

## Director of Operations and Compliance Report

August 19, 2020

### Plant Loading, CSO Report, and Director's Notes

#### Plant Loading

Biochemical Oxygen Demand, 5-Day (Avg. 33679 lbs/day)	53 percent of design
Total Suspended Solids (Avg. 32850 lbs/day)	30 percent of design
Average Daily Flow (33.10 million gallons/day)	81 percent of design
Maximum Daily Flow (62.64 million gallons/day)	50 percent of design

	Permit Limits (avg/max)	Reported Values	Violations
CBOD <sub>5</sub> , mg/L	20/40	2/3	0
TSS, mg/L	25/45	3/4	0
NH <sub>3</sub> -N, mg/L	1.3/3.0	0.30/0.33	0
Fecal coliform per 100mL	400* (max)	410	1
Chlorine Residual, mg/L	0.05* (max)	0.011	0
Dissolved Oxygen, mg/L	6.0 (min)	7.25	0
pH, S.U.	6.0/9.0 (min/max)	7.89/8.10	0
Total Nickel, mg/L	0.015 (avg.)	0.014	0
Total Zinc, mg/L	0.075/0.416	0.014/0.026	0

\*Effluent disinfection is required May 1 through October 31.

#### CSO Report

Location	Events	Discharge (million gallons)	Estimated Total Duration of Discharges (hrs)
Oakland Avenue (Outfall 003)	3	2.52	8.22
Lincoln Park (Outfall 004)	0	0.0	0.0
McKinley Avenue (Outfall 007)	3	4.61	13.4
Seventh Ward (Outfall 008)	3	28.54	7.2

#### Director's Notes:

##### **Permit Issues:**

As of the writing of this report the District staff are working to finalize the documentation to justify a request for additional time to implement nutrient reduction treatment. It is planned that it will be delivered to the Illinois EPA no later than August 21, 2020.

##### **Permit Exceedance:**

On July 7<sup>th</sup>, 2020, the District experienced an exceedance of the NPDES Permit limit for fecal coliform of 10 CFU/100mls over the 400 CFU/100mls limit. Subsequent investigations led the District staff to believe that from time to time the nitrification process in the plant treatment is not being completed. This is a natural process and if nitrification is incomplete the nitrites remain in the final clarifier

effluent, inhibiting the ability of the chemicals to disinfect the plant effluent. Therefore, all test results indicating proper chemical levels are being fed but the chemicals actually are made less effective (inhibited).

Nitrification occurs in the facility by means of adding oxygen (O<sub>2</sub>) in the mixed liquor tanks sufficiently enough to allow nitrifying bacteria to convert the ammonia (NH<sub>3</sub>) to nitrite (NO<sub>2</sub><sup>-</sup>) and then to nitrate (NO<sub>3</sub><sup>-</sup>) and nitrogen gas (N<sub>2</sub>). It had always been assumed that if the dissolved oxygen residual settings on the mixed liquor tanks were met then the nitrification process was complete. It now appears that from time to time due to flow conditions and load characteristics this assumption is not accurate.

To prevent this occurrence in the future the Operations Group are now testing for nitrite residual(s) using newly acquired equipment daily. This provides the data necessary to properly adjust the tank aeration. Also, an adjustment has been made to the tank residuals during disinfection season to better assure continuous compliance with the permit limits.

### **Collection System Ammonia Study:**

The District Lab and Pretreatment Staff are currently studying the ammonia levels within the collection system due to recent fluctuations in the ammonia concentration levels of the plant influent. The study requires collecting samples from different lift stations in the system and analyzing them for concentrations, temperature, pH, etc.

While no conclusions have been drawn it appears that the ammonia load may be much stronger from the residential areas than had been previously thought. For the most part the previous benchmarks of ammonia sources and strengths were based on short-term testing required for determining local limits which were only conducted every three years. These large data gaps bring to question the reliability of making assumptions based on the data and therefore can cause issues to the efficient operations of the system and the plant. With this in mind a new strategy is being developed to test on a consistent schedule that will best allow the staff to understand the nature of and better respond to actual conditions present in the collection system based on more data points.

### **Wyckles Road SSO Report:**

The District had a Sanitary Sewer Overflow (SSO) occurrence in the biosolids force main to the Wyckles lagoon facility on Wyckles Road. The SSO was reported to the agency as required and in a timely manner. The cause of the SSO was an air-relief valve which had stuck in the open position and allowed a small portion of the material being pumped to be released from the air-relief vault. The material was contained in a concrete lined ditch and puddled in a low area at the end of the ditch. The material was recovered, and the ditch was cleaned by District staff using the Vactor truck.

### **Staffing Change Report:**

During the last week of July and the first week of August was when the District operations department staff were brought back into the plant on a full-time full-staff basis. We are practicing social-distancing and wearing masks as recommended by the State and in accordance with District policies. Should it become necessary it would be possible to reduce staff again, but it is hoped that that will not be required.

### **New Operator in Training:**

The District is close to hiring a new operator-in-training the process is taking a while longer than it did in pre-COVID days. Assuming the individual passes the required testing etc. they will be brought in as soon as possible.

## **Operations, Laboratory, and Pretreatment Activity Reports – July 2020**

### **Operations Activities:**

Normal operational activities were conducted as proscribed by standard procedures or in response to conditions within the plant related to the new measures being employed due to Covid-19. Temporary adjustments are made occasionally to accommodate the needs of the plant as they arise.

- 1) The repairs to the primary sludge feed line has been completed and the Operators have been able to place that equipment back into normal service. There are additional plans to switch this system back to using the 210 wetwell in the near future which is expected to give better tracking of actual amounts of sludge wasted and afford more responsive automated control of the ferrous chloride feed system as well.
- 2) Operations staff responded to variations in ammonia influent levels throughout the month of July by adjusting blower operations and adding extra tanks online as necessary to protect the integrity of the plant operations and assure compliance with permit requirements. These activities did impact the energy efficiency but were necessary to meet the permit limits.
- 3) Operators are and will continue working on addressing tasks that have been set aside while the department was on reduced staffing levels in the plant.

### **Laboratory Activities:**

#### **Routine:**

A total of 1,999 analyses were performed in the laboratory during the month of July 2020.

Monitoring of treatment plant, industrial users, and receiving stream samples for compliance purposes and process monitoring continued. Laboratory personnel continued to perform additional background nutrient monitoring to help fully characterize the nutrient loading on the plant.

#### **Non-Routine:**

- 1) The quarterly sampling of the groundwater monitoring wells was conducted at the South Sludge Lagoons and Wyckles Lagoons.
- 2) Keith Richard attended the virtual quarterly meeting of the Heart of the Sangamon River Ecosystem Partnership on July 23, 2020. The partnership is a consortium of local government agencies and non-government organizations that are working together to ensure the continued well-being of the Upper Sangamon River watershed.

### **Pretreatment Activities:**

#### **General Activities:**

- 1) Pretreatment personnel monitored fourteen commercial and industrial users (IU) during July 2020 and performed four industrial user inspections.
- 2) The SDD sent, and subsequently received, a wastewater hauler discharge application from **Environmental Works**.
- 3) The SDD issued a new Industrial Wastewater Discharge Permit to **Tate and Lyle** and issued an amended permit to **KAG Specialty Products**.

- 4) The USEPA requested industrial loading data from our local limits calculations. This data is used to calculate expected industrial pollutant loadings and helps determine how much of each pollutant the SDD can treat from each Industrial User. Matt Nihiser sent a spreadsheet with the requested data to the USEPA.
- 5) The USEPA, as part of the draft ordinance review, requested a "Legal Authority Statement," which is a statement from the SDD's Attorney that our POTW has the legal authority adequate to carry out the requirements of an approved Pretreatment Program. Ed Flynn reviewed and signed the statement on August 4, 2020, and it was subsequently sent to the USEPA.
- 6) The SDD has been experiencing higher than normal ammonia loading at our headworks. Sampling was conducted throughout the collection system, and it appears that the higher loading is coming from the domestic side of our system. The SDD is continuing to investigate the cause of the high ammonia loading.

**Pretreatment Ordinance - Verbal Notices:**

- 1) A Verbal Notice was issued to **ADM** on July 6, 2020 for discharging wastewater below their lower pH limit from their Front Pump Station. ADM had a sulfuric acid line break, and the acid caused the low pH situation. The line has since been replaced with stainless steel.
- 2) A Verbal Notice was issued to **Advanced Disposal** on July 14, 2020 for exceeding their daily maximum BOD limit. Subsequent sampling has shown that Advanced is back into compliance.
- 3) A Verbal Notice was issued to **ADM West Plant** on July 31, 2020 because they discharged wastewater below their minimum pH limit. The West Plant cleaned a tank of corrosion inhibitor and washed the residue to sewer. ADM has since installed an interlock on their sewer pumps which will inhibit their operation if the pH falls below their pH limit.
- 4) A Verbal Notice was issued to **Prairie Farms** on August 3, 2020 because they discharged wastewater above their total FOG limit in July. Prairie Farms representatives indicated that proper machine rinse and capture procedures were not observed, causing the loss.
- 5) A Verbal Notice was issued to **Decatur Plating** on August 4, 2020 for discharging concentrations of zinc above their daily maximum limit in July. The issue appears to stem from a bad drum of caustic, which is fed into the process wastewater in Decatur Plating's pretreatment plant to precipitate out metals.
- 6) A Verbal Notice was issued to **Tate and Lyle** on August 7, 2020 for discharging wastewater above their daily maximum BOD limit in July. The investigation into this violation is ongoing, but it is likely related to a product loss to sewer.

**Pretreatment Ordinance - Warning Notices:**

No Warning Notices were issued during July 2020.

**Pretreatment Ordinance - Notices of Violation (NOV):**

No Notices of Violation were issued during July 2020.

**Pretreatment Ordinance - Executive Orders:**

No Executive Orders were issued during July 2020.

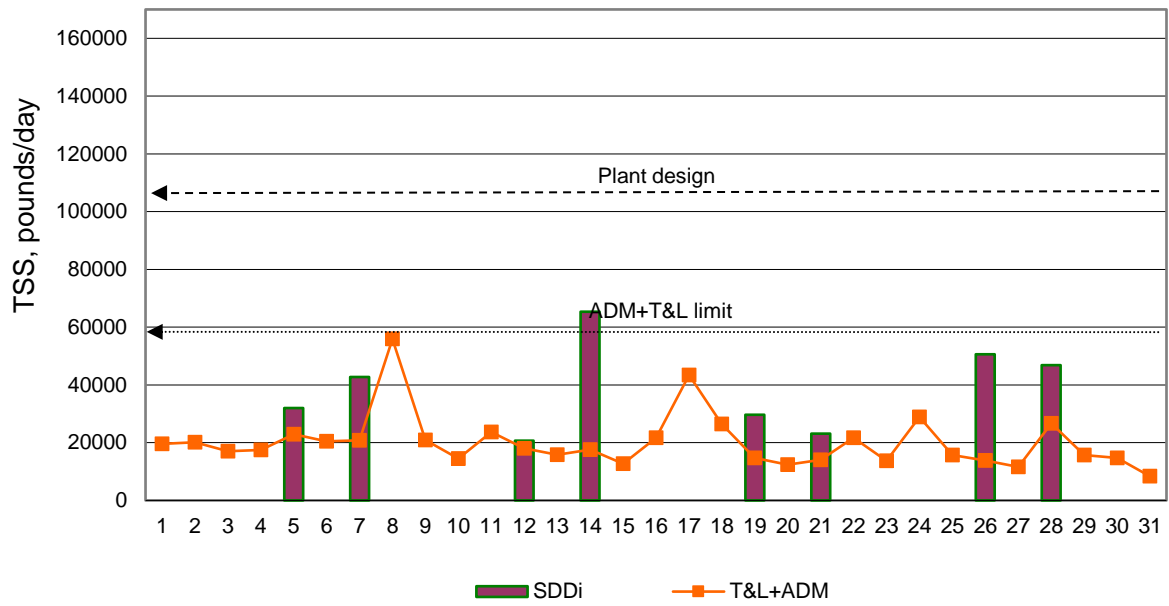
**Pretreatment Ordinance - Penalty Assessments:**

The following industrial penalties were assessed for July 2020:

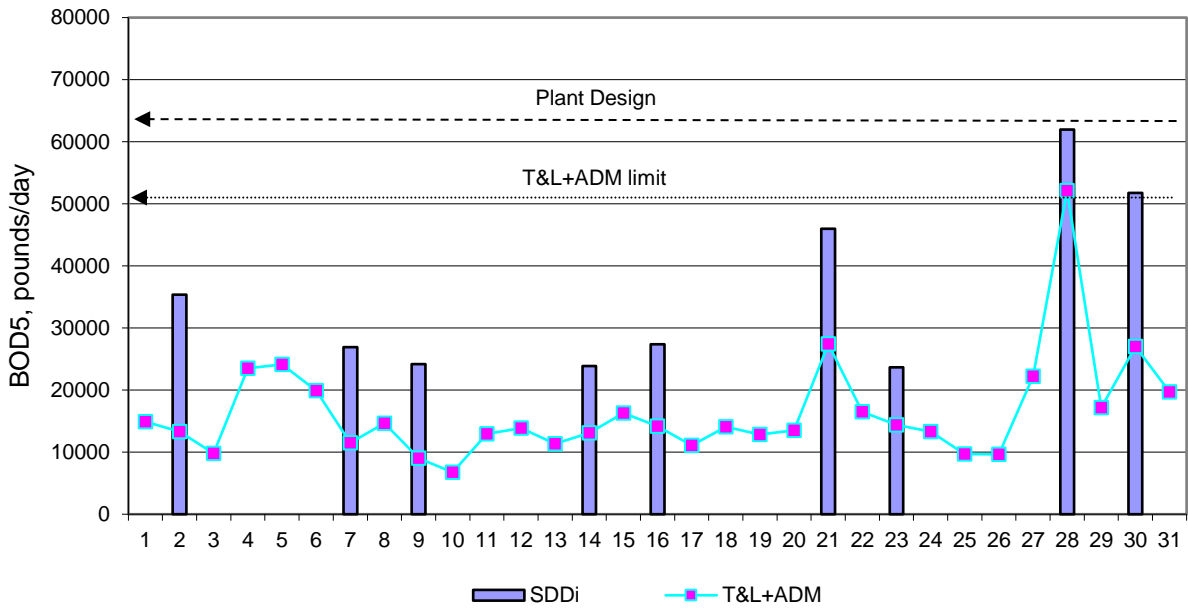
- |                         |                |
|-------------------------|----------------|
| 1) <b>Tate and Lyle</b> | <b>\$1,000</b> |
| 2) <b>ADM</b>           | <b>\$3,500</b> |
| 3) <b>Prairie Farms</b> | <b>\$1,000</b> |

**Plant Operating Graphs:**

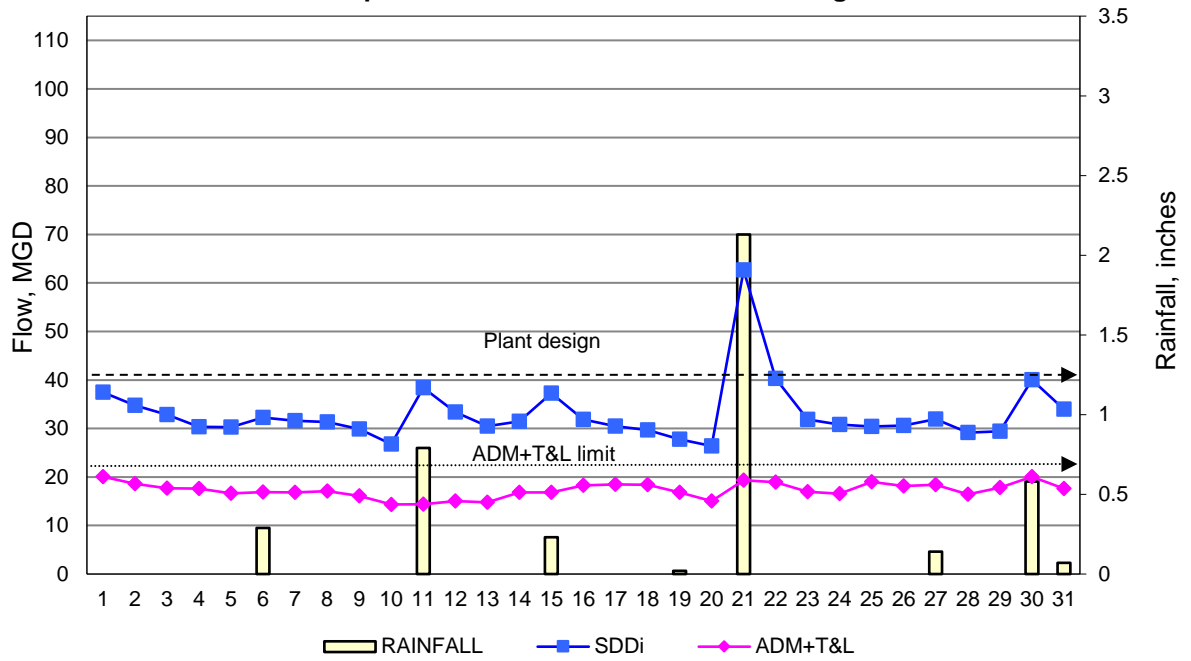
**TSS Comparison: SDD Inf T&L+ADM Discharges**



**BOD Comparison: BOD Inf vs. T&L + ADM Discharges**



**Flow Comparison: SDD vs. ADM + T&L Discharges and Rainfall**



**Plant Efficiency Graphs:**

