

April 2018
FACT SHEET
Authorization to Discharge under the
National Pollutant Discharge Elimination System
for the
Navajo Tribal Utility Authority – Kayenta Wastewater Treatment Lagoon
NPDES Permit No. NN0020281

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I. STATUS OF PERMIT

Pursuant to the U.S. Environmental Protection Agency (“USEPA”) regulations set forth in Title 40, Code of Federal Regulations (“CFR”) Part 122.21, the NTUA was issued a National Pollutant Discharge Elimination System (“NPDES”) Permit (No. NN0020280) on October 18, 2012, for its Kayenta wastewater treatment lagoon facility in Navajo County, Arizona. The permit was effective December 1, 2012, through midnight, November 30, 2017. NTUA submitted a renewal application on June 1, 2017 and updated information on November 14, 2017 and March 6, 2018. This fact sheet is based on information provided by the discharger 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 for the discharge of treated effluent to Laguna Wash, a tributary to Chinle Wash, a tributary to the San Juan River, all waters of the United States.

II. SIGNIFICANT CHANGES TO PREVIOUS PERMIT

1. The proposed permit includes a reduction in the facility design capacity from 0.90 million gallons per day (“MGD”) to 0.88 MGD, and corresponding reduction in mass discharge limits in result of plant modifications and reconfiguration.

2. The proposed permit, though similar to the previous permit issued in 2012, introduces a different calculation for determining compliance with total ammonia. In addition,

measurements for temperature are required to be taken concurrently with ammonia and pH measurements.

3. The proposed permit includes a new requirement for submitting DMRs electronically through EPA’s NetDMR system.

4. The proposed permit also includes a new requirement for submitting annual biosolids reports electronically using EPA’s NPDES Electronic Reporting Tool (“NeT”).

5. The proposed permit also includes a new requirement for developing an asset management program (AMP) to cover the treatment plant and collection system.

III. GENERAL DESCRIPTION OF FACILITY

The NTUA Kayenta wastewater treatment facility is located approximately 3 miles Northwest of Junction US 160 and 163 in Navajo County, Arizona, within the north central portion of the Navajo Nation. The Kayenta WWTF, a Publicly Owned Treatment Works (“POTW”) is considered a minor discharger. The facility serves a population of approximately 3,600, receiving only domestic sewage with a design flow capacity of 0.88 million gallons per day (MGD), revised downward from 0.90 MGD in a Kayenta Capacity calculation prepared by Mr. Daniel Boivin P.E. on February 22, 2018, and submitted to EPA on March 6, 2018. The design flow capacity calculation, herein attached to this permit fact sheet, is incorporated as the basis for the proposed permit limit calculation.

The facility is under an Administrative Order on Consent with U.S. EPA and Navajo Nation EPA to achieve compliance with the NPDES permit, as discussed in the following Section V. Effluent Characteristics. Based on information from the permittee, the annual average flow rates were 0.29 MGD in 2015, 2016 and this year. And maximum daily flow rates were 0.50 MGD, 0.97 MGD and 0.57 MGD for 2015, 2016 and 2017, respectively. The 2017 flow data table was provided to EPA in a “Kayenta Lagoon Performance Implementation and Monitoring Plan” prepared by Mr. David Shoultz, Principal Engineer of the NTUA in October 2017.

2017 DMR Flow Data

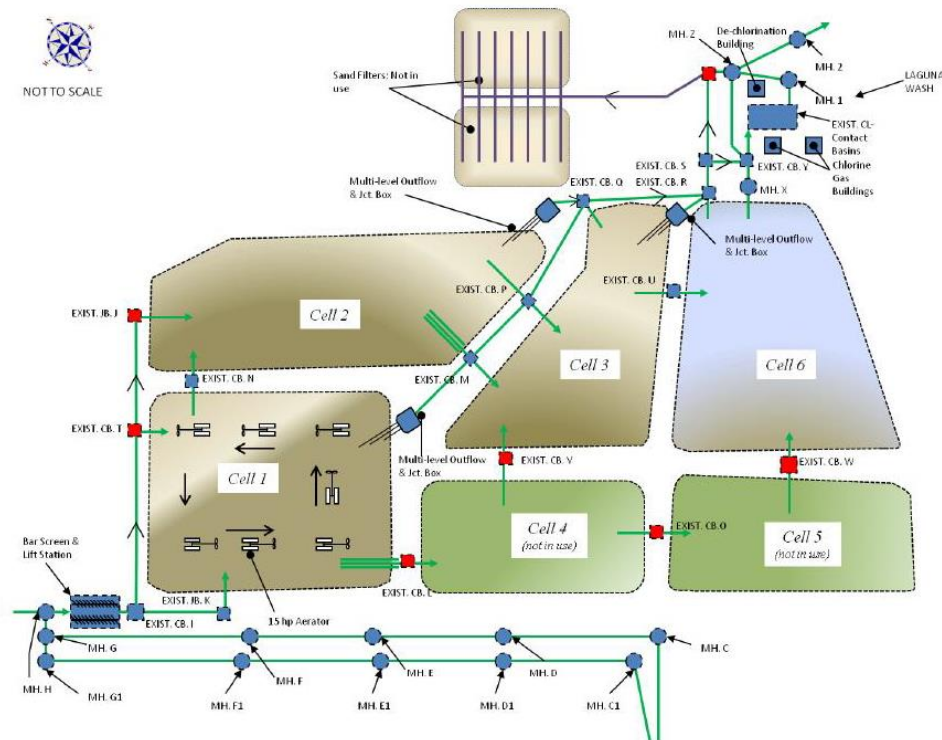
Month	Flow Influent-MGD Monthly (Avg./Max)	Flow Effluent-MGD Monthly (Avg./Max)
January	.382/.445	.301/.568
February	.328/.568	.171/.283
Mar	.392/.568	.149/.149
Apr	.392/.568	0.149
May	.420/.600	.160/.190
June	.352/.600	.141/.190
July	.390/.560	.090/.218
August	0.40/0.566	.207/.283
September	.408/.648	.145/.237

In operation since the early 1970's, the facility included a barscreen with a 2-inch opening, six (6) facultative cells operating in series, an ultrasonic flow meter to measure the influent and effluent flows, a lift station, and a chlorination contact chamber for disinfection, followed by sulfur dioxide dechlorination. Cells #1 and #2 underwent aeration process, Cells #3 and #4 were used for sedimentation, while Cells #5 and #6 were used as polishing ponds. Previously, a portion of the treated effluent was pumped to a holding pond at the Monument Valley Unified School District, located southwest of the treatment plant to be used for irrigation of the school ground although it is believed the reuse practice had ceased.

The Navajo Nation EPA ("NNEPA") conducted a compliance evaluation inspection on June 26, 2015, and noted that the first four cells (Cells #1 to #4) had approximately 3 to 4 feet of freeboard and no objectionable odor, while Cells #5 and #6 were not being utilized due to concern of long retention time. The Cell #2 liner appeared to be sagging, not properly protecting the cell wall to prevent erosion. There was notable sedimentation build up in the weir and chlorine contact chamber during the inspection.

The facility is currently undergoing renovation involving installation of a new headworks facility and cell reconfiguration with Cells #4 and #5 taken offline. NNEPA conducted a follow-up inspection on September 13, 2017, and noted the headworks construction project underway with a new mechanical bar screen, grit vortex and a new lift station. The inspector also found a broken baffle cable in Cell #1, a short circuiting occurring in Cell #3, and several junction boxes that contained stagnant water and debris.

FIGURE 7: Existing Plant (As Currently Operated)



IV. DESCRIPTION OF RECEIVING WATER

The discharge of treated domestic wastewater is from Outfall No. 001 to Laguna Wash, a tributary to Chinle Wash, a tributary to the San Juan River, all waters of the United States.

V. EFFLUENT CHARACTERISTICS

Review of DMRs from October 2012 through February 2018 showed that the facility had experienced numerous exceedances of limits for 5-day biochemical oxygen demand (“BOD₅”) and whole effluent toxicity (“WET”) and occasional exceedances of limits for total suspended solids (“TSS”) and *E. coli*, as detailed in Section VII.B.4.

The facility is under an Administrative Order on Consent (“AOC”) [Docket No. CWA-309(a)-16-011 (USEPA) and Docket No. NNCWA-AOC-2014-001 (Navajo Nation EPA)] to achieve compliance with the NPDES permit. Under the AOC, NTUA committed to submit a Compliance Plan and develop an Operation and Maintenance Plan to ensure compliance by July 30, 2016.

VI. BASIS OF PROPOSED PERMIT REQUIREMENTS

Section 301(a) of the Clean Water Act (“CWA”) provides that the discharge of any pollutant to waters of the United States is unlawful except in accordance with a National Pollutant Discharge Elimination System (“NPDES”) permit. Section 402 of the Act establishes the NPDES program. The program is designed to limit the discharge of pollutants into waters of the United States from point sources [40 CFR 122.1(b)(1)] through a combination of various requirements including technology-based and water quality-based effluent limitations.

Sections 402 and 301(b)(1)(C) of the CWA require that the permit contain effluent limitations to meet water quality standards. Specifically, the regulation under 40 CFR 122.44(d) states that an NPDES permit must contain:

“Water quality standards and State requirements: any requirements in addition to or more stringent than promulgated effluent limitations guidelines or standards under Sections 301, 304, 306, 307, 318 and 405 of CWA necessary to:

(1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality.”

Section 40 CFR 122.44(d)(i) states the following:

“Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines 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 water quality standard, including State narrative criteria for water quality.”

A. 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 applicable water quality standards. U.S. EPA approved the 1999 Navajo Nation Surface Water Quality Standards (“NNSWQS”), on March 23, 2006. The NNSWQS were revised in 2007 and approved by U.S. EPA on March 26, 2009. A 2015 *draft* NNSWQS revision has been under review by U.S. EPA. The approved 1999 NNSWQS, the 2007 revisions and the 2015 *draft* 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.

B. Applicable Technology-Based Effluent Limitations, Water Quality-Based Effluent Limitations (“WQBELs”) and BPJ

Technology-based effluent limitations require minimum levels of treatment based on currently available treatment technologies. 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.

VII. DETERMINATION OF NUMERICAL EFFLUENT LIMITATIONS

Typical pollutants of concern in untreated and treated domestic wastewater include ammonia nitrate, oxygen demand, pathogens, temperature, pH, oil and grease, and solids. US EPA proposes the following provisions and effluent discharge limitations for flow, BOD₅, TSS, *E. coli*, total dissolved solids (“TDS”), TRC and ammonia taken concurrent with temperature and pH measurements. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge by prior to entry into the receiving water.

A. Federal Secondary Treatment Effluent Discharge Limitations

The proposed permit contains discharge limitations for BOD₅, 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 cannot exceed 35 percent of the arithmetic mean of values, by weight, for influent samples collected at approximately the same times during the same period.

Discharge Limitations					
Discharge Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Monitoring Frequency
Flow ¹	MGD	-- ²	n/a	-- ²	Instantaneous
BOD ₅ ³	mg/l	45	65	--	Monthly
	kg/day	149	215	--	
TSS ⁴	mg/l	90	135	--	Monthly
	kg/day	297	446	--	
Priority Pollutants ⁵	µg/l	-- ²	n/a	-- ²	Once/1 st Quarter during Year 1

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 133.105, the discharge limits for BOD₅ shall not exceed a monthly average of 45 mg/l and a weekly average of 65 mg/l. The mass limits are calculated based upon the 0.88 MGD design flow.
4. Under 40 CFR Section, 122.45(f), the discharge limits for TSS shall not exceed a monthly average of 90 mg/l and a weekly average of 135 mg/l. These limitations (Alternative State Requirements) are consistent with 40 CFR 133.101(f), 133.103(c), 133.105(b) and (d). The mass limits are calculated based upon the 0.88 MGD design flow.
5. Priority Pollutants: During Year 1 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. Should the results reveal levels below the Navajo Nation Surface Water Quality Standards and EPA's National Water Quality Criteria for priority pollutants, monitoring will no longer be required for the remainder of the permit cycle.

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

The 2015 NNSWQS and established water quality criteria for the following beneficial uses (Laguna Wash, Chinle Wash, San Juan River in Segment 2401 of the San Juan River Basin) are defined by the NNSWQS as primary and secondary human contact, agricultural water supply, fish consumption, aquatic & wildlife habitat, and livestock watering (Table 205.1, page 27).

2. Dilution in the receiving water

Discharge from Outfall No. 001 is to Laguna Wash, a tributary to Chinle Wash, a tributary to the San Juan River, which may have no natural flow during most times of the year. Therefore, no dilution of the effluent has been considered in the development of WQBELs applicable to discharge.

3. Type of industry

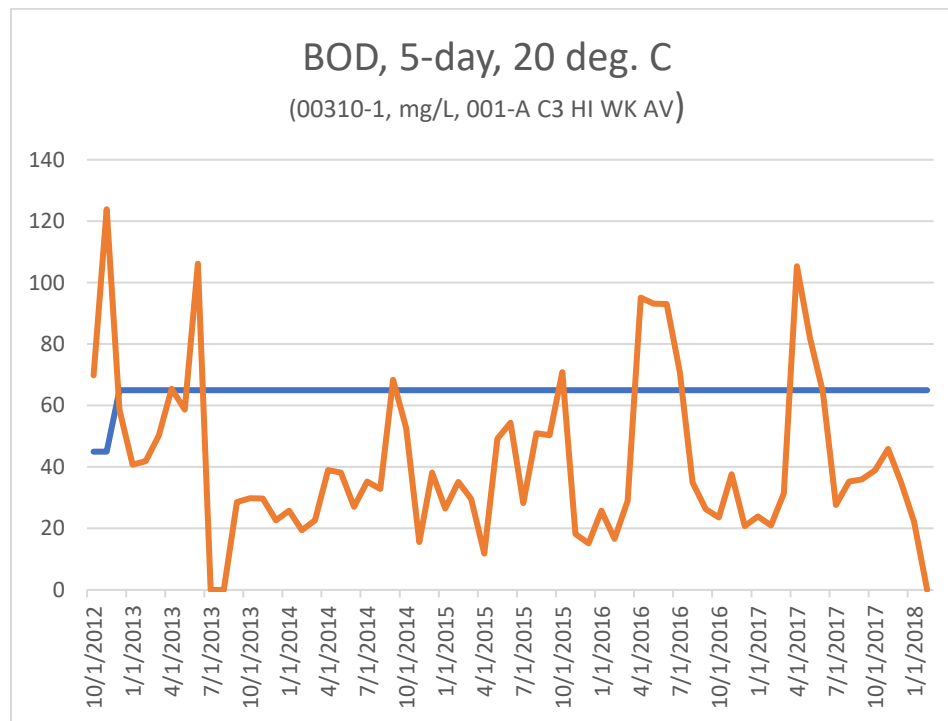
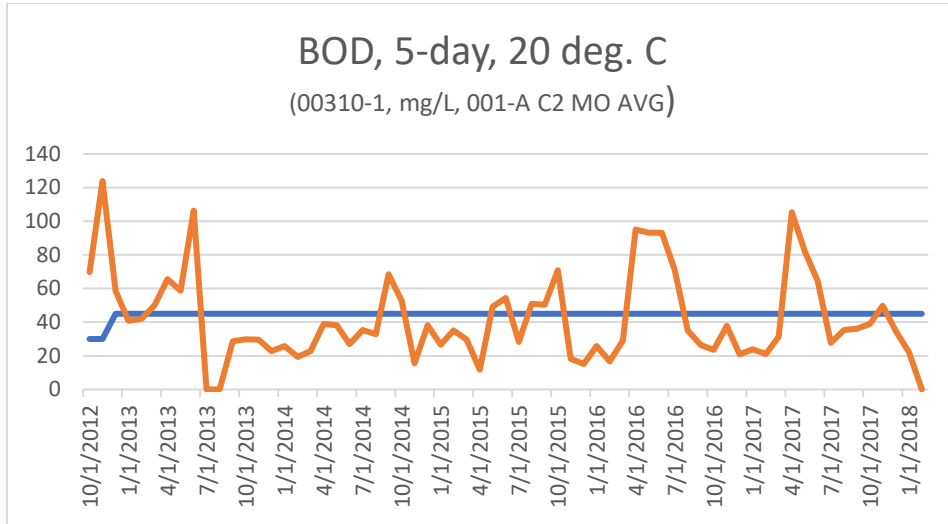
Typical pollutants of concern in untreated and treated domestic wastewater include ammonia nitrate, oxygen demand, pathogens, temperature, pH, oil and grease, and solids. Chlorine is of concern when using for disinfection, and therefore dechlorination is necessary to minimize impact on WQBELs.

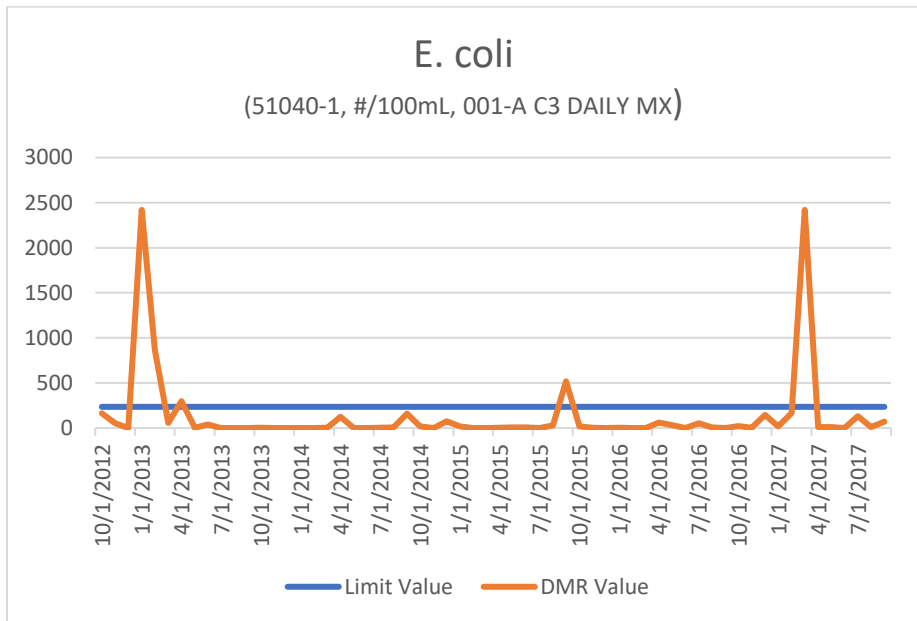
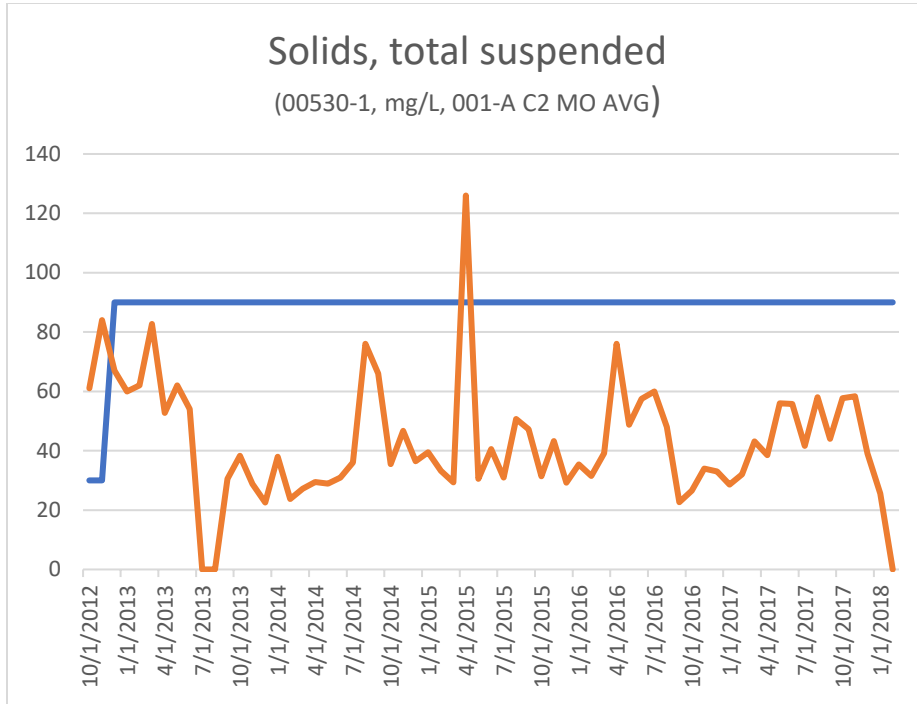
4. History of compliance problems and toxic impacts

Review of October 2012 to February 2018 DMR data showed numerous exceedances for BOD₅. Reports were often submitted late, 56 days or more.

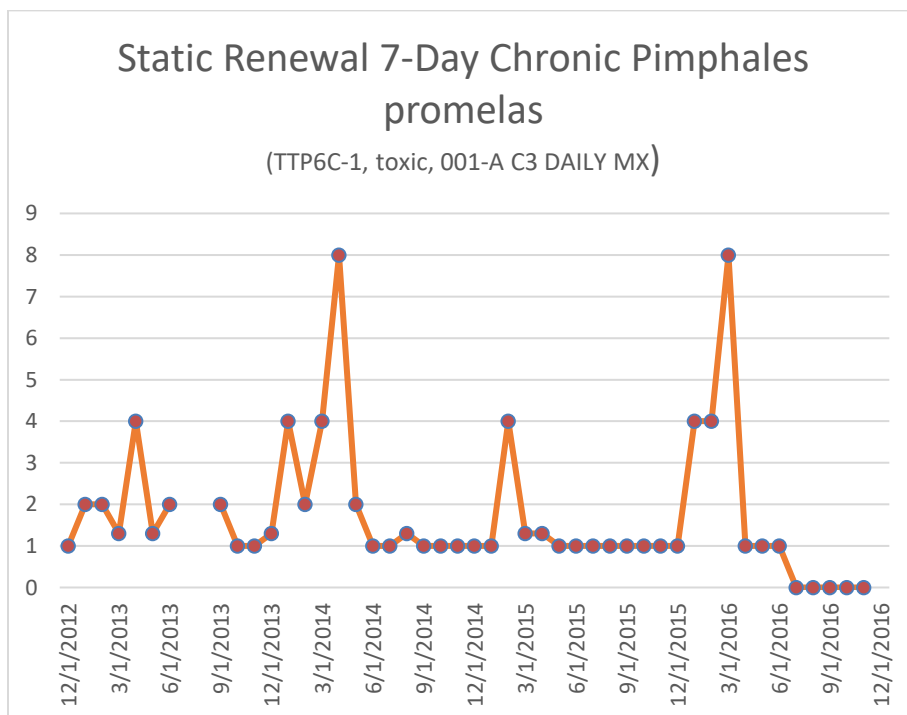
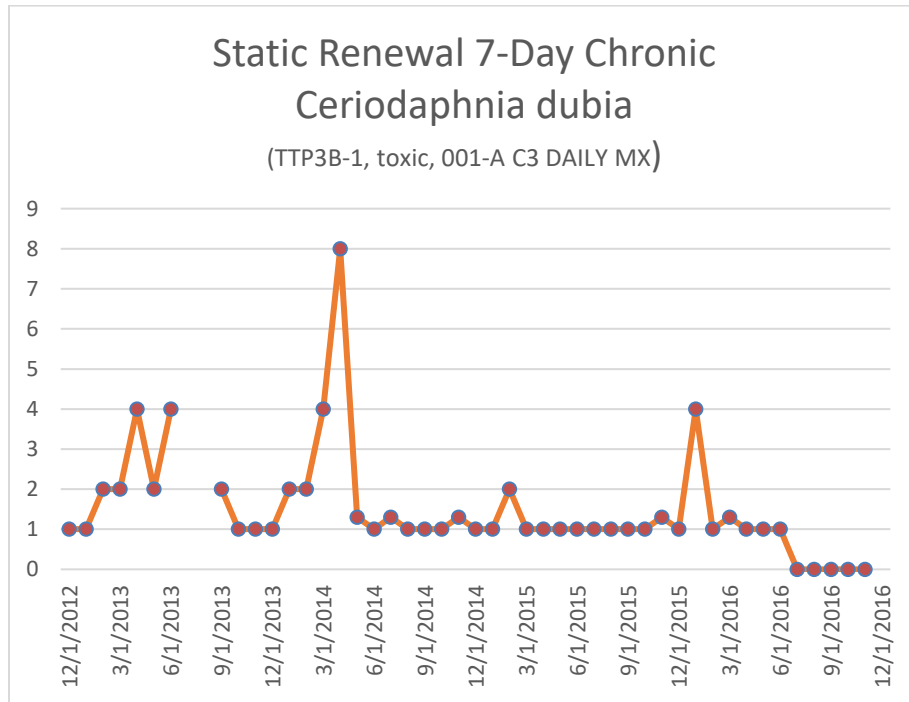
DATE	PARAMETER	LIMIT	RESULT	UNIT
October 2012	BOD ₅ , monthly average	30*	69.8	mg/l
October 2012	BOD ₅ , weekly average	45*	69.8	mg/l
October 2012	TSS, monthly average	30*	61	mg/l
October 2012	TSS, weekly average	45*	61	mg/l
November 2012	BOD ₅ , monthly average	30*	123.9	mg/l
November 2012	BOD ₅ , weekly average	45*	123.9	mg/l
November 2012	TSS, monthly average	30*	84	mg/l
November 2012	TSS, weekly average	45*	84	mg/l
December 2012	BOD ₅ , monthly average	30*	58.6	mg/l
* BOD ₅ and TSS monthly and weekly average limits were revised during January 2013 permit renewal to 45/65 and 90/135, respectively.				
January 2013	<i>E. coli</i> , daily maximum	235	2419.6	#/100ml
February 2013	<i>E. coli</i> , daily maximum	235	866.4	#/100ml
April 2013	<i>E. coli</i> , daily maximum	235	298.7	#/100ml
April 2013	BOD ₅ , monthly average	45	65.5	mg/l

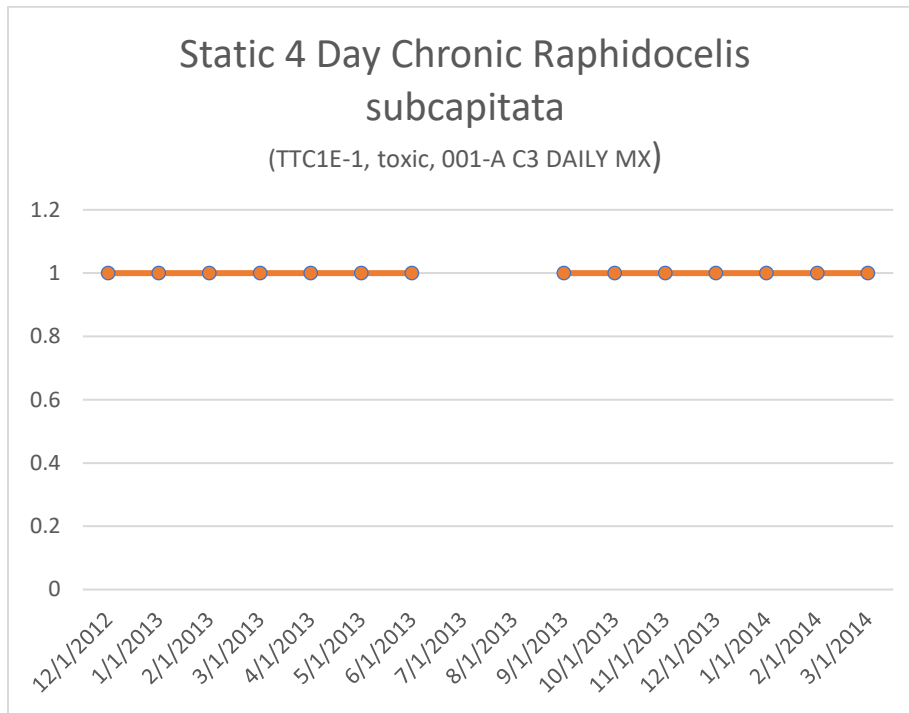
April 2013	BOD ₅ , weekly average	65	50.2	mg/l
May 2013	BOD ₅ , monthly average	45	58.7	mg/l
June 2013	BOD ₅ , monthly average	45	106.2	mg/l
June 2013	BOD ₅ , weekly average	65	106.2	mg/l
September 2014	BOD ₅ , monthly average	45	68.4	mg/l
September 2014	BOD ₅ , weekly average	65	68.4	mg/l
October 2014	BOD ₅ , monthly average	45	52.6	mg/l
April 2015	TSS, monthly average	90	126.0	mg/l
May 2015	BOD ₅ , monthly average	45	49.2	mg/l
June 2015	BOD ₅ , monthly average	45	54.4	mg/l
August 2015	BOD ₅ , monthly average	45	51.0	mg/l
September 2015	BOD ₅ , monthly average	45	50.4	mg/l
September 2015	<i>E. coli</i> , daily maximum	235	517.2	#/100ml
October 2015	BOD ₅ , monthly average	45	70.9	mg/l
October 2015	BOD ₅ , weekly average	65	70.9	mg/l
April 2016	BOD ₅ , monthly average	45	95.1	mg/l
April 2016	BOD ₅ , weekly average	65	95.1	mg/l
May 2016	BOD ₅ , monthly average	45	93.2	mg/l
May 2016	BOD ₅ , weekly average	65	93.2	mg/l
June 2016	BOD ₅ , monthly average	45	93.1	mg/l
June 2016	BOD ₅ , weekly average	65	93.1	mg/l
July 2016	BOD ₅ , monthly average	45	71.0	mg/l
July 2016	BOD ₅ , weekly average	65	71.0	mg/l
March 2017	<i>E. coli</i> , daily maximum	235	2419.6	#/100ml
April 2017	BOD ₅ , monthly average	45	105.3	mg/l
April 2017	BOD ₅ , weekly average	65	105.3	mg/l
May 2017	BOD ₅ , monthly average	45	81.9	mg/l
May 2017	BOD ₅ , weekly average	65	81.9	mg/l
June 2017	BOD ₅ , monthly average	45	64.5	mg/l





The permittee is required to perform whole effluent toxicity (WET) testing to demonstrate that no unexpected toxic components of the discharge are escaping to the receiving water undetected, and to prompt a response if they are present. In the charts below, results of above 1.0 TUC show likely presence of toxicity in the effluent during October 2012 to December 2016. The 2017 results showed no toxicity. WET test reports were often submitted late, 56 days or up to 175 days.





5. Existing data on toxic pollutants - Reasonable Potential analysis

The permittee did not provide expanded effluent testing data for the facility's treated wastewater discharge as part of the application for permit renewal. However, the permittee performed a priority pollutant scan in the first quarter of 2017 calendar year. The permit will continue requirements for monitoring, including WET testing, and EPA will continue to evaluate monitoring results to determine if additional effluent limitations are required in the future.

C. Rationale for WQBELs

Pursuant to the narrative surface water quality standards (Section 202 of 2007 NNSWQS and Section 203 of 2015 NNSWQS *draft* revisions), the discharge shall be free from pollutants in amounts or combinations that cause solids, oil, grease, foam, scum, or any other form of objectionable floating debris on the surface of the water body; may cause a film or iridescent appearance on the surface of the water body; or that may cause a deposit on a shoreline, on a bank, or on aquatic vegetation.

1. Determination of Effluent Limitation for *E. coli*

Presence of pathogens in untreated and treated domestic wastewater indicates that there is a reasonable potential for *E. coli* bacteria levels in the effluent to cause or contribute to an excursion above the water quality standards. In the proposed permit, the monthly geometric mean shall not exceed 126/100 ml as a monthly average and 575/100 ml as a single sample maximum. These limits are based on the NNSWQS for secondary human contact (p. 20). The monitoring frequency is once per month, consistent with the previous permit.

2. Total Dissolved Solids (TDS)

Presence of solids in untreated and treated domestic wastewater indicates that there is a reasonable potential for TDS levels in the effluent to cause or contribute to an excursion above the WQS. The regulations at 40 CFR 122.44(i) allow requirements for monitoring as determined to be necessary. The monitoring frequency is once per quarter, consistent with the previous permit.

3. Total Residual Chlorine (TRC)

Chlorination for disinfection purposes indicates that there is reasonable potential for TRC levels in the effluent to cause or contribute to an excursion above the WQS. Therefore, a TRC limit of 11 µg/l has been established in the proposed permit to protect the beneficial uses of the receiving waters. The monitoring frequency is once per month, consistent with the previous permit.

4. Ammonia (as N) and Ammonia Impact Ratio (“AIR”)

Presence of ammonia in untreated and treated domestic wastewater indicates that there is a reasonable potential for levels in the effluent to cause or contribute to an excursion above the water quality standards. In accordance with the NNSWQS 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 207.21 (page 68) of the *draft* 2015 NNSWQS revisions. They are also provided as Attachment C of the permit. The monitoring frequency is once per month, consistent with the previous permit.

Because ammonia criteria are pH and temperature-dependent, the permittee is required to calculate an AIR. The AIR is calculated as the ratio of the ammonia value in the effluent and the applicable ammonia standards as determined by using pH data to derive an appropriate value from the ammonia criteria table in Attachment D of the permit. The AIR limitation has been established as a monthly average of 1.0, equivalent to the standard. The permittee is required to report maximum daily and average monthly ammonia (as N) concentrations in addition to an average monthly AIR.

5. pH

Untreated and treated domestic wastewater could be contaminated with substance that affects the pH. Therefore, there is a reasonable potential for pH levels in the effluent to cause or contribute to an excursion above the water quality standards. In order to ensure adequate protection of beneficial uses of the receiving water, a maximum pH limit of 9.0 and a minimum limit of 6.5 S.U. are established in Section 206.C. of 2007 NNSWQS and Section 207 of the *draft* 2015 NNSWQS revisions. The monitoring frequency is once per month, consistent with the previous permit. 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 and temperature measurements.

6. Temperature

To support the Navajo Nation's established Ammonia standards and their dependence on temperature, monthly temperature monitoring is to be performed concurrently with ammonia and pH measurements.

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 requirement is consistent with the previous 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.

VIII. 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. The proposed permit includes a new requirement for electronically submitting compliance monitoring data by July 28, 2016, using the electronic reporting tools (NetDMR) provided by EPA Region 9. 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.

IX. 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.

X. 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 causes, 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 exceedences 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.

XI. SEWAGE SLUDGE REQUIREMENTS

Standard requirements for the monitoring, reporting, recordkeeping, and handling of sewage sludge are incorporated into the proposed permit, in accordance with 40 CFR 258 (for sewage sludge sent to a municipal landfill) and 40 CFR Part 503 (for sewage sludge placed in a sewage sludge-only surface disposal site, land applied as fertilizer, used in land reclamation, or incinerated). The permittee is required to submit annual sludge reports using EPA’s NPDES Electronic Reporting Tool (“NeT”) by February 19th of the following year. The permit also includes a requirement for submitting a report 120 days prior to disposal of sewage sludge.

XII. OTHER CONSIDERATIONS UNDER FEDERAL LAW

A. Anti-Degradation

USEPA’s antidegradation policy at 40 CFR Section 131.12 and the NNSWQS require that existing water uses and level of water quality necessary to protect the existing uses be maintained. As described in this fact sheet, the permit establishes effluent limits and monitoring requirements to ensure that all applicable water quality standards are met. The permit does not include a mixing zone; therefore, these limits will apply at the end of the pipe without consideration of dilution in the receiving water. Therefore, due to the low levels of toxic pollutants present in the effluent, the high level of treatment being obtained, and water quality-based effluent limitations, it is not expected that the discharge will adversely affect receiving water bodies.

B. Anti-Backsliding

Section 402(o) of the CWA prohibits the renewal or reissuance of an NPDES permit that contains effluent limits less stringent than those established in the previous permit, except as provided in the statute. The proposed permit is a renewal and therefore does not allow backsliding.

C. Impact to Threatened and Endangered Species

1. Background:

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1536) 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 U.S. EPA is a Federal action, consideration of a permitted discharge and its effect on any listed species is appropriate. The proposed NPDES permit authorizes the discharge of treated domestic wastewater to Laguna Wash, a tributary to Chinle Wash, a tributary to the San Juan River, all waters of the United States. The FWS has deferred all of its survey and information collection in the Navajo Nation to the Navajo Nation's Department of Fish & Wildlife Natural Heritage Program ("NHP"). Based on information listed in the NHP database, <http://www.nndfw.org>, NHP has identified no federally-listed endangered or threatened species that are known to occur on or near the project site.

2. EPA's Finding:

This permit authorizes the discharge of treated wastewater in conformance with the federal secondary treatment regulations and the NNSWQS. 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.

In considering all the information available, 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. Therefore, no requirements specific to the protection of endangered species are proposed in the permit.

D. Impact to National Historic Properties

Section 106 of the National Historic Preservation Act ("NHPA") requires federal agencies to consider the effect of their undertakings on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. Pursuant to activity authorized by this NPDES permit no new construction or disturbance of land is anticipated. Therefore, pursuant to the NHPA and 36 CFR §800.3(a)(1), EPA is making a determination that issuing the proposed NPDES permit does not have the potential to affect any historic properties or cultural properties. As a result, Section 106 does not require EPA to undertake additional consulting on this permit issuance.

E. Consideration of Environmental Justice (EJ) Impact

EPA conducted a screening level evaluation of vulnerabilities in the community posed to local residents near the vicinity of the permitted Kayenta wastewater treatment facility using EPA's EJSCREEN tool. The purpose of the screening is to identify areas disproportionately burdened by pollutant loadings and to consider demographic characteristics of the population living in the vicinity of the discharge when drafting permit conditions.

On April 9, 2018, EPA conducted an EJSCREEN analysis of the community near the vicinity of the outfall. Of the 11 environmental indicators screened through EJSCREEN, the evaluation determined elevated risk for the following factors:

Selected Variables	Percentile in State	Percentile in EPA Region	Percentile in USA
EJ Indexes			
EJ Index for Particulate Matter (PM 2.5)	88	71	87
EJ Index for Ozone	96	95	98
EJ Index for NATA* Diesel PM	60	45	66
EJ Index for NATA* Air Toxics Cancer Risk	76	67	82
EJ Index for NATA* Respiratory Hazard Index	67	49	70
EJ Index for Traffic Proximity and Volume	72	50	71
EJ Index for Lead Paint Indicator	71	51	68
EJ Index for Superfund Proximity	64	49	70
EJ Index for RMP Proximity	58	39	62
EJ Index for Hazardous Waste Proximity	68	48	69
EJ Index for Wastewater Discharge Indicator	N/A	73	76

The results showed that, at the time of this analysis conducted, the area in which the Kayenta facility is located were 76th percentile nationally for wastewater discharge indicator. The EJSCREEN analysis of demographic characteristics of the community living near the facility indicates the local population may be at relatively higher risk if exposed to environmental contaminants than the national population. Demographic characteristics that showed potentially sensitive scores were a high proportion of minority and low income population.

EPA also considers the characteristics of the wastewater treatment facility operation and discharges, and whether those discharges pose exposure risks that the NPDES permit needs to further address. EPA found no evidence to indicate the treatment facility discharge poses a significant risk to local residents. EPA concludes that the facility is unlikely to contribute to any EJ issues. Furthermore, EPA believes that by implementing and requiring compliance with the provisions of the Clean Water Act, which are designed to ensure full protection of human health, the permit is sufficient to ensure the effluent discharges do not cause or contribute to human health risk in the vicinity of the facility.

F. Asset Management

40 CFR 122.41(e) requires permittees to properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Asset management planning provides a framework for setting and operating quality assurance procedures and ensuring the permittee has sufficient financial and technical resources to continually maintain a targeted level of service. The proposed NPDES permit establishes asset management requirements to ensure compliance with the provisions of 40 CFR 122.41(e).

G. Impact to Coastal Zones

The Coastal Zone Management Act (CZMA) requires that Federal activities and licenses, including Federally permitted activities, must be consistent with an approved state Coastal Management Plan (CZMA Sections 307(c)(1) through (3)). Section 307(c) of the CZMA and implementing regulations at 40 CFR 930 prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the proposed activity

complies with the State (or Territory) Coastal Zone Management program, and the State (or Territory) or its designated agency concurs with the certification.

The proposed permit does not affect land or water use in the coastal zone.

H. Impact to Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSA) set forth a number of new mandates for the National Marine Fisheries Service, regional fishery management councils and other federal agencies to identify and protect important marine and anadromous fish species and habitat. The MSA requires Federal agencies to make a determination on Federal actions that may adversely impact Essential Fish Habitat (EFH).

The proposed permit contains technology-based effluent limits and numerical and narrative water quality-based effluent limits as necessary for the protection of applicable aquatic life uses. The proposed permit does not allow direct discharge to areas of essential fish habitat. Therefore, EPA has determined that the proposed permit will not adversely affect essential fish habitat.

XI. STANDARD CONDITIONS

A. Reopener Provision

At this time, there is no reasonable potential to establish any other water quality based limits. Should any monitoring indicate that the discharge causes, 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. In accordance with 40 CFR 122 and 124, this permit may be modified by EPA to include effluent limits, monitoring, or other conditions to implement new regulations, including EPA-approved 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. Standard Provisions

The permit requires the permittee to comply with EPA Region 9 “Standard Federal NPDES Permit Conditions”, included in the permit as Attachment A.

XII. ADMINISTRATIVE INFORMATION

A. Public Notice (40 CFR 124.10)

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft NPDES permit or other significant action with respect to an NPDES permit or application.

B. Public Comment Period (40 CFR 124.10)

Notice of the draft permit was placed on EPA Region 9 website at: <https://www.epa.gov/aboutepa/public-notices-meetings-and-events-pacific-southwest>, with a minimum of 30 days provided for interested parties to respond in writing to EPA. After the closing of the public comment period, EPA is required to respond to all significant comments at the time a final permit decision is reached or at the final permit issuance.

C. Public Hearing (40 CFR 124.12(c))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if EPA determines there is a significant amount of interest expressed during the 30-day public comment period or when it is necessary to clarify the issues involved in the permit decision.

D. Water Quality Certification Requirements (40 CFR 124.53 and 124.54)

For States, Territories, or Tribes with EPA approved water quality standards, EPA is requesting certification from the affected State, Territory, or Tribe that the proposed permit will meet all applicable water quality standards. Certification under section 401 of the CWA shall be in writing and shall include the conditions necessary to assure compliance with referenced applicable provisions of sections 208(e), 301, 302, 303, 306, and 307 of the CWA and appropriate requirements of Territory law.

XIII. CONTACT INFORMATION

Comments, submittals, and additional information relating to this proposal may be directed to:

Linh Tran
EPA Region IX
75 Hawthorne Street (WTR 2-3)
San Francisco, California 94105
415-972-3511
Tran.Linh@epa.gov

XIV. REFERENCES

- EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. Office of Water, EPA. EPA/505/2-90-001.
- EPA. 1996. *Regions IX & X Guidance for Implementing Whole Effluent Toxicity Testing Programs*, Interim Final, May 31, 1996.
- EPA. 2015. *National Recommended Water Quality Criteria*. Office of Water, EPA. Human Health Criteria Table. <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table>

EPA. 2010. *U.S. EPA NPDES Permit Writers' Manual*. Office of Water, EPA. EPA-833-K-10-001.

Navajo Nation Surface Water Quality Standards 1999 (“NNSWQS”), approved by U.S. EPA on March 23, 2006.

NNSWQS revisions 2007, approved by U.S. EPA on March 26, 2009.

Draft NNSWQS revisions 2015, under review by U.S. EPA.

NTUA’s “Kayenta Lagoon Performance Implementation and Monitoring Plan” submitted to EPA on October 17, 2017

NTUA’s “Opinion of Flow Capacity for Kayenta Wastewater Treatment Facility”, February 22, 2018, prepared by Mr. W. Daniel Boivin, P.E. of Amec Foster Wheeler, submitted to EPA on March 6, 2018

ATTACHMENT

NTUA's "Opinion of Flow Capacity for Kayenta Wastewater Treatment Facility" prepared by
Mr. W. Daniel Boivin, P.E. of Amec Foster Wheeler
submitted to EPA on March 6, 2018

February 22, 2018

Navajo Tribal Utility Authority
Office of the Deputy General Manager
PO Box 170
Ft. Defiance, AZ 86504-0170



Attention: David Shoultz, Principal Engineer

Subject: Opinion of Flow Capacity for Kayenta Wastewater Treatment Facility

Dear Mr. Shoultz,

I have reviewed the facility's Preliminary Engineering Report (2014) and the NPDES Compliance Plan (2015) each prepared for the Navajo Tribal Utility Authority by Smith Engineering Company. In my opinion the facility is nominally capable of handling the following flows.

If all cells/ponds are working passively (no mechanical aeration):

- 180,000 GPD accounting only the cells that are currently online (numbers 1, 2, 3, and 6) and
- 250,000 GPD accounting all the facilities cells.

If Cell/Pond No. 1 is aerated (mechanical aeration per the NPDES Compliance Plan) and the remaining cells/ponds are working passively (no mechanical aeration):

- 880,000 GPD for the cells that are currently online (numbers 1, 2, 3, and 6) and
- 950,000 GPD if all the facility's cells are considered.

My calculations are attached.

Please contact me if you have questions or wish to discuss my opinion.

Sincerely yours,

A handwritten signature in blue ink, appearing to read "W. Daniel Boivin". The signature is stylized and written over a faint, larger version of the signature.

Amec Foster Wheeler
W. Daniel Boivin, PE
Civil/Environmental Engineer

Kayenta WWTF - Rated Flow Calculation

1. Aerial Loading Rate Method *(assumes passively aerated cells) Metcalf & Eddy, Table 5-32*

Flow (Average 2014 - 2013) => $Q := 470000 \cdot \frac{\text{gal}}{\text{day}}$ *Muskett 2014, Table 5*

Average BOD5 => $BOD := 318.4 \cdot \frac{\text{mg}}{\text{L}}$ *Muskett 2014, Table 5*

Average Temp. (January) => $T_a := \frac{(47 + 27)}{2} = 37$ *Google data, average temperature in January for Kayenta AZ*

Organic Loading Range => 32 to 59 deg F, 20 to 40 lbs BOD5/acre-day

Calculate recommended organic loading rate

$$L_d := \frac{\left(40 \cdot \frac{\text{lb}}{\text{acre} \cdot \text{day}} - 20 \cdot \frac{\text{lb}}{\text{acre} \cdot \text{day}}\right) \cdot (59 - T_a) \cdot -1 + 40 \cdot \frac{\text{lb}}{\text{acre} \cdot \text{day}}}{(59 - 32)} = 23.7 \frac{\text{lb}}{\text{acre} \cdot \text{day}}$$

Find water surface area available *(Ponds Numbered 1 through 6) Muskett 2014, Table 4*

$$A_1 := 6.5 \cdot \text{acre} \quad A_3 := 4.5 \cdot \text{acre} \quad A_5 := 3.8 \cdot \text{acre}$$

$$A_2 := 6.5 \cdot \text{acre} \quad A_4 := 3.5 \cdot \text{acre} \quad A_6 := 3.5 \cdot \text{acre}$$

Current Surface Area => $A_c := A_1 + A_2 + A_3 + A_6 = 21 \text{ acre}$ *(Actual ponds online now. Numbers 1, 2, 3, & 6)*

Max. Surface Area => $A_m := A_1 + A_2 + A_3 + A_4 + A_5 + A_6 = 28.3 \text{ acre}$ *(All ponds online)*

Find water volume available *(Ponds Numbered 1 through 6) Muskett 2014, Table 4*

$$V_1 := 60 \cdot \text{acre} \cdot \text{ft} \quad V_3 := 26 \cdot \text{acre} \cdot \text{ft} \quad V_5 := 22 \cdot \text{acre} \cdot \text{ft}$$

$$V_2 := 62 \cdot \text{acre} \cdot \text{ft} \quad V_4 := 22 \cdot \text{acre} \cdot \text{ft} \quad V_6 := 35 \cdot \text{acre} \cdot \text{ft}$$

$$V_c := V_1 + V_2 + V_3 + V_6 = 183 \text{ acre} \cdot \text{ft} \quad V_m := V_1 + V_2 + V_3 + V_4 + V_5 + V_6 = 227 \text{ acre} \cdot \text{ft}$$

Calculate available retention time

$$\theta_t := \frac{V_c}{Q} = 126.9 \text{ day} \quad \text{Low but okay. Should be between 120 and 180 days.}$$

Max. Retention Time => $\theta_m := \frac{V_m}{Q} = 157.4 \text{ day}$ *(All ponds online)*

Determine organic load => $L_o := Q \cdot BOD = 1248.9 \frac{\text{lb}}{\text{day}}$

Calculate current rated flow => $Q_r := \frac{L_d \cdot A_c}{BOD} = 187333 \frac{\text{gal}}{\text{day}}$ *(Actual ponds online now. Numbers 1,2,3,&6)*

$$\text{Maximum Rated Flow} \Rightarrow Q_m := \frac{L_d \cdot A_m}{BOD} = 252454 \frac{\text{gal}}{\text{day}} \quad (\text{All ponds online})$$

2. Combined Method (Partial-mix Aerated Pond, Cell #1 & Aerial Loading Rate, Cells 2 - 6)

a. Determine the capacity of Partial Mix Cell #1 (take mechanical aeration into account)

$$\text{Aerator Oxygen Transfer Rate} \Rightarrow OTR_a := 1.2 \cdot \frac{\text{lb}}{\text{hp} \cdot \text{hr}} \quad (\text{for an aspirating aerator}) \text{ Crites, Table 5-32, submerged turbine w/draft tube}$$

$$\text{OTR Cell \#1} \Rightarrow OTR_1 := 7 \cdot OTR_a \cdot 15 \cdot \text{hp} = 3024 \frac{\text{lb}}{\text{day}} \quad (7 \text{ ea. } 15\text{-hp aerators}) \text{ Muskett 2015}$$

$$\text{Oxygen Demand Factor} \Rightarrow \phi := 1.5 \quad (\text{assumed to be a multiple of organic loading})$$

$$\text{Rated Flow Cell \#1} \Rightarrow Q_a := \frac{OTR_1}{BOD \cdot \phi} = 758700 \frac{\text{gal}}{\text{day}}$$

b. Use aerial loading for remaining passive Cells #2 through #6 (When all cells are operating, including Aerated Cell #1)

$$\text{Extra Cells Area} \Rightarrow A_e := A_2 + A_3 + A_4 + A_5 + A_6 = 21.8 \text{ acre} \quad (\text{Cells after the Aerated Cell \#1})$$

$$\text{Extra Cells Rated Flow} \Rightarrow Q_e := \frac{L_d \cdot A_e}{BOD} = 194470 \frac{\text{gal}}{\text{day}}$$

Combined Partial Mix & Aerial Loaded Cells #1 through #6

$$\text{Combined Total Rated Flow} \Rightarrow Q_t := Q_a + Q_e = 953170 \frac{\text{gal}}{\text{day}}$$

c. Use aerial loaded for Cells #2, #3, and #6 only (Taking into account only the cells that are currently operating, including Aerated Cell #1)

$$\text{Extra Operating Cells Area} \Rightarrow A_o := A_2 + A_3 + A_6 = 14.5 \text{ acre} \quad (\text{Cells after the Aerated Cell \#1}) \text{ Muskett2014, Figure 7}$$

$$\text{Operating Cells Rated Flow} \Rightarrow Q_o := \frac{L_d \cdot A_o}{BOD} = 129349 \frac{\text{gal}}{\text{day}}$$

Combined Partial Mix & Aerial Loaded Extra Operating Cells #1, #2, #3 and #6

$$\text{Combined Rated Flow} \Rightarrow Q_p := Q_a + Q_o = 888049 \frac{\text{gal}}{\text{day}}$$

Crites, Ronald (Chairperson), Natural Systems for Wastewater Treatment, 3/e, Manual of Practice No. FD-16, Water Environment Federation, Alexandria, VA, Section 3.1 (2010)

Metcalf & Eddy, Wastewater Engineering, Treatment, and Resource Recovery, 5/e, McGraw-Hill, New York, NY, Table 5-32 (2014)

Muskett, Allena, Kayenta Wastewater Treatment Plant, Preliminary Engineering Report, Smith Engineering Company, Albuquerque, NM (2014)

Muskett, Allena, Kayenta Wastewater Treatment Plant, NPDES Permit Compliance Plan, Smith Engineering Company, Albuquerque, NM (2015)