Mona's Copy

City of Santa Fe, New Mexico

200 Lincoln Avenue, P.O. Box 909, Santa Fe, NM 87504-0909
www.santafenm.gov

Alan Webber, Mayor

Councilors:
Signe I. Lindell, Mayor Pro Tem, District 1
Renee Villarreal, District 1
Peter N. Ives, District 2
Carol Romero-Wirth, District 2
Roman "Tiger" Abeyta, District 3
Chris Rivera, District 3
Mike Harris, District 4
JoAnne Vigil Coppler, District 4

7004 1160 0006 8885 0006

October 23, 2019

Ms. Nancy Williams
Water Enforcement Branch (6EN-WC)
EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: City of Santa Fe Response to Administrative Order; Docket Number: CWA-06-2019-1818 for NPDES Permit Number: NM0022292, Paseo de Real Wastewater Treatment Plant

Dear Ms. Williams:

This letter provides the City of Santa Fe ("City") response to Administrative Order Docket Number CWA-06-2019-1818 ("the Order") issued by the U.S. Environmental Protection Agency ("EPA") regarding the City's NPDES Permit Number NM0022292 ("Permit") dated September 26, 2019, which we received from your office on September 27,2019.

It is the City's goal to provide continuous compliance with our permit. This letter outlines the causes and history of the violations cited by EPA in the Administrative Order and the steps that the City has taken, and will continue to undertake, to address all permit compliance issues associated with Carbonaceous Biological Oxygen Demand (CBOD), Total Suspended Solids (TSS) and E. coli bacteria, as described in the Order. As described below, when the City became aware of permit noncompliance, the City immediately initiated and identified the issues affecting treatment. The City met all effective permit limits for the all referenced contaminants referenced by July 3, 2019, with the exception of one max daily E. coli reading on August 5. As of August 6, 2019, the City has met the Permit's limits for all permitted parameters and this compliance status has been maintained to the current date. This letter provides a description of the causes of noncompliance cited in CWA-06-2019-1818 and our actions to ensure continued compliance with all applicable permit limits. It includes the specific corrective actions undertaken and their expected results to correct and prevent recurrence of the observed E. coli bacteria, CBOD, and TSS violations.

Discharge Permit Status and Summary of Factors Leading to Non-Compliance

At the beginning of the permit cycle, the City was granted a schedule of compliance allowing for reporting only for Total Nitrogen and Total Phosphorous. This NPDES permit became effective in September of 2016 and also provided the City with a thirty-six month Schedule of Compliance, from the date of permit issuance, to achieve final effluent limitations for these parameters. As part of that

RECEIVED 10/31/19

2. Develop and maintain an improved Capital Asset management program so as to better respond to equipment failures, emergency repairs, and process downtime events.
3. Expand the plant operating procedure program to all processes, to include training and continuous improvement.
4. Expand and upgrade the facility's SCADA system to incorporate additional controls and monitoring capability for each process, upon each scheduled process improvement (Aeration Basin blowers, filtration, UV disinfection, sludge return, sludge wasting, etc.).

During the construction described above, it will be necessary to take each basin off-line for a period of eight to ten weeks to complete all repairs and renovations. Even with the utmost care, transfer of the biomass between basins and readjustment of aeration systems (including new equipment) will potentially upset process performance, sometimes to the extent that maintaining compliance with applicable permit limits will be difficult, if not impossible. As a result of the experiences to date and the operational challenges we experienced during the nutrient study, the City has begun consulting with staff and contract engineers to develop operational strategies and mitigation measures (including supplemental equipment/units) which will ensure that the WWTF maintains compliance with all effluent limitations in our Permit. The City will also begin pilot testing of one basin operation starting in November of 2019 to ensure the facility's ability to maintain compliance during aeration basin rehabilitation when the City will have to shut down one basin at a time to perform the required basin upgrades. If the pilot testing proves ineffective, then two basins will be returned to operation in a series to ensure compliance.

This study will make it possible to attain crucial information and testing before the system requires one basin operation during construction, as well as determine the feasibility of this operational mode and the need for side-stream treatment if effective treatment cannot be accomplished. While the testing of "one basin operation" is conducted, the secondary basin will always be available in a standby mode and ready to be placed online immediately if required. If the pilot study determines that side-stream treatment units are necessary, it will pursue the purchase or rental of these units. The City will request an opportunity to further to discuss our construction plans and schedules, as well as planned actions to maintain Permit compliance, with you at a future date several months in advance of any scheduled construction or process improvements or retrofits.

Response Summary and Certification of Compliance

The City achieved full compliance with all permit limits and Schedules of Compliance contained in NPDES Permit #NM0022292 on August 6, 2019, after one daily max E. coli violation on August 5, 2019. It has maintained that compliance to date. The City has maintained compliance with all applicable permit limits since that date and will continue to take all necessary steps, as outlined above, to comply with its NPDES discharge permit. The City is also currently investigating and pursuing the rental of "mobile" bio-disc filtration units to polish effluent during periods of upset and operational difficulties to ensure that our effluent can meet permit limits. Further actions include execution of the findings of the Nutrient Loading and Removal Optimization Study and Disinfection Compliance Recommendations recently completed by Carollo Engineering for the City. These studies and recommendations were previously forwarded to Mona Tates, of your staff, on April 24th, and to you on May 30, 2019. Additional copies have been included with this response for your immediate reference and convenience. The City is

confident that these steps will result in continued compliance with the E.coli bacteria, CBOD, and TSS and other effluent limitations of our Permit. We look forward to our continued partnership with EPA and the New Mexico Environment Department as stewards of our natural resources.

Please contact me at 505-955-4642 or mldozier@santafenm.gov , or Alex Puglisi, Environmental Compliance Officer at (505) 955-4232 or aapuglisi@santafenm.gov, should you have any questions regarding this matter or the contents of this letter.

Sincerely,

Michael L. Dozier
Director, Waste Water Management Division
City of Santa Fe, Public Utilities Department

cc: Ms. Shelly Lemon, Surface Water Quality Bureau Chief, New Mexico Environment Department
Sarah Holcomb, Surface Water Quality Bureau. New Mexico Environment Department
Jerel LaPan Hill, Interim City Manager, City of Santa Fe
Mr. Shannon Jones, Utilities Director, City of Santa Fe
Marcos Martinez, City Attorney's Office, City of Santa Fe
Alex Puglisi, Environmental Compliance Officer, City of Santa Fe

Schedule of Compliance, the City committed to complete a nutrient study to develop a treatment strategy for nutrient removal and would allow sufficient time to implement modified, or new, treatment processes as needed to comply with the new permit limitations.

The City of Santa Fe began the nutrient study in May, 2017 to investigate both nutrient loading and process and removal optimization. During this study, process changes including Mixed Liquor Suspended Solids ("MLSS") concentrations, aeration regimes, wasting schemes, and tertiary treatment modifications, and all of these changes were tested for nutrient treatment and removal efficiencies. From May 2017 through June 2018, changes in total suspended solids ("TSS") and turbidity created issues with the facility's ultraviolet ("UV") disinfection capabilities resulting in E. coli violations. The City was mindful of the possible issues a treatment process evaluation, including alternate operation scenarios, would create. That was the basis of the City's formal request to the EPA during the permit reissuance process in early CY2016 to grant the schedule of compliance that was subsequently included in our Permit. However, the City could not have foreseen all operational issues at that time, and the City did not expect that E. coli and other permitted pollutants would be adversely affected to the level that they were during the course of this study. The inability of the City's tertiary treatment capabilities to remove solids and adequately disinfect was unexpected and resultant higher turbidities affected the ability of the UV system to eliminate bacteriological contamination, as well as and maintain permit compliance for parameters such as CBOD during the study. Concurrent issues and violations covered in AO Docket Number: CWA-066-2019-1773 from January 2019 through May 2019, are also addressed in our May 30, 2019 response to that AO (attached).

Process Optimization Study

The nutrient removal optimization study was part of the Schedule of Compliance written into the 2016 reissuance of the City's NPDES permit (Permit) by EPA Region 6 in 2016. The permit also imposed new limits for Total Phosphorous and Total Nitrogen. A copy of this study entitled, "Nutrient Loading and Removal Optimization Study" was previously forwarded to Ms. Mona Tates on April 24, 2019, for reference and discussion during a conference call on the Order. The study was contracted to and conducted by Carollo Engineering Inc. and required numerous process changes to the aeration basins ("AB") to ascertain if higher levels of Total Nitrogen and Phosphorus removal could be achieved and optimized in order to ensure compliance with the new permit limits for these constituents. Process changes were implemented during the course of the study to achieve higher MLSS and sustain higher concentrations of nitrifying bacteria. These changes created numerous operational challenges during the study. The Paseo Real WWTF typically supports MLSS of 2,000 to 2,500 mg/L concentration in the summer and 3,000 to 3,200 mg/L in the colder months. During the period of June 2017 to December 2018 the MLSS increased to 5,000 causing problems with solids retention in the secondary clarifiers and ultimately reduced the effectiveness of the facility's disinfection process. AB solids began to accumulate faster than wasting rates could remove solids. This created an overabundance of solids in the clarification stage and interfered with the UV disinfection process employed by the facility.

Aeration schemes implemented during the study also created issues. Testing process changes to increase the dissolved oxygen in specific zones of the AB would negatively affect the system. There are three zones where air is disbursed throughout the individual AB system zone A, B, and C. Normally in

zone A the dissolved oxygen target is 2.0 mg/L to 2.5 mg/L and in zone B 1.5 to 1.9 mg/L and in zone C 0.5 mg/L and below. The zone C target was moved up to 1.5 mg/L in the hopes of achieving total nitrification but the higher dissolved oxygen content had an adverse effect on the secondary clarifiers. Denitrification in the secondary clarifiers caused rising sludge blankets and washouts leading to turbid water and higher TSS in clarified water, which in turn affected the UV disinfection in a negative manner. This caused E.coli to increase beyond compliance through the tertiary treatment.

In September of 2017, a study on the UV treatment process began (see attached). This study ran concurrently with the Nutrient study. Changes to the maintenance and usage of the UV process were implemented. On at least two instances direct E.coli issues could be related to part of the changes made.

In November 2017, the north aeration basin was taken offline to replace 1500 diffusers and an off gas test was performed by our consultants. During the time when the basin was empty the WWTF staff noticed that the stem for the inlet gate valve was bent but still operable. When the AB was put back into service staff tried to return the system to its pre-study parameters. As the study progressed, a few changes created issues with turbid water which was reflected in the E. coli violations which followed in the subsequent months of December 2017 and early 2019.

Operational Difficulties (June 2019 thru July 2019)

Due to an unfortunate series of events, which we will describe below, the City WWTF was out of compliance from June 21, 2019 to July 2, 2019.

The WWTF biological process was altered in April 2019 due to a failure of the influent to the north aeration basin. Therefore, the north and south basin which are normally run in parallel were re-routed to run in series. The process exhibited all the signs of returning to regular compliance operation during mid-May and through mid-June leading staff to inform EPA the plant was in compliance.

In the week of Monday June 17th, it was discovered that a two critical mixers in the south basin were not operating properly. Operations staff diagnosed the issue and repaired the mixers within the week. The facility operators made changes that brought our plant back into compliance. Due to the volume of solids that were held back in the system, operations staff had a difficult time in assuring that the solids were properly removed in a manner to guarantee limited negative impact on other components in the wastewater treatment processes. Reintegration of south aeration solids contents caused the secondary clarifiers to short circuit. This was a major factor contributing to TSS issues introduced to disc filters overloading and obstructing UV disinfection quality. The system was slowly coming back but the solids concentration was still high.

Also adding to the poor settling of the secondary clarifiers was the accumulation of filamentous bacteria over the colder winter months. While changes to the process had lowered filamentous foaming, proper mixing after repairs comingled the sludge rapidly. Supplemental measures taken to combat the filamentous were to increase the wasting of the secondary clarifiers, to throttle the inlet valves to the secondary clarifiers, and the addition of a chemical named Bio Genesis (see attached docs.) to enhance

the nitrosomonas and nitorbacter bacteria in the aeration basin. All of these measures have reduced the filamentous bacteria greatly.

The one daily max E. coli violation on August 5, 2019 was investigated and attributed to a breach in our tertiary filtering mechanism. This breach was noticed on a walk through after the sample had been grabbed. The City repaired the disk and the following day's sample was in compliance.

Summary of Corrective Measures Implemented to Date

Placed second AB online and operated in a series to reduce loading rate previously handled by one basin and increasing AB capacity and operational efficiencies.

1. Careful monitoring and prompt repair of UV system lamps to increase online performance.
2. Replenishment of inventories of lamps, tubes, and electronic components.
3. Cleaning of tubes (inside and out) on a regular basis.
4. Placement of one complete UV channel off-line (the tertiary treatment evaluation found the capacity unnecessary) and focus attention on the three necessary channels, while leaving one in reserve for use when necessary.
5. Replacement of older filter panels on an annual basis and walk through verifications on a daily basis.
6. Prompt repair of equipment so that they remain on-line.
7. Preparation of improved procedures and written documentation.
8. Training of staff on the use of the procedures and the need for documentation.

Additional Planned Improvements and Dates of Completion

1. Complete construction of the replacement anaerobic digesters, filter press addition/replacement, cogeneration using biogas, and SCADA control system (**March 2020**)
2. Complete design of aeration system improvements, including aeration diffuser, control valve, and blower replacement, upgrading of scum, skimming's, and foam management equipment and processes, and filtrate equalization, mixing unit replacement (**October 2019**)
3. Fast-track procurement and contracting of aeration systems improvement project so that construction can begin in **April 2020**.
4. Complete aeration basin improvements by **October 2020** so that both basins will be back on line prior to the onset of winter wastewater temperatures.
5. Complete construction of the balance of aeration system improvements by **April 2021,** including control system fine-tuning and process equipment shakedown.

Future Related and Continued Improvements (Under Planning and Development)

1. Begin planning for the design of upgrades to the secondary clarification, filtration, and UV disinfection processes to assure long-term compliance performance and optimization of process and energy efficiency.