

Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	9/17/2024	
Media Program:	Water	
Regulatory Program(s)	CWA – NPDES	
Company Name:	City of Santa Fe	
Facility Name:	Paseo Real Water Reclamation Facility	
Facility Physical Location:	73 Paseo Real	
(city, state, zip code)	Santa Fe, NM 87507	
Mailing address:	73 Paseo Real	
(city, state, zip code)	Santa Fe, NM 87507	
County/Parish:	Santa Fe County	
Facility Phone Number	505-955-4650	
Facility Contact:	Michael Dozier mldozier@santafenm.gov	Utilities Director, Wastewater Management Division
FRS Number:	110064609044	
Identification/Permit Number:	NM0022292	
Media Identifier Number:		
NAICS:	221320	
SIC:	4952	
Personnel participating in inspection:		
Amy Andrews, P.E.	USEPA/6EN-WMH	Inspector/Environmental Engineer
Nafis Fuad	NMED-SWQB	Inspector
Shawnee Suazo	NMED-SWQB	Inspector
Leroy Alvarado	City of Santa Fe	Interim Facility Manager
Michael Dozier	City of Santa Fe	Wastewater Division Director
Patricia Rosacker	City of Santa Fe	Laboratory Manager
EPA Lead Inspector Signature/Date	 AMY ANDREWS AMY ANDREWS c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=AMY ANDREWS, 0.9.2342.19200300.100.1.1=68001003655888 2024.11.20 12:17:16 -07'00'	
	Amy Andrews	Date
Supervisor Signature/Date	 ROBERTO BERNIER Digitally signed by ROBERTO BERNIER Date: 2024.11.20 13:38:35 -06'00'	
	Roberto Bernier	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

Environmental Protection Agency (EPA) Region 6 inspector, Amy Andrews, and New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB) inspectors, Nafis Fuad and Shawnee Suazo, arrived at the City of Santa Fe Paseo Real Water Reclamation Facility ("PRWRF" or "Facility" or "plant") at 9:50 AM on September 17, 2024, for an unannounced inspection. This was a joint inspection conducted by EPA and NMED. We met with Leroy Alvarado, the City of Santa Fe Interim Facility Manager for the Opening Conference. I presented my credentials to Mr. Alvarado and informed him that this was an EPA inspection to determine compliance with the facility's National Pollutant Discharge Elimination System (NPDES) permit and the Clean Water Act (CWA). The inspection was conducted under the authority of the NPDES permit program, in accordance with the Federal CWA. This report is based on information supplied by the City of Santa Fe representatives (the permittee), observations made by the EPA and NMED inspectors, and records and reports maintained by the permittee and the EPA.

FACILITY DESCRIPTION

The City of Santa Fe PRWRF is classified as a major municipal discharger under the CWA, Section 402, of the NPDES permit program and is authorized to discharge up to 13 million gallons per day (MGD) based on design flow, with an actual discharge around 5 MGD. Discharge is to the Santa Fe River in Waterbody Segment 20.6.4.113 (NMAC, State of New Mexico Standards for Interstate and Intrastate Surface Waters) of the Rio Grande Basin. This segment includes the designated uses of irrigation, livestock watering, wildlife habitat, primary contact and coolwater aquatic life.

The Santa Fe PRWRF is a wastewater treatment plant that serves a year-round population of approximately 89,000 residents, plus the summer tourist season which causes increased flow to the PRWRF. The plant is a conventional treatment process with an original design capacity of 13 MGD, however current capacity is likely much lower due to equipment failures. The headworks includes a rock collector, a fine barscreen, rag press, and grit removal system. The grit removal system consists of a grit tank, where flows are aerated to allow inorganic waste to settle while allowing organics to float and pass through to a wet well. The contents of this tank are pumped back to the grit separator, washed to remove the organic matter, and with the help of an auger is fed onto a conveyor belt and dropped into a dumpster for disposal. Flows from the grit chamber enter two primary clarifiers via a splitter box. The lighter material floating on the top is removed by a skimmer arm and the solids at the bottom of the clarifier are pumped to the digester.

Effluent from the primary clarifiers goes to a rapid mix tank where various recycle flows and the Return Activated Sludge (RAS) are mixed with the primary effluent and mixed liquor before entering the Bio-selector for further treatment. The bio-selectors are four basins that can be aerobic, anaerobic, or a combination of both. The bio-selector effluent flows to the aeration basins. The aeration basins are a dual-racetrack design with alternating aeration and mixing which cause nitrification and then

denitrification to remove ammonia and nitrates. The nitrification process utilizes dissolved oxygen, fed through fine bubble diffusers, to change ammonium to nitrite. Ammonia can be stripped off with increased air or converted from ammonia to nitrites by bacteria (microorganisms) called Nitrosomonas. The nitrite continues through the basin to the anoxic zone and is broken down from nitrite to nitrate by bacteria and then nitrate to nitrogen gas, nitrous oxide, carbon dioxide (CO₂), and water.

The mixed liquor flows into six secondary clarifiers to allow solids to settle to the bottom of the tank. The effluent water flows over the weirs and out of the tanks. The bacteria/microorganisms that have settled are pulled from the bottom of the clarifier, via suction pickup tubes, on the traveling bridges called Clarivacs on secondary clarifiers 1 through 4. The 5 and 6 clarifiers have skimmers and scrapers that remove the floating and settled solids. After the aeration basins, flow from the secondary clarifiers is sent through two channels to either sand filters or disc filters. Ultra-violet (UV) light is used to disinfect the treated effluent and the post-aeration basin is used to add dissolved oxygen back into the water prior to discharging to Outfall 001 and into the receiving waters.

Treated and disinfected domestic wastewater is periodically reused as irrigation water for the Santa Fe Country Club, the Santa Fe Municipal Recreation Complex, and/or the Marty Sanchez Golf Club and is also sold at a standpipe to contractors for use in construction and dust control.

The Santa Fe PRWRF uses dissolved air flotation (DAF) to thicken their biosolids (sludge). The DAF operates by pressurizing water above atmospheric pressure in a Hydrostatic (pressure) Tank. The pressurized water is introduced to a header along with pumped sludge and polymer before entering the DAF tanks, which are at atmospheric pressure. The difference in pressures causes air to come out of solution as fine bubbles, which rise to the surface of the DAF tank. The sludge attaches to the fine bubbles and is floated to the surface where it is thickened. There are three DAF units, the third one was added in 2009 for redundancy and is located in a separate building. The thickened sludge is then sent to the two new digesters that came online in February 2020. Digester solids can be stored in a storage tank before being sent to the belt press and either surface injected into the adjacent field located south of the PRWRF, taken to the Rio Rancho Landfill, or sold to the public as compost (12% sludge mixed with wood chips/hay).

Section II – OBSERVATIONS

The City of Santa Fe is currently under an Administrative Compliance Order issued by EPA and an Administrative Compliance Order issued by NMED. The City of Santa Fe has submitted a Progress Update Dated September 16, 2024, which can be seen in Appendix 2. The Orders are as follows:

- EPA Number CWA-06-2024-1765, issued July 10, 2024, for failure to meet permit effluent limitations.
- NMED, Water Protection Division, Surface Water Quality Bureau Number WQCC 24-35 (ACO).

Observations from the inspection relevant to PRWRF equipment were as follows:

- The plant capacity does not currently match the permitted design flow due to equipment malfunction. Engineers are working on an engineering report of plant capacity. Currently there is no construction taking place except for ongoing maintenance tasks.
- Permittee is working on connecting all buildings to the Supervisory Control and Data Acquisition (SCADA) System. Currently the SCADA can monitor basins but not control them. At the time of the inspection, an alarm was going off for Sludge Pump #2. Facility personnel stated that the SCADA Control Room is not manned continuously, which could lead to unanswered alarms.
- Eyewash stations were not functional on the day of the inspection, it was not immediately obvious, from a safety standpoint, that they were not available to operators if needed.
- There are plans to add supplemental air to the aeration basin because the current air capacity is not adequate for plant treatment.
- Permittee started adding T-Floc B-135 in March 2024 at the bio-selector to help with settling. They are also adding chlorine to reduce foaming and filamentous bacteria in the aeration basins.
- Three rehabilitated sand filters just came online. They were part of the original plant design but had not been used in a number of years. The permittee states that the sand filters have lowered the turbidity and the Escherichia coli bacteria (E. coli) levels in the effluent, but not quite enough to be within permit limits.
- Permittee has also brought in rental pressurized sand filter tanks as a backup, but they have not yet determined if they are needed.
- The UV system is a Trojan TJ3000, which Trojan stopped supporting in 2012, and permittee has been unable to get repair parts for the system. A third-party contractor has been hired to keep the unsupported UV system running. The facility is just now replacing the system with one that can be repaired.
- Currently only running three (3) troughs of UV channels instead of four (4) because they have been troubleshooting the bulbs and filling out complete banks of working bulbs.
- Permittee states that they were having a midge fly larvae issue on the UV bulbs that may have been caused by high nutrient levels, however they believe this issue has been resolved.
- The UV treatment is not accomplishing proper disinfection and facility personnel believe that it may be prudent to switch to chlorine disinfection, however, the PRWRF does not currently have infrastructure for chlorination and dechlorination (no contact chamber).
- The effluent flow meter has turbulence at the measurement point in the Parshall Flume that is caused by the autosampler tubing. Two staff gauges are present in the Flume with different measurements shown on them; it's not clear which one has the correct readings.
- The City of Santa Fe has reported ten (10) sanitary sewer overflows in the year prior to this inspection.

Observations regarding PRWRF personnel were as follows:

- Permittee states that the PRWRF operator work schedule is for four (4) teams of four (4) operators on shifts from noon to midnight and midnight to noon. The schedule rotates through three (3) days one week and four days the following week. Currently the teams are only half-filled with one (1) operator certified as Level 4 by the State of New Mexico (NMAC 20.7.4) and one uncertified

apprentice. Operators are dedicated to the PRWRF and do not serve additional duties at other City facilities.

- There is a separate collection system maintenance crew and a PRWRF maintenance staff (one Level 1 operator and two instrumentation technicians).

Observations regarding the Laboratory and sampling documentation review were as follows:

- The laboratory has three permanent laboratory technicians and one contract laboratory technician.
- PRWRF Operators check functionality of the NPDES permit-compliance autosamplers for the 24-hour composite samples, but laboratory personnel maintain the autosamplers and collect the samples during daytime hours.
- The in-house laboratory analyzes the samples for all the primary pollutants: pH, carbonaceous Biochemical Oxygen Demand (CBOD), total suspended solids (TSS), E. coli bacteria, total phosphorus, total nitrogen, dissolved oxygen (DO), total residual chlorine (TRC).
- Samples collected for copper, cyanide and heptachlor are sent to an external laboratory.
- Total Phosphorous (HACH Method 8190) – the value for diluted sample that was recorded by the instrument must be recorded on the benchsheet.
- Permittee is reporting “0” (zero) on their DMRs for TRC values below the MQL of 33µg/L, which is acceptable, however on March 24, 2024, the TRC result on the benchsheet was 33ug/L and permittee still reported zero. This value must be corrected and reported as 33µg/L.
- Observations from E. coli Benchsheets:
 - Data from March 1, 2024, 10:35AM and March 2, 2024, 10:45AM falls under Method 1603 modified mTEC Appendix B: Counting Colonies (Section 2.3.2) “If there is more than one dilution having an acceptable range of counts, independently carry counts to final reporting units, then average for final reported value.” Facility recorded the result for this data by dividing the sum of counts with the sum of the volume filtered. Results were recorded as 480 colonies/100mls and 600 colonies/100mls as opposed to the correct reportable values of 490 colonies/100mls and 605 colonies/100mls. There is an equivalent issue with data from March 3, 2024, 10:42AM.
 - Data from March 4, 2024, 10:46AM falls under Method 1603 modified mTEC Appendix B: Counting Colonies (Section 2.7) “If typical colonies are too numerous to count (TNTC), use upper limit count with smallest filtration volume.” Note here that the filtration volume was significantly higher than the allowable dilution limit by the method. There is an equivalent issue with data from April 1, 2024, 11:03AM.
 - Data from March 7, 2024, 11:12AM falls under Method 1603 modified mTEC Appendix B: Counting Colonies (Section 2.4). “If all MF counts are below the lower acceptable count limit, select the most nearly acceptable count.” Facility recorded the result for this data by dividing the sum of all colonies by the sum of sample volumes. Results were recorded as 72 colonies/100mls as opposed to the correct reportable values of 75 colonies/100mls. There is an equivalent issue with data from March 10, 2024, 10:47AM. Reported 97 colonies/100mls as opposed to the correct reportable values of 90 colonies/100mls.

- Data from March 29, 2024, 10:13AM falls under Method 1603 modified mTEC Appendix B: Counting Colonies (Section 2.6). If all membrane counts are above the upper acceptable limit, calculate count using the smallest volume filtered. Reporting requirement for this is as “estimated count ... CFU/100 mL”. Facility records the results as “> ... Colonies/100mls.”
- The inspector-calculated geometric mean for E. coli does not match the permittee’s reported value for the month of March 2024.

Section III – AREAS OF CONCERN

Requirement 1

NPDES Permit NM0022292, Part I: A. Effluent Limitations and Monitoring Requirements: *Final Effluent limits – 13 MGD Design Flow: During the period beginning the effective date of this permit and lasting through the expiration date of this permit (unless otherwise noted), the permittee is authorized to discharge treated municipal wastewater to the Santa Fe River, in Segment Number 20.6.4.113, from Outfall 001. Such discharges shall be limited and monitored by the permittee as specified...*

Concern 1

See Appendix 3 for permit limit exceedances reported on DMRs from this permit term (September 1, 2021, to present).

Requirement 2

NPDES Permit NM0022292, Part I: A. Effluent Limitations and Monitoring Requirements:

POLLUTANT	30-DAY AVG	30-DAY AVG	DAILY MAX	MEASUREMENT FREQUENCY	SAMPLE TYPE
E. coli Bacteria	31 billion cfu/day (*8)	126(*3)	410(*3)	Daily	Grab

NPDES Permit NM0022292, Part III. C.5.a. *Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.*

Concern 2

Permittee is not reporting E. coli correctly (see observations from E. coli benchsheets). Permittee must work with EPA to get errors corrected.

Requirement 3

NPDES Permit NM0022292, Part I: A. Effluent Limitations and Monitoring Requirements:

POLLUTANT	DAILY MAX	MEASUREMENT FREQUENCY	SAMPLE TYPE
Total Residual Chlorine	11 ug/l (*4)	Daily	Instantaneous Grab

NPDES Permit NM0022292, Part III. C.5.a. *Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.*

Concern 3

Permittee is reporting "0" (zero) on their DMRs for TRC values below the MQL of 33µg/L, which is acceptable, however on March 24, 2024, the TRC result on the benchsheet was 33ug/L and permittee still reported zero. Permittee must correct TRC reporting errors.

Requirement 4

NPDES Permit NM0022292, Part I: A. Effluent Limitations and Monitoring Requirements:

Whole Effluent Toxicity (7-Day Chronic Static Renewal /NOEC)*5	VALUE	Measurement Frequency	Sample Type
<i>Ceriodaphnia dubia</i>	Report	Once/Quarter	24-hr Composite
<i>Pimephales promelas</i>	Report	Once/Quarter	24-hr Composite

*5 Monitoring and reporting requirements begin on the effective date of this permit. See Part II of the permit, Whole Effluent Toxicity Testing Requirements for additional WET monitoring and reporting conditions. Grab samples are allowed per method, if needed.

NPDES Permit NM0022292, Part II: C.1.a. *The permittee shall test the effluent for toxicity in accordance with the provisions in this section.*

APPLICABLE TO FINAL OUTFALL(S) 001	
REPORTED AS FINAL OUTFALL	001
CRITICAL DILUTION (%)	100%
EFFLUENT DILUTION SERIES (%)	32%, 42%, 56%, 75%, 100%
TEST SPECIES AND METHODS	Ceriodaphnia dubia / Method 1002.0 (EPA-821-R-02-013 or latest version) Pimephales promelas/ Method 1000.0 (EPA/821/R-02-013 or latest version)
SAMPLE TYPE	Defined in PART I

Concern 4A

Permittee failed to achieve the Critical Dilution of 100% on February 20, 2024. This failing WET test is not reported on the permittee's DMRs. The permittee conducted the required three following monthly WET tests, however two of these reports are also not reported in the DMRs.

Concern 4B

WET tests from calendar years 2023 and 2024 are not reported correctly. Permittee must work with EPA to get these corrected.

Requirement 5

NPDES Permit NM0022292, Part III: Standard Conditions A.7. Duty To Provide Information: *The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.*

NPDES Permit NM0022292, Part III: Standard Conditions C.1. Inspection And Entry: *The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by the law to: b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit.*

Concern 5

Permittee did not submit requested laboratory reports for copper, cyanide or heptachlor. Permittee did not submit the full extent of requested laboratory benchsheets for E. coli.

Requirement 6

NPDES Permit NM0022292, Part III: Standard Conditions B.3.a. Proper Operation and Maintenance: *The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit.*

Concern 6A

Numerous equipment issues including suboptimal air in the aeration basins, and issues with the UV banks have prevented the Santa Fe PRWRF from meeting their permit requirements.

Concern 6B

Standard Operating Procedures (SOPs) for the plant are either out of date or unavailable. As equipment is replaced, it is critical to update the SOPs to be relevant to current conditions and ensure that all operators are clear on the proper operation of the plant. This is a repeat finding from previous inspections.

Concern 6C

At the time of the inspection, an alarm was going off for Sludge Pump #2. Facility personnel stated that the SCADA Control Room is not manned continuously, which could lead to unanswered alarms and additional plant issues.

Requirement 7

NPDES Permit NM0022292, Part III: Standard Conditions B.3.b. Proper Operation and Maintenance: *The permittee shall provide an adequate operating staff which is duly qualified to carry out operation, maintenance and testing functions required to insure compliance with the conditions of this permit.*

Concern 7

This facility is significantly understaffed. In accordance with NMAC 20.7.4, “operate” is defined as “performing any activity or function or making any process control or system integrity decision regarding water quality or water quantity that has the potential to affect the proper functioning of ... a public wastewater facility or to affect human health, public welfare or the environment.” Facility personnel without any operator certification are not qualified to “operate” the facility nor perform any laboratory analysis including pH and dissolved oxygen without constant oversight from a certified operator. It is the responsibility of the municipality to offer operators a salary commensurate with the tasks of running the PRWRF and the laboratory. Plant operations and laboratory analysis are not unskilled tasks, they require years of training and testing for operators to become proficient.

Requirement 8

NPDES Permit NM0022292, Part III: Standard Conditions C.6. Flow Measurements: *Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The*

devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from true discharge rates throughout the range of expected discharge volumes.

Concern 8

Turbulence at the measurement point in the effluent Parshall Flume may be causing incorrect flow readings by the electronic secondary flow meter. Two staff gauges in the Flume have different level readings and it is unclear which one is correct, preventing verification of the primary flow meter against the secondary flow meter. Facility must have the staff gauges and electronic meter verified and fixed by a qualified technician. Facility personnel were unable to provide documentation that they verify the electronic flow meter against the primary flow meter at least monthly.

Requirement 9

NPDES Permit NM0022292, Part I: D. Pollution Prevention Requirements: *The permittee shall institute a program within 12 months of the effective date of the permit (or continue an existing one) directed towards optimizing the efficiency and extending the useful life of the facility. The permittee shall consider the following items in the program: a. The influent loadings, flow and design capacity; b. The effluent quality and plant performance; c. The age and expected life of the wastewater treatment facility's equipment; d. Bypasses and overflows of the tributary sewerage system and treatment works; e. New developments at the facility; f. Operator certification and training plans and status; g. The financial status of the facility; h. Preventative maintenance programs and equipment conditions, and; i. An overall evaluation of conditions at the facility.*

Concern 9

Permittee was unable to provide a Pollution Prevention Program.

Section IV – FOLLOW UP

Documentation requested during the inspection was received via file transfer service by EPA and NMED on September 25 and 27, 2024, after exiting the Facility on September 17, 2024.

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 3 photos taken September 17, 2024

Appendix 2 – Paseo Real Water Reclamation Facility Administrative Order Emergency Project
Progress Update - September 16, 2024

Appendix 3 – NPDES Permit NM0022292 Permit Limit Exceedances

Appendix 1

Photograph Log



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 1

Location: Paseo Real Water Reclamation Facility		
City: Santa Fe	County/Parish: Santa Fe County	State: New Mexico



Photo File Name: DSCN2478.JPG

Date of Photo: 09/17/2024

Time of Photo: 11:28 AM

Photographer: Nafis Fuad

Description: Eyewash station is out of order but looks functional.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 2

Location: Paseo Real Water Reclamation Facility		
City: Santa Fe	County/Parish: Santa Fe County	State: New Mexico



Photo File Name: DSCN2511.JPG

Date of Photo: 09/17/2024

Time of Photo: 1:15PM

Photographer: Nafis Fuad

Description: Effluent flow meter turbulence from autosampler pipe, and one of the two staff gauges.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 3

Location: Paseo Real Water Reclamation Facility		
City: Santa Fe	County/Parish: Santa Fe County	State: New Mexico



Photo File Name: DSCN2512.JPG

Date of Photo: 09/17/2024

Time of Photo: 1:18PM

Photographer: Nafis Fuad

Description: Effluent flow meter and the second staff gauge present.

Appendix 2

Paseo Real Water Reclamation Facility Administrative Order Emergency
Project Progress Update - September 16, 2024

Hazen



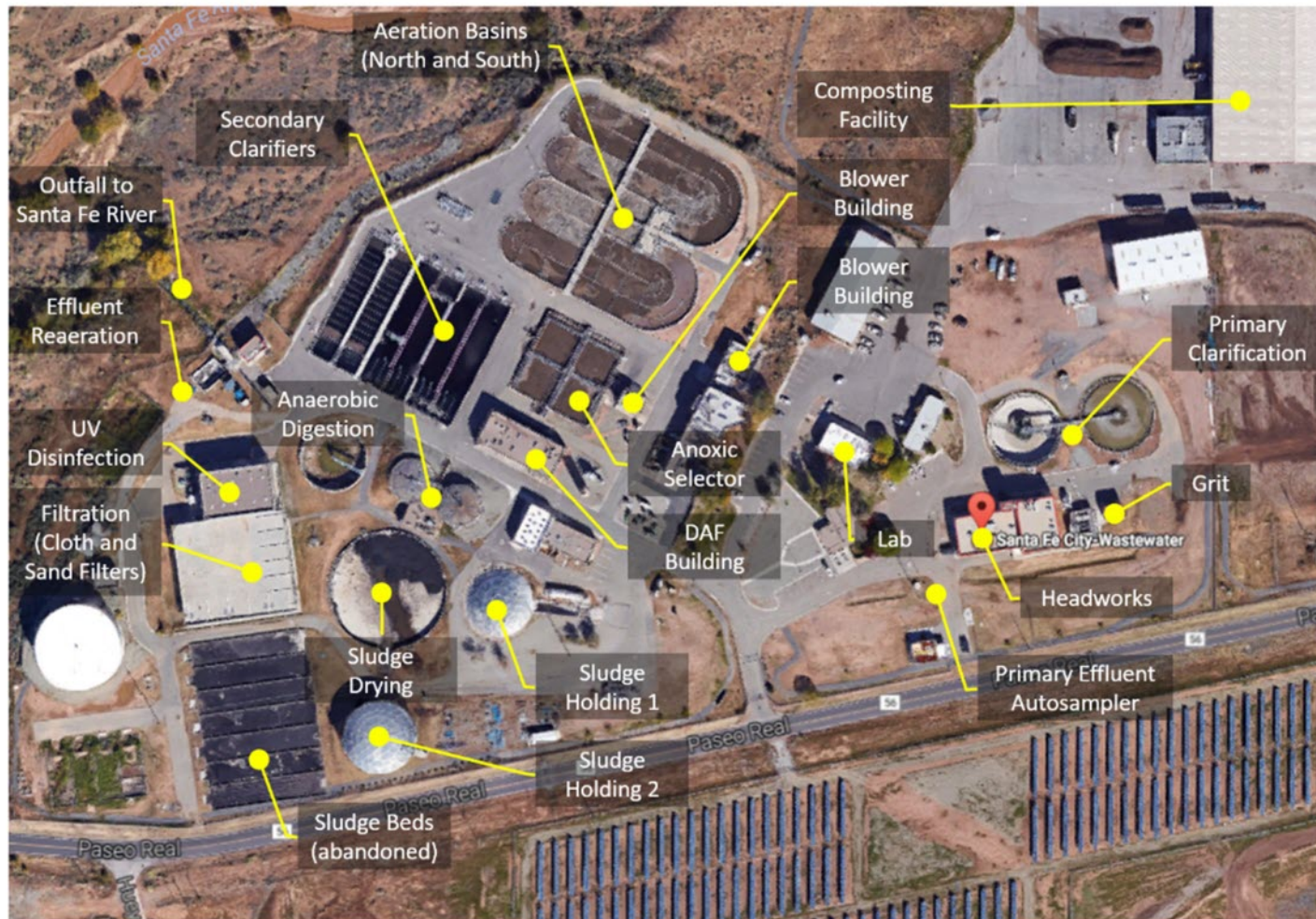
**Paseo Real Water Reclamation Facility
Administrative Order Emergency Project
Progress Update
September 16, 2024**

PRWRF Administrative Order Emergency Project Initiation

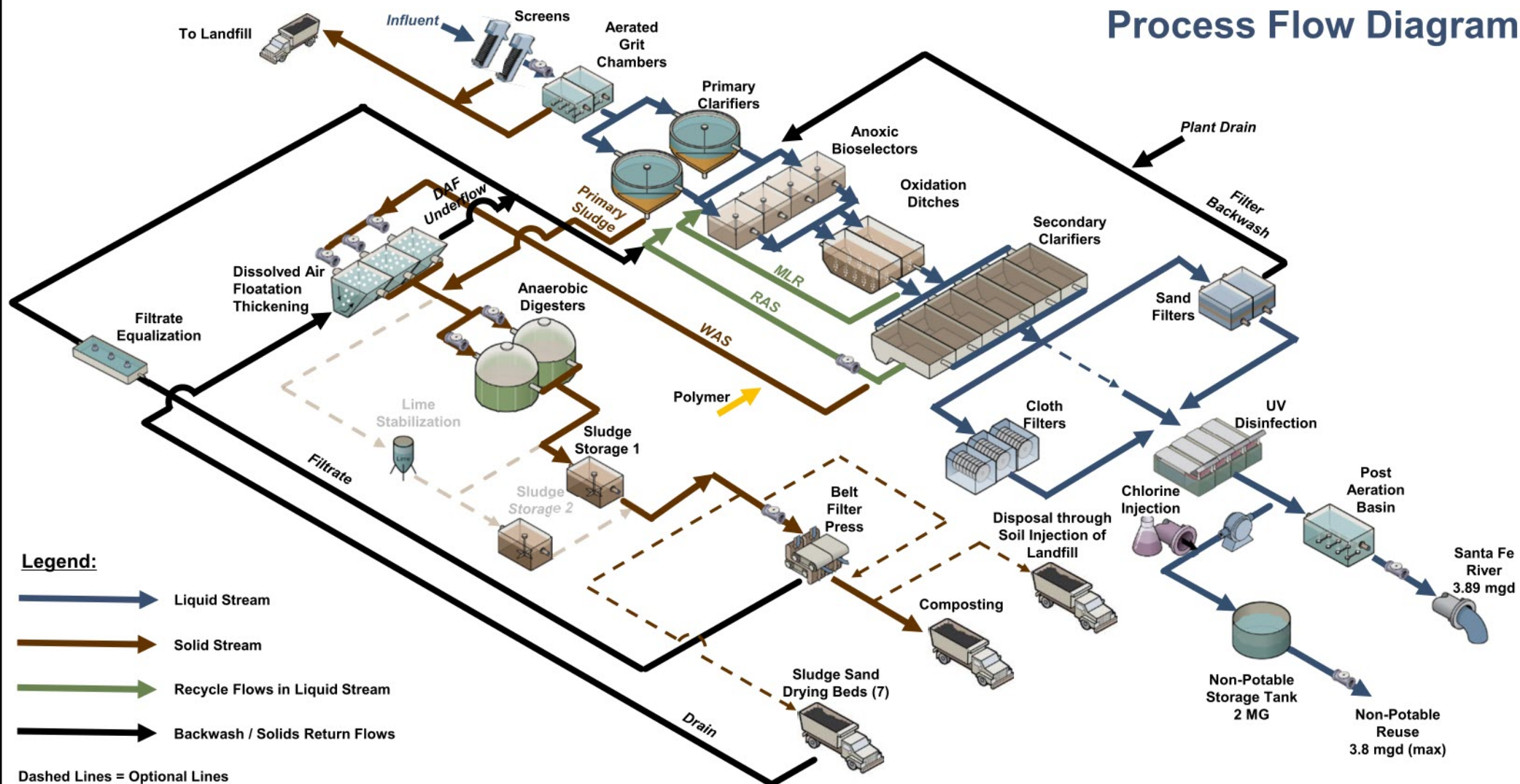
- March 4 – EPA issues Administrative Order (AO) to the City for PRWRF's violation of permitted effluent limits
- April 4 – City authorized Emergency Determination and Administrative Order Response and accompanying Budget Authorization Request (BAR) to allocate funding for:

Contractor	Service	Budget
Hazen and Sawyer	Engineering Services	\$ 2,718,000.00
A.A.C. Construction	General Construction	\$ 2,465,837.04
Rain for Rent	Temporary Filtration	\$ 1,032,505.46
AquaSight	Operational Support	\$ 350,000.00
ITSQuest Staffing	Staffing Support	\$ 264,463.70
Molzen and Corbin	Engineering Services	\$ 180,000.00
Great Western Electrical	Electrical Construction	\$ 155,690.08
Carollo Engineers	Engineering Services	\$ 60,000.00
Total		\$ 7,226,496.28

Site Plan



Process Flow Diagram



Existing Conditions as of March 2024



Primary Clarifier Scum Layer



Oxidation Ditch Foam Layer



Process Air Piping

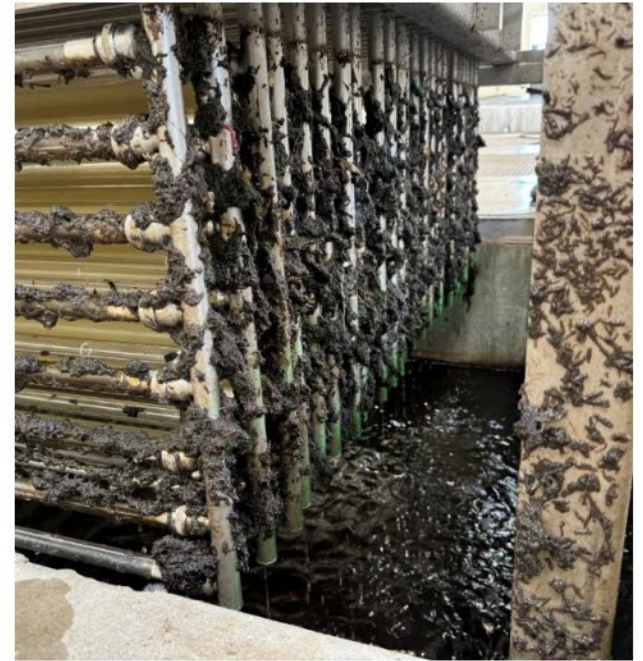
Existing Conditions as of March 2024



Secondary Clarifiers



Filter Influent Channel



UV Bank

Overall Plan

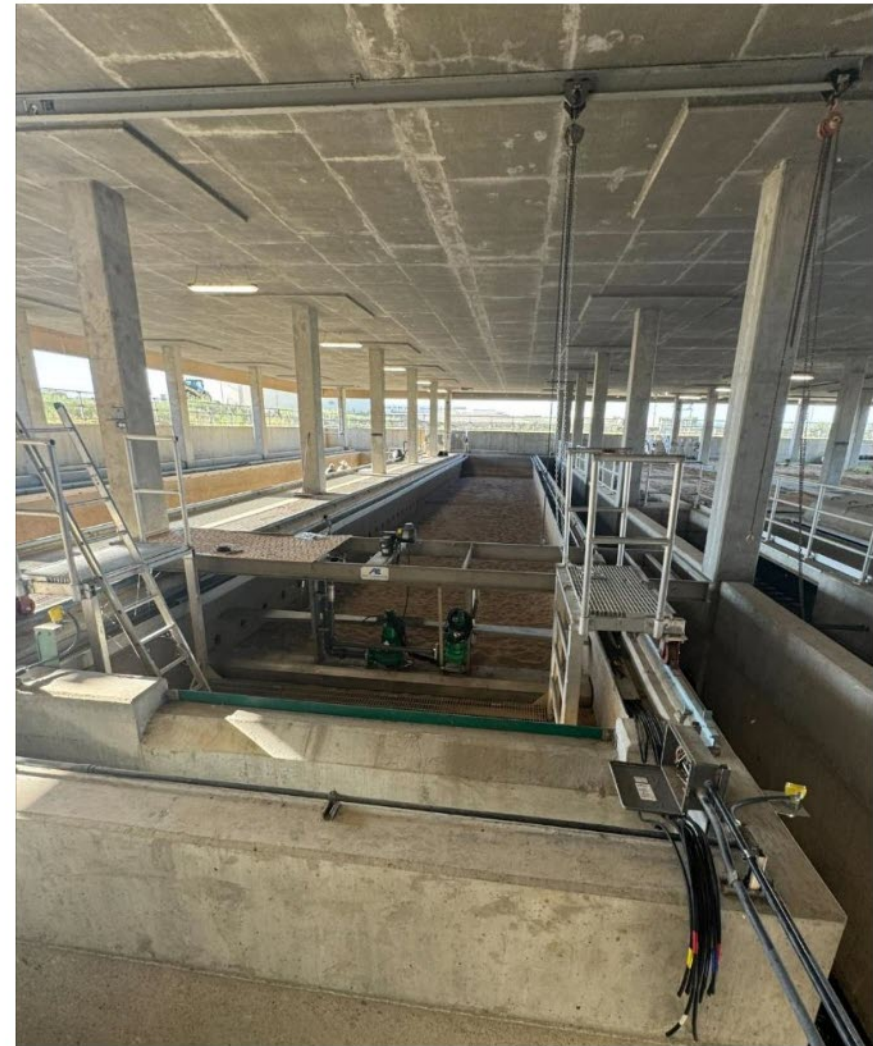
1. Improve sludge settling to increase treatment capacity and improve secondary effluent quality by:
 - a. Destroying existing populations of filamentous microorganisms
 - b. Increasing oxygen supply to activated sludge to prevent regrowth of filamentous organisms
2. Restore disinfection efficacy to reduce effluent *E. coli* by:
 - a. Restoring filter capacity and performance
 - b. Rehabilitating the existing UV disinfection system
 - c. Operating the backup chlorination/dechlorination system as an interim measure
 - d. Replacing the UV disinfection system in 2026
3. Restore performance and reliability of solids train (thickening, digestion, dewatering)
4. Rehabilitate or replace equipment to restore redundancy throughout the treatment process
5. Train PRWRF staff how to operate each unit process for improved consistency, performance, and reliability while making data-driven decisions



Progress to Date

April – May 2024

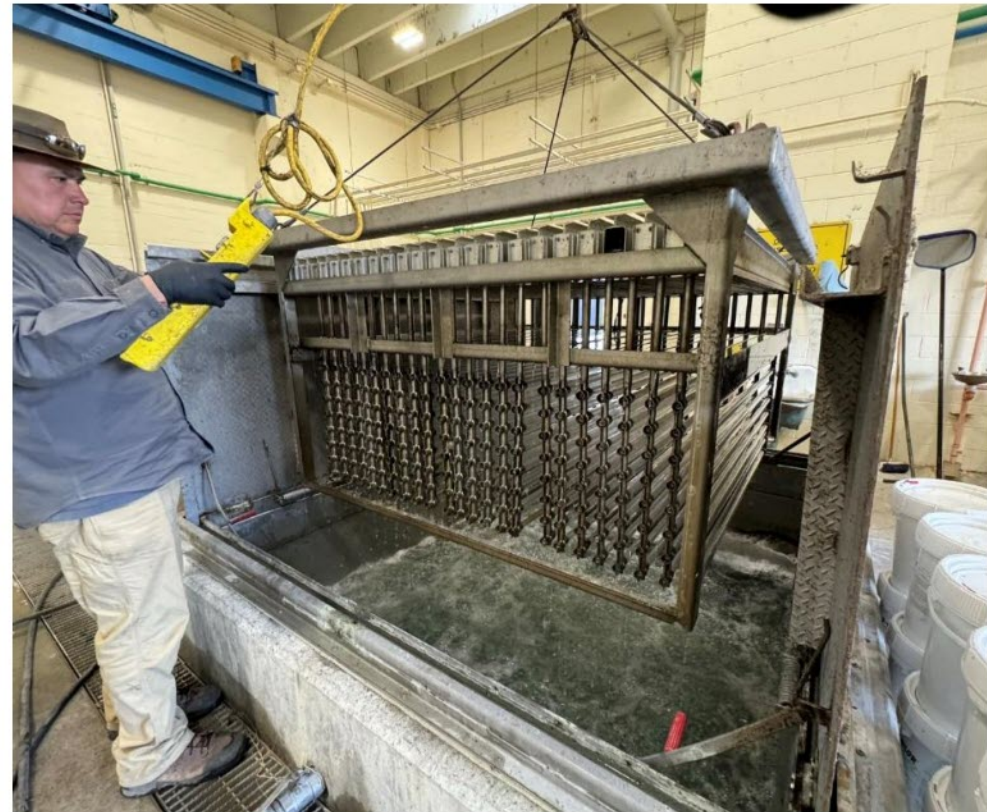
- April 5 – City responds to EPA AO with initial plan for actions categorized as immediate (30 days), near-term (6 months), and long-term (18 months).
- April 12 – A.A.C. Construction began rehabilitating the two travelling bridge sand filters.
- April 26 – Hazen recommends immediate implementation of sludge chlorination to destroy filamentous organisms and poly-aluminum chloride (PAC) dosing to improve sludge settling.
- May 8 – Rain for Rent installed pressurized sand filter skids to remove solids and reduce turbidity upstream of UV disinfection.
- May 10 – City began dosing aluminum sulfate to improve solids settling and thereby improve downstream filtration.
- May 16 – Hazen performs jar testing of aluminum sulfate and alternate coagulants to optimize approach.
- May 16 – NMED issues Administrative Compliance Order for effluent quality violations and assesses \$2.3M civil penalty.



Progress to Date

June 2024

- June 10 – City switched to T-Floc B-135 (PAC) to improve solids settling per Hazen's recommendation.
- June 12 – City began chlorinating sludge to reduce problematic bacteria and improve settling.
- June 16 – City issues response to NMED ACO and requests a hearing. City continues weekly meetings with NMED regulators (not attorneys).
- June 19-25 – Hazen analyzed influent wastewater, sampled the treatment process, and evaluated plant performance.
- June 26 – City started repairing the UV disinfection system to improve disinfection and reduce *E. coli* levels.
- June 27 – Hazen sent City a draft plan for operational changes and worked with City to implement.



Progress to Date

July 2024

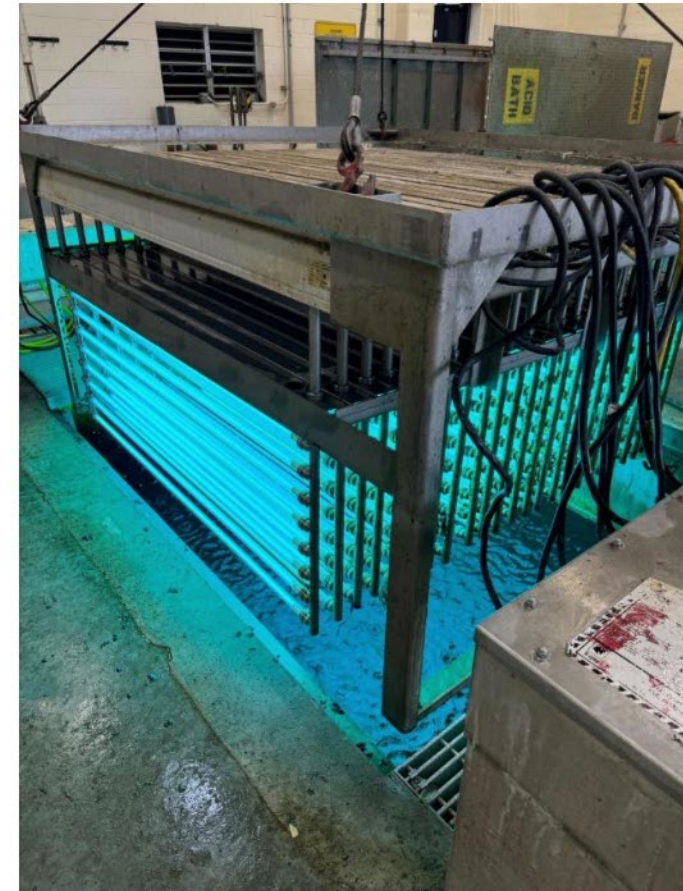
- July 1 – City adjusted operation of primary clarifiers to maintain lower sludge blankets to reduce the likelihood of fermentation and decrease loading to oxidation ditches.
- July 10 – EPA issues follow-up AO requesting updates on activities outlined in City's prior response.
- July 23 – City began draining the north oxidation ditch to prepare for aeration system repairs.
- July 24 – Tom Pfiester (Hazen Grade A Operator) arrives to provide onsite operational support full-time.
- July 26 – City began testing new methods to increase dissolved oxygen in the south oxidation ditch to improve biological treatment performance.
- July 30 – City responds to EPA AO with progress update.



Progress to Date

August - September 2024

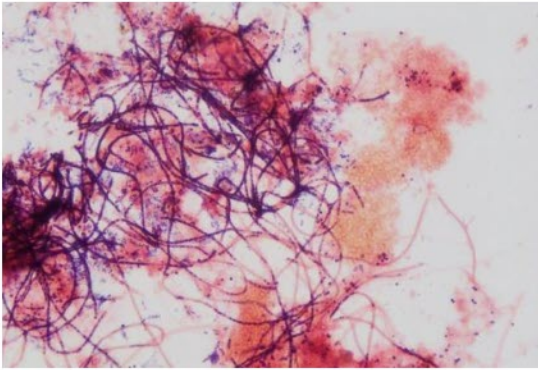
- August 5 – City replaced 27 inlet filters on the process air blowers to further increase dissolved oxygen in the south oxidation ditch. This improved nitrification and reduced effluent ammonia concentrations.
- August 14 – City cleaned the cloth media filters overnight to remove solids accumulation and restore filtration capacity.
- August 14 – City increased sludge chlorination dose to further reduce problematic bacteria and improve sludge settling.
- August 21 – City began replacing a deteriorated filter bypass gate to prevent unfiltered flow from reaching the outfall.
- August 26 – City restored full function of three UV channels. Restored function should improve disinfection efficacy and reduce *E. coli* concentrations in plant effluent.
- September 4 – City issued a PO to rent surface aerators to supplement the aeration capacity and maximize treatment capacity of the south oxidation ditch while the north oxidation is offline for repairs.
- September 6 – City issued a PO for a company specialized in UV disinfection to inspect the UV system, identify deficiencies, and develop a plan for repairs.
- September 9 – Completed rehabilitation of rehabilitating the two travelling bridge sand filters.



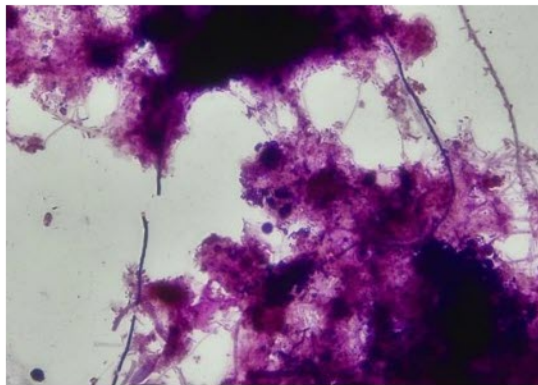
Moving in the Right Direction

Impacts of RAS Chlorination and Increased Oxygen Supply

Before



After



Future Action Items

Operations and Maintenance

Activity	Short Description	Need/Benefit	Overall Plan Category
On-Call Equipment Inspections & Maintenance	The City will execute on-call contract with James Cooke Hobson (JCH) to inspect, maintain, and rehabilitate equipment.	Having JCH on-call will allow the City to expedite inspection and maintenance/rehabilitation of equipment throughout PRWRF.	3, 4
Area Procedures and Expectations (APEs)	Hazen will create a set of knowledge management tools and decision trees to help PRWRF staff with plant operations. Hazen will develop APEs for each of the 11 key unit processes. The first training session is being scheduled for early October 2024.	The APE tools will provide clear guidance on how to operate each unit process for improved consistency, performance, and reliability while making data-driven decisions.	5
Process Control Laboratory	The City will setup an on-site process sampling laboratory to inform operational decisions.	The process control lab will help operations staff make real-time decisions and operational adjustments based on plant performance.	5
BioWin™ Process Model	Hazen is developing and calibrating a BioWin™ process model of PRWRF.	The BioWin™ process model will be used to develop real-time tools to inform operational decisions and optimize plant process performance.	5

Future Action Items

Primary and Secondary Treatment

Activity	Short Description	Need/Benefit	Overall Plan Category
Influent Characterization	The City will begin collecting influent samples for Eurofins to analyze the cyanide levels entering the plant.	Influent sampling is required by the EPA AO and will help the City understand if effluent cyanide exceedances can be reduced by addressing sources of influent cyanide.	-
Flow Equalization	The City will implement primary effluent flow equalization to minimize diurnal flow/load fluctuations and maintain a reliable supply of reuse water.	Flow equalization will improve process stability and allow PRWRF to provide reuse water during the daily period of low flow.	1, 2

Future Action Items

Tertiary Treatment & Disinfection

Activity	Short Description	Need/Benefit	Overall Plan Category
Filtration Repairs	The traveling bridge sand filters have been rehabilitated and resumed operation 9/9. Improvements to the rented pressurized sand filters should be completed by 9/30.	Filtration improvements will reduce turbidity, which will improve UV disinfection effectiveness and reduce effluent <i>E. coli</i> .	2
Supplemental Disinfection	The City will purchase and install chemical bulk storage tanks for sodium hypochlorite and sodium bisulfite.	Bulk chemical storage will support supplemental disinfection until the UV system is restored to full functionality. The tanks will remain for future use in the event supplement disinfection (or chlorination of activated sludge) becomes necessary.	2

Appendix 3

NPDES Permit NM0022292 Permit Limit Exceedances

City of Santa Fe - Permit NM0022292 - Outfall 001

Reported Permit Limit Exceedances

00300 Oxygen, dissolved (DO)

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit	
Limit Unit Desc	Milligrams per Liter
Statistical Base	MINIMUM
Limit Value	5.
DMR Values	
5/31/24	3

00600 Nitrogen, total [as N]

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	24 Hour Composite	Three per Month

Limit		
Limit Unit Desc	Pounds per Day	Milligrams per Liter
Statistical Base	30DA AVG	30DA AVG
Limit Value	265.	6.9
DMR Values		
9/30/21	612	17
10/31/21		7
11/30/21	432	13.1
12/31/21	468	11.1
1/31/22	421	9.8
2/28/22	578	13.8
3/31/22	558	12.7
5/31/22		7.2
12/31/22	515	13
1/31/23	429	12.2
2/28/23	480	11.6
3/31/23	395	10.4
4/30/23	331	8.2
10/31/23	539	12.5
11/30/23	1143	29.8
12/31/23	1251	30.1
1/31/24	582	14.5
2/29/24	355	9.4
3/31/24	678	17.8
4/30/24	310	22.7
5/31/24	372	10.9
6/30/24		8.7
7/31/24	432	12.6
8/31/24	595	17.4
9/30/24	329	10.6

00530 Solids, total suspended (TSS)

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	24 Hour Composite	Daily

Limit			
Limit Unit Desc	Pounds per Day	Milligrams per Liter	Milligrams per Liter
Statistical Base	30 DAY AVG	30 DAY AVG	7 DAY AVG
Limit Value	2127.	30.	45.
DMR Values			
9/30/21		47	69
3/31/22	3209	80.1	115.9
11/30/22			46.4
12/31/22		32.4	50.1
2/28/23		33.5	64.8
3/31/23		46	73.3
12/31/23	4345	105.3	169
2/29/24		49.3	
3/31/24	4353.9	111.4	193.9
4/30/24	2511.3	87.2	183.3
5/31/24	3407.1	92.4	354.5
8/31/24		48.5	116.2

81011 Solids, suspended percent removal

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Calculated	Weekly

Limit	
Limit Unit Desc	Percent
Statistical Base	MO AVG MIN
Limit Value	85.
DMR Values	
3/31/22	77.963
3/31/23	84.774
12/31/23	75.501
3/31/24	66.759
4/30/24	64.029
5/31/24	74.3
8/31/24	84.763

00665 Phosphorus, total [as P]

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	24 Hour Composite	Three per Month

Limit		
Limit Unit Desc	Pounds per Day	Milligrams per Liter
Statistical Base	30DA AVG	30DA AVG
Limit Value	108.	3.1
DMR Values		
9/30/21	145	3.8
10/31/21	139	4.1
3/31/22	181	4.5
12/31/23	118	
3/31/24	205	5.7
5/31/24	134	4.1
6/30/24		3.4
8/31/24	136	4.3

01042 Copper, total [as Cu]

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit				
Limit Unit Desc	Pounds per Day	Pounds per Day	Micrograms per Liter	Micrograms per Liter
Statistical Base	30 DAY AVG	DAILY MAX	30 DAY AVG	DAILY MX
Limit Value	3.28	3.28	6.02	6.02
DMR Values				
9/30/21	190.64	562.27		13
10/31/21			7.37	8.6
11/30/21			7.67	14
12/31/21				13
1/31/22				6.3
2/28/22				12
3/31/22			12.05	32
4/30/22				6.8
5/31/22				6.2
7/31/22				7.7
8/31/22				6.9
10/31/22				8.7
11/30/22				11
12/31/22			7.31	14
1/31/23			6.14	12
2/28/23				21
3/31/23				11
10/31/23				10
12/31/23				18
1/31/24				13
3/31/24				13
4/30/24		6.5	12.18	160
5/31/24			7.55	43
7/31/24				13
8/31/24		5	6.29	14
9/30/24				7.4

00400 pH

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit		
Limit Unit Desc	Standard Units	Standard Units
Statistical Base	MINIMUM	MAXIMUM
Limit Value	6.6	9.
DMR Values		
10/31/21		9.5
1/31/23	3.8	

00720 Cyanide, total [as CN]

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit				
Limit Unit Desc	Pounds per Day	Pounds per Day	Micrograms per Liter	Micrograms per Liter
Statistical Base	30DA AVG	DAILY MX	30DA AVG	DAILY MX
Limit Value	.56	.56	5.2	5.2
DMR Values				
9/30/21	22.1	322.2		12.5
6/30/23				11.7
8/31/23		1.01	5.34	25.2
9/30/23		1.01		29.2
12/31/23				6.3
3/31/24				12

50060 Chlorine, total residual (TRC)

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit	
Limit Unit Desc	Micrograms per Liter
Statistical Base	INST MAX
Limit Value	11.
DMR Values	
4/30/24	67
7/31/24	119

51040 E. coli Bacteria

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	Grab	Daily

Limit			
Limit Unit Desc	Billion Colony Forming Units per Day	Colony Forming Units per 100ml	Colony Forming Units per 100ml
Statistical Base	30 DAY AVGEO	30 DAY AVGEO	DAILY MAX
Limit Value	31.	126.	410.
DMR Values			
9/30/21			1800
10/31/21			1060
12/31/21			560
3/31/22	43.21		5100
4/30/22			620
6/30/22	63.57	134.9	2500
8/31/22			1040
2/28/23	32.61		1220
3/31/23	46.36		3900
4/30/23	121.26	484.3	2600
5/31/23	102.94	358.3	2750
6/30/23	105.7	180.4	5300
7/31/23	100.31	397.1	2100
8/31/23	41.91	180.7	1250
9/30/23			2500
10/31/23	384.7	1416.4	13200
11/30/23	1367.41	1815.7	87000
12/31/23	312.87	596.9	18000
1/31/24	194.4	198.2	14400
2/29/24	59.91		2633
3/31/24	105.41	263.5	7300
4/30/24	662.82	2972.5	88000
5/31/24	95.34	419.2	2500
6/30/24	95.35	456.6	3267
7/31/24	192.77	727.1	5200
8/31/24	1252	1251.9	28667
9/30/24	60.25	133.3	2600

80082 BOD, carbonaceous [5 day, 20 C]

Limit Start Date	Limit End Date	Sample Type	Frequency of Analysis
9/1/2021	8/31/2026	24 Hour Composite	Daily

Limit		
Limit Unit Desc	Milligrams per Liter	Milligrams per Liter
Statistical Base	30 DAY AVG	7 DAY AVG
Limit Value	10.	15.
DMR Values		
3/31/22	11	
12/31/23	14	21
3/31/24	14	25
4/30/24	13	25
5/31/24	12	44