

Monthly Operating Report
May, 2009
Concord Wastewater Treatment Plant
Operated by Woodard & Curran

Date: June 15, 2009

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

From: Michael Thompson and Staff

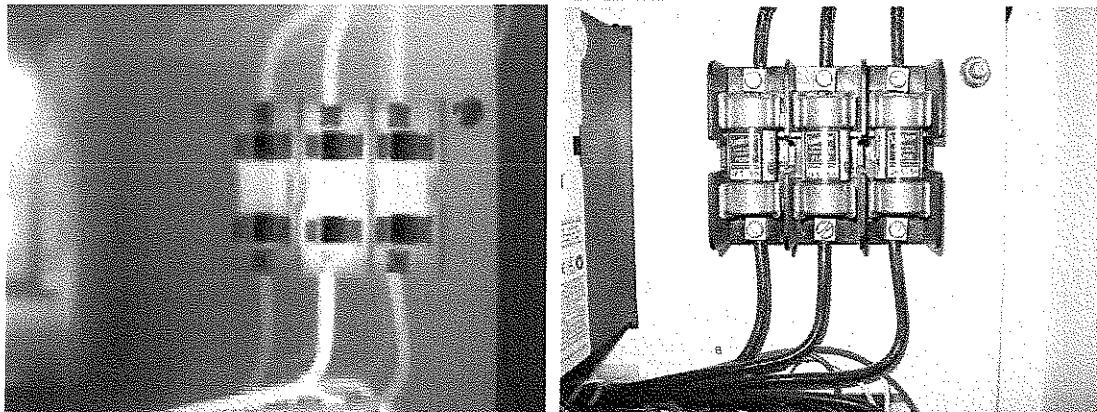
Key Activities This Month/Capital Program

During May all treatment processes were either operational or in ready standby. Flow through the facility in May fell slightly below the long-term monthly average. Average daily flow in May is 0.974 MGD, compared to a long-term monthly average at approximately 1.0 MGD. The 12-month rolling average flow, including May, is now at 1.10 MGD and a yet a little further away from the permit limit of 1.2 MGD. Barring any prolonged period of above normal precipitation, the facility's 12-month average flow is likely to hover around the current 1.10 MGD level.

More notable events or tasks accomplished in May included:

1) The new, more stringent, "in season" total phosphorus limit of 0.2 mg/l became effective this past April. Previously the facility "in season" total phosphorus limit had been 0.75 mg/l. Three effluent samples per week (an increase from previous two samples per week) undergo analysis for total phosphorus. The average of all samples collected in a month must now not exceed 0.2 mg/l. There is no daily maximum limit for total phosphorus. The monthly average total phosphorus in May is 0.15 mg/l, thus meeting permit requirements. This low phosphorus level is achieved through two-point chemical (alum) addition, vs. formerly performing one-point chemical addition. The CoMag process, representing the second point addition, has greatly improved chemical treatment efficiency. The facility is using approximately 30% less alum to achieve < 0.2 mg/l total phosphorus vs. the amount of alum previously used to reach <.75 mg/l total phosphorus, i.e. less alum with better results.

2) Over the final week of May, Woodard & Curran O&M Specialist and Master Electrician Rich Hunt performed a facility-wide infrared and visual inspection of major/critical electrical equipment. Rich worked with plant staff to operate equipment under load wherever feasible in order to capture any abnormal thermal profiles. Indeed a number of hot spots were located and most were corrected on the spot by tightening fasteners. While performing this survey, stray debris and dust, likely remnants of the facility upgrade completed in the past year, were cleaned up. A final report, including equipment specific infrared and visual pictures, along with comments, condition evaluation, and recommendations is to be delivered to the Town in June.



Above is a sample infrared scan from the electrical equipment survey conducted in May.

Maintenance Management

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

- a) conducted a survey of major electrical equipment including a infrared camera scan, vacuum cleaning, and incidental repairs/adjustments feasible during this survey.
- b) installed a water level sight tube on the odor control unit's first chamber.
- c) performed semi-annual preventive maintenance inspection of the 400 kW standby power generator including load testing the system.
- d) stainless steel metal workers here to repair tear in #1 magnetite recovery drum screen and repair pinhole leaks in magnetite slurry tank.

Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.10 MGD (12-month. Avg.)	1.2 MGD	May avg. = 0.974 MGD
BOD5 (mg/l)	3 mg/l	30 mg/l	99% average BOD removal in May
TSS (mg/l)	2 mg/l	30 mg/l	99 % average TSS removal in May
Coliform, Geo.Mean #/100ml	1 cfu*/100ml	200 cfu/100ml	Daily max. – there were no colonies detected on any tests in May
Phosphorus	0.15 mg/l	0.20 mg/l Apr. '09 – Oct. '09	0.28 mg/l daily max. on Tue. 5/26
Total Ammonia Nitrogen	0.55 mg/l	Report Only	0.91 mg/l daily max. on Wed. 5/20

*cfu = coliform forming unit or colony.

There were no NPDES permit exceedences during the month of May at the Concord WWTP.

During May, 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 May was 0.15 mg/l, thereby meeting the CWWTP permit limit not to exceed 0.20 mg/l TP.

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

Septage Receiving

During May, the facility received 150,900 gallons of septage from Concord residences and businesses.

WWTP Septage Receipts in gallons

	2009	2008	2007
January	10,500	22,750	61,850
February	41,250	60,300	55,000
March	83,250	55,550	48,550
April	168,250	152,300	127,000
May	150,900	135,150	153,800
June		126,450	128,750
July		117,000	159,050
August		142,400	140,250
September		219,950	112,250
October		262,900	199,700
November		165,300	179,950
December		104,050	42,000
Annual Totals:		1,636,000	1,408,150

Sludge Production

During May, 170,670 gallons of liquid sludge, equivalent to 24.27 dry tons, was transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

WWTP Sludge Production in gallons / dry tons			
	2009	2008	2007
January	107,500/16.71	112,227/20.15	97,500/12.83
February	86,000/14.13	107,124/18.35	89,500/11.94
March	99,000/17.56	98,500/17.97	99,000/12.91
April	153,000/23.94	90,000/17.98	143,500/21.55
May	170,670/24.27	107,000/19.74	170,200/26.40
June		98,500/17.76	152,000/21.29
July		117,000/20.98	161,500/23.60
August		99,000/16.51	143,500/21.31
September		98,000/16.82	126,000/15.27
October		108,000/18.54	230,614/30.28
November		80,500/12.62	128,669/21.13
December		126,000/18.46	140,555/22.69
Annual Totals:		1,241,851/215.88	1,682,535/241.2

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 Alarm Log

Date	Time	Alarm Source	Observations/Corrective Action/Comments
01/03/09	11:21 am	Intrusion	Headworks building door not properly latching following installation of new weather security strip by facility upgrade contractor. High wind rocked door – setting off alarm. Plant staff worked on weather strip to improve door latching.
01/07/09	7:45 pm	Hi Effluent Turbidity	Recent M2 backwash cycles producing very brief jump in turbidity as forward flow resumes. Solution is to shorten time between backwash cycles until overall treatment performance improves with slight operational adjustments over coming days.
02/08/09	10:26 am	Intrusion	High wind blew open addition door. Plant staff already on the way for normal weekend rounds, checked door and securely locked. Contractor made aware of need to rework this as well as other facility upgrade doors and locksets.
Various times in March		HVAC Common alarm	Faulty operation of plant boilers-particularly boiler #2-causing a brief dip in plant hot water loop temperature. Lag or backup boiler reliably responded and automatically brought hot water loop temp back above alarm setpoint. Boiler install vendor and others continue to monitor/troubleshoot plant heating system.
04/09	NA	NA	No after hours alarms in April
5/27/09	7-9pm	CoMag eff pH	pH meter inaccurately reading –required cleaning and calibration. Caustic pumps checked for normal operation.