

# Technical Director's Report

February 15, 2012

## Plant Loading and Operations Summary – January 2012

Biochemical Oxygen Demand, 5-Day (Avg. 36,600 lb./day)	54 percent of design
Total Suspended Solids (Avg. 101,000 lb./day)	91 percent of design
Average Daily Flow (26.8 million gallons/day)	65 percent of design
Maximum Daily Flow (46.3 million gallons/day)	37 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	8/14	0
NH <sub>3</sub> -N, mg/L	1.5/3.0	<0.18/<0.18	0
Fecal coliform per 100 mL	400*		0
Chlorine Residual, mg/L	0.05*		0
Dissolved Oxygen, mg/L	6.0 (minimum)	6.8	0

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

No violations of NPDES permit limits occurred in January.

The total amount of stabilized sludge sent to storage at the Wyckles Road Land Application Facility in January was 962 tons. Waste sludge totaling 312 tons was destroyed using the anaerobic digester stabilization process. Methane utilized to generate electricity saved the District an estimated \$2994 for the month in electrical costs.

### Activities

District staff are continuing to work with Donohue and Associates on design of a receiving station for farnesene waste and other wastewater brought to the plant by truck. We expect to receive preliminary plans and a draft Illinois EPA permit application during the week of February 13.

Illinois EPA formally accepted the District's compliance commitment related to the September 30 sanitary sewer overflow on the Stevens Creek interceptor. This agreement means that IEPA will not take any further action on this incident.

The District received a letter from U.S. EPA requesting a substantial amount of information about the District's collection system and history of sanitary sewer overflows. A response has been compiled and will be sent by the February 17 deadline.

Monte Cherry and I met with senior personnel from ADM and from Tate & Lyle to discuss possible future permit limits for nutrients and other permit requirements.

Other activities included completion of draft testimony for the nickel site-specific rule request and participation in catalytic coaching training, an energy study kickoff meeting with Clark Dietz engineers, a Biofuels webcast sponsored by the National Biosolids Partnership, and an IAWA Technical Committee meeting.

### **CSO Activity Summary**

Location	Events	Discharge (million gallons)	Estimated Total Duration of Discharges
Oakland Avenue (Outfall 003)	2	0.07	0.9
Lincoln Park (Outfall 004)	0		
McKinley Avenue (Outfall 007)	1	7.5	2
Seventh Ward (Outfall 008)	1	10.6	1.7

If there are any questions or comments concerning this report, please contact me at 217/422-6931 x214 or by email at [timk@sdd.dst.il.us](mailto:timk@sdd.dst.il.us).

# SANITARY DISTRICT OF DECATUR

501 DIPPER LANE, DECATUR, IL 62522

## MEMORANDUM

**TO:** Tim Kluge

**DATE:** 02/1/12

**FROM:** Larry Arnold

**SUBJECT:** Laboratory activities for January 2011

### **Routine :**

Monitoring of treatment plant, industrial users, and receiving stream samples for compliance purposes and process monitoring continued. Sampling, flushing, and analysis of monitoring wells in the vicinity of our sludge lagoons was conducted. Laboratory personnel continued monitoring H<sub>2</sub>S and other odor causing chemicals within the covered areas of the activated carbon treatment units. Laboratory personnel continued to perform additional ammonia and nitrate analysis to monitor the effect of changes made by ADM in their wastewater treatment to help prevent the floating solids problem here at the plant. Analysis was continued to confirm water quality of plant groundwater and groundwater near the 7<sup>th</sup> Ward CSO facility in conjunction with the district's dissolved solids strategy. Chloride analysis of industrial users continued in support of this strategy, as well. Safety meetings have continued and there was no first report of injury in the laboratory during this period.

### **Non-Routine :**

- 1) The laboratory continues to investigate the potential role of amounts of incoming Total Kjeldahl Nitrogen (Ammonia plus forms of Organic Nitrogen) in affecting the plant's nitrification ability. Incoming Total Kjeldahl Nitrogen concentrations during the month of January were under our plant's loading capacity for it on all but one day analyzed. We saw no significant NH<sub>3</sub>-N levels in the plant effluent during the month.
- 2) The laboratory continued additional analyses of the supernatant returned from Wyckle's sludge lagoons. This study was at the request of Black and Veatch and is related to the reclaimed water study and potential future EPA plant performance requirements. This will also be of significance in determination of return plant loadings via sludge lagoon supernatant generated by the Tate and Lyle/Amyris project which commenced in November. The number of analytes evaluated will be increased in February to include anions and metals for comparison with pre-Amyris discharge results obtained for the supernatant for these parameters last year.
- 3) Work continued on a laboratory manager position standard operating procedure. This effort is related to transition planning for the laboratory.
- 4) Laboratory management continued evaluation of replacement equipment available for digester gas analysis for methane, carbon dioxide, and hydrogen sulfide. The new system will feature computer software control and automated sample introduction. Available technologies are gas chromatography ( as we currently use ), infrared analyzers, or laser ablation. Efficiency of operation, operational costs, and initial capital investment will all figure into the determination. We are currently leaning towards the infrared unit due to lower

initial and ongoing capital costs and speed of analysis as compared to other techniques. Requests for quotations will be delayed towards the end of the fiscal year or moved into early next fiscal year due to the upcoming availability of an improved model.

The laboratory began investigation into an inferred interference with Nickel analysis by ICP-OES in samples containing high levels of dissolved solids. It appears such samples yield Nickel results 20 to 30 % lower with external standard techniques than when using the standard additions or matrix matching techniques available to compensate for such interferences. Although plant effluent sample analysis using the external standard technique is currently meeting method quality control requirements, the results appear to be skewed lower due to this effect. Because of the criticality of these measurements, we are switching to standard addition analysis for Nickel analysis of plant effluent and the three industrial users which are most affected by this due to their high dissolved solid content. The use of this technique will result in more analyst time devoted to the analysis.

### **Pretreatment Activity during January 2012**

#### **Verbal Notices**

We issued two Verbal Notices to **Prairie Farms Dairy, Inc.** on January 17, 2012, because they discharged wastewater with a pH below their minimum limit on December 5, 2011 and they failed to report the results of the required resample.

We issued a Verbal Notice to **Tate and Lyle** on January 20, 2012 because they discharged wastewater from the farnesene plant that exceeded their permit limits for chromium, lead, selenium, and zinc.

We issued a Verbal Notice to **ADM** on January 20, 2012 because they exceeded their three-day moving average TSS limit on January 15 and 16, 2012.

#### **Warning Notices**

We did not issue any Warning Notices during January 2012.

#### **Violation Notices**

We issued a Notice of Violation to **Decatur Memorial Hospital (DMH)** on January 3, 2012 because they were in significant non-compliance for exceeding their monthly average BOD limit during two of the three months we monitored their effluent in the last half of 2011.

#### **Executive Orders**

We issued an Executive Order to **Norfolk Southern Railway Company (NSRC)** on January 3, 2012, because **NSRC** exceeded their monthly average flow limit during each month from July through October 2011. **NSRC** eventually discovered that they had two good-sized water main leaks.

We issued an Executive Order to **DMH** on January 31, 2012 because **DMH** exceeded their monthly average BOD limit in two of the three months in which we monitored their effluent in the last half of 2011, which put them into the significant non-compliance (SNC) category.

## Penalty Assessment

We assessed the following industrial penalties for January 2012:

**Archer Daniels Midland Company:** \$2,000

### General Activity

1. We monitored thirteen commercial and industrial users (IU) and we performed nine industrial user inspections during January 2012.
2. We continued monitoring the H<sub>2</sub>S level under the SDD headworks and PE channel covers during January 2012.
3. I calculated significant non-compliance (SNC) for industrial users in the district for the last half of 2011 during January and found that three industrial users were in SNC. The three industries were **PPG, Decatur Plating, and DMH**. All three were back in compliance the last time we monitored their effluent.
4. In January, we amended the permit issued to **ADM** during December 2011 allowing them to discharge suspended solids at an accelerated rate for three months so that they do not have to install and operate temporary solids drying equipment during the winter months.
5. We issued new wastewater hauler discharge permits to **Parks Sewer Service** and **Portable Sanitation Systems** during January 2011. **Parks's** permit was a renewal because their old one was due to expire soon and **Portable Sanitation Systems** has portable toilets at ADM that they want to dump here.
6. We received a wastewater discharge permit application from **Mason Manufacturing** during January 2012 because their current permit will expire in March 2012. We received a zero process wastewater permit application from **Graham Welding** during January because **Graham Welding** has decided to have all of their process wastewater hauled away by Safety Kleen instead of discharging it into the sewer system.
7. SDD management personnel met with management personnel at **ADM** and **T&L** during January 2012 to discuss a joint nutrient management strategy for the district.
8. **ADM** began a new pilot scale test of a chemical treatment system designed to remove nickel from their wastewater, and they are also testing some portable solids removal systems including an **Alar** vacuum drum system, a DAF system, and a membrane system with a sand filter.
9. We had a compliance meeting with **DMH** personnel on January 26, 2012, to discuss the permit violations that lead to us issuing them a Notice of Violation for numerous violations that put them into SNC.
10. Stan and I attended an Industrial Pretreatment Monitoring Webinar sponsored by **Isco, Inc.** on January 31, 2012.

SANITARY DISTRICT OF DECATUR  
501 Dipper Lane Decatur, Illinois (217) 422-6931

**I&C Shop Monthly Activity Report For January 2012**

**Work Order Activity:**

- Completed 68 Corrective Work Orders
- Completed 124 PM Work Orders
- Completed 3 Safety Work Orders
- Completed 4 Project Work Orders

**I&C Shop Projects**

**Digester Gas Production Meter Replacement:** Gas meters have been installed and are operating on temporary power.

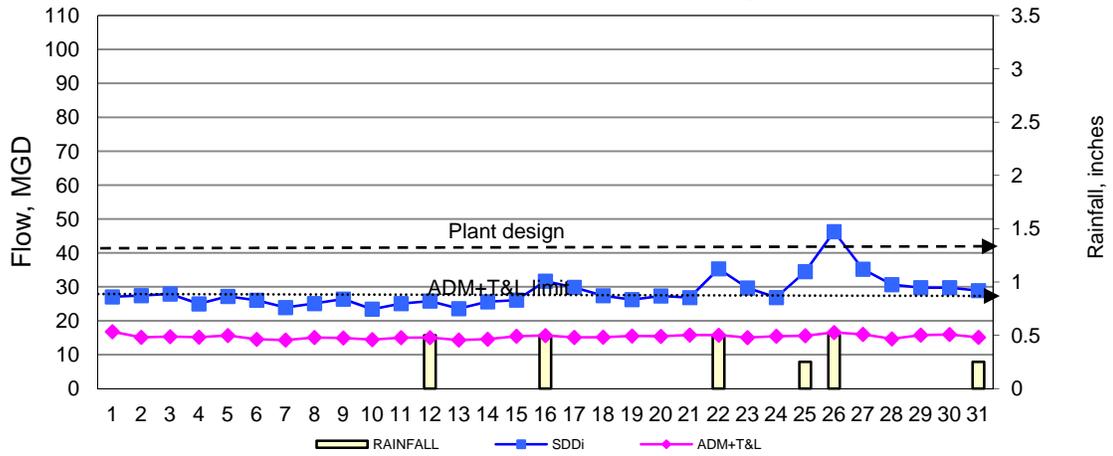
**Inventory Control System for Shop Materials:** Work continues on organizing and entering all materials in the I&C Shop into an inventory system.

**Sludge Blanket Level Detectors:** Testing has been completed on Nitrification Clarifiers. New units are on order and will be installed on one cluster in February. The test unit is now being used on Primary Clarifier #4; we will gather 30 days worth of data to see if it's useful to add monitoring to the Primary Clarifiers.

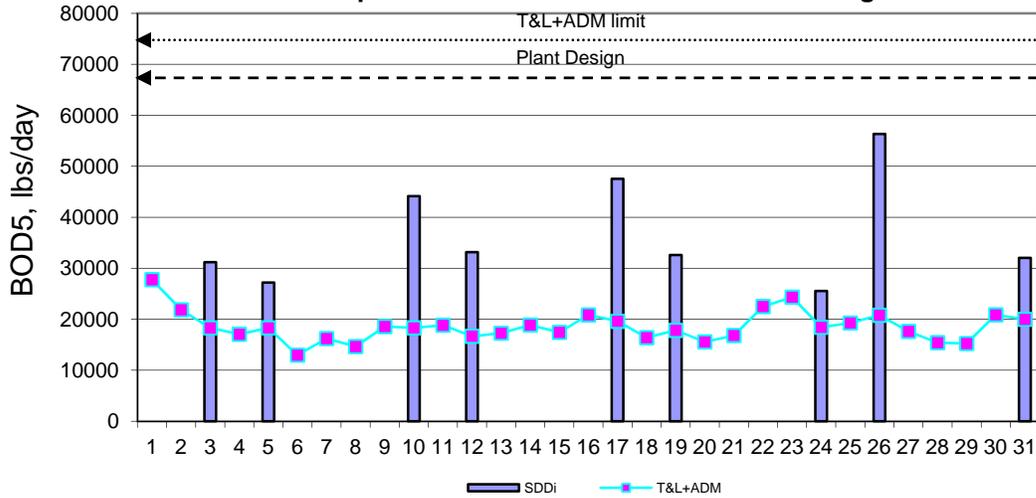
**#1 Blower Repair:** Blower is repaired and will be reinstalled on February 9<sup>th</sup>.

**Blower #2 & #6:** Work continues assisting outside contractors with new blower replacements. Bodine Electric has been onsite starting preliminary work on the electrical installations.

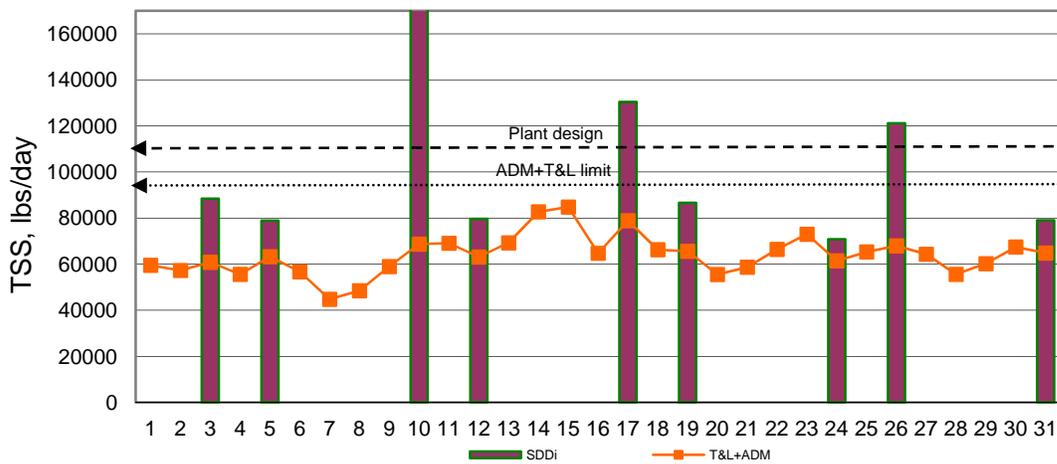
**Flow Comparison: SDD vs. ADM + T&L Discharges and Rainfall**



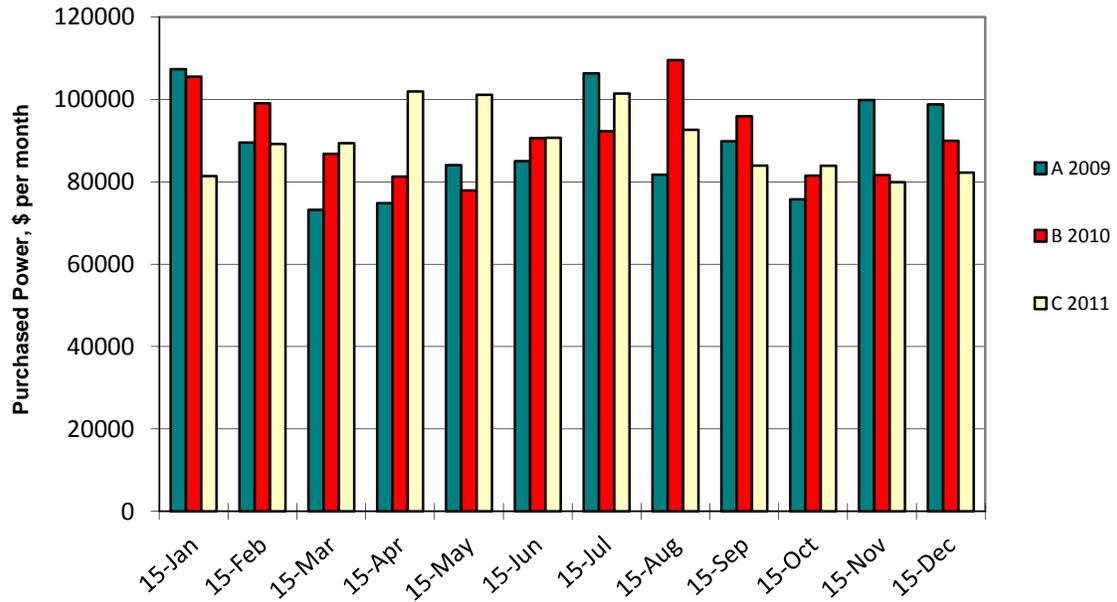
**BOD Comparison: BOD Inf vs. T&L +ADM Discharges**



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



**ELECTRIC POWER COST: '09, '10, '11**



**ELECTRIC POWER USE: '10, '11, '12**

