

**Monthly Operating Report
April, 2011
Concord Wastewater Treatment Plant
Operated by Woodard & Curran**

Date: May 17, 2011

To: Alan Cathcart, Concord Water & Sewer Superintendent
cc: Chris Whelan, Town Manager
Richard Reine, Director Concord Public Works

From: Michael Thompson and Staff

Key Activities This Month/Capital Program

During April all treatment processes were either operational or in ready standby. Flow through the facility in April averaged 1.489 million gallons per day (MGD) and even though this monthly average flow rate is rather high, the permit critical 12-month average flow dropped to 1.00 MGD. This is because the monthly average flow for last April (1.89 MGD) dropped out of the calculation for the 12-month average flow as this months flow rate replaced it. The permit upper limit for the 12-month average flow is 1.2 MGD.

More notable events or tasks accomplished in April include:

1.) With the seasons finally turning toward spring, in mid-April we felt confident that the biological odor scrubber could once again run with water without the risk of freeze up. While the scrubber runs continuously in dry mode throughout the late fall and winter, the wet mode of operation is more effective at removing hydrogen sulfide. This varying operation works out fine though as hydrogen sulfide production is only a problem when the weather/wastewater warms in late spring through the fall. To kick start bacteria re-colonization in the wet scrubber we feed a solution of common water-soluble plant food to the water re-circulating in the hydrogen sulfide destruction compartment.



The odor scrubber resumed full "wet" operation in April with nutrient feed from drum on left and humidification water from plumbing on right.

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- 2.) In April, CPW worker Joel Stevens, on temporary assignment to the plant to assist with facility operation and maintenance, completed the plant's revised O&M reference material index. This work entailed reviewing all the documentation on hand at the plant including submittals, installation manuals, and operation and maintenance manuals. The plant now has a handy index that calls out a binder reference number and room location for each piece of process equipment or support system documentation. Also in April, Joel made significant process working with plant staff to document the inventory of plant supplies, materials, and spare parts.

Concord WWTP Equipment Manual Index

Equipment System	File Number	Manual Location
Variable Freq. Drives, Allen Bradley Power Flex	0-1174	Control Room
Variable Freq. Drives Rockwell Automation	0-1774	Control Room
Intermediate Pumps VFD and Cutler-Hammer Soft Start	0-1174	Control Room
WWTP O & M Town of Concord Vol. 1 & 2	0-11730	Control Room
Garage Doors	0-8000	Maintenance Office
Sluice Gates & Slide Gates	11201	Maintenance Office
Centrifugal Pump & Vacuum Priming Hayes & Gorman Rupp	11211	Control Room
Intermediate Pump & Prime System	11211	Control Room

Sample from new re-organized WWTP reference material index

Maintenance Management

Following is a brief list of a portion of maintenance items completed in April:

- Installed a new piston housing, piston, and packing on the #1 primary scum piston pump.
- Installed two new pulsation dampeners on the primary sludge pump system.
- Realigned shifted drive coupling on the rotary drum thickener polymer makeup unit.
- Monthly service to both trickling filters including nozzle cleaning and lubrication of center bearings.
- Startup first stage of biological odor control system including the connecting and charging plant water supply, starting pump to add nutrient solution, clean dried bio-film/plastic shaving from spray nozzle inline strainer, and reinstall inline pH probe.

Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.00 MGD (12month avg)	1.2 MGD	avg. = 1.4885 MGD Max. Daily Flow = 1.64 MG
BOD5 (mg/l)	3 mg/l	30 mg/l	99% average BOD removal in Apr.
TSS (mg/l)	3 mg/l	30 mg/l	98% average TSS removal in Apr.
Coliform, Geo.Mean #/100ml	1 cfu*/100ml	200 cfu/100ml	1 test on 4/15 produced 2 cfu/100ml
Phosphorus	0.17 mg/l	0.2 mg/l Apr '11– Oct. '11	0.28 mg/l daily max. on Tue. 4/12
Total Ammonia Nitrogen	0.60 mg/l	Report Only	0.72 mg/l daily max. on Tue. 4/26

*cfu = coliform forming unit or colony.

During April, the Concord WWTP performed continuous two-stage total phosphorus (TP) removal using aluminum sulfate. First stage chemical TP treatment occurred in the secondary clarifiers and second stage TP treatment took place within the CoMag® advanced treatment process. The monthly average effluent TP concentration in April is 0.17 mg/l, thereby meeting the CWWTP's summer permit limit not to exceed 0.2 mg/l TP.

Additionally, during April all effluent disinfection was performed using ultra violet light.

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Alarm Activity

This section provides the Town information on events that activate the facility's alarm response system. These events occur while the plant is unmanned and while both the plant's SCADA system and *Lexington Alarm* are monitoring the facility's alarm system. This report identifies alarm activity from the start of the calendar year to the present.

Concord WWTP Off-Hours Alarm Log

Date	Time	Alarm Source	Observations/Corrective Action/Comments
Jan. '11	NA	NA	
Feb. '11	3:00 am	Hi-Effluent turbidity	Links in process monitoring data/trends reveal an inaccurate caustic feed to CoMag effluent. Operations staff ultimately performs hotwater flush of the caustic feed system to remove solidified caustic and restore accurate caustic pumping.
Mar. '11	NA	NA	
Apr. '11	NA	NA	

Septage Receiving

The Concord WWTP receives septage only from in-Town sources. A total of 139,750 gallons of septage was received at the Concord WWTP in April.

WWTP Septage Receipts in gallons

	2011	2010	2009
January	44,050	32,500	10,500
February	31,750	25,750	41,250
March	102,950	171,750	83,250
April	139,750	211,500	168,250
May		125,950	150,900
June		184,950	151,450
July		90,800	138,500
August		173,250	137,750
September		182,250	203,750
October		210,250	172,400
November		194,100	155,400
December		132,750	109,600
Annual Totals:	318,250	1,735,800	1,523,000

Sludge Production

During April, 81,000 gallons of liquid sludge, equivalent to 14.90 dry tons, was transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

WWTP Sludge Production in gallons /dry tons

	2011	2010	2009
January	98,309/16.78	89,000/15.61	107,500/16.71
February	72,916/13.5	90,000/16.81	86,000/14.13
March	72,617/13.89	90,000/15.65	99,000/17.56
April	81,000/14.90	135,000/23.57	153,000/23.94
May		97,980/15.76	170,670/24.27
June		99,000/18.28	153,000/20.83
July		99,000/16.81	126,000/20.57
August		108,000/18.61	76,376/11.81
September		106,160/17.88	126,000/21.65
October		107,558/17.31	99,000/16.03
November		142,500/21.18	99,000/16.51
December		134,750/21.73	117,000/17.79
Annual Totals:	324,842/44.17	1,298,945/219.20	1,421,546/223.58