

**Monthly Operating Report  
March, 2013  
Concord Wastewater Treatment Facility  
Operated by Woodard & Curran**

**Date:** April 16, 2013

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

**From:** John Parkhurst and Staff

***Key Activities This Month/Capital Program:***

During March all treatment processes were either operational or in ready standby. Flow through the facility in March averaged 2.11 million gallons per day (MGD) and the permit critical 12-month average flow increased to 1.03 MGD. This is the 2<sup>nd</sup> month that the 12-month average flow increased and moved towards the 1.20 MGD limit for 12-month average flow.

Events that are more notable or tasks accomplished in March include:

March 4<sup>th</sup>, 2013: HVM Inc. was on site to conduct an Arc Flash Survey on electrical equipment throughout the Concord WWTF.



HVM technician in arc flash protective clothing to conduct Arc Flash Survey.

## *March '13 WWTF MOR*

### *Health and Safety Activities or Training:*

During March, all plant staff participated in a 30 minute on site safety meetings on "Machine Guarding", "Blood Bourne Pathogens", and "Polymer Handling".

### *Maintenance Management*

The following is a brief list of a portion of maintenance items completed in March:

March 1<sup>st</sup>, 2013: Plant staff found M2 backwash sump pump not discharging. Pump was hauled out of the wet well and installed a new O-ring and gasket. Pump was re-installed, tested, and performed normal again.

March 3<sup>rd</sup>, 2013: Power outage at the facility resulted in on-call staff responding to many alarms. Concord WWTF staff reset tripped equipment including the odor control fan. All processes restored to normal once utility power restored.

March 4<sup>th</sup>, 2013: HVM Inc. was on site to conduct an Arc Flash Survey on electrical equipment throughout the Concord WWTF.

March 8<sup>th</sup>, 2013: Staff completed snow removal from walkways and driveways.

March 10<sup>th</sup>, 2013 Staff started effluent samplers for the 1<sup>st</sup> Quarter WET Test Sampling Event.

March 14<sup>th</sup>, 2013: Alert Scientific was onsite to complete annual preventative maintenance and calibration the Concord WWTF lab equipment.

March 18<sup>th</sup>, 2013: Plant staff power washed the RDT, oiled the roller wheels, and cleaned out the wash water solenoid.

March 19<sup>th</sup>, 2013: Monthly calibration and cleaning of online pH probes completed.

March 21<sup>st</sup>, 2013: Concord WWTF Lab had an annual fume hood inspection conducted by outside contractor.

March 27<sup>th</sup>, 2013: Plant staff replaced onsite generator batteries.

March 28<sup>th</sup>, 2013: Plant staff repaired a broken coupler from the motor to the shaft of the mixing chamber on the RDT polymer system. In addition, the staff cleaned the entire RDT polymer system.

## March '13 WWTF MOR

### Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.03 MGD (12-month avg.)	1.2 MGD	March avg. = 2.11MGD Max. Daily Flow = 2.48 MG on Fri. 03/15
BOD5 (mg/l)	4 mg/l	30 mg/l	96% average BOD removal in March
TSS (mg/l)	9 mg/l	30 mg/l	90% average TSS removal in March
Coliform, Geo.Mean #/100ml	3 cfu*/100ml	200 cfu/100ml	16 f-coliform counts daily max on Thur. 03/28
Phosphorus	0.3 mg/l	1.0 mg/l Nov '12– Mar '13	0.4 mg/l daily max. occurred on Weds. 03/06
Total Ammonia Nitrogen	0.45 mg/l	Report Only	0.50 mg/l daily max. on Weds. 03/06

\*cfu = coliform forming unit or colony.

During March, the Concord WWTF 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 March is 0.3mg/l, thereby meeting the CWWTF's winter permit limit not to exceed 1.0 mg/l TP as a monthly average.

Over the week of March 10<sup>th</sup>, the Concord WWTF conducted the 2013, first-quarter Whole Effluent Toxicity (WET) sampling event. The 48-hour LC50, a.k.a. acute toxicity test, for *Ceriodaphnia* was 75.8% and did not meet permit requirement of  $\geq 100\%$ . The 7-day NOEC, a.k.a. chronic toxicity test, was 25%. Monitoring of chronic toxicity is a permit requirement; however, there are currently no chronic toxicity limitations.

The Concord WWTF staff believes that the 48-hour LC50 acute toxicity result did not achieve an acceptable result due to issues surrounding the poorly manufactured polymer product received for the CoMag® advanced treatment process and excessive spring flows. A polymer tote was ordered from a supplier the staff has used for many years. After transferring the new product into the "online" tote, the color seemed different from past experiences. Within one day we began having issues with keeping the polymer feed system primed and flowing into the CoMag® tanks. John Parkhurst stayed overnight to hand feed the back-up dry granular version of the polymer into the tank manually. Once the staff notified the supplier of the issues surrounding their product we were shipped a new tote with a different Lot number to ensure quality would be restored.

During the time when the Concord WWTF was struggling to flocculate in the CoMag® advanced treatment process the staff increased the dose of polymer to help supplement the inefficiencies of the polymer product. Only six days prior to starting the first-quarter WET testing event we received an acceptable tote of polymer. When we received it the Concord WWTF staff decided to clean the entire polymer feed system, changed hoses, and created a more direct piping system for the polymer to come from the tote towards the pump. It is the opinion of the staff that when we received the acceptable polymer the dosing was altered by the cleanliness of the entire system, re-piping of the suction side of the pump, and the higher than normal flow paced dosing rate to combat the high flows of March 2013.

What we have done to avoid this from happening in the future is to run a jar test on every polymer tote received at the Concord WWTF. Also, pay closer attention to polymer consumption, as there is not a direct relationship between polymer needs of the CoMag® advanced treatment process and increasing flows.

A copy of the complete WET test report prepared by our contracted lab is enclosed for your review.

**March '13 WWTF MOR**

**Alarm Activity**

This section provides the Town information on events that activate the facility's alarm response system. The events occur while the plant is unmanned and while both the plant's SCADA system and The *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 WWTF Off-Hours Alarm Log

Date	Time	Alarm Source	Observations/Corrective Action/Comments
Mar. '12	NA	NA	No off hours alarms in March.
Apr. 29, '12	10:30 am	Numerous	A very brief loss of utility power lead to a number of motor faults that required reset by an onsite operator who was performing weekend (Sat.) rounds.
May '12	NA	NA	No off hours alarms in May.
Jun. 17, '12	8:30 PM	Numerous	Plant water alarm came in. Plant staff cleaned intake screens and reset system. (All OK)
Jul. 28, '12	8:00 AM	Numerous	A very brief loss of utility power lead to a number of motor faults that required reset by an onsite operator who was performing weekend (Sat.) rounds.
Aug. 5, '12	8:00 AM	Numerous	Corridor motion detectors triggered nuisance alarms. Staff reset alarm - so far so good.
Sept. 9, '12	8:00 AM	Numerous	Intrusion alarm clarifier room south motion sensor- no apparent reason other than windy outside.
Oct. 29, '12	5:45 PM	Numerous	A loss of utility power lead to a number of motor faults that required reset by an onsite operator who was performing Hurricane Sandy coverage.
Nov. '12	NA	NA	No off hours alarms in November.
Dec. '12	NA	NA	No off hours alarms in December.
Jan. 30, '13	6:56 PM	Numerous	Plant water alarm due to break in the plant water feed line in the brick building by the effluent parshall flume.
Feb. 17, '13	7:00PM	Numerous	A loss of utility power lead to a number of motor faults that require to be reset by an on-call operator.
Mar. 03, '13	12:00PM	Numerous	A loss of utility power lead to a number of motor faults that require to be reset by an on-call operator.

**Septage Receiving**

The Concord WWTF receives septage only from in-Town sources. A total of 50,000 gallons of septage received at the Concord WWTF in March.

WWTF Septage Receipts in gallons:

	2013	2012	2011
January	27,500	56,000	44,050
February	35,700	34,000	31,750
March	50,000	83,000	102,950
April		111,500	139,750
May		110,250	113,500
June		112,750	130,000
July		137,750	73,750
August		71,000	69,500
September		84,250	98,750
October		124,150	82,250
November		111,700	90,250
December		93,500	117,250
Annual Totals:	115,000	1,129,850	1,093,500

*March '13 WWTF MOR*

*Sludge Production*

During March, 79,918 gallons of liquid sludge, equivalent to 18.48 dry tons, transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

	WWTF Sludge Production in gallons /dry tons		
	2013	2012	2011
January	109,811/22.44	112,896/17.12	98,309/16.78
February	82,650/17.31	62,183/11.1	72,916/13.5
March	79,918/18.48	99,452/13.71	72,617/13.89
April		97,796/11.75	81,000/14.90
May		107,500/16.66	108,000/27.85
June		116,530/18.53	108,000/19.67
July		116,141/22.36	106,060/17.69
August		113,340/18.71	135,224/18.83
September		104,302/18.64	108,008/15.10
October		123,425/20.70	141,003/23.05
November		80,786/14.44	114,905/20.28
December		80,804/16.58	105,573/18.56
Annual Totals:	272,379/58.23	1,214,155/200.34	1,251,615/205.18