



Tennessee Department of Environment and Conservation
Division of Water Resources / Land Based Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

February 3, 2020

Re: Tracking No. TNB025615 – Land Application of Non-Exceptional Quality Biosolids
Fairfield Glade Community Club – 2019 Annual Biosolids Land Application Report

Dear Madam/Sir;

Enclosed please find the annual biosolids report for the Fairfield Glade Community Club Wastewater Treatment Facility, (SOP 00039). General SOP for the Land Application of Non-Exceptional Quality Biosolids – Tracking Number TNB025615.

The Fairfield Glade Community Club owns and operates a private sewage collection system and wastewater treatment plant and was issued a new biosolids land application permit on November 19, 2019. The wastewater treatment plant land applied biosolids during 2019.

Should you have any questions, or need any additional information please feel free to call me at (931) 510-7072.

Sincerely

Bruce Evans
Director – Sewer Systems
Fairfield Glade Community Club

BIOSOLIDS LAND APPLICATION SITE LOCATION

Longitude 35.942949

Latitude -84.871727

9.38 ACRES

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Biosolids Application Rate Calculation

$$96 \text{ Loads} * 3200 \text{ gallons} * 2.85\% \text{ solids} * 8.34 = 61062 \text{ lbs}$$

$$61062 / 2000 \text{ lbs} = 30.52 \text{ tons}$$

$$36.48 \text{ tons} / 9.38 \text{ acres} = 3.88 \text{ tons/acre}$$



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

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

Revision 05/08/14

BACKGROUND INFORMATION/QUESTIONS

FILL IN BELOW

WWTP NAME	Fairfield Glade Community Club
WWTP NPDES PERMIT NUMBER	SOP 00039
SITE NAME	Fairfield Glade Community Club WW
COUNTY	Cumberland
E.A.C.	
SITE TRACKING NUMBER	TNB025615
LABORATORY NAME	Pace Analytical
DATE OF ANALYSIS	8/28/19

SLUDGE/BIOSOLID ANALYSIS LABORATORY RESULTS

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

TOTAL KJELDAHL NITROGEN (TKN)	55,300	mg/kg
AMMONIUM NITROGEN (NH ₄ -N)	8,610	mg/kg
NITRATE + NITRITE NITROGEN (NO ₃ -N + NO ₂ -N)	207	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	<input type="checkbox"/>
2 - CORN (GRAIN) EXPECT YIELD 126 - 150 BUSHELS	<input type="checkbox"/>
3 - CORN (SILAGE) EXPECT YIELD 20 TONS	<input checked="" type="checkbox"/>
4 - SOYBEANS EXPECT YIELD 30 BUSHELS	<input type="checkbox"/>
5 - SOYBEANS EXPECT YIELD 40 BUSHELS	<input type="checkbox"/>
6 - SOYBEANS EXPECT YIELD 50 BUSHELS	<input type="checkbox"/>
7 - WHEAT EXPECT YIELD 40 BUSHELS	<input type="checkbox"/>
8 - SUMMER ANNUAL GRASS EXPECT YIELD 6 TONS (1 CUTTINGS)	<input type="checkbox"/>
9 - HYBRID HAY EXPECT YIELD 8 TONS (4 CUTTINGS)	<input type="checkbox"/>
10 - TALL FESCUE HAY EXPECT YIELD 3 TONS (2 CUTTINGS)	<input type="checkbox"/>
11 - ORCHARD GRASS HAY EXPECT YIELD 4 TONS (2 CUTTINGS)	<input type="checkbox"/>
12 - SORGHUM (GRAIN) EXPECT YIELD 60 BUSHELS	<input type="checkbox"/>
13 - COTTON EXPECT YIELD 1 BALE / ACRE	<input type="checkbox"/>
14 - COTTON EXPECT YIELD 1.5 BALE / ACRE	<input type="checkbox"/>

CROP TYPE (LBS N/ACRE/YEAR)

150

VOLATILIZATION FACTORS K_v

(SELECT ONLY ONE)

- 1 - ARE BIOSOLIDS LIQUID AND SURFACE APPLIED?
2 - ARE BIOSOLIDS LIQUID AND INJECTED INTO SOIL?
3 - ARE BIOSOLID DEWATERED AND APPLIED IN ANY MANNER?

YES

☒☐☐

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

- NONE (Unstabilized)
ALKALINE STABILIZATION
AEROBIC DIGESTION
ANAEROBIC DIGESTION
COMPOSTING

☐☐☐☒☐

SELECTION CHOICE:

1 SELECTED

MINERALIZATION RATE F_M =

0.2

AGRONOMIC LOADING RATE

5.1

tons/acre

Fairfield Glade Community Club - Biosolids Testing Results - Summary

5 Year Testing Results

Parameter	Date	Composit
TCLP Arsenic	4/4/2016	ND mg/l
TCLP Barium	4/4/2016	.235 mg/l
TCLP Cadmium	4/4/2016	ND mg/l
TCLP Chromium	4/4/2016	ND mg/l
TCLP Lead	4/4/2016	.0189 mg/l
TCLP Selenium	4/4/2016	ND mg/l
TCLP Silver	4/4/2016	ND mg/l
TCLP Mercury	4/4/2016	ND mg/l
Semi - Volatiles TCLP	4/4/2016	ND mg/l
Volatiles TCLP	4/4/2016	ND mg/l
Total Phosphorous	4/4/2016	15,100 mg/kg - dry
PCB's	4/4/2016	<.20 mg/kg
SOUR	4/4/2016	1.4 mg/g/h
Sodium & Potassium	4/4/2016	2,050 mg/kg - dry

General SOP for the Land Application of Non-EQ Biosolids

The appropriate certification in Appendix D must be used.

3.1.2.2. Class B Pathogen Requirements

In order for biosolids to be designated Class B with respect to pathogens, they shall meet one of the three pathogen reduction alternatives for Class B found below.

The site restrictions in subsection 3.1.2.3. must be met when biosolids that meet Class B pathogen requirements are applied to the land.

Pathogen reduction alternatives for Class B biosolids

Class B—Alternative 1

- (i) Seven representative samples of the biosolids that are applied to the land shall be collected.
- (ii) The geometric mean of the density of fecal coliform in the samples collected in subpart (i) of this part shall be less than either 2,000,000 Most Probable Number per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

Class B—Alternative 2

Biosolids that are applied to the land shall be treated in one of the Processes to Significantly Reduce Pathogens.

Class B—Alternative 3

Biosolids that are applied to the land shall be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by USEPA.

The appropriate certification in Appendix D must be used.

3.1.2.3. Site Restrictions for Class B Biosolids

If the biosolids are Class B with respect to pathogens, the permittee shall comply with all the site restrictions listed below:

- a) Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application.
- b) Food crops with harvested parts below the land surface shall not be harvested for 20 months after application if the biosolids remain on the land surface for four months or more prior to incorporation into the soil.
- c) Food crops with harvested parts below the land surface shall not be harvested for 38 months after application if the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
- d) Other food crops and feed crops shall not be harvested from the land for 30 days after application.

SLUDGE

Collected date/time: 08/28/19 08:05

SAMPLE RESULTS - 01
L1133541

ONE LAB, NATIONWIDE.



Microbiology by Method EPA 1681

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	MPN/g				
Fecal Coliform - Geom. Mean	<6747.87		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -1	<6811.0		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -2	7545.1		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -3	<7073.9		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -4	<7428.2		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -5	<5989.4		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -6	7096.4		1000	08/28/2019 15:15	WG1336805
Fecal Coliform -7	<5549.9		1000	08/28/2019 15:15	WG1336805





Specific Oxygen Uptake Rate (SOUR) Worksheet

Date of Data Entry: 09/10/19

Total Solids

Sample volume used for total solids test:
 Weight of dish:
 Weight of dish + dried solids:
 Weight of dried solids:
 Total Solids:

	mL
	g
	g
0.00	g
28.5	g/L

SOUR

Time (Minutes)	Temperature	Dissolved Oxygen (mg/L)
	°C	
0	27.50	5.38
1	27.50	4.93
2	27.40	4.42
3	27.40	4.09
4	27.30	3.84
5	27.30	3.53
6	27.20	3.26
7	27.20	2.97
8	27.20	2.79
9	27.10	2.58
10	27.10	2.33
11	27.10	2.14
12	27.00	1.97
13	27.00	1.82
14	27.00	1.68
15	27.00	1.57

Oxygen Consumption Rate 0.25 mg/L/minute
 SOUR 0.52 (mg/g)/hr

SOUR Temperature Correction

Average Sewage Sludge Temperature During Test
°C
27.20625

If sewage sludge is > 20°C, SOUR = 0.36 (mg/g)/hr
 If sewage sludge is < 20°C, SOUR = 0.32 (mg/g)/hr

SOUR passes if result is ≤ 1.5 (mg/g)hr

PARTIAL MIX 1

Collected date/time: 08/28/19 08:40

SAMPLE RESULTS - 01

L1133788

ONE LAB. NATIONWIDE.



Calculated Results

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Organic Nitrogen	1330	5.00	46700	175		1	09/05/2019 12:17	WG1337897
Total Nitrogen	1580	2.00	55500	70.2		1	09/05/2019 12:17	WG1337893

Gravimetric Analysis by Method 160.4/2540G

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	% of TS				
Volatile Solids	74.9		1	08/30/2019 14:50	WG1337613

Total Solids by Method 2540 G-2011

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	%				
Total Solids	2.85		1	09/01/2019 18:09	WG1338519

Wet Chemistry by Method 350.1

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Ammonia Nitrogen	245	5.00	8610	175		1	09/03/2019 18:28	WG1337897

Wet Chemistry by Method 4500Norg C-2011

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Kjeldahl Nitrogen, TKN	1580	100	55300	3510	J6	5	09/05/2019 12:17	WG1339299

Wet Chemistry by Method 9056A

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Nitrate-Nitrite	5.89	2.00	207	70.2		1	09/04/2019 04:51	WG1337893

Mercury by Method 7471A

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Mercury	ND	0.0300	ND	1.05		1	08/30/2019 09:58	WG1337389

Metals (ICP) by Method 6010B

	Result (wet)	RDL (Wet)	Result (dry)	RDL (dry)	Qualifier	Dilution	Analysis date / time	Batch
Analyte	mg/kg	mg/kg	mg/kg	mg/kg				
Arsenic	ND	0.200	ND	7.02		.1	08/30/2019 03:39	WG1337227
Cadmium	0.0711	0.0500	2.50	1.75		.1	08/30/2019 03:39	WG1337227
Copper	19.8	0.200	694	7.02		.1	08/30/2019 03:39	WG1337227
Lead	0.557	0.0500	19.5	1.75		.1	08/30/2019 03:39	WG1337227
Molybdenum	0.270	0.0500	9.47	1.75		.1	08/30/2019 03:39	WG1337227
Nickel	0.502	0.200	17.6	7.02		.1	08/30/2019 09:34	WG1337227
Selenium	0.328	0.200	11.5	7.02		.1	08/30/2019 03:39	WG1337227
Zinc	54.4	0.500	1910	17.5		.1	08/30/2019 03:39	WG1337227

Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCOUNT:

Fairfield Glade Community Club Sewer

PROJECT:
ANNUALSDG:
L1133788DATE/TIME:
09/06/19 15:28PAGE:
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Certification Statement:

I certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements in section 3.1.2 of the General Permit for Land Application of Non-Exceptional Quality Biosolids, one of the vector attraction reduction alternatives in 3.1.3, the management practices in subpart 3.2 (if necessary) and the site restrictions in subsection 3.1.2.3 (if necessary) was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

Bruce Evans

Director of Sewer Systems

Fairfield Glade Community Club

Bruce Evans Date 2/3/2020