

2017

Biosolids Annual Report Form

Facility Information

DEQ File Number: 24095

Permit Number:

Name CITY OF DEPOE BAY Permit Type: NPDES 101383
 Location Address 212 SOUTH Point ST WPCF _____

Mailing Address PO Box 8 DEPOE BAY OR 97341

Contact name BRADY WEIDNER Telephone: 541-765-3005

E-mail _____ Fax: 541-765-2129

Biosolids Process Descriptions

Generation

Wastewater Sources & Volumes:

	Gallons/yr
Municipal	213.49
Industrial	
Septage	
Total Gallons	213.49

Solids Produced:

	Dry Tons (DT)/yr
primary	
secondary	78.02
other	
Total DT	78.02

Preparation

Mark applicable processes and on separate sheet describe the processes and equipment used for:

- screening
- grit removal
- settling
- thickening
- digestion
- dewatering

Storage

For each container type, list numbers, sizes, materials (i.e. steel, etc.) and volume.

<u>Containers</u>	X number of units	X volumes of each storage container	(material)	= total volume
tanks	2	290,000	CONCRETE	580,000
clarifiers	2	25,320	"	50,640
lagoons				
drying beds				
other	WFB STORAGE	262,000	"	262,000
other	LIME CELL	35,000	"	35000
TOTAL CAPACITY:				925,220

Application

List transport equipment used from facility to sites (e.g. 3,000 gal. tanker truck).

→ 5,500 TANKER TRUCK

List application method and equipment used to apply at sites

PRESSURIZED SPLASH PLATE
biosolids/annual report form.doc

Biosolids Annual Report Form

(e.g. truck splash plate, spray gun, manure spreader, etc.).

→

Biosolids Quality

EQ		Class A	Class B
----	--	---------	----------------

Testing frequency (times/yr)	1	4	6	12
------------------------------	---	---	---	----

[in Metric Tons] [<290] [$290>1,500$] [$1,500>15,000$] [$\geq 15,000$]

[in U.S. Tons] [<319] [$319>1,650$] [$1,650>16,500$] [$\geq 16,500$]

[Choose one, based on dry weight of biosolids produced and land applied annually.]

Test data

Use Tables below to record quarterly or annual testing results; use average column for annual test data. If testing more frequently (monthly), supply data on separate sheet.

Nutrient Monitoring

Item	1 st quarter	2 nd quarter	3 rd quarter	4 th quarter	Average
TKN		5.3		5.5	5.40
NO ³ -N		0.24		5.0	3.62
NH ⁴ -N		1.1		2.6	1.850
P		3.2		.83	2.02
K		0.28		0.49	0.39
pH		6.8		7.2	7.0
Total Solids		2.1		2	2.05
Vol. Solids		77		77	77

Test data is expressed in % dry weight (dw), except pH which is standard units.

Pollutant Monitoring

Metals	1 st quarter	2 nd quarter	3 rd quarter	4 th quarter	Average
As		Ø		22	11
Cd		1.5		3	2.25
Cr		15		19	17
Cu		430		425	427.50
Pb		18		47	32.5
Hg		Ø		0.251	0.13
Mo		5.5		7.6	6.55
Ni		15		21	18.00
Se		Ø		Ø	Ø
Zn		850		9.17	429.59

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Pathogen Reduction Monitoring & Records

Circle selected pathogen reduction alternative below and on a separate sheet:

- Describe process used to reduce pathogens
- State operational parameters met (e.g. time & temperature)
- Attach monitoring data and certification statement

Part 503.32 Pathogen Reduction Alternatives

Class A Alternatives

- [requires tests for fecal coliform &/or
Salmonella sp.]
1. time & temperature
 2. pH >12, 72 hr; @52°C, 12hr, >50% TS
 3. pre- & post-testing for enteric virus & helminth ova
 4. post-testing for enteric virus & helminth ova
 5. PFRP:
 - 1 composting
 - 2 heat drying
 - 3 heat treatment
 - 4 thermophilic aerobic
 - 5 beta ray irradiation
 - 6 gamma ray irradiation
 - 7 pasteurization
 6. PFRP equivalent

Class B Alternatives

- 1 samples, geometric mean < 2,000,000 MPN or CFU/g TS
2. PSRP:
 - 1 aerobic digestion
 - 2 air drying
 - 3 anaerobic digestion
 - 4 composting
 - 5 lime stabilization
 3. PSRP equivalent

Vector Attraction Reduction (VAR) Monitoring & Records

Circle selected alternative and on separate sheet:

- Describe VAR process used
- Describe operational parameters met (e.g. pH & time)
- Attach monitoring data and certification statement

Part 503.33 Vector Reduction Alternatives

In-plant alternatives

1. 38% min. reduction of volatile solids
2. anaerobic bench scale digestion
3. aerobic bench scale digestion
4. SOUR aerobic 1.5mg O²/hr/g TS (dw)
5. aerobic 14 days>45°C average temp.
6. pH ≥ 12 for 2 hr, + 22 hr ≥ 11.5 pH
7. secondary solids ≥ 75% solids
8. primary solids ≥ 90% solids

Site management alternatives

9. subsoil injection within 8 hr
10. soil incorporation within 6-8 hr

Other alternatives

11. (for disposal units only)
 12. septage only
- pH ≥ 12 for at least 30 min.

Biosolids Annual Report Form

Land Application Site Information

For all sites used during the reporting year period, provide the following information:
(This information can be provided on a separate spreadsheet if available.)

793
355
11 48

155°

995

NOTE: Attach the following items if applicable.

Soil test data if site is proposed for application for third consecutive year.
This will apply to all sites used in 1998 that were applied to in 1996 & 1997.
See OAR 340-50-080(5)

Cumulative loadings & site life information for sites receiving biosolids with any trace pollutants exceeding Table 3 values.

See OAR 340-50-035(6)(b)

Processes and Equipment

Influent is screened with a fine screen drum screener with a 6mm bar spacing and then passes thru a cyclonic grit capture system with a 95 % recovery rate. Both screenings and grit are washed and disposed of in a landfill.

Influent is then processed in two aerobic bio-reactors with a MCRT of 5-8 days. It is then settled in two 25,000 gallon clarifiers. Solids are returned to the aeration basins at a rate to achieve the required BOD removal, and the excess is pumped to secondary digesters. A portion is removed and gravity thickened and dewatered. Water is returned to the head works and reprocessed. Solids are pumped to holding tanks and held under aeration. Samples are taken and tested 30 days before being land applied.

Vector attraction reduction is met by fecal coliform samples with result of geo-mean less than 2 million per dry gram.

Pathogen reduction is met by specific oxygen uptake rate of less than 1.5 mg O₂/hr/gm TS dw.

Bio-solids are then land applied at a rate well below agronomic loading rate of 100 lbs per acre.

In 2016/17 loading rate was 35.14 lbs per acre. SOUR was .875 and fecal coliform geo- mean of 22

Attachment D:

"I certify, under penalty of law, that the pathogen requirements in [insert either 503.32(a) or 503.32(b)], the management practices in 503.14 and the vector attraction reduction requirements in [insert 503.33(b)(1) through 503.33(b)(10)] have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I also certify that all biosolids were land applied at the approved agronomic loading rate noted in the respective Department site authorization letter. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

Signature..... Date..... 2-6-18

Cell Start Date 9/1/17

Hawaii

Aerobic ~~Incubator~~ Cell A

Temp 21°C

pH 7.0

Start DO 5.24

Start Temp 21°C

Min 00

1 8.04

2 7.61

3 7.26

4 7.05

5 6.91

6 6.80

7 6.52

8 6.43

9 6.20

10 5.79

$$2.25 \times 60 = 135 \text{ min}$$

$$\text{OUR } 135 \times 1000 = 9 \text{ Scum}$$

Initial Scum 15000

2.25

% Red

Reduction

1.5 Scum on Looma

30% UV Reduction on Mesh

To Pass

Cell Start Date 5/17 Transfer Date Colonies Transferred
 Hanaia Transfer to CFC

Aerobic Respiration Cell

Temp 19.7

P.H. 6.55

Start DO 7.9

Start Temp 19.7

MW 00

1 7.7

2 7.5

3 7.4

4 7.2

5 6.9

6 6.7

7 6.5

8 6.2

9 6.0

10 5.8

2.1

$$\frac{21}{10} \times 60 = 126 \text{ min}$$

$$126 \times 1000 = 126000 \text{ sec}$$

Initial Cell Vol 15400

.82

% Vol
Reduction

1.5 Secu on Lower

30% Vol Reduction on More

To Pass

Chlorine tests are taken bi-weekly with our BOD samples. These are grab samples and recorded on the BOSD sheets The results are always 0.0

Ammonia tests are done every three months. The results are 3.645,2.295,6.48,4.185 Maximum limit is 33.0

2875 Moonshine Park Rd., Logsdon, OR 97357, USA



Delivering more than
just test results

ALG ORELAP ID #ORJ00012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 5/5/2017

WO#: 1704722 **Received Date:** 4/19/2017 2:46:00 PM
CLIENT: City of Depoe Bay **Sampler Name:** Gary Walls
Project: **Matrix:** Soil

Lab ID:	Client Sample ID	Collection Date: 4/18/2017 11:00:00 A						
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Nitrate	EPA 300.0	ND		0.010	0.0050	% Dry W	04/20/17 10:07	RO
Ammonia-N	EPA 350.2	ND		0.010	0.0050	%-dry	05/03/17 10:47	JL
Percent Moisture	D2216	35		0.10	0	%	04/20/17 08:53	RV
Nitrogen, Kjeldahl, Total	EPA 351.3	0.31		0.010	0	% Dry W	04/27/17 09:15	ER
Total Solids	EPA 160.3	65		0.10	0	%	04/20/17 08:53	RV

Definitions:	A	Accredited by ORELAP	Qualifiers:
LOD		Limit of Detection	
MCL		Maximum Contaminant Level	
ND		Not Detected at the Reporting Limit	
PL		Permit Limit	
RL		Reporting Detection Limit	

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ANALYTICAL LABORATORY GROUP
Delivering More Than
Just Test Results

ALG ORELAP ID #ORI00012
 361 West 5th Ave
 Eugene, OR 97401
 Tel: (341) 405-8404 FAX: (341) 404-3995
 Website:

QC SUMMARY REPORT

05-May-17

WO#: 1704722
 Client: City of Depoe Bay
 Project:

QC Type	Sample ID	Analyses	Method	Analysis Date	Result	Units	RL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
MBLK	MB-R16173	Total Solids	EPA 160.3	4/20/2017	ND	%	0.10									
MBLK	MB-2613	Nitrate	EPA 300.0	4/20/2017	ND	% Dry W	0.010									
MBLK	MB-2652	Ammonia-N	EPA 350.2	5/3/2017	ND	mg/L	0.20									
MBLK	MB-2631	Nitrogen, Kjeldahl, Total	EPA 351.3	4/27/2017	ND	% Dry W	0.010									
LCS	LCS-2613	Nitrate	EPA 300.0	4/20/2017	2.5	% Dry W	0.010	2.500	0	99.0	85	115				
LCS	LCS-2652	Ammonia-N	EPA 350.2	5/3/2017	5.0	mg/L	0.20	5.000	0	99.8	85	115				
LCS	LCS-2631	Nitrogen, Kjeldahl, Total	EPA 351.3	4/27/2017	4.6	% Dry W	0.010	5.000	0	91.3	85	115				

Qualifiers:



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ALG ORELAP ID #OR100012

361 West 5th Ave

Eugene, OR 97401

TEL: (541) 485-8404 FAX: (541) 484-5995

Website:

Definition Base

WO#: 1704722

Date: 5/5/2017

Definitions:

% REC: Percent Recovery; a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration added to the sample.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration.

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: The duplicate sample of the LCS, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: The duplicate sample of the MS, used to calculate both Accuracy (%REC) and Precision (%RPD)

ND: Not Detected. The analyte level is below the lowest point the laboratory can test for.

PL: Permit limit; only applicable to wastewater reports.

PQL: Practical Quantitation Level or Reporting Limit; the limit to which data is compared for reporting.

Qual: Qualifier that applies to the analyte reported

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ALG ORELAP ID #OR100012

361 West 5th Ave

Eugene, OR 97401

TEL: (541) 485-8404 FAX: (541) 484-5995

Website:

Definition Base

WO#: 1704722

Date: 5/5/2017

Definitions:

Result: Analyte concentration reported

RL: Reporting Limit/Limit of Quantitation; the limit to which data is compared for reporting. Analyte concentrations below the reporting limit are reported as ND or with a "J" qualifier.

Units: The units in which the analyte concentration is reported.

Qualifiers:

- * Value exceeds Maximum Contaminant Level (MCL)
- A Accredited by ORELAP
- C Value is below Minimum Compound Limit.
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- LOD Limit of Detection
- MCL Maximum Contaminant Level
- NAR See note in Case Narrative
- ND Not Detected at the Reporting Limit
- PL Permit Limit
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- U Samples with CalcVal < MDL
- W Sample container temperature was outside of the limits as specified by the method.

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just test results

ALG ORELAP ID #ORI00012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 4/6/2017

WO#: 1703897 **Received Date:** 3/22/2017 2:54:00 PM
CLIENT: City of Depoe Bay **Sampler Name:** Gary Walls
Project: Biosolid **Matrix:** Biosolid

Lab ID:	Client Sample ID	Collection Date: 3/22/2017 10:10:00 A						
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Ammonia-N	EPA 350.2	0.32		0.025	0.012	%-dry	03/28/17 17:39	RO
Nitrate	EPA 300.0	0.28		0.010	0.0050	% Dry W	03/24/17 15:35	RO
Hydrogen Ion (pH)	EPA 9040C	6.1	H	0	0	pH Units	03/22/17 17:09	RO
Phosphorus, Total (As P)	EPA 365.3	1.9		0.047	0	% Dry W	03/23/17 08:30	RV
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Nitrogen, Kjeldahl, Total	EPA 351.3	5.8		0.0099	0	% Dry W	03/28/17 10:15	ER
Total Solids	EPA 160.3	2.0		0.10	0	%	03/23/17 16:44	RV
Volatile Solids	EPA 160.3	77		0.10	0	%	03/23/17 16:44	RV

Lab ID:	Client Sample ID	Collection Date: 3/22/2017 10:10:00 A						
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.9		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	3,500		100	0	MPN/gra	03/22/17 17:15	RV

Lab ID:	Client Sample ID	Collection Date: 3/22/2017 10:10:00 A						
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.9		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	13,000		110	0	MPN/gra	03/22/17 17:15	RV

Definitions:	A	Accredited by ORELAP	Qualifiers:	H	Holding times for preparation or analysis exceeded
LOD		Limit of Detection			
MCL		Maximum Contaminant Level			
ND		Not Detected at the Reporting Limit			
PL		Permit Limit			
RL		Reporting Detection Limit			



Delivering more than
just test results

ALG ORELAP ID #ORI00012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 4/6/2017

WO#:	1703897	Received Date:	3/22/2017 2:54:00 PM
CLIENT:	City of Depoe Bay	Sampler Name:	Gary Walls
Project:		Matrix:	Biosolid

Lab ID: 1703897-004	Client Sample ID	Biosolid 3 Grab		Collection Date: 3/22/2017 10:10:00 A				
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	6,800		110	0	MPN/gra	03/22/17 17:15	RV

Lab ID: 1703897-005	Client Sample ID	Biosolid 4 Grab		Collection Date: 3/22/2017 10:10:00 A				
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	2.0		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	5,500		100	0	MPN/gra	03/22/17 17:15	RV

Lab ID: 1703897-006	Client Sample ID	Biosolid 5 Grab		Collection Date: 3/22/2017 10:10:00 A				
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.6		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	10,000		120	0	MPN/gra	03/22/17 17:21	JL

Lab ID: 1703897-007	Client Sample ID	Biosolid 6 Grab		Collection Date: 3/22/2017 10:10:00 A				
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	7,200		110	0	MPN/gra	03/22/17 17:56	JL

Definitions:	A	Accredited by ORELAP	Qualifiers:	H	Holding times for preparation or analysis exceeded
LOD		Limit of Detection			
MCL		Maximum Contaminant Level			
ND		Not Detected at the Reporting Limit			
PL		Permit Limit			
RL		Reporting Detection Limit			

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ALG ORELAP ID #OR100012
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Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 4/6/2017

WO#: 1703897 Received Date: 3/22/2017 2:54:00 PM
CLIENT: City of Depoe Bay Sampler Name: Gary Walls
Project: Matrix: Biosolid

Lab ID:	Client Sample ID	Collection Date: 3/22/2017 10:10:00 A						
Analyses	Method	Result	Qual	RL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	03/23/17 16:44	RV
Total Solids	EPA 160.3	1.9		0.10	0	%	03/23/17 16:44	RV
Coliform, Fecal	SM 9221 E	5,800		110	0	MPN/gra	03/22/17 17:56	JL

Definitions:	A	Accredited by ORELAP	Qualifiers:	H	Holding times for preparation or analysis exceeded
	LOD	Limit of Detection			
	MCL	Maximum Contaminant Level			
	ND	Not Detected at the Reporting Limit			
	PL	Permit Limit			
	RL	Reporting Detection Limit			

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ALG ORELAP ID#OR100012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website: www.alg-lab.com

QC SUMMARY REPORT

06-Apr-17

WO#: 1703897
Client: City of Depoe Bay
Project:

QC Type	Sample ID	Analyses	Method	Analysis Date	Result	Units	RL	SPK value	SPK %REC	Low Limit	High Limit	RPD Ref Val	%RPD	Limit	Qual
MBLK	MB-R15723	Total Solids	EPA 160.3	3/23/2017	ND	%	0.10								
MBLK	MB-R15723	Total Solids	EPA 160.3	3/23/2017	ND	%	0.10								
MBLK	MB-R15723	Volatile Solids	EPA 160.3	3/23/2017	ND	%	0.10								
MBLK	MB-2516	Nitrate	EPA 300.0	3/24/2017	ND	% Dry W	0.010								
MBLK	MB-2534	Ammonia-N	EPA 350.2	3/28/2017	ND	mg/L	0.010								
MBLK	MB-2529	Nitrogen, Kjeldahl, Total	EPA 351.3	3/28/2017	ND	% Dry W	0.010								
MBLK	MB-2514	Phosphorus, Total (As P)	EPA 365.3	3/23/2017	ND	% Dry W	0.20								
LCS	LCS-2516	Nitrate	EPA 300.0	3/24/2017	2.5	% Dry W	2.500	0	99.2	85	115				
LCS	LCS-2534	Ammonia-N	EPA 350.2	3/28/2017	5.0	mg/L	0.010	5.000	0	99.0	85	115			
LCS	LCS-2529	Nitrogen, Kjeldahl, Total	EPA 351.3	3/28/2017	4.8	% Dry W	0.010	5.000	0	95.8	85	115			
LCS	LCS-2514	Phosphorus, Total (As P)	EPA 365.3	3/23/2017	0.20	% Dry W	0.8000	0	102	85	115				
LCS	LCS-R15697	Hydrogen Ion (pH)	EPA 9040C	3/22/2017	7.0	pH Units	0	7.030	0	100	90	110			

Qualifiers:

Neilson Research Corporation

245 South Grape Street, Medford, Oregon 97501 541-770-5678 Fax 541-770-2901

Analysis Report

ORELAP-100016
EPA OR00028

Analytical Laboratory Group, Inc.
361 West Fifth Avenue
Eugene, OR 97401
Client Sample ID: 1703897-001D
Sample Location: Biosolids
Project: 1703897

Lab Order: 1703864
NRC Sample ID 1703864-01A
Collection Date: 3/22/2017 10:10:00 AM
Received Date: 3/24/2017 10:00:00 AM
Reported Date: 4/5/2017 11:57:11 AM
Matrix: Aqueous

ANALYTICAL RESULTS

Analyses	Result	Qual	MDL	MRL	Units	DF	NELAP Date Analyzed
TRACE METALS				EPA 7471A			
Mercury	0.127			0.0148	mg/Kg-dry	1	A 3/30/2017
							Analyst: OML
TRACE METALS				EPA 6010B			
Arsenic	15	J	1.71	28.1	mg/Kg-dry	1	A 4/3/2017
Cadmium	1.6	J	0.0627	5.62	mg/Kg-dry	1	A 4/3/2017
Chromium	15	J	0.131	28.1	mg/Kg-dry	1	A 4/3/2017
Copper	357		0.426	5.62	mg/Kg-dry	1	A 4/3/2017
Lead	7.2	J	0.901	28.1	mg/Kg-dry	1	A 4/3/2017
Molybdenum	3.7	J	0.123	28.1	mg/Kg-dry	1	A 4/3/2017
Nickel	10.4		0.229	2.81	mg/Kg-dry	1	A 4/3/2017
Potassium	2870		0.828	28.1	mg/Kg-dry	1	A 4/3/2017
Selenium	2.5	J	2.46	28.1	mg/Kg-dry	1	A 4/3/2017
Silver	1.29		0.315	0.562	mg/Kg-dry	1	A 4/3/2017
Zinc	802		0.507	28.1	mg/Kg-dry	1	A 4/3/2017
% TOTAL SOLIDS				SM 2540G			
Total Solids	1.94			0.0100	0.01 %	1	A 3/27/2017
							Analyst: SCM

Qualifiers: * Value exceeds Maximum Contaminant Level
 E Value above quantitation range
 J Analyte detected below quantitation limits
 S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 ND Not Detected at the Minimum Reporting Limit

Neilson Research Corporation

DATA FLAGS

- B Analyte detected in the associated method blank.
- BA BOD Alternative Calculation: The initial results performed by Standard Methods did not fall within parameters of the Standard Methods calculation. An alternate approved calculation was performed using the HACH method and the value reported is an estimated concentration.
- C Sample(s) does not meet NELAP/ORELAP sample acceptance criteria. See Case Narrative.
- C1 Sample(s) does not meet NELAP/ORELAP sample acceptance criteria for temperature.
- CF Results confirmed by re-analysis.
- CU Cleanup performed as specified by method.
- D1 The diesel elution pattern for the sample is not typical.
- D2 The sample appears to be a heavier hydrocarbon range than diesel.
- D3 The sample appears to be a lighter hydrocarbon range than diesel.
- D4 Detected hydrocarbons do not have pattern and range consistent with typical petroleum products and may be due to biogenic interference.
- D5 Detected hydrocarbons in the diesel range appear to be weathered diesel.
- E Estimated value.
- ER Elevated reporting limit due to matrix. Report limits (MDLs, MRLs & PQLs) are adjusted based on variations in sample preparation amounts, analytical dilutions, and percent solids, where applicable.
- PC Fecal Coliforms: Sample(s) received past 40 CFR Part 136 specified holding time. Results reported as estimated values.
- G1 The gasoline elution pattern for the sample is not typical.
- G2 The sample appears to be a heavier hydrocarbon range than gasoline.
- G3 The sample appears to be a lighter hydrocarbon range than gasoline.
- G4 Detected hydrocarbons in the gasoline range appear to be weathered gasoline.
- HP Sample re-analysis performed outside of method specified holding time.
- HR Sample received outside of method specified holding time.
- HS Sample analyzed for volatile organics contained headspace.
- HT At the client's request, the sample was analyzed outside of method specified holding time.
- H Analysis performed outside of method specified holding time.
- J Analyte detected below the Minimum Reporting Limit (MRL) and above the Method Detection Limit (MDL). The J flag result is an estimated value and the user should be aware that this data is of limited reliability.
- MI Surrogate or Matrix Spike recovery is out of control limits due to matrix interference. Sample results may be biased.
- N See Case Narrative on page 2 of report.
- Q Closing continuing calibration verification (CCV) or laboratory control sample (LCS) exceeded high recovery limits, but associated samples are non-detect and the sample results are not affected. Data meets EPA/NELAP requirements.
- R Relative percent difference (RPD) is outside of the accepted recovery limits.
- R1 Relative percent difference (RPD) is outside of the accepted recovery limits. However, analyses are not controlled on RPD values for sample concentrations that are less than the reporting limit.
- R3 The relative percent difference (RPD) and/or percent recovery for the duplicate (DUP) or matrix spike (MS)/matrix spike duplicate (MSD) cannot be accurately calculated due to the concentration of analyte already present in the sample.
- R4 Duplicate analysis failed due to result being at or near method reporting limit.
- S Surrogate and/or matrix spike recovery is outside of the accepted recovery limits. Sample results may be biased.
- S1 Surrogate or matrix spike recovery is outside of control limits due to dilution necessary for analysis.
- SC Sub-contracted to another laboratory for analysis.
- SP Sample(s) were not collected per EPA Method 5035A protocols. The results are considered minimum values.
- T Toxicity Characteristic Leaching Procedure – Sample submitted contained < 0.5% solids. If the waste contains <0.5% dry solids, the liquid portion of the waste, after filtration, is defined as the TCLP extract.
- # Value exceeds regulatory level for TCLP contaminant.
- X1 The motor oil elution pattern for the sample is not typical.
- X2 The sample appears to be a heavier hydrocarbon range than motor oil.
- X3 The sample appears to be a lighter hydrocarbon range than motor oil.
- * Value exceeds Maximum Contaminant Level or is outside the acceptable range.

NRC SOP QA-1104/AD-3100

Revision 3

Effective Date: 6/3/16

Neilson Research Corporation

Date: 05-Apr-17

CLIENT: Analytical Laboratory Group, Inc.

Work Order: 1703864

Project: 1703897

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_S_7471

Sample ID	MB-37920	Samp Type:	MBLK	TestCode:	HG_S_7471	Units:	mg/Kg	Prep Date:	3/29/2017	RunNo:	94099
Client ID:	ZZZZZ	Batch ID:	37920	TestNo:	EPA 7471A	(EPA 7471A)		Analysis Date:	3/30/2017	SeqNo:	1426277
Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0000200									
Sample ID	1703A04-01AMS	Samp Type:	MS	TestCode:	HG_S_7471	Units:	mg/Kg	Prep Date:	3/29/2017	RunNo:	94099
Client ID:	ZZZZZ	Batch ID:	37920	TestNo:	EPA 7471A	(EPA 7471A)		Analysis Date:	3/30/2017	SeqNo:	1426281
Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	19.92	0.333	18.5	0	108	50	150				
Sample ID	1703A04-01AMSD	Samp Type:	MSD	TestCode:	HG_S_7471	Units:	mg/Kg	Prep Date:	3/29/2017	RunNo:	94099
Client ID:	ZZZZZ	Batch ID:	37920	TestNo:	EPA 7471A	(EPA 7471A)		Analysis Date:	3/30/2017	SeqNo:	1426282
Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.04400	0.0104	0.05194	0	84.7	75	125				
Sample ID	1703A04-01AMSD	Samp Type:	MSD	TestCode:	HG_S_7471	Units:	mg/Kg	Prep Date:	3/29/2017	RunNo:	94099
Client ID:	ZZZZZ	Batch ID:	37920	TestNo:	EPA 7471A	(EPA 7471A)		Analysis Date:	3/30/2017	SeqNo:	1426282
Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.04092	0.0105	0.05239	0	78.1	75	125	0.044	7.25	25	

Qualifiers: E Value above quantitation range
H Holding times for preparation or analysis exceeded
R Not Detected at the Minimum Reporting Limit
S RPD outside accepted recovery limits
J Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 05-Apr-17

CLIENT: Analytical Laboratory Group, Inc.
 Work Order: 1703864
 Project: 1703897

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_6010_S

Sample ID	MB-37955	SampType: MBLK	TestCode: ICP_6010_S	Units: mg/Kg	Prep Date:	4/3/2017	RunNo:	94193				
Client ID:	ZZZZZ	Batch ID:	37955	TestNo: EPA 6010B	(EPA 3050B)	Analysis Date:	4/3/2017	SeqNo:	1427577			
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		ND	0.0500	0.0500								J
Cadmium		0.0003000	0.0100	ND	0.0500							
Chromium		ND	0.0500	ND	0.0100							
Copper		ND	0.0500	ND	0.0500							
Lead		ND	0.0500	ND	0.0500							
Molybdenum		ND	0.0500	ND	0.00500							
Nickel		ND	0.04580	0.0500	ND							J
Potassium		0.04580	0.0500	ND	0.0500							
Selenium		ND	0.0500	ND	0.00100							
Silver		ND	0.0500	ND	0.0500							
Zinc		ND	0.0500	ND	0.0500							

Sample ID	LCS-37955	SampType: LCS	TestCode: ICP_6010_S	Units: mg/Kg	Prep Date:	4/3/2017	RunNo:	94193				
Client ID:	ZZZZZ	Batch ID:	37955	TestNo: EPA 6010B	(EPA 3050B)	Analysis Date:	4/3/2017	SeqNo:	1427578			
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		331.2	9.83	317	0	104	50	150				
Cadmium		182.6	1.97	182	0.0003	100	50	150				
Chromium		338.5	9.83	339	0	99.9	50	150				
Copper		345.0	1.97	352	0	98.0	50	150				
Lead		63.30	9.83	66	0	95.9	50	150				
Molybdenum		111.6	9.83	111	0	101	50	150				
Nickel		185.1	0.983	190	0	97.4	50	150				
Potassium		12450	9.83	9370	0.0466	133	50	150				
Selenium		197.5	9.83	210	0	94.0	50	150				
Silver		40.40	0.197	40.4	0	100	50	150				
Zinc		213.6	9.83	206	0	104	50	150				

Qualifiers: E Value above quantitation range
 ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded
 R RPD outside accepted recovery limits

J Analyte detected below quantitation limits
 S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 05-Apr-17

CLIENT: Analytical Laboratory Group, Inc.

Work Order: 1703864

Project: 1703897

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_6010_S

Sample ID	1703B19-01AMS	Samp Type:	MS	TestCode:	ICP_6010_S	Units:	mg/Kg-dry	Prep Date:	4/3/2017	RunNo:	94193	
Client ID:	zzzzz	Batch ID:	37955	TestNo:	EPA 6010B	(EPA 3050B)		Analysis Date:	4/3/2017	SeqNo:	1427580	
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		365.5	16.0	320.9	7.193	112	70	70	130			
Cadmium		291.3	3.21	320.9	3.05	89.8	70	70	130			
Chromium		352.0	16.0	320.9	53.63	93.0	70	70	130			
Copper		1001	3.21	320.9	607.3	123	70	70	130			
Lead		370.6	16.0	320.9	46.81	101	70	70	130			
Molybdenum		295.7	16.0	320.9	0.9945	91.8	70	70	130			
Nickel		324.1	1.60	320.9	35.34	90.0	70	70	130			
Potassium		2250	16.0	320.9	1872	118	70	70	130			
Selenium		304.5	16.0	320.9	3.514	93.8	70	70	130			
Silver		314.9	0.321	320.9	14.75	93.5	70	70	130			
Zinc		2387	16.0	320.9	2045	107	70	70	130			

Sample ID	1703B19-01AMSD	Samp Type:	MSD	TestCode:	ICP_6010_S	Units:	mg/Kg-dry	Prep Date:	4/3/2017	RunNo:	94193	
Client ID:	zzzzz	Batch ID:	37955	TestNo:	EPA 6010B	(EPA 3050B)		Analysis Date:	4/3/2017	SeqNo:	1427581	
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		462.9	21.5	430.2	7.193	106	70	130	365.5	23.5	25	
Cadmium		389.3	4.30	430.2	3.05	89.8	70	130	291.3	28.8	25	R
Chromium		448.7	21.5	430.2	53.63	91.8	70	130	352	24.1	25	
Copper		1017	4.30	430.2	607.3	95.2	70	130	1001	1.57	25	
Lead		468.5	21.5	430.2	46.81	98.0	70	130	370.6	23.3	25	
Molybdenum		393.7	21.5	430.2	0.9945	91.3	70	130	295.7	28.4	25	
Nickel		420.2	2.15	430.2	35.34	89.4	70	130	324.1	25.8	25	
Potassium		2451	21.5	430.2	1872	135	70	130	2250	8.55	25	M
Selenium		400.7	21.5	430.2	3.514	92.3	70	130	304.5	27.3	25	R
Silver		411.0	0.430	430.2	14.75	92.1	70	130	314.9	26.5	25	R
Zinc		2415	21.5	430.2	2045	86.1	70	130	2387	1.17	25	

Qualifiers: E Value above quantitation range
ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

J Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 05-Apr-17

CLIENT: Analytical Laboratory Group, Inc.
Work Order: 1703864
Project: 1703897

ANALYTICAL QC SUMMARY REPORT

TestCode: SOLIDS_TOT_S

Sample ID	MB-R941134	SampType: MBLK	TestCode: SOLIDS_TOT	Units: %	Prep Date:	Analysis Date:	RunNo: 94134	SeqNo: 1426754				
Client ID:	zzzzz	Batch ID: R94134	TestNo: SM 2540G									
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids		ND	0.0100									
Sample ID	1703838-01ADUP	SampType: DUP	TestCode: SOLIDS_TOT	Units: %	Prep Date:	Analysis Date:	RunNo: 94134	SeqNo: 1426756				
Client ID:	zzzzz	Batch ID: R94134	TestNo: SM 2540G									
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids		1.957	0.0100						1.976	0.979	5	

Qualifiers: E Value above quantitation range
ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

J Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits



Delivering more than
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ALG ORELAP ID #OR100012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 8/25/2017

WO#: 1708441 **Received Date:** 8/9/2017 2:51:00 PM
CLIENT: City of Depoe Bay **Sampler Name:** Gary Walls
Project: Fall 2017 **Matrix:** Biosolid

Lab ID:	Client Sample ID	Biosolid Grab		Collection Date: 8/9/2017 9:30:00 AM				
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Nitrate	EPA 300.0	0.032		0.010	0.0050	% Dry W	08/11/17 12:33	AS
Ammonia-N	EPA 350.2	1.1		0.010	0.0050	%-dry	08/21/17 15:26	AS
Hydrogen Ion (pH)	EPA 9040C	7.2	H	0	0	pH Units	08/09/17 15:30	ER
Phosphorus, Total (As P)	EPA 365.3	2.1		0.050	0	% Dry W	08/11/17 09:39	RV
Percent Moisture	D2216	98		0.10	0	%	08/10/17 16:49	RV
Nitrogen, Kjeldahl, Total	EPA 351.3	5.3		0.010	0	% Dry W	08/18/17 10:00	ER
Total Solids	EPA 160.3	2.0		0.10	0	%	08/10/17 16:49	RV
Volatile Solids	EPA 160.3	77		0.10	0	%	08/10/17 16:49	RV

Lab ID:	Client Sample ID	Biosolid 1 Grab		Collection Date: 8/9/2017 9:30:00 AM				
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	100		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	0.18		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	1,700,000		1,100	0	MPN/gra	08/09/17 15:50	JL

Lab ID:	Client Sample ID	Biosolid 2 Grab		Collection Date: 8/9/2017 9:30:00 AM				
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	130,000		110	0	MPN/gra	08/09/17 16:12	JL

Definitions:	A	Accredited by ORELAP	Qualifiers:	H	Holding times for preparation or analysis exceeded
LOD	Limit of Detection				
MCL	Maximum Contaminant Level				
ND	Not Detected at the Reporting Limit				
PL	Permit Limit				
PQL	Practical Quantitation Level or Reporting Limit				

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TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 8/25/2017

WO#: 1708441 **Received Date:** 8/9/2017 2:51:00 PM
CLIENT: City of Depoe Bay **Sampler Name:** Gary Walls
Project: Fall 2017 **Matrix:** Biosolid

Lab ID:	Client Sample ID	Collection Date: 8/9/2017 9:30:00 AM						
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	280,000		110	0	MPN/gra	08/09/17 16:39	JL

Lab ID:	Client Sample ID	Collection Date: 8/9/2017 9:30:00 AM						
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	71,000		11	0	MPN/gra	08/09/17 15:51	RV

Lab ID:	Client Sample ID	Collection Date: 8/9/2017 9:30:00 AM						
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	45,000		110	0	MPN/gra	08/09/17 15:50	RV

Lab ID:	Client Sample ID	Collection Date: 8/9/2017 9:30:00 AM						
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV
Coliform, Fecal	SM 9221 E	270,000		110	0	MPN/gra	08/09/17 16:00	RV

Definitions:	A	Accredited by ORELAP	Qualifiers:	H	Holding times for preparation or analysis exceeded
LOD		Limit of Detection			
MCL		Maximum Contaminant Level			
ND		Not Detected at the Reporting Limit			
PL		Permit Limit			
PQL		Practical Quantitation Level or Reporting Limit			

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Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

Analytical Report

Date Reported: 8/25/2017

WO#: 1708441 Received Date: 8/9/2017 2:51:00 PM
CLIENT: City of Depoe Bay Sampler Name Gary Walls
Project: Fall 2017 Matrix: Biosolid

Lab ID:	Client Sample ID	Biosolid 7 Grab	Collection Date: 8/9/2017 9:30:00 AM						
Analyses	Method	Result	Qual	PQL	LOD	Units	Date Analyzed	Analys	
Percent Moisture	D2216	98		0.10	0	%	08/10/17 11:37	RV	
Total Solids	EPA 160.3	1.8		0.10	0	%	08/10/17 11:37	RV	
Coliform, Fecal	SM 9221 E	79,000		110	0	MPN/gra	08/09/17 16:12	RV	

Definitions: A Accredited by ORELAP

LOD Limit of Detection

MCL Maximum Contaminant Level

ND Not Detected at the Reporting Limit

PL Permit Limit

PQL Practical Quantitation Level or Reporting Limit

Qualifiers: H Holding times for preparation or analysis exceeded

Original
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ALG
ANALYTICAL LABORATORY GROUP
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ALG ORELAP ID #OR100012
361 West 5th Ave
Eugene, OR 97401
TEL: (541) 485-8404 FAX: (541) 484-5995
Website:

QC SUMMARY REPORT

25-Aug-17

WO#:

1708441

Client:

City of Depoe Bay

Project:

Fall 2017

QC Type	Sample ID	Analyses	Method	Analysis Date		Result	Units	RL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD	RPD %RPD	Limit	Qual
				Date	Time												
MBLK	MB-R17866	Total Solids	EPA 160.3	8/10/2017		ND	%	0.10									
MBLK	MB-R17853	Total Solids	EPA 160.3	8/10/2017		ND	%	0.10									
MBLK	MB-R17865	Volatile Solids	EPA 160.3	8/10/2017		ND	%	0.10									
MBLK	MB-2912	Nitrate	EPA 300.0	8/11/2017		ND	% Dry W	0.010									
MBLK	MB-2917	Ammonia-N	EPA 350.2	8/21/2017		ND	mg/L	0.010									
MBLK	MB-2929	Nitrogen, Kjeldahl, Total	EPA 351.3	8/18/2017		ND	% Dry W	0.010									
MBLK	MB-2914	Phosphorus, Total (As P)	EPA 365.3	8/11/2017		ND	% Dry W	.00010									
LCS	LCS-2912	Nitrate	EPA 300.0	8/11/2017		2.6	% Dry W	2.500	0	103	85	115					
LCS	LCS-2917	Ammonia-N	EPA 350.2	8/21/2017		5.0	mg/L	0.010	5.000	0	99.6	85	115				
LCS	LCS-2929	Nitrogen, Kjeldahl, Total	EPA 351.3	8/18/2017		5.5	% Dry W	0.010	5.000	0	110	85	115				
LCS	LCS-2914	Phosphorus, Total (As P)	EPA 365.3	8/11/2017		0.83	% Dry W	.00010	0.8000	0	104	85	115				
LCS	LCS-R17839	Hydrogen Ion (pH)	EPA 9040C	8/9/2017		7.0	pH Units	0	7.020	0	100	90	110				

Qualifiers:



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ALG ORELAP ID #OR100012

361 West 5th Ave

Eugene, OR 97401

TEL: (541) 485-8404 FAX: (541) 484-5995

Website:

Definition Base

WO#: 1708441

Date: 8/25/2017

Definitions:

% REC: Percent Recovery; a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration added to the sample.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration.

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known mass of target analytes to a specified amount of de-ionized water and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: The duplicate sample of the LCS, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

MS: Matrix Spike; prepared by adding a known mass of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: The duplicate sample of the MS, used to calculate both Accuracy (%REC) and Precision (%RPD)

ND: Not Detected. The analyte level is below the lowest point the laboratory can test for.

PL: Permit limit; only applicable to wastewater reports.

PQL: Practical Quantitation Level or Reporting Limit; the limit to which data is compared for reporting.

Qual: Qualifier that applies to the analyte reported



Delivering more than
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ALG ORELAP ID #ORI00012

361 West 5th Ave

Eugene, OR 97401

TEL: (541) 484-8404 FAX: (541) 484-5995

Website:

Definition Base

WO#: 1708441

Date: 8/25/2017

Definitions:

Result: Analyte concentration reported

RL: Reporting Limit/Limit of Quantitation; the limit to which data is compared for reporting. Analyte concentrations below the reporting limit are reported as ND or with a "J" qualifier.

Units: The units in which the analyte concentration is reported.

Qualifiers:

- * Value exceeds Maximum Contaminant Level (MCL)
- A Accredited by ORELAP
- C Value is below Minimum Compound Limit.
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- LOD Limit of Detection
- MCL Maximum Contaminant Level
- NAR See note in Case Narrative
- ND Not Detected at the Reporting Limit
- PL Permit Limit
- PQL Practical Quantitation Level or Reporting Limit
- R RPD outside accepted recovery limits
- U Samples with CalcVal < MDL
- W Sample container temperature was outside of the limits as specified by the method.

Neilson Research Corporation

245 South Grape Street, Medford, Oregon 97501 541-770-5678 Fax 541-770-2901

Analysis Report

ORELAP 100018
EPA OR00028

Analytical Laboratory Group, Inc.
361 West Fifth Avenue
Eugene, OR 97401
Client Sample ID: 1708441-001D
Sample Location: Biosolids
Project: 1708441

Lab Order: 1708583
NRC Sample ID: 1708583-01A
Collection Date: 8/9/2017 9:30:00 AM
Received Date: 8/11/2017 10:00:00 AM
Reported Date: 8/21/2017 11:10:40 AM
Matrix: Solid

ANALYTICAL RESULTS

Analyses	Result	Qual	MDL	MRL	Units	DF	NELAP	Date Analyzed
TRACE METALS				EPA 7471A				
Mercury	0.251			0.000820	mg/Kg-dry	1	A	Analyst: OML 8/16/2017
TRACE METALS				EPA 6010B				
Arsenic	22	J	12.9	211	mg/Kg-dry	1	A	8/17/2017
Cadmium	3.0	J	0.471	42.2	mg/Kg-dry	1	A	8/17/2017
Chromium	19	J	0.984	211	mg/Kg-dry	1	A	8/17/2017
Copper	425		3.20	42.2	mg/Kg-dry	1	A	8/17/2017
Lead	47	J	6.77	211	mg/Kg-dry	1	A	8/17/2017
Molybdenum	7.6	J	0.922	211	mg/Kg-dry	1	A	8/17/2017
Nickel	21	J	1.72	21.1	mg/Kg-dry	1	A	8/17/2017
Potassium	4900		6.22	211	mg/Kg-dry	1	A	8/17/2017
Selenium	ND		18.5	211	mg/Kg-dry	1	A	8/17/2017
Silver	2.5	J	2.37	4.22	mg/Kg-dry	1	A	8/17/2017
Zinc	917		3.81	211	mg/Kg-dry	1	A	8/17/2017
% TOTAL SOLIDS				SM 2540G				
Total Solids	2.06		0.0100	0.01	%	1	A	Analyst: SCM 8/14/2017

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Minimum Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

Neilson Research Corporation

Date: 21-Aug-17

ANALYTICAL QC SUMMARY REPORT

CLIENT: Analytical Laboratory Group, Inc.

Work Order: 1708583

Project: 1708441

TestCode: HG_SL_7471

Sample ID	MB-38979	SampType: MBLK	TestCode: HG_SL_7471	Units: mg/Kg	Prep Date:	8/11/2017	RunNo:	97355				
Client ID:	zzzzz	Batch ID: 38979	TestNo: EPA 7471A	(EPA 7471A)	Analysis Date:	8/16/2017	SeqNo:	1473728				
Analyte	Mercury	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
		0.00003600	0.00002000									J
Sample ID	LCS-38979	SampType: LCS	TestCode: HG_SL_7471	Units: mg/Kg	Prep Date:	8/11/2017	RunNo:	97355				
Client ID:	zzzzz	Batch ID: 38979	TestNo: EPA 7471A	(EPA 7471A)	Analysis Date:	8/16/2017	SeqNo:	1473728				
Analyte	Mercury	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
		18.71	0.417	18.5	0.000036	101	50	150				
Sample ID	1708444-01AMS	SampType: MS	TestCode: HG_SL_7471	Units: mg/Kg-dry	Prep Date:	8/11/2017	RunNo:	97355				
Client ID:	zzzzz	Batch ID: 38979	TestNo: EPA 7471A	(EPA 7471A)	Analysis Date:	8/16/2017	SeqNo:	1473732				
Analyte	Mercury	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
		7.726	0.156	7.801	0.9383	87.0	75	125				
Sample ID	1708444-01AMSD	SampType: MSD	TestCode: HG_SL_7471	Units: mg/Kg-dry	Prep Date:	8/11/2017	RunNo:	97355				
Client ID:	zzzzz	Batch ID: 38979	TestNo: EPA 7471A	(EPA 7471A)	Analysis Date:	8/16/2017	SeqNo:	1473733				
Analyte	Mercury	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
		8.059	0.164	8.178	0.9383	87.1	75	125	7.726	4.22	25	

Qualifiers: E Value above quantitation range
ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

J Analyte detected below quantitation limits
S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 21-Aug-17

CLIENT: Analytical Laboratory Group, Inc.
 Work Order: 1708583
 Project: 1708441

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_6010_S

Sample ID	MB-39021	SampType: MBLK	TestCode: ICP_6010_S	Units: mg/Kg	Prep Date:	8/16/2017	RunNo:	97402				
Client ID:	zzzzz	Batch ID:	39021	TestNo: EPA 6010B	(EPA 3050B)	Analysis Date:	8/17/2017	SeqNo:	1474277			
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		ND	0.0500									
Cadmium		ND	0.0100									
Chromium		ND	0.0500									
Copper		ND	0.0100									
Lead		ND	0.0500									
Molybdenum		ND	0.0500									
Nickel		0.001400	0.00500									J
Potassium		0.03130	0.0500									J
Selenium		ND	0.0500									
Silver		ND	0.00100									
Zinc		0.002300	0.0500									J

Sample ID	LCS-39021	SampType: LCS	TestCode: ICP_6010_S	Units: mg/Kg	Prep Date:	8/16/2017	RunNo:	97402				
Client ID:	zzzzz	Batch ID:	39021	TestNo: EPA 6010B	(EPA 3050B)	Analysis Date:	8/17/2017	SeqNo:	1474278			
Analyte		Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		335.0	10.9	317	0	106	50	150				
Cadmium		178.5	2.19	182	0	98.1	50	150				
Chromium		336.5	10.9	339	0	99.3	50	150				
Copper		328.7	2.19	352	0	93.4	50	150				
Lead		73.23	10.9	66	0	111	50	150				
Molybdenum		112.3	10.9	111	0	101	50	150				
Nickel		183.7	1.09	190	0.0014	96.7	50	150				
Potassium		10800	10.9	9370	0.0313	115	50	150				
Selenium		214.5	10.9	210	0	102	50	150				
Silver		37.50	0.219	40.4	0	92.8	50	150				
Zinc		198.6	10.9	206	0.0023	96.4	50	150				

Qualifiers: E Value above quantitation range
 ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded
 R RPD outside accepted recovery limits

J Analyte detected below quantitation limits
 S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 21-Aug-17

ANALYTICAL QC SUMMARY REPORT

CLIENT: Analytical Laboratory Group, Inc.
 Work Order: 1708583
 Project: 1708441

TestCode: ICP_6010_S

Sample ID: 1708580-01AMS	SampType: MS	TestCode: ICP_6010_S	Units: mg/kg-dry	Prep Date: 8/16/2017	RunNo: 97402
Client ID: ZZZZZ	Batch ID: 39021	TestNo: EPA 6010B (EPA 3050B)		Analysis Date: 8/17/2017	SeqNo: 1474296

Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	736.7	35.5	709.7	5.213	103	70	130				
Cadmium	693.5	7.10	708.7	2.245	97.4	70	130				
Chromium	718.2	35.5	709.7	26.94	97.4	70	130				
Copper	965.9	7.10	709.7	306.1	93.0	70	130				
Lead	770.0	35.5	709.7	67.48	99.0	70	130				
Molybdenum	709.1	35.5	709.7	7.168	98.9	70	130				
Nickel	695.2	3.55	709.7	17.74	95.5	70	130				
Potassium	19920	35.5	14900	2767	115	70	130				
Selenium	744.5	35.5	709.7	0	105	70	130				
Silver	648.2	0.710	709.7	2.969	90.9	70	130				
Zinc	1559	35.5	709.7	948.5	85.9	70	130				

Sample ID: 1708580-01AMSD	SampType: MSD	TestCode: ICP_6010_S	Units: mg/Kg-dry	Prep Date: 8/16/2017	RunNo: 97402
Client ID: ZZZZZ	Batch ID: 39021	TestNo: EPA 6010B (EPA 3050B)		Analysis Date: 8/17/2017	SeqNo: 1474297

Analyte	Result	MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	652.0	31.5	629.9	5.213	103	70	130	736.7	12.2	25	
Cadmium	611.0	6.30	629.9	2.245	96.6	70	130	693.5	12.7	25	
Chromium	634.3	31.5	629.9	26.94	96.4	70	130	718.2	12.4	25	
Copper	888.8	6.30	629.9	306.1	92.5	70	130	965.9	8.31	25	
Lead	677.2	31.5	629.9	67.48	96.8	70	130	770	12.8	25	
Molybdenum	625.0	31.5	629.9	7.168	98.1	70	130	709.1	12.6	25	
Nickel	613.9	3.15	629.9	17.74	94.6	70	130	695.2	12.4	25	
Potassium	18260	31.5	13230	2767	117	70	130	19920	8.69	25	
Selenium	657.0	31.5	629.9	0	104	70	130	744.5	12.5	25	
Silver	568.6	0.630	629.9	2.969	89.8	70	130	648.2	13.1	25	
Zinc	1497	31.5	629.9	948.5	87.1	70	130	1559	4.00	25	

Qualifiers: E Value above quantitation range

ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded

J Analyte detected below quantitation limits

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

Neilson Research Corporation

Date: 21-Aug-17

ANALYTICAL QC SUMMARY REPORT

CLIENT: Analytical Laboratory Group, Inc.

Work Order: 1708583

Project: 1708441

TestCode: SOLIDS_TOT_S

Sample ID	MB-R97373	SampType:	MBLK	TestCode:	SOLIDSS_TOT	Units:	%	Prep Date:	RunNo:	97373			
Client ID:	zzzzz	Batch ID:	R97373	TestNo:	SM 2540G			Analysis Date:	SeqNo:	1473899			
Analyte		Result		MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids		ND		0.0100									
Sample ID	1708580-01ADUP	SampType:	DUP	TestCode:	SOLIDSS_TOT	Units:	%	Prep Date:	RunNo:	97373			
Client ID:	zzzzz	Batch ID:	R97373	TestNo:	SM 2540G			Analysis Date:	SeqNo:	1473901			
Analyte		Result		MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids		15.46		0.0100				15.22	1.54	5			
Sample ID	1708583-01ADUP	SampType:	DUP	TestCode:	SOLIDSS_TOT	Units:	%	Prep Date:	RunNo:	97373			
Client ID:	1708441-001D	Batch ID:	R97373	TestNo:	SM 2540G			Analysis Date:	SeqNo:	1473903			
Analyte		Result		MRL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Solids		2.091		0.0100				2.055	1.74	5			

Qualifiers: E Value above quantitation range

ND Not Detected at the Minimum Reporting Limit

H Holding times for preparation or analysis exceeded

J Analyte detected below quantitation limits

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits