



COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO

DEPARTMENT OF FINANCE
Cecelia H. Stowe, CPPO, C.P.M.
Purchasing Director

February 14, 2017

ADDENDUM NO. 1

INVITATION FOR BID: #17-1311-1LC

SUBJECT: Biosolid Cake Disposal Services

Gentlemen/Ladies:

Please make the following changes, corrections, additions or deletions to the above referenced Invitation for Bid:

This IFB and any addenda are available on the County of Henrico website at: <http://henrico.us/purchasing>. To receive an email copy of this document please contact col119@henrico.us

Page 1, paragraph 1 – Currently Reads:

Sealed bids in accordance with the conditions, specifications, and instructions below and on the attached sheets or drawings hereto, if any, will be received no later than **11:30 a.m.**, local prevailing time, **February 17, 2017** and will be opened and publicly read aloud.

Shall be changed to read:

Sealed bids in accordance with the conditions, specifications, and instructions below and on the attached sheets or drawings hereto, if any, will be received no later than **11:30 a.m.**, local prevailing time, **February 23, 2017** and will be opened and publicly read aloud.

Page 5, I.C.12. - Currently Reads:

The County shall be responsible for the payment of the Virginia Department of Health (VDH) County Monitor fees through the Successful Bidder. These fees shall be invoiced to County of Henrico by the Successful Bidder as a separate line item charge on the respective monthly invoice.

Shall be changed to read:

The County shall be responsible for the payment of the Department of Environmental Quality (DEQ) fees through the Successful Bidder. The Successful Bidder shall include these fees as a separate line item charge on the respective monthly invoice to County of Henrico.

Page 5, I.C.13. – shall be deleted in its entirety.

Page 3, I.C.5. - Currently Reads:

Landfill Disposal. Bidder shall provide with the Bid Form, a list of landfills approved for use by Bidder to dispose of biosolids (See Attachment F). The list must include the landfills name, address, location, and unit price (wet ton basis) for disposal. **Bidder shall also provide a notarized letter from the landfill owner indicating compliance with all local, state and federal rules, regulations and ordinances and the amount of biosolids which can be disposed of daily with the Bid Forms. Failure to do so may cause the bid to be considered nonresponsive and rejected.**

Shall be changed to read:

Landfill Disposal. Should the County direct the Successful Bidder to dispose of biosolids at the landfill approved for use, the County shall pay the Successful Bidder the unit price per wet ton (includes freight charges and Tipping Fee) as listed on the Bid Form Item #2. Bidder shall include a list of landfills approved for use by Bidder to dispose of biosolids (See Revised Attachment F). The list must include the landfills name, address, and location. **Bidder shall also provide a notarized letter from the landfill owner indicating compliance with all local, state and federal rules, regulations and ordinances and the amount of biosolids which can be disposed of daily with the Bid Forms. Failure to do so may cause the bid to be considered nonresponsive and rejected.**

Page 4, I.C.6. - Currently Reads:

Bidder must submit line item costs for three (3) management and removal options. The County shall select the option, which the County feels is most advantageous to the County.

Option 1. Successful Bidder shall provide equipment and labor to manage the biosolids inventory within the WRF Storage Facility; and the loading, transporting, and final disposition of biosolids as specified in the IFB.

Option 2. The County shall provide one (1) front-end loader and one (1) Equipment Operator to manage and load biosolids on to the Successful Bidder's trailers. The Successful Bidder shall manage the transporting and final disposition of biosolids, as specified in the IFB.

Option 3. There may be times when the County may require the Successful Bidder to provide an Equipment Operator to manage the inventory and load the Successful Bidder's trailers using the County equipment as needed and requested when the County full-time (dedicated) Equipment Operator is on leave or otherwise unavailable. The Successful Bidder Equipment Operator shall be knowledgeable and experienced in the use of front-end loader. The County will provide the Successful Bidder a minimum of 24-hours advance notice. Bidder shall provide on the Bid Form, labor rate per man hour for Equipment Operator. Hourly rates charged will be for time managing the inventory and loading the Successful Bidder's trailer. The Successful Bidder must sign in and out at the WRF Cashier in the Scale House.

Shall be changed to read:

Bidder shall provide pricing for the following management and removal service on their Bid Form:

- a) The County shall provide one (1) front-end loader and one (1) Equipment Operator to manage and load biosolids on to the Successful Bidder's trailers. The Successful Bidder shall manage the transporting and final disposition of biosolids, as specified in the IFB. (Bid Form Item #1)

- b) There may be times when the County may require the Successful Bidder to provide an Equipment Operator to manage the inventory and load the Successful Bidder's trailers using the County equipment as needed and requested when the County full-time (dedicated) Equipment Operator is on leave or otherwise unavailable. The Successful Bidder's Equipment Operator shall be knowledgeable and experienced in the use of front-end loader. The County will provide the Successful Bidder a minimum of 24-hours advance notice. Bidder shall provide on the Bid Form, labor rate per man hour for Equipment Operator. Hourly rates charged will be for time managing the inventory and loading the Successful Bidder's trailer. The Successful Bidder must sign in and out at the WRF Cashier in the Scale House. (Bid Form Item #3)

Page 8, II.D.4. - Currently Reads:

It is the intent of the Purchasing Director to award a contract to the lowest responsive and responsible Bidder provided the bid does not exceed the funds available for the contract. **This bid will be awarded by the Total Bid Price for Option 1, Option 2, or Option 3; whichever is in the best interest of the County.** (See the Bid Form).

Shall be changed to read:

It is the intent of the Purchasing Director to award a contract to the lowest responsive and responsible Bidder provided the bid does not exceed the funds available for the contract. **This bid will be awarded by the Total Bid Price.** (See the Bid Form).

Page 9, II.G.2. – Currently Reads:

The bonds shall be executed by one or more surety companies selected by the Successful Bidder which are legally authorized to do business in the Commonwealth of Virginia and the bonds shall be written of AIA Document A312, Performance Bond (2010 version) and AIA Document A312, Payment Bond (2010 version). Each bond shall be written for 100% of the contract amount, and shall be notarized.

Shall be changed to read:

The bonds shall be executed by one or more surety companies selected by the Successful Bidder which are legally authorized to do business in the Commonwealth of Virginia and the bonds shall be written of AIA Document A312, Performance Bond (2010 version) and AIA Document A312, Payment Bond (2010 version). Each bond shall be written in the amount of \$134,000, and shall be notarized.

Replaced BID FORM pages 21 – 23 with the attached REVISED BID FORM.

Replaced ATTACHMENT F pages 31 with the attached REVISED ATTACHMENT F.

Please acknowledge the receipt of Addendum No. 1 dated February 14, 2017 with your Bid Form when returning your bid package. If your Bid package has already been mailed, please return this addendum under separate cover referencing the IFB number, due date and time on the outside of the envelope. **Failure to acknowledge this addendum may result in your bid being declared non-responsive.** All other general terms, conditions and specifications shall remain the same.

Unless otherwise changed by an addendum, all other information will remain the same.

Very truly yours,

Cecelia H. Stowe, CPPO, C.P.M.
Purchasing Director

Leisel O. Collins
Procurement Analyst
804-501-5687
Col119@henrico.us

Signature

Printed Name

Company Name

Date

IFB #17-1311-1LC
BIOSOLID CAKE DISPOSAL SERVICES
Questions and Answers

Q1. What is the anticipated start date for this project?

A1. The anticipated start date of this project is March 1, 2017.

Q2. Does the County consider Attachments to be part of the Bid Form?

A2. Yes, the Attachments are part of the Bid Form. To be considered for award, Attachment A, B, E, and F must be included with your bid response.

Q3. Can you provide a copy of the pre-bid conference sign-in sheet?

A3. See attached sign-in sheet.

Q4. Where can we obtain a copy of “Henrico County Environmental Compliance Manual” that’s reference in Section I.A.1., page 2?

A4. <http://henrico.us/works/engineering-environmental-Services/environmental-manual/>.

Q5. Please clarify whether the 30 day cancellation notice that’s stated on Attachment C is to be provided for all lines or only the General Liability, Pollution Liability and Excess Liability.

A5. The 30 day cancellation notice is for all lines of coverage.

Q6. Can the County provide the annual amount of material landfilled and land applied for the prior two years?

A6. - In calendar year 2015: 17,352 wet tons land applied and 9,122 wet tons landfilled
- In calendar year 2016: 23,965 wet tons land applied and 7,373 wet tons landfilled

Q7. Please provide more details on the expectation for management of biosolids inventory for Option 1. Include days of week and hours per day that are to be schedule.

A7. See Addendum No. 1 for changes to the bid requirements.

Q8. How flexible are the duty hours listed in Section I.F., page 6? On a regular basis, can the start time be changed to 5:00 a.m.? How flexible is scheduling of operations for Saturday and Holidays?

A8. No, these are the operating hours. The County will review on a case by case basis requests to temporarily change the daily work scheduled should there be an extenuating circumstance. The County will not change our staff’s established work schedule.

Q9. Will the County allow the Successful Bidder to store bales of straw at or near the biosolids loading area for use in the transport of biosolids?

A9. Yes, the County will coordinate this with the Successful Bidder.

Q10. Can County provide analytical information showing metals and nutrient content for the past three months?

A10. See attached monthly reports for June, October, and November 2016.

- Q11. What is the anticipated volume of stored solids at start of new contract, March 1, 2017?**
A11. The anticipated volume is 6,000 wet tons.
- Q12. Which option is Henrico County utilizing currently?**
A12. The County is currently utilizing Option 2. Please see changes to bid requirements and Bid Form.
- Q13. Is there any situation where a Bidder would be awarded Option 3 without also being awarded Option 1 or 2?**
A13. See Addendum No. 1 for changes to the bid requirements.
- Q14. If material does not meet vector attraction requirements at the facility, will approval be granted to dispose the material at a landfill? Incorporation cannot be accomplished on many land application sites.**
A14. Yes, approval will be granted. The Successful Bidder will coordinate this with the County.
- Q15. Does the biosolids stated in Section I.C.2., page 3 include material that does not meet vector attraction requirements? Will the County pay tipping fees as stated in Attachment F for material that do not meet vector attraction requirements and directed to be landfilled.**
A15. Yes, this includes material that doesn't meet vector attraction requirements. County will pay Successful Bidder for the disposal of biosolids at the landfill when the material does not meet vector attraction requirements.
- Q16. In the past three years, how often has vector attraction requirements not been met?**
A16. Four times in the past three years.
- Q17. Please clarify when and under what circumstances the Successful Bidder's off site permitted storage facilities as referenced in Section I.C.7., page 4 be utilized so that costs for use of the offsite storage is appropriately accounted for in the bid prices for Option 1 and Option 2.**
A17. County expects the Successful Bidder to leverage all covered storage at the WRF (within the terms of the contract) and all Successful Bidder's offsite storage for storage of materials for land application before resorting to landfill disposal. This expectation does not apply for a "lot" of biosolids that does not meet state and federal standards for land application of Class B biosolids.
- Q18. The County storage capacity is approximately 60 days. Does that calculation include the two bays which are required to be kept empty per Section I.C.7.?**
A18. Yes, the calculation includes the two bays.
- Q19. Section I.G., page 6 requested Bidders to provide references for which annual volume of 40,000 wet tons of anaerobically digested biosolids was provided. Would the County revise the requirement from 40,000 wet tons to 25,000 wet tons and to include lime stabilized biosolids?**
A19. The County cannot revise this requirement to 25,000 wet tons.

- Q20. Section I.C.12., page 5 states County will reimburse VDH County Monitoring fees. Will the County pay the DEQ fees?**
- A20. See Addendum No. 1 for changes to the bid requirements.
- Q21. Under what conditions forestry application as stated in Section I.C.12, page 5 would not be approved?**
- A21. See Addendum No. 1 for changes to the bid requirements.
- Q22. Please clarify the following questions for the costs which are to be quoted for landfill unit price per wet ton as it relates to the statement "...this cost shall be added to the cost of the option selected by the County...." in Attachment F, page 31.**
- **Does this cost include transportation?**
 - **If the landfill option were chosen by the County, payment to the Bidder would be landfill unit price PLUS option 1 or 2 unit price.**
 - **Will the landfill unit price be included in the evaluation of the low bidder for Contract award despite 30 – 40 % of volume in previous years going to landfill disposal?**
- A22. See Addendum No. 1 and Revised Bid Form for changes to the bid requirements.
- Q23. Would the County consider an alternative where the County would pay the landfill tip fee directly and the Successful Bidder would provide transportation and delivery pricing?**
- A23. No, the County will not consider paying the landfill tip fee directly.

REVISED BID FORM

County of Henrico
 Department of Finance
 Purchasing Division
 8600 Staples Mill Road
 P. O. Box 90775
 Henrico, Virginia 23273-0775

I/We hereby propose to furnish labor, tools, transportation, materials (including, but not limited to EPA and/or DEQ approved labels and warning signs), equipment, and supervision necessary to provide Biosolids Waste Disposal Services to County of Henrico, Water Reclamation Facility (WRF), in accordance with the enclosed general terms, conditions and scope of work/services contained in **IFB # 17-1311-1LC**. The Bid Form must be completed in blue or black ink. Discrepancies in the multiplication of units of work and the unit prices will be resolved in favor of the correct multiplication of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. My/Our prices are as follows:

PRICES QUOTED SHALL BE FOB DESTINATION. Freight charges and any other associated cost shall be included in all bid prices.

Quantities listed are an estimate only; actual usage could be more or less during the contract period.

Item #1: The County shall provide one (1) front-end loader and one (1) equipment operator to manage and load biosolids on to the Successful Bidder's trailers for land application. The Successful Bidder shall manage transporting and final disposition as specified in the Scope of Work/Services.

\$ _____/per wet ton x 30,000 = \$ _____

Item #2: Bidder shall provide the unit price per wet ton (includes freight charges and Tipping Fee) for the disposal of biosolids at the landfill. This price shall be added to the unit cost of Item #1 should the Successful Bidder be directed by the County to dispose of biosolids at the landfill.

\$ _____/per wet ton x 10,000 = \$ _____

Item #3: Successful Bidder labor rate for Equipment Operator to manager inventory and load Successful Bidder's trailer using County equipment as needed and requested by the County.

\$ _____/ per Man Hour x 40 Hours = \$ _____

TOTAL BID PRICE (Item #1 + Item #2 + Item #3): \$ _____

REVISED BID FORM

I/We will be utilizing a subcontractor to transport the biosolids. The following is the name, SCC #, and address of the subcontractor:

Name: _____ **SCC#:** _____

Address: _____

I/We will be utilizing the following off-site permitted storage facilities with the capacity dedicated for Henrico County.

OFF-SITE STORAGE FACILITY	ADDRESS/LOCATION	CAPACITY DEDICATED TO COUNTY (sf)
		_____ Sq. Ft.
		_____ Sq. Ft.
		_____ Sq. Ft.
		_____ Sq. Ft.
		_____ Sq. Ft.
		_____ Sq. Ft.

I/We have included my/our bid security in the amount of five percent (5%) of the bid amount, made payable to the County of Henrico, Virginia with the Bid Form. _____ Yes _____ No.

I/We have included my/our Financial Statement with the Bid Form. _____ Yes _____ No.

I/We have included my/our Vehicles List (Attachment E) with the Bid Form. _____ Yes _____ No.

I/We have included my/our List of Landfills (Attachment F) and landfill owner notarized letter with the Bid Form. _____ Yes _____ No.

I/We have included copies of all required authorizations and permits with my/our Bid Form. _____ Yes _____ No.

My/Our payment terms are: _____. If Bidder offers a cash discount for prompt payment, it will only be considered in determining the lowest responsible Bidder if the Bidder allows at least twenty (20) days for the prompt payment after the goods or services are received or after the invoice is rendered, whichever is later.

REVISED BID FORM

To aid in the evaluation of bids, Bidders must submit the original Bid Form and one copy of the Bid Form, Attachments and detailed specification sheets, if applicable. Have you complied with this requirement? ____ Yes. ____ No. If you fail to do so, your bid may be considered nonresponsive and rejected.

Indicate whether your business ____is or ____is not located in the County, if it is, please include a copy of your County business license with your bid.

I/We acknowledge the receipt of:

Addendum No. _____ Dated _____.

Addendum No. _____ Dated _____.

Addendum No. _____ Dated _____.

REVISED ATTACHMENT F

LIST OF LANDFILLS

Bidder shall provide a list of landfills he/she have in place to use for the disposal of County of Henrico biosolids. Bidder shall include a notarized letter from each landfill owner with their approval to use/dispose of County of Henrico biosolids.

NAME OF LANDFILL	ADDRESS	LOCATION

HENRICO COUNTY PREBID CONFERENCE ATTENDANCE RECORD

Project:	Annual Contract for Biosolid Cake Disposal Services	
Bid Request No.	17-1311-1LC	Date: 1-31-2017 2:30 PM
	COMPANY NAME	Representative's Name & Address
1	Henrico County Finance/Purchasing	Yvonne Daniel for Leisel Collins 8600 Staples Mill Road Henrico, VA 23228
2	Synagro	Brett Walquist 435 Williams Court Baltimore, MD 21220
3	Synagro	Andy Guillems 10674 Tidewater Trl Chesapeake, VA 24384
4	Rege Systems	Susan Lumb PO Box 562 Zwinston VA 22734
5	DWCarey Hauling Inc	Danayl Camy 11520 Fox Cross Rd, Ashland VA 23005
6	Rege Systems	Harrison Moody PO Box 562 Remington, Va. 22734
7	Henrico County PU-Water Reclamation	James Grandstaff Jeff Sparks
8		
	Telephone Number, Fax	Number and email address
	Tel: 804-501-5686	
	Fax: 804-501-5693	
	email: dan23@henrico.us	
	Tel: (443) 377-6476	
	Fax: N/A	
	email: Bwalquist@synagro.com	
	Tel: 540-220-1858	
	Fax: N/A	
	email: Guillemsandy@synagro.com	
	Tel: 540 547 3300	
	Fax:	
	email: Struillbox@regecsystems.com	
	Tel: 804-798-4777	
	Fax: 804-798-4772	
	email: Danayl@DWCareyHaulingInc.com	
	Tel: 804-731-3103	
	Fax:	
	email: harrison-moody@hotmail.com	
	Tel: 501-7689	
	Fax: 501-7620	
	email:	
	Tel:	
	Fax:	
	email:	

HENRICO COUNTY WATER RECLAMATION FACILITY

Monitoring Period:

Jun 01, 2016

Jun 30, 2016

Anaerobically Digested Biosolids (Centrifuge Dewatered Cake)

A. Pollutant Concentrations

Name	"Concentration (mg/kg)"	"Trace Element Maximum Monthly Average Table 8B 12-VAC5-585-590"	"Trace Element Ceiling Limits** Table 8A 12-VAC5-585-590"	Method Reference
Arsenic	6.0	41 mg/kg	75 mg/kg	SW 846-6010C
Cadmium	<2.0	39 mg/kg	85 mg/kg	SW 846-6010C
Chromium	63	1200 mg/kg	3000 mg/kg	SW 846-6010C
Copper	267	1500 mg/kg	4300 mg/kg	SW 846-6010C
Lead	22	300 mg/kg	840 mg/kg	SW 846-6010C
Mercury	0.5	17 mg/kg	57 mg/kg	SW 846-7471B
Molybdenum	6		75 mg/kg	SW 846-6010C
Nickel	20	420 mg/kg	420 mg/kg	SW 846-6010C
Selenium	<5.0	100 mg/kg	100 mg/kg	SW 846-6010C
Zinc	677	2800 mg/kg	7500 mg/kg	SW 846-6010C
Ammonia - Nitrogen	8,320	N/A	N/A	SM 4500-NH3C
Nitrate+Nitrite-N	28.20	N/A	N/A	SM 4500-NO3F
Organic N	36,480	N/A	N/A	CALCULATION
pH (Std Units)	8.32	N/A	N/A	SW 846-9045D
% Total Solids	26.32	N/A	N/A	SM 2540G

**Biosolids may not be land applied if any pollutant exceeds these values.

All pollutant concentrations expressed on a dry weight basis.

B. Pathogen Reduction (12-VAC5-585-560 C.1.) - The level achieved is indicated.

☐ Class I

☒ Class II, Alt. 2 (D3)

C. Vector Attraction Reduction (12-VAC5-585-560 E.) - Please indicate the option performed.

☒ Option 1

☐ Option 2

☐ Option 3

☐ Option 4

☐ Option 5

☐ Option 6


☐ Option 7

☐ Option 8

☐ Vector attraction reduction options were not achieved, dewatered biosolids incorporated into the soil within six (6) hours after application to or placement on the land.

D. Certification

"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 gather and evaluate 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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

James C. Grandstaff Division Director	(804) 501-7689
Signature 	Date July 7, 2016

I. Pathogen Reduction - Class "B"

Digester Temps > 95 degrees F - Average Temps

Digesters	Avg. Temp.
1	98.3
2	97.8
3	98.0
4	99.6

Fecal Coliform - Monthly Geometric Mean < 2 X 1000000 MPN/g dry wt

Geometric Mean = 22,755 MPN/g dry wt < 2 x 1000000

(TOTAL) MCRT > 15 days - Monthly Average

Primary HRT=	21	days	Primary MCRT=	30	days
Secondary HRT =	6	days	Secondary MCRT=	7	days
HRT (Total) =	27	days	MCRT (TOTAL) =	37	days

II. Vector Attraction Reduction - Monthly Average > 38%

%VSR (V-K) = 42.2 >>>>>>> %VSR > 38%

Note: Effective 5-1-16 %VSR Calc uses a moving average of feed data (MCRT in days) to compare to the daily discharge data from anaerobic digestion.

III. Biosolids Generation

Plant Dry Pounds/Month = 1,714,523.41 (HC CEL DIG 4 % TS)
Dry Tons/Month = 857.26
Wet Tons/Month 3,257.07 (Contract Lab %TS)
Plant % Solids Avg. = 26.03
Contract Lab % TS Avg = 26.32

IV. Biosolids Land Applied**Biosolids Landfilled**

Wet Tons/Month = 1,235.09 Wet Tons/Month =

HENRICO WATER RECLAMATION FACILITY									
Fecal Coliforms in Biosolids by Membrane Filtration: Standard Methods 9222D-2011									
Biosolids Sample Info			# Colonies			Calc. Fecal coliform/g dry wt.		Calc. Natural Log	
Sample	Date	Sample ID	Plate 1	Plate 2	Plate 3	(% total solids)	RESULT=Fecal coliform/g dry wt.	log ₁₀	
1	6/6/2016	AB91635			33.3	24.7	13,482	9.51	
2	6/7/2016	AB91704	1	12	74	25.1	31,226	10.35	
3	6/8/2016	AB91762	4	13	79	25.3	34,184	10.44	
4	6/9/2016	AB91827	0	4	62	24.9	23,879	10.08	
5	6/14/2016	AB91944	1	14	85	25.8	34,919	10.46	
6	6/15/2016	AB92016			20	24.1	8,299	9.02	
7	6/16/2016	AB92062	1	9	84	26.7	31,717	10.36	

RESULT:

Sum: 70.23

Geo. Mean of Sum: **22,755**

Handwritten signature
7-7-16

Report Number: 16-179-0201

Account Number: 71355



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 • Fax 804-271-6446
www.waypointanalytical.com

Send To: Henrico County
WRF - Laboratory
PO#145094
9101 WRVA Rd
Richmond, VA 23231

Project : Biosolids Dewatered Sludge

REPORT OF ANALYSIS

Date Sampled: 6/27/2016 06:20:00
Date Received: 06/27/2016 00:00
Date Reported: 07/05/2016

Lab Number : 57949

Sample Id : Biosolids

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Solids *	26.32	263200	100.0	RD	06/27/2016 14:35	SM-2540G
Moisture *	73.68		100.0	RD	06/27/2016 14:35	SM-2540G
Total Kjeldahl Nitrogen	4.48	44800	10.0	JM	06/28/2016 08:30	SM-4500-NH3C-TKN
Total Phosphorus	2.52	25200	100	SB	06/29/2016 09:45	SW 6010C
Total Potassium	0.23	2290	100	SB	06/29/2016 09:45	SW 6010C
Total Magnesium	0.32	3150	100	SB	06/29/2016 09:45	SW 6010C
Total Iron		33900	100	SB	06/29/2016 09:45	SW 6010C
Total Copper		267	5	SB	06/29/2016 09:45	SW 6010C
Total Zinc		677	5	SB	06/29/2016 09:45	SW 6010C
Ammonia Nitrogen	0.83	8320	10.0	JM	06/28/2016 08:30	SM-4500-NH3C
Organic N	3.65	36480	10.0		06/28/2016 08:30	CALCULATION
Nitrate+Nitrite-N		28.2	2.00	JM	06/28/2016 08:30	SM-4500NO3F
Total Cadmium		<2.0	2.0	SB	06/29/2016 09:45	SW 6010C
Total Chromium		63	5	SB	06/29/2016 09:45	SW 6010C
Total Nickel		20	5	SB	06/29/2016 09:45	SW 6010C
Total Lead		22	5	SB	06/29/2016 09:45	SW 6010C
Total Arsenic		6.0	3.0	SB	06/29/2016 09:45	SW 6010C

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

Our reports and letters are for the exclusive and confidential use of our clients, and may not be reproduced in whole or part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.

Debbie Holt
Laboratory Supervisor

Report Number: 16-179-0201

Account Number: 71355



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 • Fax 804-271-6446
www.waypointanalytical.com

Send To: Henrico County

WRF - Laboratory

PO#145094

9101 WRVA Rd

Richmond, VA 23231

Project : Biosolids Dewatered Sludge

REPORT OF ANALYSIS

Date Sampled: 6/27/2016 06:20:00

Date Received: 06/27/2016 00:00

Date Reported: 07/05/2016

Lab Number : 57949

Sample Id : Biosolids

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Mercury		0.5	0.4	JM	06/29/2016 12:50	SW-7471B
Total Selenium		<5.0	5.0	SB	06/29/2016 09:45	SW 6010C
pH (Standard Units) *	8.32		2.00	JM	06/28/2016 08:30	SW-9045D
Calcium Carbonate Equivalent	5.66	56600	100	RD	06/28/2016 09:29	AOAC 955.01
Total Volatile Solids	57.07	570700	100.0	RD	06/27/2016 14:35	SM-2540G
Total Molybdenum		6	5	SB	06/29/2016 09:45	SW 6010C
Alkalinity (as CaCO3)		46400	100	JM	06/29/2016 13:59	SM-2320 B

Comments:

NELAP ACCREDITED: VA NELAC LAB. # 460014. PA NELAC LAB # 68-03109, FL NELAC LAB # E871087, NJ NELAC LAB # VA011. RESULTS REPORTED MEET ALL REQUIREMENTS OF THE CURRENT NELAC STANDARDS. ALKALINITY AND ORGANIC NITROGEN NOT FOR COMPLIANCE PURPOSES. CCE FOR COMPLIANCE IN VIRGINIA AND PENNSYLVANIA ONLY.
QUALIFIER: THE MATRIX SPIKE WAS OUT OF LIMIT FOR "P". ALL OTHER QC DATA IS ACCEPTABLE.

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

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Debbie Holt
Laboratory Supervisor

HWRF CHAIN OF CUSTODY For samples collected on: **BIOSOLID 4TH MON**

15-179-0201
71355
06-27-2016
14-02-36

Henrico County
Biosolids Dewatered Sludge

don:

Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery												Graphite Furnace: Mo ppm	
LOCATION	GRAB/COMP	BOTTLES PROVIDED BY:	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	TS %	TVS %	pH su	TKN %	NH3-N %	NO3-N %	P %	K %	CaCO3 Eq	Total Alkalinity ppm	Metals: As, Cd, Cr, Cu, Fe, Hg, Pb, Mg, Ni, Se, Zn, ppm	
ONVEYOR BELT WK 1	GRAB	1	6-8-16	0700	DBL												
ONVEYOR BELT WK 2	GRAB	1	6-13-16	0630	DBL												
ONVEYOR BELT WK 3	GRAB	1	6-20-16	0700	DBL												
ONVEYOR BELT WK 4	GRAB	1	6-27-16	0615	DBL												
ONVEYOR BELT WK 1-4	COMP					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

te:

ple container to be stored in DCB Sample Refrigerator

ore and after sample collection.

; new sample scoop for each weekly sample.

57949

TIME	SUBMITTED BY	DATE & TIME	RECEIVED BY
0620	DBL	6/27/16 / 0620	MAN
0752	Henrico County	6/27/16 / 0752	
		6/27 7:52	C. Mays

HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLE BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids	G	6-6-16	0745	WW	1	0756	WW	6/6/16	0756 LAJ

Cart prepared by	LAJ
Date	5/20/16
Biosolids LIMS ID	AB91635
LOG IN RECORD	7016-06-06-004

RECEIVED
 JUN 06 2016
 BY *LAJ*

HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLE BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids	3	6-7-16	0838	WJW	1	0833	WJW	6/7/16 0833	WJW


Cart prepared by	WJW
Date	5/20/16
Biosolids LIMS ID	A-091704
LOG IN RECORD	2016-06-07-003

JUN 07 2016

WJW

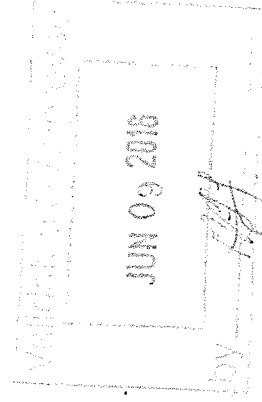
HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLE BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids	Grab	6-8-16	0729	JDK	1	0747	JDK	6/8/16	0747 VS

Cart prepared by	RAY
Date	6/8/16
Biosolids LIMS ID	AB91762
LOG IN RECORD	2016-06-08-003


 JUN 08 2016

HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME RECEIVED BY
Biosolids	Grab	6-9-16	0647	JDK	1	0651	JDK	09-10	DUSS WAM

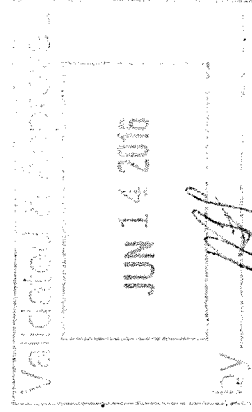
Cart prepared by	LAS
Date	5/20/16
Biosolids LIMS ID	AB91827
LOG IN RECORD	2010-06-09-002



HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids		6/14/16	0735	R Hill	1	0744	R Hill	6/14/16	JL

Cart prepared by	LAS
Date	5/29/16

Biosolids LIMS ID	AB91944
LOG IN RECORD	2016-06-14-002



HWRF CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery				Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	9	6-15-16	0835	WHL	1	0841	WHL	6-15-16	0841	NAY































Cart prepared by	LAS	✓
Date	5/22/16	
Biosolids LIMS ID	AB972016	✓
LOG IN RECORD	2016-06-15-014	































Validated & Approved
 JUN 15 2016
 by *[Signature]*































HWRF CHAIN OF CUSTODY				Laboratory Complete Upon Receipt in Lab			
Lab - Complete Prior to Giving Bottles to Operations		Operators - Complete Prior to Delivery		Operator Complete Upon Receipt in Lab		RECEIVED BY	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME LAB	DATE
Biosolids	Grab	6/16/16	0730	Sta	1	0732	6/16/16































Cart prepared by	LAS
Date	5/20/16
Biosolids LIMS ID	AB92062
LOG IN RECORD	2016.06.16-002































Validated & Approved
 JUN 16 2016
 by [Signature]

	Shift Comm ents	24044 Dig #1 Temperature - Avg Deg F	24074 Dig #2 Temperature - Avg Deg F	24104 Dig #3 Temperature - Avg Deg F	24124 Dig #4 Temperature - Avg Deg F	27075 Biosolids Fecal Geo Mean F c/gdrywt	24206 DIG Primary HRT - MAVG (NANI Final) days	24216 DIG Secondary HRT MAVG (NANI Final) days	24221 DIG Total HRT (NANI Final) days	24201 DIG Primary HRT (GRA Final) days	24211 DIG Secondary HRT (GRA Final) days
1 Wed		98.9	97.8	98.0	99.1					22	5
2 Thu		98.8	98.0	98.2	99.2					20	7
3 Fri		99.0	98.1	98.3	99.5					21	5
4 Sat		98.9	98.2	98.3	99.6					20	5
5 Sun		99.1	98.2	98.4	99.6					21	5
6 Mon		99.1	98.3	98.5	99.7					22	5
7 Tue		99.3	98.4	98.5	100.0					23	9
8 Wed		99.1	98.2	98.4	100.0					23	3
9 Thu		98.9	97.9	98.3	99.6					25	9
10 Fri		98.7	97.7	98.3	99.7					20	6
11 Sat		98.5	97.4	98.0	99.6					19	4
12 Sun		98.8	97.5	98.1	99.8					21	13
13 Mon		98.7	97.5	98.2	100.1					20	25
14 Tue		98.3	97.5	98.1	100.1					20	4
15 Wed		98.1	97.5	98.1	100.0					20	7
16 Thu		98.0	97.6	98.1	100.0					19	6
17 Fri		97.8	97.6	97.9	99.9					18	5
18 Sat		97.5	97.5	97.7	99.5					17	4
19 Sun		97.4	97.5	97.5	99.3					17	6
20 Mon		97.5	97.5	97.5	99.2					19	5
21 Tue		97.8	97.7	97.8	99.3					21	5
22 Wed		97.9	97.7	97.9	99.3					20	5
23 Thu		97.8	97.8	97.7	99.3					21	8
24 Fri		97.6	97.7	97.7	99.3					22	6
25 Sat		97.8	97.8	97.8	99.4					23	6
26 Sun		97.8	97.8	97.8	99.4					22	4
27 Mon		97.8	97.7	97.8	99.4					21	6
28 Tue		97.8	97.7	97.8	99.4					21	6
29 Wed		97.8	97.7	97.8	99.4					21	4
30 Thu		97.6	97.7	97.9	99.4	22755	21	6	27	21	5
MIN		97.4	97.4	97.5	99.1	22,755	21	6	27	17	3
MAX		99.3	98.4	98.5	100.1	22,755	21	6	27	25	25
AVG		98.3	97.8	98.0	99.6	22,755	21	6	27	21	6
SUM		2,948.1	2,933.2	2,940.4	2,987.1	22,755	21	6	27	619	192
GeoMean		98.3	97.8	98.0	99.6	22,755	21	6	27	21	6































	Shift Comm ents	24222 DIG Total HRT - MTD Avg (GRA Final) days	24053 Dig #1 TS %	24083 Dig #2 TS %	24113 Dig #3 TS %	24165 DIG Daily Avg %TS (DIG 1-3) %	24133 Dig #4 %TS (Lab) %	24176 DIG Daily Avg TS Conc (DIG 1-3) mg/l	24140 Dig #4 Level SCADA daily ft	24141 Dig #4 Level SCADA Hourly ft	24173 Dig DIG 4 Volume MG
1 Wed		27	2.8	2.9	2.7	2.8	2.8	28000	15.2	15.2	1.367
2 Thu		27	2.7	2.9	2.7	2.8	2.8	27667	14.9	14.9	1.349
3 Fri		27							14.9	14.9	1.349
4 Sat		26							15.0	15.0	1.355
5 Sun		26	2.8	3.0	2.8	2.9	2.8	28667	14.8	14.8	1.343
6 Mon		27	2.8	3.0	2.8	2.9	2.7	28667	14.4	14.4	1.320
7 Tue		27	2.8	2.9	2.8	2.8	2.8	28333	15.3	15.3	1.373
8 Wed		27	2.8	3.1	2.8	2.9	2.8	29000	16.9	16.9	1.467
9 Thu		28	2.9	3.0	2.9	2.9	2.7	29333	15.1	15.1	1.361
10 Fri		28							14.9	14.9	1.349
11 Sat		27							15.4	15.4	1.379
12 Sun		28	3.0	3.3	3.0	3.1	2.9	31000	14.0	14.0	1.296
13 Mon		29	2.9	3.3	3.0	3.1	2.9	30667	13.7	13.7	1.279
14 Tue		29	2.9	3.2	3.1	3.1	3.0	30667	15.3	15.3	1.373
15 Wed		29	3.0	3.1	3.0	3.0	2.7	30333	14.6	14.6	1.332
16 Thu		28	3.0	3.1	3.0	3.0	2.8	30333	15.0	15.1	1.355
17 Fri		28							15.0	15.0	1.355
18 Sat		28							14.9	15.1	1.349
19 Sun		27	3.0	3.2	3.0	3.1	2.9	30667	14.9	15.3	1.349
20 Mon		27	3.2	3.1	3.0	3.1	2.9	31000	15.4	15.3	1.379
21 Tue		27	3.0	3.7	3.1	3.3	2.9	32667	15.1	15.1	1.361
22 Wed		27	3.0	3.2	3.1	3.1	3.0	31000	14.9	14.9	1.349
23 Thu		27	3.0	3.2	3.1	3.1	2.9	31000	15.1	15.1	1.361
24 Fri		27							15.3	15.3	1.373
25 Sat		27							14.9	14.9	1.349
26 Sun		27	3.0	3.3	3.2	3.2	3.0	31667	15.8	15.8	1.402
27 Mon		27	3.0	3.2	3.1	3.1	3.0	31000	14.4	14.4	1.320
28 Tue		27	3.2	3.0	3.1	3.1	3.1	31000	15.0	15.0	1.355
29 Wed		27	3.0	3.2	3.1	3.1	3.0	31000	15.4	15.4	1.379
30 Thu		27							14.7	14.7	1.337
MIN		26	2.7	2.9	2.7	2.8	2.7	27,667	13.7	13.7	1.279
MAX		29	3.2	3.7	3.2	3.3	3.1	32,667	16.9	16.9	1.467
AVG		27	2.9	3.1	3.0	3.0	2.9	30,175	15.0	15.0	1.355
SUM		821	61.8	65.9	62.4	63.4	60.4	633,667	450.2	450.8	40.665
GeoMean		27	2.9	3.1	3.0	3.0	2.9	30,147	15.0	15.0	1.355

	Shift Comm ents	24172 Dig Volume (EACH) MG	24175 DIG Lbs TS Under Digestion (GRA-Final) Pounds	26085 Centrifuge Feed Total lbs/D (GRA-Final) lbs/day	24253 DIG Total MCRT (NANI Final) days	24230 DIG MCRT - Primary (NANI Final) days	24235 DIG MCRT - Primary MAVG (GRA Final) days	24246 DIG Secondary MCRT- MAVG (PDR) days	24254 DIG Total MCRT - MATD (PDR) days	1329 Pri Sludge Total Flow -Timer (GRA-Final) MGD	1221 Pri Sludge %TS (Lab) %
1 Wed		1.855	1620013	68696	24	19			24	0.1620	5.7
2 Thu		1.855	1600411	42816	37	30			30	0.1746	5.5
3 Fri		1.855							30	0.1609	
4 Sat		1.855							30	0.1794	
5 Sun		1.855	1645489	59976	27	22			29	0.1699	6.7
6 Mon		1.855	1628984	55184	30	24			29	0.1710	6.1
7 Tue		1.855	1636869	36507	45	36			33	0.1556	6.4
8 Wed		1.855	1689800	110685	15	12			30	0.1620	6.7
9 Thu		1.855	1669218	35852	47	38			32	0.1357	5.7
10 Fri		1.855							32	0.1853	
11 Sat		1.855							32	0.2033	
12 Sun		1.855	1753712	23625	74	61			37	0.1739	4.5
13 Mon		1.855	1733963	12197	142	117			49	0.1739	4.2
14 Tue		1.855	1768166	79506	22	18			46	0.1595	4.7
15 Wed		1.855	1709050	46086	37	31			45	0.1542	4.9
16 Thu		1.855	1725653	52027	33	27			44	0.1721	4.8
17 Fri		1.855							44	0.1889	
18 Sat		1.855							44	0.2220	
19 Sun		1.855	1751024	51910	34	27			44	0.2262	2.5
20 Mon		1.855	1773616	67273	26	21			42	0.1892	3.8
21 Tue		1.855	1846770	68696	27	22			41	0.1617	4.6
22 Wed		1.855	1777767	70028	25	21			40	0.1706	4.1
23 Thu		1.855	1769351	43387	41	33			40	0.1701	3.3
24 Fri		1.855							40	0.1569	
25 Sat		1.855							40	0.1664	
26 Sun		1.855	1821971	84058	22	17			39	0.1861	4.6
27 Mon		1.855	1770413	54722	32	26			39	0.1712	3.9
28 Tue		1.855	1790546	55863	32	26			39	0.1706	3.7
29 Wed		1.855	1785120	83171	21	17			38	0.1676	3.1
30 Thu		1.855					31	7	38	0.1676	
MIN		1.855	1,600,411	12,197	15	12	31	7	24	0.1357	2.5
MAX		1.855	1,846,770	110,685	142	117	31	7	49	0.2262	6.7
AVG		1.855	1,727,043	57,251	38	31	31	7	38	0.1736	4.7
SUM		55.664	36,267,905	1,202,262	794	646	31	7	1,125	5.2083	99.5
GeoMean		1.855	1,725,663	52,260	33	27	31	7	37	0.1727	4.6

	Shift Comm ents	1372 PS Load to DIG (Timer GRA Final) lbs/day	20003 GBT TWAS Flow to DIG (GRA Final) MGD	20005 GBT TWAS Load to DIG (GRA-Final) lbs/day	20007 GBT TWAS Load to DIG (LVAL-PDR) lbs/day	24173 Dig DIG 4 Volume MG	24177 Dig # of Secondary DIGs In Service Number	24178 Dig Total Secondary DIG Volume MG	24137 Dig #4 %TVS %	24016 Dig Feed %TVS (Daily Final) %	24019 Dig Feed %TVS (Mov Avg - NANI FINAL) %
1 Wed		77072	0.092	36099	36099	1.367	3	5.566	58	68.6	69.69
2 Thu		80151	0.100	36571	36571	1.349	3	5.566	57	64.8	69.31
3 Fri			0.103		36571	1.349	3	5.566			69.22
4 Sat			0.097		36571	1.355	3	5.566			69.23
5 Sun		94971	0.091	35746	35746	1.343	3	5.566	57	68.4	69.07
6 Mon		87047	0.084	34373	34373	1.320	3	5.566	57	70.3	69.01
7 Tue		83076	0.086	33723	33723	1.373	3	5.566	57	69.6	69.04
8 Wed		90593	0.085	34176	34176	1.467	3	5.566	56	71.0	69.15
9 Thu		64543	0.087	33351	33351	1.361	3	5.566	56	66.4	68.83
10 Fri			0.092		33351	1.349	3	5.566			68.68
11 Sat			0.095		33351	1.379	3	5.566			68.77
12 Sun		65285	0.096	43044	43044	1.296	3	5.566	56	64.0	68.50
13 Mon		60933	0.099	38049	38049	1.279	3	5.566	55	65.1	68.31
14 Tue		62574	0.113	58300	58300	1.373	3	5.566	56	66.5	68.20
15 Wed		63053	0.122	49805	49805	1.332	3	5.566	56	67.6	68.17
16 Thu		68952	0.121	53631	53631	1.355	3	5.566	55	64.9	67.95
17 Fri			0.117		53631	1.355	3	5.566			67.84
18 Sat			0.102		53631	1.349	3	5.566			67.65
19 Sun		47185	0.103	47173	47173	1.349	3	5.566	54	66.0	67.42
20 Mon		59981	0.102	39132	39132	1.379	3	5.566	55	68.2	67.42
21 Tue		62060	0.107	41912	41912	1.361	3	5.566	55	68.8	67.50
22 Wed		58384	0.101	47162	47162	1.349	3	5.566	55	68.6	67.56
23 Thu		46835	0.097	46092	46092	1.361	3	5.566	54	68.0	67.59
24 Fri			0.101		46092	1.373	3	5.566			67.50
25 Sat			0.078		46092	1.349	3	5.566			67.45
26 Sun		71434	0.069	32273	32273	1.402	3	5.566	54	68.4	67.44
27 Mon		55721	0.100	37515	37515	1.320	3	5.566	55	72.2	67.87
28 Tue		52688	0.100	42594	42594	1.355	3	5.566	55	74.2	68.22
29 Wed		43352	0.104	39800	39800	1.379	3	5.566	54	74.1	68.53
30 Thu			0.096		39800	1.337	3	5.566			68.54
MIN		43,352	0.069	32,273	32,273	1.279	3	5.566	54	64.0	67.42
MAX		94,971	0.122	58,300	58,300	1.467	3	5.566	58	74.2	69.69
AVG		66,471	0.098	40,977	41,320	1.355	3	5.566	56	68.4	68.32
SUM		1,395,891	2.940	860,520	1,239,610	40.665	90	166.991	1,167	1,435.5	2,049.67
GeoMean		64,985	0.097	40,424	40,732	1.355	3	5.566	56	68.3	68.32

	Shift Comm ents	24023 DIG % VSR (NANI-FINAL) %	24009 DIG %VSR (NANI Final) %	24026 DIG Total Gas Produced (Calculated Final)	24036 DIG Total Gas Produced - (Air Permit) SCF/Day	26114 Dewatered Biosolids (Plant Final) DryLbs/Day	26107 Centrifuge % Capture (Orig-Final-NANI)	26100 Centrifuge % Capture (LVAL-PDR) %	26083 Centrifuge Total Feed Flow Hour (orig) gpm	26084 Centrifuge Feed Total Flow (GRA Final) MGD	26089 Centrifuge No Days in Service/Month Number
1 Wed		39.9	39.9	566869	631500	68244	99.3	99.3	204	0.294	
2 Thu		41.3	41.3	601650	553020	42519	99.3	99.3	127	0.183	
3 Fri					600600			99.3	197	0.283	
4 Sat					648660			99.3	180	0.260	
5 Sun		40.6	40.6	660627	639420	58870	98.2	98.2	178	0.257	
6 Mon		40.5	40.5	610506	569940	54966	99.6	99.6	170	0.245	
7 Tue		40.6	40.6	588902	635520	36187	99.1	99.1	109	0.156	
8 Wed		43.2	43.2	671377	623700	109643	99.1	99.1	329	0.474	
9 Thu		42.4	42.4	513657	654120	35662	99.5	99.5	111	0.159	
10 Fri					677640			99.5	156	0.225	
11 Sat					663180			99.5	253	0.364	
12 Sun		41.5	41.5	554011	635220	23552	99.7	99.7	68	0.098	
13 Mon		43.3	43.3	526991	613800	12136	99.5	99.5	35	0.050	
14 Tue		40.7	40.7	603406	545520	79209	99.6	99.6	221	0.318	
15 Wed		40.6	40.6	561967	540540	45903	99.6	99.6	142	0.205	
16 Thu		42.3	42.3	634832	548400	51638	99.3	99.3	155	0.223	
17 Fri					549600			99.3	202	0.291	
18 Sat					584160			99.3	253	0.364	
19 Sun		43.3	43.3	495621	616260	51275	98.8	98.8	149	0.215	
20 Mon		40.9	40.9	492464	588900	66795	99.3	99.3	193	0.278	
21 Tue		41.2	41.2	519995	582180	67795	98.7	98.7	197	0.284	
22 Wed		41.3	41.3	530326	594000	69188	98.8	98.8	194	0.280	
23 Thu		43.7	43.7	493987	603360	43133	99.4	99.4	125	0.179	
24 Fri					631380			99.4	161	0.232	
25 Sat					598260			99.4	166	0.240	
26 Sun		43.3	43.3	545289	615120	83149	98.9	98.9	233	0.336	
27 Mon		42.1	42.1	480011	634140	54233	99.1	99.1	152	0.219	
28 Tue		43.1	43.1	503966	587700	55525	99.4	99.4	150	0.216	
29 Wed		46.1	46.1	472826	594120	82353	99.0	99.0	231	0.332	
30 Thu					584220			99.0	185	0.266	30
MIN		39.9	39.9	472,826	540,540	12,136	98.2	98.2	35	0.050	30
MAX		46.1	46.1	671,377	677,640	109,643	99.7	99.7	329	0.474	30
AVG		42.0	42.0	553,775	604,806	56,761	99.2	99.2	174	0.251	30
SUM		881.9	881.9	11,629,280	18,144,180	1,191,976	2,083.1	2,977.1	5,226	7.523	30
GeoMean		42.0	42.0	550,821	603,724	51,840	99.2	99.2	163	0.234	30

NANI Report Variables (GRA-FINAL)

	Shift Comm ents	26114 Dewatered Biosolids (Plant Final) DryLbs/Day	26119 Dewatered Biosolids MA/G (Plant & NANI) Drylbs/Day	26106 Dewatered Biosolids (Plant &NANI Final) Drylbs/Mon	26118 Dewatered Biosolids (Plant & NANI Final) DryTons/M	27001 Biosolids % TS (Contract Lab NANI) %	26121 Dewatered Biosolids (NANI Final) Wet Tons/M	26103 Centrifuge Cake Plant %TS Lab (NANI) %	27001 Biosolids % TS (Contract Lab NANI) %	26112 Dwtrd Biosolids Scale Wt Daily - LA NANI Wet Tons	26113 Dwtrd Biosolids Scale Wt Daily - LF NANI Wet Tons
1 Wed		68244						26.40			
2 Thu		42519						26.20			
3 Fri											
4 Sat											
5 Sun		58870						26.60			
6 Mon		54966						24.40			
7 Tue		36187						25.30			
8 Wed		109643						25.20			
9 Thu		35662						25.40		101.65	
10 Fri										104.98	
11 Sat											
12 Sun		23552						25.00			
13 Mon		12136						24.20		99.88	
14 Tue		79209						25.40		217.24	
15 Wed		45903						23.70		104.56	
16 Thu		51638						26.40		102.88	
17 Fri										33.56	
18 Sat											
19 Sun		51275						27.10			
20 Mon		66795						26.30			
21 Tue		67795						27.60			
22 Wed		69188						27.70		90.64	
23 Thu		43133						26.80		31.62	
24 Fri										100.44	
25 Sat											
26 Sun		83149						26.00			
27 Mon		54233						26.10			
28 Tue		55525						26.20			
29 Wed		82353						27.30		94.48	
30 Thu			56761	1702822.95	851.41	26.32			26.32	153.16	
MIN		12,136	56,761	1,702,822.95	851.41	26.32	-	23.70	26.32	31.62	-
MAX		109,643	56,761	1,702,822.95	851.41	26.32	-	27.70	26.32	217.24	-
AVG		56,761	56,761	1,702,822.95	851.41	26.32	-	25.97	26.32	102.92	-
SUM		1,191,976	56,761	1,702,822.95	851.41	26.32	-	545.30	26.32	1,235.09	-
GeoMean		51,840	56,761	1,702,822.95	851.41	26.32	-	25.94	26.32	91.58	-

HENRICO COUNTY WATER RECLAMATION FACILITY

Monitoring Period: Oct 01, 2016

Oct 31, 2016

Anaerobically Digested Biosolids (Centrifuge Dewatered Cake)

A. Pollutant Concentrations

Name	"Concentration (mg/kg)"	"Trace Element Maximum Monthly Average Table 8B 12-VAC5-585-590"	"Trace Element Ceiling Limits** Table 8A 12-VAC5-585-590"	Method Reference
Arsenic	9.2	41 mg/kg	75 mg/kg	SW 846-6010C
Cadmium	<2.0	39 mg/kg	85 mg/kg	SW 846-6010C
Chromium	65	1200 mg/kg	3000 mg/kg	SW 846-6010C
Copper	227	1500 mg/kg	4300 mg/kg	SW 846-6010C
Lead	21	300 mg/kg	840 mg/kg	SW 846-6010C
Mercury	<0.4	17 mg/kg	57 mg/kg	SW 846-7471B
Molybdenum	8		75 mg/kg	SW 846-6010C
Nickel	22	420 mg/kg	420 mg/kg	SW 846-6010C
Selenium	<5.0	100 mg/kg	100 mg/kg	SW 846-6010C
Zinc	627	2800 mg/kg	7500 mg/kg	SW 846-6010C
Ammonia - Nitrogen	5,870	N/A	N/A	SM 4500-NH3C
Nitrate+Nitrite-N	<12.30	N/A	N/A	SM 4500-NO3F
Organic N	33,530	N/A	N/A	CALCULATION
pH (Std Units)	8.05	N/A	N/A	SW 846-9045D
% Total Solids	25.87	N/A	N/A	SM 2540G

****Biosolids may not be land applied if any pollutant exceeds these values.**

All pollutant concentrations expressed on a dry weight basis.

B. Pathogen Reduction (12-VAC5-585-560 C.1.) - The level achieved is indicated.

 Class I

X Class II, Alt. 2 (D3)

C. Vector Attraction Reduction (12VAC5-585-560 E.) - Please indicate the option performed.

☒ Option 1 ☐ Option 2 ☐ Option 3 ☐ Option 4

* was not achieved
in October 2014


___ Option 5 ___ Option 6 ___ Option 7 ___ Option 8

11-3-16

___ Vector attraction reduction options were not achieved, dewatered biosolids incorporated into the soil within six (6) hours after application to or placement on the land.

D. Certification

"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 gather and evaluate 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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

James C. Grandstaff Division Director	(804) 501-7689
Signature 	Date November 3, 2016

DIGESTER BIOSOLIDS

October, 2016

I. Pathogen Reduction - Class "B"

Digester Temps > 95 degrees F - Average Temps

Digesters	Avg. Temp.
1	98.0
2	Digester No. 2 was out of service for the month of October 2016 to facilitate an annual clean out of the tank.
3	98.0
4	98.1

Fecal Coliform - Monthly Geometric Mean < 2 X 1000000 MPN/g dry wt

Geometric Mean = **72,167** MPN/g dry wt < 2 x 1000000

(TOTAL) MCRT > 15 days - Monthly Average

Primary HRT=	14	days	Primary MCRT=	13	days
Secondary HRT =	5	days	Secondary MCRT=	5	days
HRT (Total) =	19	days	MCRT (TOTAL) =	18	days

October MCRT and HRT calculations reflect DIG No. 2 is out of service

II. Vector Attraction Reduction - Monthly Average > 38%

%VSR (V-K) = **35.3** <<<<<< %VSR > 38%

The Vector Attraction Reduction standard for land applying Class B Biosolids was not met in October 2016. Material that does not meet standards for land application is segregated and sent to a municipal landfill for disposal.

Note: Effective 5-1-16 %VSR Calc uses the monthly average primary digester MCRT in days

III. Biosolids Generation

Plant Dry Pounds/Month =	2,768,057.98	(Uses HC CEL DIG 4 % TS)
Dry Tons/Month =	1,384.03	
Wet Tons/Month	5,349.94	(Uses Contract Lab %TS)
Plant % Solids Avg. =	27.26	
Contract Lab % TS Avg =	25.87	

IV. Biosolids Land Applied

Biosolids Landfilled

Wet Tons/Month =	2,142.04	Wet Tons/Month =	1,097.44
------------------	-----------------	------------------	-----------------

HENRICO WATER RECLAMATION FACILITY									
Fecal Coliforms in Biosolids by Membrane Filtration: Standard Methods 9222D-2011									
Biosolids Sample Info			# Colonies			Calc. Fecal coliform/g dry wt.		Calc. Natural Log	
Sample	Date	Sample ID	Plate 1	Plate 2	Plate 3	(% total solids)	RESULT=Fecal coliform/g dry wt.	log ₁₀	
1	10/3/2016	AB95648	2	10		26.4	41,322	10.63	
2	10/4/2016	AB95703	4	24		27.4	92,900	11.44	
3	10/5/2016	AB95820			104	24.8	41,935	10.64	
4	10/6/2016	AB95821			108	26.3	41,065	10.62	
5	10/11/2016	AB95943	82			26.2	3,129,771	14.96	
6	10/11/2016	AB95958			60	26.0	23,077	10.05	
7	10/12/2016	AB96016			60	28.1	21,352	9.97	

Sum: 78.31

Geo. Mean of Sum: 72,167

RESULT:

11-3-16

Report Number: 16-299-0200

Account Number: 71355

Send To: Henrico County
WRF - Laboratory
PO#145094
9101 WRVA Rd
Richmond, VA 23231

Lab Number: 60365

Sample Id: Oct 2016 Biosolid Sample



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 • Fax 804-271-6446
www.waypointanalytical.com

Project: Biosolids Dewatered Sludge

REPORT OF ANALYSIS

Date Sampled: 10/24/2016 09:55:00

Date Received: 10/25/2016 00:00

Date Reported: 10/31/2016

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Solids *	25.87	258700	100.0	R D	10/25/2016 15:30	SM-2540G
Moisture *	74.12		100.0	R D	10/25/2016 15:30	SM-2540G
Total Kjeldahl Nitrogen	3.94	39400	10.0	JM	10/26/2016 09:15	SM-4500-NH3C-TKN
Total Phosphorus	1.89	18900	100	JTR	10/27/2016 14:16	6010C
Total Potassium	0.27	2670	1000	JTR	10/27/2016 14:21	6010C
Total Magnesium	0.27	2690	100	JTR	10/27/2016 14:16	6010C
Total Iron		35400	100	JTR	10/27/2016 14:16	6010C
Total Copper		227	5.00	JTR	10/27/2016 14:16	6010C
Total Zinc		627	5.00	JTR	10/27/2016 14:16	6010C
Ammonia Nitrogen	0.59	5870	10.0	JM	10/26/2016 09:15	SM-4500-NH3C
Organic N	3.35	33530	10.0		10/26/2016 09:15	CALCULATION
Nitrate+Nitrite-N		<12.3	12.3	SJB	10/27/2016 14:50	4500NO3F-2011
Total Cadmium		<2.00	2.00	JTR	10/27/2016 14:16	6010C
Total Chromium		65.2	5.00	JTR	10/27/2016 14:16	6010C
Total Nickel		22.0	5.00	JTR	10/27/2016 14:16	6010C
Total Lead		20.5	5.00	JTR	10/27/2016 14:16	6010C
Total Arsenic		9.24	3.00	JTR	10/27/2016 14:16	6010C

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

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Debbie Holt
Laboratory Supervisor

Report Number: 16-299-0200
Account Number: 71355



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 • Fax 804-271-6446
www.waypointanalytical.com

Send To: Henrico County
WRF - Laboratory
PO#145094
9101 WRVA Rd
Richmond, VA 23231

Project : Biosolids Dewatered Sludge

Date Sampled: 10/24/2016 09:55:00
Date Received: 10/25/2016 00:00
Date Reported: 10/31/2016

REPORT OF ANALYSIS

Lab Number : 60365
Sample Id : Oct 2016 Biosolid Sample

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Mercury		<0.400	0.400	JM	10/28/2016 08:30	SW-7471B
Total Selenium		<5.00	5.00	JTR	10/27/2016 14:16	6010C
pH (Standard Units) *	8.05			JM	10/26/2016 09:15	SW-9045D
Calcium Carbonate Equivalent	4.63	46300	2500	R D	10/26/2016 10:00	AOAC 955.01
Total Volatile Solids	50.12	501200	100.0	R D	10/25/2016 15:30	SM-2540G
Total Molybdenum		7.80	5.00	JTR	10/27/2016 14:16	6010C
Alkalinity (as CaCO3)		39000	86	JM	10/20/2016 09:10	SM-2320 B

Comments:

NELAP ACCREDITED: VA NELAC LAB. # 460014. PA NELAC LAB # 68-03109, FL NELAC LAB # E871087, NJ NELAC LAB # VA011. RESULTS REPORTED MEET ALL REQUIREMENTS OF THE CURRENT NELAC STANDARDS. ALKALINITY AND ORGANIC NITROGEN NOT FOR COMPLIANCE PURPOSES. CCE FOR COMPLIANCE IN VIRGINIA AND PENNSYLVANIA ONLY.

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

Our reports and letters are for the exclusive and confidential use of our clients, and may not be reproduced in whole or part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.

Debbie Holt
Laboratory Supervisor

HWRF CHAIN OF CUSTODY

Lab - Complete Prior to Giving Bottles to

16-299-0200
71355
10-25-2016
13:29:58



Henrico County
Biosolids Dewatered Sludge

SLIDS DEWATERED SLUDGE To be delivered on:
MONDAY (MONTHLY)

Analyses Requested

LOCATION	GRAB/COMP	BOTTLES PROVIDED BY:	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	TS %	TVS %	pH	TKN %	NH3-N %	NO3-N %	P %	K %	CaCO3 Eq	Total Alkalinity ppm	Metals: As, Cd, Cr, Cu, Fe, Hg, Pb, Mg, Ni, Se, Zn, ppm	Graphite Furnace: Mo ppm
SH CONVEYOR BELT WK 1	GRAB	1	10-3-16	0730	DBL												
SH CONVEYOR BELT WK 2	GRAB	1	10-1-16	1000	DBL												
SH CONVEYOR BELT WK 3	GRAB	1	10-7-16	0830	DBL												
SH CONVEYOR BELT WK 4	GRAB	1	10/24/16	0955	SLA												
SH CONVEYOR BELT WK 1-4	COMP																

Note:

Sample container to be stored in DCB Sample Refrigerator

before and after sample collection.

Use new sample scoop for each weekly sample.

1003505

TIME	SUBMITTED BY	DATE & TIME	RECEIVED BY
10:15	SLA	10-24-16 10:15	WPH
10:53	9/3	10/25/16	B. J. R.

SLHENR

VA Certs

Add AHK Remove S



HWRF CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab			
LOCATION ✓	GRAB/COMP ✓		SAMPLE DATE ✓	SAMPLE TIME ✓	SAMPLED BY ✓	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	G		10-3-16	0745	DBC	1	0752	DBC	07/10/16	0752	9/3

Cart prepared by	KLW
Date	9/30/16
Biosolids LIMS ID	AB95648
LOG IN RECORD	2016-10-03-005

OCT 03 2016

HWRF CHAIN OF CUSTODY												
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery				Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab			
LOCATION	GRAB/COMP		SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY	
Biosolids			10-4-16	0910	KS	1	0911	KS	10-4-16	0917	sm	

Cart prepared by	KW
Date	9/30/16
Biosolids LIMS ID	A1395703
LOG IN RECORD	2016-10-04-003

OCT 04 2016

by KS

HWRF CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP		SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	Grab		10/5/16	0730	SDA	1	0739	SDA	10/5/16	0742	TM

Cart prepared by	KW
Date	9/20/16
Biosolids LIMS ID	AB95826
LOG IN RECORD	2016-10-05-014



HWRF CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	Grab	10/16/16	0735	SDA	1	0739	SDA	10/16/16	0739	JM

Cart prepared by	KW
Date	9/14/16
Biosolids LIMS ID	AB95821
LOG IN RECORD	2016-10-06-002

2016-10-06-002
KW 10/16/16

OCT 06 2016
[Signature]

HWRF CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery				Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	SRAB/COMP		SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids			10-10-16	1445	D. M. W.	1	1452	D. M. W.	10/10/16	1450	KLW
										1452KLW	10/10/16

Cart prepared by	KLW
Date	10/10/16

Biosolids LIMS ID	AB95943
LOG IN RECORD	2016-10-10-DW

OCT 10 2016

1452

HWRf CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP		SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids			10-11-16	0850	P. M. W.	1	0901	P. M. W.	10-11-16	0901	B. D.

Cart prepared by	KW
Date	9/26/16

Biosolids LIMS ID	2016-10-11-002	B. D. 10/11/16
LOG IN RECORD	AB95958	

OCT 11 2016

R. J.

HWRf CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY	
Biosolids		10-2-16	0925	1208	1	0933	RE	10/12/16	0933	KW	

Cart prepared by	KW
Date	9/30/16
Biosolids LIMS ID	A396016
LOG IN RECORD	2016-10-12-006

OCT 12 2016

[Signature]

HENRICO COUNTY WATER RECLAMATION FACILITY

Monitoring Period:

Nov 01, 2016

Nov 30, 2016

Anaerobically Digested Biosolids (Centrifuge Dewatered Cake)

A. Pollutant Concentrations

Name	"Concentration (mg/kg)"	"Trace Element Maximum Monthly Average Table 8B 12-VAC5-585-590"	"Trace Element Ceiling Limits** Table 8A 12-VAC5-585-590"	Method Reference
Arsenic	6.4	41 mg/kg	75 mg/kg	SW 846-6010C
Cadmium	<2.0	39 mg/kg	85 mg/kg	SW 846-6010C
Chromium	68	1200 mg/kg	3000 mg/kg	SW 846-6010C
Copper	273	1500 mg/kg	4300 mg/kg	SW 846-6010C
Lead	21	300 mg/kg	840 mg/kg	SW 846-6010C
Mercury	<0.4	17 mg/kg	57 mg/kg	SW 846-7471B
Molybdenum	7		75 mg/kg	SW 846-6010C
Nickel	22	420 mg/kg	420 mg/kg	SW 846-6010C
Selenium	<5.0	100 mg/kg	100 mg/kg	SW 846-6010C
Zinc	740	2800 mg/kg	7500 mg/kg	SW 846-6010C
Ammonia - Nitrogen	7,600	N/A	N/A	SM 4500-NH3C
Nitrate+Nitrite-N	<1.30	N/A	N/A	SM 4500-NO3F
Organic N	39,700	N/A	N/A	CALCULATION
pH (Std Units)	8.39	N/A	N/A	SW 846-9045D
% Total Solids	23.03	N/A	N/A	SM 2540G

**Biosolids may not be land applied if any pollutant exceeds these values.

All pollutant concentrations expressed on a dry weight basis.

B. Pathogen Reduction (12-VAC5-585-560 C.1.) - The level achieved is indicated.

☐ Class I

☒ Class II, Alt. 2 (D3)

C. Vector Attraction Reduction (12VAC5-585-560 E.) - Please indicate the option performed.

☒ Option 1

☐ Option 2

☐ Option 3

☐ Option 4

☐ Option 5

☐ Option 6


☐ Option 7

☐ Option 8

☐ Vector attraction reduction options were not achieved, dewatered biosolids incorporated into the soil within six (6) hours after application to or placement on the land.

D. Certification

"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 gather and evaluate 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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

James C. Grandstaff Division Director	(804) 501-7689
Signature 	Date 12-7-2016

DIGESTER BIOSOLIDS

November, 2016

I. Pathogen Reduction - Class "B"

Digester Temps > 95 degrees F - Average Temps

Digesters	Avg. Temp.	
1	98.2	
2	96.6	# 2 Digester returned to service on 11-7-16
3	98.2	
4	98.4	

Fecal Coliform - Monthly Geometric Mean < 2 X 1000000 MPN/g dry wt

Geometric Mean = 47,043 MPN/g dry wt < 2 x 1000000

(TOTAL) MCRT > 15 days - Monthly Average

Primary HRT=	21	days	Primary MCRT=	21	days
Secondary HRT =	6	days	Secondary MCRT=	6	days
HRT (Total) =	28	days	MCRT (TOTAL) =	28	days

II. Vector Attraction Reduction - Monthly Average > 38%

%VSR (V-K) = 57.0 >>>>>>> %VSR > 38%

Note: Effective 5-1-16 %VSR Calc uses the monthly average primary digester MCRT in days

III. Biosolids Generation

Plant Dry Pounds/Month = 1,517,835.67 (Uses HC CEL DIG 4 % TS)
Dry Tons/Month = 758.92
Wet Tons/Month 3,295.34 (Uses Contract Lab %TS)
Plant % Solids Avg. = 26.32
Contract Lab % TS Avg = 23.03

IV. Biosolids Land Applied

Biosolids Landfilled

Wet Tons/Month = 1,628.29 Wet Tons/Month = 848.01

Handwritten signature and date 12-7-16

HENRICO WATER RECLAMATION FACILITY									
Fecal Coliforms in Biosolids by Membrane Filtration: Standard Methods 9222D-2011									
Biosolids Sample Info			# Colonies			Calc. Fecal coliform/g dry wt.		Calc. Natural Log	
Sample	Date	Sample ID	Plate 1	Plate 2	Plate 3	(% total solids)	RESULT=Fecal coliform/g dry wt.		log ₁₀
1	11/7/2016	AB96761			76	26.6	28,571		10.26
2	11/8/2016	AB96830		80		27.4	291,971		12.58
3	11/9/2016	AB96877			114	25.8	44,186		10.70
4	11/14/2016	AB96931	6	16	168	27.1	63,163		11.05
5	11/15/2016	AB96995			118	26.3	44,867		10.71
6	11/16/2016	AB97064			72	26.3	27,376		10.22
7	11/17/2016	AB97107			46	25.8	17,829		9.79

Sum: 75.31
Geo. Mean of Sum: 47,043

RESULT:

DW
12-7-14

Report Number: 16-333-0200
Account Number: 71355



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 • Fax 804-271-6446
www.waypointanalytical.com

Send To: Henrico County
WRF - Laboratory
PO#145094
9101 WRVA Rd
Richmond, VA 23231

Project : Biosolid Sample

Water Reclamation Fac.

DEC - 6 2016

Lab Number : 60936
Sample Id : Biosolid

REPORT OF ANALYSIS

Date Sampled: 11/28/2016 06:35:00
Date Received: 11/28/2016 00:00
Date Reported: 12/06/2016

Received

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Solids *	23.03	230300	100.0	R D	11/28/2016 15:50	SM-2540G
Moisture *	76.96		100.0	R D	11/28/2016 15:50	SM-2540G
Total Kjeldahl Nitrogen	4.73	47300	10.0	SJB	12/05/2016 09:20	SM-4500-NH3C-TKN
Total Phosphorus	2.22	22200	100	JTR	12/02/2016 14:38	6010C
Total Potassium	0.52	5190	1000	JTR	12/06/2016 10:40	6010C
Total Magnesium	0.27	2660	100	JTR	12/02/2016 14:38	6010C
Total Iron		33500	100	JTR	12/02/2016 14:38	6010C
Total Copper		273	5.00	JTR	12/02/2016 14:38	6010C
Total Zinc		740	5.00	JTR	12/02/2016 14:38	6010C
Ammonia Nitrogen	0.76	7600	10.0	SJB	12/01/2016 09:10	SM-4500-NH3C
Organic N	3.97	39700	10.0		12/01/2016 09:10	CALCULATION
Nitrate+Nitrite-N		<1.25	1.25	SJB	11/29/2016 14:10	4500NO3F-2011
Total Cadmium		<2.00	2.00	JTR	12/02/2016 14:38	6010C
Total Chromium		68.0	5.00	MOS	12/06/2016 14:36	6010C
Total Nickel		21.5	5.00	MOS	12/06/2016 14:36	6010C
Total Lead		20.7	5.00	JTR	12/02/2016 14:38	6010C
Total Arsenic		6.38	3.00	JTR	12/02/2016 14:38	6010C

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

Debbie Holt
Laboratory Supervisor

Report Number: 16-333-0200
Account Number: 71355



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Send To: Henrico County
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PO#145094
9101 WRVA Rd
Richmond, VA 23231

Project : Biosolid Sample

DEC - 6 2016

Received

REPORT OF ANALYSIS

Date Sampled: 11/28/2016 06:35:00
Date Received: 11/28/2016 00:00
Date Reported: 12/06/2016

Lab Number : 60936
Sample Id : Biosolid

PARAMETER	RESULT (%)	RESULT (mg/kg)	QUANTITATION LIMIT (mg/kg*)	ANALYST	ANALYSIS DATE/TIME	METHOD
Total Mercury		<0.400	0.400	JM	12/06/2016 09:00	SW-7471B
Total Selenium		<5.00	5.00	JTR	12/02/2016 14:38	6010C
pH (Standard Units) *	8.39		1.00	JM	11/29/2016 09:15	SW-9045D
Calcium Carbonate Equivalent	5.81	58100	2500	R D	12/01/2016 10:00	AOAC 955.01
Total Volatile Solids	58.36	583600	100.0	R D	11/28/2016 15:50	SM-2540G
Total Molybdenum		6.70	5.00	MOS	12/06/2016 14:36	6010C
Alkalinity (as CaCO3)		41700	79	JM	12/01/2016 10:30	SM-2320 B

Comments:

NELAP ACCREDITED: VA NELAC LAB. # 460014. PA NELAC LAB # 68-03109, FL NELAC LAB # E871087, NJ NELAC LAB # VA011. RESULTS REPORTED MEET ALL REQUIREMENTS OF THE CURRENT NELAC STANDARDS. ALKALINITY AND ORGANIC NITROGEN NOT FOR COMPLIANCE PURPOSES. CCE FOR COMPLIANCE IN VIRGINIA AND PENNSYLVANIA ONLY.

All values are on a dry weight basis except as noted by asterisk. Detection limit on all N series is on a wet basis.

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Debbie Holt
Laboratory Supervisor

HWRF CHAIN OF CUSTODY

Lab - Complete Prior to Giving Bottles to Operator



DEWATERED SLUDGE To be delivered on:
AY(MONTHLY)

Analyses Requested

LOCATION	GRAB/COMP	BOTTLES PROVIDED BY?	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	TS %	TVS %	pH su	TKN %	NH3-N %	NO3-N %	P %	K %	CaCO3 Eq	Total Alkalinity ppm	Metals: As, Cd, Cr, Cu, Fe, Hg, Pb, Mg, Ni, Se, Zn, ppm	Graphite Furnace: Mo ppm
CONVEYOR BELT WK 1	GRAB	1	11-7-16	0700	DBC												
CONVEYOR BELT WK 2	GRAB	1	11-14-16	0700	DBC												
CONVEYOR BELT WK 3	GRAB	1	11-21-16	0625	DBC												
CONVEYOR BELT WK 4	GRAB	1	11-28-16	0635	DBC												
CONVEYOR BELT WK 1-4	COMP					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

60930

ite:
nple container to be stored in DCB Sample Refrigerator
ore and after sample collection.
a new sample scoop for each weekly sample.

TIME	SUBMITTED BY	DATE & TIME	RECEIVED BY
0648	DBC	11-28-16 / 0648	MAN
1137	DBC	11-28-16 / 1137	MAN

Water Reclamation Fac.

DEC - 6 2016

Received

HWRF CHAIN OF CUSTODY											
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery				Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLE BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY	
Biosolids	G	11-7-16	0650	DBC	1	0655	DBC	11-7-16	0058	NAM	

Cart prepared by	KWW
Date	10/27/16

Biosolids LIMS ID	AB3910761
LOG IN RECORD	2016-11-07-005

NOV 07 2016

AF

HWRF CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations		Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab			
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids		11-8-16	0950	D.M.W.	1	0958	D.M.W.	11-8-16	0958	MSF

Cart prepared by	KW
Date	10/27/16
Biosolids LIMS ID	AB96830
LOG IN RECORD	2016-11-08-003

11/08/2016

MSF

HWRF CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations		Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab			
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	65	11-9-16	0850	DBC	1	0900	DBC	11-9-16	0900	DBF

Cart prepared by	KW
Date	10/27/16
Biosolids LIMS ID	AB96877
LOG IN RECORD	2016-11-09-004

NOV 09 2016

DBF

HWRP CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids	Grab	11-14-16	0730	JDK	1	0746	JDK	11-14-16	0746	REF

Cart prepared by	KW
Date	10/27/16
Biosolids LIMS ID	AB96931
LOG IN RECORD	2016-11-14-005

NOV 14 2016

REF

HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations				Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLE BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids	Grab	11-15-16	0717	SDK	1	0738	SDK	11/15/16	0738 KWW

Cart prepared by	KWW
Date	10/27/16

Biosolids LIMS ID	AB96995
LOG IN RECORD	2016-11-15-002

NOV 15 2016

SDK

HWRF CHAIN OF CUSTODY									
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab	
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	RECEIVED BY
Biosolids		11-16-16	0900	P.M.W.	1	0908	D.N.W.	11-16-16	0908

Cart prepared by	KLW
Date	10/27/16
Biosolids LIMS ID	AB97064
LOG IN RECORD	2016-11-16-009

Validated & Approved
 NOV 16 2016
 by *[Signature]*

HWRF CHAIN OF CUSTODY										
Lab - Complete Prior to Giving Bottles to Operations			Operators - Complete Prior to Delivery			Operator Complete Upon Receipt in Lab		Laboratory Complete Upon Receipt in Lab		
LOCATION	GRAB/COMP	SAMPLE DATE	SAMPLE TIME	SAMPLED BY	NO. CONT	TIME IN LAB	SUBMITTED BY	DATE	TIME	RECEIVED BY
Biosolids		11-17-16	0745	D.M.W.-JDB	1	0801	D.M.W./DLS	11-17-16	0801	AAJ































Cart prepared by	KW
Date	10/27/16































Biosolids LIMS ID	AB97107
LOG IN RECORD	2016-11-17-002

NOV 17 2016




















AAJ

	Shift Comm ents	24044 Dig #1 Temperature - Avg Deg F	24074 Dig #2 Temperature - Avg Deg F	24104 Dig #3 Temperature - Avg Deg F	24124 Dig #4 Temperature - Avg Deg F	27075 Biosolids Fecal Geo Mean F.c/gdrywt	24206 DIG Primary HRT - MAVG (NANI Final) days	24216 DIG Secondary HRT MAVG (NANI Final) days	24221 DIG Total HRT (NANI Final) days	24201 DIG Primary HRT (GRA Final NANI) days	24211 DIG Secondary HRT (GRA Final) days
1 Tue		98.0	83.3	98.2	98.1					17	6
2 Wed		97.7	86.3	98.3	98.4					16	5
3 Thu		97.6	89.5	98.3	98.5					16	5
4 Fri		97.8	92.3	98.4	98.5					17	7
5 Sat		97.0	95.5	98.4	98.4					16	5
6 Sun		96.9	96.8	98.3	98.3					15	6
7 Mon		97.5	97.5	98.2	98.2					20	10
8 Tue		97.3	97.8	98.1	98.2					19	9
9 Wed		98.1	97.8	98.1	98.2					20	12
10 Thu		98.4	97.8	98.2	98.3					24	6
11 Fri		98.2	98.0	98.2	98.3					25	6
12 Sat		98.2	98.0	98.2	98.3					24	6
13 Sun		97.7	98.0	98.1	98.2					23	5
14 Mon		97.5	98.0	98.1	98.2					24	6
15 Tue		97.9	98.0	98.1	98.3					24	6
16 Wed		98.2	98.2	98.2	98.4					24	6
17 Thu		98.3	98.3	98.2	98.5					24	6
18 Fri		98.4	98.3	98.2	98.5					24	6
19 Sat		98.6	98.3	98.2	98.6					23	6
20 Sun		98.4	98.2	98.2	98.5					23	5
21 Mon		98.0	98.0	98.1	98.4					23	4
22 Tue		98.0	97.9	98.1	98.3					23	5
23 Wed		98.0	98.1	98.1	98.3					23	6
24 Thu		98.3	98.1	98.1	98.4					22	5
25 Fri		98.6	98.2	98.1	98.5					22	5
26 Sat		99.7	98.2	98.2	98.5					22	5
27 Sun		99.3	98.1	98.1	98.4					23	6
28 Mon		99.2	98.1	98.1	98.3					24	8
29 Tue		98.9	98.3	98.2	98.4					23	6
30 Wed		99.3	98.4	98.3	98.6	47043	21	6	28	22	5
MIN		96.9	83.3	98.1	98.1	47,043	21	6	28	15	4
MAX		99.7	98.4	98.4	98.6	47,043	21	6	28	25	12
AVG		98.2	96.6	98.2	98.4	47,043	21	6	28	21	6
SUM		2,945.0	2,897.8	2,945.6	2,951.0	47,043	21	6	28	645	183
GeoMean		98.2	96.5	98.2	98.4	47,043	21	6	28	21	6





























	Shift Comm ents	24222 DIG Total HRT - MTD Avg (GRA Final) <small>please</small>	24053 Dig #1 TS %	24083 Dig #2 TS %	24113 Dig #3 TS %	24165 DIG Daily Avg %TS (DIG 1-3) %	24133 Dig #4 %TS (Lab) %	24176 DIG Daily Avg TS Conc (DIG 1-3) <small>mg/l</small>	24140 Dig #4 Level SCADA daily ft	24141 Dig #4 Level SCADA Hourly ft	24173 Dig DIG 4 Volume MG
1 Tue		23	3.1		3.2	3.2	2.5	31500	20.0	20.0	1.420
2 Wed		22	3.2		3.2	3.2	3.2	32000	19.9	19.9	1.414
3 Thu		22	3.1		3.1	3.1	3.0	31000	19.7	19.7	1.402
4 Fri		22							20.2	20.2	1.431
5 Sat		22							20.0	20.0	1.420
6 Sun		22	3.6	<1.0	3.0	3.3	3.1	33000	20.3	20.3	1.437
7 Mon		23	3.0	<1.0	3.3	<2.9	3.1	29200	19.3	19.3	1.379
8 Tue		24	3.0	<1.0	2.9	<2.8	3.0	27600	19.9	19.9	1.414
9 Wed		25	3.1	<1.0	2.9	<2.8	2.6	28000	19.9	19.9	1.414
10 Thu		25							20.0	20.0	1.420
11 Fri		26							19.9	19.9	1.414
12 Sat		26							19.9	19.9	1.414
13 Sun		26	2.8	<1.0	2.8	<2.2	2.8	22000	20.0	20.0	1.420
14 Mon		27	2.7	<1.0	2.7	<2.1	2.7	21333	20.2	20.2	1.431
15 Tue		27	2.7	<1.0	2.7	<2.1	2.7	21333	20.1	20.1	1.426
16 Wed		27	2.7	<1.0	2.7	<2.1	2.7	21333	20.0	20.0	1.420
17 Thu		27	2.6	<1.0	2.6	<2.1	2.6	20667	20.0	20.0	1.420
18 Fri		27							20.0	20.0	1.420
19 Sat		27							20.0	20.0	1.420
20 Sun		27	2.6	<1.0	2.6	<2.1	2.5	20667	20.0	20.0	1.420
21 Mon		27	2.5	<1.0	2.8	<2.1	2.4	21000	20.2	20.2	1.431
22 Tue		27	2.7	<1.0	2.5	<2.1	1.9	20667	20.0	20.0	1.420
23 Wed		27							19.8	19.8	1.408
24 Thu		27							20.0	20.0	1.420
25 Fri		27							20.0	20.0	1.420
26 Sat		27							19.9	19.9	1.414
27 Sun		27	2.5	<1.0	2.5	<2.0	2.2	20000	19.9	19.9	1.414
28 Mon		28	2.5	1.0	2.5	2.0	2.3	20000	19.9	19.9	1.414
29 Tue		28	2.5	1.2	2.4	2.0	2.2	20333	20.1	20.1	1.426
30 Wed		28	2.4	1.3	2.4	2.0	2.1	20333	20.1	20.1	1.426
MIN		22	2.4	<1.0	2.4	<2.0	1.8	20,000	19.3	19.3	1.379
MAX		28	3.6	1.3	3.3	3.3	3.2	33,000	20.3	20.3	1.437
AVG		26	2.8	<1.0	2.8	<2.4	2.6	24,314	20.0	20.0	1.418
SUM		771	53.3	<16.5	52.8	<46.2	49.5	461,967	599.2	599.2	42,545
GeoMean		26	2.8	<1.0	2.8	<2.4	2.6	23,881	20.0	20.0	1.418

	Shift Comm ents	24172 Dig DIG 1,2,3 Volume (EACH) MG	24175 DIG Lbs TS Under Digestion (GRA-Final) Pounds	26085 Centrifuge Feed Total lbs/D (GRA-Final) lbs/day	24230 DIG MCRT - Primary (NANI Final) days	24231 DIG MCRT - Primary (MTDAvg-PDR) days	24235 DIG MCRT - Primary MAVG (GRA-Final) days	24241 DIG Secondary MCRT (NANI Final) days	24246 DIG Secondary MCRT- MAVG (PDR) days	24253 DIG Total MCRT (NANI Final) days	24254 DIG Total MCRT - MATD (PDR) days
1 Tue		1.904	1297393	50020	20	20		6		26	26
2 Wed		1.904	1394650	70515	14	17		5		20	23
3 Thu		1.904	1336327	66678	15	16		5		20	22
4 Fri		1.904				16					22
5 Sat		1.904				16					22
6 Sun		1.904	1420714	57322	18	17		6		25	23
7 Mon		1.904	1516762	37081	31	20		10		41	26
8 Tue		1.904	1450513	38379	29	21		9		38	28
9 Wed		1.904	1419211	25099	44	25		12		57	32
10 Thu		1.904				25					32
11 Fri		1.904				25					32
12 Sat		1.904				25					32
13 Sun		1.904	1380612	61266	17	24		5		23	31
14 Mon		1.904	1339628	50845	20	23		6		26	31
15 Tue		1.904	1338304	57496	18	23		6		23	30
16 Wed		1.904	1336981	56306	18	22		6		24	29
17 Thu		1.904	1293349	54520	18	22		6		24	29
18 Fri		1.904				22					29
19 Sat		1.904				22					29
20 Sun		1.904	1281501	58469	17	21		5		22	28
21 Mon		1.904	1287899	71524	14	21		4		18	28
22 Tue		1.904	1198568	41918	24	21		5		29	28
23 Wed		1.904				21					28
24 Thu		1.904				21					28
25 Fri		1.904				21					28
26 Sat		1.904				21					28
27 Sun		1.904	1213096	44987	21	21		6		27	28
28 Mon		1.904	1224894	35608	27	21		8		34	28
29 Tue		1.904	1231145	47498	20	21		6		26	28
30 Wed		1.904	1219248	54718	18	21		5		22	28
MIN		1.904	1,198,568	25,099	14	16		4		6	18
MAX		1.904	1,516,762	71,524	44	25		12		6	57
AVG		1.904	1,325,305	51,592	21	21		6		6	28
SUM		57.132	25,180,795	980,248	403	633		120		6	523
GeoMean		1.904	1,322,505	50,034	20	21		6		6	26

	Shift Comm ents	1328 Pri Sludge Total Flow -Timer (GRA Final) MGD	1221 Pri Sludge %TS (Lab) %	1372 PS Load to DIG (Timer GRA Final) lbs/d/au	20003 GBT TWAS Flow to DIG (GRA Final) MGD	20005 GBT TWAS Load to DIG (GRA Final) lbs/d/au	20007 GBT TWAS Load to DIG (LVAL-PDR) lbs/d/au	24173 Dig DIG 4 Volume MG	24177 Dig # Primary DIGs In Service Number	24178 Dig Total Primary DIG Volume MG	24137 Dig #4 %TVS %
1 Tue		0.1445	2.9	34977	0.084	30931	30931	1.420	2	3.809	51
2 Wed		0.1561	3.6	46890	0.084	31019	31019	1.414	2	3.809	52
3 Thu		0.1546	3.4	43853	0.081	27632	27632	1.402	2	3.809	51
4 Fri		0.1470			0.084		27632	1.431	2	3.809	
5 Sat		0.1542			0.083		27632	1.420	2	3.809	
6 Sun		0.1672	3.2	44654	0.087	31391	31391	1.437	2	3.809	52
7 Mon		0.1552	3.2	41437	0.086	30680	30680	1.379	3	4.761	53
8 Tue		0.1522	2.8	35554	0.094	32932	32932	1.414	3	4.761	53
9 Wed		0.1526	3.3	42010	0.091	31839	31839	1.414	3	4.761	53
10 Thu		0.1542			0.082		31839	1.420	3	5.713	
11 Fri		0.1542			0.075		31839	1.414	3	5.713	
12 Sat		0.1481			0.086		31839	1.414	3	5.713	
13 Sun		0.1544	4.1	52827	0.089	34295	34295	1.420	3	5.713	54
14 Mon		0.1490	4.1	50983	0.086	31746	31746	1.431	3	5.713	54
15 Tue		0.1516	3.5	44284	0.085	30594	30594	1.426	3	5.713	55
16 Wed		0.1495	2.6	32441	0.087	33305	33305	1.420	3	5.713	54
17 Thu		0.1504	3.9	48958	0.087	33374	33374	1.420	3	5.713	56
18 Fri		0.1572			0.083		33374	1.420	3	5.713	
19 Sat		0.1562			0.088		33374	1.420	3	5.713	
20 Sun		0.1574	4.0	52553	0.087	32738	32738	1.420	3	5.713	56
21 Mon		0.1597	2.5	33317	0.093	35059	35059	1.431	3	5.713	57
22 Tue		0.1544	2.8	36070	0.095	32538	32538	1.420	3	5.713	58
23 Wed		0.1554			0.097		32538	1.408	3	5.713	
24 Thu		0.1596			0.099		32538	1.420	3	5.713	
25 Fri		0.1574			0.101		32538	1.420	3	5.713	
26 Sat		0.1542			0.103		32538	1.414	3	5.713	
27 Sun		0.1492	2.6	32365	0.102	39224	39224	1.414	3	5.713	58
28 Mon		0.1401	2.5	29224	0.102	36601	36601	1.414	3	5.713	58
29 Tue		0.1484	3.1	38388	0.096	33500	33500	1.426	3	5.713	58
30 Wed		0.1690	3.1	43709	0.096	36759	36759	1.426	3	5.713	59
MIN		0.1401	2.5	29,224	0.075	27,632	27,632	1.379	2	3.809	51
MAX		0.1690	4.1	52,827	0.103	39,224	39,224	1.437	3	5.713	59
AVG		0.1538	3.2	41,289	0.090	32,956	32,461	1.418	3	5.237	55
SUM		4.6130	61.2	784,496	2.694	626,157	973,835	42,545	83	157.112	1,042
GeoMean		0.1537	3.2	40,673	0.090	32,857	32,369	1.418	3	5.173	55

	Shift Comm ents	24016 Dig Feed %TVS (Daily Final) %	24019 Dig Feed %TVS (Mov Avg - NANI FINAL) %	24023 DIG % VSR (NANI-FINAL) %	24009 DIG %VSR (NANI Final) %	24026 DIG Total Gas Produced (Calculated Final) SCF/Dav	24036 DIG Total Gas Produced - (Air Permit) SCF/Dav	26114 Dewatered Biosolids (Plant Final) Dwt/bc/Dav	26107 Centrifuge % Capture (Orig-Final-NANI) %	26100 Centrifuge % Capture (LVAL-PDR) %	26083 Centrifuge Total Daily Feed Flow (Orig GRA) gpm
1 Tue		72.5	67.61	50.1	50.1	402073	318720	49043	98.0	98.0	167
2 Wed		73.2	68.47	50.1	50.1	481200	329940	69654	98.8	98.8	183
3 Thu		73.2	69.42	54.2	54.2	483701	338460	66025	99.0	99.0	185
4 Fri			69.42				317580			99.0	141
5 Sat			69.42				352740			99.0	186
6 Sun		75.3	70.30	54.2	54.2	521745	367388	55127	96.2	96.2	154
7 Mon		76.4	71.12	54.2	54.2	500390	343380	36515	98.5	98.5	100
8 Tue		76.1	71.86	55.8	55.8	494608	352560	38008	99.0	99.0	106
9 Wed		77.0	72.62	57.5	57.5	554904	356460	24732	98.5	98.5	80
10 Thu			73.09				342660			98.5	165
11 Fri			73.09				337800			98.5	170
12 Sat			73.09				338160			98.5	173
13 Sun		75.8	73.59	57.9	57.9	667738	342360	60242	98.3	98.3	182
14 Mon		76.5	73.97	58.7	58.7	646625	364140	50367	99.1	99.1	157
15 Tue		78.0	74.46	58.1	58.1	582959	346260	56903	99.0	99.0	177
16 Wed		78.0	74.68	60.2	60.2	532080	334560	55656	98.8	98.8	174
17 Thu		78.0	75.00	57.6	57.6	639856	326100	53407	98.0	98.0	175
18 Fri			75.15				337800			98.0	172
19 Sat			75.35				360960			98.0	177
20 Sun		78.5	75.84	59.5	59.5	692409	337740	57705	98.7	98.7	195
21 Mon		77.9	76.17	58.5	58.5	548748	317160	66274	92.7	92.7	248
22 Tue		78.1	76.57	57.7	57.7	546017	325320	41365	98.7	98.7	194
23 Wed			76.83				371460			98.7	162
24 Thu			77.13				408060			98.7	209
25 Fri			77.13				416400			98.7	183
26 Sat			77.13				377100			98.7	201
27 Sun		77.9	77.34	59.5	59.5	593429	377280	44273	98.4	98.4	170
28 Mon		78.3	77.50	59.9	59.9	550080	387480	34990	98.3	98.3	129
29 Tue		78.5	77.70	60.4	60.4	607049	386340	46763	98.5	98.5	180
30 Wed		79.1	77.88	59.1	59.1	666951	363840	54249	99.1	99.1	217
MIN		72.5	67.61	50.1	50.1	402,073	317,160	24,732	92.7	92.7	80
MAX		79.1	77.88	60.4	60.4	692,409	416,400	69,654	99.1	99.1	248
AVG		76.8	73.96	57.0	57.0	563,819	352,540	50,595	98.2	98.3	170
SUM		1,458.4	2,218.92	1,083.3	1,083.3	10,712,560	10,576,208	961,296	1,865.5	2,949.8	5,109
GeoMean		76.7	73.90	56.9	56.9	558,772	351,671	49,121	98.2	98.3	166

	Shift Comm ents	26084 Cent Feed Total Flow (SCADA-NANI-P DR Final)	26089 Centrifuge No Days in Service/Month Number	26114 Dewatered Biosolids (Plant Final) Dry lbs/Dry	26119 Dewatered Biosolids MAVG (Plant & NANI) Dry lbs/Dry	26106 Dewatered Biosolids (Plant & NANI Final) Dry lbs/Mon	26118 Dewatered Biosolids (Plant & NANI Final) Dry Tons/M	27001 Biosolids % TS (Contract Lab NANI) %	26121 Dewatered Biosolids (NANI Final) Wet Tons/M	26103 Centrifuge Cake Plant %TS Lab (NANI) %	27001 Biosolids % TS (Contract Lab NANI) %
1 Tue		0.240		49043						24.80	
2 Wed		0.264		69654						27.70	
3 Thu		0.266		66025						27.20	
4 Fri		0.203									
5 Sat		0.268									
6 Sun		0.222		55127						27.70	
7 Mon		0.143		36515						27.50	
8 Tue		0.153		38008						27.80	
9 Wed		0.116		24732						26.20	
10 Thu		0.237									
11 Fri		0.245									
12 Sat		0.248									
13 Sun		0.262		60242						27.40	
14 Mon		0.226		50367						26.80	
15 Tue		0.255		56903						26.80	
16 Wed		0.250		55656						26.30	
17 Thu		0.251		53407						26.70	
18 Fri		0.248									
19 Sat		0.255									
20 Sun		0.280		57705						26.90	
21 Mon		0.357		66274						25.50	
22 Tue		0.279		41365						23.40	
23 Wed		0.234									
24 Thu		0.300									
25 Fri		0.263									
26 Sat		0.290									
27 Sun		0.245		44273						26.00	
28 Mon		0.186		34990						25.90	
29 Tue		0.259		46763							
30 Wed		0.312	30	54249	50595	1517835.67	758.92	23.03	3295.34	23.50	23.03
MIN		0.116	30	24,732	50,595	1,517,835.67	758.92	23.03	3,295.34	23.40	23.03
MAX		0.357	30	69,654	50,595	1,517,835.67	758.92	23.03	3,295.34	27.80	23.03
AVG		0.245	30	50,595	50,595	1,517,835.67	758.92	23.03	3,295.34	26.32	23.03
SUM		7.358	30	961,296	50,595	1,517,835.67	758.92	23.03	3,295.34	500.00	23.03
GeoMean		0.240	30	49,121	50,595	1,517,835.67	758.92	23.03	3,295.34	26.28	23.03

	Shift Comm ents	26112 Dwtrd Biosolids Scale Wt Daily - LA NANI Wet Tons	26113 Dwtrd Biosolids Scale Wt Daily - LF NANI Wet Tons
1 Tue		158.48	
2 Wed		87.95	75.15
3 Thu		72.42	94.79
4 Fri			77.68
5 Sat			
6 Sun			
7 Mon		206.60	54.77
8 Tue		24.07	73.87
9 Wed		24.04	25.84
10 Thu		163.20	46.19
11 Fri			
12 Sat			
13 Sun			
14 Mon		25.55	
15 Tue		79.12	24.29
16 Wed			47.50
17 Thu		56.97	75.42
18 Fri		277.33	76.21
19 Sat			
20 Sun			
21 Mon		135.30	
22 Tue		206.32	99.92
23 Wed		83.86	76.38
24 Thu			
25 Fri			
26 Sat			
27 Sun			
28 Mon		27.08	
29 Tue			
30 Wed			
MIN		24.04	24.29
MAX		277.33	99.92
AVG		108.55	65.23
SUM		1,628.29	848.01
GeoMean		80.67	60.16