

US EPA ARCHIVE DOCUMENT

September 2012
FACT SHEET
Authorization to Discharge under the
National Pollutant Discharge Elimination System
for the
Navajo Tribal Utility Authority – Shiprock Wastewater Treatment Facility
NPDES Permit No. NN0020621

Applicant address: Navajo Tribal Utility Authority (“NTUA”)
P.O. Box 170
Fort Defiance, Arizona 86504

Applicant Contact: Harry L. Begaye, EPA Technical Assistant
(928) 729-6208

Facility Address: NTUA Shiprock Wastewater Treatment Facility
P.O. Box 1749
Shiprock, New Mexico 87420-1749

Facility Contact: Eugene D. John, District Manager
(928) 729-4721

I. Summary

The NTUA was issued a National Pollutant Discharge Elimination System (“NPDES”) Permit (No. NN0020621) on July 11, 2007, for its Shiprock wastewater treatment facility, pursuant to the U.S. Environmental Protection Agency (“U.S. EPA”) regulations set forth in Title 40, Code of Federal Regulations (“CFR”) Part 122.21. The permit was effective July 14, 2007, through midnight, July 13, 2012. NTUA applied to U.S. EPA Region 9 for reissuance on February 24, 2012. All the terms and conditions of the 2007 permit are in effect until the reissuance of a new permit. This fact sheet is based on information provided by the applicant through its application and discharge data submittal, along with the appropriate laws and regulations.

Pursuant to Section 402 of the Clean Water Act (“CWA”), the U.S. EPA is proposing issuance of the NPDES permit renewal to NTUA (permittee) for the discharge of treated domestic wastewater to receiving waters named San Juan River, in Segment 2401 of the San Juan River basin, all waters of the United States.

II. Description of Facility

The NTUA Shiprock wastewater treatment facility is located in Shiprock, approximately 2 miles northwest of Highway 491 and ½ mile north of Highway 64 in San Juan County, New Mexico, within the Northeastern portion of the Navajo Nation. The facility serves approximately 6,000 customers and has a design flow rate of 1.0 million gallons per day (“MGD”). The facility receives domestic wastewater and flows from other sources such as an Indian Health Services (IHS) hospital, a dental office, a college, a construction maintenance yard and several car washes

and restaurants. According to NTUA's 2012 permit application, the average discharge rates were 0.47 MGD in 2010, 0.47 MGD in 2011 and 0.80 MGD in 2012. And the maximum daily flow rates were 0.72 MGD, 0.84 MGD and 0.97 MGD for 2010, 2011 and 2012, respectively. The design flow capacity basis of 1.0 MGD was used in determining the permit limits in the previous permit and is being used in the proposed permit.

Treatment at the entrance includes a mechanical bar screen/comminutor, a grit chamber, and a Parshall flume with a flow meter at the influent and effluent stations of the plant. Treatment includes primary clarification, trickling filtration, secondary sedimentation, and disinfection. Primary clarification is achieved when wastewater flows by gravity to the primary clarifier where solids are separated and pumped to a digester and the liquid portion flows to a wet well. Secondary treatment is provided with wastewater flowing to a splitter box that directs to either of two (2) trickling filters then to a collection box before entering the aeration basin and secondary clarifier. The trickling filters are each equipped with a center column and distribution arms. The activated sludge is redirected back to the aeration basin. The top is skimmed and the sludge is pumped to the second (old) clarifier where it is then sent to the wet well and back to the trickling filter. The digester system consists of two anaerobic digesters with floating covers, mixing units, and a heating system. Once digested, the remaining material is placed into six sludge drying beds. Disinfection is accomplished with ultraviolet (UV) lamps that produce radiation to destroy bacteria, viruses and other microorganisms within the wastewater. In the event that the UV system is inoperable, chlorination along with dechlorination will be employed as a backup disinfection system. During major maintenance events or when no discharge is required, a backup holding pond is used to store wastewater which can be pumped back to the headworks. Treated effluent is discharged from Outfall No. 001 into the San Juan River. Any sampling and monitoring under the proposed permit shall be performed at Outfall No. 001.

The Navajo Nation EPA's ("NNEPA") conducted a compliance evaluation inspection (CEI) on March 29, 2012 and noted inadequate operation and maintenance and malfunctioning equipment that may be causing improper readings and/or exceedances of several permit discharge limits. Listed deficiencies included a broken pH meter, inoperable blowers that may be causing exceedances in biochemical oxygen demand (BOD₅) discharge limit, and a need to upgrade the UV disinfection system to address the ongoing problem with *E. Coli* exceedances. NNEPA also found there was no backup system in the event of an electrical outage.

According to information from the CEI report, NNEPA was informed that IHS has planned to add approximately 100 new customers to the system in 2013. The proposed increased flow will be coming from farm housing and Blueberry Hill residents that are currently on septic systems. IHS has plans to do away with the septic systems and transfer these homes to the NTUA system.

III. Basis of Proposed Permit Requirements

A. Applicable Technology-Based Effluent Limitations

Section 301 of the CWA established a required performance level, referred to as "secondary treatment," that all POTWs were required to meet by July 1, 1977. Federal secondary treatment effluent standards for POTWs are contained in Section 301(b)(1)(B)

of the CWA. Implementing regulations for Section 301(b)(1)(B) are found at 40 CFR Part 133. The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. These technology-based effluent limits apply to all municipal wastewater treatment plants, and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD₅ and TSS. The requirements contained in the draft permit are necessary to prevent violations of applicable treatment standards.

B. Navajo Nation Surface Water Quality Standards

In accordance with 40 CFR 122.44(d), the need for discharge limitations for all pollutants that may impact applicable water quality criteria and water quality standards must be evaluated. As part of this evaluation, discharge limitations are based on application of the water quality standards. USEPA approved the 1999 Navajo Nation Surface Water Quality Standards (“NNSWQS”), on March 23, 2006. The NNSWQS were revised in 2007 and approved by the EPA on March 26, 2009. A 2010 *draft* NNSWQS revision is currently under review by NNEPA and USEPA. The approved 1999 Navajo Nation water quality standards, the 2007 revision and the 2010 *draft* revisions will be used on a best professional judgment (“BPJ”) basis for purposes of developing water quality based effluent limitations. The requirements contained in the proposed permit are necessary to prevent violations of applicable water quality standards.

IV. Determination of Effluent Limitations, Monitoring, and Reporting Requirements

A. Federal Secondary Treatment Effluent Discharge Limitations

The proposed permit contains discharge limitations for biochemical oxygen demand (BOD₅), total suspended solids (TSS) and priority toxic pollutants. For both BOD₅ and TSS, the arithmetic means of values, by weight, for effluent samples collected in a period of 30 consecutive calendar days shall not exceed 15 percent of the arithmetic mean of values, by weight, for influent samples collected at approximately the same times during the same period. These BOD₅ and TSS limits are identical to those of the previous permit.

Discharge Limitations					
Discharge Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency
Flow ¹	GPD	-- ²	n/a	-- ²	Instantaneous
BOD ₅ ³	mg/l	30	45	--	3/Month
	kg/day	114	170	--	
TSS ³	mg/l	30	45	--	3/Month
	kg/day	114	170	--	
Priority Pollutants ⁴	µg/l	n/a	n/a	-- ²	Once/1 st Quarter during Year 5

NOTES:

1. No flow limit is set at this time but influent and effluent flows must be monitored and reported. The monitoring frequency is once/month.
2. Monitoring and reporting required. No limitation is set at this time.
3. Under 40 CFR Section 122.45(f), mass limits are required for BOD₅ and TSS. The concentration limits for BOD₅ and TSS shall not exceed a monthly average of 30 mg/l and a weekly average of 45 mg/l, consistent with 40 CFR Section 133.102(a). The mass limits are calculated based upon the 1.0 MGD design flow.
4. Priority Pollutants: During Year 5 of the permit, the permittee shall monitor for the full list of priority pollutants in the Code of Federal Register (CFR) at 40 CFR Part 423, Appendix A. No limit is set at this time.

B. Water Quality Based Effluent Limitations (“WQBELs”)

Water quality-based effluent limitations, or WQBELS, are required in NPDES permits when the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an excursion above any water quality standard. [40 CFR 122.44(d)(1)].

When determining whether an effluent discharge causes, has the reasonable potential to cause, or contributes to an excursion above narrative or numeric criteria, the permitting authority shall use procedures which account for existing controls on point and non point sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity) and where appropriate, the dilution of the effluent in the receiving water [40 CFR 122.44 (d)(1)(ii)].

EPA evaluated the reasonable potential to discharge toxic pollutants according to guidance provided in the *Technical Support Document for Water Quality-Based Toxics Control* (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991) and the *U.S. EPA NPDES Permit Writers Manual* (Office of Water, U.S. EPA, December 1996). These factors include:

1. Applicable standards, designated uses and impairments of receiving water
2. Dilution in the receiving water
3. Type of industry
4. History of compliance problems and toxic impacts
5. Existing data on toxic pollutants - Reasonable Potential analysis

1. **Applicable standards, designated uses and impairments of receiving water**

The designated uses of the receiving water (San Juan River, *perennial* in Segment 2401 of the San Juan River Basin) as defined by the 2007 NNSWQS and *draft* 2010 NNSWQS revisions, are domestic water supply, primary and secondary human contact, agricultural water supply, fish consumption, aquatic & wildlife habitat, and livestock watering (Table 205.1, page 24).

2. Dilution in the receiving water

Discharge from Outfall 001 is to San Juan River with natural flows throughout the year. However, given the applicable designated uses of the river listed in Section B.1 above (eg. domestic water supply, human contact, fish consumption, etc.), no dilution of the effluent has been considered in the development of water quality based effluent limits applicable to the discharge.

3. Type of industry

Typical pollutants of concern in untreated and treated domestic wastewater include ammonia, nitrate, oxygen demand, pathogens, temperature, pH, oil and grease, and solids. Chlorine may also be of concern due to treatment plant disinfection operations and therefore, dechlorination may be necessary to minimize impact on water quality based effluent limits.

4. History of compliance problems and toxic impacts

Review of the discharge monitoring reports (DMRs) from January 2007 to December 2011 showed numerous exceedances of the permit limits.

Parameter	NPDES Permit Effluent Limitation Exceedences January 2007 to December 2011
BOD ₅	11 out of 60 sample results
TSS	6 out of 60 sample results
Nitrogen Ammonia (NH ₃ -N)	34 reporting violations out of 54 sample results
<i>E. coli</i>	36 out of 54 sample results
BOD ₅ ,% removal	11 out of 60 sample results

<u>NPDES Permit Effluent Limitation Exceedences</u> <u>July 2010 to December 2011</u>				
DATE	PARAMETER	LIMIT	RESULT	UNIT
July 2010	BOD ₅ , monthly average, concentration	30	58.9	mg/l
July 2010	BOD ₅ , weekly average, concentration	45	65.1	mg/l
July 2010	pH, maximum	8.8	9.0	Std units
July 2010	<i>E. Coli</i> , monthly average, concentration	126	2420	#/100ml
July 2010	<i>E. Coli</i> , daily maximum, concentration	235	2420	#/100ml

NPDES Permit Effluent Limitation Exceedences
July 2010 to December 2011 (continued)

DATE	PARAMETER	LIMIT	RESULT	UNIT
July 2010	BOD ₅ , percent removal	85	64	%
August 2010	BOD ₅ , monthly average, concentration	30	53.2	mg/l
August 2010	BOD ₅ , weekly average, concentration	45	56.8	mg/l
August 2010	BOD ₅ , percent removal	85	65	%
September 2010	<i>E. Coli</i> , monthly average, concentration	126	2420	#/100ml
September 2010	<i>E. Coli</i> , daily maximum, concentration	235	2420	#/100ml
October 2010	<i>E. Coli</i> , daily maximum, concentration	235	816	#/100ml
January 2011	<i>E. Coli</i> , daily maximum, concentration	235	>2419	#/100ml
February 2011	<i>E. Coli</i> , daily maximum, concentration	235	727	#/100ml
May 2011	pH, minimum	6.6	6.29	Std units
June 2011	pH, minimum	6.6	6.37	Std units
July 2011	pH, minimum	6.6	6.28	Std units
August 2011	pH, minimum	6.6	6.47	Std units
August 2011	<i>E. Coli</i> , daily maximum, concentration	235	326	#/100ml
September 2011	pH, minimum	6.6	6.38	Std units
September 2011	<i>E. Coli</i> , daily maximum, concentration	235	285	#/100ml
October 2011	pH, minimum	6.6	6.13	Std units
November 2011	pH, minimum	6.6	6.53	Std units
December 2011	pH, minimum	6.6	6.56	Std units

5. Existing data on toxic pollutants

No existing data is available on toxic pollutants.

C. Rationale for WQBELs

Effluent Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency
Total Residual Chlorine ¹	µg/l	--	--	11	3/Month
<i>E. Coli</i> ²	CFU/100 ml	126	--	235	3/Month
Total Ammonia ³	mg/l	--	--	--	Monthly
TDS ⁴	mg/l	--	--	--	Monthly
pH ⁵	std unit	between 6.6 to 9.0			Monthly
Temperature ⁶	deg F	--	--	--	Monthly
Whole Effluent Toxicity Testing ⁷	TUc	--	--	--	Monthly

NOTES:

- Total Residual Chlorine.** If chlorination is used for disinfection of the effluent, dechlorination is also necessary prior to discharge. No single sample shall exceed 11 µg/l based on the NNSWQS for protection of aquatic & wildlife habitat and livestock watering (Table 206.1, page 32 of the 2007 NNSWQS and 2010 *draft* NNSWQS revisions.) The monthly average limit of 5 µg/l in the previous permit is not included the proposed permit, consistent with updated NNSWQS.
- E. coli*.** In the proposed permit, the monthly geometric mean of *E. coli* bacteria shall not exceed 126/100 ml and 235/100 ml as a single sample maximum. The limits reflect the more stringent standards for protection of domestic water supply and primary human contact (page 14 of 2007 NNSWQS and 2010 *draft* NNSWQS revisions.)
- Total Ammonia.** In accordance with the 2007 NNSWQS and 2010 *draft* NNSWQS revisions for acute and chronic ammonia limits for protection of aquatic and wildlife habitat, the proposed permit contains effluent limitations for total ammonia. The ammonia limits are temperature and pH dependent and are listed in Table 206.2 and Table 206.3, pages 36-37 of 2007 NNSWQS and 2010 *draft* NNSWQS revisions. The monitoring frequency is set at monthly.
- Total Dissolved Solids.** No limit is proposed but the regulations at 40 CFR 122.44(i) set forth requirements for monitoring as determined to be necessary. This requirement is consistent with the previous permit.

5. **pH.** To ensure adherence to the minimum and maximum pH levels designated by the Navajo Nation for the receiving water, monthly pH monitoring is required in the permit for protection of primary and secondary human contact, and aquatic & wildlife habitat and livestock watering (page 14 of 2007 NNSWQS and pages 14-15 of 2010 draft NNSWQS revisions.) In order to support the Navajo Nation's established ammonia standards, which vary with the pH of the effluent, pH monitoring is to be performed concurrently with ammonia monitoring.
6. **Temperature.** Also to support the Navajo Nation's established ammonia standards and their dependence on temperature, monthly monitoring for temperature is to be performed concurrently with ammonia monitoring.
7. **Whole Effluent Toxicity (WET).** It is U.S. EPA Region 9's policy that all continuous dischargers be required to perform WET testing. WET testing is intended to demonstrate that there are no unexpected toxic components of the discharge escaping to the receiving water undetected, and to prompt a response if they are present. The proposed permit therefore requires chronic toxicity testing to be conducted **monthly** using a 24-hour composite sample of the treated effluent for fathead minnow (*Pimephales promela*), daphnid (*Ceriodaphnia dubia*) and an alga species (*Selenastrum capricornutum*). This is a new requirement for this permit. If no toxicity is found in the test results during the first 12 monthly test results, the testing frequency is reduced to a **quarterly** basis thereafter.

V. Reporting

The proposed permit requires discharge data obtained during the previous three months to be summarized on monthly DMR forms and reported quarterly. If there is no discharge for the month, report "C" in the No Discharge box on the DMR form for that month. These reports are due January 28, April 28, July 28, and October 28 of each year. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the U.S. EPA and the Navajo Nation EPA.

VI. General Standards

The proposed permit sets general standards that are narrative water quality standards contained in the Navajo Nation Water Quality Standards, Section 203. These general standards are set forth in Section B. General Discharge Specifications of the permit.

VII. Permit Reopeners

- A. At this time, there is no reasonable potential to establish any other water quality-based limits. Should any monitoring indicate that the discharge cause, has the reasonable potential to cause, or contributes to excursion above a water quality criterion, the permit may be reopened for the imposition of water quality-based limits and/or whole effluent toxicity limits. The proposed permit may be modified, in accordance with 40 CFR 122 and 124, to include appropriate conditions or effluent limits, monitoring, or other conditions to implement new

regulations, including U.S. EPA-approved new Tribal water quality standards; or to address new information indicating the presence of effluent toxicity or the reasonable potential for the discharge to cause or contribute to exceedances of water quality standards.

- B. In accordance with 40 CFR 122.44(c), EPA may promptly modify or revoke and reissue any permit issued to a treatment works treating domestic sewage (including “sludge only facilities”) to incorporate any applicable standard for sewage sludge use or disposal promulgated under section 405(d) of the CWA, if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in the permit.

VIII. Biosolids Requirements

The permittee shall submit a report 60 days prior to disposal of biosolids. The report shall discuss the quantity of biosolids produced, the treatment applied to biosolids including process parameters, disposal methods, and, if land applied, analyses for Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Molybdenum, Nickel, Zinc, and Selenium, and organic-N, ammonium-N, and nitrate-N, all expressed in mg/kg biosolids on a 100% dry weight basis. The permittee shall comply with all standards for biosolids use and disposal at Section 405(d) of the CWA, and 40 CFR Parts 257, 258 and 503.

X. Threatened and Endangered Species and Critical Habitat

A. Background:

Section 7 of the Endangered Species Act (ESA) of 1973 requires Federal agencies such as EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any actions authorized, funded or carried out by the Agency are not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species.

Since the issuance of NPDES permits by EPA is a Federal action, consideration of a permitted discharge and its effect on any federally-listed species is appropriate. The proposed NPDES permit authorizes the discharge of treated domestic wastewater to San Juan River, a water of the United States.

The information below is listed in the Navajo Nation’s Department of Fish & Wildlife Natural Heritage Program (NHP) database. The FWS has deferred all of its survey and information collection in the Navajo Nation to the Navajo Nation NHP.

Based on information provided by the Navajo Nation NHP on April 11, 2012, NHP identified federally-listed species known to occur on or near the project site as follows:

- Mesa Verde Cactus (*Sclerocactus mesae-verdae*), ESA threatened

- Southwestern Willow Flycatcher (*Empidonax traillii extimus*), ESA endangered (known to occur within 3 miles of the project site)

For species of concern with potential to occur on the 7.5 minute Shiprock, New Mexico quadrangle containing the project boundary, NHP identified federally-listed species as follows:

- Mountain Plower (*Charadrius montanus*), ESA threatened
- Yellow-billed Cuckoo (*Coccyzus americanus*), ESA candidate
- Roundtail Chub (*Gila robusta*), ESA threatened
- Black-footed Ferret (*Mustela nigripe*), ESA endangered
- Colorado Pikeminnow (*Ptychocheilus lucius*), ESA endangered
- Razorback Sucker (*Xyrauchen texanus*), ESA endangered

B. EPA's Finding:

This permit authorizes the discharge of treated wastewater in conformance with the federal secondary treatment regulations and the Navajo Nation Surface Water Quality Standards. These standards are applied in the permit both as numeric and narrative limits. The standards are designed to protect aquatic species, including threatened and endangered species, and any discharge in compliance with these standards should not adversely impact any threatened and endangered species.

EPA believes that effluent released in compliance with this permit will have no effect on any federally-listed threatened or endangered species or its critical habitat that may be present in the vicinity of the discharge. The treatment facility has been in existence for some time, and no new construction or modifications will be made to it due to the proposed NPDES permit. Therefore, no requirements specific to the protection of endangered species are proposed in the permit. EPA may decide that changes to the permit may be warranted based on receipt of new information. A re-opener clause has been included should new information become available to indicate that the requirements of the permit need to be changed.

XI. Administrative Information -- Public Notice, Public Comments, and Requests for Public Hearings

In accordance with 40 CFR 124.10, public notice shall be given by the U.S. EPA Director that a draft NPDES permit has been prepared by mailing a copy of the notice to the permit applicant and other Federal and State agencies, and through publication of a notice in a daily or weekly newspaper within the area affected by the facility. The public notice shall allow at least 30 days for public comment on the draft permit.

In accordance with 40 CFR 124.11 and 12, during the public comment period, any interested person may submit written comments on the draft permit, and may request a public hearing if no hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. In

accordance with 40 CFR 124.13, all persons must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position within thirty (30) days from the date of the public notice. Comments may be received either in person or mailed to:

U.S. Environmental Protection Agency, Region 9
NPDES Permits Office (WTR-5)
Attn: Linh Tran
75 Hawthorne Street
San Francisco, CA 94105
Telephone: (415) 972-3511

Interested persons may obtain further information, including copies of the draft permit, fact sheet/statement of basis, and the permit application, by contacting Linh Tran (WTR-5) at the U.S. EPA address, above. Copies of the administrative record (other than those which U.S. EPA maintains as confidential) are available for public inspection between 8:00 a.m. and 4:30 p.m., Monday through Friday (excluding federal holidays).

In accordance with 40 CFR 124.12, the U.S. EPA Director shall hold a public hearing when, on the basis of requests, a significant degree of public interest in the draft permit exists. The Director may also hold a public hearing when, for instance, such a hearing might clarify one or more issues involved in the permit decision. Public notice of such hearing shall be given as specified in 40 CFR 124.10.