

REPORT OF THE PRETREATMENT COMPLIANCE INSPECTION

AT

Duckett Creek Sanitary District

3550 Highway K
O'Fallon, MO 63368

NPDES Permit No.:

WWTF #1: MO-0085472 and WWTF #2: MO-0116572

BY

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 7

ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION (ECAD)
WATER BRANCH/DRINKING WATER & INSPECTIONS SECTION (WB/DWIS)

ON

March 19-21, 2024

At the request of the Water Branch (WB), Enforcement and Compliance Assurance Division (ECAD), a Pretreatment Compliance Inspection of the Duckett Creek Sanitary District's progress of obtaining approval of an Industrial Pretreatment Program (IPP) was conducted on March 19-21, 2024. To direct the inspection, a checklist was used that evaluates all important elements of the Pretreatment Program. A copy of the checklist is attached to this report (Attachment 1). The inspection consisted of a discussion and file review of the city's program. In addition, I conducted a brief file review of the district's Biosolids Management Program (Sludge). This narrative report presents the findings of the inspection.

Participants

Duckett Creek Sanitary District

- Luke R. Kehoe, Director of Engineering and Operations, kehoe@duckettcreek.com
- David A. Banks, Operations Supervisor
- Greg Polumbus, Lead Operator
- Nicholas Muenks, Principal Water Quality Scientist, Geosyntec Consultants, Inc.

Missouri Department of Natural Resources

- Brad Allen, Pretreatment Coordinator Brad.Allen@dnr.mo.gov
- Oscar Vazquez, Environmental Engineer, St. Louis RO Oscar.Vazquez@dnr.mo.gov

U.S. Environmental Protection Agency (EPA), Region 7

- Naji J. Ahmad, Environmental Engineer, ECAD/WB/DWIS ahmad.naji@epa.gov

Facility Description and Program Overview

The Duckett Creek Sewer District (district) was originally formed in 1972 under Missouri

statutes section 249. According to the district's website⁽¹⁾, the district did not own any treatment plants or facilities, but did, however, have defined boundaries and certain legal authorities. In 1977, a bond issue authorized the issuance of revenue bonds, and the proceeds were used to buy several small sewer systems from private companies (water and wastewater utilities) and St. Charles County Utilities. These revenue bonds were paid for with the monthly user's fees.

During the early years of the district's operation, many projects took place in eliminating sewage lagoons, small package treatment plants, and septic tanks. The focus was on the individual subdivisions that have their own sewage treatment lagoon(s). Lagoons were sometimes a nuisance due to odors and the low level of treatment. Therefore, sewer lines were extended that allowed the elimination of the lagoons and the wastewater was transported to larger, much more efficient, centralized treatment plants.

Septic systems were also a focus of the district. Septic system problems and failures were common due to the age of the septic systems, the soil types in this area, and the small lot sizes of many of the homes, and septic system failures were common. The district did much of this septic tank elimination work in concert with the St. Charles County government.

Currently, the district owns and operates seven wastewater treatment facilities (WWTF) and approximately 50 sewage pumping stations. Each WWTF has its own individual National Pollutant Discharge Elimination System (NPDES) permit. On any given day the district will treat up to 12 million gallons of wastewater. The seven WWTFs are:

1. WWTF #1 - NPDES Permit MO-0085472
2. WWTF #2 - NPDES Permit MO-0116572
3. Wyndgate Subdivision WWTF #3 - NPDES Permit MO-0131300
4. WWTF #4 - NPDES Permit MO-0136425 (under construction and not yet operational)
5. Riverdale Subdivision WWTF #5- NPDES Permit MO-0132152
6. Augustus Shores WWTF#6 - NPDES Permit MO-0120529
7. Steven A. Rogers WWTF#7 - NPDES Permit MO-0129763

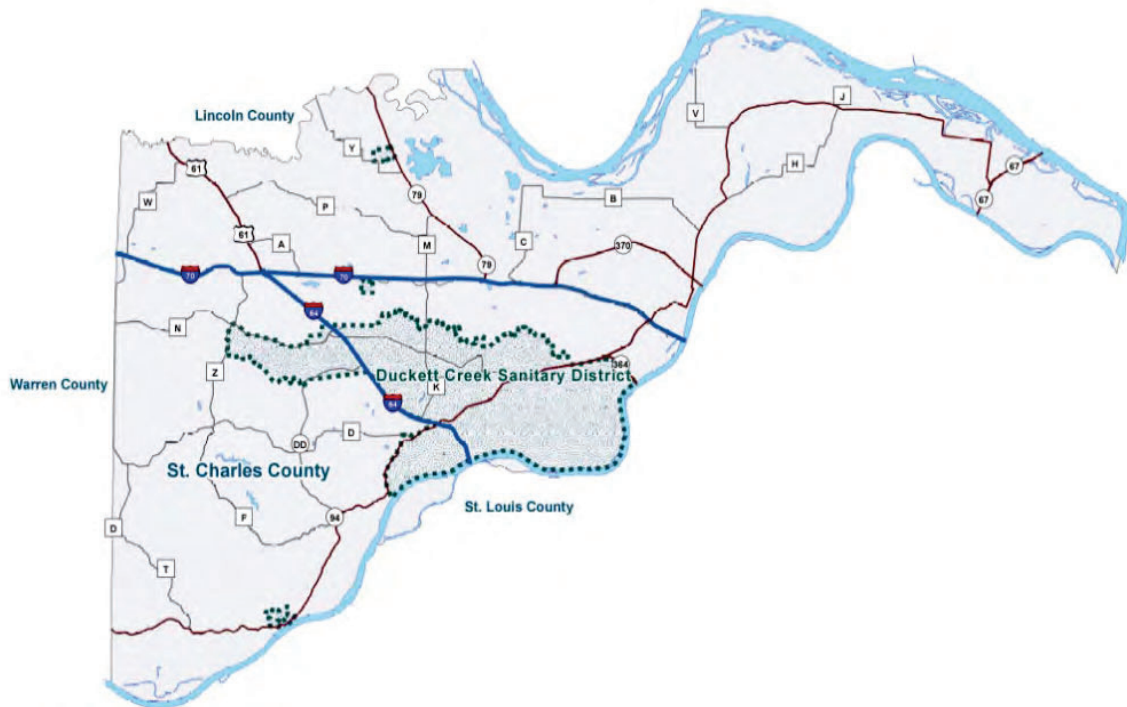
The two larger plants (WWTF #1 & WWTF #2) use conventional technologies to treat wastewater. However, some of the smaller and newer plants use the membrane bioreactor (MBR) technologies which the district designed and built the first MBR treatment plant in the Midwest.

The district is currently developing an industrial pretreatment program (IPP), as required by the Missouri Department of Natural Resources (MDNR) via letter dated March 17, 2022. In the letter (Attachment 2), the MDNR indicated that after a review of the district's recent NPDES permitting application and because the district's WWTFs #2 and #1 have a total combined design flow greater than five million gallons per day (mgd) and identified industrial discharges. Therefore, it was determined that the district was required to develop an IPP that complies with the requirements of 40 CFR 403.9(a) and 40 CFR 403.8(a), that require publicly owned treatment works with a combined design flow of five mgd or greater and receiving industrial

(1) <https://duckettcreek.com>

process wastewater from industries that are subject to pretreatment standards are required to develop an IPP.

Duckett Creek Sewer District Service Map



The MDNR required the district that the development of the IPP shall include calculation of local limits and the legal authority to limit and control industrial wastewater discharged to the district's wastewater collection and treatment systems to prevent pass through and interference. Pursuant to 40 CFR 403.8(b), the district will have until March 17, 2023, to submit a draft program that meets the requirement of 40 CFR 403.9(a).

The March 17, 2023, deadline was formally extended due to unforeseen circumstances, when the lead staff member of the district, who initiated the industrial pretreatment program development, unexpectedly went on medical leave during that time. The district requested via correspondence with the MDNR an extension, which was approved by Chris Wieberg, the Director of the Water Protection Program, on February 8, 2023, resulting in a revised due date of July 14, 2023.

On July 15, 2023, the MDNR received the draft IPP (Attachment 3) that included the following: (1) local limits calculations, (2) draft enforcement response plan (ERP), and (3) the proposed industrial pretreatment chapter to incorporate into the District's Rules, Regulations, and Rates. The draft IPP was prepared by Geosyntec Consultants, Inc. on behalf of the district.

On September 14, 2023, Brad Allen, from the MDNR, sent a response letter to the district's July 14, 2023, submittal. In his letter (Attachment 4), determined that the district's industrial pretreatment program submission was not complete and was missing elements necessary for approval (Attachment 4). The MDNR also required the district to submit more documents, and

also provided a factsheet (Attachment 6) that details the requirements of a new IPP submissions and the approval process for additional information on required items.

During the inspection, Luke R. Kehoe mentioned that the district is at the final phase of responding to Brad Allen's request (Attachment 5), and that the district attorney is finalizing the ordinance that will be submitted to the District's Board of Directors.

According to NPDES permit number MO-0116572 (WWTF #2) (Attachment 7) that will expire on December 31, 2025, WWTF #2 has a design flow of 7.0 million gallons per day (mgd), an actual flow of 4.6 mgd, and an annual design sludge production of 800 dry tons (dt). This facility is located at 13 Research Park Drive in St. Charles, Missouri. Treated effluent discharges into a Tributary to Missouri River via Outfall #001. Previously treated effluent used to supply irrigation water to the neighboring golf course via Outfall #002. However, that practice has been eliminated by severing and capping the force main that supplied the irrigation water via Outfall #002. The facility consists of mechanical bar screen; grit removal; two oxidation ditches; two secondary clarifiers; ultraviolet (UV) disinfection; waste activated sludge tank; sludge storage basin; one decanter; two gravity belt thickeners; two aerobic digesters; and two belt filter presses. Produced sludge is land applied by district personnel.

According to NPDES permit number MO-0085472 (WWTF #1) (Attachment 8) that was expired on June 30, 2021, WWTF #1 has a design flow of 5.0 mgd, an actual flow of 4.85 mgd, and an annual design sludge production of 656 dt. This facility is located at 2950 Greens Bottom Road in St. Charles, Missouri. Treated effluent discharges into Duckett Creek. The facility consists of two mechanical bar screens; grit removal; two oxidation ditches in parallel; two clarifiers in parallel; UV disinfection; aerated sludge digester; decanting tank; two belt thickeners; and sludge storage pad. Produced sludge is transported to WWTF #2.

Industrial Waste Survey and Significant Industrial Users

The district sent out industrial user surveys on May 2, 2023, for WWTF #1, to five facilities but did not identify any users that will need to be included in the IPP. On December 10, 2021, the district sent out industrial user surveys for WWTF #2, to forty-one facilities. After final review, two systems: A Square Systems and Synergetic were identified as SIUs. A Square Systems (SIC 3471) is located at 2416 Mid America Industrial Drive, and Synergetics (SIC 384) is located at 1216 E Morgan Street. However, A Square Systems is the only industrial contributor that will be regulated by the district.

Synergetics no longer discharges to the district, instead, they discharge to St. Louis Sewer district.

A Square employs over 20 full-time employees and specializes in precious and semi-precious metal plating for a wide number of industries. The facility plates silver, gold, tin, nickel, electroless nickel and copper for electrical generation and distribution, food services, defense, small electronics, laser, oil and gas, and naval. A Square is subject to the Metal Finishing Categorical Standard 40 CFR 433.17.

The MDNR issued the pretreatment authorization to A Square in early 2023. But the facility had

structural fire in late spring/early summer of 2023. Allen is currently working on A Square's most recent submission (90-day compliance report) and waiting to confirmation on the facility's operational status.

Local Limits

Local limits were calculated as concentration (mg/l) for WWTF #1 and #2 as follow:

Table 1, Local Limits for WWTF #1 MO-008547

Pollutant	Max	Pollutant	Max	Pollutant	Max
Arsenic	6.807	Mercury	0.720	Nickel	31.038
Aluminum	1406.624	Molybdenum	12.294	Lead	2.730
Cadmium	0.303	Copper	6.164	Salinum	4.280
Chromium	63.779	Cyanide	5.504	Silver	13.199
Chromium IV	7.530	Iron	593.367	Zinc	86.250

Table 2, Local Limits for WWTF #2 MO-0116572

Pollutant	Max	Pollutant	Max	Pollutant	Max
Arsenic	4.564	Mercury	0.369	Nickel	17.189
Aluminum	507.283	Molybdenum	2.469	Lead	1.545
Cadmium	1.198	Copper	24.218	Salinum	1.137
Chromium	115.669	Cyanide	3.042	Silver	7.321
Chromium IV	4.224	Iron	2624.965	Zinc	105.626

Waste Haulers

The district does not accept hauled waste at any of their seven WWTFs.

Sludge Quality

One function of the IPP is to protect the district's sludge from metals contamination. As part of this inspection, the 2022 and 2023 annual biosolids reports were reviewed to determine the IPP's effectiveness.

All sludge is transported to WWTF #2. In 2022, the city produced 627.3 dry metric tons (dmt) and in 2023, produced 739 dmt. The district land applied all the produced sludge in 2022 and 2023 as class B sludge. The district currently has 1,200 acres of agricultural land that is available for application of biosolids. The district applies on 400 acres annually.

Below are the 2022 and 2023 tables that compares the city's peak observed metals level against the statutory ceiling and the city's average level against the exceptional quality (EQ) sludge level specified by the 40 C.F.R. Part 503 Sludge regulations. Because the city sampled its sludge once a month, the monthly average is the maximum value observed.

As shown in the table below, the city's sludge is well below both the ceiling and EQ levels for all metals.

Table 3, 2023 DCSD WWTF #2 Sludge Metal Concentration Quality (mg/kg)

Pollutant	503 Ceiling	503 EQ	Max	Mo. Avg.	Max/Ceiling	Avg./EQ
Arsenic, As	75	41	5	5	6.67%	12.20%
Chromium	3000	1200	29.2	29.2	0.97%	2.43%
Cadmium, Cd	85	39	0.9	0.9	1.06%	2.31%
Copper, Cu	4300	1500	221	221	5.14%	14.73%
Lead, Pb	840	300	8.4	8.4	1.00%	2.80%
Mercury, Hg	57	17	1.62	1.62	2.84%	9.53%
Molybdenum , Mo	75	----	12.6	12.6	16.80%	
Nickel, Ni	420	420	79.7	79.7	18.98%	18.98%
Selenium, Se	100	36	11.1	11.1	11.10%	30.83%
Zinc, Zn	7500	2800	1160	1160	15.47%	41.43%

Table 4, 2023 DCSD WWTF #2 sludge characteristics

Date	Average	Minimum	Maximum
TKN	67,175	49,100	88,000
Phosphorus	16,075	10,200	19,900
Potassium	3,731	2,160	5,240
Organic N	58,308	5,500	84,000
Ammonia N	4,870	1,050	11,400
Nitrate N	437	40	3,500
Fecal Coliform	321,100	7,200	820,000

Conclusion

Duckett Creek Sewer District continues to work closely with Brad Allen and the MDNR. The district is at the final stages of resubmitting the remaining IPP document drafts to the Missouri Department of Natural Resources to achieve approval for their industrial pretreatment program. A Square is currently the one Significant Industrial User subject to the Metal Finishing Categorical Standard 40 CFR 433.17

Oscar Vazquez with the MDNR - St. Louis Regional Office will be inspecting the industry no later than September 30, 2024. District personnel accompany Oscar Vazquez on this inspection.

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Nicole Moran
Supervisor, WB/DWIS

Attachments

1. PCI Checklist
2. MDNR March 17, 2022, letter requiring development of IPP.
3. July 14, 2023, District's draft IPP submittal

4. September 14, 2023, MDNR response to the draft IPP submittal
5. Districts corrective action to MDNR September 14, 2023, letter
6. IPP approval Fact Sheet
7. NPDES permit MO-0116572
8. NPDES Permit MO-0085472