NPDES PERMIT NO. NM0030503
FACT SHEET

FOR THE DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

APPLICANT:

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ISSUING OFFICE:

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DATE PREPARED: May 17, 2017

PERMIT ACTION: Proposed reissuance of the current National Pollutant Discharge Elimination System (NPDES) permit issued October 4, 2007, with an effective date of November 1, 2007, and an expiration date of October 31, 2012.

RECEIVING STREAM: Cieneguilla Creek, thence to Eagle Nest Lake, thence to the Cimarron River, thence to the Canadian River in Water Quality Segment number 20.6.4.309 of the Canadian River Basin.

Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed in Title 40, Code of Federal Regulations, revised as of April 1, 2017.

DOCUMENT ABBREVIATIONS

In the document that follows, various abbreviations are used. They are as follows:

4Q3	Lowest four-day average flow rate expected to occur once every three-years
BAT	Best available technology economically achievable
BCT	Best conventional pollutant control technology
BPT	Best practicable control technology currently available
BMP	Best management plan
BOD	Biochemical oxygen demand (five-day unless noted otherwise)
BPJ	Best professional judgment
CBOD	Carbonaceous biochemical oxygen demand (five-day unless noted otherwise)
CD	Critical dilution
CFR	Code of Federal Regulations
cfs	Cubic feet per second
COD	Chemical oxygen demand
COE	United States Corp of Engineers
CWA	Clean Water Act
DMR	Discharge monitoring report
ELG	Effluent limitation guidelines
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FCB	Fecal coliform bacteria
F&WS	United States Fish and Wildlife Service
mg/l	Milligrams per liter (one part per million)
ug/l	Micrograms per litter (one part per billion)
MGD	Million gallons per day
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMIP	New Mexico NPDES Permit Implementation Procedures
NMWQS	New Mexico State Standards for Interstate and Intrastate Surface Waters
NPDES	National Pollutant Discharge Elimination System
MQL	Minimum quantification level
O&G	Oil and grease
POTW	Publically owned treatment works
RP	Reasonable potential
SIC	Standard industrial classification
s.u.	Standard units (for parameter pH)
SWQB	Surface Water Quality Bureau
TDS	Total dissolved solids
TMDL	Total maximum daily load
TRC	Total residual chlorine
TSS	Total suspended solids
UAA	Use attainability analysis
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Service

WLA	Wasteload allocation
WET	Whole effluent toxicity
WQCC	New Mexico Water Quality Control Commission
WQMP	Water Quality Management Plan
WWTP	Wastewater treatment plant

I. CHANGES FROM THE PREVIOUS PERMIT

Changes from the permit previously issued October 4, 2007, with an effective date of November 1, 2007, and an expiration date of October 31, 2012, include:

(a) Add effluent loading limitations and monitoring requirements for total nitrogen and total phosphorous with a three-year compliance schedule.
(b) Add effluent limitations and monitoring requirements for dissolved oxygen with a three-year compliance schedule.
(c) Delete effluent limitations and monitoring requirements for aluminum.

II. APPLICANT ACTIVITY

Under the Standard Industrial Classification (SIC) Code 4952, the applicant currently operates a publicly owned treatment works (POTW). The facility is located at 67 Servises Road, Angel Fire, in Colfax County, New Mexico. The treatment facility is a sequential batch reactor (SBR) system with ultra-violet (UV) disinfection. The facility has two lagoons that store wastewater prior to discharge either to the receiving stream or to a land application area. The facility has a design flow capacity of 0.50 million gallons per day (MGD). The single outfall of the facility is located on Cieneguilla Creek at:

Latitude 36° 24' 17" North, Longitude 105° 17' 00" West

Effluent samples must be collected at a location after the last treatment unit and prior to commingling with the water of receiving stream.

III. RECEIVING STREAM STANDARDS

The general and specific stream standards are provided in "New Mexico State Standards for Interstate and Intrastate Surface Waters," (NM WQS), 20.6.4 NMAC, as amended through June 5, 2013.

The designated uses of the receiving waters, Cieneguilla Creek, are domestic water supply, high quality coldwater aquatic life, primary contact, irrigation, livestock watering, wildlife habitat, and municipal and industrial water supply.

IV. EFFLUENT CHARACTERISTICS

The facility submitted an application dated April 30, 2012 and then submitted an application update signed on April 20, 2017 that provides more recent discharge information. The following is a summarization of effluent characteristics.

Parameter	Avg. Monthly (mg/l unless noted)	Max. Daily (or single Data)
Flow, million gallons/day (MGD)	0.10	0.45
pH, minimum, standard units (su)	N/A	7.77 su
pH, maximum, standard units (SU)	N/A	8.80 su
Biochemical Oxygen Demand, 5-day (BOD)	5.64	10.00
Fecal Coliform (bacteria/100 ml)	1.0	1.0
Total Suspended Solids (TSS)	1.36	4.0
Ammonia (as N)	3.42	10.9
Dissolved Oxygen	3.66	9.50
Total Kjeldahl Nitrogen (TKN)	9.25	11.0
Nitrate & Nitrite Nitrogen	9.18	19.0
Oil & Grease	17.13	45.0
Phosphorus	0.6	0.7
Total Dissolved Solids	489.5	591
Dissolved Aluminum	0.01	0.06

V. DRAFT PERMIT RATIONALE AND PROPOSED PERMIT CONDITIONS

The proposed effluent limitations for those pollutants proposed to be limited are based on regulations promulgated at 40 CFR 122.44. The draft permit limits are based on either technology-based effluent limits pursuant to 40 CFR 122.44(a), on BPJ in the absence of guidelines, NM WQS and/or requirements pursuant to 40 CFR 122.44(d), whichever are more stringent.

a. Reason for Permit Issuance

It is proposed that the permit be issued for a 5-year term following regulations promulgated at 40 CFR 122.46(a). The initial permit renewal application was received by EPA on May 14, 2012, and determined to be completed by EPA on the letter of June 15, 2012. An updated application was received in email on April 12, 2017. The expired permit is administratively continued.

b. Operation and Reporting

(1) Regulatory Basis

At a minimum, the facility will be required to treat to the "secondary treatment" for domestic sewage, found at 40 CFR 133.102.

(2) Operation and Reporting

The applicant is required to operate the treatment facility at maximum efficiency at all times; to monitor the facility's discharge on a regular basis; and report the monthly results quarterly. The monitoring results will be available to the public.

(3) Sewage Sludge Practices

Sludge produced at the treatment plant is sent to an aerobic digester, then to the sludge filter press. The sludge from the press is hauled to the City of Rio Rancho Sanitary Landfill for final disposal.

(4) Waste Water Pollution Prevention Requirements

The permittee shall institute or continue programs directed towards pollution prevention. The facility shall institute or continue programs to improve the operating efficiency and extend the useful life of the facility.

(5) Industrial Wastewater Contributions

Based on information provided by the applicant, the facility does not receive significant industrial wastewater. EPA has determined that the permittee will not be required to develop a full pretreatment program. However, general pretreatment provisions have been included in the permit.

c. Technology Based Effluent Limitations/Conditions

Regulations promulgated at 40 CFR 122.44(a) require that technology-based effluent limitations be placed in NPDES permits based on effluent limitations guidelines where applicable, on best professional judgment (BPJ) in the absence of guidelines, or on a combination of the two.

Limitations on 5-day biochemical oxygen demand, (BOD_5) and total suspended solids, (TSS), are in accordance with secondary treatment requirements established at 40 CFR 133.102 (a) and 133.102 (b).

d. Water Quality Based Limitations

The NM WQCC adopted new WQS for the State of New Mexico. The revised WQS as amended through June 5, 2013, are available on the NMED's website at http://www.nmenv.state.nm.us/swqb/Standards/. The WQS have been approved by EPA in accordance with Section 303 of the CWA.

e. Reasonable Potential

All applicable facilities are required to fill out appropriate sections of the Form 2A, to apply for an NPDES permit or reissuance of an NPDES permit. The new form is applicable not only to Publicly wned Treatment Works (POTW's), but also to facilities that are similar to POTWs, but which do not meet the regulatory definition of POTW (like private domestics, or similar facilities on Federal property). The forms were designed and promulgated to, make it easier for permit applicants to provide the necessary information with their applications and minimize the need for additional follow-up requests from permitting authorities, per the summary statement in the preamble to the Rule. These forms became effective December 1, 1999, after publication of the final rule on August 4, 1999, Volume 64, Number 149, pages 42433 through 42527 of the FRL.

The amount of information required for minor facilities was limited to specific sections of these forms, because they are unlikely to discharge toxic pollutants in amounts that would impact state water quality standards. Supporting information for this decision was published as Evaluation of the Presence of Priority Pollutants in the Discharges of Minor POTW's, June 1996, and was sent to all state NPDES coordinators by EPA Headquarters. In this study, EPA collected and evaluated data on the types and quantities of toxic pollutants discharged by minor POTW's of varying sizes from less than 0.1 MGD to

just under 1 MGD. The Study consisted of a query of the EPA Permit Compliance System (PCS) database from 1990 to present, an evaluation of minor POTW data provided by the State agencies, and on-site monitoring for selected toxics at 86 minor facilities across the nation.

Due to the limited information required by the application, the Agency has determined that no reasonable potential exists for this discharge to violate applicable NM WQS except for pH, E. coli, aluminum, nutrients, and the use of chlorine for disinfection or clean purpose.

The 7-day average effluent loading limits for TSS and dissolved aluminum based on the Total Maximum Daily Load (TMDL) in the current permit are retained in the proposed permit. The proposed permit applies the water quality criteria for E. coli, 126 cfu/100 ml of monthly average and 235 cfu/100 ml of daily maximum, at the discharge. The WQ-based pH limit range of 6.6 – 8.8 s.u. is retained from the current permit. The total residual chlorine limit is retained in case the permittee uses any chemical containing chlorine for cleanse of the system or supplemental disinfector.

f. Total Nitrogen and Total Phosphorus TMDL

In September 2010, TMDLs for total nitrogen (TN) and total phosphorus (TP) were approved by the EPA for the Cimarron River Watershed-Canadian River to Headwaters, which includes the Cieneguilla Creek. TN is defined as the sum of Nitrate + Nitrite (N+N), and Total Kjeldahl Nitrogen (TKN). The EPA approved TMDLs allocated interim (Phase I) annual average effluent limitations for TP of 0.1 mg/l (0.42 lbs/day (pounds per day)) and TN of 3.0 mg/l (12.5 lbs/day) to the facility, and final effluent limitations for TP of 0.06 mg/l (0.25 lbs/day) and TN of 0.56 mg/l (2.3 lbs/day). Daily load limitations were calculated based on the design flow of 0.5 MGD. In the 2012 submitted application. the permittee requested EPA to establish seasonal limitations with two implementation schedules prior to achieving the final effluent limitations. Permittee proposed seasonal limitations and schedules as summarized below.

Phase Period	Seasons	TP Limit	TN Limit
2012-2017	Year-round	3 mg/l	10 mg/l
2017-2022	October 1–April 30	3 mg/l	10 mg/l
	May 1–September 30	Zero Discharge (100% Reuse)	

But, in the 2017 submitted application, the permittee requests that the facility would be allowed to collect data for TN and TP without establishment of effluent limitations for the years 2017-2022.

Information available to EPA indicates:
1) The total interim (Phase I) loading limit allocated by the TMDL document for TP is 0.42 lbs/day (equivalent to 153.3 lbs/year), and for TN is 12.5 lbs/day (equivalent to 4,562.5 lbs/year). The TMDL document specifies that the Phase I limits are based on annual average.
2) Technologically achievable concentrations for TP typically range from 0.1 to 1.0 mg/l and for TN typically range from 3.0 to 10.0 mg/l. Phase I loading limits are calculated based on the best achievable concentrations (i.e., 0.1 mg/l for TP and 3.0 mg/l for TN).
3) The permittee reported in the 2017 application, based on three effluent samples, that TP daily average concentration is 0.6 mg/l and daily maximum concentration is 0.7 mg/l. The sum of N+N and TKN average is 18.43 mg/l and the sum of N+N and TKN daily maximum is 30 mg/l, based on four effluent data. The facility is not designed to remove TP or TN.

4) The annual average flow reported for the past three years by the permittee in the application ranged from 0.07 MGD to 0.11 MGD. The average daily flow rate is about 0.25 MGD during the tourist season from October to April.

Based on information above and by assuming the annual average discharge flow rate of 0.1 MGD, the existing achievable discharge loading rate for TP (at existing effluent quality of 0.6 mg/l) would be 0.500 lbs/day (or 182.65 lbs/year) which is higher than the Phase I Wasteload Allocation (WLA) limit of 0.42 lbs/day, and the achievable loading rate for TN (at existing effluent quality of 18.43 mg/l) would be 15.37 lbs/day (or 5610.27 lbs/year) which is greater than the Phase I WLA limit of 12.5 lbs/day.

Nitrogen and phosphorus support the growth of algae and aquatic plants, which provide food and habitat for fish, shellfish and smaller organisms that live in water. But, too much nitrogen and phosphorus in the water causes algae to grow faster than ecosystems can handle. Significant increases in algae harm water quality, food resources and habitats, and decrease the oxygen that fish and other aquatic life need to survive. Large growths of algae are called algal blooms and they can severely reduce or eliminate oxygen in the water, leading to illnesses in fish and the death of large numbers of fish. While algal blooms are consuming oxygen as they die and decompose, they may cause dead zones, areas in water with little or no oxygen where aquatic life cannot survive. Also known as hypoxia. Some algal blooms are harmful to humans because they produce elevated toxins and bacterial growth that can make people sick if they come into contact with polluted water, consume tainted fish or shellfish, or drink contaminated water.

Because nutrients (TP and TN), in general, are more likely to cause adverse environmental impact during the warm season than it does during the cold season, and the Village of Angel Fire is a winter tourist town which discharges more in winter than in summer, EPA proposes to take the loading limitation coupling with dissolved oxygen (DO) monitoring and limitation as Phase I approach for the permit term followed by effluent limitations based on Phase I TMDL limits.

Phase I Approach

Seasonal	TP (lbs/day)	TN (lbs/day)	DO (mg/l)
May – September	Report	Report	4.50
October – April	21.9/Month	651.8/Month	4.50

EPA is proposing warm and cold seasonal TP and TN loading limitations. Warm seasonal loading limits are based on "zero" discharge during May through September. In case the facility must discharge during the warm season, the operator must collect samples for TP and TN analyses daily when discharges occur during May through September. The cold seasonal loading limits are based on the total annual WLA values divided by 7 (7 months from October to April). The TMDL document specifies that the Phase I limits are based on annual average for the limits of technology, so EPA applies the total allowable WLA to develop seasonal average TP and TN limits. The formula below is used to calculate the seasonal average:

Seasonal Monthly Average = Total Annual WLA ÷ 7 Months in the Season.
Total Annual WLA for TP = 0.42 lbs/day x 365 days/year = 153.3 lbs
Seasonal Monthly Average for TP = 153.3 lbs ÷ 7 months = 21.9 lbs/month

Total Annual WLA for TN = 12.5 lbs/day x 365 days/year = 4,562.5 lbs
Seasonal Monthly Average for TN = 4,562.5 lbs ÷ 7 months = 651.8 lbs/month

Because the current biological treatment is highly temperature dependent and the local winter temperature is below freezing, it is unlikely that discharges during the winter season will meet the proposed loading limitations without either upgrading the treatment system or increasing logon capacity to hold effluent during winter time. EPA proposes to give a three-year compliance schedule for the facility to meet the TP and TN limitations.

Because the proposed seasonal limits are based on "zero" discharge during the months of May through September, EPA also proposes the operator (1) to conduct daily sampling and calculate total daily loads for TP and TN when a discharge occurs; and (2) to perform visual inspections of stream algae for seven days after a discharge occurs, during months of May through September. EPA also proposes total yearly maximum loading limits for TP and TN based on the Phase I annual WLA to account for any discharges that could occur during months of May through September period when the Village does not plan to discharge.

Phase "n" Approach

Because the WLA developed in the phased TMDL document for TP and TN are based on effluent concentrations which are currently technologically unachievable, EPA will evaluate the results from the Phase I Approach and future technology available when EPA renews the permit in five years. EPA also proposes to require the permittee to submit a TP/TN Reduction Plan which details how the permittee plans to meet the Phase "n" WLAs as expeditiously as possible but no later than 180 days prior to the expiration date of the final permit.

g. Dissolved Oxygen

To further protect receiving stream from oxygen deficiency caused by nutrients contributed by effluents, EPA is also proposing dissolved oxygen (DO) limitation in the effluent. An evaluation of the permittee's impact on the receiving water dissolved oxygen was completed as part of the permitting process. A 1-dimensional, steady state model (LA-QUAL) was used to evaluate the biochemical oxygen demand of the discharge and associated constituents including ammonia. A complete characterization of the receiving water was not available. Certain parameters, including flow, were available and were utilized. However, the receiving water model also used default values to estimate the various unavailable hydrodynamic and water quality parameters. The discharge was modeled using data obtained from the application, permits limits and defaults were used for unavailable discharge characterization data.

The evaluation demonstrated that the discharge will, at the secondary treatment technology standard, be insufficient to protect the receiving water dissolved oxygen in-stream standard of 5 mg/L. Therefore, the permit includes a minimum dissolved oxygen concentration of 4.5 mg/L.

Based upon a review of the permittee's discharge monitoring reports, a three-year compliance schedule, in consistent with the compliance schedule with TP and TN requirements, is proposed to meet the new DO limitation.

h. Monitoring Frequency

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity 40 CFR 122.48(b) and to assure compliance with permit limitations 40 CFR 122.44(i)(1). The monitoring frequencies are based on BPJ, taking into account the nature of the facility and its design flow and the previous permit. Monitoring frequencies in the current permit are retained and a frequency of 2/Month is established for TP, TN, and DO. The testing of TRC is required only when a chlorine-contained chemical is applied to the system.

g. Whole Effluent Toxicity (WET) Testing

The discharge is to Cieneguilla Creek and the critical low flow (4Q3) of the stream in that segment is estimated to be 0.19 cubic feet per second (cfs) which equals to 0.123 MGD. The design flow of the facility is 0.50 MGD. Therefore, the critical dilution of the discharge to the receiving stream is 80%. The facility is required to conduct chronic WET test annually with Ceriodaphnia dubia and Pimephales promelas and at an 80% critical dilution.

VI. 303(d) LIST

The proposed permit retains loading limit for TSS and concentration limit for E. coli based on TMDL Waste Load Allocations (WLAs) assigned to Angel Fire discharge. Effluent limitations for total nitrogen and total phosphorus are proposed to address the stream nutrient impairment. The WQS for aluminum has been changed from a fix dissolved aluminum value to in-stream hardness-dependent total aluminum value, and the State Water Quality Control Commission has approved to remove the aluminum TMDL for the Rio Chamita on April 11, 2017. Therefore, the TMDL-based aluminum limitation is proposed to be removed accordingly.

VII. ANTIDEGRADATION

The NMAC, Section 20.6.4.8 “Antidegradation Policy and Implementation Plan” sets forth the requirements to protect designated uses through implementation of the State water quality standards. The limitations and monitoring requirements set forth in the proposed permit are developed from the State water quality standards and are protective of those designated uses. Furthermore, the policy sets forth the intent to protect the existing quality of those waters, whose quality exceeds their designated use.

.VIII. ANTIBACKSLIDING

The proposed permit has deleted effluent limitation for aluminum based on new information as discussed above.

IX. HISTORICAL and ARCHEOLOGICAL PRESERVATION CONSIDERATIONS

The reissuance of the permit should have no impact on historical and/or archeological sites.

X. ENDANGERED SPECIES CONSIDERATIONS

Four species in Colfax County are listed as Endangered or Threatened, according to the most recent U.S. Fish & Wildlife Service, (USFWS), Information, Planning, and Conservation System (IPaC) website. They are Mexican spotted owl, piping plover, southwestern willow flycatcher, and black footed ferret. Based on the following discussion, EPA has determined that the reissuance of this permit will have ***no effect*** on these federally listed threatened or endangered species.

Research of available materiel finds that the primary cause for the population decreases leading to threatened or endangered status for the southwestern willow flycatcher and the Mexican spotted owl, is destruction of habitat. Issuance of this permit is found to have no impact on the habitat of the listed species since no construction is authorized by this permitting action except for the actual outfall structure. Also, suitable habitat for the southwestern willow flycatcher, to include the cottonwood overstory and willow understory is lacking in the area of the discharge.

Research of the piping plover finds that the migratory bird winters in the warmer Gulf Coast and Carribean area, then migrates to northern areas such as New Mexico for breeding. The species makes nests in sandy point bars of streams and alkali flats. Threats to the species in New Mexico are due to damming and channelization of rivers and disruption by other wildlife. Issuance of this permit will have no effect on the piping plover or its habitat.

Research of the black-footed ferret finds that the species has diminished due to the eradication of prairie dogs, the primary source of the ferret's habitat and food. Issuance of this permit will have no effect on the prairie dog food source or habitat.

XI. CERTIFICATION

The permit is in the process of certification by the State agency following regulations promulgated at 40 CFR 124.53. A draft permit and draft public notice will be sent to the District Engineer, Corps of Engineers; to the Regional Director of the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service prior to the publication of that notice.

XII. FINAL DETERMINATION

The public notice describes the procedures for the formulation of final determinations.

XIII. ADMINISTRATIVE RECORD

The following information was used to develop the proposed permit:

a. Application(s)

EPA Application Form 2A received by EPA on May 3, 2012, and Application update signed on April 20, 2017.

b. State of New Mexico References

New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, as amended through June 5, 2013.