



DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 DIVISION OF WATER RESOURCES
 William R. Snodgrass - Tennessee Tower
 312 Rosa L. Parks Avenue, 11th Floor
 Nashville, Tennessee 37243-1102
 (615) 532-0625

NOTICE OF INTENT (NOI) for Land Application of Non-Exceptional Quality Biosolids

Generator Name: BRISTOL STP #2	Current NPDES No: TN0023531	Existing Tracking No:
---------------------------------------	------------------------------------	-----------------------

Owner or Operator: (the person or legal entity which controls the site's operation)			
1	Name of Official Contact Person: (individual responsible for a site) MATTHEW DAKE	Title or Position: PROJECT MANAGER	
	Mailing Address: 578 BEAVER CREEK ROAD	City: BLUFF CITY	State: TN
	Phone: (423) 989-5570	E-mail: MATTHEW.DAKE@STSERVICES.COM	
2	Name of Local Contact Person: (if appropriate, write "same as #1") SAME AS 1	Title or Position:	
	Site Address: (this may or may not be the same as street address)	Site City:	State: TN
	Phone: ()	E-mail:	

Write in the box (to the right) or circle the number (above) to indicate where to send correspondence: **1**

All non-EQ biosolids land application sites that have been approved by the division prior to the effective date of this permit will be covered under this permit upon receipt of the signed certification statement, completed NOI and a copy of site approval letter(s).

A. OPERATIONAL INFORMATION:
Estimated annual amount of biosolids generated (dry weight basis) <u>2,000</u> (tons)
Estimated annual amount of biosolids to be land applied (dry weight basis) <u>2,000</u> (tons)
B. BIOSOLIDS TREATMENT PROCESS: Please provide a description of the biosolids treatment process used prior to biosolids being land applied (use a separate sheet if necessary): Waste activated sludge is co-settled with primary sludge in primary clarifiers. Co-settled sludge is pumped from primary clarifiers to a sludge holding tank where it is pumped to two belt filter presses for dewatering. The dewatered cake is conveyed to a pug mill where lime kiln dust is mixed with the cake. The alkaline stabilized cake is transported to a holding pad for subsequent land application.
C. CHEMICAL ANALYSIS: Indicate which contaminant standard(s) the biosolids meet: Table 1 Ceiling Contaminant Concentrations: <input type="checkbox"/> Table 3 Contaminant Concentrations: <input checked="" type="checkbox"/> • Submit analytical results to demonstrate eligibility for and compliance with the quality criteria specified in the General Permit. See attached summary. • Submit PCB and TCLP analytical results that are less five years old. See attached.
D. PATHOGEN REDUCTION LEVEL ACHIEVED: Indicate alternative used to achieve the pathogen reduction. For Class A, Alternatives 5 and 6; for Class B, Alternatives 2 and 3, list the specific Process to Further Reduce Pathogens (PFRP) or Process to Significantly Reduce Pathogens (PSRP). Class A: <input type="checkbox"/> Alternative 1 <input type="checkbox"/> Alternative 2 <input type="checkbox"/> Alternative 3 <input type="checkbox"/> Alternative 4 <input type="checkbox"/> Alternative 5 <input type="checkbox"/> Alternative 6 (List PFRP) (List Eq. PFRP) Class B: <input type="checkbox"/> Alternative 1 <input checked="" type="checkbox"/> Alternative 2 <u>Lime stabilization</u> <input type="checkbox"/> Alternative 3 (List PSRP) (List Eq. PSRP) Provide a detailed description of the pathogen treatment process. Attach laboratory analytical and/or process monitoring results, as appropriate, that demonstrate pathogen reduction is being achieved: Sufficient lime kiln dust is mixed with the dewatered cake in a pug mill to raise the pH of the biosolids to 12 or higher after 2 hours of contact. Process monitoring results attached.

Agronomic Rate Calculation Worksheet

Biosolids Analysis	DRY WT	Units
Total Kjeldahl Nitrogen (TKN)	18500	mg/kg
Ammonium nitrogen, (NH ₄ -H)	4880	mg/kg
Nitrate plus Nitrite Nitrogen, (NO ₃ -N + NO ₂ -N)	6.18	mg/kg

Crop Type Wheat (See Table 4) 60 lb N/acre/year

To convert milligram per kilogram to pounds per ton multiply by **0.002**

	Calculated	Units
1. Available nitrogen from biosolids		
a. Total Kjeldahl Nitrogen (TKN) (TKN(mg/kg) x 0.002)	37	lbs/ton
b. Ammonium nitrogen (NH ₄ -N) (NH ₄ -N (mg/kg) x 0.002)	10	lbs/ton
c. Nitrate plus Nitrite nitrogen (NO ₃ -N + NO ₂ -N) (NO ₃ -N + NO ₂ -N mg/kg x 0.002)	0.01236	lbs/ton
d. Total available inorganic nitrogen. (1b x Kv) plus 1c)	5	lbs/ton
Obtain Kv from Table 5	0.50	
e. Organic nitrogen in biosolids. (Subtract 1b from 1a.)	27	lbs/ton
f. Available organic nitrogen for the first year of application (Multiply 1e by F _m for anaerobic or aerobic process.)	8.17	lbs/ton
Obtain F _m from Table 6	0.30	
g. Total nitrogen available from biosolids. (Add 1d and 1f)	13.06	lbs/ton
2. Available nitrogen in the soil	0	lbs/acre
a. Soil test results of background nitrogen in soil	Default - Experience	
b. Or, Estimate of available nitrogen from previous biosolids applications (if estimate, attach explanation of how estimated.)		
3. Nitrogen supplied from other sources.		
a. Nitrogen from supplemental fertilizers (if appropriate)	0	lbs/acre
b. Nitrogen from irrigation water. (if appropriate)	0	lbs/acre
c. Nitrogen from previous crop. (Unless #2 is based on soil testing.)	0	lbs/acre
d. Other (if appropriate) (specify)	0	lbs/acre
e. Total Nitrogen from other sources: add a,b,c, and d if available	0	lbs/acre
4. Total nitrogen available from existing sources Add 2 and 3e	0	lbs/acre
5. Total nitrogen requirement of crop. Obtain information from Table 4 or agricultural extension agents or other agronomy professional	60	lbs/acre
6. Supplemental nitrogen needed from biosolids. (Subtract 4 from 5)	60	lbs/acre
7. Agronomic loading rate (Divide 6 by 1g)	4.59	tons/acre

Agronomic Rate Calculation Worksheet

Biosolids Analysis	DRY WT	Units
Total Kjeldahl Nitrogen (TKN)	18500	mg/kg
Ammonium nitrogen, (NH ₄ -N)	4880	mg/kg
Nitrate plus Nitrite Nitrogen, (NO ₃ -N + NO ₂ -N)	6.18	mg/kg

Crop Type Soybean/Millet Hay (See Table 4) 30 lb N/acre/year

To convert milligram per kilogram to pounds per ton multiply by **0.002**

	Calculated	Units
1. Available nitrogen from biosolids		
a. Total Kjeldahl Nitrogen (TKN) (TKN(mg/kg) x 0.002)	37	lbs/ton
b. Ammonium nitrogen (NH₄-N) (NH ₄ -N (mg/kg) x 0.002)	10	lbs/ton
c. Nitrate plus Nitrite nitrogen (NO₃-N + NO₂-N) (NO ₃ -N + NO ₂ -N mg/kg x 0.002)	0.01236	lbs/ton
d. Total available inorganic nitrogen. (1b x Kv) plus 1c)	5	lbs/ton
Obtain Kv from Table 5	0.50	
e. Organic nitrogen in biosolids. (Subtract 1b from 1a.)	27	lbs/ton
f. Available organic nitrogen for the first year of application (Multiply 1e by F _m for anaerobic or aerobic process.)	8.17	lbs/ton
Obtain F _m from Table 6	0.30	
g. Total nitrogen available from biosolids. (Add 1d and 1f)	13.06	lbs/ton
2. Available nitrogen in the soil	0	lbs/acre
a. Soil test results of background nitrogen in soil b. Or, Estimate of available nitrogen from previous biosolids applications (If estimate, attach explanation of how estimated.)	Default - Experience	
3. Nitrogen supplied from other sources.		
a. Nitrogen from supplemental fertilizers (if appropriate)	0	lbs/acre
b. Nitrogen from irrigation water. (if appropriate)	0	lbs/acre
c. Nitrogen from previous crop. (Unless #2 is based on soil testing.)	0	lbs/acre
d. Other (If appropriate) (specify)	0	lbs/acre
e. Total Nitrogen from other sources: add a,b,c, and d if available	0	lbs/acre
4. Total nitrogen available from existing sources	0	lbs/acre
Add 2 and 3e		
5. Total nitrogen requirement of crop.	30	lbs/acre
Obtain information from Table 4 or agricultural extension agents or other agronomy professional		
6. Supplemental nitrogen needed from biosolids.	30	lbs/acre
(Subtract 4 from 5)		
7. Agronomic loading rate	2.30	tons/acre
(Divide 6 by 1g)		

**Roger Morrison
106 Pleasant Grove Rd
Bluff City, Tennessee 37618
(423) 366-0031**

September 25, 2015

Mr. Robert Tipton
Environmental Assistance Center
Tennessee Department of Environment and Conservation
2305 Silverdale Road
Johnson City, Tennessee 37601-2162

RE: Land Application of Municipal Biosolids
Permission to Apply Biosolids – Roger Morrison Property
Bristol STP #2, NPDES Permit #TN0023531, Sullivan County

Dear Mr. Tipton:

The purpose of this letter is to notify you I have given the City of Bristol permission to apply alkaline stabilized biosolids to my properties located Deer Run PVT Drive Bristol, Tennessee. I understand site restrictions associated with land application of biosolids. Please contact me if you have questions.

Sincerely,



Roger Morrison



2790 Whitten Road, Memphis, TN 38133
Main 901.213.2400 ° Fax 901.213.2440
www.waypointanalytical.com

8/27/2015

Severn Trent Environmental Services
Mr. Mark Kalkwarf
578 Beaver Creek Rd.
Bluff City, TN, 37618-1220

Ref: Analytical Testing
Lab Report Number: 15-226-0288
Client Project Description: Bristol WWTP - 503 Biosolids
Project #19818

Dear Mr. Mark Kalkwarf:
Waypoint Analytical, Inc. received sample(s) on 8/14/2015 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2012) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Randy Thomas
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

Alabama #40750	Louisiana #04015	VA NELAP #460181	Texas #T104704180-11-6	Arkansas #88-0650
Mississippi	California #2904	NC #415	Oklahoma #9311	Virginia #00106
Kentucky #90047	Tennessee #TN02027	EPA #TN00012	Kentucky UST #41	Kansas #E-10396





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 www.waypointanalytical.com

06374

Severn Trent Environmental Services

Mr. Mark Kalkwarf

578 Beaver Creek Rd.

Bluff City , TN 37618-1220

Project Bristol WWTP - 503 Biosolids
 Information : Project #19818

Report Date : 08/27/2015

Received : 8/14/2015

Report Number : 15-226-0288

REPORT OF ANALYSIS

Lab No : 97374

Sample ID : 503 Biosolids

Matrix: Solids

Sampled: 8/13/2015 10:51

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	67.6	%	0.100	1	08/19/15 14:41	CJR	2540G-2011
Ammonia Nitrogen	4880	mg/Kg - dry	77.1	1	08/25/15 11:00	CLP	4500NH3C-2011
Nitrate (NO3-N)	<3.09	mg/Kg - dry	3.09	1	08/21/15 05:05	CGC	9056
Nitrite (NO2-N)	<3.09	mg/Kg - dry	3.09	1	08/21/15 05:05	CGC	9056
Total Solids	32.4	%	0.100	1	08/19/15 14:41	CJR	2540G-2011
Total Kjeldahl Nitrogen	18500	mg/Kg - dry	386	5	08/24/15 15:24	CLP	4500NORGD-2011
Total Phosphorus	4690	mg/Kg - dry	772	50	08/18/15 09:50	KM2	4500PE-2011
Total Arsenic	5.12	mg/Kg - dry	3.09	1	08/17/15 20:39	BKN	6010B
Total Cadmium	0.614	mg/Kg - dry	0.309	1	08/17/15 20:39	BKN	6010B
Total Chromium	30.6	mg/Kg - dry	0.771	1	08/17/15 20:39	BKN	6010B
Total Copper	137	mg/Kg - dry	0.772	1	08/17/15 20:39	BKN	6010B
Total Lead	13.0	mg/Kg - dry	0.925	1	08/17/15 20:39	BKN	6010B
Mercury (Total)	0.240	mg/Kg - dry	0.0410	1	08/15/15 21:03	KKM	7471A
Total Molybdenum	4.72	mg/Kg - dry	0.771	1	08/17/15 20:39	BKN	6010B
Total Nickel	17.9	mg/Kg - dry	0.771	1	08/17/15 20:39	BKN	6010B
Total Selenium	<3.09	mg/Kg - dry	3.09	1	08/17/15 20:39	BKN	6010B
Total Zinc	269	mg/Kg - dry	1.54	1	08/17/15 20:39	BKN	6010B
Neutralizing Value (%CCE)	34.3	%	0.0	1	08/21/15 12:51	AYG	AOAC 1.1.04 ~

**Qualifiers/
Definitions**

DF

Dilution Factor

MQL

Method Quantitation Limit

Cooler Receipt Form

Customer Number: **06374**

Customer Name: **Severn Trent Environmental Services**

Report Number: **15-226-0288**

Shipping Method

Fed Ex US Postal Lab Other :
 UPS Client Courier Thermometer ID: #8

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Number of coolers received	<input type="text" value="1"/>		
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Water - Sample containers properly preserved	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 – compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)	<input type="checkbox"/> Low concentration EnCore samplers (48 hr)		
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)	<input type="checkbox"/> Low conc pre-weighed vials (Sod Bis -14 d)		
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Any regulatory non-compliance issues will be recorded on non-compliance report.

Signature: Date & Time:



ENVIRONMENTAL TESTING & CONSULTING, INC.

www.etcmemphis.com

2799 Whitten Road

Memphis, Tennessee 38133

(901) 213-2400

Fax (901) 213-2440

"A Laboratory Management Partner"

4/28/2014

Severn Trent Environmental Services
Mr. Mark Kalkwarf
578 Beaver Creek Rd.
Bluff City, TN, 37618-1220

Ref: Analytical Testing
ETC Report Number: 14-101-0254
Client Project Description: Bristol WWTP - 503 Biosolids
Project #19327
Project Number: Bristol WWTP - 503 Biosolids

Dear Mr. Mark Kalkwarf:

Environmental Testing and Consulting, Inc. received sample(s) on 4/11/2014 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters (NELAP and non-NELAP) were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2012) and NELAC unless otherwise indicated. Any parameter for which the laboratory is not officially NELAP accredited is indicated by a '~' symbol. These are not included in the scope because NELAP accreditation is either not available or has not been applied for. Additional certifications may be held/are available for parameters, where NELAP accreditation is not required or applicable. A full list of certifications is available upon request.

Per EPA Methods Update Rule (May 2012), all methods from Standard Methods for the Examination of Water and Wastewater are reported to include the year of approval.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Randy Thomas
Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

Alabama #40750	Louisiana #04015	VA NELAP #460181	Texas #T104704180-11-6	Arkansas #88-0650
Mississippi	California #2904	NC #415	Oklahoma #9311	Virginia #00106
Kentucky #90047	Tennessee #TN02027	EPA #TN00012	Kentucky UST #41	Kansas #E-10396





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ENVIRONMENTAL TESTING & CONSULTING, INC.

2780 Whitten Road

Memphis, Tennessee 38133

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"A Laboratory Management Partner"

Client: Severn Trent Environmental Services
Project: Bristol WWTP - 503 Biosolids
Lab Report Number: 14-101-0254
Date: 4/28/2014

CASE NARRATIVE

Separatory Funnel Extraction 8081 Method SW-3510C (8081)

Sample 94236 (Bristol WWTP)

QC Batch No: L196394

The weight/volume extracted was reduced during the extraction procedure due to the nature of the sample. Reporting limits are factored for the sample size reduction.

Separatory Funnel Extraction Method SW-3510C (8270)

QC Batch No: L196329

The weight/volume extracted was reduced during the extraction procedure due to the nature of the sample. Reporting limits are factored for the sample size reduction.

Ultrasonic Extraction for PCB's Method SW-3546 (8082)

Sample 94237 (Bristol WWTP)

QC Batch No: L196152

The weight/volume extracted was reduced during the extraction procedure due to the nature of the sample. Reporting limits are factored for the sample size reduction.

Organochlorine Pesticides by GC (TCLP) Method SW-8081A (TCLP)

Sample 94236 (Bristol WWTP)

Analyte: Decachlorobiphenyl

QC Batch No: L196795

Surrogate(s) was flagged for recovery outside QC limits in this project sample. This sample was re-analyzed for verification, and/or dilution of target analytes. Batch QC samples (method blank and laboratory control samples) all showed surrogates within QC limits.



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Severn Trent Environmental Services
 Mr. Mark Kalkwarf
 578 Beaver Creek Rd.
 Bluff City, TN 37618-1220

Project ID :
 Project Bristol WWTP - 503 Biosolids
 Information : Project #19327

Report Date : 04/28/2014
 Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94236
 Sample ID : Bristol WWTP

Matrix: Sludge
 Sampled: 4/8/2014 11:10

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Method
TCLP Herbicide Extraction	Leachate			1	04/16/14 15:50	SAJ	SW-1311
TCLP Metals Extraction	Leachate			1	04/16/14 15:50	SAJ	SW-1311
TCLP Pesticide Extraction	Leachate			1	04/16/14 15:50	SAJ	SW-1311
TCLP SVOC Extraction	Leachate			1	04/16/14 15:50	SAJ	SW-1311
TCLP VOC ZHE Extraction	Leachate			1	04/16/14 16:02	SAJ	SW-1311 (ZHE)

Analytical Method: 6010B

Prep Method: 3005A

Prep Batch(es): L196322

Date/Time Prepped: 4/17/2014 10:30:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP Arsenic	<0.250	mg/l.	0.250	1	04/18/14 01:31	BKN	L196434
TCLP Barium	0.381	mg/L	0.250	1	04/18/14 01:31	BKN	L196434
TCLP Cadmium	<0.050	mg/L	0.050	1	04/18/14 01:31	BKN	L196434
TCLP Chromium	<0.100	mg/L	0.100	1	04/18/14 01:31	BKN	L196434
TCLP Lead	<0.100	mg/l.	0.100	1	04/18/14 13:22	JTR	L196630
TCLP Selenium	<0.500	mg/L	0.500	1	04/18/14 01:31	BKN	L196434
TCLP Silver	<0.050	mg/L	0.050	1	04/18/14 01:31	BKN	L196434

Qualifiers/ Definitions	*	Outside QC limit	DF	Dilution Factor
	I	Recovery out of range	MQL	Method Quantitation Limit



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Severn Trent Environmental Services
 Mr. Mark Kalkwarf
 578 Beaver Creek Rd.
 Bluff City, TN 37618-1220

Project ID :
 Project Bristol WWTP - 503 Biosolids
 Information : Project #19327

Report Date : 04/28/2014
 Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94236
 Sample ID : Bristol WWTP

Matrix: Sludge
 Sampled: 4/8/2014 11:10

Analytical Method: 7470A Prep Method: 7470A Prep Batch(es): L196468 Date/Time Prepped: 4/18/2014 09:00:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP Mercury	<0.0040	mg/L	0.0040	1	04/18/14 15:10	JRS	L196527

Analytical Method: 8081A Prep Method: 3510C Prep Batch(es): L196394 Date/Time Prepped: 4/17/2014 15:40:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP Endrin	<0.008000	mg/L	0.008000	10	04/19/14 03:56	VIC	L196795
TCLP gamma-BHC	<0.008000	mg/L	0.008000	10	04/19/14 03:56	VIC	L196795
TCLP Methoxychlor	<0.008000	mg/L	0.008000	10	04/19/14 03:56	VIC	L196795
TCLP Toxaphene	<0.06000	mg/L	0.06000	10	04/19/14 03:56	VIC	L196795
TCLP Chlordane	<0.04000	mg/L	0.04000	10	04/19/14 03:56	VIC	L196795
TCLP Heptachlor Epoxide	<0.008000	mg/L	0.008000	10	04/19/14 03:56	VIC	L196795
TCLP Heptachlor	<0.008000	mg/L	0.008000	10	04/19/14 03:56	VIC	L196795
Surrogate: Decachlorobiphenyl	34.08 *		Limits: 36-116%	10	04/19/14 03:56	VIC	L196795
Surrogate: Tetrachloro-m-xylene	32.50		Limits: 25-123%	10	04/19/14 03:56	VIC	L196795

Analytical Method: 8151A Prep Method: 8151A Prep Batch(es): L196402 Date/Time Prepped: 4/17/2014 16:20:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP 2,4-D	<0.0020	mg/L	0.0020	1	04/22/14 20:46	VIC	L197002

Qualifiers/ Definitions * Outside QC limit DF Dilution Factor
 I Recovery out of range MQL Method Quantitation Limit



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Severn Trent Environmental Services
 Mr. Mark Kalkwarf
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 Bluff City, TN 37618-1220

Project ID :
 Project Bristol WWTP - 503 Biosolids
 Information : Project #19327

Report Date : 04/28/2014
 Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94236
 Sample ID : Bristol WWTP

Matrix: Sludge
 Sampled: 4/8/2014 11:10

Analytical Method: 8151A		Prep Method: 8151A		Prep Batch(es): L196402	Date/Time Prepped: 4/17/2014 16:20:00		
Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP 2,4,5-TP (Silvex)	<0.0020	mg/L	0.0020	1	04/22/14 20:46	VIC	L197002
Surrogate: DCAA	88.94		Limits: 20-120%	1	04/22/14 20:46	VIC	L197002

Analytical Method: 8260B		Prep Method: 5030B		Prep Batch(es): L196387	Date/Time Prepped: 4/17/2014 08:20:00		
Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP Benzene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Carbon Tetrachloride	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Chlorobenzene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Chloroform	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP 1,4-Dichlorobenzene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP 1,2-Dichloroethane	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP 1,1-Dichloroethene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Methyl Ethyl Ketone (MEK)	<0.200	mg/L	0.200	1	04/17/14 17:29	SEB	L196389
TCLP Tetrachloroethene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Trichloroethene	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
TCLP Vinyl Chloride	<0.0100	mg/L	0.0100	1	04/17/14 17:29	SEB	L196389
Surrogate: 4-Bromofluorobenzene	117		Limits: 71-137%	1	04/17/14 17:29	SEB	L196389
Surrogate: Dibromofluoromethane	86.8		Limits: 70-128%	1	04/17/14 17:29	SEB	L196389
Surrogate: 1,2-Dichloroethane - d4	126		Limits: 63-136%	1	04/17/14 17:29	SEB	L196389
Surrogate: Toluene-d8	127		Limits: 70-130%	1	04/17/14 17:29	SEB	L196389

Qualifiers/Definitions	*	Outside QC limit	DF	Dilution Factor
	I	Recovery out of range	MQL	Method Quantitation Limit



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06374

Severn Trent Environmental Services
 Mr. Mark Kalkwarf
 578 Beaver Creek Rd.
 Bluff City, TN 37618-1220

Project ID :
 Project Bristol WWTP - 503 Biosolids
 Information : Project #19327

Report Date : 04/28/2014
 Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94236
 Sample ID : Bristol WWTP

Matrix: Sludge
 Sampled: 4/8/2014 11:10

Analytical Method: 8270C
 Prep Method: 3510C
 Prep Batch(es): L196329
 Date/Time Prepped: 4/17/2014 12:45:00

Test	Results	Units	MQL	DF	Date / Time Analyzed	By	Analytical Batch
TCLP 2-Methylphenol	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP 3&4 Methylphenol	0.344	mg/L	0.200	1	04/17/14 20:16	NFP	L196488
TCLP 2,4-Dinitrotoluene	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP Hexachlorobenzene	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP Hexachlorobutadiene	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP Hexachloroethane	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP Nitrobenzene	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP Pentachlorophenol	<0.200	mg/L	0.200	1	04/17/14 20:16	NFP	L196488
TCLP Pyridine	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP 2,4,5-Trichlorophenol	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
TCLP 2,4,6-Trichlorophenol	<0.100	mg/L	0.100	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP 2,4,6-Tribromophenol	76.0		Limits: 40-125%	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP 2-Fluorobiphenyl	52.5		Limits: 38-107%	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP 2-Fluorophenol	27.3		Limits: 20-110%	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP 4-Terphenyl-d14	75.0		Limits: 33-122%	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP Nitrobenzene-d5	53.5		Limits: 29-110%	1	04/17/14 20:16	NFP	L196488
Surrogate: TCLP Phenol-d6	20.1		Limits: 10-115%	1	04/17/14 20:16	NFP	L196488

Qualifiers/Definitions	*	Outside QC limit	DF	Dilution Factor
	1	Recovery out of range	MQL	Method Quantitation Limit



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Severn Trent Environmental Services
 Mr. Mark Kalkwarf
 578 Beaver Creek Rd.
 Bluff City, TN 37618-1220

Project ID :
 Project Bristol WWTP - 503 Biosolids
 Information : Project #19327

Report Date : 04/28/2014
 Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94237
 Sample ID : Bristol WWTP

Matrix: Solids
 Sampled: 4/8/2014 11:10

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Method
% Moisture	70.8	%	0.100	1	04/15/14 11:45	ALP	2540G-2011
Ammonia Nitrogen	1030	mg/Kg - dry	85.6	1	04/18/14 10:30	CLP	4500NH3C-2011
pH	12.3	s.u.		1	04/21/14 12:00	JHI	9045D
Total Solids	29.2	%	0.010	1	04/15/14 11:45	ALP	2540G-2011
Total Kjeldahl Nitrogen	37700	mg/Kg - dry	85.6	1	04/18/14 08:35	CLP	4500NH3D-2011
Total Phosphorus	5210	mg/Kg - dry	856	50	04/16/14 08:30	TKM	4500PE-2011
Total Arsenic	5.89	mg/Kg - dry	1.71	1	04/17/14 06:55	BKN	6010B
Total Cadmium	1.05	mg/Kg - dry	0.342	1	04/17/14 06:55	BKN	6010B
Total Chromium	18.9	mg/Kg - dry	0.856	1	04/17/14 06:55	BKN	6010B
Total Copper	78.1	mg/Kg - dry	0.856	1	04/17/14 06:55	BKN	6010B
Total Mercury	0.113	mg/Kg - dry	0.0455	1	04/17/14 15:43	JRS	7471A
Total Molybdenum	<8.56	mg/Kg - dry	8.56	10	04/18/14 12:01	JTR	6010B
Total Nickel	13.4	mg/Kg - dry	0.856	1	04/17/14 06:55	BKN	6010B
Total Selenium	<34.2	mg/Kg - dry	34.2	10	04/18/14 12:01	JTR	6010B
Total Zinc	177	mg/Kg - dry	1.71	1	04/17/14 06:55	BKN	6010B
Soluble Potassium (as K2O)	<0.719	% - dry	0.719	1	04/16/14 11:30	JHI	AOAC 2.5.07(MOE)
Total Nitrogen	3.11	% - dry	0.03	1	04/17/14 09:29	JHI	AOAC 2.4.02 ~
Phosphorus (as P2O5)	<0.3	% - dry	0.3	1	04/17/14 09:00	JHI	AOAC 2.3.02 ~
Neutralizing Value (%CCE)	42.7	%	0.1	1	04/18/14 12:29	JHI	AOAC 1.1.04 ~

Qualifiers/Definitions	* MQL	Outside QC limit Method Quantitation Limit	DF	Dilution Factor
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Severn Trent Environmental Services

Mr. Mark Kalkwarf

578 Beaver Creek Rd.

Bluff City, TN 37618-1220

Project ID :

Project Bristol WWTP - 503 Biosolids

Information : Project #19327

Report Date : 04/28/2014

Received : 4/11/2014

Report Number : 14-101-0254

REPORT OF ANALYSIS

Lab No : 94237

Matrix: Solids

Sample ID : Bristol WWTP

Sampled: 4/8/2014 11:10

Analytical Method: 8082

Prep Method: 3546

Prep Batch(es): L196152

Date/Time Prepped: 4/16/2014 09:30:00

Test	Results	Units	ML	DF	Date / Time Analyzed	By	Analytical Batch
Aroclor 1016	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1221	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1232	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1242	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1248	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1254	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Aroclor 1260	<0.293	mg/Kg - dry	0.293	1	04/18/14 22:58	VIC	L196649
Surrogate: Decachlorobiphenyl	42.6		Limits: 25-125%	1	04/18/14 22:58	VIC	L196649
Surrogate: Tetrachloro-m-xylene	42.2		Limits: 25-125%	1	04/18/14 22:58	VIC	L196649

Qualifiers/Definitions	*	Outside QC limit	DF	Dilution Factor
	I	Recovery out of range	ML	Method Quantitation Limit



Cooler Receipt Form

Customer Number: 06374

Customer Name: Severn Trent Environmental Services

Report Number: 14-101-0254

Shipping Method

Shipping Method: Fed Ex UPS US Postal Client Lab Courier Other: _____

Shipping container/cooler uncompromised?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Custody seals intact on shipping container/cooler?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Custody seals intact on sample bottles?	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> Not Required
Chain of Custody (COC) present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
COC properly completed	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Samples in proper containers?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sample containers intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Sufficient sample volume for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
All samples received within holding time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler temperature in compliance?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Water - Sample containers properly preserved	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Water - VOA vials free of headspace	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Trip Blanks received with VOAs	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
Soil VOA method 5035 - compliance criteria met	<input type="radio"/> Yes	<input type="radio"/> No	<input checked="" type="radio"/> N/A
<input type="checkbox"/> High concentration container (48 hr)	<input type="checkbox"/> Low concentration EnCore samplers (48 hr)		
<input type="checkbox"/> High concentration pre-weighed (methanol -14 d)	<input type="checkbox"/> Low conc pre-weighed vials (Sod Bls -14 d)		
Special precautions or instructions included?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	

Comments:

Any regulatory non-compliance issues will be recorded on non-compliance report.

Signature:

Date & Time:



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B - pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-1-15</u>	Analyst: <u>Joe Peters</u>
Slope: (92-102%) <u>102.1/101.9</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-1-15</u>	<u>7:35</u>	<u>JP</u>	20	<u>8:37</u>	<u>21.6</u>	<u>12.2</u>	<u>12.1</u>
2 hour	<u>↓</u>	<u>↓</u>	<u>↓</u>	20	<u>10:09</u>	<u>20.0</u>	<u>12.4</u>	<u>12.3</u>
24 hour	<u>↓</u>	<u>↓</u>	<u>↓</u>	20	<u>8:17</u>	<u>20.8</u>	<u>12.2</u>	<u>12.1</u>

Comments:

Analysis Date: <u>9-2-15</u>	Analyst: <u>Joe Peters</u>
Slope: (92-102%) <u>107.0/102.9</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-2-15</u>	<u>8:04</u>	<u>JP</u>	20	<u>8:37</u>	<u>22.2</u>	<u>12.2</u>	<u>12.1</u>
2 hour	<u>↓</u>	<u>↓</u>	<u>↓</u>	20	<u>8:40</u>	<u>21.4</u>	<u>12.1</u>	<u>12.0</u>
24 hour	<u>↓</u>	<u>↓</u>	<u>↓</u>	20	<u>8:18</u>	<u>19.9</u>	<u>12.3</u>	<u>12.1</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B - pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-3-15</u>	Analyst: <u>Joe Petec</u>
Slope: (92-102%) ^{103.1} / _{102.1}	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Adj. (u.)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	Yes	No						
Initial pH	<u>9-3-15</u>	<u>8:05</u>	<u>JP</u>	20	<u>8:25</u>	<u>21.6</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>10:13</u>	<u>20.6</u>	<u>12.3</u>	<u>12.2</u>
24 hour	↓	↓	↓	20	<u>8:20</u>	<u>19.6</u>	<u>12.1</u>	<u>11.9</u>

Comments:

Analysis Date: <u>9-4-15</u>	Analyst: <u>Joe Petec</u>
Slope: (92-102%)	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Adj. (u.)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.0	
Buffers Fresh? (Circle)	Yes	No						
Initial pH	<u>9-4-15</u>	<u>8:10</u>	<u>JP</u>	20	<u>8:29</u>	<u>20.9</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>10:30</u>	<u>20.6</u>	<u>12.1</u>	<u>12.0</u>
24 hour	↓	↓	↓	20	<u>11:11</u>	<u>20.0</u>	<u>11.8</u>	<u>11.6</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B – pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-7-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>103.8</u> <u>104.3</u> <u>104.4</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>(Yes)</u>	No						
Initial pH	<u>9-7-15</u>	<u>8:14</u>	<u>MM</u>	20	<u>9:15</u>	<u>20.0</u>	<u>12.3</u>	<u>12.2</u>
2 hour	↓	↓	↓	20	<u>11:08</u>	<u>20.2</u>	<u>12.2</u>	<u>12.1</u>
24 hour	↓	↓	↓	20	<u>9:07</u>	<u>19.3</u>	<u>12.2</u>	<u>12.0</u>

Comments:

Analysis Date: <u>9-8-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>101.4</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.1	
Buffers Fresh? (Circle)	<u>(Yes)</u>	No						
Initial pH	<u>9-8-15</u>	<u>8:44</u>	<u>MM</u>	20	<u>9:17</u>	<u>20.1</u>	<u>12.2</u>	<u>12.0</u>
2 hour	↓	↓	↓	20	<u>11:00</u>	<u>20.0</u>	<u>12.2</u>	<u>12.1</u>
24 hour	↓	↓	↓	20	<u>8:33</u>	<u>19.7</u>	<u>12.2</u>	<u>12.0</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B -- pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-9-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>102.2</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							<u>7.0</u>	
Standard #2, pH 10.0							<u>10.0</u>	
Standard #3, pH 13.0							<u>13.0</u>	
Check Std., pH 12.0							<u>12.0</u>	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-9-15</u>	<u>7:51</u>	<u>MM</u>	20	<u>8:40</u>	<u>22.6</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>10:38</u>	<u>20.3</u>	<u>12.3</u>	<u>12.2</u>
24 hour	↓	↓	↓	20	<u>8:45</u>	<u>19.8</u>	<u>12.2</u>	<u>12.0</u>

Comments:

Analysis Date: <u>9-10-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>103.5</u> <u>103.7</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							<u>7.0</u>	
Standard #2, pH 10.0							<u>10.0</u>	
Standard #3, pH 13.0							<u>13.0</u>	
Calibration Check, pH 12.0							<u>12.0</u>	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-10-15</u>	<u>8:07</u>	<u>MM</u>	20	<u>8:53</u>	<u>23.0</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>10:50</u>	<u>20.0</u>	<u>12.3</u>	<u>12.2</u>
24 hour	↓	↓	↓	20	<u>9:01</u>	<u>19.4</u>	<u>12.1</u>	<u>11.9</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-816, Method 9040B – pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-16-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>103.4 / 104.19</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-16-15</u>	<u>8:13</u>	<u>MM</u>	20	<u>9:07</u>	<u>20.3</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>11:10</u>	<u>19.4</u>	<u>12.3</u>	<u>12.1</u>
24 hour	↓	↓	↓	20	<u>10:13</u>	<u>19.4</u>	<u>11.7</u>	<u>11.5</u>

Comments:

Analysis Date: <u>9-16-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>104.0 / 105.5</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-16-15</u>	<u>8:18</u>	<u>MM</u>	20	<u>9:30</u>	<u>20.1</u>	<u>12.4</u>	<u>12.3</u>
2 hour	↓	↓	↓	20	<u>11:27</u>	<u>20.8</u>	<u>12.4</u>	<u>12.3</u>
24 hour	↓	↓	↓	20	<u>8:56</u>	<u>21.7</u>	<u>12.3</u>	<u>12.2</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B -- pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-15-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>102.9</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-15-15</u>	<u>8:03</u>	<u>MM</u>	20	<u>9:00</u>	<u>21.7</u>	<u>12.3</u>	<u>12.2</u>
2 hour	↓	↓	↓	20	<u>10:50</u>	<u>20.2</u>	<u>12.1</u>	<u>12.0</u>
24 hour	↓	↓	↓	20	<u>9:21</u>	<u>19.9</u>	<u>12.1</u>	<u>12.0</u>

Comments:

Analysis Date: <u>9-16-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>100.7</u>	Slope Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-16-15</u>	<u>8:35</u>	<u>MM</u>	20	<u>9:43</u>	<u>20.6</u>	<u>12.1</u>	<u>12.0</u>
2 hour	↓	↓	↓	20	<u>11:54</u>	<u>21.3</u>	<u>12.2</u>	<u>12.1</u>
24 hour	↓	↓	↓	20	<u>9:25</u>	<u>20.4</u>	<u>12.3</u>	<u>12.2</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-846, Method 9040B -- pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-17-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>105.0</u> <u>105.2</u> <u>104.0</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-17-15</u>	<u>8:33</u>	<u>MM</u>	20	<u>9:31</u>	<u>21.3</u>	<u>12.2</u>	<u>12.1</u>
2 hour	↓	↓	↓	20	<u>11:33</u>	<u>21.3</u>	<u>12.3</u>	<u>12.2</u>
24 hour	↓	↓	↓	20	<u>8:18</u>	<u>23.4</u>	<u>12.2</u>	<u>12.0</u>

Comments:

Analysis Date: <u>9-18-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>104.8</u> <u>104.1</u> <u>103.9</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							11.9	
Buffers Fresh? (Circle)	<u>Yes</u>	No						
Initial pH	<u>9-18-15</u>	<u>8:27</u>	<u>MM</u>	20	<u>10:03</u>	<u>22.9</u>	<u>12.3</u>	<u>12.2</u>
2 hour	↓	↓	↓	20	<u>11:53</u>	<u>20.4</u>	<u>12.3</u>	<u>12.2</u>
24 hour	↓ <u>9-18-15</u>	↓ <u>11:00</u>	↓ <u>MS</u>	20	<u>11:00</u>	<u>20.5</u>	<u>11.6</u>	<u>11.5</u>

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-046, Method 9040B - pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-21-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) ^{102.2} <u>103.2</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

sp. Adj. (s.u.)	Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
	Standard #1, pH 7.0							<u>7.00</u>	
	Standard #2, pH 10.0							<u>10.0</u>	
	Standard #3, pH 13.0							<u>13.0</u>	
	Check Std., pH 12.0							<u>12.0</u>	
	Buffers Fresh? (Circle)	<u>Yes</u>	No						
<u>1</u>	Initial pH	<u>9-21-15</u>	<u>8:24</u>	<u>MM</u>	20	<u>9:34</u>	<u>21.7</u>	<u>12.1</u>	<u>12.0</u>
<u>2</u>	2 hour	↓	↓	↓	20	<u>11:25</u>	<u>19.3</u>	<u>12.2</u>	<u>12.0</u>
<u>3</u>	24 hour	↓	↓	↓	20	<u>8:05</u>	<u>20.5</u>	<u>12.2</u>	<u>12.1</u>

Comments:

Analysis Date: <u>9-22-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) ^{104.3} <u>106.2</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

sp. Adj. (s.u.)	Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
	Standard #1, pH 7.0							<u>7.0</u>	
	Standard #2, pH 10.0							<u>10.0</u>	
	Standard #3, pH 13.0							<u>13.0</u>	
	Calibration Check, pH 12.0							<u>12.0</u>	
	Buffers Fresh? (Circle)	<u>Yes</u>	No						
<u>1, 2</u>	Initial pH	<u>9-22-15</u>	<u>9:03</u>	<u>MM</u>	20	<u>9:21</u>	<u>20.6</u>	<u>12.2</u>	<u>12.1</u>
<u>2</u>	2 hour	↓	↓	↓	20	<u>11:31</u>	<u>19.5</u>	<u>12.2</u>	<u>12.0</u>
<u>5</u>	24 hour	↓	↓	↓	20	<u>8:00</u>	<u>20.2</u>	<u>12.1</u>	<u>12.0</u>

Comments:

NOTES:
Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor



City of Bristol TN WWTP Biosolids pH

SW-848, Method 9040B -- pH Electrometric Measurement
Jan. 95 Revision 2

Analysis Date: <u>9-23-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>104.2</u> <u>104.1</u> <u>104.0</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Check Std., pH 12.0							12.0	
Buffers Fresh? (Circle)	(Yes)	No						
Initial pH	9-23-15	8:54	MM	20	9:10	21.4	12.2	12.1
2 hour	↓	↓	↓	20	11:18	19.7	12.3	12.1
24 hour	↓	↓	↓	20	9:20	20.4	12.1	12.0

Comments:

Analysis Date: <u>9-24-15</u>	Analyst: <u>MM</u>
Slope: (92-102%) <u>103.2</u> <u>103.9</u> <u>105.3</u>	Slope Acceptable? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Check Standard Acceptable? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (+/- 0.1su)	

Sample ID	Collection Date	Collection Time	Collector Initials	Weight (grams)	Analysis Time	Sample Temp (°C)	pH (s.u.)	Temp. Adj. pH (s.u.)
Standard #1, pH 7.0							7.0	
Standard #2, pH 10.0							10.0	
Standard #3, pH 13.0							13.0	
Calibration Check, pH 12.0							12.0	
Buffers Fresh? (Circle)	(Yes)	No						
Initial pH	9-24-15	7:45	MM	20	9:26	20.9	12.2	12.1
2 hour	↓	↓	↓	20	11:10	19.5	12.2	12.0
24 hour	↓	↓	↓	20	8:55	20.0	12.2	12.1

Comments:

NOTES:

Correction Factor = 0.03 x (Temp - 25)
Temp Adj pH = pH +/- Correction Factor

Bristol Biosolids Sampling Plan

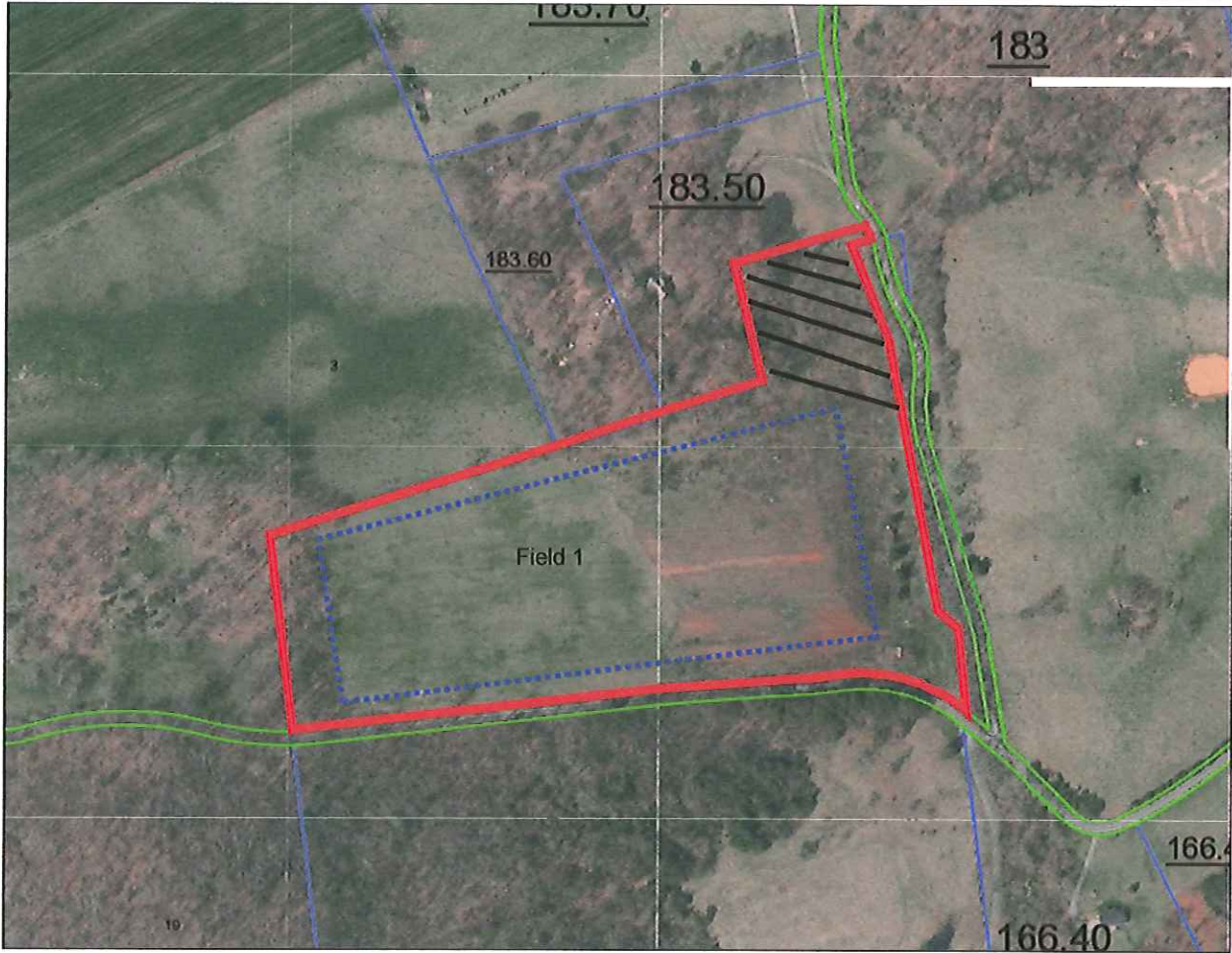
Storage Pad Sampling

1. Samples are collected bi-monthly (six per year), even number months, based on work orders generated by the computerized maintenance management program.
2. Several samples are collected from different locations on the storage pad in a one liter plastic container.
3. The samples are placed in a clean bucket and mixed to produce a composite sample.
4. A 750 ml wide mouth glass container is filled with the composite, labeled, and preserved by refrigeration.
5. The sample, along with a properly completed chain of custody, is transported to a NELAC certified laboratory.
6. The sample is analyzed using approved methods for total metals: arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc; ammonia nitrogen; nitrate; nitrite; total Kjeldahl nitrogen; total phosphorus; total solids; and neutralizing value (%CCE). Results are reported on a dry weight basis.

Pathogen Reduction and Vector Attraction Reduction Sampling

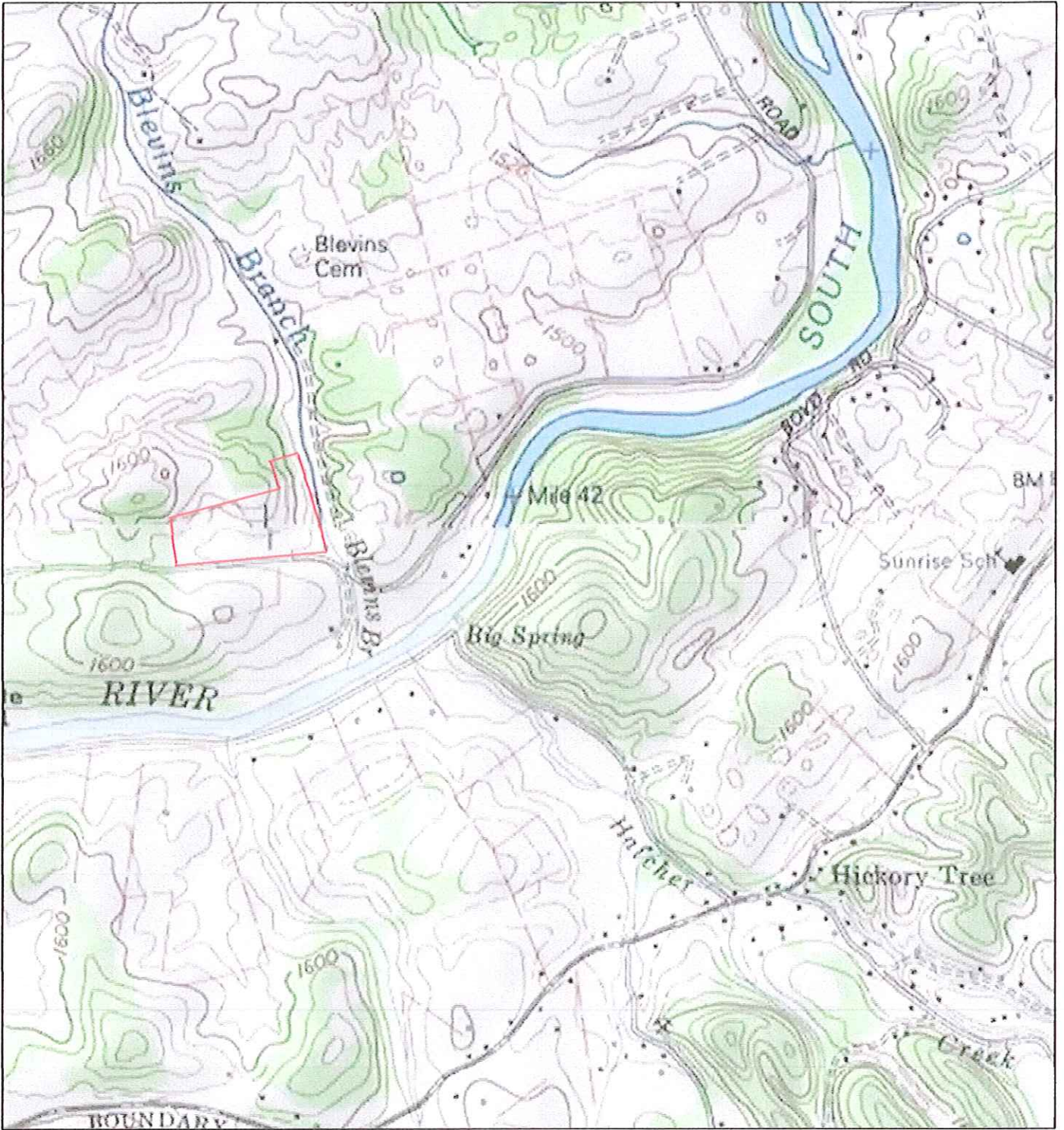
1. The belt filter press operator grabs a sample in a disposal container after lime kiln dust (LKD) addition and runs pH in the facility laboratory. The result is recorded in the appropriate laboratory bound bench book. The sample is left on the laboratory bench near the pH meter.
2. After two hours the operator runs another pH on the same sample and records the result in the bench book. The sample is left on the laboratory bench near the pH meter.
3. After an additional twenty-two hours the operator runs another pH on the same sample and records the result in the bench book.
4. The sample is then discarded by adding it to the biosolids stream prior to the pug mill.

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