



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Scott J. Nally, Director

April 8, 2013

Mayor and Council  
City of Springfield  
76 East High Street  
Springfield, Ohio 45506

**RE: City of Springfield WWTP Compliance Evaluation Inspection**

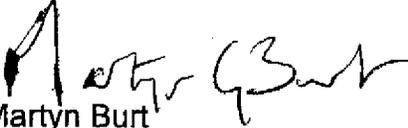
Dear Mayor and Council:

On March 26, 2013, Joe Reynolds conducted a Compliance Evaluation Inspection at the city of Springfield waste water treatment plant. The inspection was conducted as part of a compliance review for the plant with respect to the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) permit issued to the City.

The findings from the inspection are included in the attached report. The report contains one item that requires a response. Please provide a written response no later than May 6, 2013.

If you have any questions regarding the report, you may contact Joe Reynolds at (937) 285-6097.

Sincerely,

  
Martyn Burt  
Compliance Supervisor  
Division of Surface Water

MB/tb

Enclosure

cc: Tim Weaver, Operations Engineer  
Jerry Ussher, Plant Superintendent





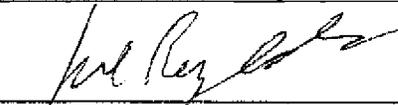
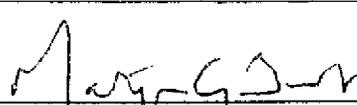
State of Ohio Environmental Protection Agency  
Southwest District Office

NPDES Compliance Inspection Report

Section A: National Data System Coding					
Permit #	NPDES#	Month/Day/Year	Inspection Type	Inspector	Facility Type
1PE00007*OD	OH0027481	3/26/2013	C	S	1

Section B: Facility Data		
Name and Location of Facility Inspected	Entry Time	Permit Effective Date
City of Springfield WWTP 965 Dayton Avenue Springfield, Ohio 45506	9:00 AM	4/1/2013
	Exit Time	Permit Expiration Date
	1:10 PM	7/31/2017
Name(s) and Title(s) of On-Site Representatives	Phone Number(s)	
Jerry Ussher, Plant Superintendent Bill Young, Consultant Mike Boggs, Andria Mohr, Lab	(937) 324 - 7626	
Name, Address and Title of Responsible Official	Phone Number	
Mayor and Council, City of Springfield 76 East High Street Springfield, Ohio 45506	(937) 324 - 7300	

Section C: Areas Evaluated During Inspection				
(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)				
<input checked="" type="checkbox"/> Permit	<input checked="" type="checkbox"/> Flow Measurement	<input checked="" type="checkbox"/> Pretreatment		
<input checked="" type="checkbox"/> Records/Reports	<input checked="" type="checkbox"/> Laboratory	<input checked="" type="checkbox"/> Compliance Schedule		
<input checked="" type="checkbox"/> Operations & Maintenance	<input checked="" type="checkbox"/> Effluent/Receiving Waters	<input checked="" type="checkbox"/> Self-Monitoring Program		
<input checked="" type="checkbox"/> Facility Site Review	<input checked="" type="checkbox"/> Sludge Storage/Disposal	<input checked="" type="checkbox"/> Other		
<input checked="" type="checkbox"/> Collection System				

Section D: Summary of Findings (Attach additional sheets if necessary)	
See attached report.	
Inspector	Reviewer
 Joe Reynolds Division of Surface Water Southwest District Office	 Martyn Burt Compliance & Enforcement Supervisor Division of Surface Water Southwest District Office
4/8/13 Date	4/8/13 Date

Sections E thru K: Complete on all inspections as appropriate  
Y – Yes, N – No, N/A – Not Applicable, N/E – Not Evaluated

**Section E: Permit Verification**

Inspection observations verify the permit

- (a) Correct name and mailing address of permittee ..... Y
- (b) Flows and loadings conform with NPDES permit..... Y
- (c) Treatment processes are as described in permit application... Y
- (d) All discharges are permitted..... Y
- (e) Number and location of discharge points are as described  
in permit..... Y
- (f) Storm water discharges properly permitted..... Y

**Comments/Status:**

All storm drains return to the head of the plant.

**Section F: Compliance**

- (a) Any significant violations since the last inspection..... N
- (b) Appropriate Non-compliance notification of violations..... N/A
- (c) Permittee is taking actions to resolve violations..... N/A
- (d) Permittee has a compliance schedule..... Y
- (e) Compliance schedule contained in...NPDES Permit Compliance Schedule
- (f) Permittee is in compliance with schedule..... Y
- (g) Has biomonitoring shown toxicity in discharge since last inspection N/A

**Comments/Status:**

Toxicity testing is included as part of the NPDES permit renewal.

**Section G: Operation & Maintenance**

**Treatment Works:**

Treatment facility properly operated and maintained

- (a) Standby power available.....generator  or dual feed ..... Y
- i. What does the back-up power source operate.....
- Runs entire plant. A new generator is included in the plant upgrade. It will run the activated sludge system not the HRT.
- ii. How often is the generator tested under load.....
- NA
- (b) Which components have an alarm system available for power or equipment failures.....
- Entire system has SCADA monitoring. Alarmed to operator station at plant. The system also calls operator cell phones.
- (c) All treatment units in service other than backup units..... Y
- (d) What method is used for scheduling routine & preventative maintenance (calendar, software, etc.).....
- A weekly maintenance log is maintained. Work orders are initialed and dated.
- (e) Any major equipment breakdown since last inspection..... N
- (f) Operation and maintenance manual provided and maintained..... Y
- (g) Any plant bypasses since last inspection..... Y
- (h) Any plant upsets since last inspection..... N

**Comments/Status:**

The gear box on one of the secondary screw pumps had to be repaired.

**Section G: Operation & Maintenance con't**

**Record Keeping/Operator of Record:**

- (a) Wastewater Treatment Works classification (OAC 3745-7)..... IV
- (b) Operator of Record holds unexpired license of class required by Permit..... N
- (c) Copy of certificate of Operator of Record displayed on-site..... Y
- (d) Has the Operator of Record submitted an ORC Notification form.. Y
- (e) Minimum operator staffing requirements fulfilled (OAC 3745-7).... Y
- (f) If a Staffing Reduction plan has been approved, are the stipulations of the plan being met.....Y
- (g) Operator of Record log book provided..... Y
- (h) Format of log book (e.g. computer log, hard bound book)
 

The city maintains electronic log. The log is password protected.
- (i) Log book kept onsite (in an area protected from weather)..... Y
- (j) Log book contains the following:
  - I. Identification of treatment works..... Y
  - II. Date/times of arrival/departure for Operator of Record and any other operator required by OAC 3745-7..... Y
  - iii. Daily record of operator and maintenance activities (including preventative maintenance, repairs and request for repairs, process control test results, etc.)..... Y
  - iv. Laboratory results (unless documented on bench sheets)... Y
  - v. Identification of person making entries..... Y
- (k) Has the Operator of Record submitted written notifications to the permittee, Ohio EPA and, if applicable, any local environmental agencies when a collection system overflow, treatment plant bypass or effluent limit violation has occurred..... Y

**Comments/Status:**

Mr. Ussher submitted his Class IV application in June, 2012. Temporary approval to operate under a Class III was issued in November, 2012.

**Section G: Operation & Maintenance con't**

**Collection System:**

- (a) Are there pump stations in the collection system..... Y
  - i. How many publicly-owned pump stations equipped with permanent standby power or equivalent.....2
  - ii. How many pump stations have telemetered alarms.....2
  - iii. How many pump stations have operable alarms.....2
- (b) Any chronic collection system overflows since last inspection..... Y
- (c) Regulatory agency notified of all overflows..... Y
- (d) Are there CSOs in the collection system..... Y  
if so, what is the LTCP status.....  

The LTCP was submitted in 2004.
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- (e) How are CSOs monitored (chalk, block, level sensor, etc.).....  

The city rotates CSO sampling 5 / event. All CSO are sampled at least once per year.
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- (f) Portable pumps available for collection system maintenance..... Y
- (g) RDII Program established and active..... Y
- (h) Any WIB complaint received since last inspection..... Y
- (i) Is there a WIB response plan..... Y
- (j) Is any portion of the collection system at or near dry weather capacity..... N

**Comments/Status:**

Mike Adamson is in charge of the collection system (937) 525 – 5800. The city reports all SSO and CSO on an annual report.
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**Section H: Sludge Management**

- (a) Method of Sludge Disposal...  Land Application  
 Haul to Another NPDES Permittee  
 Haul to a Mixed Solid Waste Landfill

\*if one of the selected methods is land application, complete applicable charts.  
**Class A - Exception Quality Sewage Sludge (monitoring station 584)**

Pathogen Reduction Alternative	84370 Vector Attraction Reduction Options							
	Option 1 -38% Volatile Solids Reduction	Option 2 -Anaerobic Bench Scale Analysis	Option 3 - Aerobic Bench Scale Analysis	Option 4 - Specific Oxygen Uptake Rate	Option 5 - Aerobic Time and Temperature	Option 6 - Alkali Addition	Option 7 - >75% Percent Solids without Unstabilized Solids	Option 8 - >75% Percent Solids with Unstabilized Solids
Alternative 1 - Time and Temperature Regime (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - High pH and High Temperature (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 3 - Other Processes (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 4 - Unknown Processes (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Composting (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Heat Drying (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Heat Treatment (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Thermophilic Aerobic Digestion (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Beta Ray Irradiation (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Gamma ray Irradiation (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 5 - Pasteurization (84397)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 6 - Approved Equivalent Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Class B Sewage Sludge (monitoring station 581)**

Pathogen Reduction Alternative	84370 Vector Attraction Reduction Options									
	Option 1 -38% Volatile Solids Reduction	Option 2 -Anaerobic Bench Scale Analysis	Option 3 - Aerobic Bench Scale Analysis	Option 4 - Specific Oxygen Uptake Rate	Option 5 - Aerobic Time and Temperature	Option 6 - Alkali Addition	Option 7 - >75% Percent Solids without Unstabilized	Option 8 - >75% Percent Solids with Unstabilized	Option 9 - Land Injection	Option 10 - Immediate Incorporation
Alternative 1 - Geometric Mean of Seven Fecal Samples (84369)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Aerobic Digestion (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Air Drying (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Anaerobic Digestion (46396)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Composting (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 2 - Lime Treatment (46396)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative 3 - Approved Equivalent Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- (b) Has amount of sludge generated changed significantly since the last inspection..... N
- (c) How much sludge storage is provided at the plant.....
- (d) Records kept in accordance with State and Federal law (5 years according to OAC 3745-40-06)..... Y
- (e) Any complaints received in last year regarding sludge..... N
- (f) 5/8" screen at headworks for facilities that land apply sludge..... N
- (g) Are sludge application sites inspected to verify compliance with NPDES permit..... Y
- (h) Is a contractor used for sludge disposal..... Y  
 If so, what is the name of the contractor.....

**Comments/Status:**

The upgrade will include 5/8" screening of the influent.

**Section I: Self-Monitoring Program**

**Flow Measurement:**

- (a) Primary/Secondary flow measuring devices (e.g. weir with ultrasonic level sensor):  

Report flow after primaries (ultrasonic on primary effluent pipe)
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- (b) Flow meter calibrated annually ..... Y  
(Date of last calibration: 5/23/2012)
- (c) 24-hour recording instruments operated and maintained..... Y
- (d) Flow measurement equipment adequate to handle full range of flows..... Y
- (e) All discharged flow is measured..... Y

**Comments/Status:**

A secondary flow meter (sonic and weir) is located at effluent weir from the chlorine contact tank. The system can measure flows over 40 MGD. Flows over 50 MGD may be an issue.

**Section I: Self-Monitoring Program (con't)**

**Sampling:**

- (a) Sampling location(s) are as specified by permit..... Y
- (b) Parameters and sampling frequency agree with permit..... Y
- (c) Permittee uses required sampling method..... Y  
(see GLC page)
- (d) Monitoring records (i.e., flow, pH, DO) maintained for a minimum of three years including all original strip chart recordings (i.e, continuous monitoring instrumentation, calibration and maintenance records)..... Y

**Comments/Status:**

**Section I: Self-Monitoring Program (con't)**

**Laboratory:**

*General*

- (a) Does the Quality Assurance Manual contain written Standard Operating Procedures (SOP's) for all analysis performed onsite..... Y
- (b) Do SOP's include the following if applicable..... N/E
  - Title
  - Scope and Application
  - Summary
  - Sample Handling and Preservation
  - Interferences
  - Apparatus and Materials
  - Reagents
  - Procedure
  - Calculations
  - Quality Control
  - Maintenance
  - Corrective Action
  - Reference (Parent Method)

*Note: Standard Methods 1020A establishes that "Quality assurance (QA) is the definitive program for laboratory operation that specifies the measure required to produce defensible data of known precision and accuracy. Standard operating procedures are to be used in the laboratory in sufficient detail that a competent analyst unfamiliar with the method can conduct a reliable review and/or obtain acceptable results." SOPs should be developed for each analytical procedure.*

- (c) EPA approved analytical testing procedures used (40 CFR 136.3).. Y
- (d) If alternate analytical procedures are used, proper approval has been obtained..... Y
- (e) Analyses being performed more frequently than required by permit. N
- (f) If (e) is yes, are results in permittee's self-monitoring report..... N/A
- (g) Satisfactory calibration and maintenance of instruments/equipment. Y  
(see score from GLC page)
- (h) Commercial laboratory used..... Y  
Parameters analyzed by commercial lab: Trace mercury, belt press fecals, belt press PCB's

Lab name: Ginosko Labs

**Discharge Monitoring Report Quality Assurance (DMRQA)**

- (a) Participation in latest USEPA quality assurance performance sampling..... N/E  
Date:
- (b) Were any parameters "Unsatisfactory"..... N/E
- (c) Reasons for "Unsatisfactory" parameters.....

**Comments/Status:**

Permit # : 1PE00007\*OD  
NPDES # : OH0027481

**Section J: Effluent/Receiving Water Observations**

Outfall # 001

Outfall Description: The effluent was not inspected due to construction and snow constraints.

Receiving Stream: Mad River

Receiving Stream Description:

**Comments/Status:**

**Section K: Multimedia Observations**

- (a) Are there indications of sloppy housekeeping or poor maintenance in work and storage areas or laboratories..... N
- (b) Do you notice staining or discoloration of soils, pavement or floors.. N
- (c) Do you notice distressed (unhealthy, discolored, dead) vegetation.. N
- (d) Do you see unidentified dark smoke or dust clouds coming from sources other than smokestacks..... N
- (e) Do you notice any unusual odors or strong chemical smells..... N
- (f) Do you see any open or unmarked drums, unsecured liquids, or damaged containment facilities..... N

If any of the above are observed, ask the following questions:

- (1) What is the cause of the condition?
- (2) Is the observed condition or source a waste product?
- (3) Where is the suspected contaminant normally disposed?
- (4) Is this disposal permitted?
- (5) How long has the condition existed and when did it begin?

**Comments/Status:**

## Inspection Findings

National Pollutant Discharge Elimination System (NPDES) permit number 1PE00007\*OD was issued to the city of Springfield on April 1, 2013. This permit expires on July 31, 2017.

The city's NPDES permit has a compliance schedule for implementation of various Long Term Control Plan (LTCP) projects. The schedule extends past the permit cycle and will need to be updated as part of future renewal permits.

As part of the permit schedule a Permit to Install application for installation of the Erie Express sewer is due August 1, 2013. I understand there are easement / access issues that may delay this project. If this date cannot be met, an NPDES permit modification request should be submitted to the district office two months prior (June 1, 2013) to the actual due date.

Jerry Ussher is the new Plant Superintendent. Mr. Ussher is a Class III Certified Operator. In June 2012, he applied for his Class IV waste water license. The City has received temporary approval to operate under the supervision of a Class III operator while Mr. Ussher tests for his Class IV license. Mr. Brandon Scott George has been hired as the Temporary Intermittent Assistant Superintendent. Bill Young, former Superintendent has been hired to consult on the plant upgrade.

The City is currently conducting stress testing of various treatment units. This testing is being performed to see if the plant can maintain secondary treatment for flows up to 40 MGD. Dry weather flows currently range from 15 to 17 MGD.

The Springfield Beckley sewer project is scheduled for completion in mid-April. This sewer will tie in to the southern interceptor. The sewer will convey a combination of sewage and industrial waste (140,000 to 250,000 gallons) from the Springfield Beckley Airport and Air Park Ohio industrial park.

Construction has started on the new head works, high rate treatment system, and secondary clarifier. A new 84" trunk sewer and diversion chamber was being installed at the time of the inspection. Two new horizontal bypass screens will be installed as part of the upgrade.

## Inspection Findings (cont.)

The plant upgrade will allow for both belt filter presses to be operated at the same time. Two new separate feed lines will be installed. The direct feed of solids from the secondary digester (bypassing the sludge holding tanks allows for the introduction of warm solid directly to the press) to the press has improved the percent solids coming off the press (22 to 23 percent solids). The electric controls for the press were moved inside the press building to allow for better climate control.

Both sludge presses will be completely revamped as part of the solids upgrade. Variable Frequency Drive motors will be added. Digester sludge is being fed at a rate of 60 to 70 gpm. Ultrasonic sensors will be used to detect sludge levels in the press effluent well. Currently one press is being run four days per week.

With the sludge facility upgrades, new belt conveyors will be added to the end of the storage building. This will improve how solids can be transferred to the storage building. Screw conveyors will carry solids directly from the press to either the new storage conveyors or they can be loaded directly into trucks.

At the time of the inspection, the storage building was full. Solids were extending out the front of the building. Solids were being transported across the street to a new storage building. The number of weeks of storage at this location remains to be determined. As part of City's contract with SYNAGRO they can haul solids to a sanitary landfill. SYNAGRO last removed solids in November, 2012.

In addition to the press building work, a fourth anaerobic digester will be installed. The digester design will allow it to function as either a primary or secondary digester. There are three existing primaries and one secondary digester currently in use at the plant. An additional heat exchanger will be added to support the new digester.

The influent screens will be upgraded as part of the plant upgrade. Fine screens with continuous rakes will be added. A new influent chamber with automatic control gates will be used to direct flow between the three influent screens. A new wash / press conveyer system will direct screened solids to a dumpster outside the building.

## Inspection Findings (cont.)

After screening, influent flows are introduced into the grit removal system. There are two aerated grit basins. Only one basin is used at a time.

All three primary clarifiers were on-line. Stress testing has verified that 40 MGD can be treated through the three primary clarifiers. The effluent was brownish grey. Some grease solids were noted.

There are four primary effluent pumps. All four were operational at the time of the inspection. With all four pumps in service, they can pump over 50 MGD. Variable frequency drive motors may be added later.

Both tricking filters were on-line. The mercury sealed bearings have been replaced. A uniform green growth was noted on their surface.

Both secondary clarifiers were on-line. Construction of a third clarifier is underway. As flows approach 40 MGD the effluent weirs begin to submerge. Effluent quality has been maintained in spite of the weir submergence. At the time of the inspection, the effluent was clear. New Wes Tech drives were added to both clarifiers. Some grease solids were noted behind the scum baffle. A minor amount of pin floc solids were leaving the system. A moderate amount of algae was noted in the effluent trough and on the effluent weir.

There are three screw pumps that carry flow from the trickling filters to the Complete Mix Activated Sludge aeration system. With two pumps in service they can pump 40 MGD. The gear box on one of the pumps was recently replaced.

There are five aeration blowers. Only one blower is used at a time. All four aeration basins were on-line. Fine bubble diffusers provide air for treatment and mixing of the tanks. The mixed liquor was light brown with minor amounts of light foam forming on the surface.

The effluent sampling room has automatic analyzers to test for pH, chlorine, turbidity and dissolved oxygen. The effluent composite sampler also is located in this room.

## Inspection Findings (cont.)

There are three post aeration blowers. Only one blower is run at a time. New fine bubble diffusers were added to the post aeration tank. This has improved the system efficiency to the point that the blowers don't need to ramp up to full speed before the dissolved oxygen levels are met. The addition of variable frequency drives is being considered. The aeration final effluent was clear. White foam was noted in the effluent channel.

A new chlorination (Sodium Hypochlorite) dechlorination (Sodium Bisulfite) building is being constructed as part of the plant upgrade. The building will serve both the plants main disinfection system and the new high rate treatment system disinfection system.

Between July, 2011 and February, 2013 the City reported the following final effluent numeric violations: (3) e-Coli.

## Item Requiring a Response

1. Log books have been purchased for the various pieces of lab equipment. These books should be used to record equipment operation and maintenance information. Annual service and calibration should be performed on all appropriate lab equipment.

# General Lab Criteria

Criteria	Standard Methods Requirement		Rating
<b>Balance</b>		Acceptable?	
• Standard Weights	• Either NIST Class 5 or ASTM/ANSI Class 1 weights <sup>1,2</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
• Calibration Frequency / Documentation	• Calibration verification required at least once each day the balance is used. <sup>3</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
• Cleanliness, air movement, vibration	• Cleanliness of balance is a must and air movement and vibration needs to be kept to a minimum <sup>1</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
• Other	• Service and recalibrate annually (manufacturer representative or comparable) <sup>1</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	• Must be able to measure to 0.1 grams <sup>4</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	• Instrument manual available	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	• Log book maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<b>M</b>			

Comments: :

The city uses OMEGA instrument calibration services. They are due for calibration April 11, 2013.

Criteria	Standard Methods Requirement		Rating
<b>Drying Oven (Suspended Solids)</b>		Acceptable?	
• Temperature Recordkeeping	• Temperature recorded with each use <sup>4</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	• Log book maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
• Calibration Frequency / Documentation	• Thermometer calibrated annually with NIST traceable thermometer <sup>1,2</sup> . Correction factor posted on thermometer / equipment <sup>1</sup>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
• Other	• Thermometer temperature accurate to 0.5° Celsius <sup>5</sup>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	• Acceptable temperature range is 103° – 105° C <sup>4</sup>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<b>M</b>			

Comments: :

The drying oven was just purchased last year. It has a built in thermal couple with digital read out. The built in thermometer will need to be recalibrated annually with an NIST traceable thermometer.

## General Lab Criteria

Criteria	Standard Methods Requirement		Rating
<b>pH Meter</b>		Acceptable?	
• Calibration Frequency / Documentation	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) <sup>3</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Logbook maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Minimum of 2 point calibration	• Calibration per manufacturer specification and calibration buffers must bracket anticipated result <sup>7</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Slope Documentation / Acceptability	• Slope acceptable range indicated on benchsheet <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Buffer Expiration Date	• Buffers must not be expired	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Other	• Instrument manual available	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Teflon covered magnetic stirrer or equivalent for mixing <sup>8</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments: :			
Criteria	Standard Methods Requirement		Rating
<b>Dissolved Oxygen Meter</b>		Acceptable?	
• Calibration Method	• Air or known DO calibration method <sup>10</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Calibration per manufacturer specification <sup>10</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Calibration Frequency / Documentation	• Logbook maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Calibration verification required at least once each day the meter is used. <sup>3</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Other	• Small to no bubble present under membrane (must be smaller than the lead in number 2 pencil) <sup>11</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Instrument manual available	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments:			

NR

NR

# General Lab Criteria

Criteria	Standard Methods Requirement		Rating	
<b>Incubator (CBOD/ E-Coli)</b>	Acceptable?			
<ul style="list-style-type: none"> <li>• Temperature Recordkeeping</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature checked / recorded twice daily for each shelf in use<sup>1</sup>(E-Coli)</li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<b>NR</b>
	<ul style="list-style-type: none"> <li>• Temperature checked / recorded daily<sup>2</sup> (CBOD)</li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Acceptable temperature range (CBOD) is 20° C ±1.0 °<sup>12</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Acceptable temperature range (E-Coli) is 35° C ±0.5 °<sup>22</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Logbook maintained<sup>2</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<ul style="list-style-type: none"> <li>• Temperature Calibration / Documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Thermometer calibrated annually with NIST traceable thermometer<sup>1, 2</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Temperature correction information posted on incubator<sup>1</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<ul style="list-style-type: none"> <li>• E-Coli can use multiple tubes (five 20 ml or ten 10 ml), or mfg's multi-well tray</li> </ul>	<ul style="list-style-type: none"> <li>• E-coli Ultraviolet lamp (365 nm wave length, 6 W bulb)<sup>23</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• Instrument manual available</li> </ul>	<input type="checkbox"/> Yes	
<ul style="list-style-type: none"> <li>• Temperature Log (thermometer accurate to 0.5 Celsius).<sup>1</sup></li> </ul>		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments:				
Criteria	Standard Methods Requirement		Rating	
<b>Refrigerator</b>	Acceptable?			
<ul style="list-style-type: none"> <li>• Temperature Recordkeeping</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature Log (thermometer accurate to 0.5 Celsius).<sup>5</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<b>NR</b>
<ul style="list-style-type: none"> <li>• Temperature Calibration / Documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Thermometer calibrated annually with NIST traceable thermometer<sup>1, 2</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<ul style="list-style-type: none"> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• Thermometer held in water bath.<sup>1</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Refrigerator temperature ≤6° Celsius.<sup>13</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<ul style="list-style-type: none"> <li>• Do not store volatile solvents, food, or beverages.<sup>14</sup></li> </ul>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments:				

# General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Chlorine Meter</b>				<b>NR</b>
• Calibration Frequency / Documentation	• pH / millivolt meter read to 0.1 mV <sup>15</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) <sup>3</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Method	• Calibration using three iodate solutions 0.2, 1.0, 5.0 milliliters or calibration per manufacturer specification <sup>16</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Standards used for calibration not expired	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope Documentation / Acceptability	• Calibration curve (acceptable slope)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Electrode free of deposits and foreign material	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained. <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: :

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Ammonia Meter</b>				<b>NR</b>
• Calibration Frequency / Documentation	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) <sup>3</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope acceptability	• Verify calibration slope is acceptable (per mfg. spec.).	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Method	• Standards used for calibration (3 ammonia solutions of 10 mg/l, 1 mg/l, and 0.1 mg/l) or per mfg. spec. <sup>17</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Standards used for calibration not expired	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Electrode free of deposits and foreign material	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Teflon covered magnetic stirrer or equivalent for mixing <sup>18</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: :

# General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Sample Collection/Handling</b>				<b>NR</b>
• Sample Labeling	• Samples container labeled (description, date, time, preservative added, initialed). <sup>19</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Chain of Custody	• Chain of custody (description, date, time, signature). <sup>19</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Composite samples refrigerated during sample collection <sup>14</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Equipment blanks utilized <sup>14</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• SOP for cleaning of sampling equipment	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Logbook being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Desiccator</b>				<b>M</b>
• General criteria	• Properly working seals.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Desiccant fresh (blue color)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Documentation	• Log book being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Comments:

The city owns an electric desiccator. Desiccant is added to improve the removal efficiency.

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Bench sheets</b>				<b>NR</b>
• General criteria	• Date(s) <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Analyst initials <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Blue or black ink pen <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Calibration information <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Equations, calculations, units for all measurements, notations, and results present <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Corrections, single line through, initialed and dated <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

# ) General Lab Criteria )

# General Lab Criteria

Criteria	Standard Methods Requirement		Rating
<b>Hot Water Bath (Fecal Coliform/E. Coli)</b>		Acceptable?	
• Temperature Recordkeeping	• Temperature Log (thermometer accurate to 0.2° C) <sup>21</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Incubator temperature 44.5° C ± 0.2° <sup>21/24</sup>		
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer <sup>1,2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Log book being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Water Level	• Thermometer total immersion or partial (line on thermometer to ID immersion depth) <sup>1,5</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

NR

Comments:

Criteria	Standard Methods Requirement		Rating
<b>Autoclaves/Steam Sterilizers</b>		Acceptable?	
• All apparatus utilized is adequately sterilized before use	• Sterilizing temperature 121° C <sup>25</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• 10 to 30 minutes time based on material being sterilized <sup>26</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Documentation	• Verify the autoclave temperature weekly by using a maximum registering thermometer (MRT) to confirm that 121°C has been reached as measured in the exhaust. <sup>1</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Date, contents, sterilization time and temperature, total time in autoclave, and analyst's initials should be recorded each time the autoclave is used <sup>1</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer <sup>1,2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	• Log book being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Performance Checks	• Test monthly for efficacy using a biological such as commercially available <i>Geobacillus stearothermophilus</i> in spore strips, suspensions, or capsules <sup>1</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

NR

Comments:

# ) General Lab Criteria

Criteria	Standard Methods Requirement	Acceptable?		Rating
<b>Final Effluent Temperature Monitoring</b>				
• General Criteria	• Thermometer calibrated annually with NIST traceable thermometer <sup>1,2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<b>NR</b>
	• Thermometer accurate to 0.1° Celsius <sup>5</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained <sup>2</sup>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Comments:				
<b>Number of Criteria Rated:</b>				Acceptable
				Marginal
				Unacceptable
				Total Number of Areas Rated
<p><b>Acceptable Ratings</b> – No action required (recommend SOP's written or updated, perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, written response not required).</p>				
<p><b>Marginal Ratings</b> – Improvements required, written response required (recommend SOP's be written or updated, recommend they perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, require deficiencies to be addressed in written response).</p>				
<p><b>Unsatisfactory Rating</b> - Improvements required, written response required, NOV issued (recommend SOP's be written or updated, recommend they perform DMRQA's for all onsite analysis, recommend voluntary lab analyst certification, require deficiencies to be addressed in written response to NOV).</p>				
Consider recommending PAI Audit from DES when:		>60% of ratings are Marginal >45% of ratings are a combination of Marginal or Unacceptable >30% of ratings are Unacceptable		

### Notation of Referenced Method

- |                            |                              |
|----------------------------|------------------------------|
| 1 Method 9020-B, Item 3    | 14 Method 1060A, Item 1      |
| 2 Method 1020-A, Item 1    | 15 Method 4500-CI I, Item 2  |
| 3 Method 1020-B, Item 10   | 16 Method 4500-CI I, Item 4  |
| 4 Method 2540-B, Item 2    | 17 Method 4500-NH3 D, Item 4 |
| 5 Method 2550-B, Item 1    | 18 Method 4500-NH3 D, Item 2 |
| 6 Method 1020-A, Item 1    | 19 Method 1060-B, Item 2     |
| 7 Method 4500-H B, Item 4  | 20 Method 1060-B, Item 1     |
| 8 Method 4500-H B, Item 2  | 21 Method 9222D, Item 1      |
| 9 Method 1020-B, Item 2    | 22 Method 9223 B, Item 2     |
| 10 Method 4500-O B, Item 3 | 23 Method 9223 B, Item 3     |
| 11 Method 4500-O G, Item 3 | 24 Method 1603, Item 2       |
| 12 Method 5210-B, Item 5   | 25 Method 9030-B, Item 3     |
| 13 CFR 136.3, Table II     | 26 Method 9020 B, Table IV   |

**Equipment Logbook Content** - all maintenance performed on a piece of equipment should be documented in the logbook. This should include parts replacement and routine maintenance activities. Entries should include date, maintenance performed and initials of person making entry.

# General Lab Criteria

<b>Preservation and Holding Times</b>						
Parameter	Container	Min. Sample Size (mL)	Sample Type	Preservation	Maximum Storage Time	
					Recommended	Regulatory
BOD / CBOD	P, G	1000	G, C	Refrigerate $\leq 6^{\circ}\text{C}$	6h	48h
TSS	P, G	200	G, C	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 d
pH	P, G	50	G	Analyze immediately	0.25h	0.25 h
NH <sub>3</sub> -N	P, G	500	G, C	Analyze as soon as possible or add H <sub>2</sub> SO <sub>4</sub> to pH <2, Refrigerate $\leq 6^{\circ}\text{C}$	7 d	28 d
TRC	P, G	500	G	Analyze immediately	0.25h	0.25 h
DO (electrode)	G, BOD Bottle	300	G	Analyze immediately	0.25h	0.25 h
Temperature	P, G	--	G	Analyze immediately	0.25h	0.25 h
Metals, general	P, G	1000	G, C	For dissolved filter immediately and add HNO <sub>3</sub> to pH <2	6 months	6 months
Purgeables by purge and trap	G (PTFE lined lid)	40 (X2)	G	HCl to pH<2, Refrigerate $\leq 6^{\circ}\text{C}$	7 d	14 d
Base/Neutrals and acids	G (solvent rinsed or baked)	1000	C, G	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 days until extraction 40 days after extraction
Pesticides	G (PTFE lined lid)	1000	C	Refrigerate $\leq 6^{\circ}\text{C}$	7 d	7 days until extraction 40 days after extraction
Fecal Coliform / E-Coli	G, P (Sterilized)	100	G	Refrigerate $\leq 10^{\circ}\text{C}$ If chlorine present, add sodium thiosulfate tablet	6 hrs transport Start analysis within 2 hrs of receipt in lab.	
Oil and Grease	G	1000	G	HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2, Refrigerate $\leq 6^{\circ}\text{C}$	28 d	28 d

## Approved Standard Methods

CBOD / BOD 5 Day	Std Methods 5210-B
Ammonia, Selective Electrode Method	Std Methods 4500-NH <sub>3</sub> D
Total Residual Chlorine, DPD Colorimetric Method	Std Methods 4500-Cl G
Total Suspended Solids, Dried at 103-105 °C	Std Methods 2540-D
Dissolved Oxygen, Membrane Electrode Method	Std Method 4500-O G
pH, Electrometric Method	Std Methods 4500-H+ B
Fecal Coliform, Membrane Filter Procedure	Std Methods 9222D
Escherichia Coli, Enzyme Substrate Test	Std Method 9223B
Escherichia Coli Membrane Filtration Procedure	EPA Method 1603
Oil and Grease	USEPA 1664A or Std Methods 5520B
Metals, general	USEPA 200, Std Methods 3111B or C, or 3120B
Volatiles (Purgeables by purge and trap)	USEPA 6210, Std Methods 624
Semi-Volatiles (Base/Neutrals and acids)	USEPA 6410, Std Methods 625
Pesticides	USEPA 6410 and 6630, Std Methods 608

