

Permit Fact Sheet
Groton Wastewater Treatment Plant
SPDES Permit No. NY0025585
Village of Groton, Tompkins County
June 27, 2008

Purpose:

This fact sheet has been prepared by the New York State Department of Environmental Conservation to brief the public on proposed modifications to the Village of Groton Wastewater Treatment Plant permit which authorizes discharge to Owasco Lake Inlet.

Background:

New York State Department of Environmental Conservation (DEC) is authorized by the United States Environmental Protection Agency (EPA) to issue State Pollutant Discharge Elimination System (SPDES) permits. The Village of Groton Wastewater Treatment Plant (WWTP) was originally placed into service in 1963 and significantly upgraded in 1977. The Village of Groton WWTP is designed to treat 0.35 million gallons per day and discharges to the Owasco Lake Inlet approximately 15 miles upstream from Owasco Lake.

Plant Description:

Sewage is treated at the Groton WWTP using a variety of engineered processes. Currently, incoming sewage passes through a grit chamber, a flow measuring flume, a comminutor, a manually cleaned bar rack and then passes to the wet well in the control building. Centrifugal pumps transfer the sewage from the wet well to an aeration tank. Flow continues to the secondary clarifiers where solids settle and are then pumped to the active aeration tank. Effluent from the settling tanks goes to a chlorine contact tank for disinfection where a chlorine residual analyzer controls the chlorine rate. Plant effluent is dechlorinated before it is discharged to the Owasco Inlet. Excess sludge is wasted to the Imhoff tank for stabilization before being transferred to the sludge drying beds. The sludge is hauled to a landfill for disposal. The control building contains a laboratory for performance testing to provide control to the treatment process. A diesel-powered generator provides power during electric outages.

History:

A fish farm, Fingerlakes Aquaculture, Inc (FA Inc), began operation in October 1999 and discharges its wastewater to the Village of Groton WWTP. Production gradually increased to the point where the fish farm's daily water use was 120,000 gallons per day (0.12 million gallons per day (MGD)). By 2004, the WWTP was violating flow and several other parameters of their permit almost every month. To address these violations, the village signed a legal agreement with DEC in 2006 which required further upgrades to treat increased flow and higher organic loads. At that time, there was no phosphorus limit in the Village of Groton permit. Recognizing new information and public concern, DEC required a phosphorus removal pilot study as part of this legal agreement. The pilot study included the addition of an iron-based salt to remove phosphorus. This study was successful in reducing effluent phosphorus concentrations. DEC believes it is appropriate to require continued reduction in phosphorus effluent concentrations. Village of Groton effluent data from January 2004 to April 2008 are presented in Table 1 attached.

The Proposed Permit:

The proposed permit contains a compliance schedule for design and construction of WWTP upgrades. Table 2 provides a summary of the current and proposed permit limits for the Groton WWTP. The proposed permit is also being modified to: 1) allow an increase in flow from 0.35 MGD to 0.5 MGD; 2) impose a limit for effluent phosphorus; and 3) to add a requirement for industrial wastewater pretreatment.

1) Flow - Engineering plans and specifications for upgrades to the Village of Groton wastewater treatment plant are to be submitted for DEC review by December 30, 2008 and the start of construction date will be June 30, 2009. Modifications to the WWTP will allow for treatment of at least 0.5 MGD. These modification include replacing current treatment processes with three new sequencing batch reactors.

2) Phosphorus - DEC performed sampling of Owasco Lake Inlet in 2006 which indicated a decline in water quality in Owasco Lake Inlet downstream of the Groton WWTP discharge. A final phosphorus effluent limit of 0.5 milligrams per liter (mg/l) is proposed for the new Groton WWTP. . This proposed effluent limit will be protective of both Owasco Lake Inlet and Owasco Lake while supporting the preliminary findings of area-wide water quality studies and pending the development of a phosphorus maximum daily load for Owasco Lake.

The proposed permit also sets forth an interim phosphorus effluent limit of 1.0 mg/l, which will be in place from the effective date of the permit until the WWTP upgrades are operational. The time frame associated with these upgrades is approximately fourteen months. After that, a limit of 0.75 mg/l phosphorus concentration will be in effect for twenty-six months allowing for optimization of the new WWTP and implementation of appropriate industrial pretreatment requirements, after which the limit will be lowered to 0.5 mg/l.

3) Industrial Pretreatment - To address increased loadings from the fish farm, the Village of Groton is required to set limits on the discharge from Fingerlakes Aquaculture Inc. These limits will reduce the nutrients and flow to the Groton WWTP to a level which can be effectively treated by the new facility before discharge to the Inlet. Treatment systems installed at the fish farm will need DEC approval.

In addition to the above proposed modifications, DEC performed a technical water quality review which led to the following recommended permit limit changes for the Groton WWTP at the increased flow rate:

- Ultimate Oxygen Demand (UOD): A proposed limit of 40 mg/l is proposed for the June-October period. This equates to 170 lb./day at 0.5 MGD. This limit is reduced from 51.4 mg/l and will result in more oxygen available for aquatic life.
- Total Residual Chlorine (TRC): A TRC of 0.1 mg/l is proposed when disinfection is practiced. While the current permit limit is 0.013 mg/l, this concentration can not be detected in an analytical laboratory because of equipment limitations. A limit of 0.1 mg/l, equal to the detection limit, is the most stringent limit used on a statewide basis for TRC..
- Nitrogen, Ammonia (NH₃): Ammonia limits are proposed at 2.7 mg/l (June - October) and 9.6

mg/l (November - May). Currently, the permit has a limit of 4.0 mg/l from June through October and no limit at other times of the year.

- Phosphorus (P): A phosphorus limit during construction plus two months will be 1.0 mg/l with a corresponding mass limit of 4.0 pounds per day. After construction plus two months a phosphorus limit of 0.75 mg/l is proposed with a corresponding mass limit of 3.1 pounds per day. Two years after that date a final phosphorus limit of 0.5 mg/l is proposed with a corresponding mass limit of 2.0 pounds per day.

Public Comment Period:

DEC welcomes your comments on the proposed permit for the Groton WWTP. Written comments on the proposed permit should be mailed no later than August 8, 2008. All comments should be addressed to:

John Merriman,
1285 Fisher Avenue
Cortland, NY 13045-1090

DEC appreciates your interest in this matter.

Table 1. Violations and Exceedances from January 2004 to April 2008

The following are the total number of violations/exceedances which occurred at the Groton WWTP from January 2004 to February 2006. It is suspected that many of these violations are due to increasing production at the Fingerlakes Aquaculture plant. The highlighted values are violations of the existing SPDES permit.

Parameters	Flow	BOD 5-Day	Suspended Solids	Settleable Solids	Ultimate Oxygen Demand	P mg/l
Limit	0.35 MGD	88 lbs/day	88 lbs/day	0.3 mg/l	150 lbs/day	No Limit
Date						
1/2004	0.337	48	39	0.2	n/a	2.9
2/2004	0.298	81	56	<0.1	n/a	2.9
3/2004	0.478	126	40	<0.1	n/a	2.6
4/2004	0.448	95	134	<0.1	n/a	2.7
5/2004	0.417	19	17	<0.1	n/a	1.6
6/2004	0.336	n/a	39	<0.1	83	2.6
7/2004	0.421	n/a	101	0.2	219	2.5
9/2004	0.447	n/a	102	0.2	179	3.0
10/2004	0.309	n/a	31	0.2	100	2.4
11/2004	0.319	29	32	<0.1	n/a	2.7
12/2004	0.401	88	57	0.1	n/a	3.5
1/2005	0.418	185	17	<0.1	n/a	2.08
2/2005	0.386	27	18	<0.1	n/a	2.51
3/2005	0.430	32	77	0.5	n/a	1.49
4/2005	0.461	58	90	<0.1	n/a	2.34
5/2005	0.317	102	66	<0.1	n/a	1.66
6/2005	0.328	n/a	8.2	0.1	96	0.77
7/2005	0.307	n/a	50	<0.1	126	3.07
8/2005	0.279	n/a	42	<0.1	100	3.83
9/2005	0.271	n/a	50	<0.1	72	2.40
10/2005	0.361	n/a	42	0.2	100	3.6

11/2005	0.353	29	29	0.1	n/a	1.53
12/2005	0.340	34	51	0.2	n/a	2.01
1/2006	0.433	13	119	0.2	n/a	2.44
2/2006	0.368	84	71	0.1	n/a	0.99
3/2006	0.382	40	41	0.1	n/a	2.50
4/2006	0.336	15	31	0.1	n/a	1.23
5/2006	0.336	62	28	0.2	n/a	0.94
6/2006	0.413	n/a	186	0.1	74.5	1.26
7/2006	0.473	n/a	51	0.2	118	1.4
8/2006	0.383	n/a	92.6	0.1	160	1.8
9/2006	0.418	n/a	80	0.1	153	0.77
10/2006	0.384	n/a	96	0.1	107	0.83
11/2006	0.449	36	79	0.1	n/a	0.76
12/2006	0.374	37	66	0.1	n/a	0.50
1/2007	0.431	125	122	0.1	n/a	1.12
2/2007	0.330	73	59	0.2	n/a	0.40
3/2007	0.548	107	87	0.2	n/a	0.30
4/2007	0.493	70	115	0.2	n/a	0.70
5/2007	0.405	45	71	0.1	n/a	0.50
6/2007	0.369	n/a	25	0.1	110	0.74
7/2007	0.355	n/a	30	0.1	91.8	1.0
8/2007	0.375	n/a	47	0.2	107	0.06
9/2007	0.375	n/a	91	0.5	138	1.39
10/2007	0.379	n/a	36	0.4	95.5	0.93
11/2007	0.403	52	62	0.1	n/a	0.97
12/2007	0.475	36	87	0.3	n/a	2.28
1/2008	0.444	69	52	0.1	n/a	0.70
2/2008	0.483	109	97	0.1	n/a	1.23
3/2008	0.571	46	41	0.1	n/a	0.54
4/2008	0.450	115	20	1.0	n/a	1.18

Table 2. Summary of the Current and Proposed Permit Limits

Parameter	Current Nov. 1 - May 31	Current June 1 - Oct. 31	Post-upgrade Nov. 1 - May 31	Post-upgrade June 1 - Oct. 31
Flow	0.35 MGD	0.35 MGD	0.50 MGD	0.50 MGD
BOD ₅ (5- day Biochemical Oxygen Demand)	Monthly Avg. 30 mg/l	Monthly avg. Monitor	Monthly avg. 30 mg/l	Monthly avg. Monitor
BOD ₅	7 day average 45 mg/l	7 day average Monitor	7 day average 45 mg/l	7 day average Monitor
UOD (Ultimate Oxygen Demand)	N/A	51.4 mg/l	N/A	40 mg/l
Solids, Suspended	Monthly Avg. 30 mg/l	Monthly Avg. 30 mg/l	Monthly Avg. 30 mg/l	Monthly Avg. 30 mg/l
Solids, Suspended	7 day average 45 mg/l	7 day average 45 mg/l	7 day average 45 mg/l	7 day average 45 mg/l
Solids, Settleable	0.3 mg/l	0.3 mg/l	0.3 mg/l	0.3 mg/l
pH	6 - 9 SU	6 - 9 SU	6 - 9 SU	6 - 9 SU
Nitrogen, NH ₃	N/A	4.0 mg/l	9.6 mg/l	2.7 mg/l
Phosphorus, Total, (as P)	Monitor ¹	Monitor ¹	0.5 mg/l ²	0.5 mg/l ²
Temperature	Monitor	Monitor	Monitor	Monitor
Coliform, Fecal 30 day mean	N/A	200	N/A	200
Coliform, Fecal 7 day mean	N/A	400	N/A	400
Chlorine, Total Residual (TRC)	N/A	0.013 mg/l	N/A	0.011 mg/l ³

Footnotes

1. Interim phosphorus limit is 1 mg/l prior to and during construction.
2. The phosphorus limit for two years after end of construction plus two months is 0.75 mg/l.
3. TRC - per TOGS 1.3.1E, Attachment 1, if chlorine continues to be used for disinfection, the calculated water quality based effluent limit is 0.011 mg/l. However, a 0.1 mg/l total residual chlorine limit should be applied for the period of disinfection. This limit represents the accepted detection level for TRC.