

NPDES PERMIT NO. NM0024848

STATEMENT OF BASIS

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

1. APPLICANT

Village of Cuba
P.O. Box 426
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2. ISSUING OFFICE

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3. PREPARED BY

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4. DATE PREPARED

March 11, 2010

5. PERMIT ACTION

Proposed reissuance of the current National Pollutant Discharge Elimination System (NPDES) permit issued October 31, 2005, with an effective date of December 1, 2005, and an expiration date of November 30, 2009.

Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed in Title 40, Code of Federal Regulations, revised as of January 4, 2010.

6. DOCUMENT ABBREVIATIONS:

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

BAT - best available technology economically achievable
BMP – best management plan
BOD – five-day biochemical oxygen demand
BPJ - best professional judgment
CD – critical dilution
CFR – Code of Federal Regulations
cfs – cubic feet per second
CIU - Categorical Industrial User's
COD – chemical oxygen demand
COE – United States Corp of Engineers
CWA – Clean Water Act
DMR – discharge monitoring report
EPA – United States Environmental Protection Agency
ESA - Endangered Species Act
FC- fecal coliform
FWS – United States Fish and Wildlife Service
MGD – million gallons per day
MQL - minimum quantification level
NMAC – New Mexico Administrative Code
NMED – New Mexico Environment Department
NMWQS - New Mexico State Standards for Interstate and Intrastate Surface Waters
NPDES – National Pollutant Discharge Elimination System
O&G – oil and grease
POTW – Publicly Owned Treatment Works
RP – reasonable potential
SIC - standard industrial classification
SIU - Significant Industrial User's
su – standard units
SWQB – Surface Water Quality Bureau
TDS – total dissolved solids
TMDL – total maximum daily load
TOC – total organic carbon
TRC – total residual chlorine
TSS – total suspended solids
UAA – use attainability analysis
WET - whole effluent toxicity
WQCC – New Mexico Water Quality Control Commission
WWTP – wastewater treatment plant

7. DISCHARGE LOCATION

As described in the application, the discharger is a publicly owned treatment works (POTW). The site is located approximately 1.3 miles south of State Highway 197- Rio Puerco Bridge in Sandoval County, New Mexico. The facility discharge is to the Rio Puerco (designated as 20.6.4.99) between Water Quality Segment number 20.6.4.105 and 20.6.4.109 of the Rio Grande Basin. The single outfall of the facility is to the Rio Puerco at:

Latitude 35E 59' 35" North, Longitude 106E 59' 13" West

7. 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 August 1, 2007.

The designated uses of the receiving waters are aquatic life, secondary contact, livestock watering, and wildlife habitat.

8. APPLICANT ACTIVITY

Under the Standard Industrial Classification (SIC) Code 4952, the applicant currently operates a domestic wastewater treatment facility.

The facility has a design flow capacity of 0.144 million gallons per day (MGD).

9. EFFLUENT CHARACTERISTICS

The facility submitted information in its application that describes the nature of the permitted discharge. The following is a summarization of effluent characteristics.

<u>Parameter</u>	<u>(Unit: mg/l unless noted)</u>	Avg. Monthly	Max. Daily
Flow, million gallons/day (MGD)		0.05	0.06
pH, minimum, standard units (su)		N/A	7.0
pH, maximum, standard units (su)		N/A	8.2
Biochemical Oxygen Demand, 5-day (BOD ₍₅₎)		28.0	43.7
Fecal Coliform (FCB) (bacteria/100 ml)		70.7	1,301
E. Coli (bacteria/100 ml)		146.9	1,991
Total Suspended Solids (TSS)		25.8	48.2
Ammonia (as N)		14.18	23.70
Total Residual Chlorine (TRC)		0.25	0.30
Dissolved Oxygen		5.80	6.60

Total Kjeldahl Nitrogen	19.4	27.9
Nitrate + Nitrite Nitrogen	1.81	8.20
Oil & Grease	ND	ND
Total Phosphorus	3.94	3.94
Total Dissolved Solids (TDS)	1003.7	1320

Based on the effluent data reported in the DMRs for the past year, the facility has consistently had values greater than the BOD and TSS effluent limitations as shown below.

Date	BOD		TSS	
	30 DAY AVG	7 DAY AVG	30 DAY AVG	7 DAY AVG
	mg/l	mg/l	mg/l	mg/l
Limit	30	45	30	45
3/2009	24	26	24	24
2/2009	33.5	34	10	10
1/2009	26.5	29	20.5	23
12/2008	28	29	33.5	38
11/2008	45.5	47	55	55
10/2008	26.5	27	31.5	34
9/2008	27	28	68	81
8/2008	14	21	30	39
7/2008	19.5	25	26	37
6/2008	35.5	41	58	65
5/2008	66	77	34.5	54
4/2008	40.5	54	49	73
3/2008	44	56	0.5	16
2/2008	42.5	55	6	9
1/2008	42.5	45	15	19

The highest 30-day average and 7-day average for BOD were 66 mg/l and 77 mg/l, respectively, reported in May 2008. And, the highest 30-day average and 7-day average for TSS were 68 mg/l and 81 mg/l, respectively, reported in September 2008.

10. SIGNIFICANT CHANGES FROM THE EXISTING PERMIT

There are significant changes of permit conditions from the existing permit issued October 31, 2005, and expired November 30, 2009:

- (i) Add effluent limitations and monitoring requirements for total nitrogen, total phosphorus, and total ammonia consistent with the State's approved TMDL;
- (ii) Establish seasonal discharge limitations;
- (iii) Change critical dilution for WET tests;
- (iv) Change effluent limitation for TRC from 11 µg/l to 19 µg/l;
- (v) Add monitoring requirements for dissolved aluminum; and
- (vi) Delete effluent limitations and monitoring requirements for fecal coliform.

11. 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 on August 5, 2009.

b. Operation and Reporting

(1) Regulatory Basis

At a minimum, the facility will be required to meet to the equivalent of “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 results quarterly. The monitoring results will be available to the public.

(3) Sewage Sludge Practices

Sludge produced at the treatment plant is disposed in a sludge lagoon.

(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, (BOD₅), or 5-day carbonaceous biochemical oxygen demand, (CBOD₅), and total suspended solids, (TSS), are in accordance with “secondary treatment requirements” established at 40 CFR 133.102 (a) and 133.102 (b). Limitations on maximum and minimum pH are in accordance with 40 CFR 133.102(c).

d. Water Quality Based Limitations

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.

The NM WQCC adopted new WQS for the State of New Mexico. The revised WQS as amended through August 1, 2007, are available on the NMED's website at <http://www.nmenv.state.nm.us/swqb/Standards/20.6.4NMAC.pdf>. 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 Owned Treatment Works (POTW's), but also to facilities that are similar to POTW's, 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 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 for the protection of aquatic life, primary or secondary contact, irrigation, livestock watering, and wildlife habitat, beyond pH, E. coli, and the use of chlorine for disinfection or clean purpose. Both pH and E. coli limitations are based on segment-specific WQS without giving consideration of dilution as required by NMED. Limitation of TRC is based on acute aquatic life criterion because the acute criterion is more stringent than the chronic at the edge of mixing zone. The TRC chronic limitation established in the expired permit was based on an assumption of “zero” 4Q3 flow prior to the availability of TMDL document.

f. 303(d) Impaired Water

The Rio Puerco reach between Arroyo Chijuilla to the northern boundary of Cuba was found to be impaired by aluminum, total nitrogen and total phosphorus. The TMDL document named “Total Maximum Daily Load (TMDL) for the Rio Puerco Watershed-Part 2” dated September 21, 2007, establishes allocated waste loads of total nitrogen and total phosphorus to the facility as below.

Total Nitrogen:	1.357 lbs/day
Total Phosphorus:	0.447 lbs/day

The TMDL document also establishes several options and compliance schedules for implementation of site-specific effluent limitations for the facility. The permittee met with NMED staff and chose to proceed with the Option 1 as specified in the TMDL document as below.

“The Village of Cuba would replace the existing aerated lagoon system of wastewater treatment with a new system (as discussed in the existing PER (Preliminary Engineering Review)) to improve the effluent quality. The following limits are based on the technological design specifications stated as achievable (with manufacturer guarantees) in the PER (Section 7.a, page 23). Even though the effluent quality that can be achieved by the proposed facility would not be sufficient to meet the target concentrations of the WLA, the overall load would be mitigated in addition to the previously described improved treatment by restricting the Village to discharge to the Rio Puerco as follows:

- Interim Effluent Limits from the date of permit issuance through the completion of construction (not to exceed 3-years)

- o Monitor and report TP, TN, and Total Ammonia by 3-hour composite, not less than once per two weeks

- Final Effluent Limits after completion of construction of new WWTP where the 30-day average loading effluent limit (lbs/day) is calculated by multiplying the 30-day average concentration based limit (mg/L) by the facility design flow (MGD) x 8.34:

- o From November 1 through March 31 each year, when instream biological activity is generally at it's lowest due to lower temperatures and shorter periods of daylight the WWTP would be allowed to discharge to the Rio Puerco. The effluent limits would be the design parameters expressed in the PER.

- TP = 1.2 lbs/day (30-day average), 1.0 mg/L (30-day average), 1.5 mg/L (daily max) measured by 3-hour composite, not less than once per two weeks
- TN = 12 lbs/day (30-day average), 10 mg/L (30-day average), 15 mg/L (daily max) measured by 3-hour composite, not less than once per two weeks
- Total Ammonia = 1.0 mg/L (30-day average), 1.5 mg/L (daily max) measured by 3-hour composite, not less than once per two weeks

- o From April 1 through October 31 each year, when instream biological activity is generally at its highest, the WWTP would not be allowed to discharge to the Rio Puerco.

- Instead of discharging to the Rio Puerco at this time, the WWTP effluent would be stored or disposed through other means (e.g., evaporation, agricultural reuse etc.) in accordance with the State Ground and Surface Water Protection Regulations (20.6.2 NMAC). Note: Ground Water Protection is addressed in the WQMP in Work Element 9.

- The Village would need to implement Best Management Practices during the time of agricultural reuse to prevent the treated wastewater from draining back into the Rio Puerco as runoff from the irrigated land.”

g. Final Effluent Limitations

Technology-based effluent limitations are established in the proposed permit for the following pollutants; BOD₅, and TSS. Water quality-based effluent limitations are established in the proposed permit for the following pollutants: E. coli, pH, TRC, total nitrogen, total phosphorus, and total ammonia. Effluent limitations and monitoring requirements for fecal coliform in the expired permit are no longer appropriate since EPA approved the revised WQS as amended through August 1, 2007, and therefore are not included in this proposed permit renewal.

Aluminum was not detected from the effluent, so the facility has demonstrated no RP for aluminum. The facility may use alum flocculation as part of treatment in the future. A monitoring requirement for aluminum is proposed to collect data for future RP evaluation. The draft permit proposes monitoring of total aluminum and dissolved aluminum. Dissolved aluminum concentration will be used for RP screening. If required, the effluent

limitations will be established for total recoverable aluminum as required by regulations found in 40 CFR 122.45(c).

h. Monitoring Frequency

Regulations require that permits 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)). EPA has developed "Procedures for Implementing NPDES Permits in New Mexico" dated July 23, 2009, (2009 IP). EPA has established recommended monitoring frequencies based on the size of facility, type of treatment process, nature of pollutant parameter, and other factors in the 2009 IP. In accordance with the 2009 IP: BOD₅, TSS, and E. coli are to be monitored 2/month for POTWs with activated sludge treatment technology and with a design flow between 0.1 and 0.5 MGD. Monitoring frequencies for pH and TRC are proposed daily and for total nitrogen, total phosphorus, and total ammonia are 1/2-weeks consistent with Toxics requirements. The monitoring frequency for aluminum is proposed to be 1/Month.

i. Whole Effluent Toxicity (WET) Testing

The discharge is to the Rio Puerco between Arroyo Chijuilla and the northern boundary of Cuba. During the previous permitting period, the critical low flow (4Q3) of Rio Puerco was estimated as "zero", but the 4Q3 flow for this segment of Rio Puerco was established to be 0.965 cubic feet per second (cfs) which is 0.624 MGD when NMED developed the TMDL document. The design flow of the facility is 0.144 MGD. Therefore, the critical dilution of the discharge to the receiving stream is 19%.

Although the previous data showed test failures for *Pimephales promelas*, RP analysis shows no RP due to new stream flow dilution (from 32% to 19%). The facility will undergo an upgrade to reduce total ammonia concentration and load in their discharge, and effluent limitations for total ammonia are proposed in the permit renewal. Therefore, no WET limit is proposed at this time. The permit proposes 7 day chronic WET testing using *Ceriodaphnia dubia* and *Pimephales promelas* at a once per year frequency starting with the first year of the permit consistent with the Procedures for Implementing NPDES Permits In New Mexico policy. The test series will be 0% (control), 8%, 11%, 14%, 19%, and 25%. The revised Procedures for Implementing NPDES Permits in New Mexico policy round all dilutions to the nearest whole number.

12. ANTIDegradation AND ANTIBACKSLIDING

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.

The less stringent effluent limitation for TRC is due to stream flow information which was not available when EPA reissued the permit in 2004. Therefore, the change of limitation is in compliance with the CWA section 402.o(2) Exceptions for antibacksliding.

13. ENDANGERED SPECIES CONSIDERATIONS

Four species in Sandoval County are listed as Endangered or Threatened, according to the U.S. Fish & Wildlife Service's (USFWS) website, <http://www.fws.gov/southwest/es/NewMexico/SBC.cfm>. The only aquatic specie listed is the Rio Grande silvery minnow. Two avian species are Mexican spotted owl and the southwestern willow flycatcher. Additionally, the black footed ferret is listed as endangered. Based on the discussion below, EPA determines that the reissuance of this permit will have *no effect* on these federally listed threatened or endangered species.

Rio Grande silvery minnow: Critical habitat includes the main stream of the Rio Grande from the bridge crossing of State Highway 22 immediately south of Cochiti Dam, Sandoval County, downstream to the Atchison Topeka and Santa Fe Railroad crossing of the river near San Marcial, Socorro County. This fish currently occurs only in the middle Rio Grande from Cochiti Dam downstream to the headwaters of Elephant Butte Reservoir. Rio Puerco is not within the range of minnow's critical habitat and the distance between the discharge to Rio Puerco and the confluence of Rio Puerco to Rio Grande is more than 120 miles. The authorized discharge by this permitting action has no effect on the minnow.

Mexican spotted owl: Forest Service lands in two areas (Unit SRM–NM–1. Cebollita Mesa, Jemez Mountains and Unit SRM–NM–4. Peralta, Jemez Mountains) in Sandoval County were designated as critical habitat. But, state and private lands were not designated as critical habitat. Spotted owls are found in various forest types including: Douglas-fir, Hemlock-Sitka Spruce, Redwood, Ponderosa Pine, Western white pine-larch, Lodgepole pine, Fir-spruce, Aspen/hardwood, and Pinyon-juniper forests. The main threats to the Mexican spotted owl are starvation, fire and loss of habitat due to logging, which also causes a greater risk of predation by great horned owls as a result of increased open space. The proposed permitting action does not contribute any threats described here.

Southwestern willow flycatcher: The proposed permitting action is not within the designated critical habitat. 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. Salt cedar is less favorable than native riparian vegetation to the flycatchers. EPA's reissuance of the NPDES permit neither authorizes nor requires construction activities which might adversely affect suitable habitat to the extent that it could not be occupied by Southwestern willow flycatchers. As to whether the permitted discharge will adversely affect the future availability of an adequate food supply, EPA notes that the permit effluent limits are protective of

aquatic life species. EPA believes effluent limits which protect both vertebrate and invertebrate aquatic organisms will be protective of the aquatic and riparian insects on which the flycatcher subsists.

Black-footed ferret: The proposed action does not have any impact to prairie dog towns, nor have any effect on the ferret.

14. HISTORICAL and ARCHEOLOGICAL PRESERVATION CONSIDERATIONS

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

15. 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.

16. FINAL DETERMINATION

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

17. ADMINISTRATIVE RECORD

The following information was used to develop the proposed permit:

- a. EPA Application Form 2A received August 5, 2009.
- b. New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, as amended through August 1, 2007.
- c. Procedures for Implementing NPDES Permits in New Mexico” as amended through July 23, 2009.