NPDES PERMIT NO. NM0030457
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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Salem Wastewater Treatment Plant
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ISSUING OFFICE

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DATE PREPARED

September 3, 2018

PERMIT ACTION

Proposed reissuance of the current permit issued on January 15, 2014 with an effective date of February 1, 2014 and an expiration date of January 31, 2019.

RECEIVING WATER – BASIN

Rio Grande - Segment 20.6.4.101 of the Rio Grande Basin

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	Publicly 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 January 15, 2014, with an effective date of February 1, 2014, and an expiration date of January 31, 2019, are:

A. Change WET species from *Daphnia Pulex* to *Ceriodaphnia dubia*.
B. Add WLA of *E.coli* as per TMDL.
C. Designated use of the Rio Grande Basin 20.6.4.101 changed from secondary to primary contact from the latest NMWQS, 2017.
D. Critical Dilution (CD) changed to 33% after an updated 4Q3 flow from the receiving water.

II. APPLICANT LOCATION AND ACTIVITY

The plant site is located at 2800 B.B. Romig Drive, Salem, in Doña Ana County, New Mexico.

Under the Standard Industrial Classification (SIC) Code 4952, the applicant operates a municipal wastewater treatment plant with a design capacity of 0.20 million gallons per day (MGD) serving a population of approximately 942. The effluent from the treatment plant is discharged into the Rio Grande in Segment 20.6.4.101 of the Rio Grande Basin. The discharge is located at Latitude 32° 41’ 36” North, Longitude 107° 12' 30" West.

The wastewater treatment process is as follows:

Raw sewage from approximately 250 homes is collected in a lift station located northeast of the plant and pumped to the entrance works. Influent wastewater comes into the treatment plant through a manual bar screen, a manual grit chamber and Parshall flume. Then, the raw wastewater flows through to one of two sequencing batch reactors (SBR's) basins for biological treatment. The decanted flow passes to the equalization basin and then to UV disinfection unit. Sludge is extracted from the SBR basin to an aerobic digester for dewatering and thickening. Thickened sludge is pumped to sludge drying bed and is then disposed in an approved landfill for final disposal.

III. RECEIVING STREAM STANDARDS

The general and specific stream standards are provided in NMWQS (20.6.4 NMAC, amended through) August 11, 2017. The facility discharges into Rio Grande in Segment 20.6.4.101 NMAC of the Lower Rio Grande River Basin NMAC. Designated uses of this segment are irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat, and primary contact.

IV. EFFLUENT CHARACTERISTICS

The EPA Permit Application Form 2A was received July 20, 2018. A quantitative description of the discharge(s) described in the EPA Permit Application Form 2A is presented below:

Parameter	Max.	Avg.
	(mg/l unless noted)	
Flow, million gallons/day (MGD)	0.04	0.03
Temperature, winter	17.0°C	15.6°C
Temperature, summer	30.1°C	28.8°C
pH, minimum, standard units (su)	6.6	N/A
pH, maximum, standard units (su)	9.0	N/A
Fecal (#bacteria/100 ml)	2.70	1.55
Biochemical Oxygen Demand (BOD)	4.10	1.89
Total Suspended Solids (TSS)	3.75	2.44
Ammonia (NH_3)	1.60	1.10
Chlorine, Total Residual (TRC)	0.0	0.0
Dissolved Oxygen (DO)	3.4	2.9
Total Kjeldahl Nitrogen (TKN)	2.5	1.8
Nitrate plus Nitrite Nitrogen	4.81	4.10
Oil & Grease	5.10	3.50
Phosphorus (total)	6.20	5.90
Total Dissolved Solids (TDS)	744	705

All pollutants reported in the DMR since 2016 were in compliance with the current NPDES permit. Because the facility's design flow is less than 1.0 MGD, the Expanded Effluent Testing Data (Part D of the application) is not required to be reported.

V. REGULATORY AUTHORITY/PERMIT ACTION

In November 1972, Congress passed the Federal Water Pollution Control Act establishing the NPDES permit program to control water pollution. These amendments established technology-based or end-of-pipe control mechanisms and an interim goal to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water," more commonly known as the "swimmable, fishable" goal. Further amendments in 1977 of the CWA gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry and established the basic structure for regulating pollutants discharges into the waters of the United States. In addition, it made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. Regulations governing the EPA administered NPDES permit program are generally found at 40 CFR §122 (program requirements & permit conditions), §124 (procedures for decision making), §125 (technology-based standards) and §136 (analytical procedures). Other parts of 40 CFR provide guidance for specific activities and may be used in this document as required.

The current permit expires January 31, 2019. It is proposed that the permit be reissued for a 5-year term following regulations promulgated at 40 CFR §122.46(a).

VI. DRAFT PERMIT RATIONALE AND PROPOSED PERMIT CONDITIONS

A. OVERVIEW of TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations contained in 40 CFR §122.44 requires that NPDES permit limits are developed that meet the more stringent of either technology-based effluent limitation guidelines, numerical and/or narrative water quality standard-based effluent limits, or the previous permit.

Technology-based effluent limitations are described in subsection B and water quality-based effluent limitations are described in subsection C below.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. General Comments

Regulations promulgated at 40 CFR §122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on ELGs where applicable, on BPJ in the absence of guidelines, or on a combination of the two. In the absence of promulgated guidelines for the discharge, permit conditions may be established using BPJ procedures. EPA establishes limitations based on the following technology-based controls: BPT, BCT, and BAT. These levels of treatment are:

BPT - The first level of technology-based standards generally based on the average of the best existing performance facilities within an industrial category or subcategory.

BCT - Technology-based standard for the discharge from existing industrial point sources of conventional pollutants including BOD, TSS, pH, and O&G.

BAT - The most appropriate means available on a national basis for controlling the direct discharge of toxic and non-conventional pollutants to navigable waters. BAT effluent limits represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

2. Effluent Limitations:

The facility is a POTW that has technology-based ELG's established at 40 CFR Part 133, Secondary Treatment Regulation. Pollutants with ELG's established in this Chapter are BOD_5, TSS and pH. BOD_5 limits of 30 mg/l for the 30-day average and 45 mg/l for the 7-day average and 85% percent (minimum) removal are found at 40 CFR §133.102(a). TSS limits; also 30 mg/l for the 30-day average and 45 mg/l for the 7-day average, average and 85% percent (minimum) removal are found at 40 CFR §133.102(b). ELG's for pH are between 6-9 s.u. and are found at 40 CFR §133.102(c). The draft permit establishes new limits for percent removal for both BOD_5 and TSS. Since these are technology-based there is no compliance schedule provided to meet these limits. Compliance is required on the permit effective date.

Regulations at 40 CFR §122.45(f)(1) require all pollutants limited in permits to have limits expressed in terms of mass such as pounds per day. When determining mass limits for POTWs or similar, the plant's design flow is used to establish the mass load. Mass limits are determined by the following mathematical relationship:

Loading in lbs/day = pollutant concentration in mg/l * 8.345 lbs/gal * design flow in MGD
TSS/BOD_5 loading (lbs/day) = 30 mg/l * 8.345 lbs/gal * 0.2 MGD = 50 lbs/day
TSS/BOD_5 loading (lbs/day) = 45 mg/l * 8.345 lbs/gal * 0.2 MGD = 75 lbs/day

A summary of the technology-based limits for the facility is:

Effluent Characteristic	Discharge Limitation			
	lbs/day, unless noted		mg/l, unless noted	
Parameter	30-day Avg	7-day Avg	30-day Avg	7-day Max
BOD_5	50	75	30	45
BOD_5, % removal[1]	≥ 85	N/A	N/A	N/A
TSS	50	75	30	45
TSS, % removal[1]	≥ 85	N/A	N/A	N/A
pH	N/A	N/A	6.0 to 9.0 s.u.	

[1] % removal is calculated using the following equation: [(average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration] * 100.

C. WATER QUALITY BASED LIMITATIONS

1. General Comments

Water quality based requirements are necessary where effluent limits more stringent than technology-based limits are necessary to maintain or achieve federal or state water quality limits. Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on federal or state WQS. Effluent limitations and/or conditions established in the draft permit are in compliance with applicable State WQS and applicable State water quality management plans to assure that surface WQS of the receiving waters are protected and maintained, or attained.

3. Implementation

The NPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations and/or conditions are included in the NPDES permits. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

4. State Water Quality Standards

The general and specific stream standards are provided in NMWQS (20.6.4 NMAC amended through August 11, 2017). The facility discharges into the Rio Grande in segment number 20.6.4.101 of the Rio Grande River Basin which has designated uses of irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat and primary contact.

5. Permit Action - Water Quality-Based Limits

Regulations promulgated at 40 CFR §122.44(d) require limits in addition to, or more stringent than effluent limitation guidelines (technology based). State WQS that are more stringent than effluent limitation guidelines are as follows:

a. BACTERIA

State WQS for *E. coli* bacteria, listed in 20.6.4.900.D NMAC for primary contact, require the monthly geometric mean to be 126 colony forming units (cfu)/100 ml or less; single sample 410 cfu/100 ml or less. EPA has included these limitations and monitoring requirements for *E. coli* similar to the last permit. Bacteria may be reported as either cfu/100 ml or most probable number (MPN). This draft permit will include a 30-day average loading limit as established in the TMDL of 9.55×10^8 cfu/day.

b. pH

The pH range, 6.6 to 9.0 su., for warmwater aquatic life (20.6.4.900.H NMAC) is more stringent than the technology-based limits, so WQ based pH limitations are established in the permit.

c. TOXICS

i. General Comments

The CWA in Section 301 (b) requires that effluent limitations for point sources include any limitations necessary to meet water quality standards. Federal regulations found at 40 CFR §122.44 (d) state that if a discharge poses the reasonable potential to cause an in-stream excursion above a water quality criteria, the permit must contain an effluent limit for that pollutant.

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 Owned Treatment Works (POTWs), but also to facilities that are similar to POTWs, but which do not meet the regulatory definition of "publicly owned treatment works" (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 facility is designated as a minor, and does not need to fill out the expanded pollutant testing section Part D of Form 2A. There are no toxics that need to be placed in the draft permit except for TRC described below.

ii. Critical Conditions

Critical conditions are used to establish certain permit limitations and conditions. The State of New Mexico WQS allows a mixing zone for establishing pollutant limits in discharges. Both the NMWQS and NMIP establish a critical low flow designated as 4Q3, as the minimum average four consecutive day flow which occurs with a frequency of once in three years. The draft permit establishes a critical dilution based on the 4Q3 provided by NMED of 0.675 cfs.

For permitting purposes of certain parameters such as WET, the critical dilution of the effluent to the receiving stream is determined. The critical dilution, CD, is calculated as:

$CD = Qe/(F \cdot Qa + Qe)$, where:

Qe = facility flow (0.2 MGD/0.3 cfs)
Qa = critical low flow of the receiving waters (0.4 MGD/0.675 cfs)
F = fraction of stream allowed for mixing (1.0)

CD = 0.2 MGD/ [(1.0) (0.4) + 0.2]
= 0.33
= 33%

d. TRC

The facility uses UV to treat bacteria. Consistent with all POTWs in the State of NM; however, TRC limitations are placed in permits to provide discharge limitations in the event chlorine is

used as backup bacteria disinfection treatment and/or cleaning and disinfection of process equipment. The previous permit established water quality-based effluent limitations for TRC of 11 µg/l and that limit will be continued in the draft permit with the conditions above stated as to when the facility needs to provide monitoring for TRC.

5. MONITORING FREQUENCY FOR LIMITED PARAMETERS

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). Sample frequency is based on the NMIP. Based on the design flow of the facility, 0.2 MGD, the NMIP has 5/week monitoring frequency for pH and TRC, 2/month for BOD, TSS, and bacteria. Flow is proposed to be monitored daily by totalizing meter. E. coli bacteria and pH shall use grab samples. BOD and TSS shall use 3-Hr composite samples. TRC shall be sampled using instantaneous grab samples. Regulations at 40 CFR §136 define instantaneous grab as being analyzed within 15-minutes of collection. Monitoring frequency for BOD or TSS percent removal is 1/month. Because the facility does not use chlorine products for disinfection, monitoring of TRC is only required when chlorine products are used for any reason to the system.

D. WHOLE EFFLUENT TOXICITY REQUIREMENTS

Procedures for implementing WET terms and conditions in NPDES permits are contained in the NMIP. Table 11 of Section V of the NMIP outlines the type of WET testing for different types of discharges.

Based on the nature of the discharge; wastewater treatment plant, the production flow; more than 0.1 MGD but less than 1.0 MGD, the nature of the receiving water: perennial, and the critical dilution; 33%, the NMIP directs the WET test to be a 7-day chronic for *Ceriodaphnia dubia* and *Pimephales promelas.* The current permit has *Daphnia pulex* in lieu of *Ceriodaphnia dubia* by mistake, the proposed permit will amend that error. Data from the DMR reveal that the yearly test passed the last 5 years. No limit will be proposed in this draft permit. The dilution series will now be 14%, 19%, 25%, 33% and 44%

VII. 303(d) LIST

According to the "2016-2018 State of New Mexico 303(d) List for Assessed Stream and River Reaches," the Rio Grande (Leasburg Dam to one mile below Percha Dam), in WQS Segment No. 20.6.4.101, is not supporting for primary contact use. The probable cause is E. coli., effluent limitations for E. coli are established based on the TMDL for the main stem of the Lower Rio Grande (from the international boundary with Mexico to Elephant Butte Dam), June 11, 2007. The limit for E. coli on draft permit will be 126 cfu/100ml with a waste load allocation of 3.79 x 10^7 cfu/day as per the TMDL directs.

VIII. 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. The permit requirements and the limits are protective of the assimilative capacity of the receiving waters, which is protective of the designated uses of that water, NMAC Section 20.6.4.8.A.2.

IX. ANTIBACKSLIDING

The proposed permit is consistent with the requirements to meet antibacksliding provisions of the Clean Water Act, Section 402(o) and 40 CFR §122.44(l)(i)(A), which state in part that interim or final effluent limitations must be as stringent as those in the previous permit, unless material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation. No less stringent effluent limitations are proposed in this permit renewal.

X. ENDANGERED SPECIES CONSIDERATIONS

According to the most recent county listing available at USFWS, Southwest Region 2 website, http://www.fws.gov/endangered/, three species in Doña Ana County are listed as endangered. The Least tern (*Sterna antillarum*), Southwestern willow flycatcher (*Empidonax traillii extimus*) and the Sneed pincushion cactus (*Coryphantha sneedii var. sneedii*).

Least tern: Interior least terns usually arrive on their breeding grounds in early to mid-May and begin to establish feeding and nesting territories. During the breeding season, the terns' home range is generally limited to a two-mile stretch of river associated with the nesting colony. Least terns nesting at sandpits along rivers use the adjoining river as well as the sandpit lake itself for foraging. Interior least terns consume small fish captured in the shallow water of rivers and lakes. In New Mexico, they breed regularly only at Bitter Lake, and they occur occasionally elsewhere along the Pecos River valley. Non-breeding, transient individuals have been observed at the Holloman Wetlands in Years 2002-2005. Human development and use of tern nesting beaches for housing and recreation subsequently lead to another rapid population decline. In the interior United States, river channelization, irrigation diversions and the construction of dams contributed to the destruction of much of the terns' sandbar nesting habitat. Quality of New Mexico breeding habitat is potentially variable due to changing water levels. Colonies may become vulnerable to disturbance and predation if water levels drop, and flows are required to maintain suitable nesting substrate.

Southwestern willow flycatcher: They build nests and lay eggs in late May or early June and fledge young in late June or early July. Typically, the southwestern willow flycatcher raises one brood per year. Breeding territory for the southwestern willow flycatcher extends from extreme southern Utah and Nevada, through Arizona, New Mexico, southern

California, and west Texas to extreme northern Baja California and Sonora, Mexico. In New Mexico, the State Game and Fish Department estimated fewer than 200 pairs remained in 1988. Surveys conducted in 1993-1995 found only about 100 pairs, with some 75% occurring in one local area. Several factors have caused the decline in Southwestern willow flycatcher populations. Extensive areas of suitable riparian habitat have been lost due to river flow-regulation and channelization, agricultural and urban development, mining, road construction, and overgrazing. As a result of habitat fragmentation, cowbird parasitism has increased. The invasion of the exotic salt cedar has also altered the riparian ecosystem in the Southwest.

Sneed pincushion cactus: occurs in west Texas and southern New Mexico. It grows at an elevation of 1,200-2,350 m in areas where the average precipitation varies from 19.7-40 cm/year. Plants of Sneed pincushion cactus are multistemmed with stems of two types. One type of stem remains small and probably serves to start new plants when they break off. The other type of stem is larger, more rigidly attached and produces flowers, fruits, and seeds. Most Sneed pincushion cacti bloom after 3-4 years. Plants bud from March to April with the principal blooming period in April.

In accordance with requirements under section 7(a)(2) of the Endangered Species Act, EPA has reviewed this permit for its effect on listed threatened and endangered species and designated critical habitat. After review, EPA has determined that the reissuance of this permit will have "*no effect*" on listed threatened and endangered species nor will adversely modify designated critical habitat. EPA makes this determination based on the following:

1. No additions have been made to the USFWS list of threatened and endangered species and critical habitat designation in the area of the discharge since prior issuance of the permit.

2. EPA has received no additional information since the previous permit issuance which would lead to revision of its determinations.

3. EPA determines that Items 1 and 2 results in no change to the environmental baseline established by the previous permit, therefore, EPA concludes that reissuance of this permit will have "no effect" on listed species and designated critical habitat.

XI. HISTORICAL and ARCHEOLOGICAL PRESERVATION CONSIDERATIONS

The reissuance of the permit should have no impact on historical and/or archeological sites since no construction activities are planned in the reissuance.

XII. PERMIT REOPENER

The permit may be reopened and modified if new information which is not available to EPA prior to the final decision of the permit becomes available during the life of the permit. New information may include, but is not limited to, revised/new State Water Quality Standards,

amended/new EPA approved TMDL, information/conditions obtained during government-to-government consultations, e.g., consultation pursuant to the ESA, and substantial changes of treatment process. Modification of the permit is subject to the provisions of 40 CFR §124.5.

XIII. VARIANCE REQUESTS

No variance requests have been received.

XIV. 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.

XV. FINAL DETERMINATION

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

XVI. ADMINISTRATIVE RECORD

The following information was used to develop the proposed permit:

A. APPLICATION(s)

EPA Application Form 2A received July 20, 2018.

B. STATE OF NEW MEXICO REFERENCES

New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, as amended through August 11, 2017.

Procedures for Implementing National Pollutant Discharge Elimination System Permits in New Mexico, March 15, 2012.

State of New Mexico 303(d) List for Assessed Stream and River Reaches, 2016 - 2018.

U.S. EPA-Approved; Total Maximum Daily Load (TMDL) for the Main Stem of the Lower Rio Grande (from the International Boundary with Mexico to Elephant Butte Dam), June 11, 2007.

Minor Municipal; SIC 4951: NPDES Compliance Evaluation; Salem Wastewater Treatment Plant: NM0030457: May 14, 2014.