City of Morro Bay and
Cayucos Sanitary District

OFFSHORE MONITORING AND REPORTING PROGRAM

RESIDUAL BIOSOLIDS CHEMICAL ANALYSIS RESULTS

SEPTEMBER 2011

Marine Research Specialists

3140 Telegraph Rd., Suite A
Ventura, California 93003

Report to

City of Morro Bay and
Cayucos Sanitary District

955 Shasta Avenue
Morro Bay, California 93442
(805) 772-6272

MONITORING AND REPORTING PROGRAM

ANNUAL BIOSOLIDS REPORT

CHEMICAL ANALYSIS RESULTS

SEPTEMBER 2011

Prepared by

Bonnie Luke
Douglas A. Coats

Marine Research Specialists

3140 Telegraph Rd., Suite A
Ventura, California 93003

Telephone: (805) 644-1180
Telefax: (805) 289-3935
E-mail: Marine@Rain.org

October 2011

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.

_____

Mr. Rob Livick
Public Services Director
City of Morro Bay

_____

Date

marine research specialists
3140 Telegraph Rd., Suite A • Ventura, CA 93003 • 805-644-1180

Bruce Keogh
Wastewater Division Manager
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

14 October 2011

Reference: Chemical Analysis Results for Biosolid Samples Collected in September 2011

Dear Mr. Keogh:

Enclosed are the results of chemical analyses conducted on a representative composite of biosolid samples collected from the drying beds on 6 September 2011. Also included in this report are pertinent QA/QC data, including chains of custody and analyses of method blanks and spikes. All analyses were conducted following the requirements set forth in Order Number R3-2008-0065 of NPDES discharge Permit Number CA0047881.

Based on a comparison between measured chemical concentrations in the composite sample and applicable State and Federal regulations, the biosolids amassed in 2011 are not considered hazardous waste, and are considered suitable for land application. A summary of the analytical results is presented in Table 1. As in prior years, only a few of the more than 150 compounds analyzed in the composite sample were detected at quantifiable concentrations, and all detected chemicals had concentrations well below the applicable standards. Bulk trace-metal concentrations measured in the September-2011 sample were comparable to concentrations measured in samples collected annually from 1999 through 2010.[1]

All trace-metal concentrations measured in the September-2011 sample were below Total Threshold Limit Concentrations (TTLC) that would designate them as hazardous under federal regulations.[2] Similarly, dry-weight concentrations for all the metals were well below the federally mandated limits, including the monthly limits for biosolids suitable for land application. One metal, copper, had a bulk wet-weight concentration that exceeded ten-times the Soluble Threshold Limit Concentration (STLC). As a result, the required waste extraction test (WET) was conducted on this compound. The test indicated that the soluble concentration of copper was more than three and a half times lower than the applicable STLC limit that would designate the biosolids as hazardous within the State of California.

Copper occurs naturally in the mineralogy of ambient sediments in the central coast region. As a result, its presence in bulk biosolid samples is not unexpected because sediments enter the collection system through runoff. Copper also enters the collection system through internal corrosion of household plumbing systems, which probably accounts for its consistent detection at low concentrations within effluent samples. As with other metals, the bulk copper concentration determined in the September-2011 sample was comparable to concentrations measured in biosolids samples collected historically.

Two synthetic organic compounds, benzoic acid, and bis(2-ethylhexyl) phthalate (BEHP), were also detected at low, but quantifiable concentrations in the September-2011 biosolid sample. There are no limits on these detected compounds specified in State and Federal regulations governing biosolids. Benzoic acid is a common food preservative while bis(2-ethylhexyl) phthalate (BEHP) is added to plastic resins to soften

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[1] Marine Research Specialists (MRS). 1999 through 2010. City of Morro Bay and Cayucos Sanitary District, Residual Biosolids Chemical Analysis Results. Prepared for the City of Morro Bay and Cayucos Sanitary District, Morro Bay, CA.

[2] U.S. Government Printing Office (USGPO). 1997b. Code of Federal Regulations. Environmental Protection. Standards for the use or disposal of Sewage Sludge, Land Application, Pollutant Limits. Chapter 40, Part 503, Subpart B. 1 July 1997 edition.

them. In particular, bis(2-ethylhexyl) phthalate has been consistently detected at low levels in both effluent and biosolid samples collected over the past decade.[3]

Other compounds listed in Table 1 further characterize the biosolids as required in the waste discharge requirements.

Please contact the undersigned if you have any questions regarding these results.

Sincerely,

Bonnie Luke
Program Manager
Enclosure (Five Report Copies)

[3] Section 2.2.12, Page 2-32 of the MBCSD 2010 Annual Report to the City of Morro Bay and Cayucos Sanitary District. Prepared by Marine Research Specialists, March 2011.

Table 1. Summary of Results for Biosolids Analyses

		Wet Weight				Dry Weight		
		Measured		Limit		Measured	Limit	
Constituent	**Units**	**Bulk [4]**	**WET [5]**	**STLC [6]**	**TTLC [7]**	**Bulk**	**Monthly [8]**	**Ceiling [9]**
Solids	%	82.7	— [10]	—	—	—	—	—
Total Dissolved Solids	ppm	—	6,100.	—	—	—	—	—
Cyanide	ppm	2.6	—	—	—	3.1	—	—
Antimony	ppm	≈1.9 [11]	—	15.	500.	≈2.3	—	—
Arsenic	ppm	3.4	—	5.	500.	4.1	41.	75.
Barium	ppm	290.	—	100.	10,000.	350.	—	—
Beryllium	ppm	≈0.18	—	0.75	75.	≈0.22	—	—
Boron	ppm	15.	—	—	—	18.	—	—
Cadmium	ppm	2.7	—	1.	100.	3.3	39.	85.
Chromium (Total)	ppm	38.	—	560.	2500.	45.	—	—
Chromium (Hexavalent)	ppm	0.3	ND [12]	5.	500.	0.36	—	—
Cobalt	ppm	3.4	—	80.	8,000.	4.2	1,500.	4,300.
Copper	ppm	480. [13]	6.9	25.	2,500.	580.	1,500.	4,300.
Lead	ppm	36.	—	5.	1,000.	44.	300.	840.
Mercury	ppm	1.1	—	0.2	20.	1.3	17.	57.
Molybdenum	ppm	19.	—	350.	3,500.	23.	—	—
Nickel	ppm	36.	—	20.	2,000.	43.	420.	420.
Selenium	ppm	6.7	—	1.	100.	8.0	100.	100.
Silver	ppm	3.0	—	5.	500.	3.7	—	—
Thallium	ppm	ND	—	7.	700.	ND	—	—
Vanadium	ppm	20.	—	24.	2,400.	24.	—	—
Zinc	ppm	1,100.	—	250.	5,000.	1,300.	2,800.	7,500.
Bis(2-ethylhexyl) phthalate	ppm	35.	—	—	—	43.	—	—
Benzoic Acid	mg/kg	20.	—	—	—	25.	—	—
Hydrogen-Ion	pH	6.28	—	—	—	—	—	—
Phosphate	mg/kg	68,000.	—	—	—	82,000.	—	—
Ammonia	mg/kg	8,100.	—	—	—	9,800.	—	—
TKN	mg/kg	34,000.	—	—	—	41,000.	—	—

[4] The total wet-weight concentration (mg/kg) within a bulk biosolid sample consisting of the entire millable solid matrix rather than just the leachate.

[5] Waste Extraction Tests (WET) measure the soluble leachate (mg/L) or the extractable amount of a substance contained within a bulk sample of biosolids. A WET is indicated if the bulk wet-weight concentration of a contaminant in a biosolids sample exceeds ten times the STLC.

[6] Soluble Threshold Limit Concentrations (STLC) apply to the measured concentration in the liquid extract from a biosolid sample, as determined by a WET. Biosolids with leachate concentrations exceeding the STLC are classified as hazardous in the State of California as described in the California Code of Regulations (CCR), Title 22, Chapter 11: *Identification and Listing of Hazardous Waste*.

[7] Total Threshold Limit Concentrations (TTLC) apply to the total wet-weight concentration of a contaminant (mg/kg) within a bulk biosolid sample. Biosolids are designated as hazardous wastes in the State of California if measured bulk concentrations exceed the TTLC as described in the CCRs, *op. cit.*

[8] Federally mandated dry-weight limits imposed on biosolids suitable for application on agricultural land apply to monthly average concentrations as defined in Table 3 of the Code of Federal Regulations (CFRs). Environmental Protection. Standards for the use or disposal of Sewage Sludge, Land Application, Pollutant Limits. Chapter 40, Part 503, Subpart B [40 CFR §503.13(b)(1)].

[9] Federally mandated dry-weight ceiling concentrations above which biosolids are considered hazardous waste as defined in Table 1 of the CFRs, *op. cit.*

[10] "—" indicates that the measurement was not required or its limit was not specified.

[11] "≈" indicates the reported concentration was too low to be reliably quantified.

[12] "ND" indicates that the measurement was not detected in concentrations exceeding the method detection limit.

[13] The bulk concentration was greater than ten times the STLC and a WET was conducted.

		Wet Weight				Dry Weight		
		Measured		Limit		Measured	Limit	
Constituent	**Units**	**Bulk [4]**	**WET [5]**	**STLC [6]**	**TTLC [7]**	**Bulk**	**Monthly [8]**	**Ceiling [9]**
Organic Nitrogen[14]	mg/kg	25,900.	—	—	—	31,200.	—	—
Nitrate as NO_3	mg/kg	130.	—	—	—	150.	—	—
Oil & Grease	ppm	15,000.	—	—	—	18,000.	—	—

[14] The amount of nitrogen as reported by TKN excluding ammonia

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Date of Report: 09/26/2011

Doug Coats

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Project: Biosolids from MBWWTP
BC Work Order: 1114512
Invoice ID: B108096

Enclosed are the results of analyses for samples received by the laboratory on 9/7/2011. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Tina Green
Client Services Manager

Authorized Signature

4100 Atlas Court Bakersfield, CA 93308 (661) 327-4911 FAX (661) 327-1918 www.bclabs.com

Table of Contents

Case Narratives

Case Narrative for Work Order 1114512

2- CEVE can only be reported as a TIC (Tentatively Identified Compound). 2-CEVE was not found as a TIC for 11-14512-1.

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949.

Chain of Custody Form

CHK BY BLT DISTRIBUTION WHITE YELLOW SUB OUT

Report To: Client: Marine Research Specialists	Project #:
Attn: Doug Coats	Project Name: MBCSD Biosolids
Street Address: 3140 Telegraph Rd. Suite A	Global ID #:
City, State, Zip: Ventura, CA 93003	Sampler(s): BK/GH
Phone: 805-644-1180	
Email Address: doug.coats@mrsenv.com	
Work Order# 11-14512	

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	Moisture, EPA 160.3 or BC	TDS, mod. STLC EPA 160.1	CAM 17 metals + Boron	TKN, EPA 351.2	Ammonia as N, EPA 350.1	Nitrate as NO3, EPA 300.0	Total Phosphate, EPA 365.4	Total Cyanide, EPA 9012	pH, EPA 9045 or 150.1	Sample Matrix: Soil	Sludge	Drinking Water	Ground water	Waste Water	Other	Are there any tests with holding times less than or equal to 48 hours?	Notes
1	~~Composite Biosolids~~ MBWWTP Biosolids	~~9/7/11~~ 9/6/11	1300	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓					☐ Yes ☐ No	

Comments:
page 1 of 2

Please see attached PDFs for full explanations/details of individual analyses!

Billing ☑ Same as above

Client: _____
Address: _____
City: _____ State _____ Zip _____
Attn: _____
PO#: _____

EDF Required? ☐ Yes ☐ No

Send Copy to State of CA? ☐ Yes ☐ No

Sample Disposal ☐ Return to Client ☐ Disposal by lab ☐ Archive Months _____

Special Reporting ☐ QC ☐ EDF ☐ Raw Data

	Relinquished By	Date	Time	Received By	Date	Time
1.	Steve R. Dallas	7Sept11	1400		9-7-11	1400
2.		9-7-11	2100		9-7-11	2100
3.		Date	Time		Date	Time

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949.

Chain of Custody Form

Report To: Client: Marine Research Specialists	Project #:
Attn: Doug Coats	Project Name: MBCSD Biosolids
Street Address: 3140 Telegraph Rd. Suite A	Global ID #:
City, State, Zip: Ventura, CA 93003	Sampler(s): BK/GH
Phone: 805-644-1180	
Email Address: doug.coats@mrsenv.com	
Work Order# 11-14512	

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	Oil and Grease, EPA 1664	Semi-vol organics, EPA 8270	Pesticides/PCBs, EPA 8080	Volatile organics, EPA 8240	Total Hex Chrom, EPA 7196	Hex Chrom, mod. STLC 7196	Asbestos, EPA 600/R-94/134	WET tests*** on Pb and Cu	Sample Matrix: Soil	Sludge	Drinking Water	Ground water	Waste Water	Other	Are there any tests with holding times less than or equal to 48 hours? Yes / No	Notes
1	~~Composite Biosolids~~ (cont'd from pg 1) MBWWTP Biosolids	~~9/7/11~~ 9/6/11	1300	✓	✓	✓	✓	✓	✓	✓	✓		✓						***STLC EPA 6010, but see notes on PDF!

Comments:
page 2 of 2

Please see attached PDFs for full explanations/details of individual analyses!

Billing ☑ Same as above

Client:
Address:
City: State Zip
Attn:
PO#:

EDF Required? ☐ Yes ☐ No

Send Copy to State of CA? ☐ Yes ☐ No

Sample Disposal ☐ Return to Client ☐ Disposal by lab ☐ Archive Months

Special Reporting ☐ QC ☐ EDF ☐ Raw Data

	1. Relinquished By	Date	Time	1. Relinquished By	Date	Time
	[illegible] R. Allen	7-6-11	1400	[illegible]	9-7-11	1400
	2. Relinquished By	Date	Time	2. Relinquished By	Date	Time
	[illegible]	9-7-11	2100	[illegible]	9-7-11	2100
	3. Relinquished By	Date	Time	3. Relinquished By	Date	Time

BC Laboratories, Inc. – 4100 Atlas Court Bakersfield, Ca. 93308 661.327-4911 Fax: 661.327-1918

Page 2 of 2

11-14512

Page 1 of 2

Analysis and Reporting for the Biosolids Sample from the Morro Bay Wastewater Treatment Plant to be collected on 7 September 2011[a]

Analysis[b]	Method
Level IIA QC	
Waste Extraction Tests on copper and lead[e] **(CCR Title 22, Article 11)**	STLC (6010)
Moisture	EPA 160.3 or BC
Total Dissolved Solids (TDS)	Modified Waste Extraction Test (STLC) EPA 160.1
CAM-17 Metals and Boron[d]:	
Antimony (Sb)	6010
Arsenic (As)	6010
Barium (Ba)	6010
Beryllium (Be)	6010
Boron (B)	6010
Cadmium (Cd)	6010
Total Chromium (Cr)	6010
Cobalt (Co)	6010
Copper (Cu)	6010
Lead (Pb)	6010
Mercury (Hg)	7471
Molybdenum (Mo)	6010
Nickel (Ni)	6010
Selenium (Se)	6010
Silver (Ag)	6010
Thallium (Tl)	6010
Vanadium (Va)	6010
Zinc (Zn)	6010
Total Kjeldahl Nitrogen (TKN)[d]	EPA 351.2
Ammonia as N[d]	EPA 350.1
Nitrate as NO_3[d]	EPA 300.0 or 353.2

[a] Please provide preliminary (pre-QC) results in BC LabNet as soon as they become available.

[b] Prior to analysis, homogenize the composite sample in the laboratory to ensure uniform distribution of multiple subsamples in sample container(s)

[c] Other metals may need to be WET tested depending on their bulk concentrations (e.g. mercury). Ms. Luke (805.289.3926) will determine the need for additional WET tests based on the preliminary bulk-chemistry analysis of metals.

[d] Sample results to be reported on an '*as received*' and '*dry basis*.'

[e] Modified-extraction, using DI water to extract not citric acid

11-14512

Analysis[b]	Method
Total Phosphate[d]	EPA 365.4
Total Cyanide[d]	EPA 9012
pH	EPA 9045 or 150.1
Oil and Grease	EPA 1664
Semi-volatile Organics	EPA 8270/625
Pesticides and PCBs	EPA 8080/608
Volatile Organics – Low Level; report all EPA priority pollutants not reported under other methods (including **acrolein, acrylonitrile, and 2-chloroethyl vinyl ether**)	EPA 8240/624
Hexavalent Chromium (Total)[d,]	EPA 7196
Hexavalent Chromium[e]	Modified Waste Extraction Test (STLC) EPA 7196
Asbestos	EPA 600/R-94/134-(100.2)

Chain of Custody and Cooler Receipt Form for 1114512 Page 5 of 5

BC LABORATORIES INC. SAMPLE RECEIPT FORM Rev. No. 12 06/24/08 Page 1 Of 1

Submission #: 11-14512

SHIPPING INFORMATION
Federal Express ☐ UPS ☐ Hand Delivery ☐
BC Lab Field Service ☑ Other ☐ (Specify)_____

SHIPPING CONTAINER
Ice Chest ☑ None ☐
Box ☐ Other ☐ (Specify)_____

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.97 Container: pipe Thermometer ID: 177

Temperature: A 1.7 °C / C 2.0 °C

Date/Time 9-7-11 2115

Analyst Init JNW

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL PHYSICAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT AMBER										
8 OZ. JAR										
32 OZ. JAR	ABCD									
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										

Comments:_____
Sample Numbering Completed By: _____ Date/Time: 9/8/11 0737
A = Actual / C = Corrected

[H:\DOCS\WP80\LAB_DOCS\FORMS\SAMREC2.WPD]

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1114512-01	**COC Number:**	---	**Receive Date:**	09/07/2011 21:00
	Project Number:	---	**Sampling Date:**	09/06/2011 13:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MBWWTP Biosolids	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ND	mg/kg	0.015	0.00078	EPA-8080	ND		1
alpha-BHC	ND	ND	mg/kg	0.015	0.0042	EPA-8080	ND		1
beta-BHC	ND	ND	mg/kg	0.015	0.011	EPA-8080	ND		1
delta-BHC	ND	ND	mg/kg	0.015	0.0023	EPA-8080	ND		1
gamma-BHC (Lindane)	ND	ND	mg/kg	0.015	0.0075	EPA-8080	ND		1
Chlordane (Technical)	ND	ND	mg/kg	1.5	0.45	EPA-8080	ND		1
4,4'-DDD	ND	ND	mg/kg	0.015	0.0019	EPA-8080	ND		1
4,4'-DDE	ND	ND	mg/kg	0.015	0.0014	EPA-8080	ND		1
4,4'-DDT	ND	ND	mg/kg	0.015	0.00093	EPA-8080	ND		1
Dieldrin	ND	ND	mg/kg	0.015	0.00096	EPA-8080	ND		1
Endosulfan I	ND	ND	mg/kg	0.015	0.0026	EPA-8080	ND		1
Endosulfan II	ND	ND	mg/kg	0.015	0.0020	EPA-8080	ND		1
Endosulfan sulfate	ND	ND	mg/kg	0.015	0.0039	EPA-8080	ND		1
Endrin	ND	ND	mg/kg	0.015	0.0010	EPA-8080	ND		1
Endrin aldehyde	ND	ND	mg/kg	0.015	0.0018	EPA-8080	ND		1
Heptachlor	ND	ND	mg/kg	0.015	0.0078	EPA-8080	ND		1
Heptachlor epoxide	ND	ND	mg/kg	0.015	0.0045	EPA-8080	ND		1
Methoxychlor	ND	ND	mg/kg	0.015	0.0039	EPA-8080	ND		1
Toxaphene	ND	ND	mg/kg	1.5	0.22	EPA-8080	ND		1
PCB-1016	ND	ND	mg/kg	0.30	0.081	EPA-8080	ND		1
PCB-1221	ND	ND	mg/kg	0.30	0.15	EPA-8080	ND		1
PCB-1232	ND	ND	mg/kg	0.30	0.036	EPA-8080	ND		1
PCB-1242	ND	ND	mg/kg	0.30	0.049	EPA-8080	ND		1
PCB-1248	ND	ND	mg/kg	0.30	0.036	EPA-8080	ND		1
PCB-1254	ND	ND	mg/kg	0.30	0.023	EPA-8080	ND		1
PCB-1260	ND	ND	mg/kg	0.30	0.066	EPA-8080	ND		1
Total PCB's (Summation)	ND	ND	mg/kg	0.30	0.15	EPA-8080	ND		1
TCMX (Surrogate)	126	126	%	20 - 143 (LCL - UCL)		EPA-8080			1
Dibutyl chlorendate (Surrogate)	131	131	%	20 - 164 (LCL - UCL)		EPA-8080		V11	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8080	09/10/11	09/15/11 11:20	VH1	GC-1	30	BUI1005

Marine Research Specialists
3140 Telegraph Road, Suite A
Suite A
Ventura, CA 93003-3238

Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ND	mg/kg	0.12	0.032	EPA-8240	ND	A10,Z1	1
Bromodichloromethane	ND	ND	mg/kg	0.12	0.021	EPA-8240	ND	A10,Z1	1
Bromoform	ND	ND	mg/kg	0.12	0.038	EPA-8240	ND	A10,Z1	1
Bromomethane	ND	ND	mg/kg	0.12	0.040	EPA-8240	ND	A10,Z1	1
Carbon tetrachloride	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
Chlorobenzene	ND	ND	mg/kg	0.12	0.032	EPA-8240	ND	A10,Z1	1
Chloroethane	ND	ND	mg/kg	0.12	0.035	EPA-8240	ND	A10,Z1	1
Chloroform	ND	ND	mg/kg	0.12	0.016	EPA-8240	ND	A10,Z1	1
Chloromethane	ND	ND	mg/kg	0.12	0.035	EPA-8240	ND	A10,Z1	1
Dibromochloromethane	ND	ND	mg/kg	0.12	0.025	EPA-8240	ND	A10,Z1	1
1,2-Dichlorobenzene	ND	ND	mg/kg	0.12	0.020	EPA-8240	ND	A10,Z1	1
1,3-Dichlorobenzene	ND	ND	mg/kg	0.12	0.035	EPA-8240	ND	A10,Z1	1
1,4-Dichlorobenzene	ND	ND	mg/kg	0.12	0.038	EPA-8240	ND	A10,Z1	1
1,1-Dichloroethane	ND	ND	mg/kg	0.12	0.035	EPA-8240	ND	A10,Z1	1
1,2-Dichloroethane	ND	ND	mg/kg	0.12	0.021	EPA-8240	ND	A10,Z1	1
1,1-Dichloroethene	ND	ND	mg/kg	0.12	0.030	EPA-8240	ND	A10,Z1	1
trans-1,2-Dichloroethene	ND	ND	mg/kg	0.12	0.035	EPA-8240	ND	A10,Z1	1
1,2-Dichloropropane	ND	ND	mg/kg	0.12	0.020	EPA-8240	ND	A10,Z1	1
cis-1,3-Dichloropropene	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
trans-1,3-Dichloropropene	ND	ND	mg/kg	0.12	0.030	EPA-8240	ND	A10,Z1	1
Ethylbenzene	ND	ND	mg/kg	0.12	0.038	EPA-8240	ND	A10,Z1	1
Methylene chloride	ND	ND	mg/kg	0.25	0.060	EPA-8240	ND	A10,Z1	1
Methyl t-butyl ether	ND	ND	mg/kg	0.12	0.012	EPA-8240	ND	A10,Z1	1
1,1,2,2-Tetrachloroethane	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
Tetrachloroethene	ND	ND	mg/kg	0.12	0.032	EPA-8240	ND	A10,Z1	1
Toluene	0.060	0.050	**mg/kg**	**0.12**	**0.030**	**EPA-8240**	ND	**J,A10,Z1**	1
1,1,1-Trichloroethane	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
1,1,2-Trichloroethane	ND	ND	mg/kg	0.12	0.019	EPA-8240	ND	A10,Z1	1
Trichloroethene	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
Trichlorofluoromethane	ND	ND	mg/kg	0.12	0.028	EPA-8240	ND	A10,Z1	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	mg/kg	0.12	0.032	EPA-8240	ND	A10,Z1	1
Vinyl chloride	ND	ND	mg/kg	0.12	0.040	EPA-8240	ND	A10,Z1	1

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Xylenes	ND	ND	mg/kg	0.25	0.085	EPA-8240	ND	A10,Z1	1
Acrolein	ND	ND	mg/kg	1.2	0.18	EPA-8240	ND	A10,Z1	1
Acrylonitrile	ND	ND	mg/kg	0.50	0.12	EPA-8240	ND	A10,Z1	1
1,2-Dichloroethane-d4 (Surrogate)	107	107	%	70 - 121 (LCL - UCL)		EPA-8240			1
Toluene-d8 (Surrogate)	103	103	%	81 - 117 (LCL - UCL)		EPA-8240			1
4-Bromofluorobenzene (Surrogate)	106	106	%	74 - 121 (LCL - UCL)		EPA-8240			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8240	09/12/11	09/19/11 17:19	ADC	MS-V2	25	BUI0717

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Acenaphthylene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Aldrin	ND	ND	mg/kg	3.0	0.72	EPA-8270C	ND	A10	1
Aniline	ND	ND	mg/kg	6.0	1.6	EPA-8270C	ND	A10	1
Anthracene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Benzidine	ND	ND	mg/kg	90	6.6	EPA-8270C	ND	A10	1
Benzo[a]anthracene	ND	ND	mg/kg	3.0	0.36	EPA-8270C	ND	A10	1
Benzo[b]fluoranthene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Benzo[k]fluoranthene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Benzo[a]pyrene	ND	ND	mg/kg	3.0	0.45	EPA-8270C	ND	A10	1
Benzo[g,h,i]perylene	ND	ND	mg/kg	3.0	1.7	EPA-8270C	ND	A10	1
Benzoic acid	25	20	**mg/kg**	**15**	**2.0**	**EPA-8270C**	ND	**A10**	1
Benzyl alcohol	3.0	2.5	**mg/kg**	**3.0**	**0.54**	**EPA-8270C**	ND	**J,A10**	1
Benzyl butyl phthalate	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
alpha-BHC	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
beta-BHC	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
delta-BHC	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
bis(2-Chloroethoxy)methane	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
bis(2-Chloroethyl) ether	ND	ND	mg/kg	3.0	0.48	EPA-8270C	ND	A10	1
bis(2-Chloroisopropyl)ether	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
bis(2-Ethylhexyl)phthalate	43	35	**mg/kg**	**6.0**	**1.3**	**EPA-8270C**	ND	**A10**	1
4-Bromophenyl phenyl ether	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
4-Chloroaniline	ND	ND	mg/kg	3.0	0.81	EPA-8270C	ND	A10	1
2-Chloronaphthalene	ND	ND	mg/kg	3.0	0.60	EPA-8270C	ND	A10	1
4-Chlorophenyl phenyl ether	ND	ND	mg/kg	3.0	0.45	EPA-8270C	ND	A10	1
Chrysene	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Dibenzo[a,h]anthracene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Dibenzofuran	ND	ND	mg/kg	3.0	0.60	EPA-8270C	ND	A10	1

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
1,2-Dichlorobenzene	ND	ND	mg/kg	3.0	0.60	EPA-8270C	ND	A10	1
1,3-Dichlorobenzene	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
1,4-Dichlorobenzene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
3,3-Dichlorobenzidine	ND	ND	mg/kg	6.0	0.20	EPA-8270C	ND	A10	1
Dieldrin	ND	ND	mg/kg	3.0	0.93	EPA-8270C	ND	A10	1
Diethyl phthalate	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Dimethyl phthalate	ND	ND	mg/kg	3.0	0.60	EPA-8270C	ND	A10	1
Di-n-butyl phthalate	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
2,4-Dinitrotoluene	ND	ND	mg/kg	3.0	0.66	EPA-8270C	ND	A10	1
2,6-Dinitrotoluene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Di-n-octyl phthalate	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
1,2-Diphenylhydrazine	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Endosulfan I	ND	ND	mg/kg	6.0	0.60	EPA-8270C	ND	A10	1
Endosulfan II	ND	ND	mg/kg	6.0	0.63	EPA-8270C	ND	A10	1
Endosulfan sulfate	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
Endrin	ND	ND	mg/kg	6.0	0.75	EPA-8270C	ND	A10	1
Endrin aldehyde	ND	ND	mg/kg	15	0.66	EPA-8270C	ND	A10	1
Fluoranthene	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
Fluorene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Heptachlor	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
Heptachlor epoxide	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
Hexachlorobenzene	ND	ND	mg/kg	3.0	0.48	EPA-8270C	ND	A10	1
Hexachlorobutadiene	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
Hexachlorocyclopentadiene	ND	ND	mg/kg	3.0	0.57	EPA-8270C	ND	A10	1
Hexachloroethane	ND	ND	mg/kg	3.0	0.60	EPA-8270C	ND	A10	1
Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	3.0	2.2	EPA-8270C	ND	A10	1
Isophorone	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
2-Methylnaphthalene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Naphthalene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
2-Naphthylamine	ND	ND	mg/kg	90	4.8	EPA-8270C	ND	A10	1
2-Nitroaniline	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
3-Nitroaniline	ND	ND	mg/kg	6.0	0.45	EPA-8270C	ND	A10	1

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
4-Nitroaniline	ND	ND	mg/kg	6.0	0.75	EPA-8270C	ND	A10	1
Nitrobenzene	ND	ND	mg/kg	3.0	0.45	EPA-8270C	ND	A10	1
N-Nitrosodimethylamine	ND	ND	mg/kg	3.0	1.1	EPA-8270C	ND	A10	1
N-Nitrosodi-N-propylamine	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
N-Nitrosodiphenylamine	ND	ND	mg/kg	3.0	0.63	EPA-8270C	ND	A10	1
Phenanthrene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
Pyrene	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
1,2,4-Trichlorobenzene	ND	ND	mg/kg	3.0	0.54	EPA-8270C	ND	A10	1
4-Chloro-3-methylphenol	ND	ND	mg/kg	6.0	0.66	EPA-8270C	ND	A10	1
2-Chlorophenol	ND	ND	mg/kg	3.0	0.48	EPA-8270C	ND	A10	1
2,4-Dichlorophenol	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
2,4-Dimethylphenol	ND	ND	mg/kg	3.0	1.0	EPA-8270C	ND	A10	1
4,6-Dinitro-2-methylphenol	ND	ND	mg/kg	15	0.36	EPA-8270C	ND	A10	1
2,4-Dinitrophenol	ND	ND	mg/kg	15	0.23	EPA-8270C	ND	A10	1
2-Methylphenol	ND	ND	mg/kg	3.0	0.51	EPA-8270C	ND	A10	1
3- & 4-Methylphenol	5.0	4.1	**mg/kg**	**6.0**	**0.99**	**EPA-8270C**	ND	**J,A10**	1
2-Nitrophenol	ND	ND	mg/kg	3.0	0.48	EPA-8270C	ND	A10	1
4-Nitrophenol	ND	ND	mg/kg	6.0	0.54	EPA-8270C	ND	A10	1
Pentachlorophenol	ND	ND	mg/kg	6.0	0.39	EPA-8270C	ND	A10	1
Phenol	ND	ND	mg/kg	3.0	0.48	EPA-8270C	ND	A10	1
2,4,5-Trichlorophenol	ND	ND	mg/kg	6.0	0.54	EPA-8270C	ND	A10	1
2,4,6-Trichlorophenol	ND	ND	mg/kg	6.0	0.51	EPA-8270C	ND	A10	1
2-Fluorophenol (Surrogate)	107	107	%	28 - 144 (LCL - UCL)		EPA-8270C		A10	1
Phenol-d5 (Surrogate)	106	106	%	36 - 136 (LCL - UCL)		EPA-8270C		A10	1
Nitrobenzene-d5 (Surrogate)	113	113	%	31 - 135 (LCL - UCL)		EPA-8270C		A10	1
2-Fluorobiphenyl (Surrogate)	106	106	%	20 - 140 (LCL - UCL)		EPA-8270C		A10	1
2,4,6-Tribromophenol (Surrogate)	115	115	%	20 - 150 (LCL - UCL)		EPA-8270C		A10	1
p-Terphenyl-d14 (Surrogate)	130	130	%	10 - 150 (LCL - UCL)		EPA-8270C		A10	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8270C	09/10/11	09/14/11 21:55	SKC	MS-B1	30	BUI0871

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	18000	15000	**mg/kg**	**71**	**23**	**EPA-1664HEM**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-1664HEM	09/15/11	09/15/11 08:30	JAK	MAN-SV	1.429	BUI1040

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Moisture	0	17.3	**%**	**0.05**	**0.05**	**Calc**	ND		1
Total Cyanide	3.1	2.6	**mg/kg**	**0.50**	**0.13**	**EPA-9012**	ND		2
pH	6.28	6.28	**pH Units**	**0.05**	**0.05**	**EPA-9045**		**pH1:1**	3
pH Measurement Temperature	24.6	24.6	**C**	**0.1**	**0.1**	**EPA-9045**			3
Nitrate as NO3	150	130	**mg/kg**	**22**	**6.0**	**EPA-300.0**	ND	**A01**	4
Total Kjeldahl Nitrogen	41000	34000	**mg/kg**	**2000**	**750**	**EPA-351.2**	ND	**A01**	5
Ammonia as N	9800	8100	**mg/kg**	**1000**	**500**	**EPA-350.1**	ND	**A01**	6
Total Phosphate	82000	68000	**mg/kg**	**3000**	**1900**	**EPA-365.4**	ND	**A01**	7
Solids	100	82.7	**%**	**0.05**	**0.05**	**SM-2540G**			8

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Calc	09/09/11	09/20/11 14:55	TMS	Calc	1	BUI0578
2	EPA-9012	09/09/11	09/09/11 15:51	TDC	KONE-1	1	BUI0621
3	EPA-9045	09/13/11	09/13/11 15:50	RML	B360	1	BUI0881
4	EPA-300.0	09/16/11	09/16/11 22:10	LRS	IC-4	5	BUI1076
5	EPA-351.2	09/15/11	09/16/11 10:44	SDU	SC-1	48.077	BUI0935
6	EPA-350.1	09/13/11	09/14/11 16:30	SDU	SC-1	100	BUI0781
7	EPA-365.4	09/21/11	09/23/11 12:18	SDU	SC-1	96.154	BUI1378
8	SM-2540G	09/12/11	09/12/11 15:00	JDK2	MANUAL	1	BUI0776

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium		ND	mg/L	0.20	0.070	EPA-7196	ND		1
Total Dissolved Solids @ 180 C		6100	**mg/L**	**200**	**200**	**EPA-160.1**	ND		2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-7196	09/15/11	09/15/11 13:53	TDC	KONE-1	1	BUI1002
2	EPA-160.1	09/22/11	09/22/11 08:30	JES2	MANUAL	20	BUI1534

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

WET Test (STLC)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Copper		6.9	**mg/L**	**0.10**	**0.012**	**EPA-6010B**	0.027		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	09/16/11	09/16/11 21:47	JRG	PE-OP2	1	BUI1105

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

BCL Sample ID: 1114512-01 | **Client Sample Name:** MBWWTP Biosolids, 9/6/2011 1:00:00PM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Antimony	2.3	1.9	**mg/kg**	**5.0**	**0.50**	**EPA-6010B**	ND	**J**	1
Arsenic	4.1	3.4	**mg/kg**	**1.0**	**0.38**	**EPA-6010B**	ND		1
Barium	350	290	**mg/kg**	**0.50**	**0.077**	**EPA-6010B**	ND		1
Beryllium	0.22	0.18	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND	**J**	1
Cadmium	3.3	2.7	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND		1
Chromium	45	38	**mg/kg**	**0.50**	**0.060**	**EPA-6010B**	ND		1
Total Hexavalent Chromium	0.36	0.30	**mg/kg**	**1.0**	**0.30**	**EPA-7199**	ND	**J**	2
Cobalt	4.2	3.4	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Copper	580	480	**mg/kg**	**1.0**	**0.12**	**EPA-6010B**	ND		1
Lead	44	36	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Mercury	1.3	1.1	**mg/kg**	**0.16**	**0.024**	**EPA-7471A**	ND		3
Molybdenum	23	19	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Nickel	43	36	**mg/kg**	**0.50**	**0.058**	**EPA-6010B**	ND		1
Selenium	8.0	6.7	**mg/kg**	**1.0**	**0.51**	**EPA-6010B**	ND		1
Silver	3.7	3.0	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND		1
Thallium	ND	ND	mg/kg	5.0	0.73	EPA-6010B	ND		1
Vanadium	24	20	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND		1
Zinc	1300	1100	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	0.32		1
Boron	18	15	**mg/kg**	**5.0**	**0.50**	**EPA-6010B**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	09/09/11	09/12/11 08:38	ARD	PE-OP2	1	BUI0601
2	EPA-7199	09/15/11	09/16/11 11:23	LD1	IC-4	1	BUI1023
3	EPA-7471A	09/12/11	09/13/11 10:46	MEV	CETAC1	0.992	BUI0719

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI1005						
Aldrin	BUI1005-BLK1	ND	mg/kg	0.00050	0.000026	
alpha-BHC	BUI1005-BLK1	ND	mg/kg	0.00050	0.00014	
beta-BHC	BUI1005-BLK1	ND	mg/kg	0.00050	0.00038	
delta-BHC	BUI1005-BLK1	ND	mg/kg	0.00050	0.000076	
gamma-BHC (Lindane)	BUI1005-BLK1	ND	mg/kg	0.00050	0.00025	
Chlordane (Technical)	BUI1005-BLK1	ND	mg/kg	0.050	0.015	
4,4'-DDD	BUI1005-BLK1	ND	mg/kg	0.00050	0.000063	
4,4'-DDE	BUI1005-BLK1	ND	mg/kg	0.00050	0.000045	
4,4'-DDT	BUI1005-BLK1	ND	mg/kg	0.00050	0.000031	
Dieldrin	BUI1005-BLK1	ND	mg/kg	0.00050	0.000032	
Endosulfan I	BUI1005-BLK1	ND	mg/kg	0.00050	0.000086	
Endosulfan II	BUI1005-BLK1	ND	mg/kg	0.00050	0.000066	
Endosulfan sulfate	BUI1005-BLK1	ND	mg/kg	0.00050	0.00013	
Endrin	BUI1005-BLK1	ND	mg/kg	0.00050	0.000035	
Endrin aldehyde	BUI1005-BLK1	ND	mg/kg	0.00050	0.000061	
Heptachlor	BUI1005-BLK1	ND	mg/kg	0.00050	0.00026	
Heptachlor epoxide	BUI1005-BLK1	ND	mg/kg	0.00050	0.00015	
Methoxychlor	BUI1005-BLK1	ND	mg/kg	0.00050	0.00013	
Toxaphene	BUI1005-BLK1	ND	mg/kg	0.050	0.0074	
PCB-1016	BUI1005-BLK1	ND	mg/kg	0.010	0.0027	
PCB-1221	BUI1005-BLK1	ND	mg/kg	0.010	0.0050	
PCB-1232	BUI1005-BLK1	ND	mg/kg	0.010	0.0012	
PCB-1242	BUI1005-BLK1	ND	mg/kg	0.010	0.0016	
PCB-1248	BUI1005-BLK1	ND	mg/kg	0.010	0.0012	
PCB-1254	BUI1005-BLK1	ND	mg/kg	0.010	0.00078	
PCB-1260	BUI1005-BLK1	ND	mg/kg	0.010	0.0022	
Total PCB's (Summation)	BUI1005-BLK1	ND	mg/kg	0.010	0.0050	
TCMX (Surrogate)	BUI1005-BLK1	88.7	%	20 - 143 (LCL - UCL)		
Dibutyl chlorendate (Surrogate)	BUI1005-BLK1	108	%	20 - 164 (LCL - UCL)		

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Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI1005										
Aldrin	BUI1005-BS1	LCS	0.0043721	0.0049180	mg/kg	88.9		70 - 130		
gamma-BHC (Lindane)	BUI1005-BS1	LCS	0.0045472	0.0049180	mg/kg	92.5		40 - 140		
4,4'-DDT	BUI1005-BS1	LCS	0.0048407	0.0049180	mg/kg	98.4		60 - 130		
Dieldrin	BUI1005-BS1	LCS	0.0046407	0.0049180	mg/kg	94.4		70 - 130		
Endrin	BUI1005-BS1	LCS	0.0049738	0.0049180	mg/kg	101		60 - 140		
Heptachlor	BUI1005-BS1	LCS	0.0045262	0.0049180	mg/kg	92.0		70 - 130		
TCMX (Surrogate)	BUI1005-BS1	LCS	0.0077957	0.0098361	mg/kg	79.3		20 - 143		
Dibutyl chlorendate (Surrogate)	BUI1005-BS1	LCS	0.025270	0.024590	mg/kg	103		20 - 164		

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Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI1005	Used client sample: N										
Aldrin	MS	1114151-01	ND	0.0045701	0.0049342	mg/kg		92.6		30 - 140	
	MSD	1114151-01	ND	0.0047106	0.0049505	mg/kg	3.0	95.2	30	30 - 140	
gamma-BHC (Lindane)	MS	1114151-01	ND	0.0044053	0.0049342	mg/kg		89.3		30 - 142	
	MSD	1114151-01	ND	0.0046525	0.0049505	mg/kg	5.5	94.0	30	30 - 142	
4,4'-DDT	MS	1114151-01	ND	0.0051112	0.0049342	mg/kg		104		30 - 140	
	MSD	1114151-01	ND	0.0052343	0.0049505	mg/kg	2.4	106	30	30 - 140	
Dieldrin	MS	1114151-01	ND	0.0049510	0.0049342	mg/kg		100		40 - 135	
	MSD	1114151-01	ND	0.0050574	0.0049505	mg/kg	2.1	102	20	40 - 135	
Endrin	MS	1114151-01	ND	0.0053062	0.0049342	mg/kg		108		30 - 150	
	MSD	1114151-01	ND	0.0053564	0.0049505	mg/kg	0.9	108	20	30 - 150	
Heptachlor	MS	1114151-01	ND	0.0046191	0.0049342	mg/kg		93.6		40 - 140	
	MSD	1114151-01	ND	0.0048508	0.0049505	mg/kg	4.9	98.0	30	40 - 140	
TCMX (Surrogate)	MS	1114151-01	ND	0.0086069	0.0098684	mg/kg		87.2		20 - 143	
	MSD	1114151-01	ND	0.0083380	0.0099010	mg/kg	3.2	84.2		20 - 143	
Dibutyl chlorendate (Surrogate)	MS	1114151-01	ND	0.024115	0.024671	mg/kg		97.7		20 - 164	
	MSD	1114151-01	ND	0.025097	0.024752	mg/kg	4.0	101		20 - 164	

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0717						
Benzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0013	
Bromodichloromethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.00084	
Bromoform	BUI0717-BLK1	ND	mg/kg	0.0050	0.0015	
Bromomethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0016	
Carbon tetrachloride	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
Chlorobenzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0013	
Chloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0014	
Chloroform	BUI0717-BLK1	ND	mg/kg	0.0050	0.00063	
Chloromethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0014	
Dibromochloromethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.00099	
1,2-Dichlorobenzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.00081	
1,3-Dichlorobenzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0014	
1,4-Dichlorobenzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0015	
1,1-Dichloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.00085	
1,1-Dichloroethene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0012	
trans-1,2-Dichloroethene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloropropane	BUI0717-BLK1	ND	mg/kg	0.0050	0.00081	
cis-1,3-Dichloropropene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
trans-1,3-Dichloropropene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0012	
Ethylbenzene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0015	
Methylene chloride	BUI0717-BLK1	ND	mg/kg	0.010	0.0024	
Methyl t-butyl ether	BUI0717-BLK1	ND	mg/kg	0.0050	0.00050	
1,1,2,2-Tetrachloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
Tetrachloroethene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0013	
Toluene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0012	
1,1,1-Trichloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.00077	
Trichloroethene	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
Trichlorofluoromethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloro-1,2,2-trifluoroethane	BUI0717-BLK1	ND	mg/kg	0.0050	0.0013	
Vinyl chloride	BUI0717-BLK1	ND	mg/kg	0.0050	0.0016	
Total Xylenes	BUI0717-BLK1	ND	mg/kg	0.010	0.0034	
Acrolein	BUI0717-BLK1	ND	mg/kg	0.050	0.0073	

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0717						
Acrylonitrile	BUI0717-BLK1	ND	mg/kg	0.020	0.0047	
1,2-Dichloroethane-d4 (Surrogate)	BUI0717-BLK1	106	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	BUI0717-BLK1	100	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BUI0717-BLK1	96.0	%	74 - 121 (LCL - UCL)		

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Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI0717										
Benzene	BUI0717-BS1	LCS	0.12748	0.12500	mg/kg	102		70 - 130		
Bromodichloromethane	BUI0717-BS1	LCS	0.13330	0.12500	mg/kg	107		70 - 130		
Chlorobenzene	BUI0717-BS1	LCS	0.12203	0.12500	mg/kg	97.6		70 - 130		
Chloroethane	BUI0717-BS1	LCS	0.13910	0.12500	mg/kg	111		70 - 130		
1,4-Dichlorobenzene	BUI0717-BS1	LCS	0.11696	0.12500	mg/kg	93.6		70 - 130		
1,1-Dichloroethane	BUI0717-BS1	LCS	0.13202	0.12500	mg/kg	106		70 - 130		
1,1-Dichloroethene	BUI0717-BS1	LCS	0.12692	0.12500	mg/kg	102		70 - 130		
Toluene	BUI0717-BS1	LCS	0.12748	0.12500	mg/kg	102		70 - 130		
Trichloroethene	BUI0717-BS1	LCS	0.13411	0.12500	mg/kg	107		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BUI0717-BS1	LCS	0.052275	0.050000	mg/kg	105		70 - 121		
Toluene-d8 (Surrogate)	BUI0717-BS1	LCS	0.051172	0.050000	mg/kg	102		81 - 117		
4-Bromofluorobenzene (Surrogate)	BUI0717-BS1	LCS	0.049469	0.050000	mg/kg	98.9		74 - 121		

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Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0717	Used client sample: N										
Benzene	MS	1113168-72	ND	0.12653	0.12500	mg/kg		101		70 - 130	
	MSD	1113168-72	ND	0.12101	0.12500	mg/kg	4.5	96.8	20	70 - 130	
Bromodichloromethane	MS	1113168-72	ND	0.12829	0.12500	mg/kg		103		70 - 130	
	MSD	1113168-72	ND	0.12709	0.12500	mg/kg	0.9	102	20	70 - 130	
Chlorobenzene	MS	1113168-72	ND	0.12174	0.12500	mg/kg		97.4		70 - 130	
	MSD	1113168-72	ND	0.12013	0.12500	mg/kg	1.3	96.1	20	70 - 130	
Chloroethane	MS	1113168-72	ND	0.14039	0.12500	mg/kg		112		70 - 130	
	MSD	1113168-72	ND	0.13118	0.12500	mg/kg	6.8	105	20	70 - 130	
1,4-Dichlorobenzene	MS	1113168-72	ND	0.11004	0.12500	mg/kg		88.0		70 - 130	
	MSD	1113168-72	ND	0.11579	0.12500	mg/kg	5.1	92.6	20	70 - 130	
1,1-Dichloroethane	MS	1113168-72	ND	0.13182	0.12500	mg/kg		105		70 - 130	
	MSD	1113168-72	ND	0.12590	0.12500	mg/kg	4.6	101	20	70 - 130	
1,1-Dichloroethene	MS	1113168-72	ND	0.12575	0.12500	mg/kg		101		70 - 130	
	MSD	1113168-72	ND	0.12120	0.12500	mg/kg	3.7	97.0	20	70 - 130	
Toluene	MS	1113168-72	ND	0.12131	0.12500	mg/kg		97.0		70 - 130	
	MSD	1113168-72	ND	0.12115	0.12500	mg/kg	0.1	96.9	20	70 - 130	
Trichloroethene	MS	1113168-72	ND	0.12939	0.12500	mg/kg		104		70 - 130	
	MSD	1113168-72	ND	0.12697	0.12500	mg/kg	1.9	102	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1113168-72	ND	0.051954	0.050000	mg/kg		104		70 - 121	
	MSD	1113168-72	ND	0.049436	0.050000	mg/kg	5.0	98.9		70 - 121	
Toluene-d8 (Surrogate)	MS	1113168-72	ND	0.050662	0.050000	mg/kg		101		81 - 117	
	MSD	1113168-72	ND	0.051091	0.050000	mg/kg	0.8	102		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1113168-72	ND	0.050492	0.050000	mg/kg		101		74 - 121	
	MSD	1113168-72	ND	0.050309	0.050000	mg/kg	0.4	101		74 - 121	

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Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0871						
Acenaphthene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Acenaphthylene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Aldrin	BUI0871-BLK1	ND	mg/kg	0.10	0.024	
Aniline	BUI0871-BLK1	ND	mg/kg	0.20	0.053	
Anthracene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Benzidine	BUI0871-BLK1	ND	mg/kg	3.0	0.22	
Benzo[a]anthracene	BUI0871-BLK1	ND	mg/kg	0.10	0.012	
Benzo[b]fluoranthene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Benzo[k]fluoranthene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Benzo[a]pyrene	BUI0871-BLK1	ND	mg/kg	0.10	0.015	
Benzo[g,h,i]perylene	BUI0871-BLK1	ND	mg/kg	0.10	0.056	
Benzoic acid	BUI0871-BLK1	ND	mg/kg	0.50	0.067	
Benzyl alcohol	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Benzyl butyl phthalate	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
alpha-BHC	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
beta-BHC	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
delta-BHC	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
gamma-BHC (Lindane)	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethoxy)methane	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethyl) ether	BUI0871-BLK1	ND	mg/kg	0.10	0.016	
bis(2-Chloroisopropyl)ether	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
bis(2-Ethylhexyl)phthalate	BUI0871-BLK1	ND	mg/kg	0.20	0.043	
4-Bromophenyl phenyl ether	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
4-Chloroaniline	BUI0871-BLK1	ND	mg/kg	0.10	0.027	
2-Chloronaphthalene	BUI0871-BLK1	ND	mg/kg	0.10	0.020	
4-Chlorophenyl phenyl ether	BUI0871-BLK1	ND	mg/kg	0.10	0.015	
Chrysene	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDD	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDE	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDT	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Dibenzo[a,h]anthracene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Dibenzofuran	BUI0871-BLK1	ND	mg/kg	0.10	0.020	
1,2-Dichlorobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.020	
1,3-Dichlorobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.021	

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0871						
1,4-Dichlorobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
3,3-Dichlorobenzidine	BUI0871-BLK1	ND	mg/kg	0.20	0.0067	
Dieldrin	BUI0871-BLK1	ND	mg/kg	0.10	0.031	
Diethyl phthalate	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Dimethyl phthalate	BUI0871-BLK1	ND	mg/kg	0.10	0.020	
Di-n-butyl phthalate	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
2,4-Dinitrotoluene	BUI0871-BLK1	ND	mg/kg	0.10	0.022	
2,6-Dinitrotoluene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Di-n-octyl phthalate	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
1,2-Diphenylhydrazine	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Endosulfan I	BUI0871-BLK1	ND	mg/kg	0.20	0.020	
Endosulfan II	BUI0871-BLK1	ND	mg/kg	0.20	0.021	
Endosulfan sulfate	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
Endrin	BUI0871-BLK1	ND	mg/kg	0.20	0.025	
Endrin aldehyde	BUI0871-BLK1	ND	mg/kg	0.50	0.022	
Fluoranthene	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
Fluorene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Heptachlor	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
Heptachlor epoxide	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.016	
Hexachlorobutadiene	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorocyclopentadiene	BUI0871-BLK1	ND	mg/kg	0.10	0.019	
Hexachloroethane	BUI0871-BLK1	ND	mg/kg	0.10	0.020	
Indeno[1,2,3-cd]pyrene	BUI0871-BLK1	ND	mg/kg	0.10	0.072	
Isophorone	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
2-Methylnaphthalene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Naphthalene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
2-Naphthylamine	BUI0871-BLK1	ND	mg/kg	3.0	0.16	
2-Nitroaniline	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
3-Nitroaniline	BUI0871-BLK1	ND	mg/kg	0.20	0.015	
4-Nitroaniline	BUI0871-BLK1	ND	mg/kg	0.20	0.025	
Nitrobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.015	
N-Nitrosodimethylamine	BUI0871-BLK1	ND	mg/kg	0.10	0.037	
N-Nitrosodi-N-propylamine	BUI0871-BLK1	ND	mg/kg	0.10	0.021	

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0871						
N-Nitrosodiphenylamine	BUI0871-BLK1	ND	mg/kg	0.10	0.021	
Phenanthrene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
Pyrene	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
1,2,4-Trichlorobenzene	BUI0871-BLK1	ND	mg/kg	0.10	0.018	
4-Chloro-3-methylphenol	BUI0871-BLK1	ND	mg/kg	0.20	0.022	
2-Chlorophenol	BUI0871-BLK1	ND	mg/kg	0.10	0.016	
2,4-Dichlorophenol	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
2,4-Dimethylphenol	BUI0871-BLK1	ND	mg/kg	0.10	0.035	
4,6-Dinitro-2-methylphenol	BUI0871-BLK1	ND	mg/kg	0.50	0.012	
2,4-Dinitrophenol	BUI0871-BLK1	ND	mg/kg	0.50	0.0077	
2-Methylphenol	BUI0871-BLK1	ND	mg/kg	0.10	0.017	
3- & 4-Methylphenol	BUI0871-BLK1	ND	mg/kg	0.20	0.033	
2-Nitrophenol	BUI0871-BLK1	ND	mg/kg	0.10	0.016	
4-Nitrophenol	BUI0871-BLK1	ND	mg/kg	0.20	0.018	
Pentachlorophenol	BUI0871-BLK1	ND	mg/kg	0.20	0.013	
Phenol	BUI0871-BLK1	ND	mg/kg	0.10	0.016	
2,4,5-Trichlorophenol	BUI0871-BLK1	ND	mg/kg	0.20	0.018	
2,4,6-Trichlorophenol	BUI0871-BLK1	ND	mg/kg	0.20	0.017	
2-Fluorophenol (Surrogate)	BUI0871-BLK1	69.0	%	28 - 144 (LCL - UCL)		
Phenol-d5 (Surrogate)	BUI0871-BLK1	96.1	%	36 - 136 (LCL - UCL)		
Nitrobenzene-d5 (Surrogate)	BUI0871-BLK1	99.7	%	31 - 135 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	BUI0871-BLK1	80.4	%	20 - 140 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	BUI0871-BLK1	71.5	%	20 - 150 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	BUI0871-BLK1	109	%	10 - 150 (LCL - UCL)		

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI0871										
Acenaphthene	BUI0871-BS1	LCS	1.2592	1.6667	mg/kg	75.6		40 - 156		
1,4-Dichlorobenzene	BUI0871-BS1	LCS	1.2898	1.6667	mg/kg	77.4		35 - 153		
2,4-Dinitrotoluene	BUI0871-BS1	LCS	1.2592	1.6667	mg/kg	75.6		30 - 150		
Hexachlorobenzene	BUI0871-BS1	LCS	1.3144	1.6667	mg/kg	78.9		45 - 143		
Hexachlorobutadiene	BUI0871-BS1	LCS	1.2361	1.6667	mg/kg	74.2		29 - 144		
Hexachloroethane	BUI0871-BS1	LCS	1.3018	1.6667	mg/kg	78.1		39 - 151		
Nitrobenzene	BUI0871-BS1	LCS	1.2319	1.6667	mg/kg	73.9		31 - 143		
N-Nitrosodi-N-propylamine	BUI0871-BS1	LCS	1.2680	1.6667	mg/kg	76.1		45 - 135		
Pyrene	BUI0871-BS1	LCS	1.5947	1.6667	mg/kg	95.7		40 - 150		
1,2,4-Trichlorobenzene	BUI0871-BS1	LCS	1.3646	1.6667	mg/kg	81.9		31 - 166		
4-Chloro-3-methylphenol	BUI0871-BS1	LCS	1.3978	1.6667	mg/kg	83.9		46 - 134		
2-Chlorophenol	BUI0871-BS1	LCS	1.3149	1.6667	mg/kg	78.9		31 - 134		
2-Methylphenol	BUI0871-BS1	LCS	1.6785	1.6667	mg/kg	101		37 - 148		
3- & 4-Methylphenol	BUI0871-BS1	LCS	3.0957	3.3333	mg/kg	92.9		41 - 113		
4-Nitrophenol	BUI0871-BS1	LCS	1.0284	1.6667	mg/kg	61.7		21 - 144		
Pentachlorophenol	BUI0871-BS1	LCS	0.66767	1.6667	mg/kg	40.1		21 - 126		
Phenol	BUI0871-BS1	LCS	1.4917	1.6667	mg/kg	89.5		40 - 117		
2,4,6-Trichlorophenol	BUI0871-BS1	LCS	1.2481	1.6667	mg/kg	74.9		36 - 139		
2-Fluorophenol (Surrogate)	BUI0871-BS1	LCS	2.4134	2.6667	mg/kg	90.5		28 - 144		
Phenol-d5 (Surrogate)	BUI0871-BS1	LCS	2.4695	2.6667	mg/kg	92.6		36 - 136		
Nitrobenzene-d5 (Surrogate)	BUI0871-BS1	LCS	2.5978	2.6667	mg/kg	97.4		31 - 135		
2-Fluorobiphenyl (Surrogate)	BUI0871-BS1	LCS	2.2697	2.6667	mg/kg	85.1		20 - 140		
2,4,6-Tribromophenol (Surrogate)	BUI0871-BS1	LCS	2.2368	2.6667	mg/kg	83.9		20 - 150		
p-Terphenyl-d14 (Surrogate)	BUI0871-BS1	LCS	1.4095	1.3333	mg/kg	106		10 - 150		

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0871	Used client sample: N										
Acenaphthene	MS	1114192-11	ND	1.2040	1.6611	mg/kg		72.5		26 - 166	
	MSD	1114192-11	ND	0.94257	1.6892	mg/kg	24.4	55.8	30	26 - 166	
1,4-Dichlorobenzene	MS	1114192-11	ND	1.2005	1.6611	mg/kg		72.3		20 - 164	
	MSD	1114192-11	ND	1.0648	1.6892	mg/kg	12.0	63.0	30	20 - 164	
2,4-Dinitrotoluene	MS	1114192-11	ND	1.1665	1.6611	mg/kg		70.2		30 - 200	
	MSD	1114192-11	ND	1.0364	1.6892	mg/kg	11.8	61.4	30	30 - 200	
Hexachlorobenzene	MS	1114192-11	ND	1.2331	1.6611	mg/kg		74.2		26 - 152	
	MSD	1114192-11	ND	0.98334	1.6892	mg/kg	22.5	58.2	30	26 - 152	
Hexachlorobutadiene	MS	1114192-11	ND	1.1658	1.6611	mg/kg		70.2		20 - 140	
	MSD	1114192-11	ND	0.91007	1.6892	mg/kg	24.6	53.9	30	20 - 140	
Hexachloroethane	MS	1114192-11	ND	1.1398	1.6611	mg/kg		68.6		30 - 140	
	MSD	1114192-11	ND	0.92730	1.6892	mg/kg	20.6	54.9	30	30 - 140	
Nitrobenzene	MS	1114192-11	ND	1.2096	1.6611	mg/kg		72.8		20 - 140	
	MSD	1114192-11	ND	1.1417	1.6892	mg/kg	5.8	67.6	30	20 - 140	
N-Nitrosodi-N-propylamine	MS	1114192-11	ND	1.2459	1.6611	mg/kg		75.0		30 - 140	
	MSD	1114192-11	ND	1.1710	1.6892	mg/kg	6.2	69.3	30	30 - 140	
Pyrene	MS	1114192-11	ND	1.5977	1.6611	mg/kg		96.2		30 - 150	
	MSD	1114192-11	ND	1.1264	1.6892	mg/kg	34.6	66.7	30	30 - 150	Q02
1,2,4-Trichlorobenzene	MS	1114192-11	ND	1.3395	1.6611	mg/kg		80.6		20 - 166	
	MSD	1114192-11	ND	1.0713	1.6892	mg/kg	22.3	63.4	30	20 - 166	
4-Chloro-3-methylphenol	MS	1114192-11	ND	1.3829	1.6611	mg/kg		83.3		37 - 137	
	MSD	1114192-11	ND	1.3045	1.6892	mg/kg	5.8	77.2	30	37 - 137	
2-Chlorophenol	MS	1114192-11	ND	1.3307	1.6611	mg/kg		80.1		27 - 140	
	MSD	1114192-11	ND	1.3241	1.6892	mg/kg	0.5	78.4	30	27 - 140	
2-Methylphenol	MS	1114192-11	ND	1.6158	1.6611	mg/kg		97.3		22 - 163	
	MSD	1114192-11	ND	1.6030	1.6892	mg/kg	0.8	94.9	30	22 - 163	
3- & 4-Methylphenol	MS	1114192-11	ND	2.9877	3.3223	mg/kg		89.9		31 - 123	
	MSD	1114192-11	ND	2.9572	3.3784	mg/kg	1.0	87.5	30	31 - 123	
4-Nitrophenol	MS	1114192-11	ND	1.0327	1.6611	mg/kg		62.2		20 - 149	
	MSD	1114192-11	ND	1.0567	1.6892	mg/kg	2.3	62.6	30	20 - 149	
Pentachlorophenol	MS	1114192-11	ND	0.97389	1.6611	mg/kg		58.6		20 - 130	
	MSD	1114192-11	ND	0.95703	1.6892	mg/kg	1.7	56.7	30	20 - 130	
Phenol	MS	1114192-11	ND	1.4210	1.6611	mg/kg		85.5		22 - 135	
	MSD	1114192-11	ND	1.4360	1.6892	mg/kg	1.1	85.0	30	22 - 135	
2,4,6-Trichlorophenol	MS	1114192-11	ND	1.3384	1.6611	mg/kg		80.6		31 - 147	
	MSD	1114192-11	ND	1.3100	1.6892	mg/kg	2.1	77.6	30	31 - 147	

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0871	Used client sample: N										
2-Fluorophenol (Surrogate)	MS	1114192-11	ND	2.4098	2.6578	mg/kg		90.7		28 - 144	
	MSD	1114192-11	ND	2.4061	2.7027	mg/kg	0.2	89.0		28 - 144	
Phenol-d5 (Surrogate)	MS	1114192-11	ND	2.3583	2.6578	mg/kg		88.7		36 - 136	
	MSD	1114192-11	ND	2.4132	2.7027	mg/kg	2.3	89.3		36 - 136	
Nitrobenzene-d5 (Surrogate)	MS	1114192-11	ND	2.4631	2.6578	mg/kg		92.7		31 - 135	
	MSD	1114192-11	ND	2.3951	2.7027	mg/kg	2.8	88.6		31 - 135	
2-Fluorobiphenyl (Surrogate)	MS	1114192-11	ND	2.0373	2.6578	mg/kg		76.7		20 - 140	
	MSD	1114192-11	ND	1.9669	2.7027	mg/kg	3.5	72.8		20 - 140	
2,4,6-Tribromophenol (Surrogate)	MS	1114192-11	ND	2.4548	2.6578	mg/kg		92.4		20 - 150	
	MSD	1114192-11	ND	2.4324	2.7027	mg/kg	0.9	90.0		20 - 150	
p-Terphenyl-d14 (Surrogate)	MS	1114192-11	ND	1.4164	1.3289	mg/kg		107		10 - 150	
	MSD	1114192-11	ND	1.1749	1.3514	mg/kg	18.6	86.9		10 - 150	

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI1040						
Oil and Grease	BUI1040-BLK1	ND	mg/kg	50	16	

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI1040										
Oil and Grease	BUI1040-BS1	LCS	563.00	794.00	mg/kg	70.9		59 - 117		

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI1040	Used client sample: N										
Oil and Grease	DUP	1114175-03	ND	ND		mg/kg			30		
	MS	1114175-03	ND	500.00	794.00	mg/kg		63.0		56 - 111	
	MSD	1114175-03	ND	641.00	794.00	mg/kg	24.7	80.7	30	56 - 111	

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Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0578						
Moisture	BUI0578-BLK1	ND	%	0.05	0.05	
QC Batch ID: BUI0621						
Total Cyanide	BUI0621-BLK1	ND	mg/kg	0.50	0.13	
QC Batch ID: BUI0781						
Ammonia as N	BUI0781-BLK1	ND	mg/kg	10	5.0	
QC Batch ID: BUI0935						
Total Kjeldahl Nitrogen	BUI0935-BLK1	ND	mg/kg	40	15	
QC Batch ID: BUI1076						
Nitrate as NO3	BUI1076-BLK1	ND	mg/kg	4.4	1.2	
QC Batch ID: BUI1378						
Total Phosphate	BUI1378-BLK1	ND	mg/kg	30	19	

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Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI0621										
Total Cyanide	BUI0621-BS1	LCS	9.9200	10.000	mg/kg	99.2		80 - 120		
QC Batch ID: BUI0781										
Ammonia as N	BUI0781-BS1	LCS	95.240	100.00	mg/kg	95.2		80 - 120		
QC Batch ID: BUI0881										
pH	BUI0881-BS1	LCS	7.0050	7.0000	pH Units	100		95 - 105		
QC Batch ID: BUI0935										
Total Kjeldahl Nitrogen	BUI0935-BS1	LCS	390.00	400.00	mg/kg	97.5		85 - 115		
QC Batch ID: BUI1076										
Nitrate as NO3	BUI1076-BS1	LCS	23.781	22.134	mg/kg	107		90 - 110		
QC Batch ID: BUI1378										
Total Phosphate	BUI1378-BS1	LCS	598.03	613.20	mg/kg	97.5		85 - 115		

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0621	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
Total Cyanide	DUP	1114512-01	2.5697	2.3005		mg/kg	11.1		20		
	MS	1114512-01	2.5697	10.908	10.000	mg/kg		83.4		80 - 120	
	MSD	1114512-01	2.5697	10.966	10.000	mg/kg	0.5	84.0	20	80 - 120	
QC Batch ID: BUI0776	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
Solids	DUP	1114512-01	82.670	82.560		%	0.1		20		
QC Batch ID: BUI0781	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
Ammonia as N	DUP	1114512-01	8111.2	8057.6		mg/kg	0.7		20		
	MS	1114512-01	8111.2	9491.4	100.00	mg/kg		1380		80 - 120	A03
	MSD	1114512-01	8111.2	8047.0	100.00	mg/kg	16.5	-64.2	20	80 - 120	A03
QC Batch ID: BUI0881	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
pH	DUP	1114512-01	6.2790	6.2800		pH Units	0.0		20		
QC Batch ID: BUI0935	Used client sample: N										
Total Kjeldahl Nitrogen	DUP	1114559-05	223.90	249.98		mg/kg	11.0		20		
	MS	1114559-05	223.90	573.74	400.00	mg/kg		87.5		80 - 120	
	MSD	1114559-05	223.90	589.10	400.00	mg/kg	2.6	91.3	20	80 - 120	
QC Batch ID: BUI1076	Used client sample: N										
Nitrate as NO3	DUP	1114618-01	4.7367	4.6924		mg/kg	0.9		20		
	MS	1114618-01	4.7367	241.19	223.58	mg/kg		106		80 - 120	
	MSD	1114618-01	4.7367	235.51	223.58	mg/kg	2.4	103	20	80 - 120	
QC Batch ID: BUI1378	Used client sample: N										
Total Phosphate	DUP	114547-01RE´	4067.8	3241.0		mg/kg	22.6		20		Q01
	MS	114547-01RE´	4067.8	5155.6	613.20	mg/kg		177		80 - 120	A03
	MSD	114547-01RE´	4067.8	5161.5	613.20	mg/kg	0.1	178	20	80 - 120	A03

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Reported: 09/26/2011 16:19
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI1002						
Hexavalent Chromium	BUI1002-BLK1	ND	mg/L	0.20	0.070	
QC Batch ID: BUI1534						
Total Dissolved Solids @ 180 C	BUI1534-BLK1	ND	mg/L	6.7	6.7	

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI1002										
Hexavalent Chromium	BUI1002-BS1	LCS	5.0146	5.0000	mg/L	100		85 - 115		
QC Batch ID: BUI1534										
Total Dissolved Solids @ 180 C	BUI1534-BS1	LCS	580.00	586.00	mg/L	99.0		90 - 110		

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Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI1002	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
Hexavalent Chromium	DUP	1114512-01	ND	ND		mg/L			20		
	MS	1114512-01	ND	4.9853	5.2632	mg/L		94.7		85 - 115	
	MSD	1114512-01	ND	4.9597	5.2632	mg/L	0.5	94.2	20	85 - 115	
QC Batch ID: BUI1534	Used client sample: Y - Description: MBWWTP Biosolids, 09/06/2011 13:00										
Total Dissolved Solids @ 180 C	DUP	114512-01RE´	6100.0	5560.0		mg/L	9.3		20		

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Project: Biosolids from MBWWTP
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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI1105						
Copper	BUI1105-BLK1	0.027083	mg/L	0.10	0.012	J

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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI1105										
Copper	BUI1105-BS1	LCS	20.655	20.000	mg/L	103		85 - 115		

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Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI1105	Used client sample: N										
Copper	DUP	1114455-03	0.26415	0.26356		mg/L	0.2		20		
	MS	1114455-03	0.26415	20.972	20.408	mg/L		101		75 - 125	
	MSD	1114455-03	0.26415	21.115	20.408	mg/L	0.7	102	20	75 - 125	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BUI0601						
Antimony	BUI0601-BLK1	ND	mg/kg	5.0	0.50	
Arsenic	BUI0601-BLK1	ND	mg/kg	1.0	0.38	
Barium	BUI0601-BLK1	ND	mg/kg	0.50	0.077	
Beryllium	BUI0601-BLK1	ND	mg/kg	0.50	0.050	
Cadmium	BUI0601-BLK1	ND	mg/kg	0.50	0.050	
Chromium	BUI0601-BLK1	ND	mg/kg	0.50	0.060	
Cobalt	BUI0601-BLK1	ND	mg/kg	2.5	0.25	
Copper	BUI0601-BLK1	ND	mg/kg	1.0	0.12	
Lead	BUI0601-BLK1	ND	mg/kg	2.5	0.25	
Molybdenum	BUI0601-BLK1	ND	mg/kg	2.5	0.25	
Nickel	BUI0601-BLK1	ND	mg/kg	0.50	0.058	
Selenium	BUI0601-BLK1	ND	mg/kg	1.0	0.51	
Silver	BUI0601-BLK1	ND	mg/kg	0.50	0.050	
Thallium	BUI0601-BLK1	ND	mg/kg	5.0	0.73	
Vanadium	BUI0601-BLK1	ND	mg/kg	0.50	0.050	
Zinc	BUI0601-BLK1	0.31952	mg/kg	2.5	0.25	J
Boron	BUI0601-BLK1	ND	mg/kg	5.0	0.50	
QC Batch ID: BUI0719						
Mercury	BUI0719-BLK1	ND	mg/kg	0.16	0.024	
QC Batch ID: BUI1023						
Total Hexavalent Chromium	BUI1023-BLK1	ND	mg/kg	1.0	0.30	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BUI0601										
Antimony	BUI0601-BS1	LCS	100.73	100.00	mg/kg	101		75 - 125		
Arsenic	BUI0601-BS1	LCS	10.569	10.000	mg/kg	106		75 - 125		
Barium	BUI0601-BS1	LCS	104.85	100.00	mg/kg	105		75 - 125		
Beryllium	BUI0601-BS1	LCS	10.866	10.000	mg/kg	109		75 - 125		
Cadmium	BUI0601-BS1	LCS	10.356	10.000	mg/kg	104		75 - 125		
Chromium	BUI0601-BS1	LCS	104.91	100.00	mg/kg	105		75 - 125		
Cobalt	BUI0601-BS1	LCS	107.27	100.00	mg/kg	107		75 - 125		
Copper	BUI0601-BS1	LCS	102.24	100.00	mg/kg	102		75 - 125		
Lead	BUI0601-BS1	LCS	107.25	100.00	mg/kg	107		75 - 125		
Molybdenum	BUI0601-BS1	LCS	102.78	100.00	mg/kg	103		75 - 125		
Nickel	BUI0601-BS1	LCS	108.39	100.00	mg/kg	108		75 - 125		
Selenium	BUI0601-BS1	LCS	10.299	10.000	mg/kg	103		75 - 125		
Silver	BUI0601-BS1	LCS	7.6457	10.000	mg/kg	76.5		75 - 125		
Thallium	BUI0601-BS1	LCS	107.66	100.00	mg/kg	108		75 - 125		
Vanadium	BUI0601-BS1	LCS	101.96	100.00	mg/kg	102		75 - 125		
Zinc	BUI0601-BS1	LCS	106.50	100.00	mg/kg	107		75 - 125		
Boron	BUI0601-BS1	LCS	97.960	100.00	mg/kg	98.0		75 - 125		
QC Batch ID: BUI0719										
Mercury	BUI0719-BS1	LCS	0.83808	0.80000	mg/kg	105		80 - 120		
QC Batch ID: BUI1023										
Total Hexavalent Chromium	BUI1023-BS1	LCS	40.812	40.000	mg/kg	102		80 - 120		

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0601	Used client sample: N										
Antimony	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	95.194	100.00	mg/kg		95.2		16 - 119	
	MSD	1114091-15	ND	97.346	100.00	mg/kg	2.2	97.3	20	16 - 119	
Arsenic	DUP	1114091-15	0.40012	ND		mg/kg			20		
	MS	1114091-15	0.40012	10.250	10.000	mg/kg		98.5		75 - 125	
	MSD	1114091-15	0.40012	10.114	10.000	mg/kg	1.3	97.1	20	75 - 125	
Barium	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	86.369	100.00	mg/kg		86.4		75 - 125	
	MSD	1114091-15	ND	87.600	100.00	mg/kg	1.4	87.6	20	75 - 125	
Beryllium	DUP	1114091-15	0.58337	0.58949		mg/kg	1.0		20		
	MS	1114091-15	0.58337	10.916	10.000	mg/kg		103		75 - 125	
	MSD	1114091-15	0.58337	11.186	10.000	mg/kg	2.4	106	20	75 - 125	
Cadmium	DUP	1114091-15	0.052637	ND		mg/kg			20		
	MS	1114091-15	0.052637	10.103	10.000	mg/kg		100		75 - 125	
	MSD	1114091-15	0.052637	10.442	10.000	mg/kg	3.3	104	20	75 - 125	
Chromium	DUP	1114091-15	0.14016	0.16353		mg/kg	15.4		20		J
	MS	1114091-15	0.14016	98.997	100.00	mg/kg		98.9		75 - 125	
	MSD	1114091-15	0.14016	102.12	100.00	mg/kg	3.1	102	20	75 - 125	
Cobalt	DUP	1114091-15	1.1815	1.1684		mg/kg	1.1		20		J
	MS	1114091-15	1.1815	104.07	100.00	mg/kg		103		75 - 125	
	MSD	1114091-15	1.1815	107.40	100.00	mg/kg	3.2	106	20	75 - 125	
Copper	DUP	1114091-15	0.64765	0.63456		mg/kg	2.0		20		J
	MS	1114091-15	0.64765	100.43	100.00	mg/kg		99.8		75 - 125	
	MSD	1114091-15	0.64765	103.01	100.00	mg/kg	2.5	102	20	75 - 125	
Lead	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	104.14	100.00	mg/kg		104		75 - 125	
	MSD	1114091-15	ND	106.80	100.00	mg/kg	2.5	107	20	75 - 125	
Molybdenum	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	99.547	100.00	mg/kg		99.5		75 - 125	
	MSD	1114091-15	ND	100.60	100.00	mg/kg	1.0	101	20	75 - 125	
Nickel	DUP	1114091-15	0.58461	0.54898		mg/kg	6.3		20		
	MS	1114091-15	0.58461	104.79	100.00	mg/kg		104		75 - 125	
	MSD	1114091-15	0.58461	108.23	100.00	mg/kg	3.2	108	20	75 - 125	
Selenium	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	9.6009	10.000	mg/kg		96.0		75 - 125	
	MSD	1114091-15	ND	8.8650	10.000	mg/kg	8.0	88.6	20	75 - 125	
Silver	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	8.4086	10.000	mg/kg		84.1		75 - 125	
	MSD	1114091-15	ND	8.6821	10.000	mg/kg	3.2	86.8	20	75 - 125	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BUI0601	Used client sample: N										
Thallium	DUP	1114091-15	ND	ND		mg/kg			20		
	MS	1114091-15	ND	105.17	100.00	mg/kg		105		75 - 125	
	MSD	1114091-15	ND	104.53	100.00	mg/kg	0.6	105	20	75 - 125	
Vanadium	DUP	1114091-15	179.63	181.26		mg/kg	0.9		20		
	MS	1114091-15	179.63	279.29	100.00	mg/kg		99.7		75 - 125	
	MSD	1114091-15	179.63	279.11	100.00	mg/kg	0.1	99.5	20	75 - 125	
Zinc	DUP	1114091-15	1.6427	1.6275		mg/kg	0.9		20		J
	MS	1114091-15	1.6427	107.92	100.00	mg/kg		106		75 - 125	
	MSD	1114091-15	1.6427	112.18	100.00	mg/kg	3.9	111	20	75 - 125	
Boron	DUP	1114091-15	0.67478	0.53934		mg/kg	22.3		20		J,A02
	MS	1114091-15	0.67478	93.470	100.00	mg/kg		92.8		75 - 125	
	MSD	1114091-15	0.67478	96.993	100.00	mg/kg	3.7	96.3	20	75 - 125	
QC Batch ID: BUI0719	Used client sample: N										
Mercury	DUP	1114468-01	ND	ND		mg/kg			20		
	MS	1114468-01	ND	ND	0.76923	mg/kg		228		80 - 120	Q03
	MSD	1114468-01	ND	ND	0.76923	mg/kg	12.1	202	20	80 - 120	Q03
QC Batch ID: BUI1023	Used client sample: N										
Total Hexavalent Chromium	DUP	1114729-01	0.35400	ND		mg/kg			20		
	MS	1114729-01	0.35400	33.622	40.000	mg/kg		83.2		75 - 125	
	MSD	1114729-01	0.35400	35.914	40.000	mg/kg	6.6	88.9	20	75 - 125	

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Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected at or above the reporting limit
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
A01	PQL's and MDL's are raised due to sample dilution.
A02	The difference between duplicate readings is less than the PQL.
A03	The sample concentration is more than 4 times the spike level.
A10	PQL's and MDL's were raised due to matrix interference.
pH1:1	pH result reported on a 1:1 dilution of sample
Q01	Sample precision is not within the control limits.
Q02	Matrix spike precision is not within the control limits.
Q03	Matrix spike recovery(s) is(are) not within the control limits.
V11	The Continuing Calibration Verification (CCV) recovery is not within established control limits.
Z1	Sample was analyzed 3 times at different dilutions with matrix interference of the internal standards.