

**City of Morro Bay and
Cayucos Sanitary District**

**OFFSHORE MONITORING
AND REPORTING PROGRAM**

**RESIDUAL BIOSOLIDS
CHEMICAL ANALYSIS RESULTS**

AUGUST 2016



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

August 2016

Prepared by
Douglas A. Coats

Marine Research Specialists

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September 2016

marine research specialists

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

8 September 2016

Reference: Chemical Analysis Results for Biosolid Samples Collected in August 2016

Dear Mr. Keogh:

Enclosed are the results of chemical analyses conducted on a representative composite of biosolid samples collected from the drying beds on 10 August 2016. 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^a 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 2016 are not considered hazardous waste, and are deemed 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 August-2016 samples were somewhat lower than concentrations measured in most samples collected annually from 1999 through 2015.^b

All trace-metal concentrations measured in the August-2016 sample were below Total Threshold Limit Concentrations (TTLIC) that would designate them as hazardous under federal regulations.^c 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. None of metals had bulk wet-weight concentrations that exceeded ten-times the applicable Soluble Threshold Limit Concentration (STLC). As a result, waste extraction tests (WET) were not conducted on any of the metals because their soluble concentrations were projected to be lower than the STLC limit that would designate the biosolids as hazardous within the State of California.

Many of the metals occur naturally in the mineralogy of ambient sediments in the central coast region. As a result, their detectable presence in bulk biosolid samples is not unexpected because sediments enter the collection system through runoff. Some of the metals also enter the collection system through internal corrosion of household plumbing systems, which probably accounts for their consistent detection at low concentrations within effluent samples. There is no clearly identifiable reason for the lower metal concentrations measured within the August-2016 biosolids samples as compared to those measured in biosolids samples collected historically.

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,

Douglas A. Coats **MARINE RESEARCH SPECIALISTS**
Vice President

Douglas A. Coats
Program Manager

Enclosure (Three Report Copies)

Table 1. Summary of Results for Biosolids Analyses

		Wet Weight				Dry Weight		
		Measured		Limit		Measured	Limit	
Constituent	Units	Bulk ^d	WET ^e	STLC ^f	TTLC ^g	Bulk	Monthly ^h	Ceiling ⁱ
Solids	%	86.3	— ^j	—	—	—	—	—
Total Dissolved Solids	ppm	—	3,700.	—	—	—	—	—
Cyanide	ppm	2.6	—	—	—	3.1	—	—
Antimony	ppm	≈1.6 ^k	—	15.	500.	≈1.9	—	—
Arsenic	ppm	1.5	—	5.	500.	1.8	41.	75.
Barium	ppm	210.	—	100.	10,000.	240.	—	—
Beryllium	ppm	≈0.083	—	0.75	75.	≈0.096	—	—
Boron	ppm	8.7	—	—	—	10.	—	—
Cadmium	ppm	0.91	—	1.	100.	1.1	39.	85.
Chromium (Total)	ppm	18.	—	560.	2,500.	20.	1,200.	3,000.
Chromium (Hexavalent)	ppm	≈0.88	ND	5.	500.	≈1.0	—	—
Cobalt	ppm	≈2.4	—	80.	8,000.	≈2.8	—	—
Copper	ppm	180.	—	25.	2,500.	210.	1,500.	4,300.
Lead	ppm	14.	—	5.	1,000.	16.	300.	840.
Mercury	ppm	0.65	—	0.2	20.	0.76	17.	57.
Molybdenum	ppm	8.3	—	350.	3,500.	9.6	18.	75.
Nickel	ppm	15.	—	20.	2,000.	18.	420.	420.
Selenium	ppm	4.7	—	1.	100.	5.4	36.	100.
Silver	ppm	1.3	—	5.	500.	1.5	—	—
Thallium	ppm	ND ^l	—	7.	700.	ND	—	—
Vanadium	ppm	14.	—	24.	2,400.	16.	—	—
Zinc	ppm	420.	—	250.	5,000.	480.	2,800.	7,500.
Hydrogen-Ion	pH	6.61	—	—	—	—	—	—
Phosphate	mg/kg	39,000.	—	—	—	45,000.	—	—
Ammonia	mg/kg	4,300.	—	—	—	4,900.	—	—
TKN	mg/kg	14,000.	—	—	—	17,000.	—	—
Organic Nitrogen ^m	mg/kg	9,700.	—	—	—	12,000.	—	—
Nitrate as NO ₃	mg/kg	1,600.	—	—	—	1,900.	—	—
Oil & Grease	ppm	27,000.	—	—	—	31,000.	—	—

-
- ^a Although Method EPA-8240 did not explicitly test for the presence of 2-chloroethyl vinyl ether (2-CEVE), a detectable concentration of this analyte would be reported as one of the Method's Tentatively Identified Compounds (TICs). As described in the Laboratory Report's *Case Narrative*, 2-CEVE was not detected in the August-2016 composite biosolids sample.
- ^b Marine Research Specialists (MRS). 1999 through 2015. 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=64>
- ^c 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.
- ^d The total wet-weight concentration (mg/kg) within a bulk biosolid sample consisting of the entire millable solid matrix rather than just the leachate.
- ^e 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.
- ^f 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*.
- ^g 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.*
- ^h 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)].
- ⁱ Federally mandated dry-weight ceiling concentrations above which biosolids are considered hazardous waste as defined in Table 1 of the CFRs, *op. cit.*
- ^j “—” indicates that the measurement was not required or its limit was not specified.
- ^k “≈” indicates the reported concentration was too low to be reliably quantified.
- ^l “ND” indicates that the measurement was not detected in concentrations exceeding the method detection limit.
- ^m The amount of nitrogen as reported by TKN excluding ammonia

Date of Report: 09/06/2016

Doug Coats

Marine Research Specialists

4744 Telephone Rd

Ste 3-315

Suite A

Ventura, CA 93003-3238

Client Project: [none]

BCL Project: Biosolids from MBWWTP

BCL Work Order: 1622180

Invoice ID: B244322, B245235

Enclosed are the results of analyses for samples received by the laboratory on 8/10/2016. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Contact Person: Tina Green
Client Services Manager



Authorized Signature

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.
All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

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

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Case Narratives

Case Narrative for Work Order 1622180

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



Chain of Custody Form

[illegible]



Chain of Custody Form

[illegible]

BC Laboratories, Inc. Chain of Custody Form (Addenda)

Page 3 of 4

16-22180
Analysis and Reporting for the Biosolids Sample from the Morro Bay Wastewater Treatment Plant to be collected August 2016^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 NO₃^d	EPA 300.0 or 353.2

^a Please provide preliminary (pre-QC) results in BC LabNet as soon as they become available. Current target sampling date is 10 August to coincide with the regular pickup by Jerry. The treatment plant has the sample containers on hand, so a new bottle order for this sampling event should not be necessary.

^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). Questions regarding the need for additional WET tests based on the preliminary bulk-chemistry analysis of metals can be directed to Doug Coats 805.218.3662.

^d Sample results to be reported on an 'as received' and 'dry basis.'

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

BC Laboratories, Inc. Chain of Custody Form (Addenda)

Page 4 of 4

16-22180

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

Chain of Custody and Cooler Receipt Form for 1622180 Page 5 of 5

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 Of 1							
Submission #: 16-22180											
SHIPPING INFORMATION Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☒ Other ☐ (Specify) _____		SHIPPING CONTAINER Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify) _____		FREE LIQUID YES ☐ NO ☒ W / S							
Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments: _____											
Custody Seals: Ice Chest ☐ Containers ☐ None ☒ Comments: _____ Intact? Yes ☐ No ☐ Intact? Yes ☐ No ☐											
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: PE Thermometer ID: 208 Temperature: (A) 0.7 °C / (C) 0.8 °C		Date/Time: 8/10/16 2106 Analyst Init: J							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁶											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PIA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
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											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
SMART KIT											
SUMMA CANISTER											

Comments: _____

Sample Numbering Completed By: CBA

A = Actual / C = Corrected

Date/Time: 8/10/16

1015

Rev 21 05/23/2016

(S:\WPDoc\WordPerfect\LAB_Docs\FORMS\SAMRECrev 20)

Marine Research Specialists
4744 Telephone Rd
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Suite A
Ventura, CA 93003-3238

Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1622180-01	COC Number:	---	Receive Date:	08/10/2016 21:05
	Project Number:	---	Sampling Date:	08/10/2016 10:30
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	BC1 Composite Biosolids	Lab Matrix:	Solids
	Sampled By:	---	Sample Type:	Sludge

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Ventura, CA 93003-3238

Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM							
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #	
Aldrin	ND	ND	mg/kg	0.026	0.0028	EPA-8080	ND	A10	1	
alpha-BHC	ND	ND	mg/kg	0.026	0.0033	EPA-8080	ND	A10	1	
beta-BHC	ND	ND	mg/kg	0.026	0.0037	EPA-8080	ND	A10	1	
delta-BHC	ND	ND	mg/kg	0.026	0.0031	EPA-8080	ND	A10	1	
gamma-BHC (Lindane)	ND	ND	mg/kg	0.026	0.0018	EPA-8080	ND	A10	1	
Chlordane (Technical)	ND	ND	mg/kg	2.6	0.078	EPA-8080	ND	A10	1	
4,4'-DDD	ND	ND	mg/kg	0.026	0.0044	EPA-8080	ND	A10	1	
4,4'-DDE	ND	ND	mg/kg	0.026	0.0043	EPA-8080	ND	A10	1	
4,4'-DDT	ND	ND	mg/kg	0.026	0.0040	EPA-8080	ND	A10	1	
Dieldrin	ND	ND	mg/kg	0.026	0.0036	EPA-8080	ND	A10	1	
Endosulfan I	ND	ND	mg/kg	0.026	0.0045	EPA-8080	ND	A10	1	
Endosulfan II	ND	ND	mg/kg	0.026	0.0057	EPA-8080	ND	A10	1	
Endosulfan sulfate	ND	ND	mg/kg	0.026	0.0051	EPA-8080	ND	A10	1	
Endrin	ND	ND	mg/kg	0.026	0.0045	EPA-8080	ND	A10	1	
Endrin aldehyde	ND	ND	mg/kg	0.026	0.0050	EPA-8080	ND	A10	1	
Heptachlor	ND	ND	mg/kg	0.026	0.0029	EPA-8080	ND	A10	1	
Heptachlor epoxide	ND	ND	mg/kg	0.026	0.0040	EPA-8080	ND	A10	1	
Methoxychlor	ND	ND	mg/kg	0.026	0.0057	EPA-8080	ND	A10	1	
Toxaphene	ND	ND	mg/kg	2.6	0.067	EPA-8080	ND	A10	1	
PCB-1016	ND	ND	mg/kg	0.52	0.20	EPA-8080	ND	A10	1	
PCB-1221	ND	ND	mg/kg	0.52	0.37	EPA-8080	ND	A10	1	
PCB-1232	ND	ND	mg/kg	0.52	0.38	EPA-8080	ND	A10	1	
PCB-1242	ND	ND	mg/kg	0.52	0.22	EPA-8080	ND	A10	1	
PCB-1248	ND	ND	mg/kg	0.52	0.36	EPA-8080	ND	A10	1	
PCB-1254	ND	ND	mg/kg	0.52	0.17	EPA-8080	ND	A10	1	
PCB-1260	ND	ND	mg/kg	0.52	0.15	EPA-8080	ND	A10	1	
Total PCB's (Summation)	ND	ND	mg/kg	0.52	0.26	EPA-8080	ND	A10	1	
TCMX (Surrogate)	96.5	96.5	%	20 - 130 (LCL - UCL)		EPA-8080		A10	1	
Decachlorobiphenyl (Surrogate)	92.8	92.8	%	40 - 130 (LCL - UCL)		EPA-8080		A10	1	

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

BCL Sample ID: 1622180-01		Client Sample Name: BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8080	08/16/16	08/16/16 17:24	HKS	GC-17	51.724	BZH1637	

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

PCB Analysis (EPA Method 8082)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
PCB-1016	ND	ND	mg/kg	0.23	0.090	EPA-8082	ND		1
PCB-1221	ND	ND	mg/kg	0.23	0.17	EPA-8082	ND		1
PCB-1232	ND	ND	mg/kg	0.23	0.17	EPA-8082	ND		1
PCB-1242	ND	ND	mg/kg	0.23	0.097	EPA-8082	ND		1
PCB-1248	ND	ND	mg/kg	0.23	0.16	EPA-8082	ND		1
PCB-1254	ND	ND	mg/kg	0.23	0.074	EPA-8082	ND		1
PCB-1260	ND	ND	mg/kg	0.23	0.067	EPA-8082	ND		1
Total PCB's (Summation)	ND	ND	mg/kg	0.23	0.12	EPA-8082	ND		1
Decachlorobiphenyl (Surrogate)	85.0	85.0	%	40 - 120 (LCL - UCL)		EPA-8082			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8082	09/01/16	09/02/16 12:44	ZZZ	GC-15	23.077	BZI0316

Marine Research Specialists
4744 Telephone Rd
Ste 3-315
Suite A
Ventura, CA 93003-3238

Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID: 1622180-01		Client Sample Name: BC1 Composite Biosolids, 8/10/2016 10:30:00AM							
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ND	mg/kg	0.010	0.0026	EPA-8240	ND	A01	1
Bromodichloromethane	ND	ND	mg/kg	0.010	0.0017	EPA-8240	ND	A01	1
Bromoform	ND	ND	mg/kg	0.010	0.0030	EPA-8240	ND	A01	1
Bromomethane	ND	ND	mg/kg	0.010	0.0032	EPA-8240	ND	A01	1
Carbon tetrachloride	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
Chlorobenzene	ND	ND	mg/kg	0.010	0.0026	EPA-8240	ND	A01	1
Chloroethane	ND	ND	mg/kg	0.010	0.0028	EPA-8240	ND	A01	1
Chloroform	ND	ND	mg/kg	0.010	0.0013	EPA-8240	ND	A01	1
Chloromethane	ND	ND	mg/kg	0.010	0.0028	EPA-8240	ND	A01	1
Dibromochloromethane	ND	ND	mg/kg	0.010	0.0020	EPA-8240	ND	A01	1
1,2-Dichlorobenzene	ND	ND	mg/kg	0.010	0.0016	EPA-8240	ND	A01	1
1,3-Dichlorobenzene	ND	ND	mg/kg	0.010	0.0028	EPA-8240	ND	A01	1
1,4-Dichlorobenzene	ND	ND	mg/kg	0.010	0.0030	EPA-8240	ND	A01	1
1,1-Dichloroethane	ND	ND	mg/kg	0.010	0.0028	EPA-8240	ND	A01	1
1,2-Dichloroethane	ND	ND	mg/kg	0.010	0.0017	EPA-8240	ND	A01	1
1,1-Dichloroethene	ND	ND	mg/kg	0.010	0.0024	EPA-8240	ND	A01	1
trans-1,2-Dichloroethene	ND	ND	mg/kg	0.010	0.0028	EPA-8240	ND	A01	1
1,2-Dichloropropane	ND	ND	mg/kg	0.010	0.0016	EPA-8240	ND	A01	1
cis-1,3-Dichloropropene	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
trans-1,3-Dichloropropene	ND	ND	mg/kg	0.010	0.0024	EPA-8240	ND	A01	1
Ethylbenzene	ND	ND	mg/kg	0.010	0.0030	EPA-8240	ND	A01	1
Methylene chloride	ND	ND	mg/kg	0.020	0.0048	EPA-8240	ND	A01	1
Methyl t-butyl ether	ND	ND	mg/kg	0.010	0.0010	EPA-8240	ND	A01	1
1,1,2,2-Tetrachloroethane	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
Tetrachloroethene	ND	ND	mg/kg	0.010	0.0026	EPA-8240	ND	A01	1
Toluene	ND	ND	mg/kg	0.010	0.0024	EPA-8240	ND	A01	1
1,1,1-Trichloroethane	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
1,1,2-Trichloroethane	ND	ND	mg/kg	0.010	0.0015	EPA-8240	ND	A01	1
Trichloroethene	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
Trichlorofluoromethane	ND	ND	mg/kg	0.010	0.0022	EPA-8240	ND	A01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	mg/kg	0.010	0.0026	EPA-8240	ND	A01	1

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

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM							
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #	
Vinyl chloride	ND	ND	mg/kg	0.010	0.0032	EPA-8240	ND	A01	1	
Total Xylenes	ND	ND	mg/kg	0.020	0.0068	EPA-8240	ND	A01	1	
Acrolein	ND	ND	mg/kg	0.10	0.015	EPA-8240	ND	A01	1	
Acrylonitrile	ND	ND	mg/kg	0.040	0.0094	EPA-8240	ND	A01	1	
1,2-Dichloroethane-d4 (Surrogate)	121	121	%	70 - 121 (LCL - UCL)		EPA-8240			1	
Toluene-d8 (Surrogate)	96.1	96.1	%	81 - 117 (LCL - UCL)		EPA-8240			1	
4-Bromofluorobenzene (Surrogate)	91.3	91.3	%	74 - 121 (LCL - UCL)		EPA-8240			1	
TIC: 2-Nonanone	0.047	0.041	mg/kg			EPA-8240		A01	1	
TIC: 3,3,5-Trimethylcyclohexanone	0.052	0.045	mg/kg			EPA-8240		A01	1	
TIC: Dimethyl disulfide	0.065	0.056	mg/kg			EPA-8240		A01	1	

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8240	08/12/16	08/12/16 17:28	MRF	MS-V3	2	BZH1219

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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)

BCL Sample ID: 1622180-01		Client Sample Name: BC1 Composite Biosolids, 8/10/2016 10:30:00AM							
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ND	mg/kg	5.3	0.49	EPA-8270C	ND	A10	1
Acenaphthylene	ND	ND	mg/kg	5.3	0.95	EPA-8270C	ND	A10	1
Aldrin	ND	ND	mg/kg	5.3	0.84	EPA-8270C	ND	A10	1
Aniline	ND	ND	mg/kg	11	0.84	EPA-8270C	ND	A10	1
Anthracene	ND	ND	mg/kg	5.3	2.6	EPA-8270C	ND	A10	1
Benzidine	ND	ND	mg/kg	160	3.1	EPA-8270C	ND	A10	1
Benzo[a]anthracene	ND	ND	mg/kg	5.3	2.2	EPA-8270C	ND	A10	1
Benzo[b]fluoranthene	ND	ND	mg/kg	5.3	0.50	EPA-8270C	ND	A10	1
Benzo[k]fluoranthene	ND	ND	mg/kg	5.3	0.90	EPA-8270C	ND	A10	1
Benzo[a]pyrene	ND	ND	mg/kg	5.3	1.4	EPA-8270C	ND	A10	1
Benzo[g,h,i]perylene	ND	ND	mg/kg	5.3	0.58	EPA-8270C	ND	A10	1
Benzoic acid	9.5	8.2	mg/kg	26	3.0	EPA-8270C	ND	J,A10	1
Benzyl alcohol	ND	ND	mg/kg	5.3	0.39	EPA-8270C	ND	A10	1
Benzyl butyl phthalate	ND	ND	mg/kg	5.3	1.7	EPA-8270C	ND	A10	1
alpha-BHC	ND	ND	mg/kg	5.3	1.8	EPA-8270C	ND	A10	1
beta-BHC	ND	ND	mg/kg	5.3	2.1	EPA-8270C	ND	A10	1
delta-BHC	ND	ND	mg/kg	5.3	0.95	EPA-8270C	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	5.3	1.3	EPA-8270C	ND	A10	1
bis(2-Chloroethoxy)methane	ND	ND	mg/kg	5.3	2.4	EPA-8270C	ND	A10	1
bis(2-Chloroethyl) ether	ND	ND	mg/kg	5.3	1.4	EPA-8270C	ND	A10	1
bis(2-Chloroisopropyl)ether	ND	ND	mg/kg	5.3	0.79	EPA-8270C	ND	A10	1
bis(2-Ethylhexyl)phthalate	12	11	mg/kg	11	1.7	EPA-8270C	ND	A10	1
4-Bromophenyl phenyl ether	ND	ND	mg/kg	5.3	1.4	EPA-8270C	ND	A10	1
4-Chloroaniline	ND	ND	mg/kg	5.3	0.79	EPA-8270C	ND	A10	1
2-Chloronaphthalene	ND	ND	mg/kg	5.3	0.63	EPA-8270C	ND	A10	1
4-Chlorophenyl phenyl ether	ND	ND	mg/kg	5.3	0.58	EPA-8270C	ND	A10	1
Chrysene	ND	ND	mg/kg	5.3	0.84	EPA-8270C	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	5.3	1.7	EPA-8270C	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	5.3	1.7	EPA-8270C	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	5.3	2.7	EPA-8270C	ND	A10	1
Dibenzo[a,h]anthracene	ND	ND	mg/kg	5.3	1.0	EPA-8270C	ND	A10	1

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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)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM							
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #	
Dibenzofuran	ND	ND	mg/kg	5.3	0.69	EPA-8270C	ND	A10	1	
1,2-Dichlorobenzene	ND	ND	mg/kg	5.3	0.44	EPA-8270C	ND	A10	1	
1,3-Dichlorobenzene	ND	ND	mg/kg	5.3	0.63	EPA-8270C	ND	A10	1	
1,4-Dichlorobenzene	ND	ND	mg/kg	5.3	0.95	EPA-8270C	ND	A10	1	
3,3-Dichlorobenzidine	ND	ND	mg/kg	11	1.3	EPA-8270C	ND	A10	1	
Dieldrin	ND	ND	mg/kg	5.3	1.6	EPA-8270C	ND	A10	1	
Diethyl phthalate	ND	ND	mg/kg	5.3	0.39	EPA-8270C	ND	A10	1	
Dimethyl phthalate	ND	ND	mg/kg	5.3	0.48	EPA-8270C	ND	A10	1	
Di-n-butyl phthalate	ND	ND	mg/kg	5.3	1.0	EPA-8270C	ND	A10	1	
2,4-Dinitrotoluene	ND	ND	mg/kg	5.3	1.6	EPA-8270C	ND	A10	1	
2,6-Dinitrotoluene	ND	ND	mg/kg	5.3	0.84	EPA-8270C	ND	A10	1	
Di-n-octyl phthalate	ND	ND	mg/kg	5.3	0.69	EPA-8270C	ND	A10	1	
1,2-Diphenylhydrazine	ND	ND	mg/kg	5.3	0.84	EPA-8270C	ND	A10	1	
Endosulfan I	ND	ND	mg/kg	11	3.3	EPA-8270C	ND	A10	1	
Endosulfan II	ND	ND	mg/kg	11	3.3	EPA-8270C	ND	A10	1	
Endosulfan sulfate	ND	ND	mg/kg	5.3	3.0	EPA-8270C	ND	A10	1	
Endrin	ND	ND	mg/kg	11	2.8	EPA-8270C	ND	A10	1	
Endrin aldehyde	ND	ND	mg/kg	26	2.3	EPA-8270C	ND	A10	1	
Fluoranthene	0.84	0.72	mg/kg	5.3	0.58	EPA-8270C	ND	J,A10	1	
Fluorene	ND	ND	mg/kg	5.3	0.69	EPA-8270C	ND	A10	1	
Heptachlor	ND	ND	mg/kg	5.3	1.3	EPA-8270C	ND	A10	1	
Heptachlor epoxide	ND	ND	mg/kg	5.3	3.4	EPA-8270C	ND	A10	1	
Hexachlorobenzene	ND	ND	mg/kg	5.3	0.63	EPA-8270C	ND	A10	1	
Hexachlorobutadiene	ND	ND	mg/kg	5.3	1.1	EPA-8270C	ND	A10	1	
Hexachlorocyclopentadiene	ND	ND	mg/kg	5.3	1.5	EPA-8270C	ND	A10	1	
Hexachloroethane	ND	ND	mg/kg	5.3	1.7	EPA-8270C	ND	A10	1	
Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	5.3	0.69	EPA-8270C	ND	A10	1	
Isophorone	ND	ND	mg/kg	5.3	0.52	EPA-8270C	ND	A10	1	
2-Methylnaphthalene	ND	ND	mg/kg	5.3	0.43	EPA-8270C	ND	A10	1	
Naphthalene	ND	ND	mg/kg	5.3	0.45	EPA-8270C	ND	A10	1	
2-Naphthylamine	ND	ND	mg/kg	160	2.1	EPA-8270C	ND	A10	1	

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1622180-01		Client Sample Name: BC1 Composite Biosolids, 8/10/2016 10:30:00AM								
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #	
2-Nitroaniline	ND	ND	mg/kg	5.3	1.4	EPA-8270C	ND	A10	1	
3-Nitroaniline	ND	ND	mg/kg	11	2.0	EPA-8270C	ND	A10	1	
4-Nitroaniline	ND	ND	mg/kg	11	2.0	EPA-8270C	ND	A10	1	
Nitrobenzene	ND	ND	mg/kg	5.3	0.52	EPA-8270C	ND	A10	1	
N-Nitrosodimethylamine	ND	ND	mg/kg	5.3	4.1	EPA-8270C	ND	A10	1	
N-Nitrosodi-N-propylamine	ND	ND	mg/kg	5.3	0.69	EPA-8270C	ND	A10	1	
N-Nitrosodiphenylamine	ND	ND	mg/kg	5.3	0.95	EPA-8270C	ND	A10	1	
Phenanthrene	ND	ND	mg/kg	5.3	1.8	EPA-8270C	ND	A10	1	
Pyrene	ND	ND	mg/kg	5.3	1.4	EPA-8270C	ND	A10	1	
1,2,4-Trichlorobenzene	ND	ND	mg/kg	5.3	0.84	EPA-8270C	ND	A10	1	
4-Chloro-3-methylphenol	ND	ND	mg/kg	11	0.90	EPA-8270C	ND	A10	1	
2-Chlorophenol	ND	ND	mg/kg	5.3	0.79	EPA-8270C	ND	A10	1	
2,4-Dichlorophenol	ND	ND	mg/kg	5.3	1.1	EPA-8270C	ND	A10	1	
2,4-Dimethylphenol	ND	ND	mg/kg	5.3	1.0	EPA-8270C	ND	A10	1	
4,6-Dinitro-2-methylphenol	ND	ND	mg/kg	26	1.6	EPA-8270C	ND	A10	1	
2,4-Dinitrophenol	ND	ND	mg/kg	26	9.5	EPA-8270C	ND	A10	1	
2-Methylphenol	ND	ND	mg/kg	5.3	0.45	EPA-8270C	ND	A10	1	
3- & 4-Methylphenol	5.5	4.8	mg/kg	11	1.8	EPA-8270C	ND	J,A10	1	
2-Nitrophenol	ND	ND	mg/kg	5.3	1.3	EPA-8270C	ND	A10	1	
4-Nitrophenol	ND	ND	mg/kg	11	1.8	EPA-8270C	ND	A10	1	
Pentachlorophenol	ND	ND	mg/kg	11	1.6	EPA-8270C	ND	A10	1	
Phenol	2.1	1.8	mg/kg	5.3	0.79	EPA-8270C	ND	J,A10	1	
2,4,5-Trichlorophenol	ND	ND	mg/kg	11	0.90	EPA-8270C	ND	A10	1	
2,4,6-Trichlorophenol	ND	ND	mg/kg	11	1.5	EPA-8270C	ND	A10	1	
2-Fluorophenol (Surrogate)	36.9	36.9	%	20 - 130 (LCL - UCL)		EPA-8270C			1	
Phenol-d5 (Surrogate)	50.0	50.0	%	30 - 130 (LCL - UCL)		EPA-8270C			1	
Nitrobenzene-d5 (Surrogate)	58.1	58.1	%	30 - 130 (LCL - UCL)		EPA-8270C			1	
2-Fluorobiphenyl (Surrogate)	45.8	45.8	%	30 - 140 (LCL - UCL)		EPA-8270C			1	
2,4,6-Tribromophenol (Surrogate)	43.9	43.9	%	20 - 150 (LCL - UCL)		EPA-8270C			1	
p-Terphenyl-d14 (Surrogate)	60.0	60.0	%	30 - 150 (LCL - UCL)		EPA-8270C			1	

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1622180-01		Client Sample Name: BC1 Composite Biosolids, 8/10/2016 10:30:00AM					
Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8270C	08/16/16	08/17/16 10:43	VH1	MS-B1	52.778	BZH1700

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

EPA Method 1664

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	31000	27000	mg/kg	250	70	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-1664A HEM	08/23/16	08/23/16 08:30	MAM	MAN-SV	5	BZH2300

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Moisture	0	13.7	%	0.05	0.05	Calc	ND		1
Total Cyanide	3.1	2.6	mg/kg	0.50	0.26	EPA-9012	ND		2
pH	6.61	6.61	pH Units	0.05	0.05	EPA-9045D		pH1:3	3
pH Measurement Temperature	24.6	24.6	C	0.1	0.1	EPA-9045D			3
Nitrate as NO3	1900	1600	mg/kg	22	6.0	EPA-300.0	ND	A07	4
Total Kjeldahl Nitrogen	17000	14000	mg/kg	4000	1500	EPA-351.2	ND	A07	5
Ammonia as N	4900	4300	mg/kg	500	250	EPA-350.1	ND	A07	6
Total Phosphate	45000	39000	mg/kg	1500	600	EPA-365.4	ND	A07	7
Solids	100	86.3	%	0.05	0.05	SM-2540G			8

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Calc	08/12/16	08/15/16 18:01	AMM	Calc	1	BZH1323
2	EPA-9012	08/18/16	08/19/16 13:06	RCC	KONE-1	0.980	BZH1559
3	EPA-9045D	08/15/16	08/15/16 16:00	DIW	PH10	1	BZH1533
4	EPA-300.0	08/16/16	08/16/16 15:46	EMW	IC5	5	BZH1551
5	EPA-351.2	08/12/16	08/17/16 15:51	JMH	SC-1	100	BZH1329
6	EPA-350.1	08/17/16	08/19/16 16:07	JP1	SC-1	48.077	BZH1685
7	EPA-365.4	08/12/16	08/15/16 09:36	JMH	SC-1	50	BZH1334
8	SM-2540G	08/12/16	08/12/16 12:15	NW1	SPEC06	1	BZH1303

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
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		3700	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	08/24/16	08/24/16 14:13	RCC	KONE-1	1	BZH2479
2	EPA-160.1	08/18/16	08/18/16 11:00	CAD	MANUAL	20	BZH1856

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Reported: 09/06/2016 10:37
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLIC)

BCL Sample ID:	1622180-01	Client Sample Name:	BC1 Composite Biosolids, 8/10/2016 10:30:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Antimony	1.9	1.6	mg/kg	5.0	0.33	EPA-6010B	ND	J	1
Arsenic	1.8	1.5	mg/kg	1.0	0.40	EPA-6010B	0.55		1
Barium	240	210	mg/kg	0.50	0.18	EPA-6010B	ND		1
Beryllium	0.096	0.083	mg/kg	0.50	0.047	EPA-6010B	ND	J	1
Cadmium	1.1	0.91	mg/kg	0.50	0.052	EPA-6010B	ND		1
Chromium	20	18	mg/kg	0.50	0.050	EPA-6010B	0.086		1
Total Hexavalent Chromium	1.0	0.88	mg/kg	2.5	0.75	EPA-7199	ND	J,A07	2
Cobalt	2.8	2.4	mg/kg	2.5	0.098	EPA-6010B	ND	J	1
Copper	210	180	mg/kg	1.0	0.050	EPA-6010B	ND		1
Lead	16	14	mg/kg	2.5	0.28	EPA-6010B	ND		1
Mercury	0.76	0.65	mg/kg	0.16	0.041	EPA-7471A	ND		3
Molybdenum	9.6	8.3	mg/kg	2.5	0.050	EPA-6010B	ND		1
Nickel	18	15	mg/kg	0.50	0.15	EPA-6010B	ND		1
Selenium	5.4	4.7	mg/kg	1.0	0.98	EPA-6010B	ND		1
Silver	1.5	1.3	mg/kg	0.50	0.067	EPA-6010B	ND		1
Thallium	ND	ND	mg/kg	5.0	0.64	EPA-6010B	ND		1
Vanadium	16	14	mg/kg	0.50	0.11	EPA-6010B	ND		1
Zinc	480	420	mg/kg	2.5	0.087	EPA-6010B	0.35		1
Boron	10	8.7	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	08/12/16	08/15/16 18:47	JRG	PE-OP2	0.962	BZH1243
2	EPA-7199	08/15/16	08/16/16 17:42	JSW	IC-4	2.500	BZH1414
3	EPA-7471A	08/15/16	08/16/16 09:37	MEV	CETAC2	1.008	BZH1421

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Reported: 09/06/2016 10:37
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: BZH1637						
Aldrin	BZH1637-BLK1	ND	mg/kg	0.00050	0.000055	
alpha-BHC	BZH1637-BLK1	ND	mg/kg	0.00050	0.000064	
beta-BHC	BZH1637-BLK1	ND	mg/kg	0.00050	0.000071	
delta-BHC	BZH1637-BLK1	ND	mg/kg	0.00050	0.000059	
gamma-BHC (Lindane)	BZH1637-BLK1	ND	mg/kg	0.00050	0.000034	
Chlordane (Technical)	BZH1637-BLK1	ND	mg/kg	0.050	0.0015	
4,4'-DDD	BZH1637-BLK1	ND	mg/kg	0.00050	0.000085	
4,4'-DDE	BZH1637-BLK1	ND	mg/kg	0.00050	0.000083	
4,4'-DDT	BZH1637-BLK1	ND	mg/kg	0.00050	0.000078	
Dieldrin	BZH1637-BLK1	ND	mg/kg	0.00050	0.000070	
Endosulfan I	BZH1637-BLK1	ND	mg/kg	0.00050	0.000087	
Endosulfan II	BZH1637-BLK1	ND	mg/kg	0.00050	0.00011	
Endosulfan sulfate	BZH1637-BLK1	ND	mg/kg	0.00050	0.000099	
Endrin	BZH1637-BLK1	ND	mg/kg	0.00050	0.000087	
Endrin aldehyde	BZH1637-BLK1	ND	mg/kg	0.00050	0.000097	
Heptachlor	BZH1637-BLK1	ND	mg/kg	0.00050	0.000057	
Heptachlor epoxide	BZH1637-BLK1	ND	mg/kg	0.00050	0.000078	
Methoxychlor	BZH1637-BLK1	ND	mg/kg	0.00050	0.00011	
Toxaphene	BZH1637-BLK1	ND	mg/kg	0.050	0.0013	
PCB-1016	BZH1637-BLK1	ND	mg/kg	0.010	0.0039	
PCB-1221	BZH1637-BLK1	ND	mg/kg	0.010	0.0072	
PCB-1232	BZH1637-BLK1	ND	mg/kg	0.010	0.0074	
PCB-1242	BZH1637-BLK1	ND	mg/kg	0.010	0.0042	
PCB-1248	BZH1637-BLK1	ND	mg/kg	0.010	0.0070	
PCB-1254	BZH1637-BLK1	ND	mg/kg	0.010	0.0032	
PCB-1260	BZH1637-BLK1	ND	mg/kg	0.010	0.0029	
Total PCB's (Summation)	BZH1637-BLK1	ND	mg/kg	0.010	0.0050	
TCMX (Surrogate)	BZH1637-BLK1	85.2	%	20 - 130 (LCL - UCL)		
Decachlorobiphenyl (Surrogate)	BZH1637-BLK1	88.8	%	40 - 130 (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		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: BZH1637										
Aldrin	BZH1637-BS1	LCS	0.0044085	0.0049180	mg/kg	89.6		70 - 130		
gamma-BHC (Lindane)	BZH1637-BS1	LCS	0.0044380	0.0049180	mg/kg	90.2		60 - 140		
4,4'-DDT	BZH1637-BS1	LCS	0.0036315	0.0049180	mg/kg	73.8		60 - 140		
Dieldrin	BZH1637-BS1	LCS	0.0046980	0.0049180	mg/kg	95.5		70 - 130		
Endrin	BZH1637-BS1	LCS	0.0049538	0.0049180	mg/kg	101		60 - 140		
Heptachlor	BZH1637-BS1	LCS	0.0039587	0.0049180	mg/kg	80.5		60 - 140		
TCMX (Surrogate)	BZH1637-BS1	LCS	0.0085007	0.0098361	mg/kg	86.4		20 - 130		
Decachlorobiphenyl (Surrogate)	BZH1637-BS1	LCS	0.017425	0.019672	mg/kg	88.6		40 - 130		

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Project Manager: Doug Coats

Organochlorine Pesticides and PCB's (EPA Method 8080)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1637		Used client sample: N									
Aldrin	MS	1621392-23	ND	0.0054747	0.0049342	mg/kg		111		50 - 140	
	MSD	1621392-23	ND	0.0051717	0.0050505	mg/kg	5.7	102	30	50 - 140	
gamma-BHC (Lindane)	MS	1621392-23	ND	0.0051819	0.0049342	mg/kg		105		50 - 140	
	MSD	1621392-23	ND	0.0048158	0.0050505	mg/kg	7.3	95.4	30	50 - 140	
4,4'-DDT	MS	1621392-23	ND	0.0031339	0.0049342	mg/kg		63.5		50 - 140	
	MSD	1621392-23	ND	0.0032646	0.0050505	mg/kg	4.1	64.6	30	50 - 140	
Dieldrin	MS	1621392-23	ND	0.0042516	0.0049342	mg/kg		86.2		40 - 140	
	MSD	1621392-23	ND	0.0042114	0.0050505	mg/kg	0.9	83.4	30	40 - 140	
Endrin	MS	1621392-23	ND	0.0050178	0.0049342	mg/kg		102		50 - 150	
	MSD	1621392-23	ND	0.0047189	0.0050505	mg/kg	6.1	93.4	30	50 - 150	
Heptachlor	MS	1621392-23	ND	0.0050826	0.0049342	mg/kg		103		60 - 140	
	MSD	1621392-23	ND	0.0046987	0.0050505	mg/kg	7.8	93.0	30	60 - 140	
TCMX (Surrogate)	MS	1621392-23	ND	0.010182	0.0098684	mg/kg		103		20 - 130	
	MSD	1621392-23	ND	0.0092556	0.010101	mg/kg	9.5	91.6		20 - 130	
Decachlorobiphenyl (Surrogate)	MS	1621392-23	ND	0.017944	0.019737	mg/kg		90.9		40 - 130	
	MSD	1621392-23	ND	0.018208	0.020202	mg/kg	1.5	90.1		40 - 130	

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Project Manager: Doug Coats

PCB Analysis (EPA Method 8082)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BZI0316						
PCB-1016	BZI0316-BLK1	ND	mg/kg	0.010	0.0039	
PCB-1221	BZI0316-BLK1	ND	mg/kg	0.010	0.0072	
PCB-1232	BZI0316-BLK1	ND	mg/kg	0.010	0.0074	
PCB-1242	BZI0316-BLK1	ND	mg/kg	0.010	0.0042	
PCB-1248	BZI0316-BLK1	ND	mg/kg	0.010	0.0070	
PCB-1254	BZI0316-BLK1	ND	mg/kg	0.010	0.0032	
PCB-1260	BZI0316-BLK1	ND	mg/kg	0.010	0.0029	
Total PCB's (Summation)	BZI0316-BLK1	ND	mg/kg	0.010	0.0050	
Decachlorobiphenyl (Surrogate)	BZI0316-BLK1	93.3	%	40 - 120 (LCL - UCL)		

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PCB Analysis (EPA Method 8082)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BZI0316										
PCB-1016	BZI0316-BS1	LCS	0.072635	0.084459	mg/kg	86.0		60 - 120		
PCB-1260	BZI0316-BS1	LCS	0.084122	0.084459	mg/kg	99.6		60 - 120		
Decachlorobiphenyl (Surrogate)	BZI0316-BS1	LCS	0.017230	0.020270	mg/kg	85.0		40 - 120		

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PCB Analysis (EPA Method 8082)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZI0316		Used client sample: N									
PCB-1016	MS	1621392-46	ND	0.073244	0.083612	mg/kg		87.6		60 - 120	
	MSD	1621392-46	ND	0.083056	0.083056	mg/kg	12.6	100	30	60 - 120	
PCB-1260	MS	1621392-46	ND	0.085953	0.083612	mg/kg		103		60 - 120	
	MSD	1621392-46	ND	0.079402	0.083056	mg/kg	7.9	95.6	30	60 - 120	
Decachlorobiphenyl (Surrogate)	MS	1621392-46	ND	0.017726	0.020067	mg/kg		88.3		40 - 120	
	MSD	1621392-46	ND	0.017940	0.019934	mg/kg	1.2	90.0		40 - 120	

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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: BZH1219						
Benzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0013	
Bromodichloromethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.00084	
Bromoform	BZH1219-BLK1	ND	mg/kg	0.0050	0.0015	
Bromomethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0016	
Carbon tetrachloride	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
Chlorobenzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0013	
Chloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0014	
Chloroform	BZH1219-BLK1	ND	mg/kg	0.0050	0.00063	
Chloromethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0014	
Dibromochloromethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.00099	
1,2-Dichlorobenzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.00081	
1,3-Dichlorobenzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0014	
1,4-Dichlorobenzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0015	
1,1-Dichloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.00085	
1,1-Dichloroethene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0012	
trans-1,2-Dichloroethene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloropropane	BZH1219-BLK1	ND	mg/kg	0.0050	0.00081	
cis-1,3-Dichloropropene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
trans-1,3-Dichloropropene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0012	
Ethylbenzene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0015	
Methylene chloride	BZH1219-BLK1	ND	mg/kg	0.010	0.0024	
Methyl t-butyl ether	BZH1219-BLK1	ND	mg/kg	0.0050	0.00050	
1,1,2,2-Tetrachloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
Tetrachloroethene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0013	
Toluene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0012	
1,1,1-Trichloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.00077	
Trichloroethene	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
Trichlorofluoromethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloro-1,2,2-trifluoroethane	BZH1219-BLK1	ND	mg/kg	0.0050	0.0013	
Vinyl chloride	BZH1219-BLK1	ND	mg/kg	0.0050	0.0016	
Total Xylenes	BZH1219-BLK1	ND	mg/kg	0.010	0.0034	

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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: BZH1219						
Acrolein	BZH1219-BLK1	ND	mg/kg	0.050	0.0073	
Acrylonitrile	BZH1219-BLK1	ND	mg/kg	0.020	0.0047	
1,2-Dichloroethane-d4 (Surrogate)	BZH1219-BLK1	104	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	BZH1219-BLK1	104	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BZH1219-BLK1	102	%	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		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: BZH1219										
Benzene	BZH1219-BS1	LCS	0.12444	0.12500	mg/kg	99.6		70 - 130		
Bromodichloromethane	BZH1219-BS1	LCS	0.12490	0.12500	mg/kg	99.9		70 - 130		
Chlorobenzene	BZH1219-BS1	LCS	0.11627	0.12500	mg/kg	93.0		70 - 130		
Chloroethane	BZH1219-BS1	LCS	0.14421	0.12500	mg/kg	115		70 - 130		
1,4-Dichlorobenzene	BZH1219-BS1	LCS	0.12387	0.12500	mg/kg	99.1		70 - 130		
1,1-Dichloroethane	BZH1219-BS1	LCS	0.12387	0.12500	mg/kg	99.1		70 - 130		
1,1-Dichloroethene	BZH1219-BS1	LCS	0.12309	0.12500	mg/kg	98.5		70 - 130		
Toluene	BZH1219-BS1	LCS	0.12711	0.12500	mg/kg	102		70 - 130		
Trichloroethene	BZH1219-BS1	LCS	0.12535	0.12500	mg/kg	100		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BZH1219-BS1	LCS	0.056610	0.050000	mg/kg	113		70 - 121		
Toluene-d8 (Surrogate)	BZH1219-BS1	LCS	0.051580	0.050000	mg/kg	103		81 - 117		
4-Bromofluorobenzene (Surrogate)	BZH1219-BS1	LCS	0.052610	0.050000	mg/kg	105		74 - 121		

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Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1219		Used client sample: N									
Benzene	MS	1621392-28	ND	0.11902	0.12500	mg/kg		95.2		70 - 130	
	MSD	1621392-28	ND	0.13752	0.12500	mg/kg	14.4	110	20	70 - 130	
Bromodichloromethane	MS	1621392-28	ND	0.12967	0.12500	mg/kg		104		70 - 130	
	MSD	1621392-28	ND	0.14489	0.12500	mg/kg	11.1	116	20	70 - 130	
Chlorobenzene	MS	1621392-28	ND	0.11368	0.12500	mg/kg		90.9		70 - 130	
	MSD	1621392-28	ND	0.12853	0.12500	mg/kg	12.3	103	20	70 - 130	
Chloroethane	MS	1621392-28	ND	0.13562	0.12500	mg/kg		108		70 - 130	
	MSD	1621392-28	ND	0.16321	0.12500	mg/kg	18.5	131	20	70 - 130	Q03
1,4-Dichlorobenzene	MS	1621392-28	ND	0.11802	0.12500	mg/kg		94.4		70 - 130	
	MSD	1621392-28	ND	0.13451	0.12500	mg/kg	13.1	108	20	70 - 130	
1,1-Dichloroethane	MS	1621392-28	ND	0.12172	0.12500	mg/kg		97.4		70 - 130	
	MSD	1621392-28	ND	0.13899	0.12500	mg/kg	13.2	111	20	70 - 130	
1,1-Dichloroethene	MS	1621392-28	ND	0.11351	0.12500	mg/kg		90.8		70 - 130	
	MSD	1621392-28	ND	0.13353	0.12500	mg/kg	16.2	107	20	70 - 130	
Toluene	MS	1621392-28	ND	0.12258	0.12500	mg/kg		98.1		70 - 130	
	MSD	1621392-28	ND	0.13908	0.12500	mg/kg	12.6	111	20	70 - 130	
Trichloroethene	MS	1621392-28	ND	0.11827	0.12500	mg/kg		94.6		70 - 130	
	MSD	1621392-28	ND	0.13834	0.12500	mg/kg	15.6	111	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1621392-28	ND	0.057460	0.050000	mg/kg		115		70 - 121	
	MSD	1621392-28	ND	0.056990	0.050000	mg/kg	0.8	114		70 - 121	
Toluene-d8 (Surrogate)	MS	1621392-28	ND	0.051420	0.050000	mg/kg		103		81 - 117	
	MSD	1621392-28	ND	0.051600	0.050000	mg/kg	0.3	103		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1621392-28	ND	0.052980	0.050000	mg/kg		106		74 - 121	
	MSD	1621392-28	ND	0.053520	0.050000	mg/kg	1.0	107		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: BZH1700						
Acenaphthene	BZH1700-BLK1	ND	mg/kg	0.10	0.0092	
Acenaphthylene	BZH1700-BLK1	ND	mg/kg	0.10	0.018	
Aldrin	BZH1700-BLK1	ND	mg/kg	0.10	0.016	
Aniline	BZH1700-BLK1	ND	mg/kg	0.20	0.016	
Anthracene	BZH1700-BLK1	ND	mg/kg	0.10	0.050	
Benzidine	BZH1700-BLK1	ND	mg/kg	3.0	0.058	
Benzo[a]anthracene	BZH1700-BLK1	ND	mg/kg	0.10	0.041	
Benzo[b]fluoranthene	BZH1700-BLK1	ND	mg/kg	0.10	0.0094	
Benzo[k]fluoranthene	BZH1700-BLK1	ND	mg/kg	0.10	0.017	
Benzo[a]pyrene	BZH1700-BLK1	ND	mg/kg	0.10	0.026	
Benzo[g,h,i]perylene	BZH1700-BLK1	ND	mg/kg	0.10	0.011	
Benzoic acid	BZH1700-BLK1	ND	mg/kg	0.50	0.057	
Benzyl alcohol	BZH1700-BLK1	ND	mg/kg	0.10	0.0073	
Benzyl butyl phthalate	BZH1700-BLK1	ND	mg/kg	0.10	0.033	
alpha-BHC	BZH1700-BLK1	ND	mg/kg	0.10	0.035	
beta-BHC	BZH1700-BLK1	ND	mg/kg	0.10	0.040	
delta-BHC	BZH1700-BLK1	ND	mg/kg	0.10	0.018	
gamma-BHC (Lindane)	BZH1700-BLK1	ND	mg/kg	0.10	0.025	
bis(2-Chloroethoxy)methane	BZH1700-BLK1	ND	mg/kg	0.10	0.045	
bis(2-Chloroethyl) ether	BZH1700-BLK1	ND	mg/kg	0.10	0.026	
bis(2-Chloroisopropyl)ether	BZH1700-BLK1	ND	mg/kg	0.10	0.015	
bis(2-Ethylhexyl)phthalate	BZH1700-BLK1	ND	mg/kg	0.20	0.032	
4-Bromophenyl phenyl ether	BZH1700-BLK1	ND	mg/kg	0.10	0.026	
4-Chloroaniline	BZH1700-BLK1	ND	mg/kg	0.10	0.015	
2-Chloronaphthalene	BZH1700-BLK1	ND	mg/kg	0.10	0.012	
4-Chlorophenyl phenyl ether	BZH1700-BLK1	ND	mg/kg	0.10	0.011	
Chrysene	BZH1700-BLK1	ND	mg/kg	0.10	0.016	
4,4'-DDD	BZH1700-BLK1	ND	mg/kg	0.10	0.032	
4,4'-DDE	BZH1700-BLK1	ND	mg/kg	0.10	0.033	
4,4'-DDT	BZH1700-BLK1	ND	mg/kg	0.10	0.052	
Dibenzo[a,h]anthracene	BZH1700-BLK1	ND	mg/kg	0.10	0.019	
Dibenzofuran	BZH1700-BLK1	ND	mg/kg	0.10	0.013	
1,2-Dichlorobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.0084	

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Marine Research Specialists
4744 Telephone Rd
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Reported: 09/06/2016 10:37
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: BZH1700						
1,3-Dichlorobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.012	
1,4-Dichlorobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.018	
3,3-Dichlorobenzidine	BZH1700-BLK1	ND	mg/kg	0.20	0.024	
Dieldrin	BZH1700-BLK1	ND	mg/kg	0.10	0.031	
Diethyl phthalate	BZH1700-BLK1	ND	mg/kg	0.10	0.0073	
Dimethyl phthalate	BZH1700-BLK1	ND	mg/kg	0.10	0.0091	
Di-n-butyl phthalate	BZH1700-BLK1	ND	mg/kg	0.10	0.019	
2,4-Dinitrotoluene	BZH1700-BLK1	ND	mg/kg	0.10	0.030	
2,6-Dinitrotoluene	BZH1700-BLK1	ND	mg/kg	0.10	0.016	
Di-n-octyl phthalate	BZH1700-BLK1	ND	mg/kg	0.10	0.013	
1,2-Diphenylhydrazine	BZH1700-BLK1	ND	mg/kg	0.10	0.016	
Endosulfan I	BZH1700-BLK1	ND	mg/kg	0.20	0.062	
Endosulfan II	BZH1700-BLK1	ND	mg/kg	0.20	0.062	
Endosulfan sulfate	BZH1700-BLK1	ND	mg/kg	0.10	0.056	
Endrin	BZH1700-BLK1	ND	mg/kg	0.20	0.053	
Endrin aldehyde	BZH1700-BLK1	ND	mg/kg	0.50	0.044	
Fluoranthene	BZH1700-BLK1	ND	mg/kg	0.10	0.011	
Fluorene	BZH1700-BLK1	ND	mg/kg	0.10	0.013	
Heptachlor	BZH1700-BLK1	ND	mg/kg	0.10	0.024	
Heptachlor epoxide	BZH1700-BLK1	ND	mg/kg	0.10	0.065	
Hexachlorobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.012	
Hexachlorobutadiene	BZH1700-BLK1	ND	mg/kg	0.10	0.020	
Hexachlorocyclopentadiene	BZH1700-BLK1	ND	mg/kg	0.10	0.029	
Hexachloroethane	BZH1700-BLK1	ND	mg/kg	0.10	0.032	
Indeno[1,2,3-cd]pyrene	BZH1700-BLK1	ND	mg/kg	0.10	0.013	
Isophorone	BZH1700-BLK1	ND	mg/kg	0.10	0.0099	
2-Methylnaphthalene	BZH1700-BLK1	ND	mg/kg	0.10	0.0082	
Naphthalene	BZH1700-BLK1	ND	mg/kg	0.10	0.0085	
2-Naphthylamine	BZH1700-BLK1	ND	mg/kg	3.0	0.039	
2-Nitroaniline	BZH1700-BLK1	ND	mg/kg	0.10	0.027	
3-Nitroaniline	BZH1700-BLK1	ND	mg/kg	0.20	0.037	
4-Nitroaniline	BZH1700-BLK1	ND	mg/kg	0.20	0.037	
Nitrobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.0098	

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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: BZH1700						
N-Nitrosodimethylamine	BZH1700-BLK1	ND	mg/kg	0.10	0.077	
N-Nitrosodi-N-propylamine	BZH1700-BLK1	ND	mg/kg	0.10	0.013	
N-Nitrosodiphenylamine	BZH1700-BLK1	ND	mg/kg	0.10	0.018	
Phenanthrene	BZH1700-BLK1	ND	mg/kg	0.10	0.034	
Pyrene	BZH1700-BLK1	ND	mg/kg	0.10	0.027	
1,2,4-Trichlorobenzene	BZH1700-BLK1	ND	mg/kg	0.10	0.016	
4-Chloro-3-methylphenol	BZH1700-BLK1	ND	mg/kg	0.20	0.017	
2-Chlorophenol	BZH1700-BLK1	ND	mg/kg	0.10	0.015	
2,4-Dichlorophenol	BZH1700-BLK1	ND	mg/kg	0.10	0.021	
2,4-Dimethylphenol	BZH1700-BLK1	ND	mg/kg	0.10	0.019	
4,6-Dinitro-2-methylphenol	BZH1700-BLK1	ND	mg/kg	0.50	0.030	
2,4-Dinitrophenol	BZH1700-BLK1	ND	mg/kg	0.50	0.18	
2-Methylphenol	BZH1700-BLK1	ND	mg/kg	0.10	0.0086	
3- & 4-Methylphenol	BZH1700-BLK1	ND	mg/kg	0.20	0.034	
2-Nitrophenol	BZH1700-BLK1	ND	mg/kg	0.10	0.025	
4-Nitrophenol	BZH1700-BLK1	ND	mg/kg	0.20	0.034	
Pentachlorophenol	BZH1700-BLK1	ND	mg/kg	0.20	0.031	
Phenol	BZH1700-BLK1	ND	mg/kg	0.10	0.015	
2,4,5-Trichlorophenol	BZH1700-BLK1	ND	mg/kg	0.20	0.017	
2,4,6-Trichlorophenol	BZH1700-BLK1	ND	mg/kg	0.20	0.028	
2-Fluorophenol (Surrogate)	BZH1700-BLK1	85.5	%	20 - 130 (LCL - UCL)		
Phenol-d5 (Surrogate)	BZH1700-BLK1	72.8	%	30 - 130 (LCL - UCL)		
Nitrobenzene-d5 (Surrogate)	BZH1700-BLK1	80.8	%	30 - 130 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	BZH1700-BLK1	78.9	%	30 - 140 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	BZH1700-BLK1	67.7	%	20 - 150 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	BZH1700-BLK1	96.6	%	30 - 150 (LCL - UCL)		

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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		Lab
								Percent Recovery	RPD	
QC Batch ID: BZH1700										
Acenaphthene	BZH1700-BS1	LCS	1.2267	1.6722	mg/kg	73.4		50 - 130		
1,4-Dichlorobenzene	BZH1700-BS1	LCS	1.3281	1.6722	mg/kg	79.4		50 - 130		
2,4-Dinitrotoluene	BZH1700-BS1	LCS	1.1870	1.6722	mg/kg	71.0		50 - 130		
Hexachlorobenzene	BZH1700-BS1	LCS	1.3074	1.3378	mg/kg	97.7		40 - 130		
Hexachlorobutadiene	BZH1700-BS1	LCS	1.1689	1.6722	mg/kg	69.9		50 - 130		
Hexachloroethane	BZH1700-BS1	LCS	1.2223	1.6722	mg/kg	73.1		50 - 130		
Nitrobenzene	BZH1700-BS1	LCS	1.4514	1.6722	mg/kg	86.8		50 - 130		
N-Nitrosodi-N-propylamine	BZH1700-BS1	LCS	1.3268	1.6722	mg/kg	79.3		40 - 120		
Pyrene	BZH1700-BS1	LCS	1.4082	1.6722	mg/kg	84.2		40 - 150		
1,2,4-Trichlorobenzene	BZH1700-BS1	LCS	1.2369	1.6722	mg/kg	74.0		50 - 120		
4-Chloro-3-methylphenol	BZH1700-BS1	LCS	1.2334	1.6722	mg/kg	73.8		50 - 130		
2-Chlorophenol	BZH1700-BS1	LCS	1.3116	1.6722	mg/kg	78.4		50 - 130		
2-Methylphenol	BZH1700-BS1	LCS	1.2143	1.6722	mg/kg	72.6		50 - 130		
3- & 4-Methylphenol	BZH1700-BS1	LCS	2.2841	3.3445	mg/kg	68.3		50 - 130		
4-Nitrophenol	BZH1700-BS1	LCS	0.89408	1.6722	mg/kg	53.5		30 - 130		
Pentachlorophenol	BZH1700-BS1	LCS	0.75428	1.3378	mg/kg	56.4		20 - 130		
Phenol	BZH1700-BS1	LCS	1.0901	1.6722	mg/kg	65.2		40 - 120		
2,4,6-Trichlorophenol	BZH1700-BS1	LCS	1.0018	1.6722	mg/kg	59.9		50 - 130		
2-Fluorophenol (Surrogate)	BZH1700-BS1	LCS	1.0469	1.6722	mg/kg	62.6		20 - 130		
Phenol-d5 (Surrogate)	BZH1700-BS1	LCS	1.1073	1.6722	mg/kg	66.2		30 - 130		
Nitrobenzene-d5 (Surrogate)	BZH1700-BS1	LCS	1.1775	1.6722	mg/kg	70.4		30 - 130		
2-Fluorobiphenyl (Surrogate)	BZH1700-BS1	LCS	0.99162	1.3378	mg/kg	74.1		30 - 140		
2,4,6-Tribromophenol (Surrogate)	BZH1700-BS1	LCS	1.1718	1.6722	mg/kg	70.1		20 - 150		
p-Terphenyl-d14 (Surrogate)	BZH1700-BS1	LCS	0.76731	0.83612	mg/kg	91.8		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

									Control Limits		
Constituent	Type	Source	Source	Result	Spike	Units	RPD	Percent	Percent		Lab
		Sample ID	Result					Added	Recovery	RPD	
QC Batch ID: BZH1700		Used client sample: N									
Acenaphthene	MS	1621392-29	ND	1.1013	1.6667	mg/kg		66.1		30 - 140	
	MSD	1621392-29	ND	1.2849	1.6447	mg/kg	15.4	78.1	30	30 - 140	
1,4-Dichlorobenzene	MS	1621392-29	ND	1.2594	1.6667	mg/kg		75.6		50 - 130	
	MSD	1621392-29	ND	1.3839	1.6447	mg/kg	9.4	84.1	30	50 - 130	
2,4-Dinitrotoluene	MS	1621392-29	ND	1.0234	1.6667	mg/kg		61.4		50 - 130	
	MSD	1621392-29	ND	1.1717	1.6447	mg/kg	13.5	71.2	30	50 - 130	
Hexachlorobenzene	MS	1621392-29	ND	1.1624	1.3333	mg/kg		87.2		50 - 130	
	MSD	1621392-29	ND	1.3211	1.3158	mg/kg	12.8	100	30	50 - 130	
Hexachlorobutadiene	MS	1621392-29	ND	1.0693	1.6667	mg/kg		64.2		50 - 130	
	MSD	1621392-29	ND	1.2010	1.6447	mg/kg	11.6	73.0	30	50 - 130	
Hexachloroethane	MS	1621392-29	ND	1.2025	1.6667	mg/kg		72.1		50 - 130	
	MSD	1621392-29	ND	1.2944	1.6447	mg/kg	7.4	78.7	30	50 - 130	
Nitrobenzene	MS	1621392-29	ND	1.3189	1.6667	mg/kg		79.1		30 - 120	
	MSD	1621392-29	ND	1.4766	1.6447	mg/kg	11.3	89.8	30	30 - 120	
N-Nitrosodi-N-propylamine	MS	1621392-29	ND	1.2574	1.6667	mg/kg		75.4		20 - 130	
	MSD	1621392-29	ND	1.3789	1.6447	mg/kg	9.2	83.8	30	20 - 130	
Pyrene	MS	1621392-29	ND	1.2933	1.6667	mg/kg		77.6		40 - 140	
	MSD	1621392-29	ND	1.4336	1.6447	mg/kg	10.3	87.2	30	40 - 140	
1,2,4-Trichlorobenzene	MS	1621392-29	ND	1.1362	1.6667	mg/kg		68.2		50 - 130	
	MSD	1621392-29	ND	1.2628	1.6447	mg/kg	10.6	76.8	30	50 - 130	
4-Chloro-3-methylphenol	MS	1621392-29	ND	1.1271	1.6667	mg/kg		67.6		50 - 130	
	MSD	1621392-29	ND	1.2174	1.6447	mg/kg	7.7	74.0	30	50 - 130	
2-Chlorophenol	MS	1621392-29	ND	1.2206	1.6667	mg/kg		73.2		50 - 130	
	MSD	1621392-29	ND	1.3711	1.6447	mg/kg	11.6	83.4	30	50 - 130	
2-Methylphenol	MS	1621392-29	ND	1.1042	1.6667	mg/kg		66.3		50 - 130	
	MSD	1621392-29	ND	1.2618	1.6447	mg/kg	13.3	76.7	30	50 - 130	
3- & 4-Methylphenol	MS	1621392-29	ND	2.1844	3.3333	mg/kg		65.5		50 - 130	
	MSD	1621392-29	ND	2.3618	3.2895	mg/kg	7.8	71.8	30	50 - 130	
4-Nitrophenol	MS	1621392-29	ND	0.74011	1.6667	mg/kg		44.4		30 - 140	
	MSD	1621392-29	ND	0.84770	1.6447	mg/kg	13.6	51.5	30	30 - 140	
Pentachlorophenol	MS	1621392-29	ND	0.65928	1.3333	mg/kg		49.4		30 - 130	
	MSD	1621392-29	ND	0.70822	1.3158	mg/kg	7.2	53.8	30	30 - 130	
Phenol	MS	1621392-29	ND	1.0085	1.6667	mg/kg		60.5		40 - 150	
	MSD	1621392-29	ND	1.1507	1.6447	mg/kg	13.2	70.0	30	40 - 150	
2,4,6-Trichlorophenol	MS	1621392-29	ND	0.89369	1.6667	mg/kg		53.6		50 - 130	
	MSD	1621392-29	ND	1.0118	1.6447	mg/kg	12.4	61.5	30	50 - 130	

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Project Manager: Doug Coats

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

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Percent Recovery	Lab Quals	
QC Batch ID: BZH1700		Used client sample: N									
2-Fluorophenol (Surrogate)	MS	1621392-29	ND	1.0806	1.6667	mg/kg		64.8	20 - 130		
	MSD	1621392-29	ND	1.1701	1.6447	mg/kg	8.0	71.1	20 - 130		
Phenol-d5 (Surrogate)	MS	1621392-29	ND	1.0997	1.6667	mg/kg		66.0	30 - 130		
	MSD	1621392-29	ND	1.1957	1.6447	mg/kg	8.4	72.7	30 - 130		
Nitrobenzene-d5 (Surrogate)	MS	1621392-29	ND	1.1766	1.6667	mg/kg		70.6	30 - 130		
	MSD	1621392-29	ND	1.3072	1.6447	mg/kg	10.5	79.5	30 - 130		
2-Fluorobiphenyl (Surrogate)	MS	1621392-29	ND	0.96159	1.3333	mg/kg		72.1	30 - 140		
	MSD	1621392-29	ND	1.0822	1.3158	mg/kg	11.8	82.2	30 - 140		
2,4,6-Tribromophenol (Surrogate)	MS	1621392-29	ND	1.1604	1.6667	mg/kg		69.6	20 - 150		
	MSD	1621392-29	ND	1.2168	1.6447	mg/kg	4.7	74.0	20 - 150		
p-Terphenyl-d14 (Surrogate)	MS	1621392-29	ND	0.74787	0.83333	mg/kg		89.7	30 - 150		
	MSD	1621392-29	ND	0.80954	0.82237	mg/kg	7.9	98.4	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: BZH2300						
Oil and Grease	BZH2300-BLK1	ND	mg/kg	50	14	

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Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab Quals
Oil and Grease	QC Batch ID: BZH2300									
	BZH2300-BS1	LCS	835.66	798.80	mg/kg	105		59 - 117		

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EPA Method 1664

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH2300		Used client sample: N									
Oil and Grease	DUP	1621392-29	ND	ND		mg/kg			30		
	MS	1621392-29	ND	775.45	800.40	mg/kg		96.9		56 - 111	
	MSD	1621392-29	ND	833.00	797.22	mg/kg	7.2	104	30	56 - 111	

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Chemical Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BZH1323						
Moisture	BZH1323-BLK1	ND	%	0.05	0.05	
QC Batch ID: BZH1329						
Total Kjeldahl Nitrogen	BZH1329-BLK1	ND	mg/kg	40	15	
QC Batch ID: BZH1334						
Total Phosphate	BZH1334-BLK1	ND	mg/kg	30	12	
QC Batch ID: BZH1551						
Nitrate as NO3	BZH1551-BLK1	ND	mg/kg	4.4	1.2	
QC Batch ID: BZH1559						
Total Cyanide	BZH1559-BLK1	ND	mg/kg	0.50	0.26	
QC Batch ID: BZH1685						
Ammonia as N	BZH1685-BLK1	ND	mg/kg	10	5.0	

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Chemical Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BZH1329										
Total Kjeldahl Nitrogen	BZH1329-BS1	LCS	409.58	400.00	mg/kg	102		90 - 110		
QC Batch ID: BZH1334										
Total Phosphate	BZH1334-BS1	LCS	657.76	613.20	mg/kg	107		85 - 115		
QC Batch ID: BZH1533										
pH	BZH1533-BS1	LCS	4.0060	4.0000	pH Units	100		95 - 105		
QC Batch ID: BZH1551										
Nitrate as NO3	BZH1551-BS1	LCS	21.922	22.134	mg/kg	99.0		90 - 110		
QC Batch ID: BZH1559										
Total Cyanide	BZH1559-BS1	LCS	13.623	14.151	mg/kg	96.3		80 - 120		
QC Batch ID: BZH1685										
Ammonia as N	BZH1685-BS1	LCS	93.740	96.154	mg/kg	97.5		80 - 120		

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Chemical Analysis

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1303		Used client sample: N									
Solids	DUP	1622168-01	98.620	97.720		%	0.9		20		
QC Batch ID: BZH1329		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
Total Kjeldahl Nitrogen	DUP	1622180-01	14408	16534		mg/kg	13.7		20		
	MS	1622180-01	14408	19162	400.00	mg/kg		1190		90 - 110	A03
	MSD	1622180-01	14408	16938	400.00	mg/kg	12.3	632	20	90 - 110	A03
QC Batch ID: BZH1334		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
Total Phosphate	DUP	1622180-01	39125	39094		mg/kg	0.1		20		
	MS	1622180-01	39125	45368	613.20	mg/kg		1020		80 - 120	A03
	MSD	1622180-01	39125	45263	613.20	mg/kg	0.2	1000	20	80 - 120	A03
QC Batch ID: BZH1533		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
pH	DUP	1622180-01	6.6130	6.6200		pH Units	0.1		20		
QC Batch ID: BZH1551		Used client sample: N									
Nitrate as NO3	DUP	1622261-07	194.43	193.14		mg/kg	0.7		20		
	MS	1622261-07	194.43	418.67	223.58	mg/kg		100		80 - 120	
	MSD	1622261-07	194.43	414.69	223.58	mg/kg	1.0	98.5	20	80 - 120	
QC Batch ID: BZH1559		Used client sample: N									
Total Cyanide	DUP	1622372-01	1087.2	1203.5		mg/kg	10.2		20		
	MS	1622372-01	1087.2	1271.6	50.000	mg/kg		369		80 - 120	A03
	MSD	1622372-01	1087.2	1288.6	50.000	mg/kg	1.3	403	20	80 - 120	A03
QC Batch ID: BZH1685		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
Ammonia as N	DUP	1622180-01	4260.1	3968.8		mg/kg	7.1		20		
	MS	1622180-01	4260.1	4443.3	96.154	mg/kg		191		80 - 120	A03
	MSD	1622180-01	4260.1	4910.8	94.340	mg/kg	10.0	690	20	80 - 120	A03

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Modified WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BZH1856						
Total Dissolved Solids @ 180 C	BZH1856-BLK1	ND	mg/L	6.7	6.7	
QC Batch ID: BZH2479						
Hexavalent Chromium	BZH2479-BLK1	ND	mg/L	0.20	0.070	

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Modified WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: BZH1856										
Total Dissolved Solids @ 180 C	BZH1856-BS1	LCS	600.00	586.00	mg/L	102		90 - 110		
QC Batch ID: BZH2479										
Hexavalent Chromium	BZH2479-BS1	LCS	5.0831	5.0000	mg/L	102		85 - 115		

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Modified WET Test (STLC)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1856		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
Total Dissolved Solids @ 180 C	DUP	1622180-01	3720.0	3780.0		mg/L	1.6		20		
QC Batch ID: BZH2479		Used client sample: Y - Description: BC1 Composite Biosolids, 08/10/2016 10:30									
Hexavalent Chromium	DUP	622180-01RE	ND	ND		mg/L			20		
	MS	622180-01RE	ND	0.053415	0.052632	mg/L		101		85 - 115	
	MSD	622180-01RE	ND	0.053179	0.052632	mg/L	0.4	101	20	85 - 115	

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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: BZH1243						
Antimony	BZH1243-BLK1	ND	mg/kg	5.0	0.33	
Arsenic	BZH1243-BLK1	0.57249	mg/kg	1.0	0.40	J
Barium	BZH1243-BLK1	ND	mg/kg	0.50	0.18	
Beryllium	BZH1243-BLK1	ND	mg/kg	0.50	0.047	
Cadmium	BZH1243-BLK1	ND	mg/kg	0.50	0.052	
Chromium	BZH1243-BLK1	0.088991	mg/kg	0.50	0.050	J
Cobalt	BZH1243-BLK1	ND	mg/kg	2.5	0.098	
Copper	BZH1243-BLK1	ND	mg/kg	1.0	0.050	
Lead	BZH1243-BLK1	ND	mg/kg	2.5	0.28	
Molybdenum	BZH1243-BLK1	ND	mg/kg	2.5	0.050	
Nickel	BZH1243-BLK1	ND	mg/kg	0.50	0.15	
Selenium	BZH1243-BLK1	ND	mg/kg	1.0	0.98	
Silver	BZH1243-BLK1	ND	mg/kg	0.50	0.067	
Thallium	BZH1243-BLK1	ND	mg/kg	5.0	0.64	
Vanadium	BZH1243-BLK1	ND	mg/kg	0.50	0.11	
Zinc	BZH1243-BLK1	0.35886	mg/kg	2.5	0.087	J
Boron	BZH1243-BLK1	ND	mg/kg	5.0	0.50	
QC Batch ID: BZH1414						
Total Hexavalent Chromium	BZH1414-BLK1	ND	mg/kg	1.0	0.30	
QC Batch ID: BZH1421						
Mercury	BZH1421-BLK1	ND	mg/kg	0.16	0.041	

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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		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: BZH1243										
Antimony	BZH1243-BS1	LCS	100.35	100.00	mg/kg	100		75 - 125		
Arsenic	BZH1243-BS1	LCS	10.037	10.000	mg/kg	100		75 - 125		
Barium	BZH1243-BS1	LCS	106.32	100.00	mg/kg	106		75 - 125		
Beryllium	BZH1243-BS1	LCS	10.831	10.000	mg/kg	108		75 - 125		
Cadmium	BZH1243-BS1	LCS	10.133	10.000	mg/kg	101		75 - 125		
Chromium	BZH1243-BS1	LCS	107.71	100.00	mg/kg	108		75 - 125		
Cobalt	BZH1243-BS1	LCS	107.84	100.00	mg/kg	108		75 - 125		
Copper	BZH1243-BS1	LCS	104.06	100.00	mg/kg	104		75 - 125		
Lead	BZH1243-BS1	LCS	105.83	100.00	mg/kg	106		75 - 125		
Molybdenum	BZH1243-BS1	LCS	104.70	100.00	mg/kg	105		75 - 125		
Nickel	BZH1243-BS1	LCS	108.70	100.00	mg/kg	109		75 - 125		
Selenium	BZH1243-BS1	LCS	8.6913	10.000	mg/kg	86.9		75 - 125		
Silver	BZH1243-BS1	LCS	10.274	10.000	mg/kg	103		75 - 125		
Thallium	BZH1243-BS1	LCS	107.52	100.00	mg/kg	108		75 - 125		
Vanadium	BZH1243-BS1	LCS	104.61	100.00	mg/kg	105		75 - 125		
Zinc	BZH1243-BS1	LCS	106.19	100.00	mg/kg	106		75 - 125		
Boron	BZH1243-BS1	LCS	97.720	100.00	mg/kg	97.7		75 - 125		
QC Batch ID: BZH1414										
Total Hexavalent Chromium	BZH1414-BS1	LCS	43.216	40.000	mg/kg	108		80 - 120		
QC Batch ID: BZH1421										
Mercury	BZH1421-BS1	LCS	0.84080	0.80000	mg/kg	105		80 - 120		

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1243		Used client sample: N									
Antimony	DUP	1621392-14	0.35279	ND		mg/kg			20		
	MS	1621392-14	0.35279	92.201	100.00	mg/kg		91.8		16 - 119	
	MSD	1621392-14	0.35279	96.650	100.00	mg/kg	4.7	96.3	20	16 - 119	
Arsenic	DUP	1621392-14	0.53670	ND		mg/kg			20		
	MS	1621392-14	0.53670	9.3848	10.000	mg/kg		88.5		75 - 125	
	MSD	1621392-14	0.53670	10.560	10.000	mg/kg	11.8	100	20	75 - 125	
Barium	DUP	1621392-14	1.3760	1.2548		mg/kg	9.2		20		
	MS	1621392-14	1.3760	109.16	100.00	mg/kg		108		75 - 125	
	MSD	1621392-14	1.3760	108.21	100.00	mg/kg	0.9	107	20	75 - 125	
Beryllium	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	10.458	10.000	mg/kg		105		75 - 125	
	MSD	1621392-14	ND	10.910	10.000	mg/kg	4.2	109	20	75 - 125	
Cadmium	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	9.6032	10.000	mg/kg		96.0		75 - 125	
	MSD	1621392-14	ND	10.009	10.000	mg/kg	4.1	100	20	75 - 125	
Chromium	DUP	1621392-14	0.72345	0.58026		mg/kg	22.0		20		A02
	MS	1621392-14	0.72345	103.27	100.00	mg/kg		103		75 - 125	
	MSD	1621392-14	0.72345	106.03	100.00	mg/kg	2.6	105	20	75 - 125	
Cobalt	DUP	1621392-14	0.11116	ND		mg/kg			20		
	MS	1621392-14	0.11116	103.15	100.00	mg/kg		103		75 - 125	
	MSD	1621392-14	0.11116	105.76	100.00	mg/kg	2.5	106	20	75 - 125	
Copper	DUP	1621392-14	1.3994	0.97750		mg/kg	35.5		20		J,A02
	MS	1621392-14	1.3994	101.12	100.00	mg/kg		99.7		75 - 125	
	MSD	1621392-14	1.3994	105.76	100.00	mg/kg	4.5	104	20	75 - 125	
Lead	DUP	1621392-14	1.5003	1.0726		mg/kg	33.2		20		J,A02
	MS	1621392-14	1.5003	101.22	100.00	mg/kg		99.7		75 - 125	
	MSD	1621392-14	1.5003	105.46	100.00	mg/kg	4.1	104	20	75 - 125	
Molybdenum	DUP	1621392-14	0.21393	0.13951		mg/kg	42.1		20		J,A02
	MS	1621392-14	0.21393	98.672	100.00	mg/kg		98.5		75 - 125	
	MSD	1621392-14	0.21393	103.54	100.00	mg/kg	4.8	103	20	75 - 125	
Nickel	DUP	1621392-14	1.1105	0.85000		mg/kg	26.6		20		A02
	MS	1621392-14	1.1105	104.89	100.00	mg/kg		104		75 - 125	
	MSD	1621392-14	1.1105	107.78	100.00	mg/kg	2.7	107	20	75 - 125	
Selenium	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	9.0023	10.000	mg/kg		90.0		75 - 125	
	MSD	1621392-14	ND	9.3246	10.000	mg/kg	3.5	93.2	20	75 - 125	
Silver	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	9.7954	10.000	mg/kg		98.0		75 - 125	
	MSD	1621392-14	ND	10.040	10.000	mg/kg	2.5	100	20	75 - 125	

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Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

									<u>Control Limits</u>		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: BZH1243		Used client sample: N									
Thallium	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	101.60	100.00	mg/kg		102		75 - 125	
	MSD	1621392-14	ND	105.70	100.00	mg/kg	4.0	106	20	75 - 125	
Vanadium	DUP	1621392-14	0.27077	0.16658		mg/kg	47.6		20		J,A02
	MS	1621392-14	0.27077	99.475	100.00	mg/kg		99.2		75 - 125	
	MSD	1621392-14	0.27077	102.37	100.00	mg/kg	2.9	102	20	75 - 125	
Zinc	DUP	1621392-14	6.9191	4.6813		mg/kg	38.6		20		A02
	MS	1621392-14	6.9191	105.97	100.00	mg/kg		99.1		75 - 125	
	MSD	1621392-14	6.9191	108.53	100.00	mg/kg	2.4	102	20	75 - 125	
Boron	DUP	1621392-14	ND	ND		mg/kg			20		
	MS	1621392-14	ND	92.891	100.00	mg/kg		92.9		75 - 125	
	MSD	1621392-14	ND	95.666	100.00	mg/kg	2.9	95.7	20	75 - 125	
QC Batch ID: BZH1414		Used client sample: N									
Total Hexavalent Chromium	DUP	1622065-01	0.49800	0.48200		mg/kg	3.3		20		J
	MS	1622065-01	0.49800	43.366	40.000	mg/kg		107		75 - 125	
	MSD	1622065-01	0.49800	43.634	40.000	mg/kg	0.6	108	20	75 - 125	
QC Batch ID: BZH1421		Used client sample: N									
Mercury	DUP	1622361-01	ND	ND		mg/kg			20		
	MS	1622361-01	ND	0.82969	0.76923	mg/kg		108		80 - 120	
	MSD	1622361-01	ND	0.80400	0.76923	mg/kg	3.1	105	20	80 - 120	

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Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
A02	The difference between duplicate readings is less than the quantitation limit.
A03	The sample concentration is more than 4 times the spike level.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
A10	Detection and quantitation limits were raised due to matrix interference.
pH1:3	pH result reported on a 1:3 dilution of sample
Q03	Matrix spike recovery(s) is(are) not within the control limits.