The State of New Hampshire
Department of Environmental Services

Thomas S. Burack, Commissioner

October 29, 2014

Ricardo Cantu, Superintendent
City of Manchester
Manchester Wastewater Treatment Plant
300 Winston St
Manchester, NH 03103

RE: On-Site Full Compliance Evaluation Report

Dear Mr. Cantu:

The New Hampshire Department of Environmental Services, Air Resources Division ("DES") has completed a Full Compliance Evaluation of the Manchester Wastewater Treatment Plant. The purpose of the inspection was to determine compliance with State Permit to Operate SP-0267 and the N.H. Admin. Rules, Env-A 100 *et seq*. The compliance evaluation included an on-site inspection completed on October 9, 2014. This is a copy of the On-Site Full Compliance Evaluation Report for your review and records.

DES identified deficiencies during this compliance evaluation, as detailed in this report.

A copy of this report may be forwarded to the Enforcement section for further review. If you have any questions, please contact Daniel Hrobak at (603) 271-1987 or email at Daniel.Hrobak@des.nh.gov.

Sincerely,

Greg Helve
Compliance Assessment Section Supervisor
Air Resources Division

cc: Mayor, City of Manchester, One City Hall Plaza, Manchester, NH 03101

Abbreviations and Acronyms

AAL	Ambient Air Limit
acf	Actual cubic foot
ags	Above ground surface
AST	Above ground storage tank
ASTM	American Society of Testing and Materials
Btu	British thermal units
CAS	Chemical Abstracts Service
CEMS	Certified emission monitoring system
cfm	Cubic feet per minute
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DER	Discrete Emission Reduction
DES	New Hampshire Department of Environmental Services
Env-A	New Hampshire Code of Administrative Rules – Air Resources Division
ERC	Emission Reduction Credit
ft	Foot or feet
ft^3	Cubic feet
gal	Gallon
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
IPA	Isopropyl alcohol
kW	Kilowatt
lb	Pound
LPG	Liquefied Petroleum Gas
MGD	Million gallons per day
MM	Million
MSDS	Material Safety Data Sheet
MW	Megawatt
N/A	Not applicable
NAAQS	National Ambient Air Quality Standard
NG	Natural Gas
NO_x	Oxides of Nitrogen
NSPS	New Source Performance Standard
PM_{10}	Particulate Matter < 10 microns
ppm	Parts per million
psi	Pounds per square inch
RACT	Reasonably Available Control Technology
RSA	Revised Statues Annotated
RTAP	Regulated Toxic Air Pollutant
scf	Standard cubic foot
SO_2	Sulfur Dioxide
SSI	Sewage Sludge Incinerator
TSP	Total Suspended Particulate
tpy	Tons per consecutive 12-month period
ULSD	Ultra-low sulfur diesel
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

I. Facility Description

DES conducted an On-Site Full Compliance Evaluation of the Manchester Wastewater Treatment Plant ("MWWTP") and the results are presented herein. The compliance evaluation covers the period of 2009 to October 9, 2014.

The MWWTP is a publicly owned treatment works. The facility is owned by the City of Manchester, Highway Department and provides primary and secondary treatment of municipal wastewater for Manchester and some surrounding communities. The MWWTP was originally constructed in 1976 to process an average daily flow of 26 MGD. An expansion completed in 1994 resulted in several facility improvements, including an increased capacity to 34 MGD, the replacement of the multiple hearth sludge incinerator with a fluidized bed sewage sludge incinerator, new odor control measures, and a new data acquisition and equipment status control system (SCADA and CEMS). Further changes took place at the facility in 2005 and are outlined in a letter from DES to MWWTP dated June 28, 2013.

Sources of air emissions at the facility include the wastewater treatment plant operations, a fluidized bed SSI, boilers for heating, underground fuel storage tanks, a solvent degreaser and four stationary combustion turbines used as emergency generators. The treatment process includes screening and grit removal, primary clarification, mechanical aeration activated sludge, secondary clarification, and disinfection. Sludge handling processes include gravity thickening of combined primary and secondary clarifier sludge, centrifuges for dewatering, and incineration.

Facility name and address	Manchester Wastewater Treatment Plant 300 Winston St Manchester, NH 03103
County	Hillsborough
Telephone	603-624-6526
AFS#	3301100089
Source Type:	Major, Title V
Inspection Date/Time	October 9, 2014 / 9:00 AM
Inspection Type	On-Site Full Compliance Evaluation
Inspection Period	2009 – October 9, 2014
Weather	55^{o} F., partly cloudy, wind 5-10 W
Inspected by	Daniel Hrobak, Senior Compliance Assessment Engineer Cathy Beahm, Technical Assistance Specialist
Source Contact(s)	Ricardo Cantu, Superintendent
Last Inspection	March 23, 2004
No deficiencies identified during previous inspection	

Permit Numbers:	SP-0267	Issued:	December 30, 2013
		Minor Permit Amendment	June 19, 2014
		Expires:	December 31, 2018
	FP-S-0240	Issued:	July 20, 2004
		Expired:	July 31, 2009

On April 16, 2009, MWWTP submitted renewal application #09-0092 for State Permit to Operate FP-S-0240 which expired on July 31, 2009. This application was received 90 days prior to the expiration date, and therefore application shield provisions applied.

On March 21, 2011, the USEPA published final rules, for both new and existing SSI units, 40 CFR Part 60 Subpart MMMM *Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units*. The MWWTP's SSI unit is subject to these rules. As part of this rule, by March 21, 2014, the MWWTP was required to apply for a Title V Operating Permit in accordance with N.H. Admin. Rules Env-A 609, *Title V Operating Permits*.

On May 7, 2013, DES sent the MWWTP a letter regarding the facility's upcoming requirements for 40 CFR 60 Subpart MMMM. In the letter, DES proposed that the MWWTP amend #09-0092 to include all additional information to satisfy the requirements of the Title V Operating Permit application.

On May 30, 2013, DES received a request to evaluate a proposed modification to the MWWTP, which included modifying the aeration basins' configuration and operation. Subsequently on June 28, 2013, DES sent the MWWTP a letter approving the proposed modification.

On October 10, 2013, the MWWTP informed DES that Boiler #3 was decommissioned, and will not be carried over into the new permit.

On December 30, 2013, DES processed application #09-0092, and issued the MWWTP State Permit to Operate SP-0267, such that the facility could operate as a minor source, with the understanding that MWWTP would still need to apply for a Title V permit.

On March 21, 2014, the MWWTP submitted Title V permit application #14-0141. On May 9, 2014, DES sent the facility a completeness letter indicating that continued operation of the facility is covered under the application shield provisions of N.H. Admin. Rules Env-A 609.08, *Application Shield.* As of the date of this inspection report, DES has not yet issued a Title V Operating Permit.

On May 9, 2014, DES sent the facility a proposal to amend SP-0267, pursuant to N.H. Admin. Rules Env-A 612.07. At the time permit SP-0267 was issued, DES understood that the four emergency generators (EU04-EU07) were internal combustion engines, thereby making them subject to 40 CFR 63 Subpart ZZZZ *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*. Upon a subsequent review and site visit, DES determined that the devices were instead combustion turbines, and therefore, not subject to 40 CFR 63 Subpart ZZZZ. As a result, on June 19, 2014, DES issued SP-0267 with a minor amendment to include this correction.

The on-site inspection included an opening meeting to discuss the purpose of the inspection as well as the rules pertaining to claims of confidentiality and facility safety concerns. The facility agreed to the inspection and authorized access to the facility. Material provided and operations conducted by the facility at the time of the inspection were not claimed as confidential.

II. Emission Unit Identification and Facility Wide Emissions

Table 1, below lists the permitted emission units from permit SP-0267.

Table 1- Device Identification

Emission Unit ID	Device Identification	Manufacturer Model Number Serial Number	Install Date	Maximum Design Capacity and Fuel Type(s)
EU01	Fluidized Bed Sewage Sludge Incinerator (I1)	Zimpro Model FBI	1994	Maximum fuel charge rate: 3,500 lb/hr of dry sludge and 500 lb/hr of dry sludge scum 4 Primary burners: 4.5 MMBtu/hr each, equivalent to 30 gal/hr of #2 fuel oil each Secondary Preheat burner: 16.5 MMBtu/hr, equivalent to 118 gal/hr of #2 fuel oil or 269.6 cfm of natural gas
EU02	Boiler #1 (B1)	Cleaver Brooks CB-600-250 L57727	June, 1974	10.5 MMBtu/hr #2 fuel oil – equivalent to 75 gal/hr **Hr meter read during inspection: 27,761**
EU03	Boiler #2 (B2)	Cleaver Brooks CB-600-250 L57728	June, 1974	10.5 MMBtu/hr #2 fuel oil – equivalent to 75 gal/hr **Hr meter read during inspection: 19,914**
EU04	Emergency Generator #2 (G2)	Solar (Harvester) Turbine GEI-SA-EM S428717	April, 1976	12.6 MMBtu/hr (900 kW; 1,207 hp) #2 fuel oil – equivalent to 90 gal/hr **Hr meter read during inspection: 780**
EU05	Emergency Generator #3 (G3)	Solar (Harvester) Turbine GEI-SA-EM S428718	April, 1976	12.6 MMBtu/hr (900 kW; 1,207 hp) #2 fuel oil – equivalent to 90 gal/hr **Hr meter read during inspection: 855**
EU06	Emergency Generator #4 Crescent Road Pump Station (G4)	Solar (Harvester) Turbine GSE-1000 S431098	April, 1976	12.6 MMBtu/hr (900 kW; 1,207 hp) #2 fuel oil – equivalent to 90 gal/hr **Hr meter read during inspection: not available (device being repaired)**
EU07	Emergency Generator #5 Crescent Road Pump Station (G5)	Solar (Harvester) Turbine GSE-1000 S431099	April, 1976	12.6 MMBtu/hr (900 kW; 1,207 hp) #2 fuel oil – equivalent to 90 gal/hr **Hr meter read during inspection: 1,257**

On March 21, 2104, the facility became subject to the Title V reporting requirements, and it will have to report emissions from the insignificant activities in the following two tables and pay any associated emission-based fees for calendar year 2014.

Insignificant Device List					
Identification	**Description**	**Install Date**	**Manufacturer**	**Maximum Design Capacity and Fuel Type**	**Location**
Boiler #4	CRPS Boiler	2003	Smith Cast Iron	0.91 MMBtu/hr #2 fuel oil – equivalent to 6.5 gal/hr	Crescent Rd Pump Station
T7	#2 Fuel Tank for Generators 4 & 5	1995	Horizontal	6,000 gal	Crescent Rd Pump Station
T8	#2 Fuel Tank for Boilers 1, 2 & 3	1995	Horizontal	15,000 gal	Administrative Building
T9	#2 Fuel Tank for Incinerators	1995	Horizontal	15,000 gal	Administrative Building
DG1	Solvent Degreaser	2008	Kleen Master	50 gal	Administrative Building
	Nat Gas Boiler 1	2014			Chlorine Building
	Nat Gas Boiler 1	2014			Chlorine Building

In the facility's May 30, 2013 modification request, the facility evaluated the H_2S emissions from its wastewater treatment plant to ensure that the emissions of this pollutant remained below AALs, pursuant to N.H. Admin. Rules Env-A 1400. The changes and evaluation are discussed further in a letter prepared by DES, summarizing this H_2S study, dated June 28, 2013.

While the facility has been a minor source, it has been required to report H_2S emissions only from its aeration basins and primary clarifiers. From 2009-2013, the facility has reported H_2S emissions from all devices in the table below. Since March 21, 2014, the facility has become subject to the Title V reporting requirements. For calendar year 2014 and forward, it will be required to report and pay fees on emissions from all insignificant activities including those in the table above and table below.

H_2S Generating Source Insignificant Device List				
Description	**Control Device**	**Air Emission Flow (cfm)**	**2004 H_2S Emission Rate (lb/hr) from FP-S-042**	**2013 Revised H_2S Emission Rate (lb/hr)**
Crescent Rd Pump Station	Pump Station Activated Carbon Unit	10,000	0.0018	0.00036
Pump Station Screen Room	None	32,000	0.0059	0.000118

H_2S Generating Source Insignificant Device List				
Description	**Control Device**	**Air Emission Flow (cfm)**	**2004 H_2S Emission Rate (lb/hr) from FP-S-042**	**2013 Revised H_2S Emission Rate (lb/hr)**
Septage Receiving	Activated Carbon Unit	700	0.0036	0.002088
Primary Clarifiers	Biofilter (Controlled) - Primary Clarifier & Aeration Basins	34,000	0.0054	0.00019
Aeration Basins	Aeration Basins Uncovered based on 2013 Sampling	3,364	0.0093	0.00054
Secondary Clarifiers	None	N/A	0.0059	Below detection Limit
Sludge Handling	Mist Scrubber	40,000	0.0083	0.00166

DES observed the devices identified in the tables above and the facility has made no changes to these devices nor has it added additional devices requiring a permit.

The table below lists the facility-wide reported annual emissions for the inspection period.

Permitted Device Emissions (tons)							
	PM_{10}	**SO_2**	**NO_x**	**CO**	**VOCs**	**Other HAPS/RTAPs**	**Total**
Permitted Limits	—	—	50	—	—	—	—
2013	0.83	6.28	5.74	0.91	0.08	0.56	14.40
2012	0.63	3.83	3.78	0.37	0.06	0.57	9.24
2011	0.42	2.94	2.81	0.36	0.04	0.35	6.93
2010	0.29	2.17	2.06	0.30	0.03	0.24	5.08
2009	0.65	3.79	3.67	0.35	0.06	0.60	9.12

Note: The facility is a true minor source for all pollutants, except for NO_x, for which the facility has taken a 50 tpy limit to be a synthetic minor source for this pollutant. The facility is also subject to the RTAP emission limitations, as specified in Env-A 1450, and discussed elsewhere in this report.

III. Control Equipment

Table 2, taken from permit SP-0267, lists the air pollution control equipment in use at the facility. The equipment shall be operated at all times that the associated devices are operating in order to meet permit conditions.

Table 2– Pollution Control Equipment Identification			
Pollution Control Equipment ID	**Description**	**Purpose**	**Emission Unit Controlled**
PCE01	Biofilter (BF1) 50' x 150' 12,000 cfm	Control of H_2S	The first basin in each of 4 aeration treatment system trains (anoxic/anaerobic zones)
PCE02	Biofilter (BF2) 50' x 150' 22,000 cfm	Control of H_2S	Primary Clarifiers
PCE03	Wet Scrubber	Control of VOCs, HAPs and RTAPs	EU01

IV. Stack Criteria

Table 3 below, taken from permit SP-0267, lists the permitted stack requirements for the facility.

During the inspection, DES observed the stacks were vertical and unobstructed, with no modifications noted by the facility.

Table 3 – Stack Criteria			
Stack Number	**Emission Unit or Pollution Control Equipment ID**	**Minimum Height (feet above ground surface)**	**Maximum Exit Diameter (feet)**
1	EU01	121.5	1.67
2	EU02 and EU03	50	3.5

V. Compliance with Operating and Emission Limitations

Table 4 below, taken from SP-0267, lists the operating and emission limitations for the facility and any deficiencies noted during the evaluation.

Table 4- Operating and Emission Limitations				
Item #	**Requirement**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
1	*Facility Wide Emission Limitations* Facility wide emissions of NO_x shall be limited to less than 50 tpy.	Facility Wide	Env-A 604.02(a)(1)	**Yes**

Table 4- Operating and Emission Limitations				
Item #	**Requirement**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
2	*24-hour and Annual Ambient Air Limit* The emissions of any Regulated Toxic Air Pollutant (RTAP) shall not cause an exceedance of its associated 24-hour or annual Ambient Air Limit (AAL) as set forth in Env-A 1450.01, *Table Containing the List Naming All Regulated Toxic Air Pollutants*.	Facility Wide	Env-A 1400 (State-Only Enforceable Limitation)	**Yes**
3	*Revisions of the List of RTAPs* In accordance with RSA 125-I:5 IV, if the Division revises the list of RTAPs or their respective AALs or classifications under RSA 125-I:4, II and III, and as a result of such revision the Owner or Operator is required to obtain or modify the permit under the provisions of RSA 125-I or RSA 125-C, the Owner or Operator shall have 90 days following publication of notice of such final revision in the New Hampshire Rulemaking Register to file a complete application for such permit or permit modification.	Facility Wide	Env-A 1404.02 (State-Only Enforceable Limitation)	**Yes**
Finding: Within 90 days of the April 4, 2014 revision to Env-A 1400, the facility conducted a review of its RTAP emissions with respect to the revision to the list of RTAPs. From this revision, it has not been required to apply for a permit or permit modification.				
4	*Fuel Usage Limitations* The facility shall be limited to the following operating limitations: a. Liquid fuel oil consumption for Boilers #1 and #2 combined shall be limited to 752,500 gallons of #2 fuel oil or diesel fuel in any consecutive 12-month period; b. The hours of operation of each emergency generator shall be limited to 120 hours during any consecutive 12-month period; and c. The incinerator shall be limited to burning 14,700 tons of dry sludge and 2,100 tons of dry sludge scum during any consecutive 12-month period.	EU01 – EU07	Env-A 604.02(a)(2)	**Yes**
5	*Maximum Sulfur Content Allowable in Liquid Fuels* The sulfur content of #2 fuel oil shall not exceed 0.40 percent sulfur by weight.	EU01 – EU07	Env-A 1604.01(a)	**Yes**
6	*40 CFR 60, Subpart O – Standards of Performance for Sewage Treatment Plants - Standard for Particulate Matter* The sewage sludge incinerator shall be limited to: a. Particulate matter emissions of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input); and b. Opacity shall not exceed 20 percent for any continuous 6-minute period.	EU01	40 CFR 60, Subpart O §60.152	**Yes**

Table 4- Operating and Emission Limitations				
Item #	**Requirement**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
Finding: • ***The particulate matter emissions were determined through stack testing conducted in 1994. The particulate matter emission rate was found to be 0.21 lb/ton dry sludge; and*** • ***The opacity emissions were determined through stack testing conducted in 1994. The opacity from this unit was found to be 0%.***				
7	*40 CFR 61, Subpart C - National Emission Standard for Beryllium* Emissions from the sewage sludge incinerator shall not exceed 10 grams (0.022 lb) of beryllium over a 24-hour period.	EU01	40 CFR 61, Subpart C §61.32	**Yes**
Finding: The facility last conducted a compliance test for beryllium in 1994. The emission rate determined by the testing is less than 1.74 x 10^{-6} lb/hr, which is approximately equal to 4.18 x 10^{-5} lb/ 24 hours.				
8	*40 CFR 61, Subpart E - National Emission Standard for Mercury* Emissions from the sewage sludge incinerator shall not exceed 3.2 kg (7.1 lb) of mercury per 24-hour period.	EU01	40 CFR 61, Subpart E §61.52(b)	**Yes**
Finding: The facility last conducted a compliance test for mercury in 1994. The emission rate determined by the testing is 6.54 x 10^{-6} lb/hr, which is equal to approximately to 1.57 x 10^{-4} lb/ 24 hours.				
9	*Particulate Matter Emission Standards* Emissions of particulate matter from the sewage sludge incinerator shall not exceed 0.675 grams per dry standard cubic meter (g/dscm), equivalent to 0.3 grains per dry standard cubic foot (gr/dscf), corrected to 7 percent oxygen (O_2).	EU01	Env-A 1902	**Yes**
Finding: The facility last conducted a compliance test for particulate in 1994. The emission rate determined by the testing is approximately 0.0042 gr/dscf at 7% O_2.				
10	*Name Plate and Instruction Posting Requirements* The owner or operator of an incinerator shall a. Install the manufacturer's name plate which lists the device's model number and rated capacity and the types of waste for which the device is designed, in a conspicuous place on the device; and b. Post detailed instructions for the operation of the device in a conspicuous place near the device.	EU01	Env-A 1903.01	**Yes**
11	*Trained and Competent Operator Required* The owner or operator of an incinerator shall designate an individual who has been trained and is competent in the operation of the incinerator to be in charge of the device.	EU01	Env-A 1903.02	**Yes**

Table 4- Operating and Emission Limitations				
Item #	**Requirement**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
12	The temperature of the sand bed and combustion zone shall be maintained between 1,200ºF and 1,650ºF and the freeboard temperature shall not exceed 1,650ºF.	EU01	Env-A 604.01	**No**
Finding: The facility has periodically exceeded the 1650ºF freeboard temperature. For more information, see Section X: Other Findings.				
13	*Pollution Control Equipment Operation and Maintenance* a. The minimum pressure drop across the wet scrubber shall be 35 inches of water column; and b. The scrubber system shall be able to deliver water at a flow rate of 100 gal/min to the venturi and up to 400 gal/min to the economizer.	PCE03	Env-A 604.01 & FP-S-0240	**Yes**
14	*Visible Emission Standard for Fuel Burning Devices Installed After May 13, 1970* The average opacity from fuel burning devices installed after May 13, 1970 shall not exceed 20 percent for any continuous 6-minute period.	EU02 – EU07	Env-A 2002.02	**Yes**
Finding: During the on-site inspection, these devices were not operating. Therefore, compliance with visible emission standards could not be determined. However, at the time the permit was issued, DES had sufficient information to indicate that, under normal operating conditions, these devices would meet this standard.				
15	*Activities Exempt from Visible Emission Standards* The average opacity shall be allowed to be in excess of those standards specified in Env-A 2002 for one period of 6 continuous minutes in any 60 minute period during startup, shutdown, malfunction, soot blowing, grate cleaning, and cleaning of fires.	EU02 & EU03	Env-A 2002.04(c) (State-Only Enforceable Limitation)	**Yes**
16	*Activities Exempt from Visible Emission Standards* Exceedences of the opacity standard in Env-A 2002 shall not be considered violations if the Owner or Operator demonstrates to the Division that such exceedences: a. Were the result of the adherence to good boiler operating practices which, in the long term, result in the most efficient or safe operation of the boiler; b. Occurred during periods of cold startup of a boiler over a continuous period of time resulting in efficient heat-up and stabilization of its operation and the expeditious achievement of normal operation of the unit; c. Occurred during periods of continuous soot blowing of the entire boiler tube section over regular time intervals as determined by	EU02 & EU03	Env-A 2002.04(d), (e), and (f) (State-Only Enforceable Limitation)	**Yes**

Table 4- Operating and Emission Limitations				
Item #	**Requirement**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
	the operator and in conformance with good boiler operating practice; or d. Were the result of the occurrence of an unplanned incident in which the opacity exceedence was beyond the control of the operator and in response to such incident, the operator took appropriate steps in conformance with good boiler operating practice to eliminate the excess opacity as quickly as possible.			
17	*Particulate Emission Standards for Fuel Burning Devices Installed After May 13, 1970, but before January 1, 1985* The particulate matter emissions from fuel burning devices installed after May 3, 1970, but before January 1, 1985 shall not exceed: a. 0.59 lb/MMBtu from each boiler; and b. 0.57 lb/MMBtu from each emergency generator.	EU02-EU07	Env-A 2002.07	**Yes**
Finding: Compliance with particulate emission standards can only be verified through stack testing for particulate matter, which has not been required for these devices, to date. However, at the time the permit was issued, DES had sufficient information indicating that, under normal operating conditions, these devices would meet the particulate matter standards. The facility uses the AP-42 emission factor of 0.0071 lb/MMBtu for EU02-EU03, and 0.0001 lb/MMBtu for EU04-EU07 to calculate the annual particulate matter emissions.				

VI. Compliance with Monitoring and Testing Requirements

Table 5 below, taken from SP-0267, lists the monitoring and testing requirements for the facility and any deficiencies noted during the inspection.

Table 5 – Monitoring and Testing Requirements						
Item #	**Parameter**	**Method of Compliance**	**Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
1	To Be Determined	When conditions warrant, the Division may require the Owner or Operator to conduct stack testing in accordance with USEPA or other Division approved methods.	Upon request by the Division	Facility Wide	RSA 125-C:6, XI	**Not Applicable**
Finding: During the inspection period, DES has not required the facility to conduct testing in addition to what is discussed elsewhere in this report.						

Table 5 – Monitoring and Testing Requirements						
Item #	**Parameter**	**Method of Compliance**	**Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
2	Sulfur Content of Liquid Fuels	Conduct testing in accordance with appropriate ASTM test methods or retain delivery tickets in accordance with Table 6, Item 4 in order to demonstrate compliance with the sulfur content limitation provisions specified in this permit for liquid fuels.	For each delivery of liquid fuel oil to the facility	Facility Wide	Env-A 806.02 & Env-A 806.05	**Yes**
Finding: The facility retains delivery tickets in order to demonstrate compliance with the sulfur content limitations specified in its permit for liquid fuels.						
3	Sulfur Content of Gaseous Fuels	Conduct testing to determine the sulfur content in grains of sulfur per 100 cubic feet, of gaseous fuels.	Upon written request by EPA or the Division	Facility Wide	Env-A 806.03	**Not Applicable**
Finding: During the inspection period, DES has not requested the facility to conduct testing to determine the sulfur content of gaseous fuels.						
4	Monitoring of Incinerator Operations	*40 CFR 60, Subpart O – Standards of Performance for Sewage Treatment Plants - Monitoring of Operations* The owner or operator of any sludge incinerator subject to 40 CFR 60, Subpart O shall: a. Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained; b. Install, calibrate, maintain and operate a monitoring device that continuously measures and records the pressure drop of the gas flow through the wet scrubbing device. The device used to monitor scrubber pressure drop shall be certified by the manufacturer to be accurate within ±250 pascals (±1 inch water gauge) and shall be calibrated on an annual basis in accordance with the manufacturer's	As noted	EU01	40 CFR 60, Subpart O §60.153	**Yes**

Table 5 – Monitoring and Testing Requirements						
Item #	**Parameter**	**Method of Compliance**	**Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
		instructions; and c. Install, calibrate, maintain and operate a monitoring device that continuously measures and records the oxygen content of the incinerator exhaust gas. The oxygen monitor shall be located upstream of any rabble shaft cooling air inlet into the incinerator exhaust gas stream, fan, ambient air recirculation damper, or any other source of dilution air. The oxygen monitoring device shall be certified by the manufacturer to have a relative accuracy of ±5 percent over its operating range and shall be calibrated according to method(s)prescribed by the manufacturer at least once each 24-hour operating period.				
5	Additional Monitoring of Incinerator Operations	*Additional Monitoring Requirements* The owner or operator shall maintain, calibrate, and operate the following monitoring equipment on the incinerator: a. A flow measuring device used to determine either the mass flow rate or volumetric flow rate of sludge charged into the incinerator. This device shall be certified by the manufacturer to have an accuracy of ±5% over its entire operating range; b. Temperature measuring devices shall be located in the fluidized bed freeboard and at the outlet of the fluidized bed. Each temperature measuring device shall	As noted	EU01	FP-S-0240	**Yes**

Table 5 – Monitoring and Testing Requirements						
Item #	**Parameter**	**Method of Compliance**	**Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
		be certified by the manufacturer to have an accuracy of ±5% over its operating range; c. A device for measuring the auxiliary fuel flow to the incinerator. The fuel flow measuring device shall be certified by the manufacturer to have an accuracy of ±5% over its operating range; and d. Continuous sampling systems shall complete a minimum of one cycle of operation which shall include sampling, analyzing, and data recording for each successive 15 minute period except for the oxygen sampling system which shall complete a minimum of one cycle of operation for each successive 5 minute period.				
6	Monitoring of Air Pollution Control Equipment	*Monitoring Requirements of Air Pollution Control Equipment* The control equipment shall be maintained in good working order and, at a minimum, the maintenance and monitoring requirements listed below shall be performed. The owner or operator shall: a. Maintain, monitor and operate the biofilters as described in the Manchester Wastewater Treatment Facility Primary Covers Odor Control Project, Operations Maintenance Information; b. Maintain, monitor and operate the scrubber as described in the Air Pollution Control Equipment Monitoring	As noted	PCE01, PCE02 & PCE03	FP-S-0240 & Env-A 604	**Yes**

Table 5 – Monitoring and Testing Requirements						
Item #	**Parameter**	**Method of Compliance**	**Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
		Plan submitted August 19, 2013 and in a manner consistent with the manufacturer's recommendations; c. Inspect the scrubber, if conditions indicate that the scrubber may need maintenance, but at least annually. The inspection shall be conducted by plant personnel familiar with the operation of the scrubber and connected equipment.				

VII. Compliance with Recordkeeping Requirements

Table 6 below, taken from SP-0267, lists the recordkeeping requirements for the facility and any deficiencies noted during the evaluation.

Table 6 - Recordkeeping Requirements					
Item #	**Requirement**	**Duration/ Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
1	*Record Retention and Availability* Keep the required records on file. These records shall be available for review by the Division upon request.	Retain for a minimum of 5 years	Facility Wide	Env-A 902	**Yes**
2	*General Recordkeeping Requirements for Process Operations* Maintain the following records for process operations: a. Hours of operation of the incinerator; and b. Amount of sludge and scum burned in the incinerator.	Monthly	EU01	Env-A 903.02	**Yes**
3	*General Recordkeeping Requirements for Combustion Devices* Maintain the following records of fuel characteristics and utilization for the fuel used in the combustion devices: a. Type (e.g. #2 fuel oil, natural gas); and b. Amount of fuel burned and hours of operation of each device to be used to apportion fuel use between the multiple devices.	Monthly	EU01-EU07	Env-A 903.03 & Env-A 604.02(a)(3)	**No**

Table 6 - Recordkeeping Requirements					
Item #	**Requirement**	**Duration/ Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
Finding: During the inspection period, the facility has not been maintaining the amount of fuel used in EU02 and EU03 by month, and hours of operation of EU02 and EU03 by month. The facility maintains hours on the emergency generators by month to determine the hourly fuel usage and from that, calculates its annual emissions.					
4	*Liquid Fuel Oil Recordkeeping Requirements* In lieu of sulfur testing pursuant to Table 5, Item 2, the owner or operator may maintain a written statement from the fuel supplier that the sulfur content of the fuel as delivered does not exceed state or federal standards for that fuel.	Whenever there is a change in fuel supplier but at least annually	EU01 - EU07	Env-A 806.05	**Yes**
Finding: The facility retains delivery tickets in order to demonstrate compliance with the sulfur content limitations specified in its permit for liquid fuels.					
5	*Gaseous Fuel Recordkeeping Requirements* Maintain one of the following: a. Sulfur content as percent sulfur by weight or in grains per 100 cubic feet of fuel; b. Documentation that the fuel source is from a utility pipeline; or c. Documentation that the fuel meets state sulfur limits.	Whenever there is a change in natural gas fuel supplier but at least annually	EU01	Env-A 903.03	**Yes**
Finding: On September 24, 2013, DES revised Chapter Env-A 903.03 such that facility is no longer required to maintain documentation of the sulfur content of natural gas burned, or that the natural gas is from a utility pipeline or meets state sulfur limits. However, the facility maintains documentation that the fuel source is from a utility pipeline.					
6	*Additional Recordkeeping Requirements: Facility Wide Emission Limitations* Maintain a 12-month running total of facility wide emissions of NO_x, which shall include emissions from non-permitted devices, for the purpose of demonstrating that the total emissions of this pollutant is below the major source threshold of 50 tpy.	Monthly	Facility Wide	Env-A 906 and Env-A 604.02(a)(3)	**No**
Finding: During the inspection period, the facility did not maintain a 12-month running total of facility-wide NO_x emissions. However, during the inspection period, NO_x emissions were below 6 tpy.					
7	*Additional Recordkeeping Requirements* The owner or operator shall maintain additional records, as necessary, for the purpose of demonstrating compliance with all federal and state statue, rules, regulations and permits. These additional records shall include, but are not limited to: a. Records of all air pollution control equipment monitoring and maintenance activities required under Table 5; and b. Records of the measured temperatures of the incinerator.	Monthly	Facility Wide	Env-A 906	**Yes**
8	*40 CFR 60, Subpart O – Standards of Performance for Sewage Treatment Plants - Recordkeeping* The owner or operator of any fluidized bed incinerator subject to 40 CFR 60, Subpart O shall retain the	As noted	EU01	40 CFR 60, Subpart O §60.153(c)	**Yes**

Table 6 - Recordkeeping Requirements					
Item #	**Requirement**	**Duration/ Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
	following information and make it available for inspection by the Administrator for a minimum of 2 years: a. For incinerators equipped with a wet scrubbing device, a record of the measured pressure drop of the gas flow through the wet scrubbing device, as required in Table 5, Item 4(b); and b. A record of the measured oxygen content of the incinerator exhaust gas, as required in Table 5, Item 4(c).				
9	*General NO_x Recordkeeping Requirements* If the actual annual NO_x emissions from all permitted devices located at the facility are greater than or equal to 10 tpy, then record the following information: a. Identification of each fuel burning device; b. Operating schedule during the high ozone season (June 1 through August 31) for each fuel burning device identified in Table 5, Item 7.a, above, including: 1. Typical hours of operation per day; 2. Typical days of operation per calendar month; 3. Number of weeks of operation; 4. Type and amount of each fuel burned; 5. Heat input rate in MMBtu/hr; 6. Actual NOx emissions for the calendar year and a typical high ozone day during that calendar year; and 7. Emission factors and the origin of the emission factors used to calculate the NOx emissions.	Maintain Up-to-Date Data	EU01 - EU07	Env-A 905.02	**Not Applicable**
Finding: During the inspection period, the facility's NO_x emissions were less than 10 tpy.					

Table 6 - Recordkeeping Requirements					
Item #	**Requirement**	**Duration/ Frequency**	**Applicable Unit**	**Rule Citation**	**Compliant**
10	*Regulated Toxic Air Pollutants* Maintain records documenting compliance with Env-A 1400. Compliance was demonstrated at the time of permit issuance as described in the Division's Application Review Summary for application #09-0092. The Owner or Operator must update the compliance demonstration by using one of the methods provided in Env-A 1405 if: a. There is a revision to the list of RTAPs lowering the AAL or De Minimis value for any RTAP emitted from the facility; b. The amount of any RTAP emitted is greater than the amount that was evaluated in the Application Review Summary (e.g., use of a raw material or fuel will increase); c. An RTAP that was not evaluated in the Application Review Summary will be emitted (e.g., a new raw material will be used); or d. Stack conditions (e.g. air flow rate) change.	Update prior to future process changes and within 90 days of each revision of Env-A 1400	Facility Wide	Env-A 902.01 (State-Only Enforceable Limitation)	**Yes**

VIII. Compliance with Reporting Requirements

Table 7 below, taken from SP-0267, lists the reporting requirements for the facility and any deficiencies noted during the evaluation.

Table 7 - Reporting Requirements					
Item #	**Requirement**	**Frequency**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
1	*Annual Emissions Report* Submit an annual emissions report which shall include the following information: a. Actual calendar year emissions from the incinerator of NO_x, CO, SO_2, TSP, VOCs and RTAPs (speciated by individual RTAP); b. Actual calendar year emissions from each boiler and each emergency generator of NO_x, CO, SO_2, TSP, and VOCs; c. Actual calendar year emissions of hydrogen sulfide from the primary clarifiers and aeration tanks; d. The methods used in calculating such emissions in accordance with Env-A 705.02, *Determination of Actual* Emissions *for Use in Calculating Emission-Based Fees*; and	Annually (received by DES no later than April 15th of the following year)	EU01 - EU07 & PCE01 - PCE03	Env-A 907.01	**No**

Table 7 - Reporting Requirements					
Item #	**Requirement**	**Frequency**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
	e. All information recorded in accordance with Table 6, Items 2, 3, 4, and 5.				
Finding: • ***The facility submitted its 2010 annual emissions report late, on April 28, 2011;*** • ***In the facility's 2009 and 2010 annual emissions reports, the facility did not report the type and amount of fuel used by device, by month, and the facility did not report the hours of operation for each emergency generator, by month; and*** • ***In the facility's 2011, 2012 and 2013 annual emissions reports, the facility did not report the type and amount of fuel used by device by month for its three permitted boilers, and the facility did not report the hours of operation for each emergency generator, by month.***					
2	*NO_x Emission Statements Reporting Requirements* If the actual annual NO_x emissions from all permitted devices are greater than or equal to 10 tpy, then include the following information with the annual emission report: a. A breakdown of NO_x emissions reported pursuant to Table 7, Item 1 by month; and b. All data recorded in accordance with Table 6, Item 9.	Annually (received by DES no later than April 15th of the following year)	EU01 - EU07	Env-A 909	**Not Applicable**
Finding: During the inspection period, the facility's NO_x emissions were less than 10 tpy.					
3	*40 CFR 60, Subpart O – Standards of Performance for Sewage Treatment Plants - Reporting* The owner or operator shall submit, to the Division and to USEPA Region 1 semi-annually, a report containing the information described below. The address for USEPA Region 1 is: EPA-New England, Region 1 5 Post Office Sq. Suite 100 Mail Code OES04-2 Boston, MA 02109-3912 The address for the Division is: NH Department of Environmental Services Air Resources Division 29 Hazen Drive P.O. Box 95 Concord, NH 03302-0095 ATTN: Section Supervisor, Compliance Bureau a. The average scrubber pressure drop for each period of 15 minutes or more during which the pressure drop was less than 28 inches of water; and b. The average oxygen content in the incinerator exhaust gas for each period of 1-hour duration or more where the percent oxygen levels exceed 9.3%.	Semi-annually received by DES and EPA no later than July 31st and January 31st of each calendar year	EU01	40 CFR 60, Subpart O §60.155 (a)	**No**

Table 7 - Reporting Requirements					
Item #	**Requirement**	**Frequency**	**Applicable Emission Unit**	**Rule Citation**	**Compliant**
Findings: • ***The facility submitted its 2009 reports late, on April 9, 2010;*** • ***The facility submitted its 2010 reports late, on April 28, 2011;*** • ***The facility submitted its 2011 reports late on February 2, 2012:*** • ***The facility submitted its 2013 January-June report late, on September 4, 2013; and*** • ***The facility submitted its July-December 2014 late, on February 10, 2014.***					
4	*Emission Based Fees* Pay emission-based fees in accordance with Condition XIII.	Annually (received by DES no later than April 15th of the following year)	EU01 - EU07	Env-A 700	**No**
Findings: • ***The facility submitted its 2009 annual emission-based fees late, on May 18, 2010;*** • ***The facility submitted its 2010 annual emission-based fees late, on May 17, 2011; and*** • ***The facility submitted its 2011 annual emission-based fees late, on April 17, 2012.***					
5	*Permit Deviation Reporting Requirements* Report permit deviations that cause excess emissions in accordance with Condition X.B.	Within 24 hours of discovery of excess emission	EU01 - EU07	Env-A 911.04 (b) (1)	**Yes**
6	*Update to Air Pollution Dispersion Modeling Impact Analysis* If an update to the facility's air pollution dispersion modeling impact analysis is required pursuant to Env-A 606.02, submit the information required pursuant to Env-A 606.04: a. With the permit application submitted for the change which triggered the analysis; or b. Within 15-days of completion of the change which triggered the analysis, if a permit application is not required.	As specified	Facility Wide	Env-A 910.01	**Not Applicable**
Finding: During the inspection period, the facility has not been required to update its air dispersion modeling impact analysis.					

IX. Permit Deviations

The facility is aware of the permit deviation reporting requirements of N.H. Admin. Rules Env-A 911. During the inspection period, the facility submitted one permit deviation report.

On October 23, 2009, the MWWTP reported that its O_2 analyzer is out of the 95% auto calibration requirement and had to be calibrated manually, which was believed to be a violation of Condition VIII B(2) of permit FP-S-0240.

On November 8, 2009, the facility submitted a permit deviation report, and submitted it in its

semi-annual report. DES reviewed the information submitted and determined that a permit deviation did not occur.

The facility also reported a deviation of Table 4, Item #12 of permit SP-0267 in its January-June 2013 semi-annual report. See *Section X: Other Findings* below, for details.

X. Other Findings

1. In accordance with Table 4, Item #12 of permit SP-0267, the facility is required to maintain of a freeboard temperature of the combustion zone of the SSI of no greater than 1650^{o}F. The facility periodically exceeded this temperature, as indicated in the facility's records and in its January-June 2013 semi-annual report. The facility contests that this minimum temperature is too low. The facility should contact Cathy Beahm of DES' Permitting and Environmental Health Bureau at 603-271-2822 to amend the permit. Until the permit is amended, the facility will be required to maintain the freeboard temperature at or below 1650^{o}F.

2. On February 17, 2011, the MWWTP completed a CO CEM certification stack test on its SSI unit. On April 18, 2011, the facility sent DES a test report, and on April 22, 2011, DES sent the facility a letter approving the results of the stack test.

3. As mentioned, the facility's SSI unit is subject to 40 CFR 60 Subpart MMMM. This rule requires the MWWTP to meet emission standards for nine pollutants, as well as opacity. The following table shows the emission limits and standards for existing fluidized bed SSI units under Subpart MMMM and compares them to actual emissions from the SSI unit at the MWWTP measured during stack testing, conducted in July, 1994. Note that the results of the 1994 stack test will not suffice for demonstration of initial compliance with the federal regulations, and the MWWTP will be required to conduct an updated, full compliance stack test for all nine pollutants shown in the following table and opacity on the SSI unit prior to the final compliance date of March 21, 2016.

MWWTP Pollutant Review for 40 CFR 60 Subpart MMMM				
Pollutant	**Units**	**Emission Limit**	**MWWTP 1994 Stack Test Emission Rates (controlled)**	**Additional Reduction Needed**
Cadmium (Cd)	milligrams per dry standard cubic meter (mg/dscm)	0.0016	0.00108	41%
Carbon Monoxide (CO)	parts per million on a dry volume basis (ppmdv)	64	0.1	None
Dioxins/Furans (total mass basis) or Dioxins/Furans (toxic equivalency basis)	nanograms (ng) per dscm	1.2 (total mass basis); or 0.10 (toxic equivalency basis)	Not tested	Unknown
Hydrogen Chloride (HCl)	ppmdv	0.51	Not tested	Unknown
Lead (Pb)	mg/dscm	0.0074	0.01084	32%

MWWTP Pollutant Review for 40 CFR 60 Subpart MMMM				
Pollutant	**Units**	**Emission Limit**	**MWWTP 1994 Stack Test Emission Rates (controlled)**	**Additional Reduction Needed**
Mercury	mg/dscm	0.037	0.00021	None
Nitrogen Oxides (NOx)	ppmdv	150	21.7	None
Particulate Matter (PM)	milligrams (mg) per dscm	18	Not tested	Unknown
Sulfur Dioxide (SO_2)	ppmdv	15	15.0	None
Fugitive emissions from ash handling	% opacity	5% of the hourly observation period	0%	None

By March 21, 2016, the facility is required to meet operating parameters, including a site-specific minimum combustion chamber operating temperature, applicable control equipment operating parameters (depending on the air pollution control equipment utilized), and a fugitive emission monitoring plan for the ash handling system. For a wet scrubber, these monitoring requirements include the scrubber liquid flow rate, the scrubber liquid pH, and the pressure drop across the scrubber. In addition, the source is required to conduct an annual air pollution control device inspection and monitor sewage sludge feed rate and moisture content.

An affected source is required to conduct annual emission tests for all nine pollutants and opacity. Less frequent testing may be allowed if the source demonstrates that emissions are at or below 75 percent of the emission standards for at least 2 consecutive years.

In lieu of stack testing, an affected source can choose to install a continuous emissions monitoring system or continuous automated sampling system for some pollutants and would be required to submit a site-specific monitoring plan for the systems.

The incinerator at an affected source must be operated by a trained and qualified operator or be operated by personnel that are directly supervised by a trained and qualified SSI unit operator. The regulations detail the elements of an approved training program as well as requirements for annual refresher courses. A qualified operator must be accessible (either at the facility or able to be at the facility within one hour) whenever the incinerator is operating.

All of the above requirements have associated recordkeeping and reporting requirements, including the submittal of an annual report.

4. On April 23, 2014, the facility submitted a protocol to conduct stack testing, pursuant to 40 CFR 60, Subpart MMMM. As of the date of this report, ***the facility has not conducted this testing***.

5. The facility's two boilers (EU02 and EU03) are subject to 40 CFR 63 Subpart JJJJJJ. DES has taken delegation of this rule for Title V sources. The following lists the requirements for the facility's boilers:

a. Submit an Initial Notification to DES and USEPA Region 1 by January 20, 2014;
The facility submitted a late Initial Notification to DES on April 17, 2014.

b. Complete an initial tune-up on the boilers by March 21, 2014;
The facility conducted an initial tune-up on October 8, 2013.

c. Complete a one-time energy assessment by March 21, 2014;
The facility has not conducted its energy assessment on its boilers.

d. Submit a notification of compliance status to DES and USEPA Region 1 for the tune-up by July 19, 2014. The website for this is http://www.epa.gov/boilercompliance/nocs.pdf;
The facility did not submit a notification of compliance status report.

e. Conduct tune-ups on the boiler within 5 years of the previous tune-up; and

f. Prepare a compliance report every five years for the boilers and submit this report to DES and USEPA Region 1, upon request.

For more information on this rule, visit http://des.nh.gov/organization/divisions/air/boiler-rule/index.htm

XI. Enforcement History and Status

During the inspection period, there has been one enforcement action against the facility. On June 10, 2011, DES issued the facility NPV for submitting its 2006 and 2010 annual emissions report late as well as submitting its 2006, 2009 and 2010 annual emission-based fees late.

XII. Compliance Assistance, Recommendations and Corrective Actions

During the inspection, there were no corrective actions completed which would result in correcting previously identified deficiencies. DES provided the following compliance assistance:

1. DES provided guidance with newly required Title V requirements; and

2. DES provided guidance on compliance with 40 CFR 63 Subpart JJJJJJ.

Based on the findings of this compliance evaluation, DES recommends the following actions to bring the facility into compliance with the identified deficiencies and operating, recordkeeping and reporting requirements:

1. Comply with the freeboard temperature requirements, specified in Table 4, Item #12, of permit SP-0267, or within 30 days of this report, contact Cathy Beahm to modify the

permit, as described in *Section X: Other Findings*;

2. Maintain records on the type and amount of fuel used in all permitted devices, including the boilers EU02 and EU03 as well as the monthly hours of operation, pursuant to Table 6, Item #3 of permit SP-0267;

3. Maintain a 12-month running total of facility-wide NO_x emissions, pursuant to Table 6, Item #6 of permit SP-0267;

4. Submit future annual emissions reports and annual emission-based fees timely, i.e. by April 15 of the following calendar year;

5. Include all required information in future annual emissions report, pursuant to Table 7, Item #1 of permit SP-0267;

6. Submit future semi-annual reports timely, as required by Table 7, Item #3 of permit SP-0267;

7. Conduct stack testing such that the facility can determine its compliance status with the future requirements pursuant to 40 CFR 60 Subpart MMMM, by March 21, 2016;

8. Comply with all future 40 CFR 60 Subpart MMMM and Title V requirements. See http://des.nh.gov/organization/divisions/air/pehb/apps/guidance.htm for more information; and

9. Comply with all requirements, pursuant to 40 CFR 63 Subpart JJJJJJ, as described in *Section X: Other Findings.*

Report Prepared By Daniel F Hrobak

Title Senior Compliance Assessment Engineer

Signed