January 15, 2019

Tennessee Department of Environment & Conservation
Division of Water Pollution Control
William R. Snodgrass Tower
312 Rosa L. Parks Avenue
11th Floor
Nashville, Tennessee 37243

ATTN: Sludge Coordinator Municipal Facilities Section

RE; Jamestown Wastewater Treatment Plant
NPDES: TN0062634
2018 Annual Biosolids Report

To whom it may concern,

In order to comply with 40 CFR 503, The Jamestown Wastewater Treatment Plant reports this information on wastewater BioSolids disposal via land application. Included is the metals test, Certification Statement, description of how pathogen reduction and vector attraction requirements were met, total dry metric tons of BioSolids disposed of in 2018, and the 2018 Annual BioSolids Report submitted to the EPA.

Sludge Generated at:

Jamestown Wastewater Treatment Plant
NPDES#: TN0062634
199 State Garage Road
Jamestown, Tennessee 38556

Sincerely,

Jacob Burke/ Superintendent
Jamestown Wastewater Treatment Plant
199 State Garage Road
P.O. Box 670
Jamestown, TN 38556
Phone: 931.879.8815 ext. 221
Email: Jacob.Burke@jamestowntn.gov

Jamestown Wastewater Treatment Plant
Jacob Burke/ WWTP Superintendent
199 State Garage Road
Jamestown, Tennessee 38556

NPDES: TN0062634

2018 BIOSOLIDS REPORT

METALS

Enclosed are the test results of the required metals. The requirement of table 1 & 3 of 40 CFR 503.13 are met by these results.

CERTIFICATION STATEMENT

I certify, under penalty of law, that the Class B pathogen requirements on 503.32(b) and the vector attraction reduction requirement in 503.33(b) have been met. This determination has been made under my direction and supervision in accordance with the system design to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction have been met. I am aware that there are significant penalties for false certification including the possibility of fine and/or imprisonment.

Signed: _____

Title: WWTP Superintendent

PATHOGEN REDUCTION

Pathogen reduction has been demonstrated by 40 CFR 503.32(b) (2) (ii). The geometric mean of seven samples was **41,400** **MPN/g**, which meets 503.32(b) (2) (ii). The test results are enclosed.

VECTOR ATTRACTION REDUCTION

The vector attraction reduction requirement has been met through 40 CFR 503.33 (b) (4). SOUR test results demonstrate an oxygen uptake rate of **1.04** **mgO2/hr/g**, which meets the requirements **(<=1.5 mgO2/hr/g)**. The test results are enclosed.

TONS DISPOSED

During the year of 2018, the Jamestown Wastewater Treatment Plant disposed of **43.0984** Metric Tons of dry sludge.

Jacob Burke

From:	donotreply@epa.gov
Sent:	Tuesday, January 15, 2019 11:30 AM
To:	donotreply@epa.gov
Cc:	johnston.carey@epa.gov; bryan@avanticorporation.com; bruno.jodi@epa.gov; daniel@avanticorporation.com; le.michael@epa.gov; hamilton.denise@epa.gov; mirza.sabah@epa.gov; sonia@avanticorporation.com; palit.ted@epa.gov; mendoza.diana@epa.gov; paola@avanticorporation.com; nguyen.jake@epa.gov; teter.royan@epa.gov; regis.bolden@cgifederal.com; hom.michael@epa.gov; carkhuff.ann@epa.gov; julie@avanticorporation.com; fondahl.lauren@epa.gov; cobb.michael@epa.gov; emily@avanticorporation.com; owutaka.alex@epa.gov; jacob@avanticorporation.com; colletti.john@epa.gov; keith.elinor@epa.gov; miller_brian2@bah.com; dunn.john@epa.gov; nonnie@avanticorporation.com; zach@avanticorporation.com; Jacob Burke
Subject:	EPA Biosolids Annual Report(s) Certified
Attachments:	cors.zip

2019-01-15

Dear NeT User,

Jacob Burke successfully submitted one or more Biosolids Annual Reports for JAMESTOWN STP with ID TNL062634. The submission is contained in the attached zip file.

If you have questions about this email or about NeT Biosolids Annual Report, please refer to the NeT Help Center at https://epanet.zendesk.com/hc/en-us/categories/204465328-Biosolids-Annual-Program-Report or e-mail NPDESereporting@epa.gov for assistance.

This is an automated notification; please do not reply to this email.

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460
BIOSOLIDS ANNUAL REPORT

FORM
Approved OMB No.
2040-0004

EPA's sewage sludge regulations require certain publicly owned treatment works (POTWs) and Class I sewage sludge management facilities to submit to a Sewage Sludge (Biosolids) Annual Report (see 40 CFR 503.18 (https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_118), 503.28 (https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_128), 503.48 (https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_148)). Facilities that must submit a Sewage Sludge (Biosolids) Annual Report include POTWs with a design flow rate equal to or greater than one million gallons per day, POTWs that serve 10,000 people or more, Class I Sludge Management Facilities (as defined by 40 CFR 503.9 (https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_19)), and facilities otherwise required to file this report (e.g., permit condition, enforcement action, state law). This is the electronic form for Sewage Sludge (Biosolids) Annual Report filers to use if they are located in one of the states, tribes, or territories (https://www.epa.gov/npdes/npdes-state-program-information) where EPA administers the Federal biosolids program.

For the purposes of this form, the term 'sewage sludge (https://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_19)' also refers to the material that is commonly referred to as 'biosolids'. EPA does not have a regulatory definition for biosolids but this material is commonly referred to as sewage sludge that is placed on, or applied to the land to use the beneficial properties of the material as a soil amendment, conditioner, or fertilizer. EPA's use of the term 'biosolids' in this form is to confirm that information about beneficially used sewage sludge (a.k.a. biosolids) should be reported on this form.

Please note that EPA may contact you after you submit this report for more information regarding your sewage sludge management program.

Facility Information

Facility Name: JAMESTOWN STP

Program Information

Please select at least one of the following options pertaining to your obligation to submit a Sewage Sludge (Biosolids) Annual Report in compliance with 40 CFR part 503. The facility is:
- a POTW with a design flow rate equal to or greater than one million gallons per day

In the reporting period, did you manage your sewage sludge or biosolids using any of the following management practices: land application, surface disposal, or incineration? ☑ YES ☐ NO

If your facility is a POTW, please provide the estimated total amount of sewage sludge produced at your facility for the reporting period (in dry metric tons). If your facility is not a POTW, please provide the estimated total amount of biosolids produced at your facility for the reporting period (in dry metric tons).
75

Reporting Period Start Date: 01/01/2018

Reporting Period End Date: 12/31/2018

Treatment Processes

Processes to Significantly Reduce Pathogens (PSRP):
Aerobic Digestion

Processes to Further Reduce Pathogens (PFRP):

Physical Treatment Options:

Other Processes to Manage Sewage Sludge:

Analytical Methods

Did you use any analytical methods to analyze sewage sludge in the reporting period? ☑ YES ☐ NO

Analytical Methods
- EPA Method 6010 - Arsenic (ICP-OES)
- EPA Method 6010 - Cadmium (ICP-OES)
- EPA Method 6010 - Copper (ICP-OES)
- EPA Method 6010 - Lead (ICP-OES)
- EPA Method 7471 - Mercury (CVAA)
- EPA Method 6010 - Molybdenum (ICP-OES)
- EPA Method 6010 - Nickel (ICP-OES)
- EPA Method 6010 - Selenium (ICP-OES)
- EPA Method 6010 - Zinc (ICP-OES)
- EPA Method 350.1 - Ammonia Nitrogen
- EPA Method 9056 - Nitrate Nitrogen (IC)
- Standard Method 4500-Norg - Organic Nitrogen
- Standard Method 2710 - SOUR
- Standard Method 2540 - Total Solids
- Standard Method 2550 - Temperature
- EPA Method 1681 - Fecal Coliform

Sludge Management - Land Application

ID: 001

Amount: 43.0984

Management Practice Detail: Agricultural Land Application

Bulk or Bag/Container: Bulk

Handler, Preparer, or Applier Type: On-Site Owner or Operator

Pathogen Class: Class B

Sewage Sludge or Biosolids Pathogen Reduction Options:

- Class B-Alternative 1: Fecal Coliform Geometric Mean

Sewage Sludge or Biosolids Vector Attraction Reduction Options:

- Option 4 - Specific Oxygen Uptake Rate

Did the facility land apply bulk sewage sludge when one or more pollutants in the sewage sludge exceeded 90 percent or more of any of the cumulative pollutant loading rates in Table 2 of 40 CFR 503.13?

☐ YES ☑ NO ☐ UNKNOWN

Monitoring Data

INSTRUCTIONS: Pollutants, pathogen densities, and vector attraction reduction must be monitored when sewage sludge or biosolids are applied to the land. Please use the following section to report monitoring data for the land application conducted by you or your facility in the reporting period for this SSUID. These monitoring data should be representative of the sewage sludge or biosolids that was applied to land during the compliance monitoring period for this SSUID (40 CFR 503.8(a) (http://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_18)). All pollutant monitoring data should be reported in milligrams per kilogram (mg/kg), dry weight basis. EPA will be using these data to demonstrate compliance with EPA's land application requirements (40 CFR 503, Subpart B).

Compliance Monitoring Periods

INSTRUCTIONS: Please use the table below to identify the start date and end date for each compliance monitoring period. The number of compliance monitoring periods reported will correspond to the required frequency of monitoring (monthly, quarterly, semi-annually, or annually). For example, if monthly monitoring is required, you should report 12 compliance monitoring periods. The required frequency is determined by the number of metric tons (dry weight basis) of sewage sludge or biosolids land applied in the reporting period for this SSUID (40 CFR 503.16 (http://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_116)).

Compliance Monitoring Event No. 1 **Compliance Monitoring Period Start Date:** 01/01/2018 **Compliance Monitoring Period End Date:** 12/31/2018

Do you have analytical results to report for this monitoring period? ☑ YES ☐ NO

Are you reporting maximum pollutant concentrations that are equivalent to the monthly average pollutant concentrations for this compliance monitoring event? [For example, this will be the case if you only collected and analyzed one sample of sewage sludge or biosolids for this compliance monitoring period.]

☑ YES ☐ NO

Maximum Concentration Data for All Sewage Sludge or Biosolids Applied to Land

This section summarizes the maximum pollutant concentrations in the biosolids or sewage sludge that was applied to land during the compliance monitoring period for this SSUID. In accordance with 40 CFR 503.13(a) (http://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_113), EPA's regulations prohibit land application of bulk sewage sludge or sewage sludge sold or gave away sewage sludge in a bag or other container when one or more sewage sludge pollutant concentrations in the sewage sludge exceed a land application ceiling pollutant limit (Table 1 of 40 CFR 503.13 (http://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_113)). EPA will compare the pollutant concentrations in this section against the ceiling concentration limits in Table 1 of 40 CFR 503.13 (http://www.ecfr.gov/cgi-bin/text-idx?node=pt40.32.503&rgn=div5#se40.32.503_113) to identify noncompliance events. All pollutant monitoring data should be reported in milligrams per kilogram (mg/kg), dry weight basis.

Please only select a "No Data Indicator Code" if you are reporting no data for the sampling period or particular parameter.

Sewage Sludge or Biosolids Parameter	Value Qualifier	Parameter Concentration (mg/kg, dry-weight basis)	If No Data, Select One Of The Following
Arsenic	<	12.6	
Cadmium	<	3.15	
Copper	=	456	
Lead	=	26.9	
Mercury	<	1.26	
Molybdenum	=	6.12	
Nickel	=	21.4	
Selenium	<	12.6	
Zinc	=	803	

Pathogen And Vector Attraction Reduction

Report the maximum pathogen densities in the sewage sludge or biosolids that was placed on an active sewage sludge unit during the compliance monitoring period for this SSUID.

Sewage Sludge or Biosolids Parameter	Value Qualifier	Value	If No Data, Select One Of The Following
Fecal Coliform	=	41400	

Report the vector attraction reduction data for the biosolids or sewage sludge that was placed on an active sewage sludge unit during the compliance monitoring period for this SSUID.

Sewage Sludge or Biosolids Parameter	Value Qualifier	Value	If No Data, Select One Of The Following
Specific Oxygen Uptake Rate (SOUR)	=	1.04	

Monthly Average Pollutant Concentration Data for All Sewage Sludge or Biosolids Applied to Land

This section summarizes the monthly average pollutant concentrations in the biosolids or sewage sludge that was applied to land during the compliance monitoring period for this SSUID. All pollutant

monitoring data should be reported in milligrams per kilogram (mg/kg), dry weight basis.

Sewage Sludge or Biosolids Parameter	Value Qualifier	Parameter Concentration (mg/kg, dry-weight basis)	If No Data, Select One Of The Following
Arsenic	<	12.6	
Cadmium	<	3.15	
Copper	=	456	
Lead	=	26.9	
Mercury	<	1.26	
Nickel	=	21.4	
Selenium	<	12.6	
Zinc	=	803	

Report the average concentration (mg/kg, dry weight basis) of Total Nitrogen (TKN plus Nitrate-Nitrite, as N) in the sewage sludge or biosolids that was applied to land during the compliance monitoring period for this SSUID.

Sewage Sludge or Biosolids Parameter	Value Qualifier	Parameter Concentration (mg/kg, dry-weight basis)	If No Data, Select One Of The Following
Total Nitrogen (TKN plus Nitrate-Nitrite)	=	6380	

Sludge Management - Surface Disposal

Sludge Management - Incineration

Sludge Management - Other Management Practice

Additional Information

Please enter any additional information that you would like to provide in the comment box below.

SOUR Test 05/23/2018: 1.04 mgO2/hr/gr Worksheet Attached 2018 Annual BioSolids Analysis Attached BioSolids TCLP/PCB's Attached (2014) <5 years

Additional Attachments

Name	Created Date	Size
2018 Annual BioSolids Analysis (ESC).pdf	01/15/2019 12:00 PM	613.37 KB
2018 SOUR Test.pdf	01/15/2019 12:00 PM	2.50 MB
2014 TCLP & PCB Analysis (ESC).pdf	01/15/2019 12:25 PM	1.70 MB

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Signing an electronic document on behalf of another person is subject to criminal, civil, administrative, or other lawful action.

Certified By: Jacob D. Burke (JACOBBURKE)

Certified On: 01/15/2019 12:29 PM

Jamestown Wastewater Treatment Plant

199 State Garage Road
Jamestown, Tennessee 38556
Jacob Burke/ Superintendent

2018

Total BioSolids Land Applied
Dry Metric Tons

Month	Gallons	% Solids	Dry Metric Tons
Jan.	0		
Feb.	0		
March	0		
April	96,000	2.21%	8.025
May	130,000	2.27%	11.1616
June	94,000	1.78%	6.3286
July	82,000	2.03%	6.2960
Aug.	0		
Sept.	106,000	1.93%	7.7379
Oct.	68,000	1.38%	3.5493
Nov.	0		
Dec.			
TOTAL	**576,000 Gals**		**43.0984 MT**

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Tax I.D. 62-0814289

Est. 1970

Mr. Jacob Burke
Jamestown Wastewater Plant
PO Box 670
Jamestown, TN 38556

Report Summary

Tuesday August 12, 2014

Report Number: L713637
Samples Received: 08/04/14
Client Project: BIO-SOLIDS

Description: SS-Biosolids TCLP/PCB's

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Janet Hensley

Janet Hensley , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Mr. Jacob Burke
Jamestown Wastewater Plant
PO Box 670
Jamestown, TN 38556

August 12,2014

Date Received : August 04, 2014
Description : SS-Biosolids TCLP/PCB's

Sample ID : DIGESTER

Collected By : Jacob Burke
Collection Date : 08/04/14 08:12

ESC Sample # : L713637-01

Site ID :

Project : BIO-SOLIDS

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time
TCLP Extraction	-				1311	08/07/14 [illegible]
Mercury	BDL	0.010	mg/l	0.20	7470A	[illegible]
Arsenic	BDL	0.45	mg/l	5.0	6010B	[illegible]
Barium	BDL	1.4	mg/l	100	6010B	08/08/14 1537 JDG 1
Cadmium	BDL	0.45	mg/l	1.0	6010B	08/08/14 1537 JDG 1
Chromium	BDL	0.45	mg/l	5.0	6010B	08/08/14 1537 JDG 1
Lead	BDL	0.45	mg/l	5.0	6010B	08/08/14 1537 JDG 1
Selenium	BDL	0.45	mg/l	1.0	6010B	08/08/14 1537 JDG 1
Silver	BDL	0.45	mg/l	5.0	6010B	08/08/14 1537 JDG 1
TCLP ZHE Extraction	-				1311	08/06/14 0735 CCS 1
TCLP Volatiles						
Benzene	BDL	0.050	mg/l	0.50	8260B	08/07/14 0506 JC 1
Carbon tetrachloride	BDL	0.050	mg/l	0.50	8260B	08/07/14 0506 JC 1
Chlorobenzene	BDL	0.050	mg/l	100	8260B	08/07/14 0506 JC 1
Chloroform	BDL	0.25	mg/l	6.0	8260B	08/07/14 0506 JC 1
1,2-Dichloroethane	BDL	0.050	mg/l	0.50	8260B	08/07/14 0506 JC 1
1,1-Dichloroethene	BDL	0.050	mg/l	0.70	8260B	08/07/14 0506 JC 1
2-Butanone (MEK)	BDL	0.50	mg/l	200	8260B	08/07/14 0506 JC 1
Tetrachloroethene	BDL	0.050	mg/l	0.70	8260B	08/07/14 0506 JC 1
Trichloroethene	BDL	0.050	mg/l	0.50	8260B	08/07/14 0506 JC 1
Vinyl chloride	BDL	0.050	mg/l	0.20	8260B	08/07/14 0506 JC 1
Surrogate Recovery						
Toluene-d8	100.		% Rec.	114.	8260B	08/07/14 0506 JC 1
Dibromofluoromethane	103.		% Rec.	125.	8260B	08/07/14 0506 JC 1
a,a,a-Trifluorotoluene	103.		% Rec.	114.	8260B	08/07/14 0506 JC 1
4-Bromofluorobenzene	104.		% Rec.	128.	8260B	08/07/14 0506 JC 1
TCLP Pesticides						
Chlordane	BDL	0.0050	mg/l	0.030	8081	08/08/14 1446 CBB 1
Endrin	BDL	0.0050	mg/l	0.020	8081	08/08/14 1446 CBB 1
Heptachlor	BDL	0.0050	mg/l	0.0080	8081	08/08/14 1446 CBB 1
Lindane	BDL	0.0050	mg/l	0.40	8081	08/08/14 1446 CBB 1
Methoxychlor	BDL	0.0050	mg/l	10.	8081	08/08/14 1446 CBB 1
Toxaphene	BDL	0.010	mg/l	0.50	8081	08/08/14 1446 CBB 1
Surrogate Recovery						
Decachlorobiphenyl	89.2		% Rec.	123.	8081	08/08/14 1446 CBB 1
Tetrachloro-m-xylene	80.2		% Rec.	114.	8081	08/08/14 1446 CBB 1

TCLP Herbicides

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REPORT OF ANALYSIS

Mr. Jacob Burke
Jamestown Wastewater Plant
PO Box 670
Jamestown, TN 38556

August 12,2014

ESC Sample # : L713637-01

Site ID :

Project : BIO-SOLIDS

Date Received : August 04, 2014
Description : SS-Biosolids TCLP/PCB's

Sample ID : DIGESTER

Collected By :
Collection Date : 08/04/14 08:12

Parameter	Result	Det. Limit	Units	Limit	Method	Date/Time
2,4,5-TP (Silvex)	BDL	0.0020	mg/l	1.0	8151A	08/11/14 [illegible]
2,4-D	BDL	0.0020	mg/l	10.	8151A	08/11/14 [illegible]
Surrogate Recovery						
2,4-Dichlorophenyl Acetic Acid	83.5		% Rec.		8151A	08/11/14 [illegible]
TCLP Semi-Volatiles						
1,4-Dichlorobenzene	BDL	0.10	mg/l	7.5	8270C	08/08/14 2102 ADF 1
2,4-Dinitrotoluene	BDL	0.10	mg/l	0.13	8270C	08/08/14 2102 ADF 1
Hexachlorobenzene	BDL	0.10	mg/l	0.13	8270C	08/08/14 2102 ADF 1
Hexachloro-1,3-butadiene	BDL	0.10	mg/l	0.50	8270C	08/08/14 2102 ADF 1
Hexachloroethane	BDL	0.10	mg/l	3.0	8270C	08/08/14 2102 ADF 1
Nitrobenzene	BDL	0.10	mg/l	2.0	8270C	08/08/14 2102 ADF 1
Pyridine	BDL	0.10	mg/l	5.0	8270C	08/08/14 2102 ADF 1
3&4-Methyl Phenol	BDL	0.10	mg/l	400	8270C	08/08/14 2102 ADF 1
2-Methylphenol	BDL	0.10	mg/l	200	8270C	08/08/14 2102 ADF 1
Pentachlorophenol	BDL	0.10	mg/l	100	8270C	08/08/14 2102 ADF 1
2,4,5-Trichlorophenol	BDL	0.10	mg/l	400	8270C	08/08/14 2102 ADF 1
2,4,6-Trichlorophenol	BDL	0.10	mg/l	2.0	8270C	08/08/14 2102 ADF 1
Surrogate Recovery						
2-Fluorophenol	23.8		% Rec.	87.0	8270C	08/08/14 2102 ADF 1
Phenol-d5	15.9		% Rec.	67.0	8270C	08/08/14 2102 ADF 1
Nitrobenzene-d5	26.6		% Rec.	120.	8270C	08/08/14 2102 ADF 1
2-Fluorobiphenyl	45.9		% Rec.	122.	8270C	08/08/14 2102 ADF 1
2,4,6-Tribromophenol	46.7		% Rec.	148.	8270C	08/08/14 2102 ADF 1
p-Terphenyl-d14	36.4		% Rec.	149.	8270C	08/08/14 2102 ADF 1

BDL - Below Detection Limit
Det. Limit - Estimated Quantitation Limit(EQL)
Limit - Maximum Contaminant Level as established by the US EPA
Note:
The reported analytical results relate only to the sample submitted.

Reported: 08/12/14 17:55 Printed: 08/12/14 17:56

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REPORT OF ANALYSIS

Mr. Jacob Burke
Jamestown Wastewater Plant
PO Box 670
Jamestown, TN 38556

August 12,2014

Date Received : August 04, 2014
Description : SS-Biosolids TCLP/PCB's

ESC Sample # : L713637-02

Sample ID : DIGESTER

Site ID :

Project # : BIO-SOLIDS

Collected By :
Collection Date : 08/04/14 08:12

Parameter	W.Result	RDL	D.Result	RDL	Units	Method	Date
Total Solids	93.4	0.100	93.4		%	2540 G-2	08/11/14
Polychlorinated Biphenyls							
PCB 1016	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1221	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1232	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1242	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1248	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1254	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCB 1260	BDL	0.017	BDL	0.018	mg/kg	8082	08/10/14
PCBs Surrogates							
Decachlorobiphenyl	94.6		94.6		% Rec.	8082	08/10/14
Tetrachloro-m-xylene	99.1		99.1		% Rec.	8082	08/10/14

BDL - Below Detection Limit
RDL - Detection Limit- Estimated Quantitation Limit(EQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 08/12/14 17:55 Printed: 08/12/14 17:56

ANALYTICAL REPORT

May 31, 2018

Jamestown Wastewater Plant

Sample Delivery Group:	L995575
Samples Received:	05/21/2018
Project Number:	ANNUAL SLUDGE
Description:	Annual Sludge

Report To:

Mr. Jacob Burke
PO Box 670
Jamestown, TN 38556

Entire Report Reviewed By: Cassandra Foster

Cassandra Foster
Technical Service Representative

TABLE OF CONTENTS

ONE LAB. NATIONWIDE.

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.

SLUDGE L995575-01 Solid			Collected by Jacob Burke	Collected date/time 05/21/18 08:45	Received date/time 05/21/18 11:10
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Microbiology by Method EPA 1681	WG1114359	1000	05/22/18 08:25	05/22/18 08:25	BGE
Total Solids by Method 2540 G-2011	WG1115017	1	05/24/18 15:01	05/24/18 15:15	MMF
Wet Chemistry by Method 350.1	WG1114379	1	05/22/18 09:48	05/23/18 08:33	KK
Wet Chemistry by Method 4500NOrg C-2011	WG1116223	1	05/26/18 09:44	05/29/18 10:33	KK
Wet Chemistry by Method 9056A	WG1115021	1	05/23/18 15:19	05/24/18 01:48	MAJ
Mercury by Method 7471A	WG1114585	1	05/22/18 14:16	05/23/18 01:22	EL
Metals (ICP) by Method 6010B	WG1114569	.1	05/22/18 17:41	05/24/18 00:30	JDG

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Cassandra Foster

Cassandra Foster
Technical Service Representative

Microbiology by Method EPA 1681

Analyte	Result MPN/g	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform -Geom.Mean	41400		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -1	12000		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -2	12300		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -3	79800		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -4	80800		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -5	49000		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -6	42200		1000	05/22/2018 08:25	WG1114359
Fecal Coliform -7	106000		1000	05/22/2018 08:25	WG1114359

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	1.59		1	05/24/2018 15:15	WG1115017

Wet Chemistry by Method 350.1

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	36.7	5.00	2310	315	J3	1	05/23/2018 08:33	WG1114379

Wet Chemistry by Method 4500NOrg C-2011

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	101	20.0	6380	1260		1	05/29/2018 10:33	WG1116223

Wet Chemistry by Method 9056A

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Nitrate-Nitrite	ND	2.00	ND	126		1	05/24/2018 01:48	WG1115021

Mercury by Method 7471A

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Mercury	ND	0.0200	ND	1.26		1	05/23/2018 01:22	WG1114585

Metals (ICP) by Method 6010B

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Arsenic	ND	0.200	ND	12.6		.1	05/24/2018 00:30	WG1114569
Cadmium	ND	0.0500	ND	3.15		.1	05/24/2018 00:30	WG1114569
Copper	7.23	0.200	456	12.6		.1	05/24/2018 00:30	WG1114569
Lead	0.426	0.0500	26.9	3.15		.1	05/24/2018 00:30	WG1114569
Molybdenum	0.0970	0.0500	6.12	3.15		.1	05/24/2018 00:30	WG1114569
Nickel	0.340	0.200	21.4	12.6		.1	05/24/2018 00:30	WG1114569
Selenium	ND	0.200	ND	12.6		.1	05/24/2018 00:30	WG1114569
Zinc	12.7	0.500	803	31.5		.1	05/24/2018 00:30	WG1114569

Method Blank (MB)

(MB) R3313235-1 05/24/18 15:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000			

L995575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L995575-01 05/24/18 15:15 • (DUP) R3313235-4 05/24/18 15:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	1.59	1.58	1	0.187		5

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3313235-2 05/24/18 15:15 • (LCSD) R3313235-3 05/24/18 15:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	%	%	%	%	%	%			%	%
Total Solids	50.0	50.0	50.0	99.9	100	85.0-115			0.0330	5

Method Blank (MB)

(MB) R3312204-1 05/23/18 08:10

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Ammonia Nitrogen	U		1.57	5.00

L995069-08 Original Sample (OS) • Duplicate (DUP)

(OS) L995069-08 05/23/18 08:28 • (DUP) R3312204-6 05/23/18 08:29

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Ammonia Nitrogen	U	5.70	1	200	J P1	20

L995575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L995575-01 05/23/18 08:33 • (DUP) R3312204-8 05/23/18 08:37

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Ammonia Nitrogen	2310	1880	1	20.5	J3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3312204-2 05/23/18 08:11 • (LCSD) R3312204-3 05/23/18 08:12

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Ammonia Nitrogen	500	462	454	92.3	90.8	90.0-110			1.64	20

L994420-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L994420-01 05/23/18 08:14 • (MS) R3312204-4 05/23/18 08:16 • (MSD) R3312204-5 05/23/18 08:17

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Ammonia Nitrogen	649	3.30	374	344	57.1	52.5	1	80.0-120	J6	J6	8.32	20

L995075-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L995075-03 05/23/18 08:31 • (MS) R3312204-7 05/23/18 08:32

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Ammonia Nitrogen	680	18.0	510	72.4	1	80.0-120	J6

Method Blank (MB)

(MB) R3313507-1 05/29/18 10:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Kjeldahl Nitrogen, TKN	U		4.48	20.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3313507-2 05/29/18 10:30 • (LCSD) R3313507-3 05/29/18 10:31

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Kjeldahl Nitrogen, TKN	400	386	396	96.5	99.0	90.0-110			2.56	20

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3312766-1 05/23/18 17:05

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Nitrate-Nitrite	U		0.107	2.00

L994944-01 Original Sample (OS) • Duplicate (DUP)

(OS) L994944-01 05/23/18 21:16 • (DUP) R3312766-4 05/23/18 21:37

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Nitrate-Nitrite	25.8	33.8	1	26.9	J3 P1	15

L995695-04 Original Sample (OS) • Duplicate (DUP)

(OS) L995695-04 05/24/18 03:54 • (DUP) R3312766-7 05/24/18 04:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Nitrate-Nitrite	ND	0.000	1	0.000		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3312766-2 05/23/18 17:26 • (LCSD) R3312766-3 05/23/18 17:47

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Nitrate-Nitrite	40.0	39.8	39.9	99.4	99.7	80.0-120			0.334	15

L995443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L995443-01 05/23/18 23:22 • (MS) R3312766-5 05/23/18 23:43 • (MSD) R3312766-6 05/24/18 00:04

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Nitrate-Nitrite	121	5.25	121	122	95.4	96.1	1	80.0-120			0.730	15

Method Blank (MB)

(MB) R3312170-1 05/22/18 23:49

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	0.00358	J	0.00280	0.0200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3312170-2 05/22/18 23:51 • (LCSD) R3312170-3 05/22/18 23:53

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.300	0.249	0.243	83.1	81.0	80.0-120			2.61	20

L995689-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L995689-01 05/22/18 23:56 • (MS) R3312170-4 05/22/18 23:58 • (MSD) R3312170-5 05/23/18 00:00

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.334	0.00455	0.274	0.204	80.5	59.7	1	75.0-125		J3 J6	29.2	20

Method Blank (MB)

(MB) R3312713-1 05/24/18 09:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Arsenic	U		0.650	2.00
Cadmium	U		0.0700	0.500
Copper	U		0.530	2.00
Lead	U		0.190	0.500
Molybdenum	U		0.160	0.500
Nickel	U		0.490	2.00
Selenium	U		0.740	2.00
Zinc	U		0.590	5.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3312713-2 05/24/18 09:38 • (LCSD) R3312713-4 05/24/18 10:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Arsenic	100	103	93.1	103	93.1	80.0-120			10.1	20
Cadmium	100	102	93.2	102	93.2	80.0-120			9.38	20
Copper	100	105	94.4	105	94.4	80.0-120			10.1	20
Lead	100	104	94.4	104	94.4	80.0-120			9.88	20
Molybdenum	100	108	97.2	108	97.2	80.0-120			10.1	20
Nickel	100	108	98.6	108	98.6	80.0-120			9.04	20
Selenium	100	103	94.1	103	94.1	80.0-120			8.71	20
Zinc	100	103	94.1	103	94.1	80.0-120			9.02	20

L995345-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L995345-01 05/23/18 23:31 • (MS) R3312770-5 05/23/18 23:37 • (MSD) R3312770-6 05/23/18 23:41

Analyte	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	110	1.41	104	111	93.0	99.4	1	75.0-125			6.58	20
Cadmium	110	U	107	115	96.6	104	1	75.0-125			7.31	20
Copper	110	3.26	109	116	96.2	102	1	75.0-125			6.09	20
Lead	110	9.95	112	120	92.3	99.5	1	75.0-125			6.80	20
Molybdenum	110	0.194	109	116	98.3	105	1	75.0-125			6.71	20
Nickel	110	8.36	114	127	95.8	108	1	75.0-125			11.0	20
Selenium	110	U	105	112	94.7	101	1	75.0-125			6.94	20
Zinc	110	22.4	133	146	100	112	1	75.0-125			8.88	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.

Jamestown Wastewater Plant

PO Box 670
Jamestown, TN 38556

Billing Information:
Accounts Payable
PO Box 670 Hwy 52E
Jamestown, TN 38556

Pres Chk

Report to: Mr. Jacob Burke

Email To: jacob.burke@jamestowntn.gov

Project Description: Annual Sludge

City/State Collected: Jamestown TN

Phone: 931-879-7571
Fax: 931-879-3543

Client Project # ANNUAL SLUDGE

Lab Project # JAME02-ANN. SLUDGE

Collected by (print): Jacob Burke

Site/Facility ID #

P.O. # 5546644

Collected by (signature): Jacob Burke

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	FCLS Microbiological	Metals 125mlHDPE-NoPres	TKN, NO2NO3,NH3 500mlHDPE-NoPres	Total Solids 125mlHDPE-NoPres	Remarks	Sample # (lab only)
SLUDGE	Grab	SS		5/21/18	8:45am	12	X	X	X	X		-1

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: ___UPS ___FedEx ___Courier CLT

Tracking #

Relinquished by: (Signature) Jacob Burke — Date: 5/21/18 — Time: 9:00AM

Received by: (Signature)

Trip Blank Received: Yes / (No) HCL / MeoH TBR

Relinquished by: (Signature) — Date: 5/21/18 — Time: 11:10am

Received by: (Signature)

Temp: 1.6 °C Bottles Received: 12

If preservation required by Login: Date/Time

Relinquished by: (Signature) — Date: — Time:

Received for lab by: (Signature) — Date: 5/21/18 — Time: 1110

Hold:

Condition: NCF / OK

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
a laboratory of Pace Analytical

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 945575

T# E030

Acctnum: JAME02

Template: T7693

Prelogin: P629193

TSR: 067 - Janet Hensley

PB: 12-12-17 CM

Shipped Via: FedEX Ground

Sample Receipt Checklist
COC Seal Present/Intact: ___NP ___Y ___N
COC Signed/Accurate: ___Y ___N
Bottles arrive intact: ___Y ___N
Correct bottles used: ___Y ___N
Sufficient volume sent: ___Y ___N
If Applicable
VOA Zero Headspace: ___Y ___N
Preservation Correct/Checked: ___Y ___N

Jamestown Wastewater Treatment Plant

SOUR TEST

Date: 5/23/18

Time: 12:03pm

Sample Collected By: Jack

Test Run By: Jack

Time Test Started: 12:11pm

Time Test Ended: 12:32pm

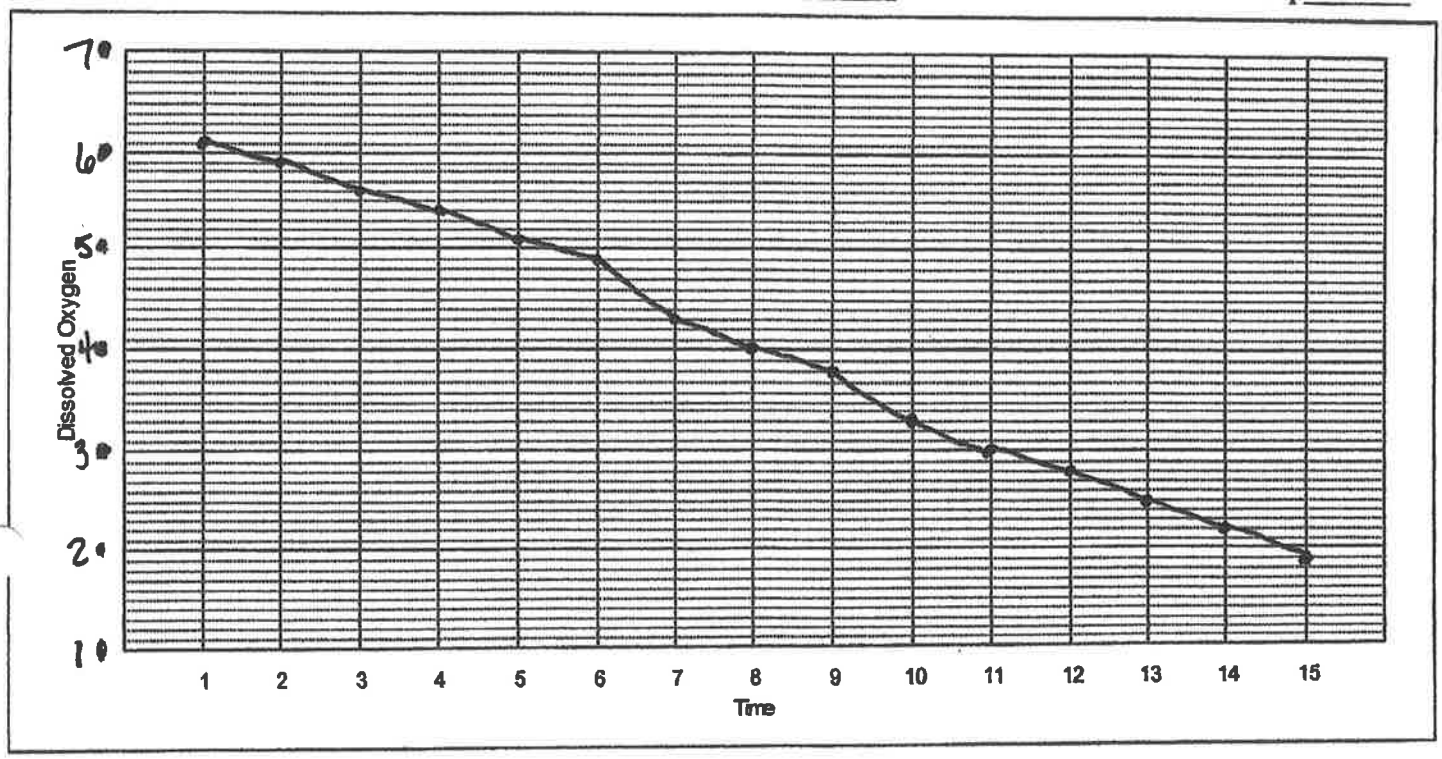
	D.O.	Temp
Beginning Reading	6.19	22.1°C
End Reading	1.92	22.0°C

Time (Minutes)	D.O. Reading
1	6.09
2	5.90
3	5.61
4	5.43
5	5.11
6	4.86
7	4.34
8	4.02
9	3.76
10	3.33
11	2.99
12	2.80
13	2.52
14	2.19
15	1.92

Specific Oxygen Uptake Rate
SOUR

Date 5/23/18 Sample Location Digester Time 12:03pm
Analyst JB

Begin Temp 22.1°C Average Temp 22.0°C End Temp 22.0°C



Enter D.O. readings at each elapsed minute on the graph.
Graph the data and determine the time period where the slope is constant with a best fit line.
Use the first and last D.O. reading from this constant slope portion of the graph in the OUR formula.

Oxygen Uptake Rate (OUR) (S.M. 2710B)

$$\text{OUR mg } O_2\text{/L/hr} = \frac{\text{Begin Dissolved Oxygen - End Dissolved Oxygen}}{\text{Elapsed Time}} \times 60$$

$$\text{OUR} = \frac{(\ 6.19\ \text{mg/L} - 1.92\ \text{mg/l})}{(\ 15\ )\ \text{Minutes}} \times 60 = 17.08\ \text{mg } O_2\text{/L/hr}$$

Brett Ward, University of Tennessee, Municipal Technical Advisory Service

Total Solids see S.M. 2540 G

Weight of Dish A = 73.5839 In oven - 12:06pm

Weight of Dish and Wet Sludge C= 98.1145 Out to Cool - 7:33a 5/25

Weight after Drying D= 73.9465 Weighed - 1:49pm 5/25

$$\% \text{ Solids} = \frac{(D-A)}{(C-A)} * 100$$

$$\% \text{ Solids} = \frac{(73.9465 - 73.5839)}{(98.1145 - 73.5839)} = \frac{(.3626)}{(24.5306)} = .01478 * 100 = \boxed{1.49\%}$$

Specific Oxygen Uptake Rate (SOUR)

1. $$\text{SOUR mg } O_2/\text{hr/g} = \frac{\text{OUR mg } O_2 \text{ /L/hr}}{\% \text{ Total Solids x 1000 g/L}}$$

Note: **enter total solids as a decimal,**

$$\text{SOUR} = \frac{(17.08) \text{ mg } O_2/\text{L/hr}}{(.0149) \text{ x 1000 g/L } (14.9)} = 1.15 \text{ mg } O_2/\text{hr/g}$$

Temperature Adjustment

SOUR @ Average Temp x correction factor = SOUR @ 20E C

1.15 mg O_2/ hr/g @ 22 °C x .90 = 1.04 mg O_2/hr/g @ 20° C

1.04 mg O_2/hr/g

< 1.50

Revised 2-04

Specific Oxygen Uptake Rate, Temperature Adjustment

SOUR is determined at the digester's ambient temperature and then adjusted as follows.

$$SOUR@20°C = SOUR @ \text{Ambient Temp.} * A^{(20-\text{Ambient temp.})}$$

Where A = 1.05 above 20°
= 1.07 below 20°
These factors are good between 10° C and 30° C

Simplified

SOUR @20° C = SOUR @ Ambient Temp. * Correction

$$\text{Correction} = A^{(20-\text{Ambient Temp})}$$

Temp° C	Correction
10	1.97
11	1.84
12	1.72
13	1.60
14	1.50
15	1.40
16	1.31
17	1.22
18	1.14
19	1.07
20	1.00
21	0.95
22	0.90
23	0.86
24	0.82
25	0.78
26	0.75
27	0.71
28	0.68
29	0.64
30	0.61

Reference: Formula for these calculations is taken from EPA's "White House Manual", page129.
Environmental Regulations and Technology, Control of Pathogens and Vector Attraction in Sewage Sludge, 1999. EPA/625/R-92/013

Brett Ward, University of Tennessee, Municipal Technical Advisory Service

TOTAL SOLIDS

A. Weight of dish and dried solids (grams)

B. Weight of dish only (TARE)

FORMULA: $\frac{(A-B) \times 1{,}000{,}000}{\text{Sample Vol. (mLs)}}$

$\frac{73.9465 - 73.5839}{25mL} \times 1000000 = 14{,}504 mg/L$

A. 73.9465

B. 73.5839

TOTAL SOLIDS: 14,504 mg/L

Put dish in Furnance to heat up w/ oven - Start Timer when Temp is 550°C (1 hour)

1 hr @ 550°C

VOLATILE SOLIDS

A. Weight of dish and dried solids BEFORE ignition

B. Weight of dish and ash AFTER ignition

C. Weight of DISH ONLY (TARE)

In Furnace - 7:50 pm

Oven to Cool - 9:12 am

Desicator to Cool - 12:15 pm

Weighed - 3:02 pm

FORMULA: $\frac{(A-B) \times 1{,}000{,}000}{\text{Sample Vol. (mLs)}}$

A. 73.9465

B. 73.7037

C. 73.5839

TOTAL VOLATILE SOLIDS: 9712 mg/L

Fixed Solids - 4792 mg/L

Apparatus

Reference: SM 19th Ed., "White House Manual"

Large sealable container (Clean one gallon jug works well)
DO Meter with effective stirrer
Magnetic stirrer (may not be needed if DO meter has effective stirrer)
Timer or stop watch
300 ml BOD bottle
1000 ml beaker
Equipment for performing the total solids test

Note
This test can only be performed on sludges from Aerobic Digesters or treatment units. The test must be performed at ambient temperatures between 10E C and 30E C. The temperature must be adjusted to 20E C by using the temperature adjustment formula. The test is proven on sludges less than or equal to 2.0 % solids, EPA may not recognize results on thicker sludges.
Sample from well mixed digesters while aeration is in operation. Test within 15 min of collection. A test requires two subsamples to be analyzed per sample.

Procedure

1. Calibrate the DO meter.
2. Collect a sample from the digester using the large sealable container, filling it about one half full.
3. Use the DO meter to check DO and temperature. If DO is low (under 4.0 mg/L, preferred DO is 5-6 mg/L) shake the remaining sample in the sample container to elevate the DO level.
4. Fill a BOD bottle with sample and insert DO probe using caution not to trap air bubbles in the bottle.
5. Place the BOD bottle into the 1000 ml beaker and pour sludge into the beaker until the level reaches the neck of the BOD bottle. This will insulate the bottle contents during the test. If the DO probe does not provide complete mixing use a magnetic stirrer.
6. Begin the test by reading and recording the beginning Temperature and DO.
7. Read the DO every minute for 15 minutes. If the DO falls below 1.0 mg/ L discontinue the test.
8. Record the ending temperature.
9. Graph the DO readings on the SOUR worksheet. If there is an initial rapid drop in the DO levels followed by a slower steady slope downward, discard those initial values and use only the values that give a steady oxygen uptake. The test could be repeated allowing the initial rapid uptake to take place before the 15 minute time is begun.
10. Perform the Total solids test S.M. 2540 G to complete the SOUR calculations.
11. Make the Temperature adjustments to the SOUR calculations.

Tennessee Department of Environment and Conservation - Division of Water Pollution Control

Exhibit B - Agronomic Application Rate Calculations Based on Nitrogen (N)

Revision 2/03/11

BACKGROUND INFORMATION/QUESTIONS	FILL IN BELOW
WWTP NAME	Jamestown WWTP
WWTP NPDES PERMIT NUMBER	TN0062634
SITE NAME	
COUNTY	Fentress
E.A.C.	
SITE TRACKING NUMBER	
LABORATORY NAME	Environmental Science Corp.
DATE OF ANALYSIS	5/21/18

SLUDGE/BIOSOLID ANALYSIS LABORATORY RESULTS

(Attached a copy of the laboratory analysis used for these calculations to this report)

TOTAL KJELDAHL NITROGEN (TKN)	6,380	mg/kg
AMMONIUM NITROGEN (NH_4-N)	2,310	mg/kg
NITRATE + NITRITE NITROGEN (NO_3-N + NO_2-N)	126	mg/kg
NITROGEN FROM SUPPLEMENTAL FERTILIZERS (If Appropriate)		lbs/acre
NITROGEN FROM IRRIGATION WATER (If Appropriate)		lbs/acre
NITROGEN FROM PREVIOUS CROP (Unless 2 is based on soil testing)		lbs/acre
OTHER (If Appropriate) Specify _____		lbs/acre

SELECT CROP TYPE (SELECT ONLY ONE)	YES
1 - CORN (GRAIN) EXPECT YIELD 100 - 125 BUSHELS	☐
2 - CORN (GRAIN) EXPECT YIELD 126 - 150 BUSHELS	☐
3 - CORN (SILAGE) EXPECT YIELD 20 TONS	☐
4 - SOYBEANS EXPECT YIELD 30 BUSHELS	☐
5 - SOYBEANS EXPECT YIELD 40 BUSHELS	☐
6- SOYBEANS EXPECT YIELD 50 BUSHELS	☐
7- WHEAT EXPECT YIELD 40 BUSHELS	☐
8 - SUMMER ANNUAL GRASS EXPECT YIELD 6 TONS (1 CUTTINGS)	☐
9 - HYBRID HAY EXPECT YIELD 8 TONS (4 CUTTINGS)	☐
10 - TALL FESCUE HAY EXPECT YIELD 3 TONS (2 CUTTINGS)	☑
11 - ORCHARD GRASS HAY EXPECT YIELD 4 TONS (2 CUTTINGS)	☐
12 - SORGHUM (GRAIN) EXPECT YIELD 60 BUSHELS	☐
13 - COTTEN EXPECT YIELD 1 BALE / ACRE	☐
14 - COTTEN EXPECT YIELD 1.5 BALE / ACRE	☐

CROP TYPE (LBS N/ACRE/YEAR)	120

VOLATILIZATION FACTORS K_V

(SELECT ONLY ONE)	YES
1 - ARE BIOSOLIDS LIQUID AND SURFACE APPLIED?	☑
2 - ARE BIOSOLIDS LIQUID AND INJECTED INTO SOIL?	☐
3 - ARE BIOSOLID DEWATERED AND APPLIED IN ANY MANNER?	☐

VOLATILIZATION FACTORS K_V = 0.5

MINERALIZATION RATE F_M

WHAT BIOSOLID PROCESS GENERATE THE FRACTION (F_M) OF ORGANIC NITROGEN? (SELECT ONLY ONE)	SELECT PROCESS
ANAEROBIC PROCESS	☐
AEROBIC PROCESS	☑

Process selected is **Aerobic**

TIME AFTER BIOSOLIDS APPLICATION (SELECT ONLY ONE)	SELECT YEARS
0 - 1 YEARS	☑
1 - 2 YEARS	☐
2 - 3 YEARS	☐

MINERALIZATION RATE F_M = 0.3

AGRONOMIC LOADING RATE 22.0 tons/acre