City of Morro Bay and
Cayucos Sanitary District

OFFSHORE MONITORING AND REPORTING PROGRAM

RESIDUAL BIOSOLIDS CHEMICAL ANALYSIS RESULTS

SEPTEMBER 2012

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 2012

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 2012

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.

Bruce Keogh

Mr. Bruce Keogh
Wastewater Division Manager
City of Morro Bay

Date Oct 22, 2012

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

22 October 2012

Reference: Chemical Analysis Results for Biosolid Samples Collected in September 2012

Dear Mr. Keogh:

Enclosed are the results of chemical analyses conducted on a representative composite of biosolid samples collected from the drying beds on 19 September 2012. 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 2012 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-2012 sample were comparable to concentrations measured in samples collected annually from 1999 through 2011.[1]

All trace-metal concentrations measured in the September-2012 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 five 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-2012 sample was comparable to concentrations measured in biosolids samples collected historically.

One synthetic organic compound, bis(2-ethylhexyl) phthalate (BEHP), was also detected at a low, but quantifiable concentration in the September-2012 biosolid sample. BEHP is added to plastic resins to soften them and has been consistently detected at low levels in both effluent and biosolid samples collected over the past decade.[3] There is no limit on this compound specified in State and Federal regulations governing biosolids.

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[1] Marine Research Specialists (MRS). 1999 through 2011. 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. http://www.morro-bay.ca.us/Archive.aspx?AMID=53

[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.

[3] Section 2.2.12, Page 2-33 of the MBCSD 2011 Annual Report to the City of Morro Bay and Cayucos Sanitary District. Prepared by Marine Research Specialists, March 2012.

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

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	%	91.1	— [10]	—	—	—	—	—
Total Dissolved Solids	ppm	—	5,500.	—	—	—	—	—
Cyanide	ppm	1.9	—	—	—	2.1	—	—
Antimony	ppm	≈1.7[11]	—	15.	500.	≈1.9	—	—
Arsenic	ppm	4.8	—	5.	500.	5.3	41.	75.
Barium	ppm	390.	—	100.	10,000.	430.	—	—
Beryllium	ppm	≈0.12	—	0.75	75.	≈0.14	—	—
Boron	ppm	19.	—	—	—	21.	—	—
Cadmium	ppm	2.6	—	1.	100.	2.8	39.	85.
Chromium (Total)	ppm	39.	—	560.	2,500.	43.	—	—
Chromium (Hexavalent)	ppm	ND[12]	ND	5.	500.	ND	—	—
Cobalt	ppm	3.7	—	80.	8,000.	4.1	1,500.	4,300.
Copper	ppm	480.[13]	5.	25.	2,500.	530.	1,500.	4,300.
Lead	ppm	33.	—	5.	1,000.	37.	300.	840.
Mercury	ppm	0.98	—	0.2	20.	1.1	17.	57.
Molybdenum	ppm	17.	—	350.	3,500.	19.	—	—
Nickel	ppm	34.	—	20.	2,000.	37.	420.	420.
Selenium	ppm	5.9	—	1.	100.	6.5	100.	100.
Silver	ppm	3.	—	5.	500.	3.3	—	—
Thallium	ppm	ND	—	7.	700.	ND	—	—
Vanadium	ppm	22.	—	24.	2,400.	24.	—	—
Zinc	ppm	1,000.	—	250.	5,000.	1,100.	2,800.	7,500.
Bis(2-ethylhexyl) phthalate	ppm	28.	—	—	—	31.	—	—
Hydrogen-Ion	pH	6.32	—	—	—	—	—	—
Phosphate	mg/kg	68,000.	—	—	—	75,000.	—	—
Ammonia	mg/kg	6,500.	—	—	—	7,100.	—	—
TKN	mg/kg	32,000.	—	—	—	36,000.	—	—

[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	25,500.	—	—	—	28,900.	—	—
Nitrate as NO_3	mg/kg	310.	—	—	—	340.	—	—
Oil & Grease	ppm	44,000.	—	—	—	49,000.	—	—

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

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Date of Report: 10/19/2012

Doug Coats

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

Project: Biosolids from MBWWTP
BC Work Order: 1217869
Invoice ID: B132075

Enclosed are the results of analyses for samples received by the laboratory on 9/19/2012. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Tina Green
Client Services Manager

Authorized Signature

Table of Contents

Case Narratives

Case Narrative for Work Order 1217869

2-CEVE was none detected

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949.

Chain of Custody Form

CHK BY [ ] DISTRIBUTION [ ] 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): Bruce Keogh
Phone: 805-644-1180	Nez Chauwa
Email Address: doug.coats@mrsenv.com	George Helms
Work Order# 12-17869	

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? Yes / No	Notes
1	Composite Biosolids	9/19/12	0900	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓						

Comments:
page 1 of 2

Please see attached PDF 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	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
	Bruce Keogh	9/19/12	1330		9-19-12	2045			
					9-19-12	1330		9-19-12	2045

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):
Phone: 805-644-1180	Bruce Keogh
Email Address: doug.coats@mrsenv.com	Nez Chavira
Work Order# 12-17869	George Helms

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	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)	9/19/12	0900	✓	✓	✓	✓	✓	✓	✓									✓						***STLC EPA 6010, but see notes on PDF!

Comments:
page 2 of 2

Please see attached PDF 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
	19Sept12	1330		9-19-12	1330
2. Relinquished By	Date	Time	2. Relinquished By	Date	Time
	9-19-12	2045		9-19-12	2045
3. Relinquished By	Date	Time	3. Relinquished By	Date	Time

Chain of Custody and Cooler Receipt Form for 1217869 Page 3 of 5

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 12 12/30/10 Page 1 Of 1

Submission #: 12-1778169

SHIPPING INFORMATION	SHIPPING CONTAINER
Federal Express ☐ UPS ☐ Hand Delivery ☐	Ice Chest ☒ None ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____	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: 0.95 Container: 24A Thermometer ID: 207 Date/Time 9-19-12

Temperature: (A) 2.5 °C / (C) 2.5 °C Analyst Init JNW 2100

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										
PLA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RA RADIOLOGICAL										
BA 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: 9/20/12 0900

A = Actual / C = Corrected

12-178b9

Page 1 of 2

Analysis and Reporting for the Biosolids Sample from the Morro Bay Wastewater Treatment Plant to be collected on 19 September 2012[a]

Analysis[b]	Method
Level IIA QC	
Waste Extraction Tests on copper[c] **(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. lead, 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

12-17869

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

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

Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1217869-01	**COC Number:**	---	**Receive Date:**	09/19/2012 20:45
	Project Number:	---	**Sampling Date:**	09/19/2012 09:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Composite Biosolids	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Sludge

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

Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ND	mg/kg	0.0015	0.000078	EPA-8080	ND		1
alpha-BHC	ND	ND	mg/kg	0.0015	0.00042	EPA-8080	ND		1
beta-BHC	ND	ND	mg/kg	0.0015	0.0011	EPA-8080	ND		1
delta-BHC	ND	ND	mg/kg	0.0015	0.00023	EPA-8080	ND		1
gamma-BHC (Lindane)	ND	ND	mg/kg	0.0015	0.00075	EPA-8080	ND		1
Chlordane (Technical)	ND	ND	mg/kg	0.15	0.045	EPA-8080	ND		1
4,4'-DDD	ND	ND	mg/kg	0.0015	0.00019	EPA-8080	ND		1
4,4'-DDE	ND	ND	mg/kg	0.0015	0.00014	EPA-8080	ND		1
4,4'-DDT	ND	ND	mg/kg	0.0015	0.000093	EPA-8080	ND		1
Dieldrin	ND	ND	mg/kg	0.0015	0.000096	EPA-8080	ND		1
Endosulfan I	ND	ND	mg/kg	0.0015	0.00026	EPA-8080	ND		1
Endosulfan II	ND	ND	mg/kg	0.0015	0.00020	EPA-8080	ND		1
Endosulfan sulfate	ND	ND	mg/kg	0.0015	0.00039	EPA-8080	ND		1
Endrin	ND	ND	mg/kg	0.0015	0.00010	EPA-8080	ND		1
Endrin aldehyde	ND	ND	mg/kg	0.0015	0.00018	EPA-8080	ND		1
Heptachlor	ND	ND	mg/kg	0.0015	0.00078	EPA-8080	ND		1
Heptachlor epoxide	ND	ND	mg/kg	0.0015	0.00045	EPA-8080	ND		1
Methoxychlor	ND	ND	mg/kg	0.0015	0.00039	EPA-8080	ND		1
Toxaphene	ND	ND	mg/kg	0.15	0.022	EPA-8080	ND		1
PCB-1016	ND	ND	mg/kg	0.030	0.0081	EPA-8080	ND		1
PCB-1221	ND	ND	mg/kg	0.030	0.015	EPA-8080	ND		1
PCB-1232	ND	ND	mg/kg	0.030	0.0036	EPA-8080	ND		1
PCB-1242	ND	ND	mg/kg	0.030	0.0049	EPA-8080	ND		1
PCB-1248	ND	ND	mg/kg	0.030	0.0036	EPA-8080	ND		1
PCB-1254	ND	ND	mg/kg	0.030	0.0023	EPA-8080	ND		1
PCB-1260	ND	ND	mg/kg	0.030	0.0066	EPA-8080	ND		1
Total PCB's (Summation)	ND	ND	mg/kg	0.030	0.015	EPA-8080	ND		1
TCMX (Surrogate)	79.3	79.3	%	20 - 140 (LCL - UCL)		EPA-8080			1
Dibutyl chlorendate (Surrogate)	102	102	%	20 - 140 (LCL - UCL)		EPA-8080			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8080	09/25/12	10/01/12 23:07	VH1	GC-1	3	BVI2165

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

Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ND	mg/kg	0.0050	0.0013	EPA-8240	ND		1
Bromodichloromethane	ND	ND	mg/kg	0.0050	0.00084	EPA-8240	ND		1
Bromoform	ND	ND	mg/kg	0.0050	0.0015	EPA-8240	ND		1
Bromomethane	ND	ND	mg/kg	0.0050	0.0016	EPA-8240	ND		1
Carbon tetrachloride	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
Chlorobenzene	ND	ND	mg/kg	0.0050	0.0013	EPA-8240	ND		1
Chloroethane	ND	ND	mg/kg	0.0050	0.0014	EPA-8240	ND		1
Chloroform	ND	ND	mg/kg	0.0050	0.00063	EPA-8240	ND		1
Chloromethane	ND	ND	mg/kg	0.0050	0.0014	EPA-8240	ND		1
Dibromochloromethane	ND	ND	mg/kg	0.0050	0.00099	EPA-8240	ND		1
1,2-Dichlorobenzene	ND	ND	mg/kg	0.0050	0.00081	EPA-8240	ND		1
1,3-Dichlorobenzene	ND	ND	mg/kg	0.0050	0.0014	EPA-8240	ND		1
1,4-Dichlorobenzene	ND	ND	mg/kg	0.0050	0.0015	EPA-8240	ND		1
1,1-Dichloroethane	ND	ND	mg/kg	0.0050	0.0014	EPA-8240	ND		1
1,2-Dichloroethane	ND	ND	mg/kg	0.0050	0.00085	EPA-8240	ND		1
1,1-Dichloroethene	ND	ND	mg/kg	0.0050	0.0012	EPA-8240	ND		1
trans-1,2-Dichloroethene	ND	ND	mg/kg	0.0050	0.0014	EPA-8240	ND		1
1,2-Dichloropropane	ND	ND	mg/kg	0.0050	0.00081	EPA-8240	ND		1
cis-1,3-Dichloropropene	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
trans-1,3-Dichloropropene	ND	ND	mg/kg	0.0050	0.0012	EPA-8240	ND		1
Ethylbenzene	ND	ND	mg/kg	0.0050	0.0015	EPA-8240	ND		1
Methylene chloride	ND	ND	mg/kg	0.010	0.0024	EPA-8240	ND		1
Methyl t-butyl ether	ND	ND	mg/kg	0.0050	0.00050	EPA-8240	ND		1
1,1,2,2-Tetrachloroethane	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
Tetrachloroethene	ND	ND	mg/kg	0.0050	0.0013	EPA-8240	ND		1
Toluene	ND	ND	mg/kg	0.0050	0.0012	EPA-8240	ND		1
1,1,1-Trichloroethane	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
1,1,2-Trichloroethane	ND	ND	mg/kg	0.0050	0.00077	EPA-8240	ND		1
Trichloroethene	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
Trichlorofluoromethane	ND	ND	mg/kg	0.0050	0.0011	EPA-8240	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	mg/kg	0.0050	0.0013	EPA-8240	ND		1
Vinyl chloride	ND	ND	mg/kg	0.0050	0.0016	EPA-8240	ND		1

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Xylenes	ND	ND	mg/kg	0.010	0.0034	EPA-8240	ND		1
Acrolein	ND	ND	mg/kg	0.050	0.0073	EPA-8240	ND		1
Acrylonitrile	ND	ND	mg/kg	0.020	0.0047	EPA-8240	ND		1
1,2-Dichloroethane-d4 (Surrogate)	83.2	83.2	%	70 - 121 (LCL - UCL)		EPA-8240			1
Toluene-d8 (Surrogate)	93.9	93.9	%	81 - 117 (LCL - UCL)		EPA-8240			1
4-Bromofluorobenzene (Surrogate)	98.7	98.7	%	74 - 121 (LCL - UCL)		EPA-8240			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8240	09/21/12	09/21/12 15:39	ADC	MS-V2	1	BVI1481

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Acenaphthylene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Aldrin	ND	ND	mg/kg	7.5	1.8	EPA-8270C	ND	A10	1
Aniline	ND	ND	mg/kg	15	4.0	EPA-8270C	ND	A10	1
Anthracene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Benzidine	ND	ND	mg/kg	220	16	EPA-8270C	ND	A10	1
Benzo[a]anthracene	ND	ND	mg/kg	7.5	0.90	EPA-8270C	ND	A10	1
Benzo[b]fluoranthene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Benzo[k]fluoranthene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Benzo[a]pyrene	ND	ND	mg/kg	7.5	1.1	EPA-8270C	ND	A10	1
Benzo[g,h,i]perylene	ND	ND	mg/kg	7.5	4.2	EPA-8270C	ND	A10	1
Benzoic acid	ND	ND	mg/kg	38	5.0	EPA-8270C	ND	A10	1
Benzyl alcohol	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Benzyl butyl phthalate	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
alpha-BHC	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
beta-BHC	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
delta-BHC	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
bis(2-Chloroethoxy)methane	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
bis(2-Chloroethyl) ether	ND	ND	mg/kg	7.5	1.2	EPA-8270C	ND	A10	1
bis(2-Chloroisopropyl)ether	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
bis(2-Ethylhexyl)phthalate	31	28	**mg/kg**	**15**	**3.2**	**EPA-8270C**	ND	**A10**	1
4-Bromophenyl phenyl ether	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
4-Chloroaniline	ND	ND	mg/kg	7.5	2.0	EPA-8270C	ND	A10	1
2-Chloronaphthalene	ND	ND	mg/kg	7.5	1.5	EPA-8270C	ND	A10	1
4-Chlorophenyl phenyl ether	ND	ND	mg/kg	7.5	1.1	EPA-8270C	ND	A10	1
Chrysene	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Dibenzo[a,h]anthracene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Dibenzofuran	ND	ND	mg/kg	7.5	1.5	EPA-8270C	ND	A10	1

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
1,2-Dichlorobenzene	ND	ND	mg/kg	7.5	1.5	EPA-8270C	ND	A10	1
1,3-Dichlorobenzene	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
1,4-Dichlorobenzene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
3,3-Dichlorobenzidine	ND	ND	mg/kg	15	0.50	EPA-8270C	ND	A10	1
Dieldrin	ND	ND	mg/kg	7.5	2.3	EPA-8270C	ND	A10	1
Diethyl phthalate	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Dimethyl phthalate	ND	ND	mg/kg	7.5	1.5	EPA-8270C	ND	A10	1
Di-n-butyl phthalate	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
2,4-Dinitrotoluene	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
2,6-Dinitrotoluene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Di-n-octyl phthalate	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
1,2-Diphenylhydrazine	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Endosulfan I	ND	ND	mg/kg	15	1.5	EPA-8270C	ND	A10	1
Endosulfan II	ND	ND	mg/kg	15	1.6	EPA-8270C	ND	A10	1
Endosulfan sulfate	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
Endrin	ND	ND	mg/kg	15	1.9	EPA-8270C	ND	A10	1
Endrin aldehyde	ND	ND	mg/kg	38	1.6	EPA-8270C	ND	A10	1
Fluoranthene	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
Fluorene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Heptachlor	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
Heptachlor epoxide	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
Hexachlorobenzene	ND	ND	mg/kg	7.5	1.2	EPA-8270C	ND	A10	1
Hexachlorobutadiene	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
Hexachlorocyclopentadiene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Hexachloroethane	ND	ND	mg/kg	7.5	1.5	EPA-8270C	ND	A10	1
Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	7.5	5.4	EPA-8270C	ND	A10	1
Isophorone	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
2-Methylnaphthalene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Naphthalene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
2-Naphthylamine	ND	ND	mg/kg	220	12	EPA-8270C	ND	A10	1
2-Nitroaniline	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
3-Nitroaniline	ND	ND	mg/kg	15	1.1	EPA-8270C	ND	A10	1

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
4-Nitroaniline	ND	ND	mg/kg	15	1.9	EPA-8270C	ND	A10	1
Nitrobenzene	ND	ND	mg/kg	7.5	1.1	EPA-8270C	ND	A10	1
N-Nitrosodimethylamine	ND	ND	mg/kg	7.5	2.8	EPA-8270C	ND	A10	1
N-Nitrosodi-N-propylamine	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
N-Nitrosodiphenylamine	ND	ND	mg/kg	7.5	1.6	EPA-8270C	ND	A10	1
Phenanthrene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
Pyrene	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
1,2,4-Trichlorobenzene	ND	ND	mg/kg	7.5	1.4	EPA-8270C	ND	A10	1
4-Chloro-3-methylphenol	ND	ND	mg/kg	15	1.6	EPA-8270C	ND	A10	1
2-Chlorophenol	ND	ND	mg/kg	7.5	1.2	EPA-8270C	ND	A10	1
2,4-Dichlorophenol	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
2,4-Dimethylphenol	ND	ND	mg/kg	7.5	2.6	EPA-8270C	ND	A10	1
4,6-Dinitro-2-methylphenol	ND	ND	mg/kg	38	0.90	EPA-8270C	ND	A10	1
2,4-Dinitrophenol	ND	ND	mg/kg	38	0.58	EPA-8270C	ND	A10	1
2-Methylphenol	ND	ND	mg/kg	7.5	1.3	EPA-8270C	ND	A10	1
3- & 4-Methylphenol	ND	ND	mg/kg	15	2.5	EPA-8270C	ND	A10	1
2-Nitrophenol	ND	ND	mg/kg	7.5	1.2	EPA-8270C	ND	A10	1
4-Nitrophenol	ND	ND	mg/kg	15	1.4	EPA-8270C	ND	A10	1
Pentachlorophenol	ND	ND	mg/kg	15	0.98	EPA-8270C	ND	A10	1
Phenol	ND	ND	mg/kg	7.5	1.2	EPA-8270C	ND	A10	1
2,4,5-Trichlorophenol	ND	ND	mg/kg	15	1.4	EPA-8270C	ND	A10	1
2,4,6-Trichlorophenol	ND	ND	mg/kg	15	1.3	EPA-8270C	ND	A10	1
2-Fluorophenol (Surrogate)	63.8	63.8	%	28 - 144 (LCL - UCL)		EPA-8270C		A10	1
Phenol-d5 (Surrogate)	67.5	67.5	%	36 - 136 (LCL - UCL)		EPA-8270C		A10	1
Nitrobenzene-d5 (Surrogate)	76.2	76.2	%	31 - 135 (LCL - UCL)		EPA-8270C		A10	1
2-Fluorobiphenyl (Surrogate)	75.6	75.6	%	20 - 140 (LCL - UCL)		EPA-8270C		A10	1
2,4,6-Tribromophenol (Surrogate)	61.9	61.9	%	20 - 150 (LCL - UCL)		EPA-8270C		A10	1
p-Terphenyl-d14 (Surrogate)	77.5	77.5	%	30 - 150 (LCL - UCL)		EPA-8270C		A10	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8270C	09/25/12	10/05/12 07:34	SKC	MS-B1	75	BVJ0248

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	49000	44000	**mg/kg**	**250**	**100**	**EPA-1664HEM**	ND	**A09**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-1664HEM	09/25/12	09/25/12 13:00	JAK	MAN-SV	5	BVI1836

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Moisture	0	8.94	**%**	**0.05**	**0.05**	**Calc**	ND		1
Total Cyanide	2.1	1.9	**mg/kg**	**0.50**	**0.21**	**EPA-9012**	ND		2
pH	6.32	6.32	**pH Units**	**0.05**	**0.05**	**EPA-9045**		**pH1:1**	3
pH Measurement Temperature	21.8	21.8	**C**	**0.1**	**0.1**	**EPA-9045**			3
Nitrate as NO3	340	310	**mg/kg**	**4.4**	**1.2**	**EPA-300.0**	ND		4
Total Kjeldahl Nitrogen	36000	32000	**mg/kg**	**4000**	**1500**	**EPA-351.2**	ND	**A01**	5
Ammonia as N	7100	6500	**mg/kg**	**1000**	**500**	**EPA-350.1**	540	**A01**	6
Total Phosphate	75000	68000	**mg/kg**	**3000**	**1000**	**EPA-365.4**	ND	**A01**	7
Solids	100	91.1	**%**	**0.05**	**0.05**	**SM-2540G**			8

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Calc	09/25/12	10/03/12 23:51	MSA	Calc	1	BVI1739
2	EPA-9012	09/27/12	09/27/12 12:15	TDC	KONE-1	1	BVI1997
3	EPA-9045	09/25/12	09/25/12 14:18	RML	B360	1	BVI1925
4	EPA-300.0	09/26/12	09/26/12 20:49	LS1	IC2	1	BVI1892
5	EPA-351.2	09/28/12	10/03/12 13:40	SDU	SC-1	100	BVI2089
6	EPA-350.1	09/25/12	09/28/12 14:23	SDU	SC-1	100	BVI1793
7	EPA-365.4	09/28/12	10/03/12 10:47	SDU	SC-1	100	BVI2091
8	SM-2540G	09/25/12	09/25/12 00:30	RAC	Inst	1	BVI1840

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

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		5500	**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	09/27/12	09/27/12 15:32	TDC	KONE-1	1	BVJ0082
2	EPA-160.1	09/27/12	09/27/12 15:20	NW1	MANUAL	20	BVI2037

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

WET Test (STLC)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Copper		5.0	**mg/L**	**0.10**	**0.012**	**EPA-6010B**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	09/27/12	09/28/12 17:08	JRG	PE-OP2	1	BVI2076

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Reported: 10/19/2012 13:36
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

BCL Sample ID: 1217869-01 | **Client Sample Name:** Composite Biosolids, 9/19/2012 9:00:00AM

Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Antimony	1.9	1.7	**mg/kg**	**5.0**	**0.50**	**EPA-6010B**	ND	**J**	1
Arsenic	5.3	4.8	**mg/kg**	**1.0**	**0.38**	**EPA-6010B**	ND		1
Barium	430	390	**mg/kg**	**0.50**	**0.077**	**EPA-6010B**	ND		1
Beryllium	0.14	0.12	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND	**J**	1
Cadmium	2.8	2.6	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND		1
Chromium	43	39	**mg/kg**	**0.50**	**0.060**	**EPA-6010B**	ND		1
Total Hexavalent Chromium	ND	ND	mg/kg	1.0	0.30	EPA-7199	ND		2
Cobalt	4.1	3.7	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Copper	530	480	**mg/kg**	**1.0**	**0.12**	**EPA-6010B**	ND		1
Lead	37	33	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Mercury	1.1	0.98	**mg/kg**	**0.16**	**0.024**	**EPA-7471A**	0.027		3
Molybdenum	19	17	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	ND		1
Nickel	37	34	**mg/kg**	**0.50**	**0.058**	**EPA-6010B**	ND		1
Selenium	6.5	5.9	**mg/kg**	**1.0**	**0.51**	**EPA-6010B**	ND		1
Silver	3.3	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	22	**mg/kg**	**0.50**	**0.050**	**EPA-6010B**	ND		1
Zinc	1100	1000	**mg/kg**	**2.5**	**0.25**	**EPA-6010B**	0.30		1
Boron	21	19	**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	09/24/12	09/25/12 08:27	ARD	PE-OP2	0.952	BVI1720
2	EPA-7199	10/10/12	10/12/12 20:55	LS1	IC-4	1	BVJ0287
3	EPA-7471A	09/24/12	09/26/12 14:40	MEV	CETAC1	1	BVI1709

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Reported: 10/19/2012 13:36
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: BVI2165						
Aldrin	BVI2165-BLK1	ND	mg/kg	0.00050	0.000026	
alpha-BHC	BVI2165-BLK1	ND	mg/kg	0.00050	0.00014	
beta-BHC	BVI2165-BLK1	ND	mg/kg	0.00050	0.00038	
delta-BHC	BVI2165-BLK1	ND	mg/kg	0.00050	0.000076	
gamma-BHC (Lindane)	BVI2165-BLK1	ND	mg/kg	0.00050	0.00025	
Chlordane (Technical)	BVI2165-BLK1	ND	mg/kg	0.050	0.015	
4,4'-DDD	BVI2165-BLK1	ND	mg/kg	0.00050	0.000063	
4,4'-DDE	BVI2165-BLK1	ND	mg/kg	0.00050	0.000045	
4,4'-DDT	BVI2165-BLK1	ND	mg/kg	0.00050	0.000031	
Dieldrin	BVI2165-BLK1	ND	mg/kg	0.00050	0.000032	
Endosulfan I	BVI2165-BLK1	ND	mg/kg	0.00050	0.000086	
Endosulfan II	BVI2165-BLK1	ND	mg/kg	0.00050	0.000066	
Endosulfan sulfate	BVI2165-BLK1	ND	mg/kg	0.00050	0.00013	
Endrin	BVI2165-BLK1	ND	mg/kg	0.00050	0.000035	
Endrin aldehyde	BVI2165-BLK1	ND	mg/kg	0.00050	0.000061	
Heptachlor	BVI2165-BLK1	ND	mg/kg	0.00050	0.00026	
Heptachlor epoxide	BVI2165-BLK1	ND	mg/kg	0.00050	0.00015	
Methoxychlor	BVI2165-BLK1	ND	mg/kg	0.00050	0.00013	
Toxaphene	BVI2165-BLK1	ND	mg/kg	0.050	0.0074	
PCB-1016	BVI2165-BLK1	ND	mg/kg	0.010	0.0027	
PCB-1221	BVI2165-BLK1	ND	mg/kg	0.010	0.0050	
PCB-1232	BVI2165-BLK1	ND	mg/kg	0.010	0.0012	
PCB-1242	BVI2165-BLK1	ND	mg/kg	0.010	0.0016	
PCB-1248	BVI2165-BLK1	ND	mg/kg	0.010	0.0012	
PCB-1254	BVI2165-BLK1	ND	mg/kg	0.010	0.00078	
PCB-1260	BVI2165-BLK1	ND	mg/kg	0.010	0.0022	
Total PCB's (Summation)	BVI2165-BLK1	ND	mg/kg	0.010	0.0050	
TCMX (Surrogate)	BVI2165-BLK1	75.0	%	20 - 140 (LCL - UCL)		
Dibutyl chlorendate (Surrogate)	BVI2165-BLK1	77.5	%	20 - 140 (LCL - UCL)		

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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 - 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: BVI2165										
Aldrin	BVI2165-BS1	LCS	0.0042260	0.0050000	mg/kg	84.5		70 - 130		
gamma-BHC (Lindane)	BVI2165-BS1	LCS	0.0042060	0.0050000	mg/kg	84.1		60 - 140		
4,4'-DDT	BVI2165-BS1	LCS	0.0042233	0.0050000	mg/kg	84.5		60 - 140		
Dieldrin	BVI2165-BS1	LCS	0.0041003	0.0050000	mg/kg	82.0		70 - 130		
Endrin	BVI2165-BS1	LCS	0.0040983	0.0050000	mg/kg	82.0		60 - 140		
Heptachlor	BVI2165-BS1	LCS	0.0039673	0.0050000	mg/kg	79.3		70 - 130		
TCMX (Surrogate)	BVI2165-BS1	LCS	0.0085080	0.010000	mg/kg	85.1		20 - 140		
Dibutyl chlorendate (Surrogate)	BVI2165-BS1	LCS	0.019401	0.025000	mg/kg	77.6		20 - 140		

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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: BVI2165	Used client sample: N										
Aldrin	MS	1216377-09	ND	0.0037047	0.0050847	mg/kg		72.9		30 - 140	
	MSD	1216377-09	ND	0.0039407	0.0050847	mg/kg	6.2	77.5	30	30 - 140	
gamma-BHC (Lindane)	MS	1216377-09	ND	0.0038010	0.0050847	mg/kg		74.8		30 - 140	
	MSD	1216377-09	ND	0.0039210	0.0050847	mg/kg	3.1	77.1	30	30 - 140	
4,4'-DDT	MS	1216377-09	ND	0.0038563	0.0050847	mg/kg		75.8		30 - 140	
	MSD	1216377-09	ND	0.0039569	0.0050847	mg/kg	2.6	77.8	30	30 - 140	
Dieldrin	MS	1216377-09	ND	0.0036315	0.0050847	mg/kg		71.4		40 - 140	
	MSD	1216377-09	ND	0.0038553	0.0050847	mg/kg	6.0	75.8	30	40 - 140	
Endrin	MS	1216377-09	ND	0.0036627	0.0050847	mg/kg		72.0		30 - 150	
	MSD	1216377-09	ND	0.0037692	0.0050847	mg/kg	2.9	74.1	30	30 - 150	
Heptachlor	MS	1216377-09	ND	0.0035708	0.0050847	mg/kg		70.2		40 - 140	
	MSD	1216377-09	ND	0.0037125	0.0050847	mg/kg	3.9	73.0	30	40 - 140	
TCMX (Surrogate)	MS	1216377-09	ND	0.0079837	0.010169	mg/kg		78.5		20 - 140	
	MSD	1216377-09	ND	0.0075498	0.010169	mg/kg	5.6	74.2		20 - 140	
Dibutyl chlorendate (Surrogate)	MS	1216377-09	ND	0.017447	0.025424	mg/kg		68.6		20 - 140	
	MSD	1216377-09	ND	0.017946	0.025424	mg/kg	2.8	70.6		20 - 140	

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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: BVI1481						
Benzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0013	
Bromodichloromethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.00084	
Bromoform	BVI1481-BLK1	ND	mg/kg	0.0050	0.0015	
Bromomethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0016	
Carbon tetrachloride	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
Chlorobenzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0013	
Chloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0014	
Chloroform	BVI1481-BLK1	ND	mg/kg	0.0050	0.00063	
Chloromethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0014	
Dibromochloromethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.00099	
1,2-Dichlorobenzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.00081	
1,3-Dichlorobenzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0014	
1,4-Dichlorobenzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0015	
1,1-Dichloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.00085	
1,1-Dichloroethene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0012	
trans-1,2-Dichloroethene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloropropane	BVI1481-BLK1	ND	mg/kg	0.0050	0.00081	
cis-1,3-Dichloropropene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
trans-1,3-Dichloropropene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0012	
Ethylbenzene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0015	
Methylene chloride	BVI1481-BLK1	ND	mg/kg	0.010	0.0024	
Methyl t-butyl ether	BVI1481-BLK1	ND	mg/kg	0.0050	0.00050	
1,1,2,2-Tetrachloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
Tetrachloroethene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0013	
Toluene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0012	
1,1,1-Trichloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.00077	
Trichloroethene	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
Trichlorofluoromethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloro-1,2,2-trifluoroethane	BVI1481-BLK1	ND	mg/kg	0.0050	0.0013	
Vinyl chloride	BVI1481-BLK1	ND	mg/kg	0.0050	0.0016	
Total Xylenes	BVI1481-BLK1	ND	mg/kg	0.010	0.0034	
Acrolein	BVI1481-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: BVI1481						
Acrylonitrile	BVI1481-BLK1	ND	mg/kg	0.020	0.0047	
1,2-Dichloroethane-d4 (Surrogate)	BVI1481-BLK1	95.2	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	BVI1481-BLK1	97.1	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BVI1481-BLK1	99.6	%	74 - 121 (LCL - UCL)		

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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: BVI1481										
Benzene	BVI1481-BS1	LCS	0.11150	0.12500	mg/kg	89.2		70 - 130		
Bromodichloromethane	BVI1481-BS1	LCS	0.10975	0.12500	mg/kg	87.8		70 - 130		
Chlorobenzene	BVI1481-BS1	LCS	0.11754	0.12500	mg/kg	94.0		70 - 130		
Chloroethane	BVI1481-BS1	LCS	0.11763	0.12500	mg/kg	94.1		70 - 130		
1,4-Dichlorobenzene	BVI1481-BS1	LCS	0.12516	0.12500	mg/kg	100		70 - 130		
1,1-Dichloroethane	BVI1481-BS1	LCS	0.11099	0.12500	mg/kg	88.8		70 - 130		
1,1-Dichloroethene	BVI1481-BS1	LCS	0.12012	0.12500	mg/kg	96.1		70 - 130		
Toluene	BVI1481-BS1	LCS	0.11725	0.12500	mg/kg	93.8		70 - 130		
Trichloroethene	BVI1481-BS1	LCS	0.11658	0.12500	mg/kg	93.3		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BVI1481-BS1	LCS	0.046500	0.050000	mg/kg	93.0		70 - 121		
Toluene-d8 (Surrogate)	BVI1481-BS1	LCS	0.049210	0.050000	mg/kg	98.4		81 - 117		
4-Bromofluorobenzene (Surrogate)	BVI1481-BS1	LCS	0.049440	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: BVI1481	Used client sample: N										
Benzene	MS	1216377-54	ND	0.11477	0.12500	mg/kg		91.8		70 - 130	
	MSD	1216377-54	ND	0.11772	0.12500	mg/kg	2.5	94.2	20	70 - 130	
Bromodichloromethane	MS	1216377-54	ND	0.11750	0.12500	mg/kg		94.0		70 - 130	
	MSD	1216377-54	ND	0.11528	0.12500	mg/kg	1.9	92.2	20	70 - 130	
Chlorobenzene	MS	1216377-54	ND	0.12397	0.12500	mg/kg		99.2		70 - 130	
	MSD	1216377-54	ND	0.12693	0.12500	mg/kg	2.4	102	20	70 - 130	
Chloroethane	MS	1216377-54	ND	0.12043	0.12500	mg/kg		96.3		70 - 130	
	MSD	1216377-54	ND	0.12816	0.12500	mg/kg	6.2	103	20	70 - 130	
1,4-Dichlorobenzene	MS	1216377-54	ND	0.13543	0.12500	mg/kg		108		70 - 130	
	MSD	1216377-54	ND	0.12409	0.12500	mg/kg	8.7	99.3	20	70 - 130	
1,1-Dichloroethane	MS	1216377-54	ND	0.11396	0.12500	mg/kg		91.2		70 - 130	
	MSD	1216377-54	ND	0.11368	0.12500	mg/kg	0.2	90.9	20	70 - 130	
1,1-Dichloroethene	MS	1216377-54	ND	0.11928	0.12500	mg/kg		95.4		70 - 130	
	MSD	1216377-54	ND	0.12669	0.12500	mg/kg	6.0	101	20	70 - 130	
Toluene	MS	1216377-54	ND	0.12331	0.12500	mg/kg		98.6		70 - 130	
	MSD	1216377-54	ND	0.12217	0.12500	mg/kg	0.9	97.7	20	70 - 130	
Trichloroethene	MS	1216377-54	ND	0.12250	0.12500	mg/kg		98.0		70 - 130	
	MSD	1216377-54	ND	0.12409	0.12500	mg/kg	1.3	99.3	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1216377-54	ND	0.046470	0.050000	mg/kg		92.9		70 - 121	
	MSD	1216377-54	ND	0.044810	0.050000	mg/kg	3.6	89.6		70 - 121	
Toluene-d8 (Surrogate)	MS	1216377-54	ND	0.049670	0.050000	mg/kg		99.3		81 - 117	
	MSD	1216377-54	ND	0.049360	0.050000	mg/kg	0.6	98.7		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1216377-54	ND	0.049950	0.050000	mg/kg		99.9		74 - 121	
	MSD	1216377-54	ND	0.046480	0.050000	mg/kg	7.2	93.0		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: BVJ0248						
Acenaphthene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Acenaphthylene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Aldrin	BVJ0248-BLK1	ND	mg/kg	0.10	0.024	
Aniline	BVJ0248-BLK1	ND	mg/kg	0.20	0.053	
Anthracene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Benzidine	BVJ0248-BLK1	ND	mg/kg	3.0	0.22	
Benzo[a]anthracene	BVJ0248-BLK1	ND	mg/kg	0.10	0.012	
Benzo[b]fluoranthene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Benzo[k]fluoranthene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Benzo[a]pyrene	BVJ0248-BLK1	ND	mg/kg	0.10	0.015	
Benzo[g,h,i]perylene	BVJ0248-BLK1	ND	mg/kg	0.10	0.056	
Benzoic acid	BVJ0248-BLK1	ND	mg/kg	0.50	0.067	
Benzyl alcohol	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Benzyl butyl phthalate	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
alpha-BHC	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
beta-BHC	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
delta-BHC	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
gamma-BHC (Lindane)	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethoxy)methane	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
bis(2-Chloroethyl) ether	BVJ0248-BLK1	ND	mg/kg	0.10	0.016	
bis(2-Chloroisopropyl)ether	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
bis(2-Ethylhexyl)phthalate	BVJ0248-BLK1	ND	mg/kg	0.20	0.043	
4-Bromophenyl phenyl ether	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
4-Chloroaniline	BVJ0248-BLK1	ND	mg/kg	0.10	0.027	
2-Chloronaphthalene	BVJ0248-BLK1	ND	mg/kg	0.10	0.020	
4-Chlorophenyl phenyl ether	BVJ0248-BLK1	ND	mg/kg	0.10	0.015	
Chrysene	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDD	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDE	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
4,4'-DDT	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Dibenzo[a,h]anthracene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Dibenzofuran	BVJ0248-BLK1	ND	mg/kg	0.10	0.020	
1,2-Dichlorobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.020	
1,3-Dichlorobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	

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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: BVJ0248						
1,4-Dichlorobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
3,3-Dichlorobenzidine	BVJ0248-BLK1	ND	mg/kg	0.20	0.0067	
Dieldrin	BVJ0248-BLK1	ND	mg/kg	0.10	0.031	
Diethyl phthalate	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Dimethyl phthalate	BVJ0248-BLK1	ND	mg/kg	0.10	0.020	
Di-n-butyl phthalate	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
2,4-Dinitrotoluene	BVJ0248-BLK1	ND	mg/kg	0.10	0.022	
2,6-Dinitrotoluene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Di-n-octyl phthalate	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
1,2-Diphenylhydrazine	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Endosulfan I	BVJ0248-BLK1	ND	mg/kg	0.20	0.020	
Endosulfan II	BVJ0248-BLK1	ND	mg/kg	0.20	0.021	
Endosulfan sulfate	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
Endrin	BVJ0248-BLK1	ND	mg/kg	0.20	0.025	
Endrin aldehyde	BVJ0248-BLK1	ND	mg/kg	0.50	0.022	
Fluoranthene	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
Fluorene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Heptachlor	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
Heptachlor epoxide	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.016	
Hexachlorobutadiene	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
Hexachlorocyclopentadiene	BVJ0248-BLK1	ND	mg/kg	0.10	0.019	
Hexachloroethane	BVJ0248-BLK1	ND	mg/kg	0.10	0.020	
Indeno[1,2,3-cd]pyrene	BVJ0248-BLK1	ND	mg/kg	0.10	0.072	
Isophorone	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
2-Methylnaphthalene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Naphthalene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
2-Naphthylamine	BVJ0248-BLK1	ND	mg/kg	3.0	0.16	
2-Nitroaniline	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
3-Nitroaniline	BVJ0248-BLK1	ND	mg/kg	0.20	0.015	
4-Nitroaniline	BVJ0248-BLK1	ND	mg/kg	0.20	0.025	
Nitrobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.015	
N-Nitrosodimethylamine	BVJ0248-BLK1	ND	mg/kg	0.10	0.037	
N-Nitrosodi-N-propylamine	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	

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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: BVJ0248						
N-Nitrosodiphenylamine	BVJ0248-BLK1	ND	mg/kg	0.10	0.021	
Phenanthrene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
Pyrene	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
1,2,4-Trichlorobenzene	BVJ0248-BLK1	ND	mg/kg	0.10	0.018	
4-Chloro-3-methylphenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.022	
2-Chlorophenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.016	
2,4-Dichlorophenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
2,4-Dimethylphenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.035	
4,6-Dinitro-2-methylphenol	BVJ0248-BLK1	ND	mg/kg	0.50	0.012	
2,4-Dinitrophenol	BVJ0248-BLK1	ND	mg/kg	0.50	0.0077	
2-Methylphenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.017	
3- & 4-Methylphenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.033	
2-Nitrophenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.016	
4-Nitrophenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.018	
Pentachlorophenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.013	
Phenol	BVJ0248-BLK1	ND	mg/kg	0.10	0.016	
2,4,5-Trichlorophenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.018	
2,4,6-Trichlorophenol	BVJ0248-BLK1	ND	mg/kg	0.20	0.017	
2-Fluorophenol (Surrogate)	BVJ0248-BLK1	68.7	%	28 - 144 (LCL - UCL)		
Phenol-d5 (Surrogate)	BVJ0248-BLK1	78.3	%	36 - 136 (LCL - UCL)		
Nitrobenzene-d5 (Surrogate)	BVJ0248-BLK1	81.6	%	31 - 135 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	BVJ0248-BLK1	73.0	%	20 - 140 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	BVJ0248-BLK1	56.8	%	20 - 150 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	BVJ0248-BLK1	63.0	%	30 - 150 (LCL - UCL)		

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Reported: 10/19/2012 13:36
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: BVJ0248										
Acenaphthene	BVJ0248-BS1	LCS	1.3153	1.6949	mg/kg	77.6		50 - 140		
1,4-Dichlorobenzene	BVJ0248-BS1	LCS	1.2753	1.6949	mg/kg	75.2		35 - 140		
2,4-Dinitrotoluene	BVJ0248-BS1	LCS	1.3237	1.6949	mg/kg	78.1		40 - 140		
Hexachlorobenzene	BVJ0248-BS1	LCS	1.3336	1.6949	mg/kg	78.7		46 - 140		
Hexachlorobutadiene	BVJ0248-BS1	LCS	1.0498	1.6949	mg/kg	61.9		40 - 120		
Hexachloroethane	BVJ0248-BS1	LCS	1.2959	1.6949	mg/kg	76.5		39 - 140		
Nitrobenzene	BVJ0248-BS1	LCS	1.2620	1.6949	mg/kg	74.5		38 - 130		
N-Nitrosodi-N-propylamine	BVJ0248-BS1	LCS	1.0536	1.6949	mg/kg	62.2		45 - 120		
Pyrene	BVJ0248-BS1	LCS	1.0814	1.6949	mg/kg	63.8		50 - 150		
1,2,4-Trichlorobenzene	BVJ0248-BS1	LCS	1.1383	1.6949	mg/kg	67.2		41 - 140		
4-Chloro-3-methylphenol	BVJ0248-BS1	LCS	1.2180	1.6949	mg/kg	71.9		46 - 130		
2-Chlorophenol	BVJ0248-BS1	LCS	1.2685	1.6949	mg/kg	74.8		40 - 130		
2-Methylphenol	BVJ0248-BS1	LCS	1.1051	1.6949	mg/kg	65.2		37 - 140		
3- & 4-Methylphenol	BVJ0248-BS1	LCS	2.3827	3.3898	mg/kg	70.3		41 - 120		
4-Nitrophenol	BVJ0248-BS1	LCS	1.0180	1.6949	mg/kg	60.1		21 - 120		
Pentachlorophenol	BVJ0248-BS1	LCS	0.87797	1.6949	mg/kg	51.8		23 - 125		
Phenol	BVJ0248-BS1	LCS	1.1834	1.6949	mg/kg	69.8		40 - 120		
2,4,6-Trichlorophenol	BVJ0248-BS1	LCS	1.1976	1.6949	mg/kg	70.7		44 - 130		
2-Fluorophenol (Surrogate)	BVJ0248-BS1	LCS	1.9559	2.7119	mg/kg	72.1		28 - 144		
Phenol-d5 (Surrogate)	BVJ0248-BS1	LCS	2.1719	2.7119	mg/kg	80.1		36 - 136		
Nitrobenzene-d5 (Surrogate)	BVJ0248-BS1	LCS	2.2634	2.7119	mg/kg	83.5		31 - 135		
2-Fluorobiphenyl (Surrogate)	BVJ0248-BS1	LCS	2.1973	2.7119	mg/kg	81.0		20 - 140		
2,4,6-Tribromophenol (Surrogate)	BVJ0248-BS1	LCS	1.8027	2.7119	mg/kg	66.5		20 - 150		
p-Terphenyl-d14 (Surrogate)	BVJ0248-BS1	LCS	0.91356	1.3559	mg/kg	67.4		30 - 150		

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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: BVJ0248	Used client sample: N										
Acenaphthene	MS	1216377-91	ND	1.2910	1.6722	mg/kg		77.2		37 - 143	
	MSD	1216377-91	ND	1.3332	1.6779	mg/kg	3.2	79.5	30	37 - 143	
1,4-Dichlorobenzene	MS	1216377-91	ND	1.2332	1.6722	mg/kg		73.7		25 - 150	
	MSD	1216377-91	ND	1.3104	1.6779	mg/kg	6.1	78.1	30	25 - 150	
2,4-Dinitrotoluene	MS	1216377-91	ND	1.2840	1.6722	mg/kg		76.8		30 - 140	
	MSD	1216377-91	ND	1.3232	1.6779	mg/kg	3.0	78.9	30	30 - 140	
Hexachlorobenzene	MS	1216377-91	ND	1.3196	1.6722	mg/kg		78.9		30 - 150	
	MSD	1216377-91	ND	1.3883	1.6779	mg/kg	5.1	82.7	30	30 - 150	
Hexachlorobutadiene	MS	1216377-91	ND	1.0441	1.6722	mg/kg		62.4		20 - 140	
	MSD	1216377-91	ND	1.0674	1.6779	mg/kg	2.2	63.6	30	20 - 140	
Hexachloroethane	MS	1216377-91	ND	1.2477	1.6722	mg/kg		74.6		30 - 140	
	MSD	1216377-91	ND	1.3242	1.6779	mg/kg	5.9	78.9	30	30 - 140	
Nitrobenzene	MS	1216377-91	ND	1.2438	1.6722	mg/kg		74.4		24 - 140	
	MSD	1216377-91	ND	1.2802	1.6779	mg/kg	2.9	76.3	30	24 - 140	
N-Nitrosodi-N-propylamine	MS	1216377-91	ND	1.1180	1.6722	mg/kg		66.9		30 - 120	
	MSD	1216377-91	ND	1.1597	1.6779	mg/kg	3.7	69.1	30	30 - 120	
Pyrene	MS	1216377-91	ND	1.0599	1.6722	mg/kg		63.4		40 - 150	
	MSD	1216377-91	ND	1.0440	1.6779	mg/kg	1.5	62.2	30	40 - 150	
1,2,4-Trichlorobenzene	MS	1216377-91	ND	1.1263	1.6722	mg/kg		67.4		22 - 150	
	MSD	1216377-91	ND	1.1671	1.6779	mg/kg	3.6	69.6	30	22 - 150	
4-Chloro-3-methylphenol	MS	1216377-91	ND	1.1880	1.6722	mg/kg		71.0		37 - 134	
	MSD	1216377-91	ND	1.2299	1.6779	mg/kg	3.5	73.3	30	37 - 134	
2-Chlorophenol	MS	1216377-91	ND	1.2769	1.6722	mg/kg		76.4		33 - 130	
	MSD	1216377-91	ND	1.3567	1.6779	mg/kg	6.1	80.9	30	33 - 130	
2-Methylphenol	MS	1216377-91	ND	1.0833	1.6722	mg/kg		64.8		23 - 140	
	MSD	1216377-91	ND	1.1228	1.6779	mg/kg	3.6	66.9	30	23 - 140	
3- & 4-Methylphenol	MS	1216377-91	ND	2.3268	3.3445	mg/kg		69.6		31 - 123	
	MSD	1216377-91	ND	2.4315	3.3557	mg/kg	4.4	72.5	30	31 - 123	
4-Nitrophenol	MS	1216377-91	ND	1.0952	1.6722	mg/kg		65.5		20 - 140	
	MSD	1216377-91	ND	1.1534	1.6779	mg/kg	5.2	68.7	30	20 - 140	
Pentachlorophenol	MS	1216377-91	ND	0.97670	1.6722	mg/kg		58.4		20 - 130	
	MSD	1216377-91	ND	1.0148	1.6779	mg/kg	3.8	60.5	30	20 - 130	
Phenol	MS	1216377-91	ND	1.1594	1.6722	mg/kg		69.3		22 - 135	
	MSD	1216377-91	ND	1.2144	1.6779	mg/kg	4.6	72.4	30	22 - 135	
2,4,6-Trichlorophenol	MS	1216377-91	ND	1.2425	1.6722	mg/kg		74.3		40 - 140	
	MSD	1216377-91	ND	1.2772	1.6779	mg/kg	2.7	76.1	30	40 - 140	

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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: BVJ0248	Used client sample: N										
2-Fluorophenol (Surrogate)	MS	1216377-91	ND	1.9206	2.6756	mg/kg		71.8		28 - 144	
	MSD	1216377-91	ND	2.0289	2.6846	mg/kg	5.5	75.6		28 - 144	
Phenol-d5 (Surrogate)	MS	1216377-91	ND	2.1396	2.6756	mg/kg		80.0		36 - 136	
	MSD	1216377-91	ND	2.2383	2.6846	mg/kg	4.5	83.4		36 - 136	
Nitrobenzene-d5 (Surrogate)	MS	1216377-91	ND	2.2167	2.6756	mg/kg		82.8		31 - 135	
	MSD	1216377-91	ND	2.3232	2.6846	mg/kg	4.7	86.5		31 - 135	
2-Fluorobiphenyl (Surrogate)	MS	1216377-91	ND	2.1977	2.6756	mg/kg		82.1		20 - 140	
	MSD	1216377-91	ND	2.2178	2.6846	mg/kg	0.9	82.6		20 - 140	
2,4,6-Tribromophenol (Surrogate)	MS	1216377-91	ND	1.9014	2.6756	mg/kg		71.1		20 - 150	
	MSD	1216377-91	ND	1.9523	2.6846	mg/kg	2.6	72.7		20 - 150	
p-Terphenyl-d14 (Surrogate)	MS	1216377-91	ND	0.91377	1.3378	mg/kg		68.3		30 - 150	
	MSD	1216377-91	ND	0.90235	1.3423	mg/kg	1.3	67.2		30 - 150	

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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: BVI1836						
Oil and Grease	BVI1836-BLK1	ND	mg/kg	50	21	

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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: BVI1836										
Oil and Grease	BVI1836-BS1	LCS	650.00	790.00	mg/kg	82.3		59 - 117		

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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: BVI1836	Used client sample: N										
Oil and Grease	DUP	1218076-01	644.00	667.00		mg/kg	3.5		30		
	MS	1218076-01	644.00	1748.0	790.00	mg/kg		140		56 - 111	Q03
	MSD	1218076-01	644.00	1657.0	790.00	mg/kg	5.3	128	30	56 - 111	Q03

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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: BVI1739						
Moisture	BVI1739-BLK1	ND	%	0.05	0.05	
QC Batch ID: BVI1793						
Ammonia as N	BVI1793-BLK1	5.3800	mg/kg	10	5.0	J
QC Batch ID: BVI1892						
Nitrate as NO3	BVI1892-BLK1	ND	mg/kg	4.4	1.2	
QC Batch ID: BVI1997						
Total Cyanide	BVI1997-BLK1	ND	mg/kg	0.50	0.21	
QC Batch ID: BVI2089						
Total Kjeldahl Nitrogen	BVI2089-BLK1	ND	mg/kg	40	15	
QC Batch ID: BVI2091						
Total Phosphate	BVI2091-BLK1	ND	mg/kg	30	10	

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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: BVI1793										
Ammonia as N	BVI1793-BS1	LCS	105.07	100.00	mg/kg	105		80 - 120		
QC Batch ID: BVI1892										
Nitrate as NO3	BVI1892-BS1	LCS	22.825	22.134	mg/kg	103		90 - 110		
QC Batch ID: BVI1925										
pH	BVI1925-BS1	LCS	7.0310	7.0000	pH Units	100		95 - 105		
QC Batch ID: BVI1997										
Total Cyanide	BVI1997-BS1	LCS	9.6714	10.000	mg/kg	96.7		80 - 120		
QC Batch ID: BVI2089										
Total Kjeldahl Nitrogen	BVI2089-BS1	LCS	399.84	400.00	mg/kg	100		85 - 115		
QC Batch ID: BVI2091										
Total Phosphate	BVI2091-BS1	LCS	610.97	613.20	mg/kg	99.6		85 - 115		

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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: BVI1793	Used client sample: N										
Ammonia as N	DUP	1217748-03	2421.2	2402.4		mg/kg	0.8		20		
	MS	1217748-03	2421.2	2460.4	100.00	mg/kg		39.2		80 - 120	A03
	MSD	1217748-03	2421.2	2461.8	100.00	mg/kg	0.1	40.6	20	80 - 120	A03
QC Batch ID: BVI1840	Used client sample: N										
Solids	DUP	1217976-01	93.800	93.780		%	0.0		20		
QC Batch ID: BVI1892	Used client sample: N										
Nitrate as NO3	DUP	1217748-03	15.671	18.504		mg/kg	16.6		20		
	MS	1217748-03	15.671	251.03	223.58	mg/kg		105		80 - 120	
	MSD	1217748-03	15.671	248.84	223.58	mg/kg	0.9	104	20	80 - 120	
QC Batch ID: BVI1925	Used client sample: Y - Description: Composite Biosolids, 09/19/2012 09:00										
pH	DUP	1217869-01	6.3150	6.2970		pH Units	0.3		20		
QC Batch ID: BVI1997	Used client sample: N										
Total Cyanide	DUP	1217748-04	0.58650	0.52860		mg/kg	10.4		20		
	MS	1217748-04	0.58650	8.7459	9.8039	mg/kg		83.2		80 - 120	
	MSD	1217748-04	0.58650	9.4870	9.8039	mg/kg	8.1	90.8	20	80 - 120	
QC Batch ID: BVI2089	Used client sample: N										
Total Kjeldahl Nitrogen	DUP	1217976-01	669.60	669.60		mg/kg	0		20		
	MS	1217976-01	669.60	987.68	400.00	mg/kg		79.5		80 - 120	Q03
	MSD	1217976-01	669.60	971.12	400.00	mg/kg	1.7	75.4	20	80 - 120	Q03
QC Batch ID: BVI2091	Used client sample: N										
Total Phosphate	DUP	1217976-01	803.96	747.78		mg/kg	7.2		20		
	MS	1217976-01	803.96	1331.6	613.20	mg/kg		86.0		80 - 120	
	MSD	1217976-01	803.96	1317.9	613.20	mg/kg	1.0	83.8	20	80 - 120	

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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: BVI2037						
Total Dissolved Solids @ 180 C	BVI2037-BLK1	ND	mg/L	6.7	6.7	
QC Batch ID: BVJ0082						
Hexavalent Chromium	BVJ0082-BLK1	ND	mg/L	0.20	0.070	

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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: BVI2037										
Total Dissolved Solids @ 180 C	BVI2037-BS1	LCS	555.00	586.00	mg/L	94.7		90 - 110		
QC Batch ID: BVJ0082										
Hexavalent Chromium	BVJ0082-BS1	LCS	4.7085	5.0000	mg/L	94.2		85 - 115		

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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: BVI2037	Used client sample: Y - Description: Composite Biosolids, 09/19/2012 09:00										
Total Dissolved Solids @ 180 C	DUP	1217869-01	5540.0	5460.0		mg/L	1.5		20		
QC Batch ID: BVJ0082	Used client sample: Y - Description: Composite Biosolids, 09/19/2012 09:00										
Hexavalent Chromium	DUP	1217869-01	ND	ND		mg/L			20		
	MS	1217869-01	ND	4.1522	5.2632	mg/L		78.9		85 - 115	Q03
	MSD	1217869-01	ND	4.1054	5.2632	mg/L	1.1	78.0	20	85 - 115	Q03

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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: BVI2076						
Copper	BVI2076-BLK1	ND	mg/L	0.10	0.012	

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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: BVI2076										
Copper	BVI2076-BS1	LCS	20.179	20.000	mg/L	101		85 - 115		

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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: BVI2076	Used client sample: N										
Copper	DUP	1218074-02	0.098781	0.099079		mg/L	0.3		20		J
	MS	1218074-02	0.098781	20.715	20.408	mg/L		101		75 - 125	
	MSD	1218074-02	0.098781	20.998	20.408	mg/L	1.4	102	20	75 - 125	

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Project Number: [none]
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: BVI1709						
Mercury	BVI1709-BLK1	0.026720	mg/kg	0.16	0.024	J
QC Batch ID: BVI1720						
Antimony	BVI1720-BLK1	ND	mg/kg	5.0	0.50	
Arsenic	BVI1720-BLK1	ND	mg/kg	1.0	0.38	
Barium	BVI1720-BLK1	ND	mg/kg	0.50	0.077	
Beryllium	BVI1720-BLK1	ND	mg/kg	0.50	0.050	
Cadmium	BVI1720-BLK1	ND	mg/kg	0.50	0.050	
Chromium	BVI1720-BLK1	ND	mg/kg	0.50	0.060	
Cobalt	BVI1720-BLK1	ND	mg/kg	2.5	0.25	
Copper	BVI1720-BLK1	ND	mg/kg	1.0	0.12	
Lead	BVI1720-BLK1	ND	mg/kg	2.5	0.25	
Molybdenum	BVI1720-BLK1	ND	mg/kg	2.5	0.25	
Nickel	BVI1720-BLK1	ND	mg/kg	0.50	0.058	
Selenium	BVI1720-BLK1	ND	mg/kg	1.0	0.51	
Silver	BVI1720-BLK1	ND	mg/kg	0.50	0.050	
Thallium	BVI1720-BLK1	ND	mg/kg	5.0	0.73	
Vanadium	BVI1720-BLK1	ND	mg/kg	0.50	0.050	
Zinc	BVI1720-BLK1	0.31282	mg/kg	2.5	0.25	J
Boron	BVI1720-BLK1	ND	mg/kg	5.0	0.50	
QC Batch ID: BVJ0287						
Total Hexavalent Chromium	BVJ0287-BLK1	ND	mg/kg	1.0	0.30	

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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: BVI1709										
Mercury	BVI1709-BS1	LCS	0.78528	0.80000	mg/kg	98.2		80 - 120		
QC Batch ID: BVI1720										
Antimony	BVI1720-BS1	LCS	96.107	100.00	mg/kg	96.1		75 - 125		
Arsenic	BVI1720-BS1	LCS	10.204	10.000	mg/kg	102		75 - 125		
Barium	BVI1720-BS1	LCS	96.025	100.00	mg/kg	96.0		75 - 125		
Beryllium	BVI1720-BS1	LCS	10.112	10.000	mg/kg	101		75 - 125		
Cadmium	BVI1720-BS1	LCS	10.158	10.000	mg/kg	102		75 - 125		
Chromium	BVI1720-BS1	LCS	105.01	100.00	mg/kg	105		75 - 125		
Cobalt	BVI1720-BS1	LCS	106.08	100.00	mg/kg	106		75 - 125		
Copper	BVI1720-BS1	LCS	102.71	100.00	mg/kg	103		75 - 125		
Lead	BVI1720-BS1	LCS	104.88	100.00	mg/kg	105		75 - 125		
Molybdenum	BVI1720-BS1	LCS	102.79	100.00	mg/kg	103		75 - 125		
Nickel	BVI1720-BS1	LCS	106.77	100.00	mg/kg	107		75 - 125		
Selenium	BVI1720-BS1	LCS	9.4269	10.000	mg/kg	94.3		75 - 125		
Silver	BVI1720-BS1	LCS	10.152	10.000	mg/kg	102		75 - 125		
Thallium	BVI1720-BS1	LCS	104.75	100.00	mg/kg	105		75 - 125		
Vanadium	BVI1720-BS1	LCS	101.20	100.00	mg/kg	101		75 - 125		
Zinc	BVI1720-BS1	LCS	104.16	100.00	mg/kg	104		75 - 125		
Boron	BVI1720-BS1	LCS	96.343	100.00	mg/kg	96.3		75 - 125		
QC Batch ID: BVJ0287										
Total Hexavalent Chromium	BVJ0287-BS1	LCS	36.946	40.000	mg/kg	92.4		80 - 120		

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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: BVI1709	Used client sample: N										
Mercury	DUP	1217876-04	0.053280	0.057619		mg/kg	7.8		20		J
	MS	1217876-04	0.053280	0.80000	0.79365	mg/kg		94.1		80 - 120	
	MSD	1217876-04	0.053280	0.80492	0.79365	mg/kg	0.6	94.7	20	80 - 120	
QC Batch ID: BVI1720	Used client sample: N										
Antimony	DUP	1217976-01	ND	ND		mg/kg			20		
	MS	1217976-01	ND	16.490	97.087	mg/kg		17.0		16 - 119	
	MSD	1217976-01	ND	16.198	97.087	mg/kg	1.8	16.7	20	16 - 119	
Arsenic	DUP	1217976-01	3.0852	2.7378		mg/kg	11.9		20		
	MS	1217976-01	3.0852	11.713	9.7087	mg/kg		88.9		75 - 125	
	MSD	1217976-01	3.0852	11.368	9.7087	mg/kg	3.0	85.3	20	75 - 125	
Barium	DUP	1217976-01	141.33	154.24		mg/kg	8.7		20		
	MS	1217976-01	141.33	214.62	97.087	mg/kg		75.5		75 - 125	
	MSD	1217976-01	141.33	243.95	97.087	mg/kg	12.8	106	20	75 - 125	
Beryllium	DUP	1217976-01	0.18871	0.18948		mg/kg	0.4		20		J
	MS	1217976-01	0.18871	8.9361	9.7087	mg/kg		90.1		75 - 125	
	MSD	1217976-01	0.18871	9.0462	9.7087	mg/kg	1.2	91.2	20	75 - 125	
Cadmium	DUP	1217976-01	0.071014	0.074719		mg/kg	5.1		20		J
	MS	1217976-01	0.071014	8.9075	9.7087	mg/kg		91.0		75 - 125	
	MSD	1217976-01	0.071014	8.8907	9.7087	mg/kg	0.2	90.8	20	75 - 125	
Chromium	DUP	1217976-01	19.882	20.041		mg/kg	0.8		20		
	MS	1217976-01	19.882	107.52	97.087	mg/kg		90.3		75 - 125	
	MSD	1217976-01	19.882	108.69	97.087	mg/kg	1.1	91.5	20	75 - 125	
Cobalt	DUP	1217976-01	5.4647	5.4041		mg/kg	1.1		20		
	MS	1217976-01	5.4647	91.711	97.087	mg/kg		88.8		75 - 125	
	MSD	1217976-01	5.4647	92.653	97.087	mg/kg	1.0	89.8	20	75 - 125	
Copper	DUP	1217976-01	10.434	10.506		mg/kg	0.7		20		
	MS	1217976-01	10.434	101.04	97.087	mg/kg		93.3		75 - 125	
	MSD	1217976-01	10.434	102.70	97.087	mg/kg	1.6	95.0	20	75 - 125	
Lead	DUP	1217976-01	2.6385	2.5971		mg/kg	1.6		20		
	MS	1217976-01	2.6385	89.352	97.087	mg/kg		89.3		75 - 125	
	MSD	1217976-01	2.6385	89.023	97.087	mg/kg	0.4	89.0	20	75 - 125	
Molybdenum	DUP	1217976-01	ND	0.26832		mg/kg			20		J
	MS	1217976-01	ND	83.213	97.087	mg/kg		85.7		75 - 125	
	MSD	1217976-01	ND	82.772	97.087	mg/kg	0.5	85.3	20	75 - 125	
Nickel	DUP	1217976-01	8.4897	8.5658		mg/kg	0.9		20		
	MS	1217976-01	8.4897	95.243	97.087	mg/kg		89.4		75 - 125	
	MSD	1217976-01	8.4897	96.004	97.087	mg/kg	0.8	90.1	20	75 - 125	

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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: BVI1720	Used client sample: N										
Selenium	DUP	1217976-01	ND	ND		mg/kg			20		
	MS	1217976-01	ND	8.4644	9.7087	mg/kg		87.2		75 - 125	
	MSD	1217976-01	ND	8.0516	9.7087	mg/kg	5.0	82.9	20	75 - 125	
Silver	DUP	1217976-01	ND	ND		mg/kg			20		
	MS	1217976-01	ND	8.8350	9.7087	mg/kg		91.0		75 - 125	
	MSD	1217976-01	ND	8.9668	9.7087	mg/kg	1.5	92.4	20	75 - 125	
Thallium	DUP	1217976-01	2.2361	1.4009		mg/kg	45.9		20		J,A02
	MS	1217976-01	2.2361	87.578	97.087	mg/kg		87.9		75 - 125	
	MSD	1217976-01	2.2361	86.980	97.087	mg/kg	0.7	87.3	20	75 - 125	
Vanadium	DUP	1217976-01	35.789	35.590		mg/kg	0.6		20		
	MS	1217976-01	35.789	120.92	97.087	mg/kg		87.7		75 - 125	
	MSD	1217976-01	35.789	122.00	97.087	mg/kg	0.9	88.8	20	75 - 125	
Zinc	DUP	1217976-01	35.536	35.905		mg/kg	1.0		20		
	MS	1217976-01	35.536	120.53	97.087	mg/kg		87.5		75 - 125	
	MSD	1217976-01	35.536	121.71	97.087	mg/kg	1.0	88.8	20	75 - 125	
Boron	DUP	1217976-01	3.7308	4.0615		mg/kg	8.5		20		J
	MS	1217976-01	3.7308	83.182	97.087	mg/kg		81.8		75 - 125	
	MSD	1217976-01	3.7308	84.446	97.087	mg/kg	1.5	83.1	20	75 - 125	
QC Batch ID: BVJ0287	Used client sample: N										
Total Hexavalent Chromium	DUP	1218345-03	0.60400	0.59400		mg/kg	1.7		20		J
	MS	1218345-03	0.60400	3.6880	40.000	mg/kg		7.7		75 - 125	Q03
	MSD	1218345-03	0.60400	4.0140	40.000	mg/kg	8.5	8.5	20	75 - 125	Q03

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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.
A09	PQL's were raised due to high concentration of target analytes requiring sample dilution.
A10	PQL's and MDL's were raised due to matrix interference.
pH1:1	pH result reported on a 1:1 dilution of sample
Q03	Matrix spike recovery(s) is(are) not within the control limits.