
- Have an assigned wasteload allocation (WLA) from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring. Monitoring data are reported in the application and DMR and any special studies
- Are expected to be in the discharge based on the nature of the discharge

The wastewater treatment process for this facility includes both primary and secondary treatment, as well as disinfection with UV and chlorination as back-up. DMR data indicates chlorine was used for disinfection approximately 14 times between 2013 and 2019.

Based on this analysis, pollutants of concern are as follows:

- BOD_5
- TSS
- *E. coli* bacteria
- TRC
- pH
- Temperature
- Ammonia

C. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to certain municipal WWTPs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table . For additional information and background refer to Part 5.1 *Technology Based Effluent Limits for POTWs* in the Permit Writers Manual.

Table 7. Secondary Treatment Effluent Limits

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	---
pH	within the limits of 6.0 – 9.0 s.u.	
Source: 40 CFR 133.102		

Mass-Based Limits

40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, except under certain conditions. 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass-based limits are expressed in pounds per day and are calculated as follows:

$$\textit{Mass based limit (lb/day)} = \textit{concentration limit (mg/L)} \times \textit{design flow (mgd)} \times 8.34^{1}$$

[1] 8.34 is a conversion factor with units (lb ×L)/(mg × gallon×10^6)

Since the design flow for this facility is 0.03 mgd, the technology-based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.03 mgd × 8.34 = 7.5 lbs/day

Average Weekly Limit = 45 mg/L × 0.03 mgd × 8.34 = 11.3 lbs/day

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The Winchester WWTP uses chlorine disinfection as a back-up. A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. For technology-based effluent limits, the AWL is calculated to be 1.5 times the AML, consistent with the "secondary treatment" limits for BOD_5 and TSS. This results in an AWL for chlorine of 0.75 mg/L.

Since the federal regulations at 40 CFR 122.45 (b) and (f) require limitations for POTWs to be expressed as mass-based limits using the design flow of the facility, mass-based limits for chlorine are calculated as follows:

Average Monthly Limit= 0.5 mg/L x 0.03 mgd x 8.34 = 0.1 lbs/day

Average Weekly Limit = 0.75 mg/L x 0.03 mgd x 8.34 = 0.2 lbs/day

The EPA has determined the technology-based effluent limit for chlorine is not sufficiently stringent to meet water quality standards. Refer to discussion on water quality-based effluent limits below.

D. Water Quality-Based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. 40 CFR 122.44(d)(1) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality. Effluent limits must also meet the applicable

water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation for the discharge in an approved TMDL. If there are no approved TMDLs that specify wasteload allocations for this discharge; all of the water quality-based effluent limits are calculated directly from the applicable water quality standards.

Reasonable Potential Analysis and Need for Water Quality-Based Effluent Limits

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria may be exceeded (EPA, 2014). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained, and acutely toxic conditions are prevented. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body.

The Winchester WWTP does not have a mixing zone as the critical low flow condition is zero flow. The reasonable potential analysis and water quality-based effluent limit calculations were based on meeting water quality standards at the end-of-pipe.

The equations used to conduct the reasonable potential analysis and calculate the water quality-based effluent limits are provided in Appendix D.

Reasonable Potential and Water Quality-Based Effluent Limits

The reasonable potential and water quality-based effluent limit for specific parameters are summarized below. The calculations are provided in Appendix D.

<u>Ammonia</u>

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form

increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The table below details the equations used to determine water quality criteria for ammonia.

Table 8. Ammonia Criteria

Total ammonia nitrogen criteria (mg N/L):

Annual Basis

Based on IDAPA 58.01.02

INPUT	
1. Receiving Water Temperature (deg C):	15.2
2. Receiving Water pH:	8.30
3. Is the receiving water a cold water designated use?	Yes
4. Are non-salmonid early life stages present or absent'	Present
OUTPUT	
Total ammonia nitrogen criteria (mg N/L):	
Acute Criterion (CMC)	**3.15**
Chronic Criterion (CCC)	**1.46**

Acute Criteria Equation: Cold Water

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

Acute Criteria Equation: Warm Water

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

Chronic Criteria: Cold Water, Early Life Stages Present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet MIN(2.85, 1.45 \cdot 10^{0.028(25-T)}$$

Chronic Criteria: Cold Water, Early Life Stages Absent

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) \bullet 1.45 \cdot 10^{0.028(25-T)})$$

A reasonable potential calculation showed that the Winchester WWTP discharge would have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit contains water quality-based effluent limits for ammonia. The limits are the same as in the existing permit. See Appendix D for reasonable potential and effluent limit calculations.

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0. Mixing zones are generally not granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. Effluent pH data were compared to the water quality criteria for the period between March 2013 and January 2019. The pH of the effluent ranged from 6.5-8.6, which is within the water quality criteria.

Dissolved Oxygen (DO) and BOD_5

The Idaho water quality standards establish a minimum concentration of 6 mg/L DO. Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. Nutrients such as ammonia and phosphorus cause excessive plant and algae growth and decay which can also significantly affect the amount of dissolved oxygen available.

The technology-based limits for BOD_5 will ensure that the discharge does not cause or contribute to a violation of dissolved oxygen criteria in the receiving water.

E. coli

The Idaho water quality standards state that waters of the State of Idaho, that are designated for recreation, are not to contain *E. coli* bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty-day period. A mixing zone is not appropriate for bacteria for waters designated for contact recreation. Therefore, the draft permit contains a monthly geometric mean effluent limit for *E. coli* of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for *E. coli* of 406 organisms per 100 ml, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for *E. coli*. This will ensure that the discharge will have a low probability of exceeding water quality standards for *E. coli*.

40 CFR 122.45(d)(2) requires that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

Chlorine

The Idaho state water quality standards at IDAPA 58.01.02.210 establish an acute criterion of 19 µg /L, and a chronic criterion of 11 µg/L for the protection of aquatic life. A reasonable potential calculation showed that the discharge from the facility would have the reasonable potential to cause or contribute to a violation of the water quality criteria for chlorine. Therefore, the draft permit contains a water quality-based effluent limit. See Appendix D for reasonable potential and effluent limit calculations.

Residues

The Idaho water quality standards require that surface waters of the State be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Monitoring Changes from the Previous Permit

This draft permit includes the same flow, BOD_5, TSS, pH, and E. coli monitoring as required in the previous permit. Temperature monitoring has increased from once a month to once a week to correspond with pH monitoring. It is expected pH and temperature monitoring can be achieved using the same grab sample. The five samples per month monitoring frequency for E. coli is based on Idaho's water quality criterion for E. coli (IDAPA 58.01.02.251.01.a). Weekly monitoring is required for total ammonia as N in order to determine compliance with the effluent limits. The facility will monitor for chlorine five times per week if chlorine is used in the treatment process. Dissolved oxygen monitoring was removed from the permit. Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far from the point of discharge. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand potential in the receiving water. The BOD_5 limits will ensure that dissolved oxygen criteria are met in the receiving water.

C. Electronic Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: https://netdmr.epa.gov. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

VI. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Quality Assurance Plan

The City of Winchester is required to update the Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan must include of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the Nez Perce Tribe upon request.

B. Operation and Maintenance Plan

The permit requires the City of Winchester to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within 180 days of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the Nez Perce Tribe upon request.

C. Nutrient Reduction Study

The prior permit required semi-annual nutrient monitoring. Upon review of the data, EPA has determined that the Winchester WWTP is a contributor of nutrients to the receiving water. The latest Integrated Report identifies Winchester Lake as being impaired for nutrients and Lapwai Creek is also listed as impaired for nutrients beginning at the mouth of Sweetwater Creek, approximately 20 miles downstream from the Winchester discharge. The

permit requires the Winchester WWTP to evaluate current facility operations to achieve improvements in nutrient removal using existing infrastructure. The potential to reduce both phosphorus and nitrogen should be evaluated. To achieve the objectives of the study the monitoring frequency for nutrients has been increased from twice per year to monthly. Monthly monitoring will allow the operator to assess the variability in nutrient removal and the performance of the treatment performance on a monthly and seasonal basis. Changes to facility operations resulting from the analysis carried out as above are only intended to be refinements to the wastewater treatment system already in place. Therefore, the permit requirement is limited to evaluation of options that:

1. Address changes to facility operation and maintenance and do not include structural changes; and
2. Would not result in rate increases or substantial investment. The nutrient reduction study must be completed within 3.5 years of the effective date of the final permit.

D. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

SSOs are not authorized under this permit. The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system.

The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

E. Environmental Justice

As part of the permit development process, the EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted.

The facility is not located within or near a Census block group that is potentially overburdened. The draft permit does not include any additional conditions to address environmental justice.

Regardless of whether a WWTP is located near a potentially overburdened community, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities (see https://www.federalregister.gov/d/2013-10945). Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

For more information, please visit https://www.epa.gov/environmentaljustice and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

F. Design Criteria

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the flow or loading exceeds 85% of the design criteria values for three consecutive months. The permittee has a design flow of 0.03 mgd but often exceeds this design value on a maximum monthly basis, with maximum monthly flows between 2013 and 2019 ranging from 0.018 to

0.15 mgd, indicating a possible problem with inflow and infiltration within the collection system.

G. Pretreatment Requirements

The Nez Perce Tribe does not have an approved state pretreatment program per 40 CFR 403.10, thus, EPA is the Approval Authority for Idaho POTWs. Since the Winchester WWTP does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the facility.

Special Condition II.D of the permit reminds the Permittee that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program and requires the permittee to develop and maintain a master list of the industrial users introducing pollutants to the POTW.

Although, not a permit requirement, the Permittee may wish to consider developing the legal authority enforceable in Federal, State or local courts which authorizes or enables the POTW to apply and to enforce the requirement of sections 307 (b) and (c) and 402(b)(8) of the Clean Water Act, as described in 40 CFR 403.8(f)(1). Where the POTW is a municipality, legal authority is typically through a sewer use ordinance, which is usually part of the city or county code. The EPA has a Model Pretreatment Ordinance for use by municipalities operating POTWs that are required to develop pretreatment programs to regulate industrial discharges to their systems (EPA, 2007). The model ordinance should also be useful for communities with POTWs that are not required to implement a pretreatment program in drafting local ordinances to control nondomestic dischargers within their jurisdictions.

H. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species (ESA-listed species).

The USFWS species list for Lewis County identifies the following ESA-listed species and critical habitat in the vicinity of the discharge:

- Bull trout (*Salvelinus confluentus*), threatened
- Bull trout critical habitat
- Spalding's catchfly (*Lepidium papilliferum*), threatened

NOAA Fisheries identifies the following ESA-listed species and critical habitat in the vicinity of the discharge:

- Fall Chinook salmon (*Oncorhynchus tshawytscha*), threatened
- Fall Chinook salmon critical habitat
- Snake River steelhead (*Oncorhynchus mykiss*), threatened
- Snake River steelhead critical habitat

EPA has determined the reissuance of the NPDES permit to the City of Winchester WWTP will have no effect on bull trout, Spalding's catchfly, fall Chinook salmon, or steelhead. No effect to critical habitat is expected. EPA prepared a memo in 2012 providing more detail on the no effect determination for the prior permit. The nature of the discharge and conditions of the receiving water and listed species have not changed. The analysis and conclusions of the 2012 memo remain valid and accurate for this reissuance.

The U.S. Fish and Wildlife Service Draft Bull Trout Recovery Plan (USFWS 2002) identified causes of the bull trout listing. They are: operation and maintenance of dams and other diversion structures, forest management practices, livestock grazing, agriculture, agricultural diversions, road construction and maintenance, mining, and introduction of nonnative species. No sewage treatment plant is identified as a contributing factor to the decline in bull trout. Similar factors have likely caused the decline of other salmonid species such as the fall Chinook salmon and the Snake River steelhead.

In addition, there are site-specific factors supporting EPA's no effect determination. The facility is very small; it serves a population of 300 and has a design flow of 0.03 mgd. There are no industrial dischargers contributing to the WWTP. The WWTP will be required to meet water quality criteria for ammonia, chlorine, E. coli, and pH at the end-of-pipe. The facility has ultraviolet disinfection, and only uses chlorine during periods of high flow. The facility is not expected to discharge chlorine in significant amounts. The facility's effluent is required meet water quality standards, and effluent pollutant concentrations are expected to be less than levels known to cause toxicity to aquatic life, including threatened and endangered species. Therefore, threatened and endangered aquatic species will not be exposed to elevated pollutant concentrations as a result of the discharge, and the discharge will have no effect on bull trout, fall Chinook salmon, or Snake River steelhead, or critical habitat for these species. Furthermore, the discharge will not adversely affect essential fish habitat.

EPA has determined that the reissuance of an NPDES permit to the City of Winchester WWTP will have no effect on the Spalding's catchfly. The perennial plant grows on mesic grassland prairies at low- to mid- elevations and is not susceptible to the water quality impacts that may result from the issuance of an NPDES permit (http://www.fws.gov/oregonfwo/Species/Data/SpaldingsCatchfly/). The primary causes of the Spalding's catchfly's decline are nonnative invasive plants, habitat fragmentation, changes in the fire regime and fire effects, land conversion associated with urban and agricultural development, livestock and wildlife grazing and trampling, herbicide and insecticide spraying, off-road vehicle use, insect damage and disease, impacts from prolonged drought and climate change, and the inadequacy of existing regulatory

mechanisms (USFWS 2007). Issuance of an NPDES permit to the City of Winchester WWTP will have no effect on the factors causing the decline of the Spalding's catchfly. Therefore, the issuance of this permit will have no effect on the Spalding's catchfly.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The EPA has determined that issuance of this permit will have no effect on any EFH in the vicinity of the discharge.

C. Antidegradation

The EPA has completed an antidegradation review which is shown in Appendix E.

D. Permit Expiration

The permit will expire five years from the effective date.

E. 401 Certification

Section 401 of the CWA requires the State in which the discharge originates to certify that the discharge complies with the appropriate sections of the CWA, and with any appropriate requirements of State Law. This facility is located on the Nez Perce Reservation. Since this facility discharges to tribal waters and the Tribe does not have TAS from the EPA for purposes of the Clean Water Act, the EPA is the certifying authority. The EPA is taking comment on the EPA's intent to certify this permit.

IX. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001. https://www3.epa.gov/npdes/pubs/owm0264.pdf

Water Pollution Control Federation. Subcommittee on Chlorination of Wastewater. *Chlorination of Wastewater.* Water Pollution Control Federation. Washington, D.C. 1976.

EPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001. September 2010. https://www3.epa.gov/npdes/pubs/pwm_2010.pdf

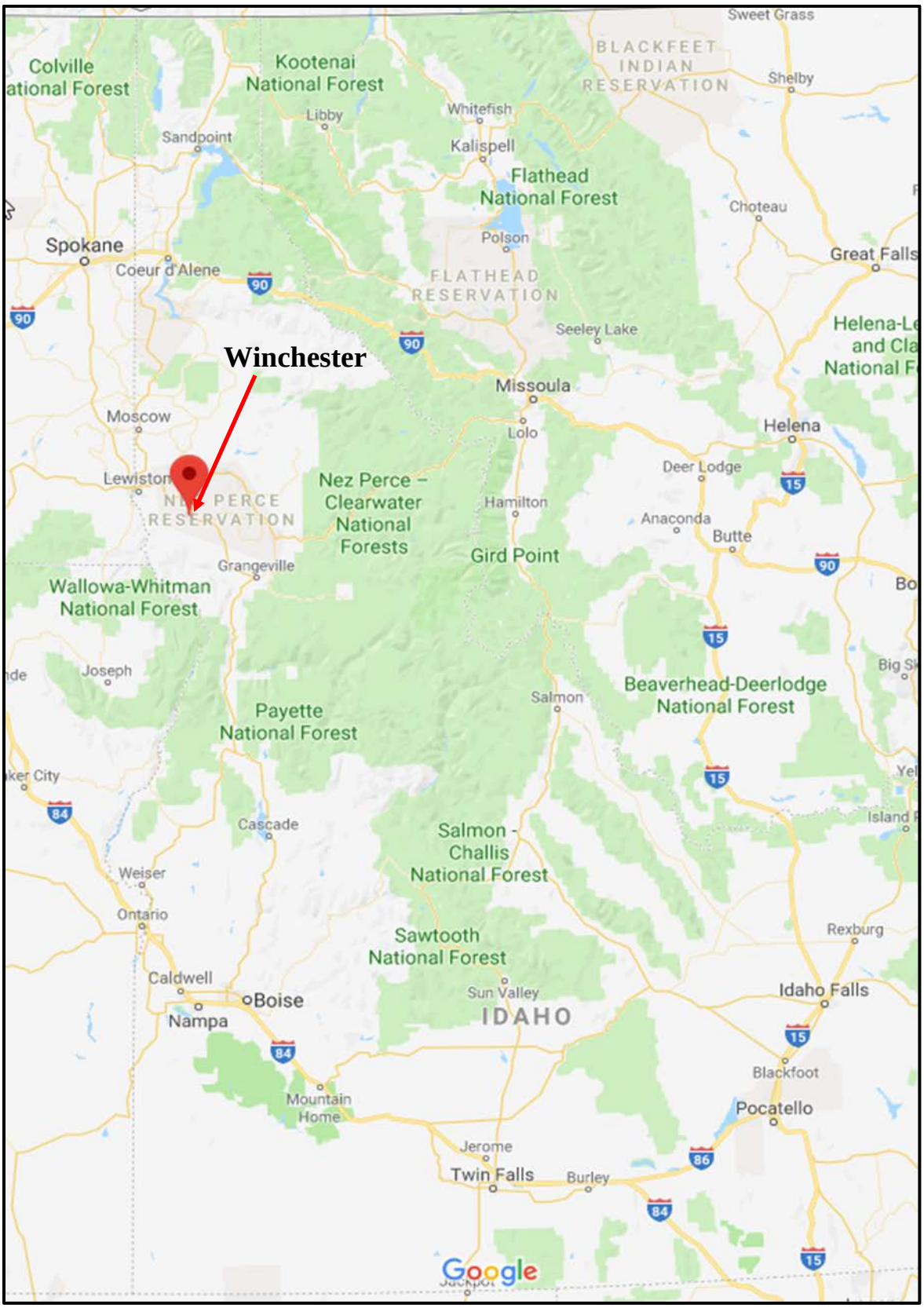
EPA, 2007. *EPA Model Pretreatment Ordinance*, Office of Wastewater Management/Permits Division, January 2007. https://www3.epa.gov/npdes/pubs/pretreatment_model_suo.pdf

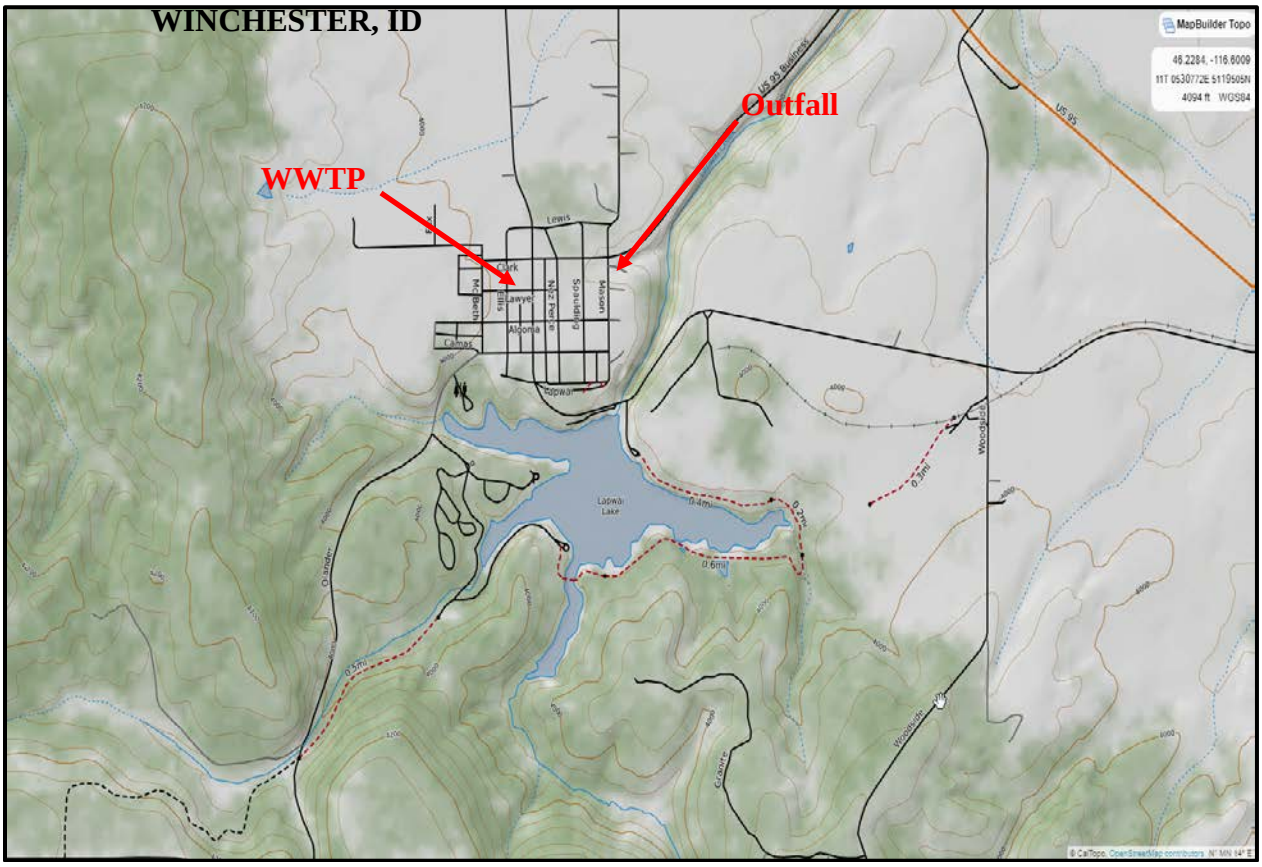
EPA, 2011. *Introduction to the National Pretreatment Program*, Office of Wastewater Management, EPA 833-B-11-011, June 2011. https://www3.epa.gov/npdes/pubs/pretreatment_program_intro_2011.pdf

EPA. 2014. Water Quality Standards Handbook Chapter 5: General Policies. Environmental Protection Agency. Office of Water. EPA 820-B-14-004. September 2014. https://www.epa.gov/sites/production/files/2014-09/documents/handbook-chapter5.pdf

Appendix A. Facility Information

General Information	
NPDES ID Number:	ID-002018-4
Physical Location:	570 North Shore Road Winchester, ID 83555
Mailing Address: Contact:	City of Winchester WWTP Box 245 Winchester, ID 83555 Mike Haight, Facility Operator (208.924.5358)
Facility Background:	The facility's existing permit became effective March 1, 2013 and expired February 28, 2018.
Facility Information	
Type of Facility:	Publicly Owned Treatment Works (POTW)
Treatment Train:	Activated sludge and UV disinfection. Chlorination used as needed, generally as a backup during periods of high flow.
Flow:	Design flow is 0.03 mgd.
Outfall Location:	Latitude: 46º 14' 17" N; Longitude: 116º 37' 09 " W
Receiving Water Information	
Receiving Water:	Lapwai Creek spillway
Watershed:	Lower Clearwater sub-basin (HUC 17060306)
Beneficial Uses:	Cold water communities, primary contact recreation


Winchester
Sweet Grass
BLACKFEET INDIAN RESERVATION
Shelby
Colville ational Forest
Kootenai National Forest
Libby
Whitefish
Sandpoint
Kalispell
Flathead National Forest
Choteau
Spokane
Coeur d'Alene
Polson
Great Falls
FLATHEAD RESERVATION
Seeley Lake
Helena-Le and Cla National F
Missoula
Moscow
Lolo
Helena
Lewiston
Deer Lodge
Nez Perce – Clearwater National Forests
Hamilton
Anaconda
Butte
Grangeville
Gird Point
Wallowa-Whitman National Forest
Joseph
Beaverhead-Deerlodge National Forest
Salmon
Payette National Forest
Cascade
Salmon - Challis National Forest
Weiser
Ontario
Sawtooth National Forest
Rexburg
Caldwell
Boise
Nampa
Sun Valley
IDAHO
Idaho Falls
Blackfoot
Mountain Home
Pocatello
Jerome
Twin Falls
Burley
Google



Source: Google Maps

Photograph by EPA on May 18, 2011 looking at the spillway from Lake Winchester to Lapwai Creek.

Photograph by EPA on May 18, 2011 looking at outfall 001 for the wastewater treatment plant. Effluent flows approximately ¼ mile east from the plant to the spillway from Lake Winchester to Lapwai Creek.

Appendix B. Water Quality Data

A. Treatment Plant Effluent Data

Parameter	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	BOD, 5-day, 20 deg. C	E. coli, MTEC-MF	E. coli, MTEC-MF	Flow	Flow	Nitrite + Nitrate total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, ammonia total [as N]	Nitrogen, Kjeldahl, total [as N]
Units	mg/L	mg/L	lbs/day	lbs/day	#/100mL	#/100mL	MGD	MGD	mg/L	mg/L	mg/L	lbs/day	lbs/day	mg/L
Statistical Basis	MO AVG	WKLY AVG	MO AVG	WKLY AVG	INST MAX	MO GEOMN	MO AVG	MO MAX	SEAN MAX	DAILY MX	MO AVG	DAILY MX	MO AVG	SEAN MAX
Effluent Limit	30	45	7.5	11.3	406	126	Report	Report	Report	3.1	1.3	0.8	0.3	Report
3/1/2013	7	7	1	1			0.0197	0.0213						
4/1/2013	3.8	3.8	1	1			0.0204	0.018						
5/1/2013	2	2	1	1			0.0209	0.0273						
6/1/2013	3.25	3.25	1	1			0.021	0.0294						
7/1/2013	3	3	1	1			0.0194	0.0204						
8/1/2013	2	2	1	1			0.0167	0.0214						
9/1/2013	2	2	1	1			0.0174	0.0177						
10/1/2013	2	2	1	1			0.017	0.022						
11/1/2013	3.04	3.04	1	1			0.0302	0.0195						
12/1/2013	2.1	2.1	1	1			0.0208	0.0275						
1/1/2014	7	7	2	2			0.0204	0.0262						
2/1/2014	2.45	2.45	1	1			0.022	0.0275				0.0275	0.022	
3/1/2014	20	20	3	3			0.0232	0.0684						
4/1/2014	4.56	4.56	1	1			0.0192	0.022						
5/1/2014	4.19	4.19	1	1			0.0183	0.02						
6/1/2014	2.48	2.48	1	1	18	5	0.0194	0.0215		0.277	0.1385	0.0462	0.0231	
7/1/2014	3.12	3.12	1	1	11	3	0.0203	0.0207		0.251	0.251	0.04	0.04	
8/1/2014	2	2	1	1	93	6	0.0178	0.0185		0.3	0.1	0.1	0	
9/1/2014	2	2	1	1	17	3	0.0193	0.0178		0.185	0.185	0.03	0.03	
10/1/2014	4.67	4.67	1	1	32	11	0.019	0.0218		1.13	0.7255	0.1885	0.121	
11/1/2014	6.09	6.09	1	1	44	12	0.023	0.0738						
12/1/2014	4.96	4.96	1	1	272	41	0.0217	0.0239		1.15	0.686	0.1918	0.1144	2.71
1/1/2015	6.68	6.68	1.1	1.1	75	22	0.0366	0.0595		0.823	0.6805	0.1373	0.1135	
2/1/2015	3.8	3.8	1	1	299	66	0.0204	0.0234		0.225	0.172	0.0375	0.0287	
3/1/2015	5	5	1	1	328	61	0.0208	0.0211		0.219	0.186			
4/1/2015	6	6	1	1	121	4	0.0169	0.0197		0.229	0.229	0.0382	0.0382	
5/1/2015	5	5	1	1	63	4	0.0162	0.0186		3.88	2.1	0.6	0.4	
6/1/2015	2	2	1	1	19	3	0.019	0.0243		0.392	0.3005	0.0654	0.0501	
7/1/2015	2	2	0.3	0.3	47	18	0.0222	0.0748		1.42	0.8	0.2	0.1	
8/1/2015	2	2	0.3	0.3	13	0	0.0217	0.0264						
9/1/2015	2	2	0.3	0.3	15	2	0.0183	0.0216		0.2	0.2	0.03	0.03	
10/1/2015	2	2	0.3	0.3	4	1	0.0179	0.0213		0.21	0.1045	0.035	0.0174	
11/1/2015	2	2	0.3	0.3	6	2	0.0198	0.0228		0.4	0.3	0.1	0.1	
12/1/2015	3	3	1	1	50	6	0.0214	0.0246	9.97	0.295	0.178	0.0492	0.0297	1.32
1/1/2016	3	3	1	1	7	67	0.0238	0.0272		0.336	0.2465	0.056	0.0411	
2/1/2016	5	5	0.8	0.8	575	56	0.0266	0.0583		0.265	0.2145	0.0442	0.0358	
3/1/2016	6	6	1	1	112	27	0.029	0.0957		0.123	0.0943	0.0205	0.0157	
4/1/2016	3	3	0.5	0.5	3	2	0.0178	0.0198		0.09	0.08	0.02	0.01	
5/1/2016	3	3	0.5	0.5	2	1	0.0196	0.0225		0.115	0.12	0.02	0.02	
6/1/2016	2	2	0.3	0.3	32	9	0.0163	0.0181		0.258	0.231	0.043	0.0385	
7/1/2016	14	14	2.3	2.3	18	6	0.0169	0.0213		0.682	0.2265	0.1	0.03	
8/1/2016	3	3	0.5	0.5	397	9	0.0159	0.0188		0.229	0.173	0.0382	0.0289	
9/1/2016	2.04	2.04	0.3	0.3	6	2	0.0159	0.0175		0.189	0.1665	0.03	0.027	
10/1/2016	2	2	0.33	0.33	132	13.5	0.019	0.027		0.0576	0.0288	0.009	0.004	
11/1/2016	2.21	2.21	0.3	0.3	299	30	0.0204	0.0264	11.9	0.299	0.182	0.498	0.17	2.3
12/1/2016	7	7	1	1	47	13	0.02	0.0228	22.3	0.117	0.35	0.01	0.05	2.02
1/1/2017	5.1	5.1	0.8	0.8	416	76	0.02	0.0236		0.113	0.0839	0.01	0.01399	
2/1/2017	9.88	9.88	1.6	1.6	524	71	0.0217	0.0986		0.891	0.728	0.14	0.12	
3/1/2017	6.82	6.82	1.1	1.1	179	72	0.0468	0.1299		0.391	0.326	0.06	0.05	
4/1/2017	10.7	10.7	1.7	1.7	225	35	0.0179	0.0193		0.4	0.2	0.06	0.03	
5/1/2017	4	4	0.6	0.6	960	38	0.023	0.034	19.6	0.6	0.5	0.1	0.08	2.53
6/1/2017	4	4	1	1	7	2	0.0223	0.0288		0.134	0.1104	0.03	0.02	
7/1/2017	2.48	2.48	0.4	0.4	403	10	0.0176	0.153		0.121	0.06	0.02	0.01	
8/1/2017	3.1	3.1	0.5	0.5	10	3	0.0155	0.018		0.569	0.32	0.09	0.05	
9/1/2017	6	6	1.5	1.5	4	2	0.0185	0.0271		0.252	0.397	0.06	0.09	
10/1/2017	2.66	2.66	0.4	0.4	192	12	0.0201	0.0246		0.238	0.2	0.03	0.03	
11/1/2017	16	16	2.6	2.6	194	11	0.0234	0.0277	14.4	0.641	0.445	0.07	0.1	3.67
12/1/2017	7.48	7.48	1.2	1.2	75	20	0.0247	0.1031		0.931	0.594	0.155	0.099	
1/1/2018	4.23	4.23	1	1	366	39	0.0293	0.054		2.45	1.3	0.6	0.3	
2/1/2018	3.83	3.83	1	1	38	12	0.0302	0.0449		0.411	0.264	0.06	0.06	
3/1/2018	5.62	5.62	1.4	1.4	344	50	0.0465	0.0913		0.478	0.312	0.119	0.0781	
4/1/2018	5.49	5.49	1.8	1.8	88	8	0.0811	0.0446		0.21	0.19	0.07	0.05	
5/1/2018	2.12	2.12	0.53	0.53	13	2	0.0325	0.0475		0.116	0.05	0.01	0.01	
6/1/2018	2	2	0.4	0.4	2	0	0.0252	0.0429	12.9	0.11	0	0.01	0	1.12
7/1/2018	2	2	0.3	0.3	21	0	0.0244	0.0249		0.09	0.07	0.02	0.01	
8/1/2018	2	2	0.33	0.33	10	2	0.022	0.0309		0.068	0.0606	0.0113	0.0101	
9/1/2018	3.37	3.37	0.56	0.56	178	18	0.0223	0.031		0.109	0.07	0.02	0.01	
10/1/2018	7.91	7.91	1.3	1.3	397	24	0.0247	0.0289		0.215	0.149	0.0538	0.0373	
11/1/2018	5	5	0.8	0.8	403	35	0.0263	0.0398		0	0	0	0	
12/1/2018	4	4	1.2	1.2	313	13	0.0286	0.0396	14.3	0.075	0.037	0.01	0.009	1.75
1/1/2019	2	2	0.5	0.5	115	28	0.0343	0.0349		0.0763	0.06	0.01	0.01	
Average	4.4	4.4	0.9	0.9	154.2	19.4	0.0231	0.0361	15.1	0.4	0.3	0.1	0.1	2.2
Minimum	2	2	0.3	0.3	2	0	0.0155	0.0175	9.97	0	0	0	0	1.12
Maximum	20	20	3	3	960	76	0.0811	0.153	22.3	3.88	2.1	0.6	0.4	3.67
Count	71	71	71	71	56	56	71	71	7	54	54	54	54	8
Std Dev	3.3	3.3	0.5	0.5	191.3	21.9	0.0	0.0	4.4	0.6	0.3	0.1	0.1	0.8
CV	0.746	0.746	0.559	0.559	1.241	1.128	0.401	0.759	0.290	1.424	1.182	1.494	1.265	0.377
95th Percentile	10.29	10.29	1.9	1.9	443	68	0.0355	0.0972	21.49	1.2445	0.7532	0.3043	0.13815	3.334

Parameter	DO	pH	pH	Phosphorus, total [as P]	TSS	TSS	TSS	TSS	Temp	BOD, 5-day	TSS	TRC	TRC	TRC	TRC
Units	mg/L	S.U.	S.U.	mg/L	mg/L	mg/L	lbs/day	lbs/day	C°	% removal	% removal	µg/L	µg/L	lbs/day	lbs/day
Statistical Basis	INST MIN	INST MAX	INST MIN	SEAN MAX	MO AVG	WKLY AVG	MO AVG	WKLY AVG	MO MAX	MO AV MN	MO AV MN	DAILY MX	MO AVG	DAILY MX	MO AVG
Effluent Limit	Report	9	6.5	Report	30	45	7.5	11.3	Report	85	85	50	50	0.013	0.013
3/1/2013		6.9	6.8		7	7	1	1		97	93				
4/1/2013		7.6	7.5		8	8	1	1		97	92				
5/1/2013		7.7	7.4		3	3	1	1		99	98				
6/1/2013		7.7	7.5		9	9	2	2		99	90				
7/1/2013		7.6	7.5		7	7	1	1		99	97				
8/1/2013		7.8	7.1		2	2	1	1		99	98				
9/1/2013		7.3	7.1		4	4	1	1		99	95				
10/1/2013		7.3	6.9		9	9	2	2		99	96				
11/1/2013		7.3	7.1		10	10	2	2		99	96				
12/1/2013		7.3	7.1		5	5	1	1		99	93				
1/1/2014		7.1	7		5	5	1	1		97	95				
2/1/2014		7.2	6.9		4	4	1	1		97	96				
3/1/2014		7.4	6.9		19	19	3	3		92	94	300	300	0.2	0.2
4/1/2014		7.4	7.2		7	7	1	1		99	99				
5/1/2014		7.9	7.3		9	9	2	2		99	99				
6/1/2014	3	7.4	7.3		5	5	1	1	14.8	99	97				
7/1/2014	2.1	7.4	7.3		12	12	2	2	18.1	99	95				
8/1/2014	2.3	7.3	7.1		8	8	1	1	18	99	98				
9/1/2014	2.6	7.4	7.3		6	6	1	1	17.2	99	99	0	0	0	0
10/1/2014	2	7.4	7.3		6	6	1	1	15.5	99	97				
11/1/2014	3	7.4	7.1		12	12	2	2	12.8	98	96	0	0	0	0
12/1/2014	3.2	7.6	7.1	2.26	17	17	2.8	2.8	10.7	95	76				
1/1/2015	2.7	7.4	7.1		8	8	1.3	1.3	7.9	92	93				
2/1/2015	5	7.5	7.4		8	8	1	1	8.5	95	88				
3/1/2015	4.3	7.5	7.4		14	14	2.3	2.3	9.8	99	97				
4/1/2015	4	7.5	7.3		5	5	1	1	11.4	97	98				
5/1/2015	2.5	7.4	7.4		13	13	2	2	14.5	97	97				
6/1/2015	2.2	7.4	7.4		3	3	1	1	17.3	99	99				
7/1/2015	1.8	7.4	7.3		6	6	1	1	19.1	99	94				
8/1/2015	2.5	7.5	7.4		5	5	0.8	0.8	18.9	99	98				
9/1/2015	2	7.4	7.2		1	1	0.2	0.2	17.3	99	99				
10/1/2015	2.8	7.5	7.2		1	1	0.2	0.2	16.7	99	99				
11/1/2015	3.2	7.5	7.3		1	1	0.2	0.2	13.9	99	99				
12/1/2015	3.1	7.3	7	0.809	6	6	1	1	9.7	98	96				
1/1/2016	3.6	7.5	7		4	4	1	1	8.5	99	94				
2/1/2016	3.1	7.2	7.1		3	3	0.5	0.5	8.6	97	97				
3/1/2016	2.8	7.2	7.1		6	6	1	1	7.9	97	98	0	0	0	0
4/1/2016	2.6	7.2	7.1		8	8	1.3	1.3	11.9	99	97				
5/1/2016	2.5	7.4	7.3		6	6	1	1	13.2	99	93				
6/1/2016	1.6	7.4	7.1		5	5	0.8	0.8	17.7	99	95	0	0	0	0
7/1/2016	2.2	7.3	7.1		18	18	3	3	19.1	97	92	0	0	0	0
8/1/2016	2.9	7.3	7.2		7	7	1.1	1.1	18.9	98	90				
9/1/2016	2.9	7.3	7.2		4	4	7	7	16.8	99	96				
10/1/2016	2.6	7.3	7.3		9	9	1.5	1.5	14.9	99	96				
11/1/2016	1.4	7.3	7	2.74	7	7	1.1	1.1	13.9	99	97	0	0	0	0
12/1/2016	3	7	6.9	1.56	7	7	1	1	8.9	98	89				
1/1/2017	2.3	7.1	6.8		7.3	7.3	1.2	1.2	8	98	96				
2/1/2017	2.3	7.4	7.1		9.24	9.24	1.5	1.5	7.5	95	95	0	0	0	0
3/1/2017	2.7	7.3	7.1		11	11	1.8	1.8	7.7	98	93	900	450	1.5	0.5
4/1/2017	3.1	7.3	7.2		16	16	2.6	2.6	9.4	95	91				
5/1/2017	2.3	7.3	7.2	2.74	10	10	1.6	1.6	12.5	98	90	0	0	0	0
6/1/2017	1.5	7.5	6.6		8	8	2	2	17.5	99	96				
7/1/2017	1.7	6.6	6.5		9.61	9.61	1.6	1.6	18.7	99	96	0	0	0	0
8/1/2017	1.8	6.6	6.5		12	12	2	2	19	98	96				
9/1/2017	1.9	7.5	6.6		15.5	15.5	4	4	18.3	97	92				
10/1/2017	3.4	7.5	7.4		4.52	4.52	0.7	0.7	14.8	98	98	0	0	0	0
11/1/2017	2.2	7.5	7.3	2.56	2	2	0.3	0.3	12.3	94	99				
12/1/2017	3.1	7.6	7.5		19	19	3.1	3.1	8.8	95	82	0	0	0	0
1/1/2018	3.5	7.6	7.4		54	54	14	14	7.7	96	54				
2/1/2018	5.2	7.6	7.4		10	10	2.5	2.5	7.6	99	95				
3/1/2018	4.2	7.5	7.3		7	7	1.7	1.7	7.7	96	94				
4/1/2018	2.1	7.5	7.3		7	7	2.3	2.3	10.6	98	99	0	0	0	0
5/1/2018	2.1	7.5	7.3		2	2	0.5	0.5	13.2	99	98				
6/1/2018	1.6	7.5	7.4	3.06	4	4	0.8	0.8	16.8	97	96				
7/1/2018	3	7.5	7.3		9	9	1.5	1.5	18.4	99	94				
8/1/2018	2.6	7.5	6.9		5	5	0.83	0.83	18.7	99	98				
9/1/2018	2.6	7.6	6.9		5	5	0.83	0.83	17.6	97	92				
10/1/2018	1.8	8.6	7.1		2	2	0.3	0.3	15.2	95	98				
11/1/2018	1.9	7	6.8		7	7	1.1	1.1	12.2	99	98				
12/1/2018	2.3	7	6.5	3.09	5	5	1.5	1.5	10.7	99	99				
1/1/2019	3.2	7.3	6.5		10	10	2.5	2.5	9.1	99	94				
Average	2.7	7.4	7.1	2.4	8.2	8.2	1.6	1.6	13.4	97.8	94.5	85.7	53.6	0.1	0.1
Minimum	1.4	6.6	6.5	0.809	1	1	0.2	0.2	7.5	92	54	0	0	0	0
Maximum	5.2	8.6	7.5	3.09	54	54	14	14	19.1	99	99	900	450	1.5	0.5
Count	56	71	71	8	71	71	71	71	56	71	71	14	14	14	14
Std Dev	0.8	0.3	0.3	0.8	6.9	6.9	1.8	1.8	4.1	1.7	6.3	247.6	139.3	0.4	0.1
CV	0.302	0.036	0.036	0.337	0.849	0.849	1.092	1.092	0.303	0.017	0.066	2.889	2.601	3.297	2.801
95th Percentile	4.225	7.7	7.45	3.0795	17.5	17.5	3.05	3.05	18.925	99	99	510	352.5	0.655	0.305

Appendix C. Reasonable Potential and Water Quality-Based Effluent Limit Formulae

A. Reasonable Potential Analysis

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_d Q_d = C_e Q_e + C_u Q_u \qquad \text{Equation 1}$$

where,

- C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
- C_e = Maximum projected effluent concentration
- C_u = 95th percentile measured receiving water upstream concentration
- Q_d = Receiving water flow rate downstream of the effluent discharge = Q_e+Q_u
- Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
- Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \qquad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \qquad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$ Equation 5

After the dilution factor simplification, the mass balance equation becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u$$ Equation 6

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u$$ Equation 7

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

The above equations for C_d are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's Technical Support Document for Water Quality-based Toxics Controls (TSD, 1991) recommends using the maximum projected effluent concentration (Ce) in the mass balance calculation (see equation 3, page C-5). To determine the maximum projected effluent concentration (Ce) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (Ce) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n}$$ Equation 8

where,

p_n = the percentile represented by the highest reported concentration
n = the number of samples
confidence level = 99% = 0.99

and

$$RPM = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}}$$ Equation 9

Where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile)
Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)

CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$$C_e = (RPM)(MRC) \qquad \text{Equation 10}$$

where MRC = Maximum Reported Concentration

Maximum Projected Effluent Concentration at the Edge of the Mixing Zone

Once the maximum projected effluent concentration is calculated, the maximum projected effluent concentration at the edge of the acute and chronic mixing zones is calculated using the mass balance equations presented previously.

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

B. WQBEL Calculations

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis. To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation 6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 11}$$

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, the EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation __. As discussed in Appendix ___, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \qquad \text{Equation 12}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\,\sigma)} \qquad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 14}$$

where,

σ^2 = $\ln(CV^2 + 1)$

Z_{99} = 2.326 (z-score for the 99th percentile probability basis)
CV = coefficient of variation (standard deviation ÷ mean)
σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTAc) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \quad \text{Equation 15}$$

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \quad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \quad \text{Equation 17}$$

where σ, and σ^2 are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1$
z_a = 1.645 (z-score for the 95th percentile probability basis)
z_m = 2.326 (z-score for the 99th percentile probability basis)
n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

C. Critical Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3 or 30Q10

1. The 1Q10 represents the lowest one-day flow with an average recurrence frequency of once in 10 years.
2. The 1B3 is biologically based and indicates an allowable exceedance of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.
5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.
7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

The Winchester WWTP discharges into a receiving water that experiences zero flow during portions of the year. Therefore, a critical low flow of zero was used for all reasonable potential and effluent limit calculations.

Appendix D. Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Winchester
Facility Flow (mgd)	0.03
Facility Flow (cfs)	0.05

Critical River Flows (CFS)	(IDAPA 58.01.02 03. b)	Annual Crit. Flows	Annual Crit. Flows
Aquatic Life - Acute Criteria - Criterion Max Concentration (CMC)	**1Q10**	0	--
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**	0	--
Ammonia	**30B3/30Q10** (seasonal)	0	--
Human Health - Non-Carcinogen	**30Q5**	0	--
Human Health - carcinogen	**Harmonic Mean Flow**	0	--

DF at defined percent of river flow allow	25%	1.0
DF at defined percent of river flow allow	25%	1.0

Receiving Water Data		Notes:	Annual Crit. Flows
Hardness, as mg/L $CaCO_3$	= 100 mg/L	5th % at critical flows	
Temperature, °C	Temperature, °C	95th percentile	15.2
pH, S.U.	pH, S.U.	95th percentile	8.3

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	CHLORINE (Total Residual)
Effluent Data	**Number of Samples in Data Set (n)**		54	14
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.424	2.89
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		3,880	900
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only			
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		602	
	Geometric Mean, µg/L, Human Health Criteria Only			
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	3,149	19.
	Aquatic Life Criteria, µg/L	Chronic	1,458	11.
	Human Health Water and Organism, µg/L		--	--
	Human Health, Organism Only, µg/L		--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute		--
		Chronic		--
	Carcinogen (Y/N), Human Health Criteria Only		--	--
Percent River Flow Default Value = **25%**	**Aquatic Life - Acute**	**1Q10**	0%	0%
	Aquatic Life - Chronic	7Q10 or 4B3	0%	0%
		30B3 or 30Q10		0%
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	0%	0%
	Human Health - Carcinogen	Harmonic Mean		0%
Calculated Dilution Factors (DF) (or enter Modeled DFs)	Aquatic Life - Acute	1Q10	1.0	1.0
	Aquatic Life - Chronic	7Q10 or 4B3	1.0	1.0
		30B3 or 30Q10	1.0	1.0
	Human Health - Non-Carcinogen and Chronic Ammonia	30Q5	1.0	1.0
	Human Health - Carcinogen	Harmonic Mean	1.0	1.0

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.053	1.495
P_n	$=(1\text{-confidence level})^{1/n}$, where confidence level =	99%	0.918	0.720
Multiplier (TSD p. 57)	$=\exp(z\sigma-0.5\sigma^2)/\exp[\text{normsinv}(P_n)\sigma-0.5\sigma^2]$, where	99%	2.7	13.6
Statistically projected critical discharge concentration (C_e)			10358	12218.03
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	10358	12218.03
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	10358	12218.03
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			2	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			2	4
LTA Coeff. Var. (CV), decimal	(Use CV of data set or default = 0.6)		1.424	0.600
Permit Limit Coeff. Var. (CV), decimal	(Use CV from data set or default = 0.6)		1.424	0.600
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a - 1)$	Acute	3,149	19.0
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_u \times (MZ_c - 1)$	Chronic	1,458	11.0
Long Term Ave (LTA), ug/L	$WLAa \times \exp(0.5\sigma^2-z\sigma)$, Acute	99%	474	6.1
(99th % occurrence prob.)	$WLAc \times \exp(0.5\sigma^2-z\sigma)$; ammonia n=30, Chronic	99%	831	5.8
Limiting LTA, ug/L	used as basis for limits calculation		474	5.8
Applicable Metals Criteria Translator (metals limits as total recoverable)				--
Average Monthly Limit (AML), ug/L	where % occurrence prob =	95%	**1321.4**	**9.006**
Maximum Daily Limit (MDL), ug/L	where % occurrence prob =	99%	**3149.1**	**18.071**
Average Monthly Limit (AML), mg/L			**1.321**	**0.009**
Maximum Daily Limit (MDL), mg/L			**3.149**	**0.018**
Average Monthly Limit (AML), lb/day			**0.33**	**0.002**
Maximum Daily Limit (MDL), lb/day			**0.79**	**0.005**

Appendix E. Antidegredation Analysis

The WQS contain an antidegradation policy providing Tier 1 and Tier 2 levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).

The EPA is employing a water body by water body approach in conducting the antidegradation analysis. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data was used to determine support status and the Tier protection. (IDAPA 58.01.02.052.05).

According to the 2014 Integrated Report, Lapwai Creek from the point of discharge to the confluence of Sweetwater Creek approximately 20 miles downstream is fully supporting beneficial uses. Therefore, the EPA will provide a Tier 2 antidegradation analysis.

Pollutants with Limits in the Current and Proposed Permit

For pollutants that are currently limited and will have limits under the reissued permit, the current discharge quality is based on the limits in the current permit or license (IDAPA 58.01.02.052.06.a.i), and the future discharge quality is based on the proposed permit limits (IDAPA 58.01.02.052.06.a.ii). For the Winchester permit, this means determining the permit's effect on water quality based upon the limits for BOD_5, TSS, total residual chlorine, E. Coli, and ammonia in the current and proposed permits. No parameters in this proposed permit reissuance contain less stringent effluent limitations or monitoring requirements than the 2013 permit. Effluent limits for BOD_5, TSS, and E. coli are the same in the 2013 permit and this proposed reissuance, and the ammonia and total residual chlorine effluent limits are slightly more stringent than the 2013 permit.

No adverse change in water quality and no degradation will result from the discharge of these pollutants in the reissued permit and the quality of the receiving water is maintained and protected. The EPA concludes that this discharge permit complies with the Tier 2 provisions of Idaho's WQS (IDAPA 58.01.02.051.02 and IDAPA 58.01.02.052.06).