Ohio | Environmental Protection Agency

Ted Strickland, Governor
Lee Fisher, Lt. Governor
Chris Korleski, Director

1PZ0007320091117

WARREN ODOT REST AREA 08-38 JACKSON, JOSHUA 2009/11/17

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OhioEPA

State of Ohio Environmental Protection Agency

Southwest District Office

401 E. Fifth St.
Dayton, Ohio 45402

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

November 16, 2009

Ohio Department of Transportation, District 8
Attn: Mr. John Burnie
505 S.R. 741
Lebanon, OH 45036 corresp.

RE: ODOT Rest Area WWTW/Compliance Evaluation Inspection Report
NPDES Permit No. OH0118737/OEPA PERMIT NO. 1PZ00073*CD

Dear Mr. Burnie:

On November 9, 2009, I conducted an NPDES Compliance Inspection of the Ohio Department of Transportation (ODOT) Rest Area wastewater treatment works (WWTW); on I-71 near Lebanon. Besides you, Mr. Bob Montgomery and Mr. Tim Goodlett (operator of record for the facility) were present during the inspection. The purpose of the inspection was to evaluate compliance with the terms and conditions of the NPDES Permit.

A copy of the inspection report is enclosed. **Please pay special attention to the items in bold type, as they indicate needs for corrective action and there are deadlines associated with them.**

Thank you and your staff for the time extended during the inspection process. If you have any questions, please feel free to contact me by phone at (937) 285-6029 or by e-mail at joshua.jackson@epa.state.oh.us.

Respectfully,

Joshua Jackson
Environmental Specialist II
Division of Surface Water

Cc: Tim Goodlett, ODOT District 8 (w/report)

Enclosures

OhioEPA

State of Ohio Environmental Protection Agency
Southwest District Office

NPDES Compliance Inspection Report
Semi-Public Sewage Disposal Inspection Form

Section A: National Data System Coding					
Permit #	**NPDES#**	**Month/Day/Year**	**Inspection Type**	**Inspector**	**Facility Type**
1PZ00073*CD	OH0118737	11/09/2009	C	S	2

Section B: Facility Data		
Name and Location of Facility Inspected	**Entry Time**	**Permit Effective Date**
ODOT Rest Area 08-38 I-71 Southbound at mile marker 34.3 Turtle Creek Township, Warren County	9:30 a.m.	4/1/2007
	Exit Time	**Permit Expiration Date**
	10:30 a.m.	3/31/2012
Name(s), Address and Title(s) of Operator of Record	**Phone Number(s)**	
Tim Goodlett, Class II WW	513-615-5322 (Cell Phone)	
Name, Address and Title of Responsible Official	**Phone Number**	
John Burnie, District 8 Facility Supt. 505 S.R. 741 Lebanon, OH 45036	513-933-6537	

Ohio EPA Inspector	Ohio EPA Reviewer
11-16-09	11/16/09
Joshua Jackson Date Division of Surface Water Southwest District Office	Martyn Burt Date Compliance & Enforcement Supervisor Division of Surface Water Southwest District Office

Permit # : 1PZ00073*CD
NPDES #: OH0118737

Average Daily Design Flow:	**40,000 Gallons/Day**
Plant Serves:	2 ODOT Rest Areas
Average Daily Flow: (Period of Review):	**11,600 Gallons/Day (January - September 2009)**
Method of flow monitoring:	**Ultrasonic level sensor in sand filter dosing tank**
Type of alarms for plant:	**Telemetry. High water alarms for north bound rest area lift station, sand filter dosing tank and equalization tank. Notification for blowers and/or UV system out of service.**

Pretreatment

Type of Pretreatment: **Trash Trap**
Does the Trash Trap need pumped: **Yes**
Maintenance of pretreatment components is: **Fair**

Comments/Status:

Trash trap was last pumped in the summer. It is scheduled to be pumped in 2 weeks. Staff schedule quarterly pumping of the tank.

Secondary Treatment (Aeration)

Color of sludge: **Medium Brown**
Quality of Sludge: **Thin**
Foam: **None present**
Odor: **No objectionable odor present**

	Yes	No		Yes	No
Aeration is taking place	☒	☐	Plant is septic	☐	☒
Blowers are operating	☒	☐	Blowers are on a timer	☒	☐
Skimmers are operating	☒	☐	Plant is flooded	☐	☒
Diffusers are operating	☒	☐	Grating is present	☒	☐
Sludge return is operating	☒	☐			

Maintenance of aerating equipment is...**Good**

Comments/Status:

The sludge return was timed "off" during the inspection. Mr. Goodlett manually activated the return to show that it is operable.

Permit # : 1PZ00073*CD
NPDES #: OH0118737

Secondary Treatment (Settling)

Clarity:	**Some solids**
Condition of Weir:	**Solids present**
Weir is level:	**Yes**
Effluent in weir:	**Light Solids**
Clarifier walls need scraped:	**No**

Overall maintenance of settling components is: **Good**

Comments/Status:

Mr. Goodlett stated that he is having difficulty with building up a good bacterial colony that settles out in the clarifier. His last 30-minute settleability test showed only 13% instead of a desirable 35-70%.

Tertiary Treatment

	Yes	No		Yes	No
Surface sand Filters: **Slow**	☒	☐	**Subsurface**	☐	☒
Distribution box operating	☒	☐	Beds alternated	☒	☐
Are filters ponding/flooding	☒	☐	Beds raked	☒	☐
Sand filters overgrown	☐	☒	Chlorination present	☐	☒
UV present	☒	☐	Dechlorination present	☐	☒

Overall maintenance of components is: **Good**

Comments/Status:

Solids were present on the sand filter in use and the upflow clarifier. Mr. Goodlett was in the process of beginning a scheduled cleaning of the upflow clarifier.

Sludge Handling/Storage Disposal

Hauler name: **Mike's Sanitation**
Sludge wasted from: **Sludge holding tank**
How often is sludge wasted: **Sludge has not been wasted since plant was constructed 2 years ago.**
Sludge drying beds: **No** Sludge holding tank: **Yes**

Overall maintenance of components is: **Good**

Comments/Status:

Permit # : 1PZ00073*CD
NPDES #: OH0118737

Plant Discharge

Discharge point is a: **Ditch**
Name of discharge point: **Unnamed tributary of Turtle Creek**
Discharge is visible: **Yes** Quality of Effluent: **Clear**

Comments/Status:

Permit # : 1PZ00073*CD
NPDES #: OH0118737

Inspection Findings
(items for correction in bold type)

EFFLUENT LIMIT VIOLATIONS
(Period of Review: January – September 2009)

7D = Weekly 30D = Monthly 1D = Daily Conc. = Concentration (mg/l) Qty.= Quantity (Kg/Day)

Reporting Period	Parameter	Limit Type	Limit	Reported Value
January 2009	Total Suspended Solids	30D Conc	12	26.9
January 2009	Nitrogen, Ammonia (NH3	30D Conc	3.0	7.06667
January 2009	Nitrogen, Ammonia (NH3	7D Conc	4.5	9.6
January 2009	Total Suspended Solids	7D Conc	18	99.8
January 2009	Nitrogen, Ammonia (NH3	7D Conc	4.5	8.6
January 2009	Dissolved Oxygen	1D Conc	5.0	2.3
March 2009	Dissolved Oxygen	1D Conc	5.0	3.94
April 2009	Nitrogen, Ammonia (NH3	30D Conc	3.0	4.29
April 2009	Nitrogen, Ammonia (NH3	7D Conc	4.5	6.95
April 2009	Dissolved Oxygen	1D Conc	5.0	4.84
September 2009	Total Suspended Solids	7D Conc	18	59.

It was noted that Mr. Goodlett has had difficulty maintaining good bacterial colonies within the aeration basin (30-minute settleability at 13%); such that a large portion of solids will not settle, but overflow the weirs into the upflow clarifier and the slow surface sand filters. Mr. Jon VanDommelen, with Ohio EPA's Technical Assistance Unit, worked with Mr. Goodlett over the summer in addressing the ammonia issue. Because of the low alkalinity in the influent, sodium bicarbonate is added to raise the pH. This allows the WWTW to nitrify and the air is cycled on and off to denitrify and recover some of the alkalinity. At the time Mr. VanDommelen worked with Mr. Goodlett, the WWTW was settling correctly.
The permittee should contact Mr. VanDommelen without delay to reassess the treatment strategy for this facility. Adjustments may need to be made for cold weather months.

At this point the solids issue has not caused recurring violations at the effluent. On the day of the inspection, the effluent was clear and the stream was free from solids deposition attributed to the WWTW.

According to Ohio Administrative Code 3745-7-02, Mr. Goodlett is required to complete the attached Operator of Record Notification Form and submit it to Ohio EPA. This must be done as soon as possible but no later than November 25, 2009.

Belmont laboratories conducts all NPDES required testing for this WWTW with the exception of temperature, which is performed by Mr. Goodlett. At the time of the inspection, there was no Standard Operating Procedure (SOP) established for the temperature analysis. The SOP should include the following categories (for all that are applicable); I have also included a copy of temperature analysis shown within "Standard Methods" to use as an example.

- 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: SOP's are required per Standard Methods 1020A and states "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."

At the time of the inspection, the facility did not have a National Institute for Standards & Technology (NIST) traceable thermometer for daily use or to calibrate the everyday thermometer. This should be part of the SOP for temperature.
The SOP for temperature should be developed as soon as possible but no later than December 15, 2009.

The effluent flow meter (level sensor in the sand filter dosing chamber) was not operable at the time of the inspection and had not been for several months. Staff have been using water meter readings to gauge daily discharge flow rates from the WWTW. While this would be an acceptable method for small WWTW that do not have a great deal flow variability or water loss, a more robust flow meter is needed for the ODOT Rest Area WWTW to provide more accuracy.
The permittee must have the existing flow meter repaired by no later than December 30, 2009.

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters
Operator Certification Unit

Operator of Record (ORC) Notification Form

Ohio Environmental Protection Agency
Division of Drinking and Ground Waters
Operator Certification Unit
50 West Town St, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Phone: (614) 644-2752
1- 866 - 411-OPCT (6728)
Fax: (614) 644-2909
email: opcert@epa.state.oh.us
website: www.epa.state.oh.us/ddagw/opcert.html

I. SYSTEM INFORMATION

Name of System: _____ Phone Number: _____

PWS ID/NPDES Permit #: _____ STU # _____ Classification: _____

_____ _____
Name of Facility Owner or Permittee, Title (Print) Facility Owner or Permittee (Signature)

II. SYSTEM TYPE (Check only one of the following. Use additional sheets if necessary.)

Public Water System (PWS)	Distribution System	Treatment Works	Collection System

III. OPERATOR OF RECORD INFORMATION

Add Additional(A), New (N) or Remove(R)	Name of Operator of Record	Certification Number & Expiration Date	I verify that I am the onsite certified operator responsible for the technical operation of the above referenced facility. (Signature of certified operator)*

* A signature by an operator of record who is being removed is not required.
(Attach additional sheets if necessary.)

Amount of time an ORC spends onsite at the Facility: _____

For Internal Use Only	
Reviewed by:	Date of SDWIS update:
Date of Compliance Status Letter:	

where:

A = weight of dried residue + dish, mg,
B = weight of dish,
C = weight of wet sample + dish, mg, and
D = weight of residue + dish after ignition, mg.

5. Precision and Bias

Precision and bias data are not now available.

6. Bibliography

GOODMAN, B.L. 1964. Processing thickened sludge with chemical conditioners. Pages 78 et seq. *in* Sludge Concentration, Filtration and Incineration. Univ. Michigan Continued Education Ser. No. 113, Ann Arbor.

GRATTEAU, J.C. & R.I. DICK. 1968. Activated sludge suspended solids determinations. *Water Sewage Works* 115:468.

2550 TEMPERATURE*

2550 A. Introduction

Temperature readings are used in the calculation of various forms of alkalinity, in studies of saturation and stability with respect to calcium carbonate, in the calculation of salinity, and in general laboratory operations. In limnological studies, water temperatures as a function of depth often are required. Elevated temperatures resulting from discharges of heated water may have significant ecological impact. Identification of source of water supply, such as deep wells, often is possible by temperature measurements alone. Industrial plants often require data on water temperature for process use or heat-transmission calculations.

* Approved by Standard Methods Committee, 2000.

2550 B. Laboratory and Field Methods

1. Laboratory and Other Non-Depth Temperature Measurements

Normally, temperature measurements may be made with any good mercury-filled Celsius thermometer. As a minimum, the thermometer should have a scale marked for every 0.1°C, with markings etched on the capillary glass. The thermometer should have a minimal thermal capacity to permit rapid equilibration. Periodically check the thermometer against a precision thermometer certified by the National Institute of Standards and Technology (NIST, formerly National Bureau of Standards)* that is used with its certificate and correction chart. For field operations use a thermometer having a metal case to prevent breakage.

A total immersion thermometer is designed to indicate temperatures correctly when the bulb and the entire liquid column are exposed to the temperature being measured, except for a minimal emergent length. A partial-immersion thermometer has a line around it at the immersion distance from the bottom. It indicates correctly when the bulb and the liquid column to that line are exposed to the temperature being measured and the emergent stem is at ambient temperature.

* Some commercial thermometers may be as much as 3°C in error.

2. Depth Temperature Measurements

Depth temperature required for limnological studies may be measured with a reversing thermometer, thermophone, or thermistor. The thermistor is most convenient and accurate; however, higher cost may preclude its use. Calibrate any temperature measurement devices with a NIST-certified thermometer before field use. Make readings with the thermometer or device immersed in water long enough to permit complete equilibration. Report results to the nearest 0.1 or 1.0°C, depending on need.

The thermometer commonly used for depth measurements is of the reversing type. It often is mounted on the sample collection apparatus so that a water sample may be obtained simultaneously. Correct readings of reversing thermometers for changes due to differences between temperature at reversal and temperature at time of reading. Calculate as follows:

$$\Delta T = \left[\frac{(T^1 - t)(T^1 + V_0)}{K}\right] \times \left[1 + \frac{(T^1 - t)(T^1 + V_0)}{K}\right] + L$$

where:

ΔT = correction to be added algebraically to uncorrected reading,
T^1 = uncorrected reading at reversal,

t = temperature at which thermometer is read,
V_0 = volume of small bulb end of capillary up to 0°C graduation,
K = constant depending on relative thermal expansion of mercury and glass (usual value of K = 6100), and
L = calibration correction of thermometer depending on T^1.

If series observations are made it is convenient to prepare graphs for a thermometer to obtain ΔT from any values of T^1 and t.

3. Bibliography

WARREN, H.F. & G.C. WHIPPLE. 1895. The thermophone—A new instrument for determining temperatures. *Mass. Inst. Technol. Quart.* 8:125.

SVERDRUP, H.V., M.W. JOHNSON & R.H. FLEMING. 1942. The Oceans. Prentice-Hall, Inc., Englewood Cliffs, N.J.

AMERICAN SOCIETY FOR TESTING AND MATERIALS. 1949. Standard Specifications for ASTM Thermometers. No. E1-58, ASTM, Philadelphia. Pa.

REE, W.R. 1953. Thermistors for depth thermometry. *J. Amer. Water Works Assoc.* 45:259.

2560 PARTICLE COUNTING AND SIZE DISTRIBUTION*

2560 A. Introduction

1. General Discussion

Particles are ubiquitous in natural waters and in water and wastewater treatment streams. Particle counting and size distribution analysis can help to determine the makeup of natural waters, treatment plant influent, process water, and finished water. Similarly, it can aid in designing treatment processes, making decisions about changes in operations, and/or determining process efficiency. Methods for measuring particle size distribution included herein depend on electronic measurement devices because manual methods are likely to be too slow for routine analysis. However, when particle size analysis is to include size distribution of large (>500-μm) aggregates, use direct microscopic counting and sizing. Principles of various types of instruments capable of producing both size and number concentration information on particulate dispersions are included. Unless explicitly stated otherwise, the term "size distribution" means an absolute size distribution, i.e., one that includes the number concentration or count.

In most particle-counting instruments, particles pass though a sensing zone where they are measured individually; the only exception included is the static type of light-scattering instrument. Instruments create an electronic pulse (voltage, current, or resistance) that is proportional to a characteristic size of the particle. The instrument responses (pulse height, width, or area) are classified by magnitude and counted in each class to yield the particle size distribution.

2. Selection of Method

Three instrument types are included: electrical sensing zone instruments, light-blockage instruments, and light-scattering instruments.

Select instrument consistent with expected use of the particle size analysis. Instruments vary in the particle characteristic being sensed, lower and upper size limits of detection, degree of resolution of the size distribution, particle number concentration range that can be measured accurately, amount of shear to which a sample is subjected before measurement, amount of sample preparation, operator skill required, and the ease with which data can be obtained and manipulated into the desired forms. See Sections 2560B.1, C.1, and D.1, and manufacturers' literature for information on characteristics of each type of instrumentation.

Some instruments can be set up for either continuous-flow or batch sampling. Others can be used only for batch analysis. For instruments usable in both modes, check that no systematic differences in particle size distributions occur between continuous-flow measurements and batch samples taken at or near the intake point for continuous-flow samples.

3. Sample Collection and Handling

a. Batch samples: Use extreme care in obtaining, handling, and preparing batch samples to avoid changing total particle count and size distribution.

Choose representative times and locations for sampling. Ensure that particles are not subjected to greater physical forces during collection than in their natural setting. Collect samples from a body of water with submerged vessels to minimize turbulence and bubble entrainment. If sampling from particular depths, use standard samplers designed for that purpose. For flowing systems, make sure that the velocity into the opening of the sampling device is the same as that of the flowing stream (isokinetic sampling) and that the opening

* Approved by Standard Methods Committee, 2000.
Joint Task Group: 20th Edition—Desmond F. Lawler (chair), Erika E. Hargesheimer, Carrie M. Lewis, Nancy E. McTigue, Theodore S. Tanaka, John E. Tobiason, Mark R. Wiesner.