



**Environmental
Protection Agency**

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

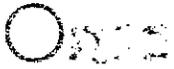


1PB0010820100512

BROWN

SARDINIA WWTP

JACKSON, JOSHUA 2010/05/12



**Environmental
Protection Agency**

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

May 12, 2010

Village of Sardinia
Mayor & Council
P.O. Box 27
Sardinia, OH 45171

Correct

**RE: Village of Sardinia WWTW / Compliance Evaluation Inspection
NPDES Permit No. OH0020729 / OEPA PERMIT NO. 1PB00108*FD**

Ladies & Gentlemen:

On May 5, 2010, I conducted an NPDES Compliance Evaluation Inspection at the Village of Sardinia wastewater treatment works (WWTW). Stuart Patrick, who is the contract Operator of Record, was present during the inspection to represent the Village. A follow-up telephone call was made to Tim Mock (Village Administrator) after the inspection. The purpose of the inspection was to evaluate compliance with the terms and conditions of the NPDES Permit.

A copy of the Compliance Evaluation Inspection report is enclosed. Two evaluated areas received "Marginal" ratings. **Please pay close attention to the "items requiring correction" shown in bold type.**

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 Mock, Village of Sardinia
John Van Harlingen, The H2O Company

Enclosure





State of Ohio Environmental Protection Agency
Southwest District Office

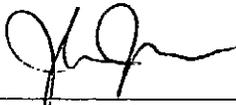
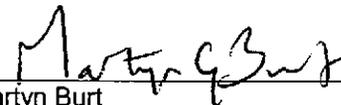
NPDES Compliance Inspection Report

Section A: National Data System Coding					
Permit #	NPDES#	Month/Day/Year	Inspection Type	Inspector	Facility Type
1PB00108*FD	OH0020729	5/5/2010	C	S	11

Section B: Facility Data		
Name and Location of Facility Inspected	Entry Time	Permit Effective Date
Village of Sardinia WWTW 141 South Main Street Sardinia, Brown County	9:30 a.m.	8/1/2005
	Exit Time	Permit Expiration Date
	12:30 p.m.	7/31/2010
Name(s) and Title(s) of On-Site Representatives		Phone Number(s)
Stuart Patrick, Class III ORC		937-446-2110
Name, Address and Title of Responsible Official		Phone Number
Tim Mock, Village Administrator P.O. Box 27 Sardinia, OH 45171		937-446-3807

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

*Laboratory was evaluated and SOPs will need to be developed (see within report).

Section D: Summary of Findings (Attach additional sheets if necessary)	
See attached report.	
Inspector	Reviewer
 Joshua Jackson Division of Surface Water Southwest District Office Date: 5-12-10	 Martyn Burt Compliance & Enforcement Supervisor Division of Surface Water Southwest District Office Date: 5/12/10

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..... N/A

Comments/Status:

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..... N
- (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:

See discussion on significant violations later in the report.

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.....

The entire WWTW.

ii. How often is the generator tested under load.....

Comes on 1/week but not tested under load. **The generator should be tested under load at least 1/month.**

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

Alarm system does not notify staff when away from the WWTW.

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

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

Mr. Patrick is developing a preventative maintenance schedule (mostly completed at the time of the inspection). A log is currently kept on-site.

(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..... N

Comments/Status:

Equipment manuals are kept on-site.

Section G: Operation & Maintenance con't

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..... 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..... N/A
- (g) Operator of Record log book provided..... Y
- (h) Format of log book (e.g. computer log, hard bound book)

Spiral bound. Mr. Patrick will replace with with a hard bound, numbered book.
- (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:

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.....0
 - ii. How many pump stations have telemetered alarms.....0
 - iii. How many pump stations have operable alarms.....5

- (b) Any chronic collection system overflows since last inspection..... N
- (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:

Sardinia Staff are utilizing a 2004 partial collection system study compiled by Severn Trent, for RDII program planning. In 2009, gravity sewer was grouted around the Kings Drive pump station and Tri-County Hwy pump station. Four leaking laterals were replaced as well. The Village has had accounting issues, so Wayne Cannon (RCAP) is performing a rate study that will give the Village a better handle on their sewer finances and what monies can be allocated for collection system maintenance.

Section H: Sludge Management

- (a) Method of Sludge Disposal...
 - Land Application
 - Haul to Another NPDES Permittee
 - Haul to a Mixed Solid Waste Landfill
- (b) Has amount of sludge generated changed significantly since the last inspection..... N
- (c) How much sludge storage is provided at the plant.....

More than 6 months (250,000 gallons of digester storage) plus concrete pad
- (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..... Y
- (g) Are sludge application sites inspected to verify compliance with NPDES permit..... N/A
- (h) Is a contractor used for sludge disposal..... N/A
If so, what is the name of the contractor.....

Comments/Status:

Section I: Self-Monitoring Program

Flow Measurement:

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

Ultrasonic level sensor with v-notch weir
- (b) Flow meter calibrated annually N
(Date of last calibration: 2008)
- (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:

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..... N
- (b) Do SOP's include the following if applicable..... N
- | | |
|------------------------------------|-----------------------------|
| • Title | • Procedure |
| • Scope and Application | • Calculations |
| • Summary | • Quality Control |
| • Sample Handling and Preservation | • Maintenance |
| • Interferences | • Corrective Action |
| • Apparatus and Materials | • Reference (Parent Method) |
| • Reagents | |

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. N
(see score from GLC page)
- (h) Commercial laboratory used..... Y
Parameters analyzed by commercial lab: Everything but suspended solids, CBOD5, dissolved oxygen, pH, nitrogen-ammonia (just started), and fecal coliform.

Lab name: Test America

Section J: Effluent/Receiving Water Observations

Outfall # 001

Outfall Description: At the time of the inspection the facility was not discharging (SBR).

Receiving Stream: Slabcamp Run

Receiving Stream Description: The effluent channel has large amounts of filamentous algae. Some algae was observed into the stream as well.

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 (Items for Correction in Bold Type)

The permit to install for the Village of Sardinia wastewater treatment works (WWTW) expansion/upgrade was approved on July 7, 2005 (construction completed in 2008). Improvements for the upgrade/expansion of the existing WWTP included the following: influent pump station, mechanical bar screen, manual bar screen, grit removal, Sequencing Batch Reactor, ultraviolet disinfection, post aeration, sludge holding tanks (converted from existing Can-Tex tanks), sludge storage pad. The expanded WWTW is designed to treat and discharge an average daily flow 0.3 MGD (peak hourly influent rate of 1.2 MGD). From January of 2009 – March of 2010, the reported average daily discharge flow from the WWTW was 0.12 MGD.

Effluent Limit Violations

(Period of Review: January 2009 – March 2010)

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

Reporting Period	Parameter	Limit Type	Limit	Reported Value
December 2009	Nitrogen, Ammonia (NH3)	7D Conc	2.8	5.485
December 2009	Nitrogen, Ammonia (NH3)	7D Qty	3.2	6.95647
March 2010	Total Suspended Solids	30D Conc	12	15.6
March 2010	Nitrogen, Ammonia (NH3)	30D Conc	1.87	2.118
March 2010	Total Suspended Solids	7D Conc	18	40.
March 2010	Total Suspended Solids	7D Qty	20	22.8689
March 2010	Total Suspended Solids	7D Conc	18	22.
March 2010	Nitrogen, Ammonia (NH3)	7D Conc	2.8	5.575
March 2010	Nitrogen, Ammonia (NH3)	7D Qty	3.2	3.22747

The violations in March of 2010 were caused by failure of one of the aeration mixer bearings. The WWTW also had a failure of two of the three blowers. With only one blower available, there was not enough air capacity to maintain an effective biological community. The blowers are operational at this point and the mixer was planned for servicing with the next few days.

The violations in December of 2009 were caused by a power outage, which negatively affected the Aqua SBR panel (it needed to be manually reset). Weekend staff were unaware of the problem and the delay caused the SBR to lose aeration for two days. Operational staff have since written an SOP for the weekend staff so they would make this part of their inspection check and have the ability to reset the panel if needed.

WWTW Alarm System

The violations that occurred at the WWTW in December of 2009 show a need for an alarm system that will contact staff during off hours. Part III, item 3 (A), of the Village's NPDES permit states, "At all times, the permittee shall maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee necessary to achieve compliance with the terms and conditions of this permit..."

Since the Village of Sardinia is a small community that staffs the WWTW 5-8 hours/weekdays and only 1-2 hours/weekend days, there must be a way to notify personnel during off hours when the WWTW performance is at a reduced level so that immediate action can be taken. Personnel should be notified during the following events, at a minimum: power outage, SBR blower failure, influent pump station high level, and UV disinfection module failure. Because there currently is no alarm system, the "Facility Site Review" section of this report was given a "Marginal" rating.

The alarm system, described above, shall be installed and operational by no later than June 25, 2010.

Quality Assurance & Standard Operating Procedures

The foundation of the NPDES permitting program is the reliability of data "self-reported" by wastewater dischargers under permit. Part III, 3., of the Village's NPDES permit requires "All wastewater treatment works shall be operated in a manner consistent with the following: At all times, the permittee shall maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee necessary to achieve compliance with the terms and conditions of this permit. *Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures...*" Part III, 5., goes on to say, "Test procedures for the analysis of pollutants shall conform to regulation 40 CFR 136... The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to insure accuracy of measurements."

The federal regulatory benchmark for all water and wastewater sampling/laboratory procedures is 40 CFR 136. This rule lists acceptable sampling and laboratory procedures published in "Standard Methods for the Examination of Water and Wastewater" (Standard Methods) among other resources such as the American Society for Testing and Materials (ASTM). Standard Methods is a comprehensive reference widely used throughout the industry and is cooperatively published by the American Water Works Association, Water Environment Federation and the American Public Health Association.

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". *Without a QA program, the City is without defensible data showing compliance with the NPDES permit.* Standard Methods goes on to require the inclusion of Standard Operating Procedures (SOP) for each analytical method within the QA manual. The SOP should include the following applicable categories:

- Title
- Scope and Application
- Summary
- Sample Handling and Preservation
- Interferences
- Apparatus and Materials
- Reagents
- Procedure
- Calculations
- Quality Control (calibration)
- Maintenance
- Corrective Action
- Reference (Parent Method)

During the inspection, Mr. Patrick was given example SOPs for assistance in developing site-specific SOPs for the Sardinia WWTW laboratory. **It is expected that the Village of Sardinia develop SOPs for the following analytical procedures (at a minimum) by no later than July 23, 2010: pH, temperature, dissolved oxygen, suspended solids, CBOD5, nitrogen-ammonia, bacteria (fecal coliform/e. coli) and sample collection. Each of the SOPs should comply with the analytical methods outlined in Standard Methods.**

Attached is the Ohio EPA General Lab Criteria rating sheet that Mr. Patrick and Mr. Jackson went over during the laboratory inspection. It outlines basic QA/QC expectations for different sampling, testing and equipment within a wastewater laboratory. Please feel free to use this when developing the SOPs.

E. coli

Because of Water Quality changes that went effect March 15, 2010, the fecal coliform limits and monitoring currently in the NPDES permit for the Village of Sardinia will be replaced with E. coli limits and monitoring when the permit is renewed this year. The limits will be as follows:

- 161 cts/100 ml (30-day average, summer)
- 362 cts/100 ml (7-day average, summer)

Annual Effluent Meter Calibration

The effluent meter has not been checked for accuracy since 2008; for this reason a rating of "Marginal" was given for the "Flow Measurement" section of this report. Accurate discharge flow monitoring is one of the foundational requirements of the NPDES permitting program; pollutant loading-based limitations are discharge flow driven, as are waste load allocations to meet Ohio water quality standards. Therefore, it is paramount that the Village report

accurate and defensible data to Ohio EPA. Towards that end, the Village must contract with a third party to perform annual effluent flow meter calibration and maintain documentation on-site. **Effluent meter calibration must be completed by no later than July 16, 2010.**

Pump Station Alarms

The Village currently has 5 pump stations; none of which are equipped with telemetry alarms systems to alert personnel of high water levels in the event of a power failure or pump failure. According to WWTW staff, the lift stations are equipped with visual alarms. The Village reported three lift station overflow events in 2007 and 2008. As a result of this, the Village agreed to conduct daily inspections of the pumps stations.

During the next inspection, Ohio EPA will conduct an examination of the daily inspection logs for each of these pump stations to ensure this work is being completed. Ohio EPA will also evaluate whether some (if not all) of the pump stations warrant something more than a visual alarm. This will be based on location, station holding capacity and inspection frequency.

Items Noted During the Inspection

1. The mixed liquor in the West SBR tank had a large amount of foam. Mr. Patrick stated that the mixed liquor suspended solids had reached 6,000 mg/l prior to wasting. He stated that the mixed liquor appears to treat most effectively when the MLSS is in the range of 3,000 mg/l.
2. Two geotextile woven bags were mostly full of sludge that had been dewatered over time. The Village is in the process of removing sludge (Rumpke pick it up and takes it to the landfill). There were some solids that were not on the concrete pad; apparently, some sludge had fallen off the front-end-loader when it was removed from the bag and put into the dumpster. **The Village must keep all of the solids on the concrete pad at all times, since the drain conveys flow to the head of the WWTW. All other areas drain to a catch basin, which is directed to the creek.**
3. When the Tri-County Pump Station was taken down for service, a local septage hauler moved several truckloads of sewage from the pump station to the WWTW. This occurred for over a month. To pay the hauler back for the services, the Village is accepting septic tank waste at the WWTW from the hauler. At this point, the hauler is averaging around 40 loads/month. Since the WWTW is responding well to the increase in organic loading, the Village is considering regular septage receiving even after the money has been paid back (extra revenue).

General Lab Criteria

Criteria	Standard Methods Requirement		Acceptable?	Rating
Balance				NR
• Standard Weights	• Either NIST Class S or ASTM/ANSI Class 1 weights ^{1,2} (weights had no certification)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Calibration Frequency / Documentation	• Calibration verification required at least once each day the balance is used. ³	<input type="checkbox"/> Yes	<input checked="" 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 ¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Service and recalibrate annually (manufacturer representative or comparable) ¹ (Just purchased balance)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Must be able to measure to 0.1 grams ⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book maintained ⁶	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: pertinent information was stored on bench sheets instead of formal logbook

Criteria	Standard Methods Requirement		Acceptable?	Rating
Drying Oven (Suspended Solids)				NR
• Temperature Recordkeeping	• Temperature recorded with each use ⁴	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Log book maintained ⁶	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Frequency / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2} . Correction factor posted on thermometer / equipment ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Other	• Thermometer temperature in 0.5° C increments ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Acceptable temperature range is 103° – 105° F ⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: pertinent information was stored on bench sheets instead of formal logbook

Criteria	Standard Methods Requirement		Acceptable?	Rating
pH Meter				NR
• 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	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Logbook maintained ⁹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Minimum of 2 point calibration	• Calibration per manufacturer specification and calibration buffers must bracket anticipated result ⁷	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Slope Documentation / Acceptability	• Slope acceptable range indicated on benchsheet ²	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Buffer Expiration Date	• Buffers must not be expired	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Teflon covered magnetic stirrer or equivalent for mixing ⁸	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

General Lab Criteria

Comments: pertinent information was stored on bench sheets instead of formal logbook. New pH meter will produce slope after calibration is completed.

Criteria	Standard Methods Requirement	Acceptable?		Rating
Dissolved Oxygen Meter				
• Calibration Method	• Air or known DO calibration method ¹⁰	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	NR
	• Calibration per manufacturer specification ¹⁰	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Calibration Frequency / Documentation	• Logbook maintained ⁹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Calibration verification required at least once each day the meter is used. ³	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Other	• Small to no bubble present under membrane (must be smaller than the lead in number 2 pencil) ¹¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Instrument manual available	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: pertinent information was stored on bench sheets instead of formal logbook.

Criteria	Standard Methods Requirement	Acceptable?		Rating
Incubator (CBOD/ E-Coli)				
• Temperature Recordkeeping	• Temperature checked / recorded twice daily for each shelf in use ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	NR
	• Acceptable temperature range (CBOD) is 20° C ±1.0° ¹²	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Acceptable temperature range (E-Coli) is 35° C ±0.5° ²²	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Logbook maintained ⁹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Temperature Log (thermometer reads to 0.2 Celsius). ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
Refrigerator				
• Temperature Recordkeeping	• Temperature Log (thermometer reads to 0.5 Celsius). ¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	NR
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Other	• Thermometer held in water bath. ¹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Refrigerator temperature ≤6° Celsius. ¹³	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Do not store volatile solvents, food, or beverages. ¹⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
Ammonia Meter				
• Calibration Frequency /	• Calibration verification required for testing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NR

General Lab Criteria

Documentation	over long period of time (e.g. 12 hrs.), or after a large number of samples (every 10 samples) ³			
	• Log book being maintained ⁹	<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. ¹⁷	<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 ¹⁸	<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
Sample Collection/Handling				
• Sample Labeling	• Samples container labeled (description, date, time, preservative added, initialed). ¹⁹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	NR
• Chain of Custody	• Chain of custody (description, date, time, signature). ¹⁹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Other	• Composite samples refrigerated during sample collection ¹⁴	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Equipment blanks utilized ¹⁴	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• SOP for cleaning of sampling equipment	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Logbook being maintained ⁹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
Desiccator				
• General criteria	• Properly working seals.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	NR
	• Desiccant fresh (blue color)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
• Documentation	• Log book being maintained ⁹	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments: Label was place on the dessicator for when the dessicant was last changed.

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

General Lab Criteria

dated²

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
Hot Water Bath (Fecal Coliform/E. Coli)				
• Temperature Recordkeeping	• Temperature Log (thermometer reads 0.2° C) ²¹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	NR
	• Incubator temperature 44.5° C ± 0.2° ^{21/24}			
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
	• Log book being maintained ⁹	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
• Water Level	• Thermometer total immersion or partial (line on thermometer to ID immersion depth) ^{1,5}	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	

Comments:

Criteria	Standard Methods Requirement	Acceptable?		Rating
Autoclaves/Steam Sterilizers				
• All apparatus utilized is adequately sterilized before use	• Sterilizing temperature 121° C ²⁵	<input type="checkbox"/> Yes	<input type="checkbox"/> No	NR
	• 10 to 30 minutes time based on material being sterilized ²⁶	<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. ¹	<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 ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
• Temperature Calibration / Documentation	• Thermometer calibrated annually with NIST traceable thermometer ^{1,2}	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	• Log book being maintained ⁹	<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 ¹	<input type="checkbox"/> Yes	<input type="checkbox"/> No	

Comments:

Number of Criteria Rated:	Acceptable	
	Marginal	
	Unacceptable	
Total Number of Areas Rated		

General Lab Criteria

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-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-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 $\leq 6^{\circ}\text{C}$	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
NH3-N	P, G	500	G, C	Analyze as soon as possible or add H_2SO_4 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_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 $\leq 6^{\circ}\text{C}$	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.	

General Lab Criteria

Oil and Grease	G	1000	G	HCl or H ₂ SO ₄ to pH <2, Refrigerate ≤6° C	28 d	28 d
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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 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



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