U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 8
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STATEMENT OF BASIS

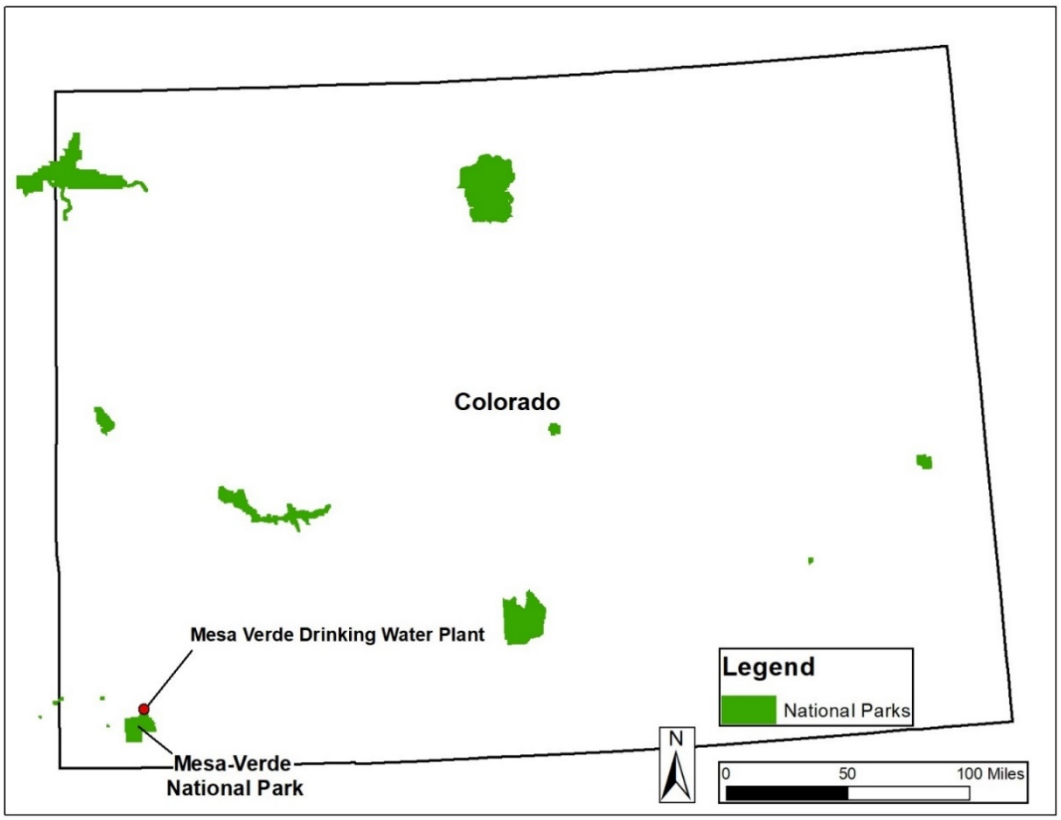
PERMITTEE:	The United States Department of Interior, National Park Service
FACILITY NAME AND ADDRESS:	Mesa Verde National Park - Water Treatment Plant P.O. Box 8 Mesa Verde, Colorado 81330
PERMIT NUMBER:	CO0034622
RESPONSIBLE OFFICIAL:	Cliff Spencer, Superintendent (970) 529-5056 E-mail: cliff_spencer@nps.gov
FACILITY CONTACT:	Michael Rubin, Facility Manager (970) 529-4607 E-mail: michael_rubin@nps.gov
PERMIT TYPE:	Federal Facility, Minor, Permit Renewal
TYPE OF TREATMENT:	Microfiltration, carbon adsorption, and disinfection of drinking water
FACILITY LOCATION:	Mesa Verde National Park Montezuma County, Colorado Lat. 37.3405º N, Long. 108.4137º W
OUTFALL LOCATION:	Outfall 001 – Lat. 37.34052º N, Long. 108.41308º W Outfall 002 – Lat. 37.34103º N, Long. 108.41335º W

1 INTRODUCTION

This statement of basis (SoB) is for the reissuance of a National Pollutant Discharge Elimination System (NPDES) permit (the Permit) to the National Park Service, for the Mesa Verde Water Treatment Plant (WTP). The Permit establishes discharge limitations for the discharge of wastewater from Outfall 001 and Outfall 002 to an unnamed tributary of McElmo Creek. The SoB explains the nature of the discharge, the EPA's decisions for limiting the pollutants in the wastewater, and the regulatory and technical basis for these decisions.

The WTP is located within Mesa Verde National Park (the Park) in southwestern Colorado (Figure 1). The EPA Region 8 is the permitting authority for federal facilities located within the state of Colorado.

Figure 1. Facility Location Map



2 BACKGROUND INFORMATION

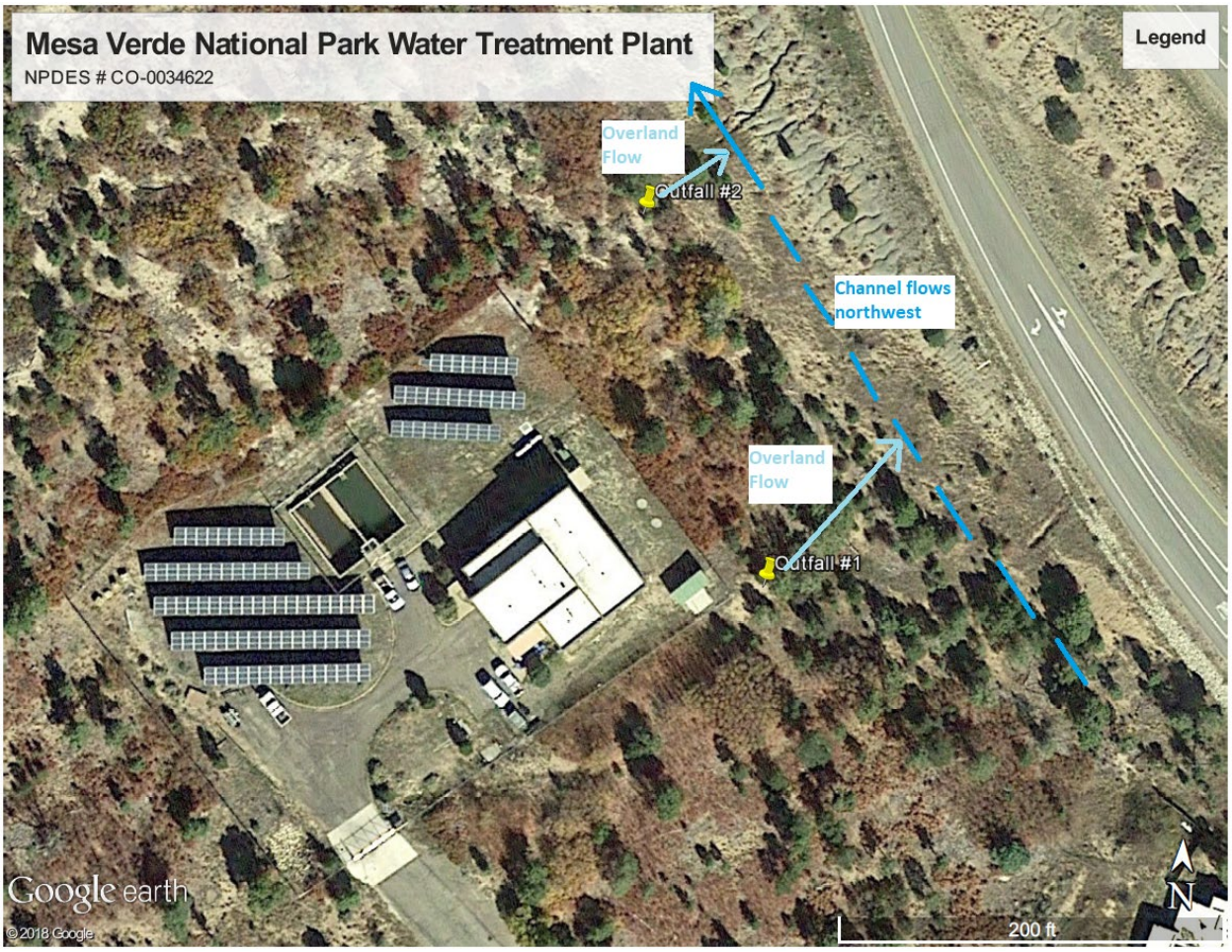
The WTP is owned and operated by the National Park Service and is located approximately 0.1 miles south of U.S. Highway 160 near the main entrance to the Park and approximately 8 miles east of the City of Cortez, Colorado. The WTP serves the Park visitor services, campground, and several residences with potable water. Water demand is highly seasonal, with the highest demand occurring during the summer and the lowest demand during the winter. The WTP produces a total of 12 to 14 million gallons of finished water per year and has about 3.5 million gallons of finished water storage capacity within the Park. Water is diverted from the West (Fork) Mancos River (either

directly or via the Jackson Gulch Reservoir) and is transported about 18 miles via an underground pipeline. The pipeline conveys water to an underground storage tank, which is located under a parking area adjacent to the Main Entrance Road and about 0.5 miles south of the Park entrance. From the underground storage tank, the intake water is gravity fed to the WTP via another pipeline.

2.1 Facility Description

The WTP consists of an underground storage tank for raw intake water, a microfiltration system, some granular activated carbon (GAC) filters, a clearwell, and several settling/drying basins (two inside the building, and two outside the building), along with two outfalls (Figure 2).

Figure 2. Mesa Verde National Park Water Treatment Facility



2.2 Discharge Locations

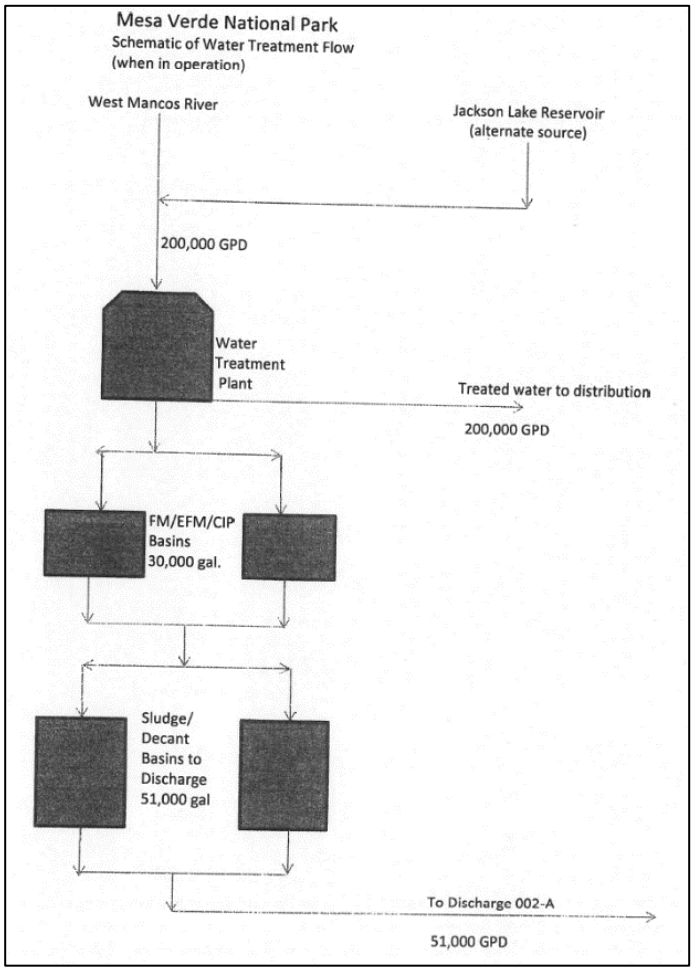
Outfall 001 (the permittee refers to it as 001-A in the permit application) is used for emergencies only and is located approximately 50 feet east of the water treatment plant. It discharges from the WTP clearwell and two rectangular inside settling basins located below the floor of the WTP. It has not discharged in the last permit cycle. Outfall 001 consists of about 80 feet of a six-inch pipe lying on the ground with no outlet structure. No flow measuring devices are installed on the discharge

pipe. It is located near the east corner of the WTP property. The coordinates of Outfall 001 are approximately latitude 37.34052° N and longitude 108.41308° W.

Outfall 002 (the permittee refers to it as 002-A in the permit application) is located approximately 100 feet north of the WTP near the north corner of the outside basins and is used for routine controlled batch discharges. Outfall 002 discharges when one of the two outside settling basins fills with wastewater, and it discharges approximately 51,000 gallons in a controlled batch discharge over the course of one day (Figure 3). This discharge may be as frequent as once every four or five days during the summer to as little as once every three months in the winter. A valve is used to control the flow from the west end of the outside basin. The flow goes through a six-inch pipe with no outlet structure and no flow measuring device. The coordinates of Outfall 002 are approximately latitude 37.34103° N and longitude 108.41335° W.

In order to keep the source water pipeline from freezing during cold weather, a minimal amount of water (10 to 15 gallons per minute [gpm]) is kept flowing through the pipeline during the winter. When the raw water underground storage tank is full, it is necessary to discharge the extra flow. While some of this winter flow is used to recharge the clearwell at the WTP, some of it is discharged to surface water. This discharge occurs at the underground storage tank approximately 0.5 miles from the WTP and flows east to an unnamed tributary of Mud Creek, which is a tributary to the Mancos River. This practice has been occurring for over 25 years. Water transfers that do not introduce pollutants are excluded from requiring an NPDES permit. 40 CFR 122.3(i) excludes, "[d]ischarges from a water transfer. Water transfer means an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. This exclusion does not apply to pollutants introduced by the water transfer activity itself to the water being transferred." Since the water is transferred within its source river basin and is not treated or used in any process, an NPDES permit is not required for this discharge, and the Permit does not address this transfer and discharge.

Figure 3. Line Diagram of Plant Wastewater Processes



2.3 Treatment Processes

The WTP uses a membrane filtration process to treat the drinking water. The current membrane filtration unit is a model AP4 Microza Filter from the Pall Corporation. The sediment content of the raw water is very low, and there is no treatment of the water prior to the membrane filtration unit. The water treatment process consists of membrane filtration, GAC adsorption, and chlorination. The membrane filtration unit has a maximum treatment capacity of about 350 gpm but is normally operated at about 130 to 180 gpm. Currently, about 12 to 14 million gallons of filtered water are produced annually. During the summer, about 180,000 to 225,000 gallons are produced daily. Conversely, during the winter when the demand for water is low, the WTP may not be operated for several consecutive days.

The dual pressure vessel GAC system consists of a 350 gpm unit with an empty bed contact time of 10 minutes. It was put in operation in November 2009. The GAC system was installed downstream of the existing microfiltration membranes but prior to chlorine addition. The addition of the GAC system did not increase the WTP's treatment capacity. This system only improves water quality and operates seasonally from May through October.

There are several sources of process wastewater flow in the WTP that are described in section 2.2.1. There is no discharge of sanitary wastewater from the WTP.

Wastewater is typically directed to either of two (inside) rectangular sludge/decant/settling basins located below the floor of the WTP. The dimension of each basin is 26' by 20', and they are 10' deep. There is an overflow pipe located one foot below the top of each basin. Any overflow from the inside settling basins discharges to Outfall 001. Water can also be pumped from the inside settling basin to Outfall 001 or pumped to one of the two outside sludge/decant/settling basins located approximately 50 feet west of the WTP building.

These outside basins are concrete vaults, each measuring approximately 20' by 40' by 10' deep and located side-by-side. They are constructed of thick concrete walls, and there are butterfly valves on the outflow lines with which to control the discharge flow. This water is not recycled back to the WTP. At the west end of the outside basins, there is piping that can be used to release water to Outfall 002. This drainpipe is located about two feet above the bottom of the basin. The maximum operating capacity of each outside basin is approximately 51,000 gallons. The removal of sediment from the outside basins is done periodically as needed, typically about once every other year. A basin is allowed to dry out, and the sediment is removed manually. The removed sediment is bagged up and disposed of at a landfill.

2.3.1 Process Wastewater

There are four sources of process wastewater at the facility:

1. Routine backwashing of the membrane filters (process stream flux maintenance [FM])
2. The enhanced flux maintenance (EFM) cycle
3. A clean in place (CIP) cycle
4. Filter-to-waste GAC flush when GAC is replaced

The largest volume of wastewater comes from the routine FM cycle (i.e., backwashing of the membrane filters). Raw water is used to flush solids from the filter. The FM cycle happens for a few minutes during every hour of operation. The permittee estimates the average FM flow is about 448 gallons/hour of operation. For a full 24 hours of operation, there would be about 10,752 gallons of FM flow. During the winter months, the volume of FM flow is much less (less than one hour of operation per day). The permittee estimates that the WTP runs and uses this process about 10 to 11 days/month in the summer, 8 to 9 days/month in the shoulder seasons (May and September), and then just a few days per month the rest of the year (October through April), which are not necessarily full 24-hour days of operation. Since there is no chemical addition prior to the water going to the membrane filters, the FM wastewater contains the suspended solids and adsorbed particles rejected by the membrane units and the minerals dissolved in the raw water supply. The permittee estimates that most of this material settles out in the basin prior to discharge. This "flush" water makes up the majority of the total discharges.

The second source of discharge water is the EFM cycle, which is performed after approximately one million gallons of water has been produced. The EFM cycle uses heated, filtered water and is dosed with an initial charge of 1,000 mg/L of sodium hypochlorite (NaOCl), with an expected residual of 300 mg/L. This is used to remove biological films from the surface of the membrane

filters. After the chemical solution is applied, there is a rinse step and flushing of the system. Approximately 1,440 gallons of wastewater are generated during each EFM cycle at the WTP. Annual discharges from the EFM cycle are approximately 20,000 gallons.

The CIP cycle is run biannually and produces about 2,500 gallons of wastewater per event. The CIP cycle removes accumulated foulants that are not removed by backwashing and the EFM cycle. The CIP cycle takes about 24 hours to complete and involves three steps: a warm caustic wash, a warm acid wash, and a cool rinse. The caustic wash involves 350 gallons of 0.5% caustic soda (sodium hydroxide – NaOH) and 300 mg/L sodium hypochlorite (NaOCl) solution. The 0.5% caustic wash water is made using a 50% caustic soda stock solution and diluting it with warm water. The acid wash involves 350 gallons of 2% citric acid ($C_6H_8O_7$) solution. The 2% acid wash water is made using a 50% citric acid stock solution and diluting it with warm water. The rinse step uses unheated filtered water. The wastewater is pumped to one of the outside basins. The wastewater from the acid and base rinses is mixed, and the resulting pH of the effluent is neutral. Annual discharges from the CIP cycle are approximately 5,000 gallons.

The fourth source of discharge water is the filter-to-waste GAC flush. This occurs when the GAC material is replaced, which happens about once every 2.5 years. The new GAC is flushed with filtered water for several hours to clean out impurities. This flush water is diverted to the settling basins, where impurities settle out of the water prior to discharge. Total discharge from this process are approximately 3,000 gallons once every 2.5 years, which is the equivalent of 1,200 gallons per year.

The vast majority of the wastewater generated in any given year is due to the FM cycle. Based on data from 2015-2019, a rough approximation of the wastewater breakdown would be that 90% of the wastewater generated at the WTP is from the FM cycle, 7% of the wastewater generated is from the EFM cycle, 2% of the wastewater generated is from the CIP cycle, and <1% of the wastewater generated is from the filter-to-waste GAC flush.

2.4 Chemicals Used

Several chemicals are used in the treatment process. Chlorine (in the form of sodium hypochlorite), sodium hydroxide (a base), and citric acid (an acid) are all used in the cleaning process. Chlorine is also used for disinfection, although there is no process wastewater stream from this step. Alum is not used at the WTP.

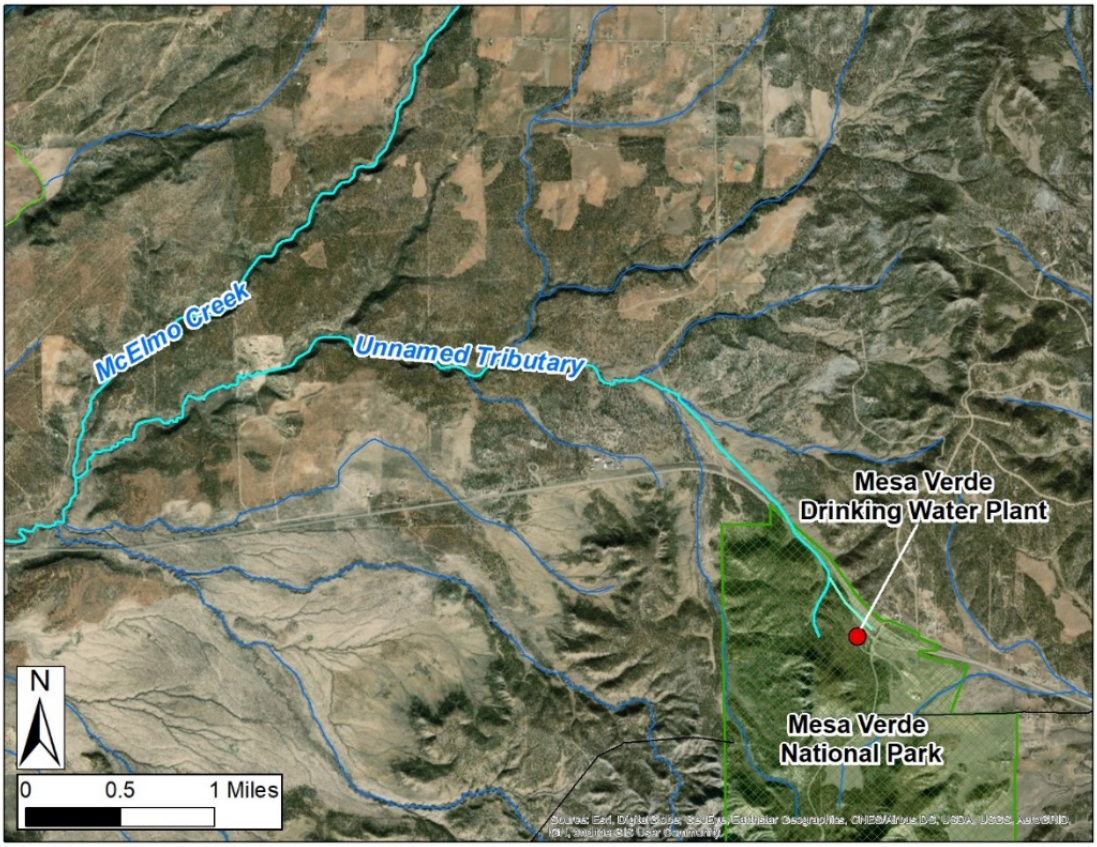
3 DESCRIPTION OF RECEIVING WATER

The WTP discharges overland about 50 feet to a roadside drainage along the south side of Highway 160 and ultimately flows into an unnamed drainage that is a tributary to McElmo Creek, which is located in the San Juan River basin. The receiving water for the WTP is the unnamed tributary of McElmo Creek (Figure 4). This unnamed tributary is in Segment 8 (COSJLP08) of the sub-basin titled “La Plata River, Mancos River, McElmo Creek, and San Juan River in Montezuma County and Dolores County.” Segment 8 is described as “all tributaries of McElmo Creek, including all wetlands, from the source to the Colorado/Utah border, except for the portions within the Ute Mountain Indian Reservation and except for specific listings in Segments 7a, 7b and 11.” The receiving water is in hydrologic unit code (HUC) 14080202 (McElmo Creek). According to the

permittee, the receiving water's stream bed is dry for much of the year. Thus, the receiving water's relevant critical flows (30E3 and 1E3) are assumed to be zero, and there is no available dilution.

As discussed in section 2.1, the WTP has a winter practice of discharging transferred water to an unnamed tributary of Mud Creek, which is a tributary to the Mancos River. Since this is a discharge excluded from NPDES permit requirements under 40 CFR 122.3(i), the unnamed tributary of Mud Creek is not considered a receiving water for this NPDES permit.

Figure 4. Mesa Verde Water Treatment Facility Receiving Water Map



4 PERMIT HISTORY

According to EPA records maintained for the WTP, this renewal is at least the 6th issuance of this NPDES permit. The previous permit for the WTP became effective on November 1, 2014 and was set to expire on September 30, 2019. The WTP submitted a permit renewal application in a timely manner, and thus the previous permit was administratively continued.

4.1 Discharge Monitoring Report (DMR) Data

The WTP does not continuously discharge but reports and typically discharges every quarter from Outfall 002. Outfall 001 reported no discharge for the entire previous permit cycle. The WTP has had no violations of permit limits in the last five years (Table 1). Additionally, Outfall 002 reported "No Discharge" in the first quarters of 2015, 2016, and 2017, and the last quarter of 2017. These are winter months when water use in the Park is low.

Table 1. Summary of the WTP's DMR Data (2014-2019) for Outfall 002 from EPA Integrated Compliance Information System (ICIS) database (data accessed January 2020)

Parameter	Permit Limit(s)	Reported Average	Reported Range	Number of Data Points	Number of Violations
Discharge Volume, million gallons/quarter	-	0.10	0.05-0.26	17	-
Total Suspended Solids (TSS), 30-Day Average, mg/L	30	9.8	4-17	17	0
Total Suspended Solids (TSS), 7-Day Average, mg/L	45	11.9	4-32	17	0
Total Residual Chlorine, 30-Day Average, mg/L	0.011	0	All reported as '0'	17	0
Total Residual Chlorine, Daily Max, mg/L	0.019	0	All reported as '0'	17	0
pH, standard units a/	6.5-9.0	7.7	7.2-8.5	17	0
Oil and Grease, visible observation of sheen c/	No visible sheen allowed	-	No visible sheen observed	17	0

a/ Limitation is a range, pH shall not to be less than 6.5 nor greater than 9.0 standard units at any time.
b/ Median reported pH.
c/ Grab samples were only required if a visible sheen was present.

4.2. Inspection History

The WTP has not been inspected since the previous permit was issued in November 2014.

5 MAJOR CHANGES FROM PREVIOUS PERMIT

- Total dissolved solids (TDS) effluent limits have been implemented to comply with Colorado Regulation No. 61.
- Total dissolved solids (TDS) effluent monitoring will be required quarterly to comply with Colorado Regulation No. 61.
- Annual reporting of the total annual TDS load (tons/year) will be required to determine whether this facility meets the waiver requirements for municipal discharges in Colorado Regulation No. 61.

6 PROPOSED PERMIT LIMITATIONS

6.1 Technology Based Effluent Limitations (TBELs)

Technology-based effluent limits represent the minimum level of control that must be imposed by an NPDES permit based on available technology. Colorado Regulation No. 61 defines these as all applicable state effluent limitations adopted in Colorado Regulation No. 62 (Regulations for Effluent Limitations), effluent limitations adopted for categorical industrial users adopted by EPA, applicable standards and criteria in 40 CFR Part 125, applicable toxic pollutant standards in 40 CFR Part 129, and best professional judgment. Furthermore, Regulation No. 61 states that for Potable Water Treatment Plants, pollutants of concern are TSS and chlorine, and that the likelihood of unknown toxics in such waters is very limited. Thus, these types of facilities are generally exempt from biomonitoring requirements.

Colorado Regulation No. 62 applies the following numeric limits for when the parameter may, without treatment, be present in the discharge at a level approaching the relevant limit (Table 2).

Table 2. Specific Effluent Limitations for the Discharge of Pollutants per Colorado Regulation Number 62 (62.5[1])

Parameter	30-Day Average	7-Day Average	Instantaneous Maximum
Biological Oxygen Demand (BOD_5)	30 mg/L	45 mg/L	N/A
Total Suspended Solids (TSS)	30 mg/L	45 mg/L	N/A
Carbonaceous Biological Oxygen Demand ($CBOD_5$)	25 mg/L	40 mg/L	N/A
Residual Chlorine	N/A	N/A	0.5 mg/L
pH	N/A	N/A	6.0 - 9.0 standard units
Oil and Grease	N/A	N/A	10 mg/L

Additionally, salinity is regulated by the Colorado River Basin Salinity Control Act, and associated state water quality standards in Colorado Regulation No. 39. These require that municipal dischargers, which include water and wastewater treatment plants, limit their salinity increase (measured as TDS) to 400 mg/L or less above the flow weighted averaged salinity of the intake water supply. However, this maximum incremental increase requirement may be waived in those cases where the TDS load reaching the mainstem of the Colorado River is less than 366 tons per year.

6.2 Water Quality Based Effluent Limitations (WQBELs)

The WTP discharges to an unnamed tributary of McElmo Creek. A general description of the receiving water can be found in section 3. The receiving water is within the state of Colorado and thus state of Colorado water quality standards (WQS) apply.

Water quality standards are established to protect both aquatic life and human health (based on consumption of organisms and/or water). When both criteria apply, the EPA considers the more stringent of the two for final WQBELs.

6.2.1 Colorado Water Quality Standards

The receiving water is within Segment 8 (COSJLP08) of the sub-basin titled "La Plata River, Mancos River, McElmo Creek, and San Juan River in Montezuma County and Dolores County." Segment 8 is described as "all tributaries to McElmo Creek, including all wetlands, from the source to the Colorado/Utah border, except for the portions within the Ute Mountain Indian Reservation and except for specific listings in Segments 7a, 7b and 11." Designated uses for Segment 8 include Agriculture, Aquatic Life Warm 2, Recreation E, and Water Supply uses, and Segment 8 has been designated as use protected (UP). These terms are defined in Colorado Regulation No. 31 and are listed below:

Agriculture: These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

Aquatic Life Warm Class 2: These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

Recreation (Class) E: These surface waters are used for primary contact recreation or have been used for such activities since November 28, 1975.

Water Supply: These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration, and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements thereto.

Use Protected designation: The purpose of these provisions is to identify waters whose quality is not better than the federal "fishable, swimmable" goal, and which therefore are appropriately not subject to the antidegradation review process.

Based on these uses, relevant numeric state criteria include those for pH, temperature, and chlorine. These will be discussed further in section 6.4. No other pollutants are considered to be of potential concern based on the information provided in the permit application. In addition, the application data showed no detections of any metals, volatile or synthetic organic compounds, or radioactive compounds.

There is no dilution available in the receiving water (see section 3) and so the Permit will set effluent limits at end of pipe.

6.2.2 Total Maximum Daily Loads (TMDLs)

The state of Colorado does not currently have any TMDLs for the San Juan River or McElmo Creek. The Permit contains a reopener provision that could be used if a TMDL is developed for this watershed in the future.

6.3 Justification of Permit Effluent Limits

All reasonable potential (RP) calculations were performed in a spreadsheet and are part of the administrative record.

6.3.1 TSS, Oil and Grease (O&G), BOD, and CBOD

The effluent limitations based on Colorado Regulation No. 62 include total suspended solids and oil and grease. The WTP has no reasonable potential to generate organic matter and increase the BOD5 or CBOD5 in the effluent at a level near the relevant limits. It is also a drinking water treatment plant with very clean source water. Therefore, no BOD5 or CBOD5 effluent limits or monitoring will be required.

6.3.2 Total Residual Chlorine (TRC)

Colorado Regulation No. 62 sets a residual chlorine effluent limit of 0.5 mg/L. The WQS in Colorado Regulation No. 34 are more stringent than this. Because there is no available dilution in the receiving waters, the Permit will require that the discharge comply with the WQS for TRC in Colorado Regulation No. 34 at the point of discharge. The WQS for TRC are 0.011 mg/L as a chronic standard and 0.019 mg/L as an acute standard. These will be implemented in the Permit as an average monthly limit and a maximum daily limit.

Since the numeric limitations in Colorado Regulation No. 62 only apply when TRC may be present in the discharge at a level approaching the relevant limit, and there is reasonable potential to cause or contribute to an exceedance of WQS in Colorado Regulation No. 34 only when chlorine is present in the discharge, the effluent limitations and monitoring requirements in the Permit will only apply when the discharge may contain chlorine. This would include discharges associated with the enhanced flux maintenance cycle, the clean in place cycle, and any other times where chlorine or a chlorine compound is used in the cleaning process. Wastewater from the flux maintenance cycle and the filter-to-wash GAC does not contain chlorine.

The Permit requires that the permittee use an analytical procedure with a minimum detection level no greater than 0.05 mg/L, which is considered the minimum detection limit for approved TRC analytical methods. Analytical values less than 0.05 mg/L shall be considered to be in compliance with the Permit.

6.3.3 Phosphorus

Colorado Regulation No. 34 lists a phosphorus standard for this segment. However, the standard only applies above the facilities listed in section 34.5(5) of the document. It appears that the WTP is not above any of these facilities, and therefore the phosphorus standard does not apply. Regardless, the WTP has no reasonable potential to increase phosphorus in the receiving water. It is a drinking water treatment plant with very clean source water, and there are no operations within the WTP that add or create phosphorus and no phosphorus-based chemicals are used. Therefore, no phosphorus limits or monitoring will be required at the WTP.

6.3.4 Total Dissolved Solids (TDS)

As discussed in section 6.1, Colorado Regulation No. 39 requires that municipal dischargers, which include water and wastewater treatment plants, limit their salinity increase (measured as TDS) to 400 mg/L or less above the flow weighted averaged salinity of the intake water supply. This maximum incremental increase requirement may be waived in those cases where the TDS load reaching the mainstem of the Colorado River is less than 366 tons per year.

The WTP is a small intermittent discharger and produces on average less than 500,000 gallons per year of effluent. It is extremely unlikely the WTP would contribute more than 366 tons of TDS load per year based on this low discharge volume. The WTP effluent concentration of TDS would have to be in the hundreds of thousands of milligrams per liter. Because of this, a permit limit of 366 tons/year will be implemented, and no monitoring of influent will be required. The effluent will require quarterly monitoring to determine if the WTP is in compliance with the effluent limit of 366 tons per year of TDS.

6.3.5 pH

In accordance with the State of Colorado's Basic Water Quality Standards (Regulation No. 31 and 34), the water quality standard for pH in this stream segment is between 6.5 and 9.0. Because there is no available dilution in the receiving water, this WQS must be met at the point of discharge. This requirement is more stringent than the 6.0 to 9.0 limitation required by Regulation No. 62 (Regulations for Effluent Limitations).

6.3.6 Temperature

Colorado designates this stream segment as “Warm Stream Tier 2.” The associated WQS for this designation include a daily maximum temperature of 25.2o C (Dec. – Feb.) and 28.6o C (March – Nov.) and a maximum weekly average temperature of 13.8o C (Dec. – Feb.) and 27.5o C (March – Nov.). The WTP has submitted temperature data indicating that its maximum temperature discharge in winter is 7.1o C and in summer is 21.1o C. These are well below the temperature WQS, and temperature monitoring and effluent limits will not be required in the Permit.

6.3.7 Other pollutants of concern

Based on the chemicals being used at the WTP and the quality of the raw water supply, no other water quality based effluent limitations are considered necessary. The WTP submitted data with the permit renewal application that contained sampling for metals, volatile and synthetic organic

compounds, and radiological parameters. With the exception of nitrates, fluoride, sodium and barium, none of the tested species was present above the minimum reporting limit. The nitrate sample (0.09 mg/L) does not have reasonable potential to cause an exceedance of the acute nitrate standard of 10 mg/L. Fluoride, sodium, and barium, which were all just above the minimum reporting limit, do not have published WQS. Furthermore, Colorado Regulation No. 61 states that the likelihood of unknown toxics in potable water discharges is very limited. For these reasons, effluent limits and monitoring requirements for other parameters are not included in the Permit.

6.4 Final Effluent Limitations

Applicable TBELs and WQBELs were compared, and the most stringent of the two was selected for the following effluent limits (Table 3). The effluent limitations in the Permit are a combination of numeric effluent limitations and operational requirements for the water treatment system.

Table 3. Effluent Limitations – Outfall 001 and Outfall 002

Characteristic	30-Day Average a/	7-Day Average a/	Daily Maximum a/	Limit Basis b/
Total Suspended Solids (TSS), mg/L	30	45	-	CO Reg. 62/TBEL
Oil and Grease (O&G), mg/L	-	-	10	CO Reg. 62/TBEL
Total Residual Chlorine (TRC), mg/L c/	0.011	-	0.019	CO Reg. 34/ WQBEL
The total annual TDS load discharged from the facility must be less than 366 tons/year.				CO Reg. 61/TBEL
The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time.				CO Reg. 34/ WQBEL

a/ See section 1 of the Permit for definition of terms.
b/ CO Reg: state of Colorado Regulation for Water Quality Standards
c/ The TRC limits apply only for discharges associated with the use of chlorine, such as the enhanced flux maintenance cycle, the clean in place cycle, and any other times where chlorine or a chlorine compound is used in the cleaning process. When a discharge occurs in which no chlorine may be present, report "N/A" to the TRC field on the Discharge Monitoring Report (DMR). For the purposes of the permit, the minimum limit of analytical reliability in the analysis for TRC is considered to be 0.05 mg/L. For purposes of calculating averages and reporting in the Discharge Monitoring Report form, analytical values less than 0.05 mg/L shall be considered to be in compliance with the Permit.

6.5 Antidegradation

Discharges from the WTP are existing, and no changes to effluent quality are proposed. No exceedances of numeric or narrative standards will be allowed in the Permit. An antidegradation review is not necessary per Colorado's Antidegradation Policy, because the receiving stream is a use protected water, and use protected waters are not subject to antidegradation review.

6.6 Anti-Backsliding

Federal regulations require at 40 CFR Part 122.44(l)(1) that "when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit were based have materially and substantially changed since the time the Permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR Part 122.62)."

This permit renewal complies with anti-backsliding regulatory requirements. All effluent limitations, standards, and conditions in the Permit are either equal to or more stringent than those in the previous permit (see section 5).

7 MONITORING REQUIREMENTS

The following parameters shall be monitored during discharge from the WTP as shown in Table 4. If no discharge occurs during a monitoring period, "no discharge" shall be indicated on the DMR. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, as required in 40 CFR Part 122.41(j).

Effluent monitoring samples shall be taken at Outfall 001 and Outfall 002. The effluent sampling location shall be after all treatment processes but prior to discharge to the receiving water.

Table 4. Monitoring Requirements at Outfall 001 and 002

Effluent Characteristic	Frequency	Sample Type a/
Total Volume Discharged, million gallons	Each Discharge	b/
Total Suspended Solids (TSS), mg/L	Monthly c/	Composite d/
Oil and Grease (O&G), Visual	Monthly c/	Visual
Oil and Grease (O&G), mg/L	e/	Grab
Total Residual Chlorine (TRC), mg/L f/	Each Discharge	Grab
pH, standard units g/	Each Discharge	Grab/Instantaneous
Total Dissolved Solids (TDS), mg/L	Quarterly	Grab
Total Annual TDS Load, tons/year h/	Annually	Calculated

a/ See section 1 of the Permit for definition of terms.

b/ The total volume of water discharged during a reporting period shall be estimated based on the total number of discharges that occurred during the reporting period and the approximate volume of water discharged with each discharge. The volume of water discharged with each discharge

may be estimated by the change in the amount of water in a settling basin before the discharge started and after the discharge stopped.

c/ Samples shall be taken and visual observations made a minimum of each 30-day period or calendar month if there is a discharge. The highest weekly value and average monthly value shall be reported for each month in the quarterly reporting period.

d/ A composite sample shall consist of a minimum of four (4) grab samples. They should be spread out over the discharge period so that samples from the beginning of the discharge, the approximate midpoint of the discharge, and the end of the discharge are captured. The grab samples shall be composited in equal volumes.

e/ If a visible sheen or floating oil is detected or observed in the discharge, a grab sample shall immediately be taken, analyzed and recorded in accordance with the requirements of 40 CFR Part 136. If no visible sheen or floating oil is detected or observed, report the code for "Conditional Monitoring - Not Required This Period" on the Discharge Monitoring Report.

f/ The TRC monitoring requirements apply only for discharges associated with the use of chlorine, such as the enhanced flux maintenance cycle, the clean in place cycle, and any other times where chlorine or a chlorine compound is used in the cleaning process. When chlorine is not used, report "N/A" to the TRC field on the Discharge Monitoring Report (DMR). For the purposes of the permit, the minimum limit of analytical reliability in the analysis for TRC is considered to be 0.05 mg/L. For purposes of calculating averages and reporting in the Discharge Monitoring Report form, analytical values less than 0.05 mg/L shall be considered to be in compliance with this permit.

g/ The maximum and minimum pH observed shall be reported each quarter.

h/ The reported value for this parameter is the total mass of dissolved solids discharged by this facility per year. The calculation for this parameter is the sum of the products of the TDS (mg/L) and total volume discharged (TVD) (million gallons/quarter) for each quarter (q = 1 through 4) converted to tons/year using the equation below. If more than one TDS sample is collected from an outfall during a quarter, the TDS results shall be averaged for the quarter.

(1) Total Annual TDS Load (tons / year) =

$$4.17 \times 10^{-3} * [TDS_{q1}*TVD_{q1} + TDS_{q2}*TVD_{q2} + TDS_{q3}*TVD_{q3} + TDS_{q4}*TVD_{q4}]$$

As an example for one quarter, if the reported total volume discharged for the first quarter of 2020 was 0.25 million gallons, and the reported TDS value for that quarter was 500 mg/L, then the total TDS load for that quarter would be 0.25 million gallons * 500 mg/L * 4.17x10-3 (conversion factor) = 0.52 tons of TDS that quarter. The annual total would be found by summing the individual calculations for the four quarters. The conversion factor (4.17x10-3) can either be applied to each quarter (as in this example) or at the end after all four quarters are summed (as in the equation).

8 REPORTING REQUIREMENTS

On December 21, 2015, the NPDES Electronic Reporting Rule (40 CFR Part 127) went into effect. This rule includes two phases. Phase 1 included the requirement that by no later than December 21, 2016, entities that are required to submit DMRs must do so electronically unless a waiver from electronic reporting is granted to the entity. Phase 2 includes the requirement that by no later than December 21, 2020, or as otherwise specified in 40 CFR Part 127, other specified reporting must be done electronically.

With the effective date of the Permit, the permittee must electronically report DMRs on a quarterly frequency using NetDMR. Electronic submissions by permittees must be submitted to the EPA Region 8 no later than the 28th of the month following the completed reporting period (Table 5). The compliance monitoring period for the total annual TDS load (tons/year) analysis is considered to be the calendar year (January – December), and thus the total annual TDS load results are due on January 28. The permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at https://netdmr.zendesk.com/home.

The reports that are to be submitted electronically after December 21, 2020, or as otherwise specified in 40 CFR Part 127, are to be submitted using the NPDES Electronic Reporting Tool (NeT). The instructions on how to use NeT are not yet available. In the future, the permittee will receive instructions on how to use NeT. Until then, the permittee shall continue to submit these reports in paper format by mailing them to the specified addresses.

Table 5. Due Dates for Quarterly DMR Submittals

Compliance Monitoring Period	Due Date
January – March	April 28
April – June	July 28
July – September	October 28
October – December	January 28

9 SPECIAL CONDITIONS

The previous permit contained additional operational and maintenance requirements specific to this drinking water plant. These requirements are general best management practices necessary to achieve effluent limitations per 40 CFR 122.44(k). In general, these operational special conditions are in place to minimize the potential for accidental discharge of pollutants. They are listed below:

1. To minimize the potential for the accidental discharge of wastewater containing high concentrations of total residual chlorine, the wastewater from the enhanced flux maintenance (EFM) cycle and the clean in place (CIP) cycle shall be pumped to one of the outside basins before being discharged. This provides greater exposure to ultraviolet radiation, off-gassing aided by wind, solar radiation and temperature, and further opportunity for dilution.
2. To ensure that the acid and base used in the CIP cycle have neutralized the effluent to an acceptable pH, the pH of the settling basin shall be checked prior to discharge both during and immediately after the CIP cycle. These pH measurements shall not be used in lieu of pH monitoring requirements at the outfall and are not reported on the DMR.
3. To maximize residence time in the settling basins, there shall be no inflow of wastewater into an inside or outside settling basin while a controlled discharge is occurring from that basin.
4. To minimize the potential of sediment in the wastewater discharge, the removal of wastewater from an inside or outside settling basin for the purpose of being discharged

shall be done in such a manner that the intake to the pump or outlet pipe is kept at least one (1) foot above the sediment layer at the bottom of the basin.

5. To minimize the possibility of an overflow of a settling basin resulting in a discharge from Outfall 001, each day that water is being treated at the water treatment plant the water level in each settling basin shall be observed to ensure that the settling basin is not likely to overflow before the next inspection.

These requirements are being carried over to the Permit to ensure proper operation of the facility and protection of the receiving water. See section 5.1 of the Permit for more information on these special conditions, and section 7.5 of the Permit for additional facility inspection requirements.

10 ENDANGERED SPECIES CONSIDERATIONS

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS), that any Federal action carried out by the Agency is not likely to jeopardize the continued existence of any endangered species or threatened species (together, "listed" species), or result in the adverse modification or destruction of habitat of such species that is designated by the FWS as critical ("critical habitat"). See 16 U.S.C. § 1536(a)(2), 50 CFR Part 402. When a Federal agency's action "may affect" a protected species, that agency is required to consult with the FWS, depending upon the endangered species, threatened species, or designated critical habitat that may be affected by the action (50 CFR Part 402.14(a)).

The U. S. Fish and Wildlife Information for Planning and Conservation (IPaC) website program was accessed on March 3, 2020 to determine federally listed Endangered, Threatened, Proposed and Candidate Species for the area near the WTP (Table 6).

Table 6. Species Resource List

Species	Scientific Name	Status
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	Endangered
Mexican spotted owl	*Strix occidentalis lucida*	Threatened
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered
Greenback cutthroat trout	*Oncorhynchus clarkii stomias*	Threatened
Razorback sucker	*Xyrauchen texanus*	Endangered
Chapin Mesa milkvetch	*Astragalus schmolliae*	Candidate
Mesa Verde cactus	*Sclerocactus mesae verdae*	Threatened

10.1 Biological Evaluations and Conclusions

The U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) tool was used to determine the listed species in the area. Review of the nine listed or candidate species and the anticipated effects of the reissuance of the Permit are provided below. There were no critical habitats identified at this location.

No changes are planned at the WTP. This permit renewal is simply a continuation of existing conditions. The discharges from Outfalls 001 and 002 flow overland to an unnamed tributary of McElmo Creek. Permit effluent limitations are protective of receiving water quality and the effluent quality should not present a problem for any wildlife that came into contact with the effluent.

New Mexico meadow jumping mouse, *Zapus hudsonius luteus* – This location is outside the critical habitat for this species, but the New Mexico meadow jumping mouse may be present in the area. However, no changes are anticipated to habitat that supports this species, nor are discharges from the WTP anticipated to affect it. The listing status of this species has changed since the last reissuance of the Permit. It was proposed endangered in the previous statement of basis. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Mexican spotted owl, *Strix occidentalis lucida* – This location is outside the critical habitat for this species, but the Mexican spotted owl may be present in the area. However, no changes are anticipated to habitat that supports this species, nor are discharges from the WTP anticipated to affect it. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Southwestern willow flycatcher, *Empidonax traillii extimus* – This location is outside the critical habitat for this species, but the southwestern willow flycatcher may be present in the area. However, no changes are anticipated to habitat that supports this species, nor are discharges from the WTP anticipated to affect it. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Yellow-billed cuckoo, *Coccyzus americanus* – This location is outside the critical habitat for this species, but the yellow-billed cuckoo may be present in the area. However, no changes are anticipated to habitat that supports this species, nor are discharges from the WTP anticipated to affect it. The listing status of this species has changed since the last reissuance of the Permit. It was proposed threatened in the previous statement of basis. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Colorado pikeminnow, *Ptychocheilus lucius* – This location is outside the critical habitat for this species, but the Colorado pikeminnow may be present in the area. The WTP does withdraw water from the Upper Colorado River basin to treat for drinking water. However, no changes are anticipated to habitat that supports this species. The WTP discharges to a dry channel, and discharges from the WTP are not anticipated to affect this population. The EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Greenback cutthroat trout, *Oncorhynchus clarkii stomias* – No critical habitat has been designated for this species, but the greenback cutthroat trout may be present in the area. The WTP does withdraw water from the Upper Colorado River basin to treat for drinking water. However, no changes are anticipated to habitat that supports this species. The WTP discharges to a dry channel, and discharges from the WTP are not anticipated to affect this population. The EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Razorback sucker, *Xyrauchen texanus* – This location is outside the critical habitat for this species, but the razorback sucker may be present in the area. The WTP does withdraw water from the Upper Colorado River basin to treat for drinking water. However, no changes are anticipated to habitat that supports this species. The WTP discharges to a dry channel, and discharges from the WTP are not anticipated to affect this population. The EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Chapin Mesa milkvetch, *Astragalus schmolliae* – This is a candidate species only and no critical habitat has been designated for this species, but the Chapin Mesa milkvetch may be present in the area. However, no changes are anticipated to habitat that supports this species. The WTP discharges to a dry channel, and discharges from the WTP are not anticipated to affect this population. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Mesa Verde cactus, *Sclerocactus mesae verdae* – No critical habitat has been designated for this species, but the Mesa Verde cactus may be present in the area. However, no changes are anticipated to habitat that supports this species. The WTP discharges to a dry channel, and discharges from the WTP are not anticipated to affect this population. Based on this information, the EPA has determined that the reissuance of the Permit **may affect, but is not likely to adversely affect** this species.

Per the *Endangered Species Consultation Handbook and the Memorandum of Agreement Between the EPA, FWS, and NMFS Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act*, the "may affect" determinations above require informal consultation with the U.S. FWS. Prior to public notice, a copy of the draft Permit and this Statement of Basis were sent to the FWS.

11 NATIONAL HISTORIC PRESERVATION ACT REQUIREMENTS

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The U.S. National Park Service (U.S. NPS) National Register of Historic Places Database was used to determine and evaluate resources of concern in or near the Mesa Verde Water Treatment Plant.

The entire Mesa Verde National Park (reference number 66000251) is registered on the National Register of Historic Places. Additionally, eight other sites (primarily archeological sites) were identified in the general vicinity of the Park that have restricted addresses so it was difficult to determine their proximity to the WTP (Table 7). However, based on the nature of the Permit reissuance, the EPA does not anticipate any impacts on listed/eligible historic properties. There will not be any new ground disturbance or significant changes to the volume, quality, or location of

discharge. During public notice of the Permit, the State Historic Preservation Office will be notified as an interested party to ensure that historic properties are not negatively affected by the conditions of the Permit.

Table 7. Nearby Sites on the National Register of Historic Places

Property Name	Reference Number	Status	County	Address
Mesa Verde National Park	66000251	Listed	Montezuma	-
Cannonball Ruins	97000378	Listed	Montezuma	Address Restricted
Indian Camp Ranch Archeological District	12000145	Listed	Montezuma	Address Restricted
Mitchell Springs Archeological Site	01001207	Listed	Montezuma	Address Restricted
Mud Springs Pueblo	82001020	Listed	Montezuma	Address Restricted
Roy's Ruin	91002027	Listed	Montezuma	Address Restricted
Sand Canyon Archaeological District	05000138	Listed	Montezuma	Address Restricted
Wallace Ruin	03000961	Listed	Montezuma	Address Restricted
Lost Canyon Archeological District	88001909	Listed	Montezuma	Address Restricted

12 MISCELLANEOUS

The effective date and expiration date of the Permit will be determined upon issuance for a period not to exceed 5 years.

Permit drafted by Erik Makus, U.S. EPA, (406) 457-5017 (March 2020)

ADDENDUM:

AGENCY CONSULTATIONS

On May 13, 2020, the USFWS concurred with the EPA's preliminary conclusion that the Permit reissuance is not likely to adversely affect listed species.

The Colorado SHPO did not comment on the EPA's preliminary determination that the Permit reissuance will not impact any historic properties.

PUBLIC NOTICE AND RESPONSE TO COMMENTS

The Permit and statement of basis were public noticed on the EPA website on May 8, 2020. EPA received comments from the Colorado Department of Public Health & Environment (CDPHE). Their comments and EPA's responses are provided below.

Comment #1: In Colorado, permits must consider not only the direct receiving water but any downstream waters that the effluent will reach. The draft permit does not appear to consider the downstream segment, the mainstem of McElmo Creek, Segment COSJLP07b. The downstream segment is reviewable and whether this would trigger the application of antidegradation limits should be discussed in the final fact sheet;

Response to Comment #1: The original statement of basis did not consider McElmo Creek (segment COSJLP07b) in the antidegradation review process, since the receiving water's confluence with McElmo Creek is approximately eight miles downstream from the point of discharge. However, since the CDPHE policy is to consider any downstream waters that the effluent will reach, this response to comment will consider McElmo Creek. This stream segment is Reviewable, and an antidegradation review is required pursuant to Colorado Regulation No. 31. This antidegradation review followed the procedures outlined in *Antidegradation Significance Determination for New or Increased Water Quality Impacts.*

The facility has been permitted since 1992, and has not had any increases in permit limits since the original permit was issued. The proposed permit does not contain any increases or new water quality impacts. According to the *Antidegradation Review Process Overview* (Figure 1 in the above-referenced document), the *Screening Process – Is there a New or Increased WQ Impact?* (Figure 2) is used to determine if there is a new or increased water quality impact. This flowchart requires comparing the current and proposed design flows and discharge concentrations/effluent limits.

The design flow of the facility is calculated to be 0.014 MGD (see comment response #2). This has not changed from the previous permit, and thus this is the existing (implied) design flow as well as the new design flow. The new water quality-based effluent limit [$WQBEL_{new}$] and the current authorized discharge concentration [Existing Limit] are the same. Nothing has changed from the previous permit to this permit (with the exception of an additional limit for total dissolved solids [TDS], which is discussed further below). Therefore, the potential new discharge load [$Load_{new}$] and the current authorized discharge load [$Load_{old}$] are equal for all pollutants with the exception of TDS.

The proposed permit contains a TDS effluent limit and monitoring requirements, which were not included in the previous permit. This is a technology-based effluent limit pursuant to Colorado Regulation No. 39. This does not represent a new or increased source of TDS, and per the guidance in Figure 2, the implied old load can be determined from the average effluent concentration and design flow. The average effluent concentration cannot be determined as there has been no TDS sampling, although quarterly TDS monitoring is a new requirement of the proposed permit. However, we can call the existing effluent TDS concentration X mg/L. Since there is no change or increase in TDS, proposed effluent concentration is also X mg/L. Thus, the [$WQBEL_{new}$] = [Existing Limit] for TDS as well.

Following the flow chart in Figure 2, since the [$Load_{new}$] = [$Load_{old}$], and the [$WQBEL_{new}$] = [Existing Limit] for all pollutants, an increased water quality impact will not occur and the antidegradation review is terminated for this stream segment at this time.

No changes were made to the Permit as a result of this comment.

Comment #2: Flow limits were not included for either outfall. Flow limits are required under the Colorado permitting regulations, 5 CCR 1002, Regulation 61;

> (i) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of concentration and mass or concentration and flow except:
>
> A) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;

Response to Comment #2: A flow limit has been added to both outfalls in the Permit. The facility is an intermittent discharger, averaging about one batch discharge of 51,000 gallons every four to six weeks. However, their drinking water demand and effluent production are seasonally based, peaking in the summer and approaching zero in the winter. To determine an appropriate design flow and flow limit, EPA considered two factors:

1. The Permittee estimates that they occasionally discharge up to 5 times per month during peak demand in July/August. The flow limit should be at or above this value.
2. The outside holding basin can hold approximately 4 days of effluent at full production when the facility is running 24 hours per day. This means that at full design operation, the facility would be discharging approximately every 4 days, or approximately 8 times per month.

To satisfy both considerations above, the 30-day average flow effluent limit will be equal to eight daily batch discharges of 51,000 gallons over the course of a month. This equates to a final permit flow limit (30-day average) of 0.014 MGD. This is also considered the design flow of the facility.

This effluent flow limit for both outfalls has been added to the Permit in Table 2, and a 30-day average flow has been added to the Permit in Table 3 as a reporting requirement for both outfalls.

Comment #3: No source water samples or effluent samples were submitted to facilitate a Reasonable Potential (RP) analysis for metals and other potentially relevant pollutants, and no monitoring for parameters other than chlorine, pH, TSS, TDS, and Oil and Grease have been

included in the permit. The Colorado Discharge Permit System Regulations (Regulation No. 61, 5 CCR 1002-61) require that permit limitations be placed upon any discharged pollutant that causes or contributes to, or that has the reasonable potential to cause or contribute to, an exceedance of water quality standards (see Section 61.8(2)(b)(i)(A)), and Division Policy CW-1. In order to evaluate RP, monitoring for some pollutants should be required in the permit. The division would require at least 10 data points in all seasons (during discharge). Monitoring for additional parameters, including TIN (nitrate is in the finished water sample), some metals, and EC (if crop irrigation occurs) should be included in the permit.

Response to Comment #3:

EPA does not consider nitrate a pollutant of concern at this facility, nor are nitrates a default pollutant of concern at potable water treatment facilities. The single nitrate sample present in the finished water (0.09 mg/L) is over two orders of magnitude below the water quality standard of 10 mg/L, and not far above the minimum reporting limit of 0.05 mg/L. The sample value is within the range of what is found in streams with no anthropogenic impacts. Additionally, the processes used within the facility do not add or concentrate nitrogen species. Based on these factors, EPA has no justification for adding nitrate and/or total inorganic nitrogen monitoring or effluent limits to the Permit.

Metals were considered in our analysis and were not determined to be pollutants of concern. However, it would be reasonable to consider metals as a pollutant of concern and, if so, metals monitoring would be appropriate for this facility. To determine if various metals could have reasonable potential to violate water quality standards, an annual metals effluent sampling event will be added to the Permit. Sampling will target metals for which this stream segment (COSJLP08) has numeric water quality standards. Since many of Colorado's water quality standards for metals are hardness-dependent, and the receiving stream is effluent dominated, an effluent hardness sample will be taken concurrently with the metals sampling.

This frequency and parameter list is generally in line with EPA Region 8's Drinking Water General Permit, which requires annual metals effluent sampling for 12 metals of concern. A single annual sampling event is also an appropriate site-specific approach, due to the seasonal nature of the facility's discharge. Most years the facility does not discharge in the winter, and rarely in the spring. For example, the facility did not discharge between October 2019 and June 2020 this year. The annual metals sample will be required in the summer (June through August) when the majority of their discharge events occurs as this will be most representative of their effluent concentrations. Metals monitoring will include those parameters listed in Table 1:

Table 1. Additional Annual Monitoring Requirements – Effluent

Metal	Total Recoverable	Dissolved
Arsenic (As)	Yes	-
Cadmium (Cd)	Yes	-

Metal	Total Recoverable	Dissolved
Chromium (Cr)	Yes	-
Iron (Fe)	Yes	-
Lead (Pb)	Yes	-
Molybdenum (Mo)	Yes	-
Nickel (Ni)	Yes	-
Copper (Cu)	-	Yes
Manganese (Mn)	-	Yes
Selenium (Se)	-	Yes
Silver (Ag)	-	Yes
Zinc (Zn)	-	Yes

The determination for EC monitoring is discussed in the response to comment #7.

Monitoring requirements for metals (both total recoverable and dissolved), and hardness have been added to Table 3 in the Permit.

Comment #4: In a clarification email from EPA dated June 2, 2020, the COG641000 general permit is mentioned as a partial justification for the limited set of parameters in the permit. However, Section 3 of the general permit clearly allows the addition of additional parameters:

3. Site-specific limitations Site-specific limitations for a parameter may be added on a case-by-case basis that are equivalent to the Basic Standards and Methodologies for Surface Water, or Regulation for Effluent Limitations, or any other applicable regulation, and would be specified in the certification along with the appropriate monitoring frequencies

In addition, we note that the COG641000 was issued September 30, 2005 and is now expired. Colorado is planning on updating and renewing this general permit in 2021/2022.

Response to Comment #4: EPA agrees that additional parameters may be added. EPA is aware that COG641000 has expired.

No changes were made to the Permit as a result of this comment.

Comment #5: The permit allows some water to be discharged without monitoring or limits through a permit exemption based on water transfers. Per Section 2 of the Statement of Basis:

> [S]urface water is drawn from the Mancos River and Jackson Gulch Reservoir and transported via an underground pipeline into an underground storage tank, where the water is then fed, via another pipe, into the WTP. In order to keep the water pipeline from freezing during cold weather, 10 to 15 gallons per minute [gpm] is kept flowing through the pipeline during the winter. When the raw water underground storage tank is full, it is necessary to discharge the extra flow. While some of this winter flow is used to recharge the clearwell at the WTP, some of it is discharged to surface water.

This appears to be more like an incidental disposal of this water pursuant to industrial processes, not a water transfer intending to move water from one place to another. In addition, the potential contamination from the tank is not addressed. Please re-evaluate if the activity is within the water transfers rule in the final permit, addressing the points above. If it is not, effluent limitations and monitoring should apply to this discharge under the NPDES permit.

Response to Comment #5: The water transfer rule states that if an activity conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use, then the water transfer itself is exempt from NPDES permitting. EPA acknowledges that the activity in question is not a water transfer intending to move water from one place to another. However, the activity in question meets the requirements of the water transfer rule, as it results in the conveyance of a water of the U.S. to another water of the U.S. and does not subject that water to any intervening use. Because no pollutants are introduced - see discussion below - EPA considers this a water transfer exempt from requiring an NPDES permit.

Prior to forming this response, EPA verified with the Permittee that no chemicals or pollutants are added to the water as it is being transferred. Likewise, the Permittee has never used any chemicals to clean the raw water holding tank and/or pipeline that convey the water from the Mancos River to the facility. As a result, the water transfer activity itself does not result in the introduction of pollutants, and no permit is required.

No changes were made to the Permit as a result of this comment.

Comment #6: Citric Acid and Sodium Hydroxide (in addition to chlorine) are chemicals added in the treatment process. While chlorine is limited in the permit, no evaluation of citric acid or sodium hydroxide was included in the Statement of Basis, including no mention or analysis of the concentration/amount being added. Note that there is the potential for aquatic toxicity with citric acid.

Response to Comment #6: Page 7 of the Statement of Basis discusses the concentrations, amounts, and timing of citric acid and sodium hydroxide additions used in the process. To briefly recap, twice per year a small amount of sodium hydroxide and citric acid are used to clean the filters during the clean-in-place (CIP) cycle. Approximately 3.5 gallons of concentrated sodium hydroxide is slowly injected into a 350 gallon stream of clean water, and the filters are rinsed with this mixture. When this cycle is finished, this base is discharged into a holding basin. Next, approximately 12 gallons of concentrated citric acid is slowly injected into a 350 gallon stream of clean water, and the filters are

rinsed with this mixture. This mixture is then discharged into the same holding basin. The acid/base rinses mix in this basin and largely neutralize each other. This process is completed during the off-season (spring and fall) when drinking water demand is low in the park and the CIP wastewater can sit in the outside holding basin for an extended period of time. According to the Permittee, the CIP wastewater remains in the holding basin for at least a few weeks before being discharged. During this holding time, the basin is filled to 51,000 gallons with wastewater from the regular filter backwash cycles. This represents an approximate 100x dilution of the already-neutralized acid/base mixture before being discharged. At this point, the Permittee checks the pH within the basin and makes adjustments if necessary (although according to the Permittee, they have never had to adjust the pH). The Permit currently contains a Special Condition (see Section 5) that requires the Permittee to check the pH of the CIP effluent prior to discharging.

Sodium hydroxide is a strong base and completely dissociates in water. Therefore, once this is added to the water column, it is only present as sodium cations and hydroxide anions. The pH monitoring ensures that there will be no violations of any Colorado water quality standard.

Citric acid is a weak triprotic acid that partially dissociates to form hydrogen ions and citrate anions. According to a review of the safety data sheet (SDS) for citric acid and citrate, and The Handbook of Environmental Chemistry, Vol. 3, Detergents, citric acid and citrate salts are "generally safe for a variety of organisms, rapidly biodegradable in the environment, and fairly ubiquitous in nature."

The neutralized mixture spends at least several weeks in the outside holding basin before being discharged and is exposed to a variety of physical, chemical, and other environmental degradation processes including ultraviolet radiation and chemical precipitation. Based on the frequency of discharge, holding time, dilution factors, and other degradation processes, EPA has no justification for adding any additional citric acid or sodium hydroxide monitoring or effluent limits to the Permit.

No changes were made to the Permit as a result of this comment.

Comment #7: The Statement of Basis acknowledges the potential for crop irrigation in the area, but did not evaluate EC/SAR in accordance with Colorado's WQP-24, Irrigation of Crops. The application of the Irrigation of Crops policy is required for compliance with Regulation 31's narrative water quality standard. WQP-24 can be found at https://www.colorado.gov/pacific/cdphe/water-quality-permitting-policies

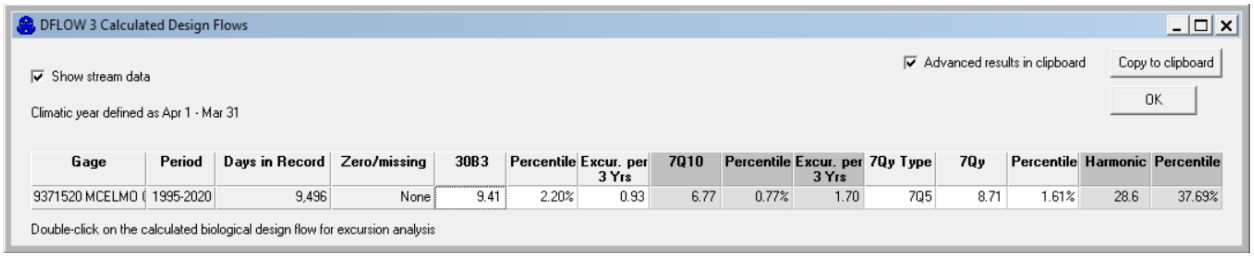
Response to Comment #7: EPA inadvertently left this consideration out of the statement of basis. Below is an evaluation of EC/SAR in accordance with *WQP-24, Irrigation of Crops*.

The first step was to determine if and where irrigated land occurs in any of the receiving waters. A review of aerial photography shows no irrigated land on the tributary to McElmo Creek that the facility discharges to. A few miles downstream from the tributary's confluence with McElmo Creek near the town of Cortez, there is some irrigated land near McElmo Creek. However, after further investigation, this land is not irrigated from McElmo Creek. According to the Montezuma Valley Irrigation Company (MVIC) based in Cortez, this land is irrigated from the Highline Ditch and the Rocky Ford Ditch, both of which bring snowmelt down from McFee Lake near Dolores, CO. This can be verified on an aerial photo, as the irrigated land actually 'hugs' the Highline Ditch and the

Rocky Ford Ditch along their 'downhill' side. The first irrigation using McElmo Creek appears to be approximately 25 miles downstream of the tributary's confluence with McElmo Creek. This location is at approximately 37.32° N, 108.67° W. The MVIC verified this observation, mentioning that the water in McElmo Creek only gets used for irrigation once it is joined by enough return flows from the land irrigated by ditches coming out of the mountains.

The location of the first verified irrigated land is approximately 3.5 miles upstream from USGS gage 09371520 – McElmo Creek Above Trail Canyon near Cortez, CO. The drainage area difference between the two locations is less than 2% (230 square miles at the first irrigated land vs. 234 square miles at the USGS gage). The final chronic low flow condition at the gage will be adjusted for this minor watershed area difference by multiplying the value by 0.983 (230 mi^2/234 mi^2).

Colorado uses the 30E3 as their receiving water chronic low flow value. Appendix A of Colorado Regulation No. 31 defines the 30E3 as a biologically-based low flow, and Appendix A appears to be the same as Appendix C of "Technical Guidance Manual for Performing Wasteload Allocations, Book VI: Design Conditions – Chapter 1: Stream Design Flow for Steady-State Modeling" (EPA, 1986), which is the basis for the biologically-based DFLOW design calculations. Thus, these two design standards, the 30E3 and 30B3, appear to be exactly the same. In this analysis, EPA used the 30B3 chronic low flow value, which is supported by low flow design software such as DFLOW and SWToolbox. The chronic low flow of McElmo Creek (calculated as the 30B3) at this USGS gage is approximately 9.41 cfs using DFLOW software (see screen capture from DFLOW output below). Adjusted for a watershed area ratio of 0.983, this becomes 9.25 cfs. The maximum discharge flow at the facility is 0.051 MGD, or 0.079 cfs, when they discharge a full holding tank of 51,000 gallons drained out over 24 hours. This ratio (9.25 cfs to 0.079 cfs) represents a dilution ratio of approximately 117:1. Per WQP-24 (Section 3.3.4), "If the discharge flow is diluted by 100 or greater, based on the maximum flow of the discharge and the chronic low flow of the receiving water, then the SAR/ECw criteria will not apply." Since 117:1 is above the 100:1 requirement, no EC/SAR monitoring or effluent limits are required for this facility.


DFLOW 3 Calculated Design Flows

Show stream data

Advanced results in clipboard

Copy to clipboard

OK

Climatic year defined as Apr 1 - Mar 31

Gage	Period	Days in Record	Zero/missing	30B3	Percentile	Excur. per 3 Yrs	7Q10	Percentile	Excur. per 3 Yrs	7Qy Type	7Qy	Percentile	Harmonic	Percentile
9371520 MCELMO (	1995-2020	9,496	None	9.41	2.20%	0.93	6.77	0.77%	1.70	7Q5	8.71	1.61%	28.6	37.69%

Double-click on the calculated biological design flow for excursion analysis

No changes were made to the Permit as a result of this comment.