



State of Ohio Environmental Protection Agency

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December 17, 2007

RE: LORAIN COUNTY
SHEFFIELD VILLAGE
SHEFFIELD-SHEFFIELD LAKE
SCHOOLS WWTP INSPECTION
(3PT00088, OH0129216)

Mr. Will Folger, Superintendent
Sheffield-Sheffield Lake City Schools
1824 Harris Road
Sheffield Village, OH 44054

Dear Mr. Folger:

On November 29, 2007, a Compliance Evaluation Inspection (CEI) was conducted at the Sheffield-Sheffield Lake Schools wastewater treatment plant (WWTP). Present during the inspection was Ms. Christina Douglas of Uni-Tech, representing the school system; Mr. John Sabo of the Lorain County Health Department; and this writer, of Ohio EPA.

The purpose of the visit was to inspect the completed surface sand filters, to evaluate the facility's operation and maintenance, and discuss the WWTP compliance with NPDES Permit effluent limits.

At the time of the inspection the maintenance of the plant could be rated as satisfactory. The following items were observed at the WWTP:

- 1) Contents of the aeration tank were the typical medium brown in color, with no foam or grease. Aeration of the tank was good, and all return sludge lines were operating, returning a medium brown liquid.
- 2) The settling tanks contained a slight floating scum and some duckweed on the surface of the tank contents. The skimmer needed slight adjustment. According to Ms. Douglas, the return lines had become plugged overnight, and they had just been unplugged a few hours prior to the inspection.
- 3) The pump station was operating properly; the high level alarm was functional.
- 4) Surface sand filters were online. Sand in the 4 cells was raked level and was free of solids or vegetation.
- 5) The tablet chlorinator / dechlorinator units were not in use, as the disinfection season ended October 31st.

During the period November 1, 2006, through November 1, 2007, the Sheffield-Sheffield Lakes WWTP reported the following NPDES permit effluent violations in their monthly operating reports (MORs):

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Sheffield Lake City Schools
NPDES Permit No. 3PT00088
Effluent Limits Violations
(Nov. 1, 2006 through Nov. 1, 2007)

Reporting Period	Parameter	Limit Type	Limit	Reported Value	Violation Date
November 2006	Total Suspended Solids	30D Conc	12	17.2	11/1/2006
November 2006	Total Suspended Solids	7D Conc	18	35.	11/1/2006
November 2006	Total Suspended Solids	30D Qty	1.14	1.62755	11/1/2006
November 2006	Total Suspended Solids	7D Qty	1.70	3.31188	11/1/2006
November 2006	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	6.4	11/1/2006
November 2006	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	.6056	11/1/2006
November 2006	Dissolved Oxygen	1D Conc	6.0	5.1	11/2/2006
November 2006	Total Suspended Solids	7D Conc	18	21.	11/8/2006
November 2006	Total Suspended Solids	7D Qty	1.70	1.98713	11/8/2006
November 2006	Dissolved Oxygen	1D Conc	6.0	5.	11/9/2006
November 2006	Dissolved Oxygen	1D Conc	6.0	5.2	11/16/2006
November 2006	Dissolved Oxygen	1D Conc	6.0	5.	11/24/2006
November 2006	Dissolved Oxygen	1D Conc	6.0	5.1	11/29/2006
December 2006	Total Suspended Solids	30D Conc	12	28.5	12/1/2006
December 2006	Total Suspended Solids	7D Conc	18	24.	12/1/2006
December 2006	Total Suspended Solids	30D Qty	1.14	2.69681	12/1/2006
December 2006	Total Suspended Solids	7D Qty	1.70	2.271	12/1/2006
December 2006	Nitrogen, Ammonia (NH3-N)	30D Conc	3.0	24.375	12/1/2006
December 2006	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	37.5	12/1/2006
December 2006	Nitrogen, Ammonia (NH3-N)	30D Qty	0.28	2.30648	12/1/2006
December 2006	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	3.54844	12/1/2006
December 2006	Dissolved Oxygen	1D Conc	6.0	4.6	12/7/2006
December 2006	Dissolved Oxygen	1D Conc	6.0	4.8	12/14/2006
December 2006	Total Suspended Solids	7D Conc	18	33.	12/15/2006
December 2006	Total Suspended Solids	7D Qty	1.70	3.12263	12/15/2006
December 2006	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	11.25	12/15/2006
December 2006	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	1.06453	12/15/2006
December 2006	Dissolved Oxygen	1D Conc	6.0	5.	12/21/2006
January 2007	Total Suspended Solids	7D Conc	18	22.	1/1/2007
January 2007	Total Suspended Solids	7D Qty	1.70	2.08175	1/1/2007
January 2007	Nitrogen, Ammonia (NH3-N)	30D Conc	3.0	5.05	1/1/2007
January 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	12.2	1/1/2007
January 2007	Nitrogen, Ammonia (NH3-N)	30D Qty	0.28	.47786	1/1/2007
January 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	1.15443	1/1/2007
January 2007	Dissolved Oxygen	1D Conc	6.0	5.6	1/4/2007
January 2007	Dissolved Oxygen	1D Conc	6.0	5.7	1/11/2007
January 2007	Dissolved Oxygen	1D Conc	6.0	5.3	1/25/2007

Reporting Period	Parameter	Limit Type	Limit	Reported Value	Violation Date
February 2007	Total Suspended Solids	30D Conc	12	39.5	2/1/2007
February 2007	Total Suspended Solids	7D Conc	18	91.	2/1/2007
February 2007	Total Suspended Solids	30D Qty	1.14	3.73769	2/1/2007
February 2007	Total Suspended Solids	7D Qty	1.70	8.61088	2/1/2007
February 2007	CBOD 5 day	7D Conc	15	21.	2/1/2007
February 2007	CBOD 5 day	7D Qty	1.42	1.98713	2/1/2007
February 2007	Dissolved Oxygen	1D Conc	6.0	5.2	2/1/2007
February 2007	Total Suspended Solids	7D Conc	18	60.	2/8/2007
February 2007	Total Suspended Solids	7D Qty	1.70	5.6775	2/8/2007
February 2007	Dissolved Oxygen	1D Conc	6.0	5.	2/8/2007
February 2007	Dissolved Oxygen	1D Conc	6.0	5.5	2/28/2007
March 2007	Total Suspended Solids	30D Conc	12	22.6	3/1/2007
March 2007	Total Suspended Solids	7D Conc	18	34.	3/1/2007
March 2007	Total Suspended Solids	30D Qty	1.14	2.13853	3/1/2007
March 2007	Total Suspended Solids	7D Qty	1.70	3.21725	3/1/2007
March 2007	Nitrogen, Ammonia (NH3-N)	30D Conc	3.0	20.434	3/1/2007
March 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	5.685	3/1/2007
March 2007	Nitrogen, Ammonia (NH3-N)	30D Qty	0.28	1.93357	3/1/2007
March 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	.53794	3/1/2007
March 2007	Dissolved Oxygen	1D Conc	6.0	4.9	3/7/2007
March 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	45.375	3/22/2007
March 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	4.29361	3/22/2007
April 2007	Nitrogen, Ammonia (NH3-N)	30D Conc	3.0	5.63333	4/1/2007
April 2007	Nitrogen, Ammonia (NH3-N)	30D Qty	0.28	.53305	4/1/2007
April 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	7.15	4/8/2007
April 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	.67657	4/8/2007
April 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	4.5	9.65	4/15/2007
April 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.43	.91313	4/15/2007
May 2007	Total Suspended Solids	30D Conc	12	33.4	5/1/2007
May 2007	Total Suspended Solids	30D Qty	1.14	3.16048	5/1/2007
May 2007	Nitrogen, Ammonia (NH3-N)	30D Conc	2.0	8.44	5/1/2007
May 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	3.0	20.75	5/1/2007
May 2007	Nitrogen, Ammonia (NH3-N)	30D Qty	0.19	.79864	5/1/2007
May 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.28	1.96347	5/1/2007
May 2007	CBOD 5 day	30D Conc	10	13.	5/1/2007
May 2007	CBOD 5 day	30D Qty	0.95	1.23013	5/1/2007
May 2007	Total Suspended Solids	7D Conc	18	55.	5/15/2007
May 2007	Total Suspended Solids	7D Qty	1.70	5.20438	5/15/2007
May 2007	Nitrogen, Ammonia (NH3-N)	7D Conc	3.0	10.	5/15/2007
May 2007	Nitrogen, Ammonia (NH3-N)	7D Qty	0.28	.94625	5/15/2007
May 2007	Total Suspended Solids	7D Conc	18	84.	5/22/2007
May 2007	Total Suspended Solids	7D Qty	1.70	7.9485	5/22/2007
May 2007	CBOD 5 day	7D Conc	15	25.	5/22/2007

Reporting Period	Parameter	Limit Type	Limit	Reported Value	Violation Date
May 2007	CBOD 5 day	7D Qty	1.42	2.36563	5/22/2007
June 2007	Total Suspended Solids	30D Conc	12	263.	6/1/2007
June 2007	Total Suspended Solids	7D Conc	18	263.	6/1/2007
June 2007	Total Suspended Solids	30D Qty	1.14	24.8863	6/1/2007
June 2007	Total Suspended Solids	7D Qty	1.70	24.8863	6/1/2007
September 2007	Total Suspended Solids	1D Conc	18	20.	9/5/2007

Discussed during the inspection were the following items:

- 1) The surface sand filters were put online in August 2007, thus completing the WWTP upgrade.
- 2) It was observed that all four filter cells were being dosed concurrently. An inspection of the sand filter distribution box revealed there is no way to segregate the 4 filter cells individually. Usually, only one cell is dosed at a time, allowing the remaining cells to either be cleaned, or be in a state of rest for use on a rotating basis.
- 3) It is recommended that a means of segregating the cells individually be implemented. Typically, either plumber's plugs or slide gates are used for this purpose.
- 4) The grating lockdown for the disinfection tank has been modified, replacing the bolt down bar with a bar using a padlock.
- 5) Access for inspection and filling of the tubes in the chlorination / dechlorination tablet units remains difficult for the operator. The tablet tubes in the contact tank should be extended to the top of the tank opening, for easy inspection and filling. As currently installed, it requires the operator to either enter the tank, or lean in to reach the tubes. Both of these methods of filling the tubes could pose a safety hazard to the operator, and is a potential liability to the school system.
- 6) One of the two blowers for the sewage system is out of service, leaving only one operating. The inoperable blower should be repaired or replaced as soon as possible.
- 7) There is an air leak which needs to be fixed in the header piping going to the aeration tanks.

- 8) The WWTP has experienced approximately 15 dissolved oxygen violations over the past year. This could be remedied with the addition of post aeration in the chlorine contact tank, prior to discharge. Extending an air line to the contact tank, from the existing blower and air piping system, may be an alternative.
- 9) Monitoring and reporting requirements of the NPDES permit were discussed. The NPDES permit requires daily continuous flow measurements be made. The flow measurements are needed to calculate the loadings of pollutants being discharged from the WWTP.
- 10) Currently there is no flow measurement of any kind being performed at the WWTP, nor is there any equipment to measure the flow. Ms. Douglas is estimating the average daily flow and reporting the estimated flows on Monthly Operating Reports. Although better than not reporting flows at all, this practice does not meet the intent of the NPDES permit, and needs to be corrected as soon as possible with the addition of a continuous reading flow meter.
- 11) Also needed to meet the intent of the NPDES permit is a method of collecting composite samples for analysis. According to the permit, samples collected for total suspended solids, CBOD₅, and ammonia nitrogen, are to be composite samples. According to Ms. Douglas, the samples collected and reported for these parameters are grab samples, which may not be totally representative of the wastewater being discharged.
- 12) To meet the NPDES permit definition of composite samples, they ***“shall be comprised of at least 3 grab samples, proportionate in volume to the sewage flow rate at the time of sampling, and collected at intervals of at least 30 minutes, but not more than 2 hours, during the period that the plant is staffed on each day for sampling. Such samples shall be collected at such times and locations, and in such fashion, as to be representative of the facility’s performance.”*** An automated composite sampler may be the best way to collect the required composite samples.
- 13) Day to day maintenance at the WWTP is conducted by maintenance personnel from the school. Upon further discussion regarding the effluent violations reported on MORs, it was indicated that, occasionally, an operation or maintenance problem may arise which needs the immediate

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attention of Ms. Douglas. There have been times that Ms. Douglas was not notified of problems upon their discovery by maintenance personnel, and they were allowed to persist until they were found upon Ms. Douglas' arrival at the WWTP.

- 14) Daily communication between WWTP maintenance personnel and Ms. Douglas is strongly recommended. Potential effluent violations may be prevented if operation and maintenance problems are acted upon quickly.

A copy of this inspection report is being forwarded to Uni-Tech and Mr. Sabo. If you have any comments or questions about this document, you may contact me at (330) 963-1110.

Respectfully,



Charles E. Allen
Environmental Engineer
Division of Surface Water

CEA/mt

cc: Christina Douglas, Uni-Tech
John Sabo, Lorain County Health Department

File: SP/Sheffield/Sheffield Schools