

NPDES PERMIT NO. NM0023485

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

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PERMIT ACTION

Proposed reissuance of the current NPDES permit issued December 31, 2003, with an effective date of February 1, 2004, and an expiration date of January 31, 2009.

RECEIVING WATER – BASIN

Rio Grande – 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
E. coli	Escherichia coli
FCB	Fecal coliform bacteria
FWS	United States Fish and Wildlife Service
ug/l	Micrograms per liter (one part per billion)
mg/l	Milligrams per liter (one part per million)
MGD	Million gallons per day
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
ng/l	Nanograms per liter (one part per trillion)
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
PSWQS	Pueblo of Sandia Water Quality Standards
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
USGS	United States Geological Service
WET	Whole effluent toxicity
WQCC	New Mexico Water Quality Control Commission
WQMP	Water Quality Management Plan
WWTP	Wastewater treatment plant

In this document, references to State WQS and/or rules shall mean collectively either or both the Pueblo of Sandia and/or the State of New Mexico.

I. CHANGES FROM THE PREVIOUS PERMIT

Changes from the permit previously issued December 31, 2003, with an effective date of February 1, 2004, and an expiration date of January 31, 2009, are:

- A. The pollutant pH has been made more stringent.
- B. E. coli bacteria limits have been added.
- C. Fecal coliform bacteria limits have been removed from the permit.
- D. WET limits have been eliminated and replaced with WET reporting.
- E. The critical dilution used for WET has been reduced.
- F. Arsenic permit limits have been removed due to changes in WQS and replaced with monitoring requirements.
- G. Ammonia limits have been reduced due to changes in WQS.
- H. A one-time PCB monitoring requirement has been added.
- I. Dissolved oxygen monitoring has been added.

II. APPLICANT LOCATION and ACTIVITY

As described in the application, the facility is located at 585 Calle Chaparral, in Bernalillo, Sandoval County, New Mexico.

Under the Standard Industrial Classification Code 4952, the applicant operates a POTW with a design flow capacity of 0.80 MGD serving a population of approximately 7,000. As described in the application, preliminary treatment includes pumping into a channel containing an automatic bar screen which removes materials using a one quarter-inch screen. The solids are washed to remove organics and compacted for disposal in a landfill. Wastewater then flows by gravity into an aerated grit chamber where grit and heavy particles are removed. Wastewater is then treated using anoxic and aerated tanks for oxidation of the organics and removal of ammonia, nitrogen and phosphorus contaminants. After sedimentation, where solids sludge and clear liquid are separated, the clear liquid continues by gravity flow through vertical ultraviolet bulbs which disinfect bacteria using UV light. Effluent is then discharged via an effluent pump station to the Rio Grande. Sludge from the clarifiers is further dewatered and removed to a landfill, as is the screenings and grit

The discharge from the POTW is through Outfall 001 at Latitude 35° 18' 20" North and Longitude 106° 33' 40" West. A map of the facility is provided in **Figure 1** below.

III. EFFLUENT CHARACTERISTICS

A quantitative description of the discharge(s) described in the EPA Permit Application Form 2A received July 31, 2008, are presented below:

POLLUTANT TABLE - 1

Parameter	Avg	Max
	(mg/l unless noted)	
Flow, million gallons/day (MGD)	0.74	0.80
Temperature, winter	59 °F	61 °F
Temperature, summer	77 °F	77 °F
pH, minimum, standard units (SU)	N/A	7.2 su
pH, maximum, standard units (SU)	N/A	7.6 su
Biochemical Oxygen Demand, (BOD)	7.2	13.7
Fecal Coliform (FCB) (bacteria/100 ml)	19	48
Total Suspended Solids (TSS)	8.1	17.4
Ammonia (NH ₃)	7.8	11.6
Chlorine, Total Residual (TRC)	0.15	0.2
Dissolved Oxygen	5.18	5.5
Total Kjeldahl Nitrogen (TKN)	12.8	16.3
Nitrate plus Nitrite Nitrogen	0.05	0.05
Oil and grease	5.0	5.0
Phosphorus, Total	0.9	2.1
Total Dissolved Solids (TDS)	835	842

A summary of the last 24-months of 30-day average pollutant data taken from DMRs for limited pollutants are shown in **Appendix 1** attached below.

In addition, WET testing during the permit term has shown no RP for aquatic toxicity. *See* WET section below.

IV. 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.

It is proposed that the permit be reissued for a 5-year term following regulations promulgated at 40 CFR §122.46(a). The previous permit expired January 31, 2009, and a timely complete permit renewal application was received July 31, 2008, in accordance with provisions found at 40 CFR §122.21(d) and (e).

V. 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 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 established in the proposed draft permit for TSS and BOD. Water quality-based effluent limitations are established in the proposed draft permit for E. coli bacteria, TRC, ammonia-nitrogen, nitrate and pH.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

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, fecal coliform, 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.

The Bernalillo facility is a POTW treating sanitary wastewater. POTW's have technology-based ELG's established at 40 CFR Part 133, Secondary Treatment Regulation. Pollutants with ELG's established in this Chapter are BOD, TSS and pH. BOD limits of 30 mg/l for the 30-day average and 45 mg/l for the 7-day average 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, 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). 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 POTW's, 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
30-day average BOD/TSS loading = 30 mg/l * 8.345 lbs/gal * 0.8 MGD
30-day average BOD/TSS loading = 200 lbs

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

Final Effluent Limits - 0.8 MGD design flow.

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			
	Lbs/Day		mg/l (unless noted)	
Parameter	30-Day Avg.	7-Day Avg.	30-Day Avg.	7-Day Avg.
Flow	N/A	N/A	Measure MGD	Measure MGD
BOD	200	300	30	45
TSS	200	300	30	45
pH	N/A	N/A	6.0 – 9.0 standard units	

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.

2. 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.

3. State Water Quality Numerical Standards

a. GENERAL COMMENTS

For the Rio Grande, the Pueblo of Sandia has designated uses of warmwater fishery, primary contact ceremonial, primary contact recreational, secondary contact recreational, agricultural water supply, and industrial water supply. For New Mexico, designated uses of irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat and secondary contact need protective limits.

b. RECEIVING WATER STANDARDS and DESIGNATED USES

The facility is located on State land but the discharge from Outfall 001 enters the Rio Grande from the east to Pueblo of Sandia waters. The Tribe controls the water rights of the east half of

the Rio Grande, with the west half Rio Grande controlled by New Mexico. The state portion of the Rio Grande is designated as Segment 20.6.4.106 in the Rio Grande Basin.

c. WATER QUALITY STANDARDS

i. Pueblo of Sandia Water Quality Standards

The Pueblo of Sandia has been approved to have treatment in the same manner as a state as contained in 40 CFR 131.8. The general and specific stream standards for the Pueblo of Sandia Water Quality Standards (PSWQS) are provided in "Pueblo of Sandia Water Quality Standards", revised January 31, 2008, approved and adopted by Tribal Council Resolution 2009-118 on November 13, 2009, and approved by EPA March 9, 2010.

The designated uses of the Rio Grande, according to PSWQS, Section V.A.1, are warmwater and coolwater aquatic/fishery, primary contact ceremonial, primary and secondary contact recreational, agricultural and industrial water supply, domestic water supply and wildlife habitat.

ii. State Water Quality Standards

The New Mexico State Standards for Interstate and Intrastate Surface Waters are found at 20.6.4 NMAC, amended through August 1, 2007 and are found on the NMED's website at <http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.pdf>.

The New Mexico designated uses of the Rio Grande are irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat and secondary contact.

4. 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. pH

Pueblo of Sandia stream segment WQS; coolwater aquatic life/fishery use, require pH to be between 6.6 and 9.0 su. New Mexico stream segment specific WQS for pH is 6.6 to 9.0 su. These criteria are more restrictive than the technology-based limits presented earlier, and they are also more restrictive than the current permit. The draft permit shall establish 6.6 to 9.0 su's for pH based on Pueblo of Sandia and NM stream segment specific WQS.

b. BACTERIA

The previous permit had limits for FCB. Since the previous permit issuance, New Mexico has adopted E. coli as the State bacteria standard in lieu of FCB. PSWQS allow either FCB or E. coli to be used for bacteria monitoring. PSWQS stream segment specific WQS require E. coli of 47 cfu/100 ml monthly geometric mean and 88 cfu/100 ml single sample maximum. State of New Mexico stream segment specific WQS require E. coli of 126 cfu/100 ml monthly geometric mean and 410 cfu/100 ml daily maximum, end-of-pipe.

New Mexico issued a TMDL in May 2010, and approved by EPA June 30, 2010, based on PSWQS. The TMDL established E. coli limits of 47 cfu/100 ml monthly geometric average with a monthly average waste load limit of 1.43×10^9 cfu/day based on PSWQS. The load limit is based on the following conversion factor:

$$C \text{ as cfu/100ml} \times 1000 \text{ ml/Liter} \times 1 \text{ Liter/0.264 gallons} \times 1,000,000 \text{ gal/MG} \times Q_e \text{ as MGD} = 3.79 \times 10^7$$

$$\text{Loading limit expressed as cfu/day} = 47 \text{ cfu/100 ml} \times 0.8 \text{ MGD} \times 3.79 \times 10^7 = 1.43 \times 10^9 \text{ cfu/day}$$

This TMDL supersedes and replaces a 2002 TMDL that established FCB limits. Since the 2010 TMDL eliminates FCB and replaces it with E. coli bacteria, the change does not constitute antibacksliding. The draft permit will propose E. coli bacteria limits of 47 cfu/100 ml monthly geometric average with a monthly average waste load limit of 1.43×10^9 cfu. Since there is no required construction activity to add bacteria control technology, no compliance schedule will be granted in the draft permit to meet the E. coli limits.

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 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. However, certain toxics; ammonia, nitrate-nitrogen and arsenic, have been identified in previous permits as being present at concentrations that exceed RP and they will be discussed below.

ii. Critical Conditions

Critical conditions are used to establish certain permit limitations and conditions. Both the Pueblo of Sandia and the State of New Mexico WQS allow a mixing zone for establishing pollutant limits in discharges. Both states 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 SWQB of the NMED provided EPA with the 4Q3 for the Bernalillo WWTP. The USGS Gauge 083330000 station, used previously for this permit downstream of the facility, had a 4Q3 of 75.1 cfs (48.54 MGD). The contributors to this gauge station are the flow from this facility (0.8 MGD) plus the flow from Rio Rancho WWTP #2 (5.5 MGD) and #3 (0.85 MGD). The combined flows from the three facilities total 7.15 MGD, so the 4Q3 at the Bernalillo WWTP is 41.39 MGD; (48.54 – 7.15).

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:

$CD = Q_e / (FQ_a + Q_e)$, where:

Q_e = facility flow (0.80 MGD)

Q_a = critical low flow of the receiving waters (41.39 MGD)

F = fraction of stream allowed for mixing (1.0)

$$\begin{aligned} CD &= 0.80 \text{ MGD} / [(1.0)(41.39) + 0.80] \\ &= 0.019 \\ &= 1.9 \% \end{aligned}$$

The following instream parameters were taken from Station 32RGrand464.2, Rio Grande above Highway 550 Bridge; approximately one river-mile upstream of the facility:

Stream hardness - 104 mg/l.

Stream TSS - 55 mg/l.

Stream pH - 8.2 su.

Stream temperature - 16 °C.

iii. Nitrate

The previous permit had nitrate limits of 10 mg/l, 30-day average. PSWQS Section IV.D.4 establishes maximum criteria for nitrates of 10 mg/l. New Mexico does not have a statewide standard for nitrate and there is no stream segment specific limitation either. The draft permit establishes limits for nitrates based on the PSWQS, the limiting water quality standard. The limit is identical to the previous permit, 10 mg/l, 30-day average.

iv. TRC

The application indicates that the facility uses ultraviolet (UV) light for bacteria control. The previous permit used chlorine and had limits for TRC of 11 ug/l. TRC limitations will be continued in the draft permit however under limited circumstances. Those times are when chlorine is either used as a back-up system during power failures and/or when chlorine is used to disinfect process treatment equipment. During those times, TRC limitations will be monitored and reported daily.

v. Water Quality Standards – New Mexico

The RP and permit limits if required for protection of NMWQS are screened in a spreadsheet and attached as **Appendix 2** attached to the Fact Sheet. The analysis demonstrates that no permit limits are required to be placed in the draft permit for the protection of designated uses based on NMWQS.

vi. Arsenic – Pueblo of Sandia Human Health Considerations

The previous permit established 30-day average limits for arsenic, equal to the PSWQS human health criteria 0.0175 ug/l. Recent changes in the PSWQS relaxed the arsenic human health criteria from 0.0175 ug/l to 3.6 ug/l and allowed a mixing zone for determining human health limits using the harmonic mean flow. Part H of Section 1 of the PSWQS states that ...”critical low flow of streams on the Pueblo at a particular site shall be the minimum average four consecutive day flow which occurs with a frequency of once in three years (4Q3).” Further the same part states that “...human health criteria the harmonic mean flow will be used.” NMED provided data on the harmonic mean flow for the Rio Grande based on data for the time period 1974 to 2008 is 197 cfs. However, the portion of flow from 2002 thru 2008 had flows directed from Cochiti reservoir by agreement that are no longer in effect. This period of flow was not dependent on climatic conditions and not representative of the amount of flow expected to be present in the next permit cycle. Removing that portion of the flow data from the trend adjusts the harmonic mean flow to 179 cfs. This value will be used to determine PSWQS human health based limitations for arsenic. The Pueblo of Sandia provided EPA with dissolved arsenic data taken from the Rio Grande over the past several years. The data was used to establish a background concentration to be used in establishing reasonable potential and if required permit limitations. Data from two sites, above the 550 Bridge and above Bernalillo POTW was used to determine the instream background arsenic value. Using the geometric of the 23 points, covering 2001 thru 2007, yields a dissolved background arsenic concentration of 3.09 ug/l. This value will be used for permit calculations.

To determine if a pollutant has a reasonable potential to exceed a water quality criteria the following test is performed according to the PS Implementation Procedures (PSIP):

Equation 1:

$$IWC_{(HH)} = ((FQa \times Ca) + (Qe \times Ce \times 2.13)) \div (FQa + Qe)$$

If the IWC is greater than the applicable criteria then a permit limit must be developed using the following relationship:

Equation 2:

$$\text{Daily Average Permit Limit} = Cs[(FQa + Qe) \div Qe] - Ca\{FQa \div Qe\}$$

Where:

Ce is the daily average effluent concentration, 12 ug/l

Cs is the applicable water quality criteria, 3.6 ug/l dissolved arsenic human health

Ca is the ambient concentration upstream of discharger, 3.09 ug/l dissolved arsenic

Qe is the effluent flow rate, 1.24 cfs (0.8 MGD)

Qa is the harmonic mean stream flow rate, 179 cfs

F is the fraction of stream allowed for mixing, 1.0 for human health based on the PSIP.

Based on Equation 1, the $IWC_{(HH)}$ is 3.24 ug/l, less than the 3.6 ug/l criteria, so no RP has been demonstrated for arsenic and a permit limit for arsenic is not required based on PSWQS. This is a change from the previous permit but is based on two significant changes since the previous permit's issuance. The first is the change in WQS from 17.5 ng/l to 3.6 ug/l; an increase of over 200% and the second change is the allowance of a harmonic mean flow for human health RP determinations. These two changes in WQS allowed for the permit limit to be removed from the draft permit and is not subject to antibacksliding as provided for in 40 CFR §122.44(L)(1); material and substantive changes. The draft permit will propose replacing the limit with monitoring of arsenic on a once per month frequency.

vii. Arsenic – Pueblo of Sandia Aquatic Toxicity Considerations

The PSIP states “Within the mixing zone, there shall be no acute toxicity. There shall be no chronic toxicity at the edge of the mixing zone.” Acute chronic aquatic criteria must be met at end-of-pipe. The acute criteria for arsenic is 340 ug/l. Since this value is considerably greater than the DMR reported value of 12 ug/l, no RP exists for acute toxicity and no permit limit is required to address acute arsenic toxicity.

The same equations presented above for human health apply for chronic toxicity RP as follows:

Equation 1:

$$IWC_{(CT)} = ((FQa \times Ca) + (Qe \times Ce \times 2.13)) \div (FQa + Qe)$$

Where:

Ce is the daily average effluent concentration, 12 ug/l

Cs is the applicable water quality criteria, 150 ug/l total aquatic chronic toxicity

Ca is the ambient concentration upstream of discharger, 3.09 ug/l

Qe is the effluent flow rate, 1.24 cfs (0.8 MGD)

Qa is the 4Q3, 41.39 MGD (64.04 cfs)

F is the fraction of stream allowed for mixing, 1.0 for human health based on the PSIP.

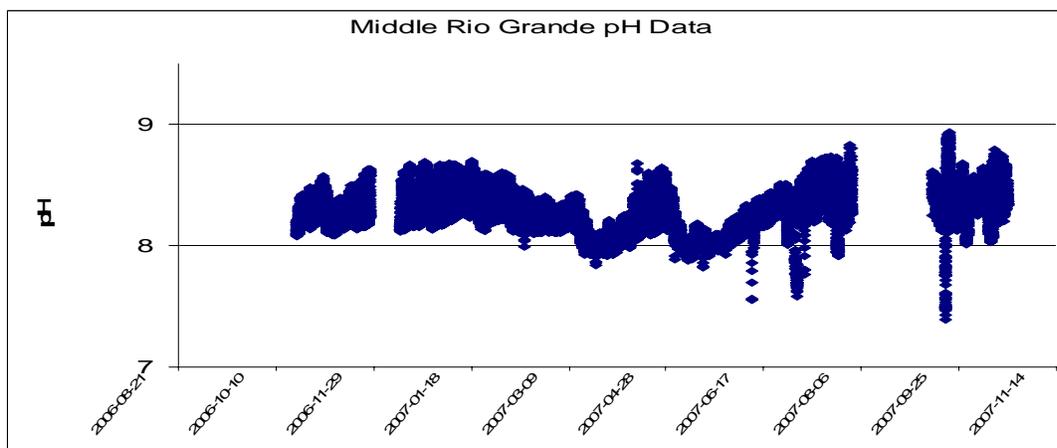
$$IWC_{(CT)} = 3.517 \text{ ug/l}$$

Since the $IWC_{(CT)}$ is less than the criteria, 150 ug/l, there is no RP and a permit limit is not required in the draft permit to address arsenic chronic toxicity based on PSWQS.

viii. Ammonia

The previous permit established limits for ammonia of 0.30 mg/l, 30-day average and 0.71 mg/l 7-day average based on Pueblo of Sandia WQS. These limits were based on then current PSWQS which used criteria determined using the unionized ammonia relationship to total ammonia. On December 22, 1999, EPA published in the Federal Register, Vol. 64, No. 245, 1999 Update of Ambient Water Quality Criteria for Ammonia (1999 AU). The recently approved PSWQS have adopted that update for ammonia criteria.

Acute ammonia criteria (CMC) using the 1999 AU guidance are based on pH data only. The Rio Grande at the point of discharge has coolwater designated uses based on PSWQS and the standards require that coolwater protection is provided when salmonid fish species may be present. Data for pH is available in several places in the Middle Rio Grande (MRG) in the vicinity of the discharge. A long pH data set covering 12-months; October 2006 thru October 2007, from the Alameda Bridge (USGS Station No 351968106641474) was used to establish receiving water criteria. Using an automatic sampler, data was taken every 15-minutes and the data set has over 28,700 points. Since values for pH are not linear; they are logarithmic and cannot be “averaged” like other pollutant concentration values, the 90th percentile value of the large data set represents a reasonable and conservative permit strategy for the MRG to be used in establishing the CMC criteria. The 90th percentile of the pH data set is 8.50 su.



Where salmonid fish are present the 1999 AU establishes the acute criteria, CMC, in mg/l, for total ammonia-nitrogen as follows using the 90th percentile value of the MRG; 8.5 su:

$$CMC = \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

$$CMC = 2.14 \text{ mg/l}$$

Chronic criteria, CCC, unlike acute criteria, are based on both temperature and pH. The AU policy for CCC is based on fish early life stages present (FELP) or fish early life stages absent (FELA). The AU policy however describes that at temperatures greater than or equal to 15°C (59.0° F), the two criteria are the same. A three-year; January 2007, thru December 2009, with over 26,300 data points (USGS Station No 350402106392810) was evaluated. For purposes of determining CCC, the season temperature will use the 90th percentile of the temperature data of the set. The 90th percentile of the data is 76° F, (24.4° C).

The AU describes the FELP as follows:

$$CCC_{FELP} = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \times \text{MIN} \left(2.85, 1.45 \times 10^{0.028 \times (25 - T)} \right)$$

Where pH is the 90th percentile of the MRG; 8.50 su and T is the 90th percentile temperature; 24.4° C.

The ammonia-nitrogen criteria, CCC_{FELP}, is 0.57 mg/l ammonia-nitrogen.

According to the PS Implementation Procedures (PSIP), ammonia limits are calculated using Equation 2 shown above:

$$\text{Daily Avg} = Cs[(FQa + Qe) \div Qe] - Ca\{FQa \div Qe\}$$

Based on Equation 2 the 30-day average limit is 30.1 mg/l.

As was stated earlier, the PSIP states “Within the mixing zone, there shall be no acute toxicity,” so the acute ammonia criteria calculated above is the permit limit; 2.14 mg/l. Since the chronic limit is less stringent than the acute limit determined above, the draft permit will propose the acute limit, 2.14 mg/l, as the 30-day average permit limit. To establish daily maximum permit limits, the 1.5 ratio allowed in the NMED IP will be used and the daily maximum permit limit is proposed at 3.21 mg/l. Loading limits for ammonia are established using the following relationship:

$$\text{Loading Limits (lbs/day)} = \text{Pollutant concentration in mg/l} \times 8.345 \times \text{MGD}$$

$$\text{30-Day Avg} = 2.14 \times 8.345 \times 0.8 = 14.3 \text{ lbs/day}$$

$$\text{Daily Max} = 3.21 \times 8.345 \times 0.8 = 21.4 \text{ lbs/day}$$

These limits are less restrictive than the previous permit but since they are based on a change of PSWQS changes, they are not subject to antibacksliding.

The State of New Mexico allows compliance with total ammonia standards by performing WET testing. The previous permit established WET testing based on New Mexico guidance and this will ensure that New Mexico ammonia criteria are protected. The proposed permit establishes effluent limitations for total ammonia to meet the PSWQS, the limiting water quality standard. EPA notes that the proposed permit also establishes biomonitoring requirements which are discussed below in Part E of this Section.

5. 303(d) List Impacts

The Rio Grande, Stream Segment 20.6.4.106, Rio Grande non-pueblo Alameda Bridge to the HWY 550 Bridge, is listed as impaired on the “State of New Mexico Part 303(d) List for Assessed Stream and River Reaches, 2010-2012.” The waterbody is assessed as Category 5/5A with irrigation, livestock watering and wildlife habitat as fully supporting but secondary contact and marginal warmwater aquatic life as being impaired. Probable causes of impairments are listed as E. coli, ambient bioassays; PCB’s in fish tissue and dissolved oxygen.

The PCB is a listed pollutant since currently NMED has issued a fish consumption advisories for the reach. These advisories demonstrate non-attainment with “fishable” CWA goals and require further investigation. The NMED released results of a study conducted in 2009 of Rio Grande water quality near the Santa Fe Buckman Direct Diversion and in Albuquerque during storm flow conditions, April 19, 2010, stating that “...storm water events in the Albuquerque area have

the potential to carry concentrations of PCBs into the Rio Grande that can harm wildlife and humans consuming PCB contaminated fish.” The press release added that “Since the focus of the sampling events was river water, it is not known at this time if the contaminants were present in the stormwater itself or if the volume and velocity of the stormwater flow disturbed contaminants already present and bound in sediments.” Previous studies conducted since 2003 by local storm water management agencies have not detected PCBs in stormwater. These earlier tests were conducted using EPA Method 608; a gas-chromatograph with electron capture sometimes referred to as the Arochlor method having a MQL of 0.2 ug/l. This latest stormwater testing of PCBs testing by NMED however, were analyzed using EPA Method 1668; also referred to as the Congener Method. The Congener Method has detection capabilities of 200 pg/l, significantly lower than the Arochlor Method. Although EPA Method 1668 has been proposed, it has not been approved under 40 CFR 136 for use in compliance monitoring for NPDES permits. The spread between the Arochlor and Congener Method’s MQLs are where PCB criteria for both the PSWQS and NMWQS for human health are. So while the early indications lead back to PCB’s being in stormwater, it is prudent that discharges from the POTW be evaluated at the Congener levels to determine if the POTW has any contributing role in the pollutants impact. However, use of this more sensitive EPA method will provide lower detection levels necessary to determine if PCBs are in discharges to or from the POTW at levels that have reasonable potential to cause or contribute to an exceedance of State or Tribal water quality standards. Since the waterbody is listed for PCB’s in the State’s portion of the river, an assessment of potential PCB contamination using the sensitive Congener Method will be required. The draft permit will propose a one-time analysis of effluent using the Congener Method. The test shall be required to be performed within the first year of issuance.

The E. coli TMDL has just recently been approved and loadings have been previously addressed in the Fact Sheet above. *See* Section V. C. 4. b above.

The DO TMDL is scheduled for 2013. Both PSWQS and NMWQS require a 5 mg/l DO minimum. A DO model was completed by the EPA in late 2009 that concluded that 95% percentile flow runs would not cause a violation of these WQS. The permit has technology-based limitations for BOD that address the impact of oxygen demanding substances on the receiving stream and are consistent with the DO model. However, monitoring of DO will be established in the draft permit since the receiving stream is listed as having DO impairments and a TMDL is pending within the expected five-year permit term.

The standard reopener language in the permit allows additional permit conditions if warranted by the additional data based on these requirements and/or new or revised TMDLs.

D. 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). Technology based pollutants; BOD, and TSS, are proposed to be monitored three (3) times per month. Flow is proposed to be monitored continuously. These frequencies are the same as the current permit. Sample type for BOD and TSS is 12-Hour composite, which is consistent with the previous permit and with the NMIP.

Water quality-based pollutant monitoring frequency for E. coli bacteria shall be three (3) times per week using grab samples consistent with the previous permit. The pollutant pH shall be monitored daily by grab sample consistent with the NMIP. Nitrate and ammonia-nitrogen shall be monitored two (2) times per week using 12-hour composite samples consistent with the NMIP. TRC shall be monitored daily if chlorine is used in the plant as either an emergency or backup bacteria control and/or if used to disinfect process equipment. Sample type for TRC shall be instantaneous grab. Regulations at 40 CFR Part 136 define instantaneous grab as being analyzed within 15-minutes of collection. All of these monitoring frequencies are consistent with the NMIP. PCB testing using the Congener Method shall be once and must be sampled within the first 12-months after the permit effective date. Arsenic monitoring shall be once per month using 12-hour composite samples.

E. WHOLE EFFLUENT TOXICITY LIMITATIONS

The previous permit established WET limits after a 3-year compliance schedule with 45% CD. The results from the DMR reports for WET testing are shown in **Appendix 3**. Analysis of DMR data shown in **Appendix 3** demonstrates that at the 45% CD the discharge no longer demonstrated RP to exceed applicable narrative WQS. The conclusion of DMR data is that the permit no longer needs a WET limit, but may be reduced to a WET report. In Section V.C.4.c.ii. above; “Critical Conditions”, it was shown that the critical dilution, CD, for the facility is 1.9%, based on newer 4Q3 data. When the critical dilution is equal to or less than 10%, the NMIP provide that in lieu of the more expensive 7-day chronic test, a 48-hour acute test may be run using a 10:1 acute to chronic ratio (19%). Since the CD is based on changing data, the reduction in CD is allowed under antibacksliding. The draft permit will propose 48-hour acute WET testing using *Daphnia pulex* and *Pimephales promelas* at a once per six-month frequency for the first full year (two tests). The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations shall be 8%, 11%, 14%, 19%, and 25%. The low-flow effluent concentration (critical low-flow dilution) is defined as 19% effluent.

The permittee shall conduct separate WET tests in accordance with the following table:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE MONITORING</u> <u>30-DAY AVG MINIMUM</u>	<u>48-Hr. MINIMUM</u>
Whole Effluent Toxicity Testing (48 Hr. Static Renewal) 1/		
<u>Daphnia pulex</u>	REPORT	REPORT
<u>Pimephales promelas</u>	REPORT	REPORT
<u>EFFLUENT CHARACTERISTIC</u>	<u>MONITORING REQUIREMENTS</u> <u>FREQUENCY</u>	<u>TYPE</u>
Whole Effluent Toxicity Testing (48 Hr. Static Renewal) 1/		
<u>Daphnia pulex</u>	1/Six-Months	24 Hr. Composite
<u>Pimephales promelas</u>	1/Six-Months	24-Hr. Composite

FOOTNOTES:

1/ Monitoring and reporting requirements begin on the effective date of this permit. See Part II, Whole Effluent Toxicity Testing Requirements for additional WET monitoring and reporting conditions.

VI. FACILITY OPERATIONAL PRACTICES**A. SEWAGE SLUDGE**

Based on information provided in the application, sewage sludge produced at this facility is dried using sand beds and disposed of in the Sandoval County Landfill. The permittee shall use only those sewage sludge disposal or reuse practices that comply with the federal regulations established in 40 CFR Part 503 "Standards for the Use or Disposal of Sewage Sludge". EPA may at a later date issue a sludge-only permit. Until such future issuance of a sludge-only permit, sludge management and disposal at the facility will be subject to Part 503 sewage sludge requirements. Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a sludge-only permit has been issued. Part IV of the draft permit contains sewage sludge permit requirements.

B. WASTE WATER POLLUTION PREVENTION REQUIREMENTS

The permittee shall institute programs directed towards pollution prevention. The permittee will institute programs to improve the operating efficiency and extend the useful life of the treatment system.

C. INDUSTRIAL WASTEWATER CONTRIBUTIONS

The treatment plant has no non-categorical Significant Industrial User's (SIU) and no Categorical Industrial User's (CIU). The EPA has tentatively determined that the permittee will not be required to develop a full pretreatment program. However, general pretreatment provisions have been required. The facility is required to report to EPA, in terms of character and volume of pollutants any significant indirect dischargers into the POTW subject to pretreatment standards under Section 307(b) of the CWA and 40 CFR Part 403.

D. 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 results quarterly. The monitoring results will be available to the public.

VII. ANTIDegradation

The Pueblo of Sandia and New Mexico both have antidegradation requirements to protect existing uses through implementation of their WQS. The limitations and monitoring requirements set forth in the proposed draft are developed from the appropriate State WQS and are protective of those designated uses. Furthermore, the policy's set 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.

VIII. 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. The proposed permit maintains the mass loading requirements of the previous permit for nitrate, BOD and TSS. The pollutant pH has been made more stringent and this action is not subject to antibacksliding provisions. Ammonia limits have been established at seasonal limits, and are less stringent than the previous permit based on changes in WQS. Arsenic limits have also been removed in the draft permit based on changes in WQS. WET changes are also based on changes in critical conditions and past performance. All of the changes represent permit requirements that are consistent with the States WQS and WQMP.

IX. ENDANGERED SPECIES CONSIDERATIONS

According to the most recent county listing available at US Fish and Wildlife Service (USFWS), Southwest Region 2 website, <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>, four species in Sandoval County are listed as endangered (E) or threatened (T). The lone aquatic species is the Rio Grande silvery minnow (*Hybognathus amarus*) (E). Two species are birds and include the southwestern willow flycatcher (*Empidonax traillii extimus*) (E) and the Mexican spotted owl (*Strix occidentalis lucida*) (T). The only mammal is the black-footed ferret *Mustela nigripes* (E). The American bald eagle (*Haliaeetus leucocephalus*) was previously listed in Sandoval County; however, the USFWS, removed the American bald eagle in the lower 48 states from the Federal List of Endangered and Threatened Wildlife Federal Register, July 9, 2007, (Volume 72, Number 130).

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. The previous permit initiated Formal Consultation with the FWS for the discharge from the facility. EPA provided a Biological Evaluation (BE) to FWS January 31, 2001. The FWS responded to EPA’s BE, December 6, 2001, Consultation # 2-22-01-I-542, concurring with EPA’s “no effect” determination for the Southwestern flycatcher and its “may affect, but not likely to adversely affect” the Rio Grande silvery minnow.

2. No changes have been made to the US Fish and Wildlife list of threatened and endangered species and critical habitat designation in the area of the discharge since prior issuance of the permit.

3. EPA has received no additional information since its December 6, 2001, BE, which would lead to revision of its determinations.

4. The changes in the draft permit are made as a result of changes in applicable WQS. The human health criteria that established the previous arsenic permit limit was 0.0175 ug/l. In addition, the permit was developed without a mixing zone based on current Pueblo of Sandia WQS. Significant changes in both the arsenic human health criteria and the allowance of a mixing zone has allowed for the arsenic limit to be eliminated in the draft permit.

5. EPA determines that Items 1, 2, 3, and 4 result 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.

X. 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.

XI. PERMIT REOPENER

The permit may be reopened and modified during the life of the permit if relevant portions of either States WQS are revised or remanded. In addition, the permit may be reopened and modified during the life of the permit if relevant procedures implementing the States Water Quality Standards are either revised or promulgated. Should either State adopt a new WQS, and/or develop or amend a TMDL, this permit may be reopened to establish effluent limitations for the parameter(s) to be consistent with that approved State standard and/or water quality management plan, in accordance with 40 CFR §122.44(d). Modification of the permit is subject to the provisions of 40 CFR §124.5.

XII. VARIANCE REQUESTS

No variance requests have been received.

XIII. CERTIFICATION

The permit is in the process of certification by the Pueblo of Sandia 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.

XIV. FINAL DETERMINATION

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

XV. ADMINISTRATIVE RECORD

The following information was used to develop the proposed permit:

A. APPLICATION(s)

EPA Application Form 2A received July 31, 2008.

B. 40 CFR CITATIONS

Citations to 40 CFR are as of April 30, 2010.

Sections 122, 124, 125, 133, 136

C. TRIBAL/STATE WATER QUALITY REFERENCES

“Pueblo of Sandia Water Quality Standards”, revised January 31, 2008, adopted by Tribal Council Resolution 2009-118 on November 13, 2009, and approved by EPA March 9, 2010.

Pueblo of Sandia Water Quality Standards Implementation Plan, developed by EPA Region 6, December 29, 1993.

Total Maximum Daily Load (TMDL) Report for the Middle Rio Grande Watershed, approved by EPA, June 30, 2010.

New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, as amended through August 1, 2007.

Procedures for Implementing NPDES Permits in New Mexico, July 2009.

Statewide Water Quality Management Plan, December 17, 2002.

State of New Mexico 303(d) List for Assessed Stream and River Reaches, 2010 - 2012.

FIGURE 1 – Facility Site

