

YAKIMA REG WWTF

Facility ID: 483

Facility Type: Biosolids Management

Physical Address: 2220 E VIOLA ST, YAKIMA, WA 98901 **County:**Yakima

Give a brief description of your biosolids management practices.

The Yakima Regional WWTP uses a centrifuge to dewater digested sludge prior to transport. All solids are hauled by Natural Selections Farms for beneficial land application on permitted sites.

Did you begin the reporting year with any biosolids/products stored on site from a previous calendar year?

☐ Yes
 ☒ No

Did you end the reporting year with any biosolids stored on site?

☐ Yes
 ☒ No

Did you receive biosolids (not septage) from any other facility during 2018?



☐ Yes
 ☒ No

Did you receive any septage during 2018?

☐ Yes
 ☒ No

Biosolids Management Activities

How many dry tons of biosolids did you produce during 2018? 1,518.70

Did you apply biosolids directly to a site specifically permitted for your facility, or sell or give away any Exceptional Quality biosolids?

☐ Yes
 ☒ No

Did you send any biosolids off site to another permitted facility, or were any of your biosolids incinerated?

☒ Yes
 ☐ No

(i) Do not include biosolids you apply directly to a site specifically permitted for your facility, or Exceptional Quality biosolids you sold or gave away.

(ii) Provide the name of the facility, permit number, and dry tons or gallons transferred.

(iii) List all destinations separately.

What did you do with your biosolids?

Type	Facility Name 	Permit Number	Dry Tons
Sent to a biosolids beneficial use facility (BUF)	NATURAL SELECTION FARMS BUF	BT9904	1,518.70

Number of pollutant monitoring events during the reporting year

6



Did not meet requirement(s)

Attached Files**Signature Authority**[Ecology Deleg Letter.pdf](#) Uploaded: 2019-07-01[Ecology ESAF.pdf](#) Uploaded: 2019-07-01**Monitoring and Analytical Data**[\\yakima_city\ykww\Chiefs\Biosolids Information\Ye](#) Uploaded: 2019-07-01**This form is prepared by**

Name: Price, Michael
Email: mike.price@yakimawa.gov
Phone: (509) 575-6077

This form is submitted by

I understand that the proper signatory is the responsible official as identified under [WAC 173-308-310 \(10\)](#)
Signatories to permit applications and reports, and is responsible for the content of this annual report when it is submitted. I declare that:

- ☐ I am the responsible official as described in [WAC 173-308-310\(a\)](#)
- ☒ I am the duly authorized signatory for this report in accordance with [WAC 173-308-310\(b\)](#)
- ☐ I am not the responsible official but am submitting this report with the full knowledge and approval of the responsible official

Responsible Official Name: Michael Price Title: Wastewater Division Manager
Submitted By: Price, Michael
Submitted Date: 10/14/2019

2018

Volatile Solids Reduction in % For Vector Attraction Reduction

MONTH	RAW	WAS	AVERAGE IN	PRIMARY 1	PRIMARY 2	PRIMARY 3	AVERAGE OUT	PERCENT REDUCTION	TEMP. F°	HYDRAULIC DET TIME DAYS
January	89.5%	87.4%	88.5%	74.0%	72.6%	73.0%	73.2%	64.33%	99.2	28.9
February	89.4%	85.0%	87.2%	65.4%	72.1%	71.7%	69.7%	66.18%	99.4	24.8
March	89.3%	85.6%	87.5%	73.2%	74.1%	73.1%	73.5%	60.26%	99.2	23.4
April	86.2%	86.9%	86.6%	69.4%	72.9%	74.0%	72.1%	59.84%	99.4	25.3
May	88.6%	84.7%	86.7%	73.3%	72.7%	70.4%	72.1%	60.12%	99.4	23.3
June	86.1%	88.3%	87.2%	71.7%	73.5%	71.1%	72.1%	62.07%	99.4	24.3
July	87.5%	86.8%	87.2%	72.6%	73.1%	73.3%	73.0%	60.13%	99.5	29.4
August	88.6%	87.8%	88.2%	71.7%	71.3%	70.8%	71.3%	66.82%	99.5	39.0
September	88.7%	86.6%	87.7%	74.3%	74.4%	73.5%	74.1%	59.76%	99.7	35
October	89.1%	87.8%	88.5%	73.4%	74.2%	74.8%	74.1%	62.58%	99.4	34.6
November	90.5%	88.3%	89.4%	75.8%	73.5%	73.4%	74.2%	65.84%	99.5	38.8
December	90.0%	88.9%	89.5%	74.6%	76.0%	75.2%	75.3%	64.11%	99.5	34.7
High for year								66.82%	99.7	
Low for year								59.76%	99.2	
Average								62.67%	99.4	

Notes: Arithmetic averages used to determine averages for volatile solids.
 Percents are entered in as decimals.
 Formula to determine percent reduction is from page 4-23 of EPA's Operational Manual 430/9-76-001, "Anaerobic Sludge Digestion".

$$\text{Percent reduction} = \frac{(\text{IN} - \text{OUT}) \times 100\%}{\text{IN} - (\text{IN} \times \text{OUT})}$$

Biosolids Production for calendar year 2018

MONTH	FEED FLOW (MG)	FEED CONC.	GROSS DRY TONS	CENTRATE CONC.	CENTRATE DRY TONS	TOTAL DRY TONS	Weighed DRY TONS
January	3.316	14,535	200.99	305	4.22	196.77	138.45
February	2.750	14,527	166.59	515	5.91	160.68	125.79
March	2.538	15,668	165.82	103	1.09	164.73	143.43
April	2.158	15,093	135.82	85	0.76	135.05	112.13
May	3.211	15,602	208.91	113	1.51	207.40	170.51
June	2.423	15,048	152.04	159	1.61	150.44	131.49
July	2.204	15,755	144.82	152	1.40	143.43	138.51
August	2.538	15,144	160.26	119	1.26	159.00	115.65
September	1.878	15,178	118.86	190	1.49	117.37	96.13
October	2.569	16,866	180.68	218	2.34	178.35	156.02
November	1.733	14,748	106.58	262	1.89	104.68	94.62
December	2.006	15,488	129.56	185	1.55	128.01	95.97

DRY TONS/YEAR	1845.92	1518.70
METRIC DRY TONS / YEAR	1674.25	1377.46
AVERAGE DRY TONS/MONTH	153.83	126.56
METRIC DRY TONS/MONTH	139.52	114.79

ADJUSTED DRY TONS PER YEAR	1518.70
ADJUSTED METRIC DRY TONS PER YEAR	1377.46

Adjusted dry tons = calculated dry tons minus 17.73 percent

Calculated amounts= (Flow (MG) X Feed Conc X 8.34) / 2000 - (Flow (MG) X Centrate Conc X 8.34) / 2000

Calculated amounts, using feed flow calculated from pump run
time X metered flow rate.

Weighed amounts from hauling records = 17.73 percent less
than calculated amounts.

Total dry tonnage is gross dry tons minus centrate dry tons

Average amount is arithmetic average for the year.

concentrations are mg/l as received from lab report.



(509) 662-1888
Fax: (509) 662-8183
3019 G S Center Road
Wenatchee, WA 98801

Batch: 871774
Client: City of Yakima
Account: 148
Sampler: Daryl Bullard
PO Number:
(509) 452-7707
Fax: (509) 452-7773
1008 W. Ahtanum Rd.
Union Gap, WA 98903

Analytical Services Report

City of Yakima
Wastewater Division
2220 E Viola Ave
Yakima, WA 98901

Report Date: 4/19/18

Laboratory Number: 18-E008197
Sample Identification: 2018 Biosolids #2

Date Received: 4/11/18
Date Sampled: 4/11/18

Test Requested	Results	Units	RL	Method	Date Analyzed	Flags
NO3N/Total Solid	28.5	mg/kg		SM4500 NO3-E	4/12/18	
Sulfur Solid	11400	mg/Kg	69.8	SM3120	4/17/18	
Total Percent Solids	17.9	%	0.01 %	SM 2540-B	4/16/18	
Phosphorous/Solid	22100	mg/Kg	14	EPA 200.7	4/16/18	
Kjeldahl Nitrogen/Solid	76000	mg/kg		SM-4500NorgC	4/19/18	
Ammonia Solid	6820	mg/kg		SM4500-NH3N	4/12/18	
Total Metals Digest Solid	Metals Digest			SW846 3050B	4/13/18	

Approved By Name:

Function:

Signature:

Cascade Analytical uses procedures established by EPA, AOAC, APHA, ASTM, and FDA/BAM. Cascade Analytical makes no warranty of any kind the client assumes all risk and liability from the use of these results. Cascade Analytical, Inc.'s liability to the client as a result of use of Cascade's test results shall be limited to a sum equal to the fees paid by the client to Cascade Analytical, Inc. for analysis. PLEASE REVIEW YOUR DATA IN A TIMELY MANNER. DATA GAPS OR ERRORS AFTER THREE MONTHS WILL NOT BE OUR RESPONSIBILITY. THOUGH WE DO KEEP ALL ANALYTICAL DATA FOR SEVERAL YEARS, SAMPLES ARE DISPOSED OF AFTER SIX WEEKS.



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3019 G S Center Road
Wenatchee WA 98801

Batch: 879023
(509) 452-7707 Client: City of Yakima
Fax (509) 452-7773
1008 W. Antenna Rd 148
Union Gap WA 98903 Brady
PO Number:

REPRINT
with Corrections
Date: 8/17/18

--- Analytical Services Report ---

City of Yakima
Wastewater Division
2220 E Viola Ave
Yakima, WA 98901

Report Date: 8/17/18

Laboratory Number: 18-E024889
Sample Identification: 2018 Biosolids #4

Date Received: 8/10/18
Date Sampled: 8/ 9/18

Test Requested	Results	Units	RL	Method	Date Analyzed	Flags
NO3N/Total Solid	5.00	mg/kg		SM4500 NO3-E	8/28/18	
Sulfur Solid	11700	mg/Kg	62.5	SM3120	8/14/18	
Total Percent Solids	20.0	%	0.01 %	SM 2540-B	8/16/18	
Phosphorous/Solid	17500	mg/Kg	12.5	EPA 200.7	8/14/18	
Kjeldahl Nitrogen/Solid	68000	mg/kg		SM-4500NorgC	8/14/18	
Ammonia Solid	6650	mg/kg		SM4500-NH3N	8/14/18	
Total Metals Digest Solid	Metals Digest			SW846 3050B	8/13/18	

Approved By Name:

Function:

Signature:

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Review the NO3 = entry error in Original
TKW.



(509) 662-1888
Fax: (509) 662-8183
3019 G. S. Center Road
Wenatchee WA 98801

Batch: 884785
Client: City of Yakima
Account: 148
Sampler: Brady Linden
PO Number:
1008 W. Ahtanum Rd
Union Gap, WA 98903

Analytical Services Report

City of Yakima
Wastewater Division
2220 E Viola Ave
Yakima, WA 98901

Report Date: 12/10/18

Laboratory Number: 18-E037809

Date Received: 12/ 6/18

Sample Identification: 2018 Biosolids #6 Nutrie
Date Sampled: 12/ 5/18

Test Requested	Results	Units	RL	Method	Date Analyzed	Flags
NO3N/Total Solid	6.35	mg/kg		SM4500 NO3-E	12/ 7/18	
Sulfur Solid	12900	mg/Kg	66.1	SM3120	12/10/18	
Total Percent Solids	18.9	%	0.01 %	SM 2540-B	12/ 7/18	
Phosphorous/Solid	16600	mg/Kg	13.2	EPA 200.7	12/10/18	
Kjeldahl Nitrogen/Solid	72500	mg/kg		SM-4500NorgC	12/ 7/18	
Ammonia Solid	6240	mg/kg		SM4500-NH3N	12/ 7/18	
Total Metals Digest Solid	Metals Digest			SW846 3050B	12/ 7/18	

Laura Mrachek
President

Approved By Name:

Signature:

Function:

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YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological	Analytical Method	Results (As Recvd.)	Results (Dry wt.)	Units	Detection Limit	Date Analyzed	Limits Tables 1,3	Comments
Fecal coliform				MPN/gm				Not Performed

E) Recommended Nutrients								
Boron (total/extractable)	SW846 6010	20.647	20.647	mg/kg	270	02/23/18		Not Performed
Calcium (total/extractable)				mg/kg				
Chloride (total/extractable)	SW846 6010	9.391	9.391	mg/kg	210	02/22/18		Not Performed
Iron (total/extractable)	SW846 6010	6.525	6.525	mg/kg	15	02/23/18		
Magnesium (total/extractable)	SW846 6010	164	164	mg/kg	10	02/22/18		
Manganese (total/extractable)	SW846 6010	1.518	1.518	mg/kg	20	02/23/18		
Potassium (total/extractable)	SM3120	10.300	10.300	mg/kg	66.5	02/14/18		
Sulfur (total/extractable)								

F) Alternative Pathogens								
Salmonella				MPN/4 gms				Not Performed
Viruses				PFU/4 gms				Not Performed
Helminths				viable ova/4 gms				Not Performed

G) Additional Analyses								
pH				std units				Not Performed
Conductivity				dS/m				Not Performed
Total carbon				mg/kg				Not Performed
Silver	SM3030D/SM3113B	4.12	4.12	mg/kg	0.7	02/15/18		Not Performed

NOTES:
Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8
A) Pollutant limits from WAC 173-308-160 Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits See also 40CFR 503.13
For B) Nutrient analyses, see "Managing Nitrogen From Biosolids", Ecology publication #99-508, Ch. 9
Analysis for A) Pollutants, B) Nutrients, C) Conventional, and D) Bacteriological are all required for land application.
Analysis for E) Recommended Nutrients, F) Alternative Pathogens, and G) Additional Analyses are optional.
Analysis for E) Recommended Nutrients can be either total (for environmental purposes) or extractable (for agronomic purposes). Please specify.
Results for F) Alternative Pathogens are reported per 4 grams of total solids.

YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological	Analytical Method	Results (As Recvd.)	Results (Dry wt.)	Units	Detection Limit	Limits Tables 1,3	Comments
Fecal coliform				MPN/gm			Not Performed

E) Recommended Nutrients							
Boron (total/extractable)				mg/kg			Not Performed
Calcium (total/extractable)	SW846 6010	24,949	24,949	mg/kg	270	04/17/18	
Chloride (total/extractable)				mg/kg			Not Performed
Iron (total/extractable)	SW846 6010	8,459	8,459	mg/kg	210	04/13/18	
Magnesium (total/extractable)	SW846 6010	9,612	9,612	mg/kg	15	04/13/18	
Manganese (total/extractable)	SW846 6010	153	153	mg/kg	10	04/13/18	
Potassium (total/extractable)	SW846 6010	2,421	2,421	mg/kg	20	04/17/18	
Sulfur (total/extractable)	SM3120	11,400	11,400	mg/kg	69.8	04/17/18	

F) Alternative Pathogens							
Salmonella				MPN/4 gms			Not Performed
Viruses				PFU/4 gms			Not Performed
Helminths				viable ova/4 gms			Not Performed

G) Additional Analyses				std units			
pH				dS/m			Not Performed
Conductivity				mg/kg			Not Performed
Total carbon				mg/kg			Not Performed
Silver	SM3030D/SM3113B	3.35	3.35		0.7	04/18/18	

NOTES:

Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8

A) Pollutant limits from WAC 173-308-160. Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits. See also 40CFR 503.13

For B) Nutrient analyses, see "Managing Nitrogen From Biosolids". Ecology publication #99-508, Ch. 9

Analysis for A) Pollutants, B) Nutrients, C) Conventional, and D) Bacteriological are all required for land application.

Analysis for E) Recommended Nutrients, F) Alternative Pathogens, and G) Additional Analyses are optional.

Analysis for E) Recommended Nutrients can be either total (for environmental purposes) or extractable (for agronomic purposes). Please specify.

Results for F) Alternative Pathogens are reported per 4 grams of total solids.

YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological	Analytical	Results	Results	Units	Detection	Date	Limits	Comments
	Method	(As Recvd.)	(Dry wt.)		Limit	Analyzed	Tables 1,3	
Fecal coliform				MPN/gm				Not Performed

E) Recommended Nutrients								
Boron (total/extractable)	SW846 6010	22.648	22.648	mg/kg	270	07/17/18		Not Performed
Calcium (total/extractable)				mg/kg				
Chloride (total/extractable)	SW846 6010	8.323	8.323	mg/kg	210	06/15/18		Not Performed
Iron (total/extractable)	SW846 6010	7.913	7.913	mg/kg	15	07/17/18		
Magnesium (total/extractable)	SW846 6010	131	131	mg/kg	10	06/14/18		
Manganese (total/extractable)	SW846 6010	2.361	2.361	mg/kg	20	07/17/18		
Potassium (total/extractable)	SW846 6010	10.400	10.400	mg/kg	62.8	06/12/18		
Sulfur (total/extractable)	SM3120							

F) Alternative Pathogens								
Salmonella				MPN/4 gms				Not Performed
Viruses				PFU/4 gms				Not Performed
Helminths				viable ova/4 gms				Not Performed

G) Additional Analyses								
pH				std units				Not Performed
Conductivity				dS/m				Not Performed
Total carbon	SM3030D/SM3113B	1.18	1.18	mg/kg	0.7	07/11/18		Not Performed
Silver				mg/kg				

NOTES:

Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8
 A) Pollutant limits from WAC 173-308-160. Table 1 - Ceiling Concentration Limits. Table 3 - Pollutant Concentration Limits. See also 40CFR 503.13
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 Results for F) Alternative Pathogens are reported per 4 grams of total solids

YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological		Analytical Method	Results (As Recvd.)	Results (Dry wt.)	Units	Detection Limit	Date Analyzed	Limits Tables 1,3	Comments
Fecal coliform					MPN/gm				Not Performed
E) Recommended Nutrients									
Boron (total/extractable)					mg/kg	270	09/07/18		Not Performed
Calcium (total/extractable)					mg/kg				
Chloride (total/extractable)					mg/kg				Not Performed
Iron (total/extractable)					mg/kg	210	09/06/18		
Magnesium (total/extractable)					mg/kg	15	09/06/18		
Manganese (total/extractable)					mg/kg	10	09/06/18		
Potassium (total/extractable)					mg/kg	20	09/07/18		
Sulfur (total/extractable)					mg/kg	66.5	08/14/18		
F) Alternative Pathogens									
Salmonella					MPN/4 gms				Not Performed
Viruses					PFU/4 gms				Not Performed
Helminths					viable ova/4 gms				Not Performed
G) Additional Analyses									
pH					std units				Not Performed
Conductivity					dS/m				Not Performed
Total carbon					mg/kg				Not Performed
Silver					mg/kg	0.7	9/13/18		
NOTES:									
Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8									
A) Pollutant limits from WAC 173-308-160 Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits See also 40CFR 503.13									
For B) Nutrient analyses see "Managing Nitrogen From Biosolids", Ecology publication #99-508, Ch. 9									
Analysis for A) Pollutants, B) Nutrients, C) Conventional, and D) Bacteriological are all required for land application.									
Analysis for E) Recommended Nutrients, F) Alternative Pathogens, and G) Additional Analyses are optional									
Analysis for E) Recommended Nutrients can be either total (for environmental purposes) or extractable (for agronomic purposes) Please specify.									
Results for F) Alternative Pathogens are reported per 4 grams of total solids.									

NOTES:

Analytical Methods are prescribed per federal requirements in WAC 173-306-140. See also 40 CFR 503.8
 A) Pollutant limits from WAC 173-306-160. Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits. See also 40 CFR 503.13
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YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological	Analytical Method	Results (As Recvd.)	Results (Dry wt.)	Units	Detection Limit	Date Analyzed	Limits Tables 1,3	Comments
Fecal coliform				MPN/gm				Not Performed

E) Recommended Nutrients								
Boron (total/extractable)	SW846 6010	21.802	21.802	mg/kg	270	10/18/18		Not Performed
Calcium (total/extractable)				mg/kg				
Chloride (total/extractable)	SW846 6010	9,152	9,152	mg/kg	210	10/17/18		Not Performed
Iron (total/extractable)	SW846 6010	6,215	6,215	mg/kg	15	10/18/18		
Magnesium (total/extractable)	SW846 6010	122	122	mg/kg	10	10/17/18		
Manganese (total/extractable)	SW846 6010	1,771	1,771	mg/kg	20	10/17/18		
Potassium (total/extractable)	SM3120	11,500	11,500	mg/kg	66.5	10/12/18		
Sulfur (total/extractable)								

F) Alternative Pathogens								
Salmonella				MPN/4 gms				Not Performed
Viruses				PFU/4 gms				Not Performed
Helminths				viable ova/4 gms				Not Performed

G) Additional Analyses								
pH				std units				Not Performed
Conductivity				dS/m				Not Performed
Total carbon				mg/kg				Not Performed
Silver	SM3030D/SM3113B	3.20	3.20	mg/kg	0.7	10/11/18		

NOTES:

Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8
 A) Pollutant limits from WAC 173-308-160. Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits. See also 40CFR 503.13
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YAKIMA REGIONAL WASTEWATER TREATMENT PLANT
ANALYTICAL RESULTS

D) Bacteriological	Analytical Method	Results (As Recvd.)	Results (Dry wt.)	Units	Detection Limit	Date Analyzed	Limits Tables 1,3	Comments
Fecal coliform				MPN/gm				Not Performed

E) Recommended Nutrients								
Boron (total/extractable)	SW846 6010	21.754	21.574	mg/kg	270	01/02/19		Not Performed
Calcium (total/extractable)				mg/kg				
Chloride (total/extractable)	SW846 6010	10.957	10.957	mg/kg	210	12/21/18		Not Performed
Iron (total/extractable)	SW846 6010	5.380	5.380	mg/kg	15	01/03/19		
Magnesium (total/extractable)	SW846 6010	119	119	mg/kg	10	12/21/18		
Manganese (total/extractable)	SW846 6010	2.199	2.199	mg/kg	20	01/03/18		
Potassium (total/extractable)	SM3120	12.900	12.900	mg/kg	66.1	12/10/19		
Sulfur (total/extractable)								

F) Alternative Pathogens								
Salmonella				MPN/4 gms				Not Performed
Viruses				PFU/4 gms				Not Performed
Helminths				viable ova/4 gms				Not Performed

G) Additional Analyses								
pH				std units				Not Performed
Conductivity				dS/m				Not Performed
Total carbon				mg/kg				Not Performed
Silver	SM3030D/SM3113B	6.21	6.21	mg/kg	0.7	1/10/19		

NOTES:

Analytical Methods are prescribed per federal requirements in WAC 173-308-140. See also 40 CFR 503.8
 A) Pollutant limits from WAC 173-308-160. Table 1 - Ceiling Concentration Limits, Table 3 - Pollutant Concentration Limits. See also 40CFR 503.13
 For B) Nutrient analyses, see "Managing Nitrogen From Biosolids", Ecology publication #99-508, Ch. 9
 Analysis for A) Pollutants, B) Nutrients, C) Conventional, and D) Bacteriological are all required for land application.
 Analysis for E) Recommended Nutrients, F) Alternative Pathogens, and G) Additional Analyses are optional.
 Analysis for E) Recommended Nutrients can be either total (for environmental purposes) or extractable (for agronomic purposes). Please specify.
 Results for F) Alternative Pathogens are reported per 4 grams of total solids.