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

Date: November 16, 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

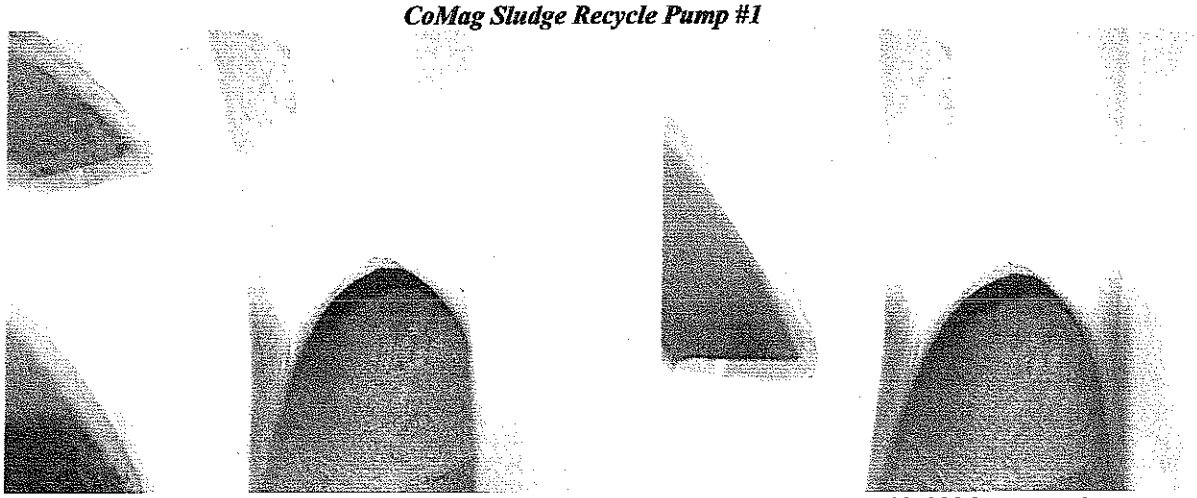
Key Activities This Month/Capital Program

During October all treatment processes were either operational or in ready standby. Flow through the facility in October averaged 0.85 million gallons per day (MGD) and the permit critical 12-month average flow has fallen, although only slightly, for the third consecutive month to 1.05 MGD. The 12-month average daily flow permit limit is 1.2 MGD. This 1.05 MGD 12-month rolling average flow is the lowest since September 2008. If historical trends hold, I would expect this rolling average flow rate to start a slow creep upward to peak again in the spring of 2010.

More notable events or tasks accomplished in October included:

1) With the onset of cool fall weather, the facility began the 2009-10 heating season. The two new (installed 2007) Smith boilers were put in auto operation yet the #2 boiler continues to have operational issues that result in shutdowns due to poor flame quality. We are currently working with the Town, CDM, and outside contractors to identify and price modifications to the fuel supply to both boilers. The hope is to have this fuel plumbing work complete by the end of November and as a result have both boilers working reliably for the upcoming winter.

CoMag Sludge Recycle Pump #1



9/10/08, 6000 hrs operation ***10/5/09, 10, 289 hrs operation***

2) On October 5, plant personnel performed an internal inspection on the #1 and #3 CoMag sludge recycle pumps. These inspections are of particular interest due to a degree of uncertainty as to how the volutes and impellers would wear when moving a magnetite-laden sludge. On very close inspection, we detect no visible wear after over 10K hours of operation. If one looks very closely at the pictures above one might be able to make out that the very faint striations and casting imperfections that existed in 2008 are virtually identical in 2009. A vane of the impeller is visible on the left side of both above pictures and our inspection found these impellers to be in a visibly like new condition.

Maintenance Management

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

a) an outside contractor performed a semi-annual "major" preventative maintenance inspection/service on the facility's emergency standby power generator.
b) replaced a failed motor on a basement unit heater.
c) performed semi-annual internal inspection on the #1 and #3 CoMag process sludge recycle pumps.
d) replaced two boiler fuel filters and began process of charging hot water loop with anti-freeze.
e) calibrated CoMag process turbidimeters including the replacement of meter lamps.

Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.05 MGD (12-month. Avg.)	1.2 MGD	Oct. avg. = 0.849 MGD
BOD5 (mg/l)	3 mg/l	30 mg/l	99% average BOD removal in Oct.
TSS (mg/l)	2 mg/l	30 mg/l	99 % average TSS removal in Sept.
Coliform, Geo.Mean #/100ml	1 cfu*/100ml	200 cfu/100ml	All f-coliform tests in Oct. showed 0 colonies.
Phosphorus	0.19 mg/l	0.20 mg/l Apr.'09 – Oct. '09	0.39 mg/l daily max. on Tue. 10/20
Total Ammonia Nitrogen	1.24 mg/l	Report Only	1.67 mg/l daily max. on Thu. 10/1

**cfu =coliform forming unit or colony.*

There were no NPDES permit exceedances during October at the Concord WWTP.

During October, 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 October is 0.19 mg/l, thereby meeting the CWWTP's permit limit not to exceed 0.20 mg/l TP.

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

Septage Receiving

During October, the facility received 172,400 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	151,450	126,450	128,750
July	138,500	117,000	159,050
August	137,750	142,400	140,250
September	203,750	219,950	112,250
October	172,400	262,900	199,700
November		165,300	179,950
December		104,050	42,000
Annual Totals:	1,258,000	1,636,000	1,408,150

Sludge Production

During October, 99,000 gallons of liquid sludge, equivalent to 16.03 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	153,000/20.83	98,500/17.76	152,000/21.29
July	126,000/20.57	117,000/20.98	161,500/23.60
August	76,376/11.81	99,000/16.51	143,500/21.31
September	126,000/21.65	98,000/16.82	126,000/15.27
October	99,000/16.03	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:	1,196,546/197.5	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.
6/20/09	2 pm	CoMag low eff pH	Both caustic feed pumps to CoMag effluent had become air bound. On call operator came on site and bled air from pump and restored normal auto feed of caustic based on pH input from SCADA.
07/09	NA	NA	No after hours alarms in July.
08/09	NA	NA	No after hours alarms in August.
9/3/09	10:00 PM	Intrusion	CoMag settling tank room – north motion sensor activated. No doors, windows, or other motion sensors activated. Police investigate – apparent false alarm.
10/09	NA	NA	No after hours alarms in October.