

CEDARWOOD ENGINEERING SERVICES PLLC

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August 26, 2013

Mr. William Lupo, P.E.
Regional Water Engineer
NYSDEC - Region 5
232 Golf Course Road
Warrensburg, NY 12885

Re: RBC Failure
Willsboro (T) WWTP, SPDES # 0239682

Dear Mr. Lupo:

On behalf of the Town of Willsboro, Cedarwood Engineering Services, PLLC (Cedarwood) is submitting an Incident Report in accordance with 6NYCRR Part750-2.7(a) for the Town's wastewater treatment plant (WWTP). On August 23, 2013, Cedarwood was informed by the Town of Willsboro that there was an abnormal clicking noise originating from the RBC at the Town's WWTP. Cedarwood responded and determined that there was a major structural issue with the rotating biological contactor (RBC) and repairs were required. The RBC is a critical component of the WWTP as it is responsible for the majority of the biochemical oxygen demand (BOD) removal. Currently, the WWTP incorporates bar screens, primary clarification, an RBC, followed by secondary clarification and discharge. Primary and RBC sludge is wasted to an aerobic digester which is followed by sludge drying beds. The average daily flow to the WWTP is approximately 35,000 gallons per day (gpd) with a permitted flow of 75,000 gpd. The Town's collection system is influenced by infiltration and inflow (I&I) and peak daily flows can exceed 110,000 gpd. The WWTP outfall discharges into the Boquet River.

A letter was send to the Town of Willsboro on August 26th, detailing the likely estimated costs to repair the RBC and the estimated costs associated with a full RBC replacement. At the time, the estimated costs associated with repairing the RBC totaled \$55,500 and a full RBC replacement was estimated to exceed \$200,000, excluding a new drive unit.

On September 3, 2013, the Willsboro WWTP operator contacted Cedarwood stating that the condition of the RBC was deteriorating with additional structural failure and the start of media failure. Cedarwood directed the operator to stop the RBC while they reviewed the available options. Currently, the flow still goes through the RBC and some treatment is occurring; however, this will diminish as the biology runs out of oxygen, which leaves only primary and secondary clarification. Continued use of the RBC in its current condition would most likely result in total RBC failure.

Cedarwood contacted the NYSDEC to inform them of the situation and to inform them that a solution to allow the plant to maintain SPDES compliance was being worked on. The NYSDEC forwarded an excerpt from the WWTP operations and maintenance manual (O&M), which described that the existing equalization basin could be used as an activated sludge process in the event that the RBC fails. Based on the flows and BOD loadings, this basin is sufficiently sized to utilize an activated sludge process and the existing equalization blowers can provide sufficient air; however, Cedarwood is concerned with the existing diffuser layout and is recommending disabling the existing coarse bubble aeration diffusers and installing a fine bubble diffusion system for better air distribution and to eliminate dead spots within the basin.

Cedarwood will be on-site September 10, 2013 to reconfigure this system. Once the required modifications are in-place, the sludge in the aerobic digester will be tested then pumped into the equalization basin. Wastewater will be introduced and the effluent will be tested to ensure the system meets SPDES compliance. A plan and section drawing for the temporary system is attached with this letter. The wastewater will enter the converted EQ tank from the existing screenings room, where the activated sludge will remove the organic strength from the wastewater. The flow will be conveyed to the existing secondary clarifier where a temporary pump will be installed in the waste pump pit to return the activated sludge to the process. The existing pump in the waste pit will be used to waste sludge. Polyaluminum chloride (PAC) will be added to the process to aid in solids settling in the secondary clarifier. It should be noted that the primary clarifier will not be a part of the temporary treatment system as the existing piping is not configured to go from the primary clarifier to the EQ basin. Since there is sufficient tank volume and air available in the EQ basin, this is not an issue, especially with typical municipal BOD loadings (~300 mg/l).

Making these changes will help ensure that the WWTP remains in SPDES compliance while the existing RBC is being diagnosed and repaired. It is estimated that the RBC work can take a minimum of two months for repairs or up to six months if a full replacement is required. Once the RBC is repaired, the portion of the influent flow can be diverted to rebuild the biology, minimizing the amount of process violations. A timeline is summarized below:

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|----------------------------------|--------------------|
| First Notice of RBC Issue | August 23, 2013 |
| Second Failure/RBC Drive Stopped | September 3, 2013 |
| Modifications to EQ Basin | September 10, 2013 |
| Transfer of Aerobic Sludge to EQ | September 11, 2013 |
| Plant On-line and in Compliance | October 2, 2013 |
| RBC Repairs/Replacement Begin | October 15, 2013 |

With regard to SPDES compliance, it is anticipated that BOD and TSS will exceed permit limits until October 2nd. Around this date, the activated sludge in the EQ basin will be fully acclimated and the process will be optimized.

It should be noted that the Town will be soliciting bids for refurbishing the clarifiers this month (September). Once the primary clarifier is rebuilt, the secondary clarifier will be taken off-line for refurbishing. A temporary MBR will be retrofitted into the EQ basin during this time to maintain plant compliance.

Cedarwood will update all involved/concerned parties during this process and will send out notification of issues or changes that arise.

Please give me a call at 518-251-5160 (office) if you have any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Suozzo". The signature is fluid and cursive, with a long horizontal stroke at the end.

Tom Suozzo, P.E.

cc: Ed Hatch, Town of Willsboro Supervisor
Bob Murphy, Town of Willsboro WWTP Operator
Willsboro Town Board
Tamara Venne, NYSDEC
Jason Denno, NYSEFC
Anna Reynolds, Essex Co. Planning
Mike Mascarenas, Essex Co. Planning
Bob Hafner, Town of Willsboro Attorney