Ohio EPA
40 years and moving forward

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

September 3, 2013

Re: Harrison County
Village of Cadiz
Wastewater Treatment Facility
Compliance Evaluation Inspection
NPDES Permit 0PB00009*ED

Mayor and Council
Village of Cadiz
128 Court Street, P.O. Box 153
Cadiz, Ohio 43907

Dear Mayor and Council:

On July 11, 2013, I conducted an inspection of the Village of Cadiz wastewater treatment facility, located along State Route 250 S., Cadiz, Harrison County, Ohio. The purpose of the inspection was to determine the Cadiz treatment facility's compliance with NPDES Permit Number 0PB00009*ED, and the Ohio Water Pollution Control Act, Revised Code Chapter 6111. The operator was not present during the inspection, but the facility was open due to work being conducted by contractors. Phone conversations to discuss issues were subsequently conducted with Tom Carter, Supt., as well as with Shawn Greer, also with the village.

Photos of the facility were taken, and some are attached. As a result of the inspection, I have the following comments:

- The Imhoff tank was in operation. The tank exhibits concrete deterioration, as we have discussed in previous inspection letters.
- The flow splitter box (ahead of the trickling filters) had been repaired recently; the walls having been reinforced with additional concrete.
- Both trickling filters were in operation, and seemed to be functioning properly, exhibiting only moderate growth. The filters have undergone rehabilitation/maintenance recently.
- The primary clarifier was operating, and appeared to be functioning properly.
- The back-up clarifier was not in operation, and was nearly full of water. It was undergoing some maintenance work. The steel components exhibited some rust and were in need of painting.
- The solids contact aeration appeared to be operating properly.
- The sludge drying beds, which are not used, had sludge and weeds in them, and needed to be cleaned out.
- The plant effluent appeared to be clear.

- A small patch of dark sediment was observed in Sally Buffalo Creek about 40 ft. downstream of the final outfall. The base of the stream downstream of the final outfall appeared to exhibit some bacterial growth in a few places.
- The north trunk line replacement project was observed to be underway, along the east side of State Route 250, at Short Creek Road (CR76), which is just north of the wastewater treatment facility.

A review of the Discharge Monitoring Reports (DMR's) for the period July, 2012 through June, 2013, showed the following permit limitation violations:

Reporting Period	Station	Parameter	Limit Type	Limit	Reported Value	Violation Date
August 2012	001	pH	1D Conc	6.5	6.45	8/20/12
Sept. 2012	001	pH	1D Conc	6.5	6.47	9/13/12
Dec. 2012	001	Total Suspended Solids	7D Qty	41	43.2913	12/8/12
Dec. 2012	001	Total Suspended Solids	30D Qty	27	27.9258	12/1/12
June 2013	001	Total Suspended Solids	30D Conc	12	16.75	6/1/13
June 2013	001	Total Suspended Solids	7D Conc	18	50.5	6/22/13
June 2013	001	Total Suspended Solids	30D Qty	27	46.2801	6/1/13
June 2013	001	Total Suspended Solids	7D Qty	41	145.611	6/22/13

The DMR review for the above period also showed the following permit Code Violations:

Reporting Period	Station	Reporting Code	Parameter	Limit Type	Limit	Reported Value	Violation Date
June 2013	001	31648	E. coli			AK	6/26/13

And the DMR review for the above period showed the following permit frequency violations:

Reporting Period	Station	Reporting Code	Parameter	Sample Frequency	Expected	Reported	Violation Date
May 2013	001	00665	Phosphorus, Total (P)	1/Month	1	0	5/1/13
Nov. 2012	001	00630	Nitrite Plus Nitrate	1/Month	1	0	11/1/12
August 2012	581	00400	pH	1/Quarter	1	0	8/1/12
August 2012	581	00627	Nitrogen Kjeldahl, Tot	1/Quarter	1	0	8/1/12
August 2012	581	00668	Phosphorus, Total in S	1/Quarter	1	0	8/1/12
August 2012	581	70322	Sludge Solids, Percent	1/Month	1	0	8/1/12
August 2012	581	00611	Ammonia (NH3) in Sludge	1/Quarter	1	0	8/1/12
August 2012	581	80991	Sludge Volume, Gallons	1/Month	1	0	8/1/12
April 2013	581	70322	Sludge Solids, Percent	1/Month	1	0	4/1/13

Please be advised that failure to comply with the effluent limitations or to satisfy the monitoring or reporting requirements of your NPDES permit may be cause for enforcement action pursuant to the Ohio Revised Code Chapter 6111.

If you have not already done so, please inform this office, in writing, by September 15, 2013, as to the reasons for the above referenced violations, as well as a description of the actions taken or proposed to prevent any further violations. Your response should include the dates, either actual or proposed, for completion of the actions.

Tom Carter reported that he is not quite able to staff the facility for the 20 hrs./week, 5 separate days, as required by Part II, Item (A.)(3), of the permit. The village will have to provide the required staffing.

Attached is a copy of the inspection report which indicates marginal evaluations of the following areas: Effluent/Receiving Waters. I gave this rating because of the issues mentioned in the above comments regarding the receiving stream condition. Over the past year, the facility appeared to be in substantial compliance with the NPDES permit.

The village of Cadiz appears to be in compliance with the Director's Final Findings and Orders, issued June 11, 2012. We received an operating and maintenance plan from you on May 17, 2013. The plan was required by the orders to be submitted by July 11, 2012.

Please respond, in writing, to the above comments by September 15, 2013. If you have any questions, please contact me at (740) 380-5218.

Sincerely,

Dan Messerly
District Staff Engineer
Division of Surface Water

DM/dh

Enclosure

c: Tom Carter, Supt., Village of Cadiz
c: Mike Shapiro, CO, Legal

State of Ohio Environmental Protection Agency
Southeast District Office

Municipal NPDES Compliance Inspection Report

Section A: National Data System Coding					
Permit #	**NPDES #**	**Month/Day/Year**	**Inspection Type**	**Inspector**	**Facility Type**
0PB00009*ED	OH0024295	July 11, 2013	C	S	1

Section B: Facility Data		
Name and Location of Facility Inspected	**Entry Time**	**Permit Effective Date**
Village of Cadiz Wastewater Treatment Facility US Route 250 S Cadiz, Ohio 43907, Harrison County	~2:30 p.m.	May 1, 2013
	Exit Time	**Permit Expiration Date**
	~3:00 p.m.	April 30, 2018
Name(s) and Title(s) of On-Site Representative(s)	**Phone Number(s)**	
Tom Carter, Superintendant (was not present at time of inspection) Shawn Greer, assistant operator/lab tech (not present)	(740) 942-3884	
Name, Address, and Title of Responsible Official	**Phone Number**	
Mayor & Council Village of Cadiz 128 Court Street, P.O. Box 153 Cadiz, Ohio 43907	(740) 942-8844	

Section C: Areas Evaluated During Inspection

(S = Satisfactory; M = Marginal; U = Unsatisfactory; N = Not Evaluated; N/A = Not Applicable)

S	Permit	S	Flow Measurement	N	Pretreatment
S	Records/Reports	S	Laboratory	N/A	Compliance Schedules
S	Operations & Maintenance	M	Effluent/Receiving Waters	S	Self-Monitoring Program
S	Facility Site Review	S	Sludge Storage/Disposal		Other
U	Collection System				

Section D: Summary of Findings (attach additional sheets if necessary)

Facility final effluent appeared acceptable. A small patch of dark sediment was observed in Sally Buffalo Creek downstream of the final outfall, and the base of the stream appeared to have some bacterial growth in places also.
Many improvements to the plant units have been made, including maintenance of the back-up clarifier and trickling filters, as well as new concrete reinforcement of the flow splitter box.
All plant units appeared to be on-line, except the back-up clarifier which was being maintenanced (and was put back on-line 6/21/13). See attached cover letter.
The north trunk line replacement project was observed to be underway, along the east side of State Route 250, at Short Creek Rd. (CR76), which is just north of the wastewater treatment facility.
Tom Carter is: Class III WW, Class III Water, Lab Cert. for WTP; not quite able to put in 20 hrs/week, 5 separate days
Shawn Greer is: Class I Water, Lab Cert. WTP; 1 week/month he is strictly WTP staff.

Inspector	Reviewer
Dan Messerly 8-30-13	Jennifer M. Witte 9/3/13
Dan Messerly Date Division of Surface Water Southeast District Office	**Jennifer M. Witte** Date Compliance & Enforcement Supervisor Division of Surface Water Southeast District Office

Sections E through 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	N/A

Comments/Status:

(d) during wet weather there can be SSO's on the collection system, particularly the north trunk line. These events are reported; replacement/slip-lining of north trunk line is currently underway.

Section F: Compliance

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

Comments/Status:

(a) (in past year) overflows from manholes along north trunk line are common. There were four months with limit violations in the past year.
(e) Director's Final Findings & Orders, dated June 11, 2012.

Section G: Operation and Maintenance

Treatment Works:

Treatment facility properly operated and maintained

(a) Standby power available generator ☐ or dual feed ☐ ..... N

i. What does the back-up power source operate

ii. How often is the generator tested under load

(b) Which components have an alarm system available for power or equipment failures

No alarm systems, except in chlorine and SO2 rooms (disinfection system)

(c) All treatment units in service other than backup units ..... Y

(d) What method is used for scheduling routine and preventative maintenance (calendar, software, etc.)

maintenance lists

(e) Any major equipment breakdown since last inspection ..... Y

(f) Operation and maintenance manual provided and maintained ..... Y

(g) Any plant bypasses since last inspection ..... N

(h) Any plant upsets since last inspection ..... Y

Comments/Status:

(c) all treatment units were in service except the second clarifier which was being rehabilitated/maintenanced. It was placed back in service on 6/21/13.
(e) both trickling filters rebuilt; one was down at a time during the last 12 months; trickling filter flow splitter box was repaired by adding concrete reinforcement; will be installing a mechanical auger screen at headworks before end of 2013, to replace a failed comminutor.
(f) No O/M Manual, but some individual treatment units have manuals.
(h) heavy rain events have caused plant upsets, such as July 2013 rain event (3.5") which resulted in plant final tank water having brown appearance like the stream. North trunk line replace/reline project underway to correct condition; central/south trunk line projects in planning stage.

Record Keeping/Operator of Record:

(a) Wastewater Treatment Works classification (OAC 3745-7) II

(b) Operator of Record holds unexpired license of class required by Permit ..... Y

(c) Copy of certificate of Operator of Record displayed on-site ..... N

(d) Has the Operator of Record submitted an ORC Notification form ..... Y

(e) Minimum operator staffing requirements fulfilled (OAC 3745-7) ..... N

(f) If a Staffing Reduction plan has been approved, are the stipulations of the plan being met ..... N/A

(g) Operator of Record log book provided ..... Y

(h) Format of log book (e.g. computer log, hard bound book)

hard bound book; carries daily sheets which get filed after transferring info. to hard bound log book kept at office.

(i) Log book kept onsite (in an area protected from weather) ..... N

(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) ..... N

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:

(e) ORC reports that he is not quite able to spend 20 hrs/week, 5 separate days.
(i) kept at WTP where office is located.
(j) IV. documented on bench sheets.
(k) such notifications are routinely sent to Ohio EPA/SEDO by superintendant (who is an employee of Cadiz)

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	0
	II. How many pump stations have telemetered alarms	0
	III. How many pump stations have operable alarms	0
(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	N
	If so, what is the LTCP status	
(e)	How are CSOs monitored (chalk, block, level sensor, etc.)	
(f)	Portable pumps available for collection system maintenance	Y
(g)	RDII Program established and active	Y
(h)	Any WIB complaint received since last inspection	N
(i)	Is there a WIB response plan	N
(j)	Is any portion of the collection system at or near dry weather capacity	N

Comments/Status:

(a): there are two pump stations on the collection system (SR 9 at Airport Road, Grant Street); neither have alarms; no problems with the stations;Grant St. has two pumps; Airport station is a one pump station (with second pump kept on-hand)
(b) & (g): collection system has SSO events from manholes; particularly the north trunk line. The entire collection system is being studied for purposes of removing I/I. The lower half of the north trunk line is currently being replaced with a force main which is 75% installed, and pump station is not started yet but to be installed by November 2013; some manholes in upper end have been replaced, while the upper end will be slip-lined this year. A second project to rehabilitate the other two trunk lines (i.e. the south, and the central), is in the planning stage.

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% Solids without Unstabilized Solids	Option 8 - >75% Solids with Unstabilized Solids
Alternative 1 – Time and Temperature Regime (84369)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – High pH and High Temperature (84369)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 3 – Other Processes (84369)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 4 – Unknown Processes (84369)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Composting (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Heat Drying (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Heat Treatment (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Thermophilic Aerobic Digestion (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Beta Ray Irradiation (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Gamma Ray Irradiation (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 5 – Pasteurization (84397)	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 6 – Approved Equivalent Process	☐	☐	☐	☐	☐	☐	☐	☐

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% Solids without Unstabilized Solids	Option 8 - >75% Solids with Unstabilized Solids	Option 9 – Land Injection	Option 10 – Immediate Incorporation
Alternative 1 – Geometric Mean of Seven Fecal Samples (84369)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – Aerobic Digestion (46396)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – Air Drying (46396)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – Anaerobic Digestion (46396)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – Composting (46396)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 2 – Lime Treatment (46396)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Alternative 3 – Approved Equivalent Process	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

(b) Has amount of sludge generated changed significantly since the last inspection ..... N

(c) How much sludge storage is provided at the plant

Imhoff Tank holds ~50,000+ gals.; concrete sludge storage tank holds 50,000 gals; at least 100,000 gals. of sludge is pressed, 3X per year.

(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 ..... N/A

(h) Is a contractor used for sludge disposal ..... Y

If so, what is the name of the contractor

Agri-Sludge Inc. Biosolids are hauled to Kimble Landfill. 47.79 dry tons hauled in 2012.

Comments/Status:

(f) A Permit to Install for a new mechanical auger screen was issued, and the equipment will be installed at the headworks of the plant (upstream of Imhoff Tank) soon. Currently, there is a bar screen; the comminutor is not in service.
(h) no land application has occurred in 3-4 years; is pressed and taken to landfill.

Section I: Self-Monitoring Program

Flow Measurement:

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

Weir/Ultrasonic measurement

(b) Flow meter calibrated annually ..... N

Date of last calibration

definite date could not be determined; was easily more than 1 year ago.

(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:

(d) chart recorder reportedly max.'s out at 1.2 MGD flow rate; majority of the time it is well within range; requires a very large rainfall (3"-4") to max. out; totalizer reportedly captures all flow volume.

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 (see GLC page) ..... Y

(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:

(b) effluent composite sampler reportedly pulls a 20 ml sample every 10 mins; can pull up to 200 samples; usually pulls 160-170 samples; is linked to effluent flow meter.

Laboratory:

General

(a) Does the Quality Assurance Manual contain written Standard Operating Procedures (SOP's) for all analysis performed onsite ..... N

(b) Do SOP's include the following if applicable ..... N

- Title
- Scope and Application
- Summary
- Sample Handling & 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 know 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 ..... N/A

(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 (see score from GLC page) ..... Y

(h) Commercial laboratory used ..... Y

Parameters analyzed by commercial lab: **all except pH, chlorine, D.O., temp. (which are done in-house)**

Lab name: **Masi: E-coli, NO2+NO3, O & G**
Ream & Haager (New Philadelphia): metals, TSS, CBOD
(a) no Q/A manual

Discharge Monitoring Report Quality Assurance (DMRQA)

(a) Participation in latest USEPA quality assurance performance sampling ..... N/A
Date:

(b) Were any parameters "Unsatisfactory" ..... N/A

(c) Reasons for "Unsatisfactory" parameters

N/A

Comments/Status:

(g) see lab criteria form

Section J: Effluent/Receiving Water Observations

Outfall #: **0PB00009*001**
Outfall Description: **Final plant effluent- clear**

Receiving Stream: **Sally Buffalo Creek**
Receiving Stream Description: **clear; small dark patch of sediment observed about 40 ft. downstream of outfall; base of stream appeared to have some bacterial growth in a few places downstream of outfall also.**

Comments/Status:

Section K: Multimedia Observations

(a)	Are there indications of sloppy housekeeping or poor maintenance in work & 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:

General Lab Criteria

Facility: Village of Cadiz, 7/11/13, 0PB00009*ED

Criteria	Standard Methods Requirement			Rating
Balance		**Acceptable?**		
• Standard Weights	• Either NIST Class s or ASTM/ANSI Class 1 weights[1,2]	☐ Yes	☐ No	N/A
• Calibration Frequency/ Documentation	• Calibration verification required at least once each day the balance is used[3]	☐ Yes	☐ No	
• Cleanliness, air movement, vibration	• Cleanliness of balance is a must and air movement and vibration needs to be kept to a minimum[1]	☐ Yes	☐ No	
• Other	• Service and recalibrate annually (manufacturer representative or comparable)[1]	☐ Yes	☐ No	
	• Must be able to measure to 0.1 grams[4]	☐ Yes	☐ No	
	• Instrument manual available	☐ Yes	☐ No	
	• Log book maintained[6]	☐ Yes	☐ No	
Comments:				

Criteria	Standard Methods Requirement			Rating
Drying Oven (Suspended Solids)		**Acceptable?**		
• Temperature Recordkeeping	• Temperature recorded with each use[4]	☐ Yes	☐ No	N/A
	• Log book maintained[6]	☐ Yes	☐ No	
• Calibration Frequency/ Documentation	• Thermometer calibrated annually with NIST traceable thermometer[1,2]. Correction factor posted on thermometer/equipment[1]	☐ Yes	☐ No	
• Other	• Thermometer temperature in 0.1°C increments[5]	☐ Yes	☐ No	
	• Acceptable temperature range is 103° – 105°F[4]	☐ Yes	☐ No	
	• Instrument manual available	☐ Yes	☐ No	
Comments:				

Criteria	Standard Methods Requirement			Rating
pH Meter		**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)[3]	☒ Yes	☐ No	A
	• Log book maintained[9]	☒ Yes	☐ No	
• Minimum of 2 point calibration	• Calibration per manufacturer specification and calibration buffers must bracket anticipated result[7]	☒ Yes	☐ No	
• Slope Documentation/ Acceptability	• Slope acceptable range indicated on benchsheet[2]	☒ Yes	☐ No	
• Buffer Expiration Date	• Buffers must not be expired	☒ Yes	☐ No	
• Other	• Instrument manual available	☒ Yes	☐ No	
	• Teflon covered magnetic stirrer or equivalent for mixing[8]	☒ Yes	☐ No	
Comments: single log book kept for each lab instrument;				

General Lab Criteria

Criteria	Standard Methods Requirement			Rating
Dissolved Oxygen Meter		**Acceptable?**		
• Calibration Method	• Air or known DO calibration method[10]	☒ Yes	☐ No	A
	• Calibration per manufacturer specification[10]	☒ Yes	☐ No	
• Calibration Frequency/ Documentation	• Logbook maintained[9]	☒ Yes	☐ No	
	• Calibration verification required at least once each day the meter is used.[3]	☒ Yes	☐ No	
• Other	• Small to no bubble present under membrane (must be smaller than the lead in number 2 pencil)[11]	☒ Yes	☐ No	
	• Instrument manual available	☒ Yes	☐ No	
Comments: YSI D.O. meter				

Criteria	Standard Methods Requirement			Rating
Incubator (CBOD/E-Coli)		**Acceptable?**		
• Temperature Recordkeeping	• Temperature checked/recorded twice daily for each shelf in use[1]	☐ Yes	☐ No	N/A
	• Temperature checked/recorded daily[2] (CBOD)	☐ Yes	☐ No	
	• Acceptable temperature range (CBOD) is 20°C ±1.0°[12]	☐ Yes	☐ No	
	• Acceptable temperature range (E-Coli) is 35°C ±0.5°[22]	☐ Yes	☐ No	
	• Logbook maintained[9]	☐ Yes	☐ No	
• Temperature Calibration/ Documentation	• Thermometer calibrated annually with NIST traceable thermometer[1,2]	☐ Yes	☐ No	
	• Temperature correction information posted on incubator[1]	☐ Yes	☐ No	
• E-Coli can use multiple tubes (five 20 ml or ten 10 mg), or mfg's multi-well tray	• E-coli Ultraviolet lamp (365 nm wave length, 6 W bulb)[23]	☐ Yes	☐ No	
• Other	• Instrument manual available	☐ Yes	☐ No	
	• Temperature Log (thermometer reads to 0.1 Celsius)[5]	☐ Yes	☐ No	
Comments:				

Criteria	Standard Methods Requirement			Rating
Refrigerator		**Acceptable?**		
• Temperature Recordkeeping	• Temperature Log (thermometer reads to 0.1 Celsius)[5]	☒ Yes	☐ No	A
• Temperature Calibration/ Documentation	• Thermometer calibrated annually with NIST traceable thermometer[1,2]	☐ Yes	☒ No	
• Other	• Thermometer held in water bath[1]	☒ Yes	☐ No	
	• Refrigerator temperature ≤6° Celsius[13]	☒ Yes	☐ No	
	• Do not store volatile solvents, food, or beverages[14]	☒ Yes	☐ No	
Comments: keep temp. log on days of refrig. use (2 days/wk.).				

Criteria	Standard Methods Requirement			Rating
Chlorine Meter		**Acceptable?**		
• Calibration Frequency/ Documentation	• pH/millivolt meter read to 0.1 mV[15]	☐ Yes	☐ No	A
	• Calibration verification required for testing over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples)[3]	☒ Yes	☐ No	
• Calibration Method	• Calibration using three iodate solutions 0.2, 1.0, 5.0 milliliters	☐ Yes	☐ No	

General Lab Criteria

	or calibration per manufacturer specification[16]			
	• Standards used for calibration not expired	☒ Yes	☐ No	
• Slope Documentation/ Acceptability	• Calibration curve (acceptable slope)	☐ Yes	☐ No	
• Other	• Electrode free of deposits and foreign material	☐ Yes	☐ No	
	• Log book being maintained[9]	☐ Yes	☒ No	
	• Instrument manual available	☒ Yes	☐ No	
Comments: Hach Cl meter (not a probe method, so some responses above are N/A)				

Criteria	Standard Methods Requirement			Rating
Ammonia Meter		**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)[3]	☐ Yes	☐ No	**N/A**
	• Log book being maintained[9]	☐ Yes	☐ No	
• Slope Acceptability	• Verify calibration slope is acceptable (per mfg. spec.)	☐ Yes	☐ 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.[17]	☐ Yes	☐ No	
	• Standards used for calibration not expired	☐ Yes	☐ No	
• Other	• Electrode free of deposits and foreign material	☐ Yes	☐ No	
	• Teflon covered magnetic stirrer or equivalent for mixing[18]	☐ Yes	☐ No	
	• Instrument manual available	☐ Yes	☐ No	
Comments:				

Criteria	Standard Methods Requirement			Rating
Sample Collection/Handling		**Acceptable?**		
• Sample Labeling	• Samples container labeled (description, date, time, preservative added, initialed)[19]	☒ Yes	☐ No	**A**
• Chain of Custody	• Chain of custody (description, date, time, signature)[19]	☒ Yes	☐ No	
• Other	• Composite samples refrigerated during sample collection[14]	☒ Yes	☐ No	
	• Equipment blanks utilized[14]	☒ Yes	☐ No	
	• SOP for cleaning of sampling equipment	☒ Yes	☐ No	
	• Log book being maintained[9]	☒ Yes	☐ No	
Comments: Masi, and Ream & Haager are the outside labs. Outside lab provides bottles w/preservative. Sample sheet is used as log for outside lab items. In-house sample containers marked.				

Criteria	Standard Methods Requirement			Rating
Desiccator		**Acceptable?**		
• General Criteria	• Properly working seals	☐ Yes	☐ No	**N/A**
	• Desiccant fresh (blue color)	☐ Yes	☐ No	
• Documentation	• Log book being maintained[9]	☐ Yes	☐ No	
Comments:				

General Lab Criteria

Criteria	Standard Methods Requirement			Rating
Bench Sheets		**Acceptable?**		
• General Criteria	• Date(s)[2]	☒ Yes	☐ No	**A**
	• Analyst initials[2]	☒ Yes	☐ No	
	• Blue or black ink pen[2]	☐ Yes	☒ No	
	• Calibration information[2]	☒ Yes	☐ No	
	• Equations, calculations, units for all measurements, notations, and results present[2]	☒ Yes	☐ No	
	• Corrections, single line through, initialed and dated[2]	☐ Yes	☒ No	
Comments: pre-made sheet used; red ink pen used; pH calibrated; no calcs.- results present; have used white-out in past for corrections.				

Criteria	Standard Methods Requirement			Rating
Hot Water Bath (Fecal Coliform/E. Coli)		**Acceptable?**		
• Temperature Recordkeeping	• Temperature Log (thermometer reads 0.2° C)[21]	☐ Yes	☐ No	**N/A**
	• Incubator temperature 44.5° C ±0.2° [21/24]	☐ Yes	☐ No	
• Temperature Calibration/ Documentation	• Thermometer calibrated annually with NIST traceable thermometer[1,2]	☐ Yes	☐ No	
	• Log book being maintained[9]	☐ Yes	☐ No	
• Water Level	• Thermometer total immersion or partial (line on thermometer to ID immersion depth)[1,5]	☐ Yes	☐ No	
Comments:				

Criteria	Standard Methods Requirement			Rating
Autoclaves/Steam Sterilizers		**Acceptable?**		
• All apparatus utilized is adequately sterilized before use	• Sterilizing temperature 121° C[25]	☐ Yes	☐ No	**N/A**
	• 10 to 30 minutes time based on material being sterilized[26]	☐ Yes	☐ 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[1]	☐ Yes	☐ No	
	• Date, contents, sterilization time and temperature, total time in autoclave, and analyst's initials should be recorded each time the autoclave is used[1]	☐ Yes	☐ No	
• Temperature Calibration/ Documentation	• Thermometer calibrated annually with NIST traceable thermometer[1,2]	☐ Yes	☐ No	
	• Log book being maintained[9]	☐ Yes	☐ No	
• Performance Checks	• Test monthly for efficacy using a biological such as commercially available *Geobacillus stearothermophilus* in spore strips, suspensions, or capsules[1]	☐ Yes	☐ No	
Comments:				

General Lab Criteria

Criteria	Standard Methods Requirement			Rating
Final Effluent Temperature Monitoring		**Acceptable?**		
• General Criteria	• Thermometer calibrated annually with NIST traceable thermometer[1,2]	☐ Yes	☒ No	A
	• Thermometer reads in increments of at least 0.1°C[5]	☒ Yes	☐ No	
	• Log book being maintained[2]	☒ Yes	☐ No	
Comments: Using DO/temp meter; have log book.				

Number of Criteria Rated:	**Acceptable**	7
	Marginal	0
	Unacceptable	0
	Total Number of Areas Rated	7

Acceptable Ratings – 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).	
Marginal Ratings – 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).	
Unsatisfactory Rating – 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).	
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

General Lab Criteria

Notation of Referenced Method

1	Method 9020-B, Item 4	14	Method 1060A, Item 1
2	Method 1020-A, Item 1	15	Method 4500-Cl I, Item 2
3	Method 1020-B, Item 10	16	Method 4500-Cl 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-B, 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.

Preservation and Holding Times

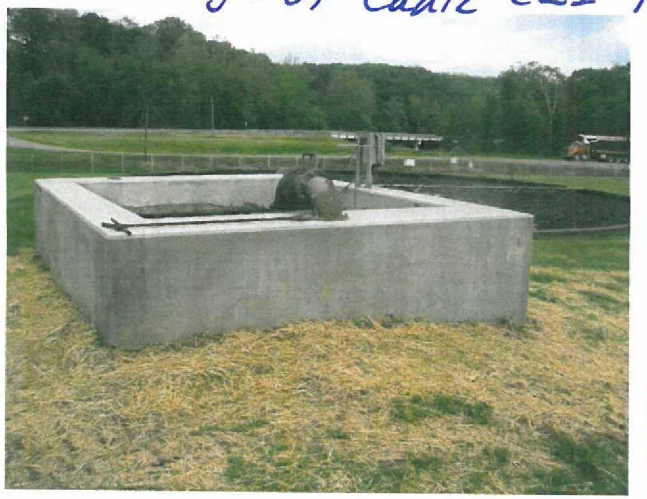
Parameter	Container	Min. Sample Size (mL)	Sample Type	Preservation	Maximum Storage Time	
					Recommended	Regulatory
BOD / CBOD	P, G	1000	G, C	Refrigerate ≤6°C	6h	48h
TSS	P, G	200	G, C	Refrigerate ≤6°C	7 d	7 d
pH	P, G	50	G	Analyze immediately	0.25h	0.25 h
NH3-N	P, G	500	G, C	Analyze as soon as possible or add H_2SO_4 to pH <2, Refrigerate ≤6°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_3 to pH <2	6 months	6 months
Purgeables by purge and trap	G (PTFE lined lid)	40 (X2)	G	HCl to pH <2, Refrigerate ≤6°C	7 d	14 d
Base/Neutrals and acids	G (solvent rinsed or baked)	1000	G, C	Refrigerate ≤6°C	7 d	7 days until extraction 40 days after extraction
Pesticides	G (PTFE lined lid)	1000	C	Refrigerate ≤6°C	7 d	7 days until extraction 40 days after extraction
Fecal Coliform / E-Coli	G, P (Sterilized)	100	G	Refrigerate ≤10°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_2SO_4 to pH <2, Refrigerate ≤6°C	28 d	28 d

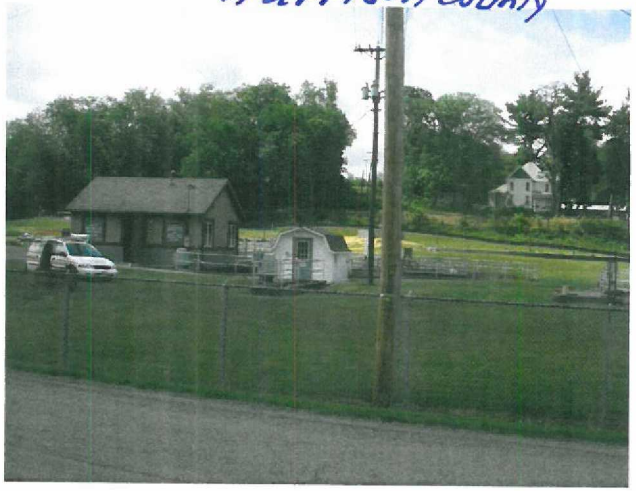
General Lab Criteria

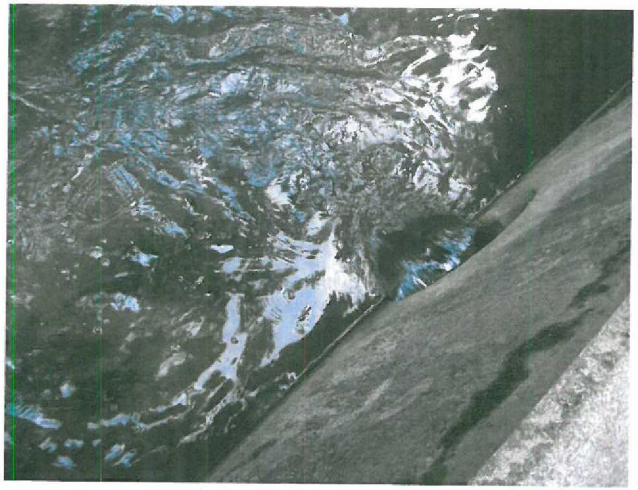
Approved Standard Methods	
CBOD / BOD 5 Day	Std Methods 5210-B
Ammonia, Selective Electrode Method	Std Methods 4500-NH3 D
Total Residual Chlorine, DPD Colorimetric Method	Std Methods 4500-Cl G
Total Suspended Solids, Dried at 103-105°C	Std Methods 2540-D
Dissolved Oxygen, Membrane Electrode Method	Std Methods 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

Village of Cadiz CEI 7-11-13 AM

Harrison County







Village of Cadiz CEI 7-11-13 D.J.M. Harrison County