

WASTEWATER 101

Part 4

Where does treated water go?

Wastewater Surveillance Program Water Environment Federation

**nwbe.org
nwbe@wef.org**

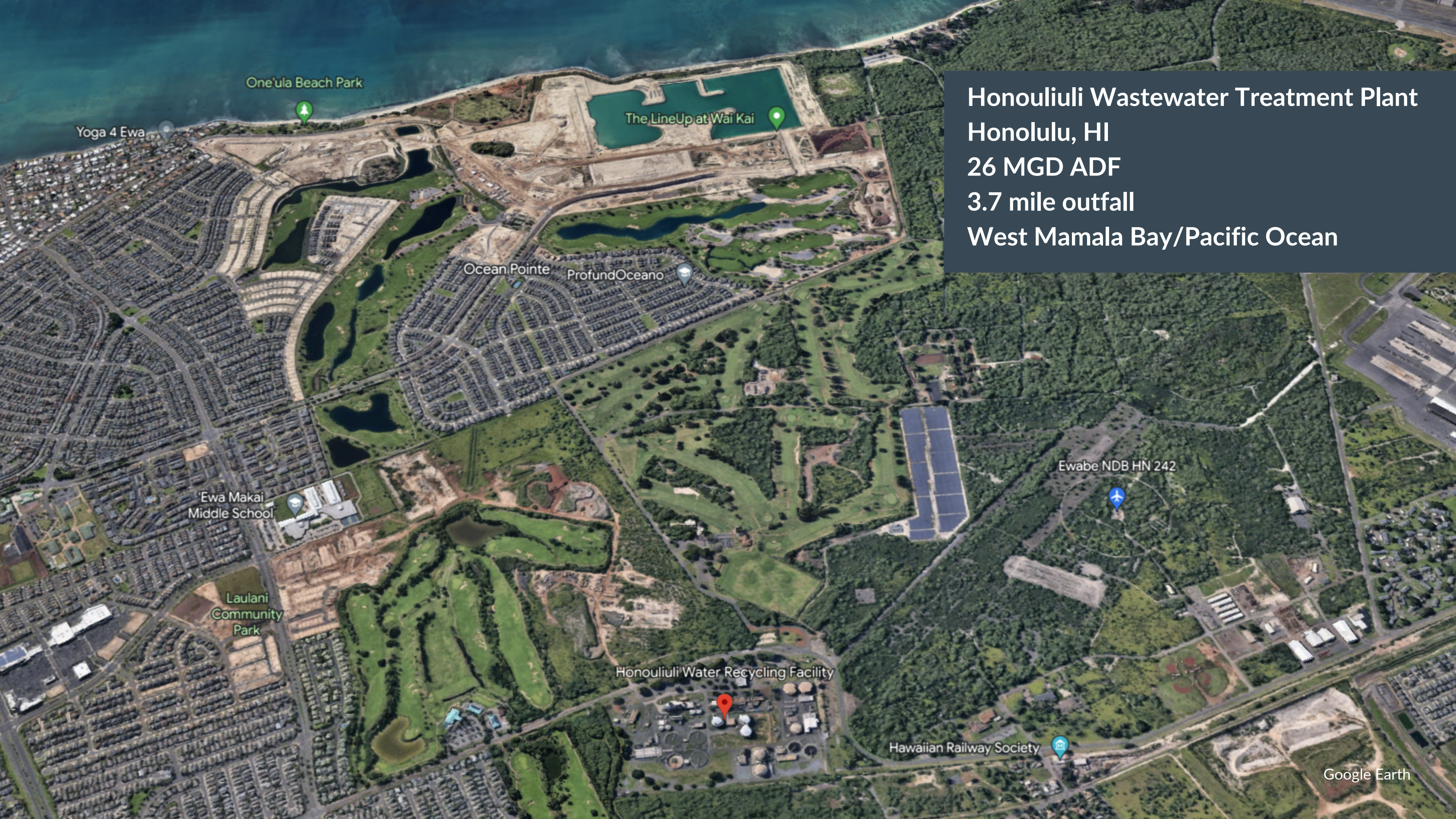
DISCLAIMER

Development and production of this material was made possible through funding from the US Centers for Disease Control and Prevention (CDC) to the Water Environment Federation (WEF) under Cooperative Agreement CK20-2003 (Improving Clinical and Public Health Outcomes through National Partnerships to Prevent and Control Emerging and Re-Emerging Infectious Disease Threats). This material is solely the responsibility of WEF and does not necessarily represent the official position of CDC.

TREATED EFFLUENT DISCHARGE

- Through long or short **outfalls**
- Into **receiving waters**
 - Streams, rivers, lakes, bays, or coastal ocean waters
 - (Usually) known as *Waters of the United States*





Honouliuli Wastewater Treatment Plant
Honolulu, HI
26 MGD ADF
3.7 mile outfall
West Mamala Bay/Pacific Ocean

Point Loma Wastewater Treatment Plant
San Diego, CA
175 MGD ADF
4.4 mile outfall + 0.5 mile diffuser legs (2)
Pacific Ocean

Point Loma Wastewater Treatment Plant

Marine Protected
Area North Boundary

Deer Island Wastewater Treatment Plant
Boston, MA
330 MGD ADF
9.5 mile outfall
Massachusetts Bay/Atlantic Ocean



Deer Island Wastewater Treatment Plant

Massachusetts Water Resources Authority

Google Earth

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WATERS OF THE UNITED STATES



3004

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers
33 CFR Part 328

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 120
[EPA-HQ-OW-2021-0602; FRL-6027.4-01-OW]

Revised Definition of "Waters of the United States"

AGENCY: Department of the Army, Corps of Engineers, Department of Defense; and Environmental Protection Agency (EPA).
ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") are finalizing a rule defining the scope of waters protected under the Clean Water Act. In developing this rule, the agencies considered the text of the relevant provisions of the Clean Water Act and record, relevant Supreme Court case law, and the agencies' experience and technical expertise after more than 45 years of implementing the longstanding pre-2015 regulations defining "waters of the United States."

This final rule advances the objective of the Clean Water Act and ensures critical protections for the nation's vital water resources, which support public health, environmental protection, agricultural activity, and economic growth across the United States. **DATES:** This action is effective on March 18, 2023.

Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 564-2281; email address: CJAWotus@epa.gov, and Stacey Jensen, Office of the Assistant Secretary of the Army for Civil Works, Department of the Army, 108 Army Pentagon, Washington, DC 20310-0104; telephone number: (703) 459-6026; email address: usarmy.pentagon.hqda-asa-cw.mbx.asa-cw-reporting@army.mil.

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I. Executive Summary

Congress enacted the Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, 86 Stat. 816, as amended, 33 U.S.C. 1251 *et seq.* (Clean Water Act or Act) "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. 1251(a). In doing so, Congress performed a "total restructuring" and "complete rewriting" of the then-existing statutory framework, designed to "establish an all-encompassing program of water pollution regulation." *City of Milwaukee v. Illinois*, 451 U.S. 304, 317-18 (1981) (citation omitted). Congress thus intended the 1972 Act to be a bold step forward in providing protections for the nation's waters.

most Federal programs to protect water quality under the Clean Water Act—for example, water quality standards, permitting to address discharges of pollutants, including discharges of dredged or fill material, processes to address impaired waters, oil spill prevention, preparedness and response programs, and Tribal and State water quality certification programs—because the Clean Water Act uses the term "navigable waters" in establishing such programs. As a unanimous Supreme Court concluded decades ago, Congress delegated a "breadth of federal regulatory authority" in the Clean Water Act and expected the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") to tackle the "inherent difficulties of defining precise bounds to regulable waters." *United States v. Riverside Bayview Homes*, 474 U.S. 121, 134 (1985) ("Riverside Bayview"). The Supreme Court noted that "[f]aced with such a problem of defining the bounds of its regulatory authority, an agency may appropriately look to the legislative history and underlying policies of its statutory grants of authority." *Id.* at 132. "[p]rotection of aquatic ecosystems, Congress recognized, demanded broad federal authority to control pollution, and it is essential that hydrologic cycles and pollutants be controlled at discharge." *Id.* at 132-33 (citations omitted). The Supreme Court has twice more addressed the complex issue of Clean Water Act jurisdiction over "waters of the United States." *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001) ("SWANCC"); *Rapanos v. United States*, 547 U.S. 715 (2006) ("Rapanos"). This rule takes up that multi-faceted challenge. In developing this rule, the agencies considered the text of the relevant provisions of the Clean Water Act and the statute as a whole, the scientific record, relevant Supreme Court case law, and the agencies' experience and technical expertise after 45 years of implementing the longstanding pre-2015 regulations defining "waters of the United States." This rule is consistent with those provisions in *Riverside Bayview*, *SWANCC*, and *Rapanos*. The agencies' proposed rule defines limits that preserve the boundary of Federal protection, and significantly

pre-2015 regulations are commonly referred to as "the 1986 regulations," and this preamble will refer to them as such, but the agencies note that "the 1986 regulations" have largely been in place since 1977 and were also amended in 1993 to add an exclusion.⁴ Since 2015, the agencies have finalized three rules revising the definition of "waters of the United States." See 80 FR 37054 (June 29, 2015); 84 FR 56626 (October 22, 2019); 85 FR 22250 (April 21, 2020). The most recent rule, the 2020 "Navigable Waters Protection Rule" ("2020 NWPR"), substantially departed from prior rules defining "waters of the United States." On January 20, 2021, President Biden signed Executive Order 13990, entitled "Restoring Science to Tackle the Climate Crisis," directing all executive departments and agencies to immediately review and, as appropriate and consistent with applicable law, take action to address the promulgation of Federal regulations and other actions that conflict with national policies of science-based decision making in order to improve public health in order environment, and ensure access to clean air and water. 86 FR 7037 (published January 25, 2021, signed January 20, 2021). After completing a review of and announcing the record for the 2020 NWPR, on June 9, 2021, the agencies replaced the rule. The 2020 NWPR was subsequently vacated by two district courts, as discussed further below. In this rule, consistent with the general framework of the 1986 regulations, the agencies interpret the term "waters of the United States" to include:

- traditional navigable waters, the territorial seas, and interstate waters ("paragraph (a)(1) waters");
- impoundments of "waters of the United States" ("paragraph (a)(2) impoundments");
- tributaries to traditional navigable waters, the territorial seas, interstate waters, or paragraph (a)(2) impoundments in 1993 (58 FR 45008, 45091 (August 25, 1993)), the agencies' regulations defining "waters of the United States" remained unchanged until the agencies finalized the 2015 Clean Water Rule (80 FR 37054, 37104 (June 29, 2015)). In 2019, the agencies re promulgated their pre-2015 regulations (84 FR 56626, 56667 (October 22, 2019)).

For convenience, in this preamble the agencies will generally cite the Corps' longstanding regulations, "the pre-2015 regulations," or "the 1986 regulations" in place until 2015. These references are inclusive of EPA's comparable regulations that were re codified in 1988 and of the exclusion for prior converted cropland, which both agencies added in 1993.

release of the Science Report, additional published peer-reviewed scientific literature has strengthened and supplemented the report's conclusions. The Technical Support Document for the Final Rule: Revised Definition of "Waters of the United States" (hereinafter, "Technical Support Document") provides additional scientific and technical information about issues raised in this rule.⁵⁹ The agencies' interpretation also reflects consideration of the statute as a whole, including both its objective in section 101(a) and its policies, such as that of section 101(b), which states in part that "it is the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, [and] to plan the development and use (including restoration, preservation, and enhancement) of land and water resources." 33 U.S.C. 1251(b). The agencies find that the scope of Clean Water Act jurisdiction established in this final rule enhances States' ability to protect waters within their borders, such as by participating in the section 401 certification process and by providing input during the permitting process for out-of-state section 402 and 404 permits that may affect their waters. See 33 U.S.C. 1341, 1342(b), 1344(h)(1)(E). Indeed, in implementing and participating in the Clean Water Act's regulatory requirements and framework, States can have more powerful and holistic tools for addressing water quality than they would have in implementing state-only laws and regulations.

Further, this rule is based on the agencies' conclusion that the significant nexus standard is consistent with the statutory text and legislative history, advances the objective of the Clean Water Act, is informed by the scientific record and Supreme Court case law, and appropriately considers the policies of the Act. The agencies have also determined that the relatively permanent standard is appropriate to include in this rule because, while it

⁵⁹ Appendix A of the Technical Support Document contains a glossary of terms used in the document. Appendix B of the Technical Support Document contains the references cited in the document. Appendix C of the Technical Support Document is a list of citations that have been published since the Science Report and that contain findings relevant to the report's conclusions. ⁶⁰ Throughout this preamble, when the agencies refer to "science," that means foundational principles related to chemical, physical, and biological integrity, including biology, hydrology, geology, chemistry, and soil science; the Science Report; and the Technical Support Document for this rule.

CLEAN WATER ACT

- Enacted in 1972
- Prohibits:
 - Discharge of **pollutants**
 - To **waters of the United States**
 - From **point sources**
 - Without a **permit**

➔ National Pollutant Discharge Elimination System (NPDES) program



“POLLUTANT”

“ The term pollutant is defined very broadly in the Clean Water Act . It includes any type of industrial, municipal, and agricultural waste discharged into water. Some examples are dredged soil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste. By law, a pollutant is not sewage from vessels or discharges incidental to the normal operation of an Armed Forces vessel, or certain materials injected into an oil and gas production well. ”

NPDES Permit Basics

<https://www.epa.gov/npdes/npdes-permit-basics>

“POINT SOURCE”

“ The term point source is also defined very broadly in the Clean Water Act and it has been through 25 years of litigation. It means any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, discrete fissure, or container. It also includes vessels or other floating craft from which pollutants are or may be discharged. By law, the term "point source" also includes concentrated animal feeding operations, which are places where animals are confined and fed. By law, agricultural stormwater discharges and return flows from irrigated agriculture are not "point sources." ”

NPDES Permit Basics

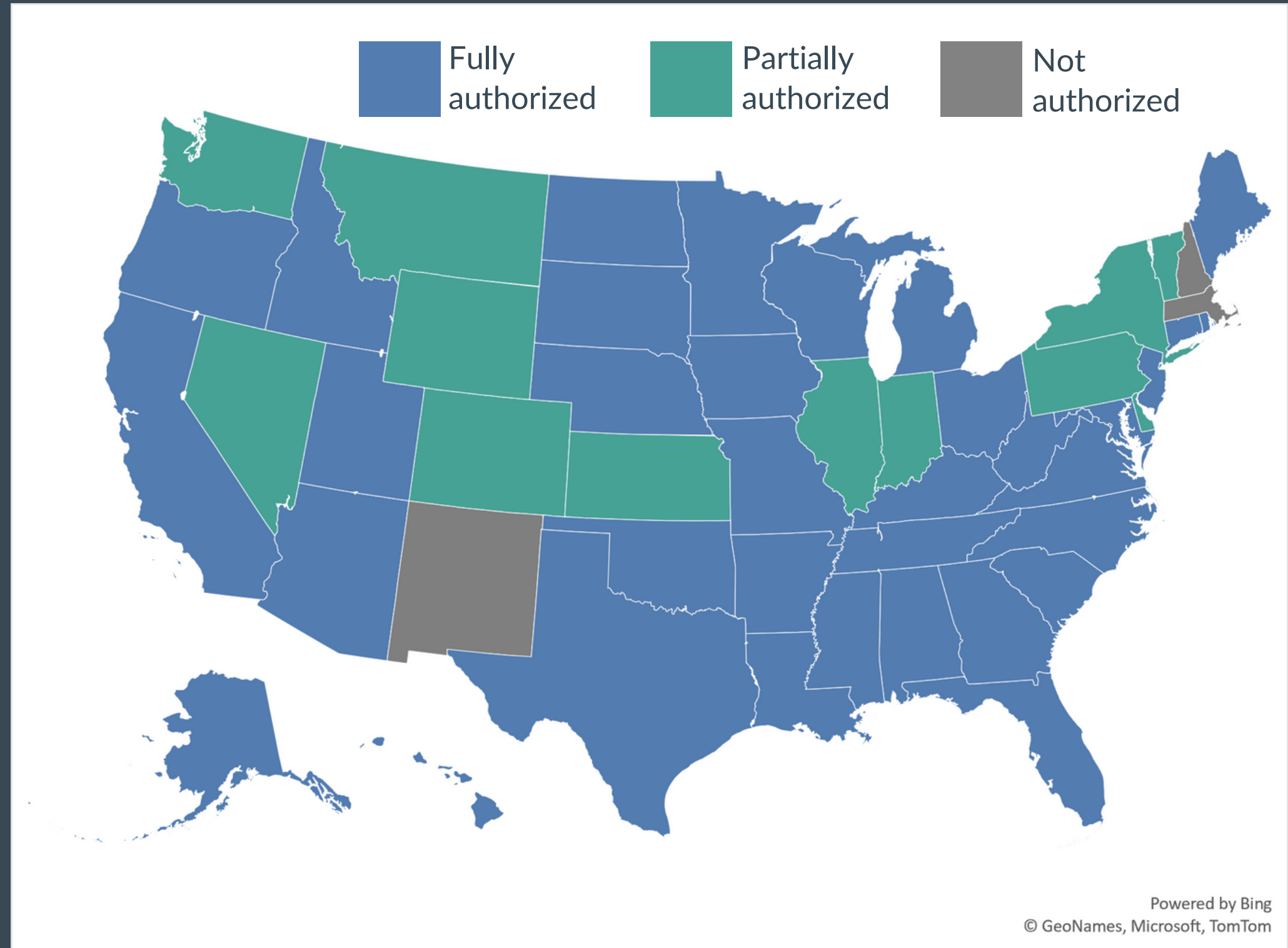
<https://www.epa.gov/npdes/npdes-permit-basics>

National Pollutant Discharge Elimination System

**Issued by EPA
or authorized
states**

National Pollutant Discharge Elimination System

Issued by EPA
or authorized
states



National Pollutant Discharge Elimination System

Issued by EPA
or authorized
states

Permits include
limits on
pollutants that
can be
discharged

and

monitoring and
reporting
requirements

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reporting
requirements

Monitoring and
reporting
requirements
can apply to:

influent,
effluent,
or
receiving
waters

PERMIT EXAMPLES

City of Boone, Iowa, Sewage Treatment Plant

7 MGD capacity
Activated sludge plant
Serves 13,000 people

**Brightwater Wastewater Treatment Plant,
King County, Washington**

36 MGD ADF
Advanced treatment
Serves 189,000 people

Saint Regis Mohawk Tribe

65,000 gallons per day
Activated sludge
Serves a few hundred people

PERMIT PARTS: THE COVER PAGE

City of Boone, Iowa, Sewage Treatment Plant

Brightwater Wastewater Treatment Plant, King County, Washington

Saint Regis Mohawk Tribe

IOWA DEPARTMENT OF NATURAL RESOURCES

National Pollutant Discharge Elimination System (NPDES) Permit

OWNER NAME & ADDRESS

CITY OF BOONE
CITY HALL
P.O. BOX 550
BOONE, IA 50036

FACILITY NAME & ADDRESS

BOONE CITY OF STP
1721 MCHOSE DRIVE
BOONE, IA 50036

Section 33, T84N, R26W
Boone County

IOWA NPDES PERMIT NUMBER: 0819001
DATE OF ISSUANCE: 08/01/2019
DATE OF EXPIRATION: 07/31/2024

YOU ARE REQUIRED TO FILE FOR RENEWAL
OF THIS PERMIT BY: 02/02/2024
EPA NUMBER: IA0058076

This permit is issued pursuant to the authority of section 402(b) of the Clean Water Act (33 U.S.C 1342(b)), Iowa Code section 455B.174, and rule 567-64.3, Iowa Administrative Code. You are authorized to operate the disposal system and to discharge the pollutants specified in this permit in accordance with the effluent limitations, monitoring requirements and other terms set forth in this permit.

You may appeal any condition of this permit by filing a written notice of appeal and request for administrative hearing with the director of this department within 30 days of your receipt of this permit.

Any existing unexpired Iowa operation permit or Iowa NPDES permit previously issued by the department for the facility identified above is revoked by the issuance of this permit. This provision does not apply to any authorization to discharge under the terms and conditions of a general permit issued by the department or to any permit issued exclusively for the discharge of stormwater.

FOR THE DEPARTMENT OF NATURAL RESOURCES

By _____

Ann Seda
NPDES Section
ENVIRONMENTAL SERVICES DIVISION

Facility Name: BOONE CITY OF STP
Permit Number: 0819001

Outfall No.: 001 DISCHARGE FROM AN ACTIVATED SLUDGE WASTEWATER TREATMENT FACILITY.
Receiving Stream: HONEY CREEK
Route of Flow: HONEY CREEK TO DES MOINES RIVER

Issuance Date: February 26, 2018
Effective Date: March 01, 2018
Expiration Date: February 28, 2023

National Pollutant Discharge Elimination System Waste Discharge Permit No. WA0032247

State of Washington
DEPARTMENT OF ECOLOGY
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

In compliance with the provisions of
The State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington
and
The Federal Water Pollution Control Act
(The Clean Water Act)
Title 33 United States Code, Section 1342 et seq.

King County Department of Natural Resources and Parks, Wastewater Treatment Division

King Street Center, KSC-NR-700
201 South Jackson Street
Seattle, Washington 98104-3855

is authorized to discharge in accordance with the Special and General Conditions that follow.

Plant Name: Brightwater Wastewater Treatment Plant (WWTP)	Receiving Water: Puget Sound
Plant Location: 22505 SR 9 SE, Woodinville, WA 98072	Discharge Locations: Outfall 001
Plant Type: Activated Sludge with Hollow Fiber Membranes; Chemically Enhanced Primary Treatment for Peak Wet Weather Flows	Diffuser 1 Latitude: 47.777138360 Longitude: -122.416948716
	Diffuser 2 Latitude: 47.776987265 Longitude: -122.417957020


Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology



United States Environmental Protection Agency
Region 2
Water Division
290 Broadway
New York, New York 10007

NPDES NO. SR0240281

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

The following Permittee is authorized to discharge subject to the requirements set forth in this permit:

Permittee (mailing address)	Facility (location address)
Saint Regis Mohawk Tribe	Saint Regis Mohawk Tribe Wastewater Treatment Plant
71 Margaret Terrance Memorial Way	47 Sanitation Plant Road
Akwesasne, New York 13655	Akwesasne, New York 13655
EPA has classified this discharge as a minor discharge.	

The Permittee may discharge from the discharge point identified below:

Outfall	Effluent description	Outfall latitude	Outfall longitude	Receiving water name and classification
001	wastewater	44°, 58', 50.18"	74°, 39', 24.5"	St. Regis River / B

Issuance date	Effective date (EDP)	Expiration date	Renewal application date
July 21, 2021	September 1, 2021	August 31, 2026	March 1, 2026

To meet the provisions of the Clean Water Act (CWA) as amended, 33 *United States Code* (U.S.C.) 1251 *et seq.* and its implementing regulations, the Permittee shall comply with the requirements in this permit.

I, Javier Laureano, do hereby certify that this permit with all attachments is a full, true and correct copy of the permit issued by EPA, on July 21, 2021.


Javier Laureano, Director
Water Division
U.S. Environmental Protection Agency Region 2

PERMIT PARTS: EFFLUENT LIMITS

City of Boone, Iowa, Sewage Treatment Plant

Brightwater Wastewater Treatment Plant,
King County, Washington

Saint Regis Mohawk Tribe

Outfall: 001 Effective Dates: 03/01/2023 to 07/31/2024

Parameter	Season	Limit Type	Limits
E. COLI			
	MAR	Geometric Mean	151 #/100 ML
	APR	Geometric Mean	151 #/100 ML
	MAY	Geometric Mean	151 #/100 ML

Outfall: 001 Effective Dates: 08/01/2019 to 07/31/2024

Parameter	Season	Limit Type	Limits
AMMONIA NITROGEN (N)			
	AUG	30 Day Average	1.0 MG/L 56.2 LBS/DAY
	AUG	Daily Maximum	16.2 MG/L 947.2 LBS/DAY
	SEP	30 Day Average	1.5 MG/L 62.2 LBS/DAY

Effluent Limitations:

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:

001 DISCHARGE FROM AN ACTIVATED SLUDGE WASTEWATER TREATMENT FACILITY.

Outfall: 001 Effective Dates: 08/01/2019 to 07/31/2024

Parameter	Season	Limit Type	Limits
CBOD5 85% Removal Required			
	Yearly	7 Day Average	40 MG/L 2335 LBS/DAY
	Yearly	30 Day Average	25 MG/L 1460 LBS/DAY
TOTAL SUSPENDED SOLIDS 85% Removal Required			
	Yearly	7 Day Average	45 MG/L 2627 LBS/DAY
	Yearly	30 Day Average	30 MG/L 1751 LBS/DAY
AMMONIA NITROGEN (N)			
	JAN	30 Day Average	3.5 MG/L 200.6 LBS/DAY
	JAN	Daily Maximum	15.2 MG/L 886.7 LBS/DAY
	FEB	30 Day Average	4.1 MG/L 232.8 LBS/DAY
	FEB	Daily Maximum	14.2 MG/L 828.8 LBS/DAY
	MAR	30 Day Average	3.5 MG/L 176.0 LBS/DAY
	MAR	Daily Maximum	14.7 MG/L 857.4 LBS/DAY
	APR	30 Day Average	1.6 MG/L 89.8 LBS/DAY
	APR	Daily Maximum	15.7 MG/L 916.6 LBS/DAY
	MAY	30 Day Average	1.8 MG/L 107.1 LBS/DAY
	MAY	Daily Maximum	15.2 MG/L 886.7 LBS/DAY
	JUN	30 Day Average	1.3 MG/L 77.1 LBS/DAY
	JUN	Daily Maximum	14.4 MG/L 843.1 LBS/DAY
	JUL	30 Day Average	1.0 MG/L 59.2 LBS/DAY
	JUL	Daily Maximum	17.6 MG/L 1026.5 LBS/DAY

Effluent Limits: Outfall 001
See discharge coordinates on cover sheet

Parameter	Average Monthly ^a	Average Weekly ^b
Biochemical Oxygen Demand (5-day) (BOD ₅)	30 milligrams/liter (mg/L) 10,233 pounds/day (lbs/day) 85% removal of influent BOD ₅	45 mg/L 15,350 lbs/day
Total Suspended Solids (TSS)	30 mg/L 10,233 lbs/day 85% removal of influent TSS	45 mg/L 15,350 lbs/day
Total Residual Chlorine	0.5 mg/L	0.75mg/L
pH	6.0 standard units	9.0 standard units
Fecal Coliform Bacteria ^c	200/100 milliliter (mL)	400/100 mL

Parameter **Minimum** **Maximum**

Parameter	Monthly Geometric Mean	Weekly Geometric Mean

a Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured. See footnote c for fecal coliform calculations.

b Average weekly discharge limit means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges' measured during that week. See footnote c for fecal coliform calculations.

c Ecology provides directions to calculate the monthly and the weekly geometric mean in publication No. 04-10-020, Information Manual for Treatment Plant Operators.

PART II. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Final Effluent Limitations—Outfall Number 001
The Permittee shall maintain compliance with the following effluent limitations at Outfall 001, with compliance measured at Monitoring Location.

Effluent Limitations Table

Parameter	Units	Effluent limitations			Monitoring requirements		Parameter Code	Footnotes
		Average monthly	Average weekly	Maximum daily	Sample type	Minimum sampling frequency		
Benzene	µg/L	--	--	10	Grab	1/Month	34030	(5)
BOD ₅	mg/l	30	45	--	Composite	Every 2 weeks	00310	(2)
BOD ₅	lb/day	87.57	131.35	--	Composite			
Chromium	mg/l	7.56	--	20.90	Grab	1/Month	01118	
Color	CU	--	--	--	Grab	1/Month	00080	(6)
Copper	mg/l	0.49	--	1.34	Grab	1/Month	01042	
Dissolved Oxygen	mg/l	6.0*	--	--	Grab	1/Month	00300	(6)
E. Coli	Colonies/100 ml	126	--	--	Grab	1/Month	51040	(4)
Effluent Flow	mgd	--	--	0.350	Continuous	--	50050	(1)
Effluent Total Suspended Solids	mg/L	30	45	--	Composite	Every 2 weeks	00530	(2)
Effluent Total Suspended Solids	lb/day	87.57	131.35	--	Composite			(6)
Lead	mg/l	0.30	--	0.94	Grab	1/Month	01114	
Nickel	mg/l	5.65	--	14.20	Grab	1/Month	01074	
pH	standard units	Minimum 6.5 Maximum 8.5			Grab	Daily	00400	(6)
Chlorine, Total Residual	mg/L	--	--	0.5	Grab	Daily	50060	(3)

TYPICAL EFFLUENT LIMITS

Usually includes:

- 5-day biochemical oxygen demand (BOD or cBOD)
- Total suspended solids (TSS)
- pH
- Dissolved oxygen (DO)
- Total residual chlorine (TRC)
- Fecal indicator bacteria (such as *E. coli* or fecal coliform)
- Toxicity testing

Plus maybe some combination of:

- Nitrogen (ammonia, nitrate/nitrite, Total Kjeldahl Nitrogen, total nitrogen)
- Phosphorus (total phosphorus)
- Metals, such as copper, lead, nickel, zinc
- Specific organic pollutants
- Other pollutants of concern

PERMIT PARTS: EFFLUENT LIMITS

City of Boone, Iowa, Sewage Treatment Plant

Brightwater Wastewater Treatment Plant,
King County, Washington

Saint Regis Mohawk Tribe

Outfall: 001 Effective Dates: 03/01/2023 to 07/31/2024

Parameter	Season	Limit Type	Limits
E. COLI			
	MAR	Geometric Mean	151 #/100 ML
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	MAY	Geometric Mean	151 #/100 ML

Outfall: 001 Effective Dates: 08/01/2019 to 07/31/2024

Parameter	Season	Limit Type	Limits
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Outfall: 001 Effective Dates: 08/01/2019 to 07/31/2024

Parameter	Season	Limit Type	Limits
CBOD5			
85% Removal Required			
	Yearly	7 Day Average	40 MG/L 2335 LBS/DAY
	Yearly	30 Day Average	25 MG/L 1460 LBS/DAY
TOTAL SUSPENDED SOLIDS			
85% Removal Required			
	Yearly	7 Day Average	45 MG/L 2627 LBS/DAY
	Yearly	30 Day Average	30 MG/L 1751 LBS/DAY
AMMONIA NITROGEN (N)			
	JAN	30 Day Average	3.5 MG/L 200.6 LBS/DAY
	APR	30 Day Average	1.6 MG/L 89.8 LBS/DAY
	APR	Daily Maximum	15.7 MG/L 916.6 LBS/DAY
	MAY	30 Day Average	1.8 MG/L 107.1 LBS/DAY
	MAY	Daily Maximum	15.2 MG/L 886.7 LBS/DAY
	JUN	30 Day Average	1.3 MG/L 77.1 LBS/DAY
	JUN	Daily Maximum	14.4 MG/L 843.1 LBS/DAY
	JUL	30 Day Average	1.0 MG/L 59.2 LBS/DAY
	JUL	Daily Maximum	17.6 MG/L 1026.5 LBS/DAY

cBOD, TSS, ammonia, nitrate, acute toxicity with *Ceriodaphnia* and *Pimephales*, DO, pH, *E. coli*

Effluent Limits: Outfall 001
See discharge coordinates on cover sheet

Parameter	Average Monthly ^a	Average Weekly ^b
Biochemical Oxygen Demand (5-day) (BOD ₅)	30 milligrams/liter (mg/L) 10,233 pounds/day (lbs/day) 85% removal of influent BOD ₅	45 mg/L 15,350 lbs/day
Total Suspended Solids (TSS)	30 mg/L 10,233 lbs/day 85% removal of influent TSS	45 mg/L 15,350 lbs/day
Total Residual Chlorine	0.5 mg/L	0.75mg/L
Parameter	Minimum	Maximum
pH		
Fecal coliform		
a	Average monthly discharge limit means the sum of all daily discharges measured during a calendar month and divide this sum by the total number of daily discharges measured. See footnote c for fecal coliform calculations.	
b	Average weekly discharge limit means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges' measured during that week. See footnote c for fecal coliform calculations.	
c	Ecology provides directions to calculate the monthly and the weekly geometric mean in publication No. 04-10-020, Information Manual for Treatment Plant Operators.	

BOD, TSS, TRC, pH, fecal coliform

PART II. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Final Effluent Limitations—Outfall Number 001
The Permittee shall maintain compliance with the following effluent limitations at Outfall 001, with compliance measured at Monitoring Location.

Effluent Limitations Table

Parameter	Units	Effluent limitations			Monitoring requirements		Parameter Code	Footnotes
		Average monthly	Average weekly	Maximum daily	Sample type	Minimum sampling frequency		
Benzene	µg/L	--	--	10	Grab	1/Month	34030	(5)
BOD ₅	mg/l	30	45	--	Composite	Every 2 weeks	00310	(2)
BOD ₅	lb/day	87.57	131.35	--	Composite			
Chromium								
Color								
Co								
Dis								
E. Coli								
Effluent Flow	mgd	--	--	0.350	Continuous	--	50050	(1)
Effluent Total Suspended Solids	mg/L	30	45	--	Composite	Every 2 weeks	00530	(2)
Effluent Total Suspended Solids	lb/day	87.57	131.35	--	Composite			(6)
Lead	mg/l	0.30	--	0.94	Grab	1/Month	01114	
Nickel	mg/l	5.65	--	14.20	Grab	1/Month	01074	
pH	standard units	Minimum 6.5 Maximum 8.5			Grab	Daily	00400	(6)
Chlorine, Total Residual	mg/L	--	--	0.5	Grab	Daily	50060	(3)

BOD, TSS, DO, pH, *E. coli*, TRC, metals (Cr, Cu, Pb, Ni, Zn), color, flow

PERMIT PARTS: SECONDARY TREATMENT REQUIREMENT

City of Boone, Iowa, Sewage Treatment Plant

Brightwater Wastewater Treatment Plant,
King County, Washington

Saint Regis Mohawk Tribe

Facility Name: BOONE CITY OF STP
Permit Number: 0819001

Effluent Limitations:

You are prohibited from discharging pollutants except in compliance with the following

001 DISCHARGE FROM AN ACTIVATED SLUDGE WASTEWATER TREATMENT FACILITY.

Outfall: 001 Effective Dates: 08/01/2019 to 07/31/2024

Parameter	Season	Limit Type	Limits
CBOD5			85% Removal Required
	Yearly	7 Day Average	40 MG/L 2335 LBS/DAY
	Yearly	30 Day Average	25 MG/L 1460 LBS/DAY
TOTAL SUSPENDED SOLIDS			85% Removal Required
	Yearly	7 Day Average	45 MG/L 2627 LBS/DAY
	Yearly	30 Day Average	30 MG/L 1751 LBS/DAY

Effluent Limits: Outfall 001
See discharge coordinates on cover sheet

Parameter	Average Monthly ^a
Biochemical Oxygen Demand (5-day) (BOD ₅)	30 milligrams/liter (mg/L) 10,233 pounds/day (lbs/day) 85% removal of influent BOD ₅
Total Suspended Solids (TSS)	30 mg/L 10,233 lbs/day 85% removal of influent TSS

Footnote (2): The arithmetic mean of the values for effluent samples collected in a period of 30 consecutive days shall not exceed 15 percent of the arithmetic means of the values of influent samples collected at approximately the same time during the same period (85 percent removal).

85% removal of cBOD and TSS required

85% removal of BOD and TSS required

85% removal of cBOD and TSS required

PERMIT PARTS: MONITORING REQUIREMENTS

City of Boone, Iowa, Sewage Treatment Plant

Brightwater Wastewater Treatment Plant,
King County, Washington

Saint Regis Mohawk Tribe

Outfall	Wastewater Parameter	Sample Frequency	Sample Type	Monitoring Location
The following monitoring requirements shall be in effect from 08/01/2019 to 07/31/2024				
001	BIOCHEMICAL OXYGEN DEMAND (BOD ₅)	2 TIMES PER WEEK	24 HOUR COMPOSITE	RAW WASTE
001	FLOW	7/WEEK OR DAILY	24 HOUR TOTAL	RAW WASTE
001	NITROGEN, TOTAL (AS N)	1 TIME PER WEEK	24 HOUR COMPOSITE	RAW WASTE
001	NITROGEN, TOTAL KJELDAHL (AS N)	1 EVERY MONTH	24 HOUR COMPOSITE	RAW WASTE
001	PH	2 TIMES PER WEEK	GRAB	RAW WASTE
001	PHOSPHORUS, TOTAL (AS P)	1 TIME PER WEEK	24 HOUR COMPOSITE	RAW WASTE
001	TEMPERATURE	2 TIMES PER WEEK	GRAB	RAW WASTE
001	TOTAL SUSPENDED SOLIDS	2 TIMES PER WEEK	24 HOUR COMPOSITE	RAW WASTE
001	CBOD ₅	2 TIMES PER WEEK	24 HOUR COMPOSITE	EFFLUENT PRIOR TO DISINFECTION
001	TOTAL SUSPENDED SOLIDS	2 TIMES PER WEEK	24 HOUR COMPOSITE	EFFLUENT PRIOR TO DISINFECTION
001	ACUTE TOXICITY, CERIODAPHNIA	1 EVERY 12 MONTHS	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	ACUTE TOXICITY, PIMEPHALES	1 EVERY 12 MONTHS	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	AMMONIA NITROGEN (N)	2 TIMES PER WEEK	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	DISSOLVED OXYGEN	2 TIMES PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	NITRATE NITROGEN (AS N)	1 EVERY MONTH	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	NITROGEN, TOTAL (AS N)	1 TIME PER WEEK	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	PH	5 TIMES PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	PHOSPHORUS, TOTAL (AS P)	1 TIME PER WEEK	24 HOUR COMPOSITE	EFFLUENT AFTER DISINFECTION
001	TEMPERATURE	2 TIMES PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
The following monitoring requirements shall be in effect from 03/01/2023 to 07/31/2024				
001	E. COLI	GEO. MEAN 1/3 MONTHS	GRAB	EFFLUENT AFTER DISINFECTION

S2. Monitoring requirements

S2.A. Monitoring schedule

The Permittee must monitor in accordance with the following schedule and the requirements specified in Appendix A.

Parameter	Units & Speciation	Minimum Sampling Frequency	Sample Type
(1) Wastewater influent, monitored at Headworks			
Wastewater Influent means the raw sewage flow from the collection system into the treatment facility. Sample the wastewater entering the headworks of the treatment plant excluding any side-stream returns from inside the plant.			
Flow	MGD	Continuous ^a	Metered/Recorded
BOD ₅	mg/L	5/week	24-hr Composite ^b
BOD ₅	lbs/day	5/week	Calculation ^c
TSS	mg/L	5/week	24-hr Composite
TSS	lbs/day	5/week	Calculation

PART II. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Final Effluent Limitations—Outfall Number 001

The Permittee shall maintain compliance with the following effluent limitations at Outfall 001, with compliance measured at Monitoring Location.

Effluent Limitations Table

Parameter	Units	Effluent limitations			Monitoring requirements		Parameter Code	Footnotes
		Average monthly	Average weekly	Maximum daily	Sample type	Minimum sampling frequency		
Benzene	µg/L	--	--	10	Grab	1/Month	34030	(5)
BOD ₅	mg/l	30	45	--	Composite	Every 2 weeks	00310	(2)
BOD ₅	lb/day	87.57	131.35	--	Composite			
Chromium	mg/l	7.56	--	20.90	Grab	1/Month	01118	
Color	CU	--	--	--	Grab	1/Month	00080	(6)
Copper	mg/l	0.49	--	1.34	Grab	1/Month	01042	
Dissolved Oxygen	mg/l	6.0*	--	--	Grab	1/Month	00300	(6)
E. Coli	Colonies/100 ml	126	--	--	Grab	1/Month	51040	(4)
Effluent Flow	mgd	--	--	0.350	Continuous	--	50050	(1)
Effluent Total Suspended Solids	mg/L	30	45	--	Composite	Every 2 weeks	00530	(2)
Effluent Total Suspended Solids	lb/day	87.57	131.35	--	Composite			(6)
Lead	mg/l	0.30	--	0.94	Grab	1/Month	01114	
Nickel	mg/l	5.65	--	14.20	Grab	1/Month	01074	
pH	standard units	Minimum 6.5 Maximum 8.5			Grab	Daily	00400	(6)
Chlorine, Total Residual	mg/L	--	--	0.5	Grab	Daily	50060	(3)

Required to monitor raw waste + effluent prior/after disinfection

Influent monitoring requirements include 24-hour composites 2 times per week

Required to monitor influent + final effluent + chemically-enhanced primary treatment bypass

Influent monitoring requirements include 24-hour composites 5 times per week

Required to monitor effluent only; no specific influent monitoring requirements

Effluent monitoring requirements include composite samples every 2 weeks

TERMINOLOGY

OUTFALL

Pipe or other conduit, sometimes with diffusers, that conveys final effluent to a receiving water

RECEIVING WATER

A stream, river, lake, bay, or coastal water that receives treated effluent

WATERS OF THE U.S.

Waters (or impoundments or tributaries of those waters) currently used, or used in the past, for interstate or foreign commerce, including all tidal waters, plus the territorial seas and interstate waters and wetlands

TERMINOLOGY

POLLUTANT

Any type of industrial, municipal, or agricultural waste discharged into water; very broadly defined

POINT SOURCE

Any discernible, confined and discrete conveyance, such as a pipe, ditch, channel, tunnel, conduit, discrete fissure, or container; also broadly defined

NPDES

National Pollutant Discharge Elimination System; governs discharge of pollutants from point sources into waters of the U.S.

WHAT TO ASK YOUR UTILITY PARTNERS



- What influent monitoring requirements does your current NPDES permit contain?
 - What parameters do you need to measure?
 - How frequently do you need to measure them?
 - What type of samples do you need to take and where do you need to take them to satisfy the influent monitoring requirements?
- How do you expect your influent monitoring requirements to change, if at all, in future permits?

NPDES PERMIT RESOURCES



NPDES FAQs on
[epa.gov](https://www.epa.gov)



Enforcement and
Compliance History Online
(ECHO) data downloads on
echo.epa.gov



Fact sheet on
NPDES permits and
wastewater surveillance
on [nwbe.org](https://www.nwbe.org)



This was Part 4 of WASTEWATER 101: Where does treated water go?

Other parts in the series include:

Part 1: What is wastewater?

Part 2: How is wastewater collected?

Part 3: How is wastewater treated?

Part 5: How is water quality monitored?

Part 6: Who works in the wastewater sector?

Thank you!