

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

**OFFSHORE MONITORING
AND REPORTING PROGRAM**

**RESIDUAL BIOSOLIDS
CHEMICAL ANALYSIS RESULTS**

AUGUST 2018



Marine Research Specialists
4744 Telephone Rd Ste 3 PMB 315
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 2018

Prepared by

Douglas A. Coats

Marine Research Specialists

4744 Telephone Rd Ste 3 PMB 315
Ventura, California 93003

Telephone: (805) 644-1180

E-mail: Marine@Rain.org

September 2018

John Gunderlock
Wastewater Treatment & Collection Systems Supervisor
City of Morro Bay
955 Shasta Avenue
Morro Bay, CA 93442

20 September 2018

Reference: Chemical Analysis Results for Biosolid Samples Collected in August 2018

Dear Mr. Gunderlock:

Enclosed are the results of chemical analyses conducted on a representative composite of biosolid subsamples collected from the drying beds on 29 August 2018. 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 R3-2017-0050 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 2018 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-2018 samples were comparable to concentrations measured in most samples collected annually from 1999 through 2017.^b

All trace-metal concentrations measured in the August-2018 sample were below Total Threshold Limit Concentrations (TTLC) 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. 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 only one-third of the applicable STLC limit that would designate the biosolids as hazardous within the State of California.

The consistent presence of low but detectable metal concentrations within the biosolids was expected. Many of the metals occur naturally in the mineralogy of ambient sediments within the central coast region. As a result, their presence in bulk biosolid samples was anticipated 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 accounts for their regular presence at low concentrations within effluent samples.

One synthetic organic compound, methylene chloride, was also detected at a low, but quantifiable concentration in the August-2018 biosolid sample. There are no limits on this compound specified in State and Federal regulations governing biosolids. The 0.019-mg/kg bulk concentration that was found in the sample was only slightly greater than the associated 0.010-mg/kg quantification level. On rare occasions, it has been detected at similarly low concentrations in both effluent and biosolid samples collected over the past two decades. Methylene chloride is primarily used as a solvent in paint removers, but is also used in aerosol formulations and degreasing agents.

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
Program Manager

Enclosure (Three Report Copies)

Table 1. Summary of Results for Biosolids Analyses

Constituent	Units	Wet Weight				Dry Weight		
		Measured		Limit		Measured	Limit	
		Bulk ^d	WET ^e	STLC ^f	TTLC ^g	Bulk	Monthly ^h	Ceiling ⁱ
Solids	%	89.7	— ^j	—	—	—	—	—
Total Dissolved Solids	ppm	—	5,400.	—	—	—	—	—
Cyanide	ppm	4.4	—	—	—	4.9	—	—
Antimony	ppm	≈3.5 ^k	—	15.	500.	≈3.9	—	—
Arsenic	ppm	≈1.0	—	5.	500.	≈1.2	41.	75.
Barium	ppm	130.	—	100.	10,000.	150.	—	—
Beryllium	ppm	ND ^l	—	0.75	75.	ND	—	—
Boron	ppm	14.	—	—	—	16.	—	—
Cadmium	ppm	1.6	—	1.	100.	1.7	39.	85.
Chromium (Total)	ppm	32.	—	560.	2,500.	36.	1,200.	3,000.
Chromium (Hexavalent)	ppm	≈0.37	ND	5.	500.	≈.41	—	—
Cobalt	ppm	≈2.4	—	80.	8,000.	≈2.7	—	—
Copper	ppm	320.	8.3	25.	2,500.	350.	1,500.	4,300.
Lead	ppm	19.	—	5.	1,000.	21.	300.	840.
Mercury	ppm	0.84	—	0.2	20.	0.93	17.	57.
Molybdenum	ppm	12.	—	350.	3,500.	13.	18.	75.
Nickel	ppm	22.	—	20.	2,000.	24.	420.	420.
Selenium	ppm	3.5	—	1.	100.	3.9	36.	100.
Silver	ppm	2.0	—	5.	500.	2.2	—	—
Thallium	ppm	ND	—	7.	700.	ND	—	—
Vanadium	ppm	14.	—	24.	2,400.	16.	—	—
Zinc	ppm	870.	—	250.	5,000.	970.	2,800.	7,500.
Methylene chloride	ppm	0.019	—	—	—	0.022	—	—
Hydrogen-Ion	pH	6.19	—	—	—	—	—	—
Phosphate	mg/kg	71,000.	—	—	—	79,000.	—	—
Ammonia	mg/kg	6,900.	—	—	—	7,600.	—	—
TKN	mg/kg	36,000.	—	—	—	40,000.	—	—
Organic Nitrogen ^m	mg/kg	29,100.	—	—	—	32,400.	—	—
Nitrate as NO ₃	mg/kg	870.	—	—	—	970.	—	—
Oil & Grease	ppm	55,000.	—	—	—	61,000.	—	—

-
- ^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-2017 composite biosolids sample.
- ^b Marine Research Specialists (MRS). 1999 through 2017. 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?ADID=4607>
- ^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: 09/24/2018

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: 1826961

Invoice ID: B316593

Enclosed are the results of analyses for samples received by the laboratory on 8/29/2018. If you have any questions concerning this report, please feel free to contact me.

Revised Report: This report supercedes Report ID 1000794848

Sincerely,

Contact Person: Christina Herndon
Client Service Rep

Authorized Signature

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

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Case Narratives

Case Narrative for Work Order 1826961

2-CVE can only be reported as a TIC (Tentatively Identified Compound). 2-CVE was not found as a TIC for lab number 1826961.

Analysis and Reporting for the Biosolids Sample from the Morro Bay Wastewater Treatment Plant to be collected in August 2018^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

^a Treatment plant personnel are coordinating with Jerry Mason regarding the existing bottle inventory at the plant and the need for additional sample containers. They will also select a suitable sampling date to coincide with regular courier pickups in August.

^b Prior to analysis, homogenize the composite sample in the laboratory to ensure uniform distribution of multiple subsamples in the 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 Report 2-CEVE non-detects in the case narrative as an absence of an associated Tentatively Identified Compound (TIC), as has been the case for biosolids reporting in the past.

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

Analysis^b	Method
Nitrate as NO₃^d	EPA 300.0 or 353.2
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	EPA 8081A
PCBs	EPA 8082
Volatile Organics – Low Level; report all EPA priority pollutants not reported under other methods (including acrolein, acrylonitrile, and 2-chloroethyl vinyl ether^e)	EPA 8240/624
Hexavalent Chromium (Total)^d	EPA 7196
Hexavalent Chromium^f	Modified Waste Extraction Test (STLC) EPA 7196



BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 of 1

Submission #: B-26961

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: _____

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

COC Received: YES NO

Emissivity: 0.98 Container: PE Thermometer ID: 208 Date/Time: 8/29 2020

Temperature: (A) 2.8 °C / (C) 25 °C Analyst Init: ENR

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 508/533/5080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.I										
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										
INCORE										
SMART KIT										
SUMMA CANISTER										

Comments: _____

Sample Numbering Completed By: ENR Date/Time: 8-29 7:10 Rev 21 05/23/2016

Actual / Corrected

[S:\WPDoc\WordPerfect\LAB_DOC\FORMS\ISAMRECrev 20]



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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1826961-01	COC Number:	---	Receive Date:	08/29/2018 20:20
	Project Number:	---	Sampling Date:	08/29/2018 08:20
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	BC1 Composite Biosolids	Lab Matrix:	Solids
	Sampled By:	---	Sample Type:	Other

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Marine Research Specialists
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Ventura, CA 93003-3238

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 1826961-01		Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM							
Constituent	Dry Basis	As Recvd	Units	As Received		Method	MB Bias	Lab Quals	Run #
	Result	Result		PQL	MDL				
Aldrin	ND	ND	mg/kg	0.15	0.015	EPA-8081A	ND	A10	1
alpha-BHC	ND	ND	mg/kg	0.15	0.019	EPA-8081A	ND	A10	1
beta-BHC	ND	ND	mg/kg	0.15	0.014	EPA-8081A	ND	A10	1
delta-BHC	ND	ND	mg/kg	0.15	0.039	EPA-8081A	ND	A10	1
gamma-BHC (Lindane)	ND	ND	mg/kg	0.15	0.026	EPA-8081A	ND	A10	1
Chlordane (Technical)	ND	ND	mg/kg	15	0.42	EPA-8081A	ND	A10	1
4,4'-DDD	ND	ND	mg/kg	0.15	0.025	EPA-8081A	ND	A10	1
4,4'-DDE	ND	ND	mg/kg	0.15	0.011	EPA-8081A	ND	A10	1
4,4'-DDT	ND	ND	mg/kg	0.15	0.042	EPA-8081A	ND	A10	1
Dieldrin	ND	ND	mg/kg	0.15	0.013	EPA-8081A	ND	A10	1
Endosulfan I	ND	ND	mg/kg	0.15	0.0084	EPA-8081A	ND	A10	1
Endosulfan II	ND	ND	mg/kg	0.15	0.022	EPA-8081A	ND	A10	1
Endosulfan sulfate	ND	ND	mg/kg	0.15	0.072	EPA-8081A	ND	A10	1
Endrin	ND	ND	mg/kg	0.15	0.022	EPA-8081A	ND	A10	1
Endrin aldehyde	ND	ND	mg/kg	0.15	0.023	EPA-8081A	ND	A10	1
Heptachlor	ND	ND	mg/kg	0.15	0.030	EPA-8081A	ND	A10	1
Heptachlor epoxide	ND	ND	mg/kg	0.15	0.0090	EPA-8081A	ND	A10	1
Methoxychlor	ND	ND	mg/kg	0.15	0.036	EPA-8081A	ND	A10	1
Toxaphene	ND	ND	mg/kg	15	0.57	EPA-8081A	ND	A10	1
TCMX (Surrogate)	96.2	96.2	%	20 - 130 (LCL - UCL)		EPA-8081A		A10	1
Decachlorobiphenyl (Surrogate)	133	133	%	40 - 130 (LCL - UCL)		EPA-8081A		A10,S09	1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC	
			Date/Time					Batch ID	
1	EPA-8081A	08/31/18 15:00	09/04/18	10:58	HKS	GC-17	300	B023801	

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Marine Research Specialists
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Suite A
Ventura, CA 93003-3238

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

PCB Analysis (EPA Method 8082)

BCL Sample ID:	1826961-01	Client Sample Name:	BC1 Composite Biosolids, 8/29/2018 8:20:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
				PQL	MDL				
PCB-1016	ND	ND	mg/kg	1.6	0.21	EPA-8082	ND	A10	1
PCB-1221	ND	ND	mg/kg	1.6	0.30	EPA-8082	ND	A10	1
PCB-1232	ND	ND	mg/kg	1.6	0.41	EPA-8082	ND	A10	1
PCB-1242	ND	ND	mg/kg	1.6	0.27	EPA-8082	ND	A10	1
PCB-1248	ND	ND	mg/kg	1.6	0.30	EPA-8082	ND	A10	1
PCB-1254	ND	ND	mg/kg	1.6	0.28	EPA-8082	ND	A10	1
PCB-1260	ND	ND	mg/kg	1.6	0.30	EPA-8082	ND	A10	1
Total PCB's (Summation)	ND	ND	mg/kg	1.6	0.79	EPA-8082	ND	A10	1
Decachlorobiphenyl (Surrogate)	66.7	66.7	%	40 - 120 (LCL - UCL)		EPA-8082		A10	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8082	09/05/18 10:30	09/05/18 14:50	HKS	GC-15	157.89	B024004

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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID:	1826961-01	Client Sample Name:	BC1 Composite Biosolids, 8/29/2018 8:20:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
				PQL	MDL				
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	0.0045	0.0040	mg/kg	0.0050	0.0011	EPA-8240	ND	J	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	0.0022	0.0020	mg/kg	0.0050	0.00063	EPA-8240	ND	J	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	0.0046	0.0041	mg/kg	0.0050	0.0012	EPA-8240	ND	J	1
Ethylbenzene	ND	ND	mg/kg	0.0050	0.0015	EPA-8240	ND		1
Methylene chloride	0.022	0.019	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

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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

BCL Sample ID:	1826961-01	Client Sample Name:	BC1 Composite Biosolids, 8/29/2018 8:20:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
				PQL	MDL				
Vinyl chloride	ND	ND	mg/kg	0.0050	0.0016	EPA-8240	ND		1
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)	132	132	%	70 - 121 (LCL - UCL)		EPA-8240		S09	1
Toluene-d8 (Surrogate)	83.7	83.7	%	81 - 117 (LCL - UCL)		EPA-8240			1
4-Bromofluorobenzene (Surrogate)	77.2	77.2	%	74 - 121 (LCL - UCL)		EPA-8240			1
TIC: 2-Butanone	0.051	0.046	mg/kg			EPA-8240			1
TIC: 2-Ethyl-1-hexanol	0.072	0.064	mg/kg			EPA-8240			1
TIC: 2-Ethylhexanal	0.024	0.022	mg/kg			EPA-8240			1
TIC: 6-Methyl-6-hepten-2-one	0.030	0.027	mg/kg			EPA-8240			1
TIC: Hexamethyldisiloxane	0.017	0.015	mg/kg			EPA-8240			1
TIC: Hexanal	0.052	0.047	mg/kg			EPA-8240			1
TIC: Trimethylsilanol	0.14	0.12	mg/kg			EPA-8240			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8240	09/11/18 02:00	09/12/18 18:34	ADC	MS-V3	1	B024359

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID:	1826961-01	Client Sample Name:	BC1 Composite Biosolids, 8/29/2018 8:20:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	As Received PQL	As Received MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthene	ND	ND	mg/kg	27	2.1	EPA-8270C	ND		1
Acenaphthylene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
Aldrin	ND	ND	mg/kg	27	3.8	EPA-8270C	ND		1
Aniline	ND	ND	mg/kg	55	9.8	EPA-8270C	ND		1
Anthracene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
Benzidine	ND	ND	mg/kg	820	21	EPA-8270C	ND		1
Benzo[a]anthracene	ND	ND	mg/kg	27	2.6	EPA-8270C	ND		1
Benzo[b]fluoranthene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
Benzo[k]fluoranthene	ND	ND	mg/kg	27	2.7	EPA-8270C	ND		1
Benzo[a]pyrene	ND	ND	mg/kg	27	3.0	EPA-8270C	ND		1
Benzo[g,h,i]perylene	ND	ND	mg/kg	27	6.3	EPA-8270C	ND		1
Benzoic acid	ND	ND	mg/kg	140	5.2	EPA-8270C	ND		1
Benzyl alcohol	ND	ND	mg/kg	27	16	EPA-8270C	ND		1
Benzyl butyl phthalate	ND	ND	mg/kg	27	3.0	EPA-8270C	ND		1
alpha-BHC	ND	ND	mg/kg	27	3.8	EPA-8270C	ND		1
beta-BHC	ND	ND	mg/kg	27	2.4	EPA-8270C	ND		1
delta-BHC	ND	ND	mg/kg	27	2.5	EPA-8270C	ND		1
gamma-BHC (Lindane)	ND	ND	mg/kg	27	2.5	EPA-8270C	ND		1
bis(2-Chloroethoxy)methane	ND	ND	mg/kg	27	2.0	EPA-8270C	ND		1
bis(2-Chloroethyl) ether	ND	ND	mg/kg	27	7.1	EPA-8270C	ND		1
bis(2-Chloroisopropyl)ether	ND	ND	mg/kg	27	9.0	EPA-8270C	ND		1
bis(2-Ethylhexyl)phthalate	5.5	4.9	mg/kg	55	3.0	EPA-8270C	ND	J	1
4-Bromophenyl phenyl ether	ND	ND	mg/kg	27	2.7	EPA-8270C	ND		1
4-Chloroaniline	ND	ND	mg/kg	27	3.3	EPA-8270C	ND		1
2-Chloronaphthalene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
4-Chlorophenyl phenyl ether	ND	ND	mg/kg	27	2.4	EPA-8270C	ND		1
Chrysene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
4,4'-DDD	ND	ND	mg/kg	27	4.4	EPA-8270C	ND		1
4,4'-DDE	ND	ND	mg/kg	27	6.0	EPA-8270C	ND		1
4,4'-DDT	ND	ND	mg/kg	27	3.3	EPA-8270C	ND		1
Dibenzo[a,h]anthracene	ND	ND	mg/kg	27	6.3	EPA-8270C	ND		1

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Marine Research Specialists
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Ventura, CA 93003-3238

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1826961-01		Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM							
Constituent	Dry Basis	As Recvd	Units	As Received		Method	MB Bias	Lab Quals	Run #
	Result	Result		PQL	MDL				
Dibenzofuran	ND	ND	mg/kg	27	1.9	EPA-8270C	ND		1
1,2-Dichlorobenzene	ND	ND	mg/kg	27	18	EPA-8270C	ND		1
1,3-Dichlorobenzene	ND	ND	mg/kg	27	18	EPA-8270C	ND		1
1,4-Dichlorobenzene	ND	ND	mg/kg	27	18	EPA-8270C	ND		1
3,3-Dichlorobenzidine	ND	ND	mg/kg	55	4.1	EPA-8270C	ND		1
Dieldrin	ND	ND	mg/kg	27	6.8	EPA-8270C	ND		1
Diethyl phthalate	ND	ND	mg/kg	27	2.3	EPA-8270C	ND		1
Dimethyl phthalate	ND	ND	mg/kg	27	2.7	EPA-8270C	ND		1
Di-n-butyl phthalate	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
2,4-Dinitrotoluene	ND	ND	mg/kg	27	9.0	EPA-8270C	ND		1
2,6-Dinitrotoluene	ND	ND	mg/kg	27	2.4	EPA-8270C	ND		1
Di-n-octyl phthalate	ND	ND	mg/kg	27	3.3	EPA-8270C	ND		1
1,2-Diphenylhydrazine	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
Endosulfan I	ND	ND	mg/kg	55	7.4	EPA-8270C	ND		1
Endosulfan II	ND	ND	mg/kg	55	7.4	EPA-8270C	ND		1
Endosulfan sulfate	ND	ND	mg/kg	27	3.8	EPA-8270C	ND		1
Endrin	ND	ND	mg/kg	55	7.9	EPA-8270C	ND		1
Endrin aldehyde	ND	ND	mg/kg	140	5.2	EPA-8270C	ND		1
Fluoranthene	ND	ND	mg/kg	27	5.5	EPA-8270C	ND		1
Fluorene	ND	ND	mg/kg	27	2.1	EPA-8270C	ND		1
Heptachlor	ND	ND	mg/kg	27	2.6	EPA-8270C	ND		1
Heptachlor epoxide	ND	ND	mg/kg	27	4.4	EPA-8270C	ND		1
Hexachlorobenzene	ND	ND	mg/kg	27	2.0	EPA-8270C	ND		1
Hexachlorobutadiene	ND	ND	mg/kg	27	2.1	EPA-8270C	ND		1
Hexachlorocyclopentadiene	ND	ND	mg/kg	27	2.0	EPA-8270C	ND		1
Hexachloroethane	ND	ND	mg/kg	27	17	EPA-8270C	ND		1
Indeno[1,2,3-cd]pyrene	ND	ND	mg/kg	27	6.0	EPA-8270C	ND		1
Isophorone	ND	ND	mg/kg	27	5.5	EPA-8270C	ND		1
2-Methylnaphthalene	ND	ND	mg/kg	27	3.0	EPA-8270C	ND		1
Naphthalene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
2-Naphthylamine	ND	ND	mg/kg	820	10	EPA-8270C	ND		1

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1826961-01		Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM							
Constituent	Dry Basis	As Recvd	Units	As Received		Method	MB Bias	Lab Quals	Run #
	Result	Result		PQL	MDL				
2-Nitroaniline	ND	ND	mg/kg	27	3.5	EPA-8270C	ND		1
3-Nitroaniline	ND	ND	mg/kg	55	6.5	EPA-8270C	ND		1
4-Nitroaniline	ND	ND	mg/kg	55	7.9	EPA-8270C	ND		1
Nitrobenzene	ND	ND	mg/kg	27	2.6	EPA-8270C	ND		1
N-Nitrosodimethylamine	ND	ND	mg/kg	27	4.9	EPA-8270C	ND		1
N-Nitrosodi-N-propylamine	ND	ND	mg/kg	27	16	EPA-8270C	ND		1
N-Nitrosodiphenylamine	ND	ND	mg/kg	27	3.5	EPA-8270C	ND		1
Phenanthrene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
Pyrene	ND	ND	mg/kg	27	5.5	EPA-8270C	ND		1
1,2,4-Trichlorobenzene	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
4-Chloro-3-methylphenol	ND	ND	mg/kg	55	3.0	EPA-8270C	ND		1
2-Chlorophenol	ND	ND	mg/kg	27	15	EPA-8270C	ND		1
2,4-Dichlorophenol	ND	ND	mg/kg	27	4.1	EPA-8270C	ND		1
2,4-Dimethylphenol	ND	ND	mg/kg	27	3.0	EPA-8270C	ND		1
4,6-Dinitro-2-methylphenol	ND	ND	mg/kg	140	5.2	EPA-8270C	ND		1
2,4-Dinitrophenol	ND	ND	mg/kg	140	4.1	EPA-8270C	ND		1
2-Methylphenol	ND	ND	mg/kg	27	19	EPA-8270C	ND		1
3- & 4-Methylphenol	ND	ND	mg/kg	55	38	EPA-8270C	ND		1
2-Nitrophenol	ND	ND	mg/kg	27	1.8	EPA-8270C	ND		1
4-Nitrophenol	ND	ND	mg/kg	55	7.1	EPA-8270C	ND		1
Pentachlorophenol	ND	ND	mg/kg	55	6.3	EPA-8270C	ND		1
Phenol	ND	ND	mg/kg	27	17	EPA-8270C	ND		1
2,4,5-Trichlorophenol	ND	ND	mg/kg	55	4.1	EPA-8270C	ND		1
2,4,6-Trichlorophenol	ND	ND	mg/kg	55	1.9	EPA-8270C	ND		1
2-Fluorophenol (Surrogate)	40.2	40.2	%	20 - 130 (LCL - UCL)		EPA-8270C			1
Phenol-d5 (Surrogate)	38.0	38.0	%	30 - 130 (LCL - UCL)		EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	37.7	37.7	%	30 - 130 (LCL - UCL)		EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	30.5	30.5	%	30 - 140 (LCL - UCL)		EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	69.5	69.5	%	20 - 150 (LCL - UCL)		EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	52.0	52.0	%	30 - 150 (LCL - UCL)		EPA-8270C			1

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4744 Telephone Rd
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Suite A
Ventura, CA 93003-3238

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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

BCL Sample ID: 1826961-01	Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM
----------------------------------	---

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC
			Date/Time					Batch ID
1	EPA-8270C	08/30/18 20:30	08/31/18 15:46		MK1	MS-B1	272.73	B023625

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

BCL Sample ID: 1826961-01	Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM								
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
Oil and Grease	61000	55000	mg/kg	PQL 1700	MDL 630	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC	
			Date/Time	Date/Time				Batch ID	
1	EPA-1664A HEM	09/04/18 14:30	09/04/18 14:30		MAM	MAN-SV	33.333	B023825	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

BCL Sample ID:	1826961-01	Client Sample Name:	BC1 Composite Biosolids, 8/29/2018 8:20:00AM						
Constituent	Dry Basis Result	As Recvd Result	Units	As Received PQL	As Received MDL	Method	MB Bias	Lab Quals	Run #
Moisture	0	10.3	%	0.05	0.05	Calc	ND		1
Total Cyanide	4.9	4.4	mg/kg	2.5	0.75	EPA-9012	ND	A07	2
pH	6.19	6.19	pH Units	0.05	0.05	EPA-9045D		pH1:3	3
pH Measurement Temperature	23.7	23.7	C	0.1	0.1	EPA-9045D			3
Nitrate as NO3	970	870	mg/kg	22	6.0	EPA-300.0	ND	A07	4
Total Kjeldahl Nitrogen	40000	36000	mg/kg	4000	1600	EPA-351.2	ND	A07	5
Ammonia as N	7600	6900	mg/kg	500	250	EPA-350.1	ND	A07	6
Total Phosphate	79000	71000	mg/kg	3000	1900	EPA-365.4	ND	A07	7
Solids	100	89.7	%	0.05	0.05	SM-2540G			8

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Calc	08/30/18 15:01	09/04/18 11:40	MSA	Calc	1	B\H0326
2	EPA-9012	09/04/18 10:20	09/04/18 16:06	MC1	KONE-1	4.902	B023794
3	EPA-9045D	09/07/18 13:00	09/07/18 13:00	RT1	MANUAL	1	B024174
4	EPA-300.0	09/05/18 08:50	09/06/18 01:05	MIG	IC2	5	B023869
5	EPA-351.2	09/04/18 21:00	09/12/18 14:16	JMH	SC-1	100	B023847
6	EPA-350.1	09/04/18 11:29	09/06/18 13:06	JMH	SC-1	49.020	B023791
7	EPA-365.4	09/04/18 21:00	09/11/18 09:29	JMH	SC-1	100	B023848
8	SM-2540G	08/30/18 23:50	08/31/18 22:44	PG1	MANUAL	1	B023676

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

BCL Sample ID: 1826961-01	Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM								
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium		ND	mg/L	0.20	0.070	EPA-7196	ND		1
Total Dissolved Solids @ 180 C		5400	mg/L	500	500	EPA-160.1	ND		2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-7196	09/07/18 12:09	09/07/18 12:41	MC1	KONE-1	1	B024367
2	EPA-160.1	09/10/18 09:00	09/10/18 09:00	CAD	MANUAL	50	B024258

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

WET Test (STLC)

BCL Sample ID: 1826961-01	Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM								
Constituent	Dry Basis Result	As Recvd Result	Units	As Received		Method	MB Bias	Lab Quals	Run #
Copper		8.3	mg/L	0.10	0.012	EPA-6010B	0.031		1

Run #	Method	Prep Date	Run		Analyst	Instrument	Dilution	QC	
			Date/Time					Batch ID	
1	EPA-6010B	09/03/18 13:00	09/04/18 09:58		KDF	PE-OP3	1	B023757	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

BCL Sample ID: 1826961-01		Client Sample Name: BC1 Composite Biosolids, 8/29/2018 8:20:00AM							
Constituent	Dry Basis	As Recvd	Units	As Received		Method	MB Bias	Lab Quals	Run #
	Result	Result		PQL	MDL				
Antimony	3.9	3.5	mg/kg	10	0.66	EPA-6010B	0.75	J,A07	1
Arsenic	1.2	1.0	mg/kg	2.0	0.80	EPA-6010B	ND	J,A07	1
Barium	150	130	mg/kg	1.0	0.36	EPA-6010B	ND	A07	1
Beryllium	ND	ND	mg/kg	1.0	0.094	EPA-6010B	ND	A07	1
Cadmium	1.7	1.6	mg/kg	1.0	0.10	EPA-6010B	ND	A07	1
Chromium	36	32	mg/kg	1.0	0.10	EPA-6010B	0.32	A07	1
Total Hexavalent Chromium	0.41	0.37	mg/kg	1.0	0.30	EPA-7199	ND	J	2
Cobalt	2.7	2.4	mg/kg	5.0	0.20	EPA-6010B	ND	J,A07	1
Copper	350	320	mg/kg	2.0	0.10	EPA-6010B	ND	A07	1
Lead	21	19	mg/kg	5.0	0.56	EPA-6010B	ND	A07	1
Mercury	0.93	0.84	mg/kg	0.16	0.019	EPA-7471A	ND		3
Molybdenum	13	12	mg/kg	5.0	0.10	EPA-6010B	ND	A07	1
Nickel	24	22	mg/kg	1.0	0.30	EPA-6010B	ND	A07	1
Selenium	3.9	3.5	mg/kg	2.0	2.0	EPA-6010B	ND	A07	1
Silver	2.2	2.0	mg/kg	1.0	0.13	EPA-6010B	ND	A07	1
Thallium	ND	ND	mg/kg	10	1.3	EPA-6010B	ND	A07	1
Vanadium	16	14	mg/kg	1.0	0.22	EPA-6010B	ND	A07	1
Zinc	970	870	mg/kg	5.0	0.17	EPA-6010B	0.59	A07	1
Boron	16	14	mg/kg	10	1.0	EPA-6010B	ND	A07	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-6010B	08/30/18 10:45	08/30/18 19:18	KDF	PE-OP3	1.980	B023526
2	EPA-7199	09/06/18 09:15	09/06/18 19:31	SAV	IC-4	1	B023997
3	EPA-7471A	09/04/18 12:45	09/04/18 14:56	JP1	CETAC2	1.025	B023814

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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B023801						
Aldrin	B023801-BLK1	ND	mg/kg	0.00050	0.000049	
alpha-BHC	B023801-BLK1	ND	mg/kg	0.00050	0.000064	
beta-BHC	B023801-BLK1	ND	mg/kg	0.00050	0.000048	
delta-BHC	B023801-BLK1	ND	mg/kg	0.00050	0.00013	
gamma-BHC (Lindane)	B023801-BLK1	ND	mg/kg	0.00050	0.000086	
Chlordane (Technical)	B023801-BLK1	ND	mg/kg	0.050	0.0014	
4,4'-DDD	B023801-BLK1	ND	mg/kg	0.00050	0.000083	
4,4'-DDE	B023801-BLK1	ND	mg/kg	0.00050	0.000038	
4,4'-DDT	B023801-BLK1	ND	mg/kg	0.00050	0.00014	
Dieldrin	B023801-BLK1	ND	mg/kg	0.00050	0.000042	
Endosulfan I	B023801-BLK1	ND	mg/kg	0.00050	0.000028	
Endosulfan II	B023801-BLK1	ND	mg/kg	0.00050	0.000073	
Endosulfan sulfate	B023801-BLK1	ND	mg/kg	0.00050	0.00024	
Endrin	B023801-BLK1	ND	mg/kg	0.00050	0.000073	
Endrin aldehyde	B023801-BLK1	ND	mg/kg	0.00050	0.000077	
Heptachlor	B023801-BLK1	ND	mg/kg	0.00050	0.000099	
Heptachlor epoxide	B023801-BLK1	ND	mg/kg	0.00050	0.000030	
Methoxychlor	B023801-BLK1	ND	mg/kg	0.00050	0.00012	
Toxaphene	B023801-BLK1	ND	mg/kg	0.050	0.0019	
TCMX (Surrogate)	B023801-BLK1	85.5	%	20 - 130 (LCL - UCL)		
Decachlorobiphenyl (Surrogate)	B023801-BLK1	80.8	%	40 - 130 (LCL - UCL)		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab	Quals
								Percent Recovery	RPD		
QC Batch ID: B023801											
Aldrin	B023801-BS1	LCS	0.0050298	0.0049180	mg/kg	102		70 - 130			
gamma-BHC (Lindane)	B023801-BS1	LCS	0.0050387	0.0049180	mg/kg	102		60 - 140			
4,4'-DDT	B023801-BS1	LCS	0.0044961	0.0049180	mg/kg	91.4		60 - 140			
Dieldrin	B023801-BS1	LCS	0.0047757	0.0049180	mg/kg	97.1		70 - 130			
Endrin	B023801-BS1	LCS	0.0053895	0.0049180	mg/kg	110		60 - 140			
Heptachlor	B023801-BS1	LCS	0.0049518	0.0049180	mg/kg	101		60 - 140			
TCMX (Surrogate)	B023801-BS1	LCS	0.0095970	0.0098361	mg/kg	97.6		20 - 130			
Decachlorobiphenyl (Surrogate)	B023801-BS1	LCS	0.015485	0.019672	mg/kg	78.7		40 - 130			

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quals
								Percent Recovery	Percent Recovery	
QC Batch ID: B023801		Used client sample: N								
Aldrin	MS	1825689-73	ND	0.0050950	0.0050167	mg/kg		102		50 - 140
	MSD	1825689-73	ND	0.0053205	0.0049669	mg/kg	4.3	107	30	50 - 140
gamma-BHC (Lindane)	MS	1825689-73	ND	0.0051716	0.0050167	mg/kg		103		50 - 140
	MSD	1825689-73	ND	0.0053891	0.0049669	mg/kg	4.1	108	30	50 - 140
4,4'-DDT	MS	1825689-73	ND	0.0043378	0.0050167	mg/kg		86.5		50 - 140
	MSD	1825689-73	ND	0.0051407	0.0049669	mg/kg	16.9	104	30	50 - 140
Dieldrin	MS	1825689-73	ND	0.0047365	0.0050167	mg/kg		94.4		40 - 140
	MSD	1825689-73	ND	0.0053616	0.0049669	mg/kg	12.4	108	30	40 - 140
Endrin	MS	1825689-73	ND	0.0051355	0.0050167	mg/kg		102		50 - 150
	MSD	1825689-73	ND	0.0061106	0.0049669	mg/kg	17.3	123	30	50 - 150
Heptachlor	MS	1825689-73	ND	0.0048993	0.0050167	mg/kg		97.7		60 - 140
	MSD	1825689-73	ND	0.0052838	0.0049669	mg/kg	7.6	106	30	60 - 140
TCMX (Surrogate)	MS	1825689-73	ND	0.0097642	0.010033	mg/kg		97.3		20 - 130
	MSD	1825689-73	ND	0.0085917	0.0099338	mg/kg	12.8	86.5		20 - 130
Decachlorobiphenyl (Surrogate)	MS	1825689-73	ND	0.015219	0.020067	mg/kg		75.8		40 - 130
	MSD	1825689-73	ND	0.017972	0.019868	mg/kg	16.6	90.5		40 - 130

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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: B024004						
PCB-1016	B024004-BLK1	ND	mg/kg	0.010	0.0013	
PCB-1221	B024004-BLK1	ND	mg/kg	0.010	0.0019	
PCB-1232	B024004-BLK1	ND	mg/kg	0.010	0.0026	
PCB-1242	B024004-BLK1	ND	mg/kg	0.010	0.0017	
PCB-1248	B024004-BLK1	ND	mg/kg	0.010	0.0019	
PCB-1254	B024004-BLK1	ND	mg/kg	0.010	0.0018	
PCB-1260	B024004-BLK1	ND	mg/kg	0.010	0.0019	
Total PCB's (Summation)	B024004-BLK1	ND	mg/kg	0.010	0.0050	
Decachlorobiphenyl (Surrogate)	B024004-BLK1	80.0	%	40 - 120 (LCL - UCL)		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

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: B024004										
PCB-1016	B024004-BS1	LCS	0.064430	0.083893	mg/kg	76.8		60 - 120		
PCB-1260	B024004-BS1	LCS	0.064430	0.083893	mg/kg	76.8		60 - 120		
Decachlorobiphenyl (Surrogate)	B024004-BS1	LCS	0.018456	0.020134	mg/kg	91.7		40 - 120		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

PCB Analysis (EPA Method 8082)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: B024004		Used client sample: N								
PCB-1016	MS	1825689-68	ND	0.066780	0.084746	mg/kg		78.8		60 - 120
	MSD	1825689-68	ND	0.065677	0.082508	mg/kg	1.7	79.6	30	60 - 120
PCB-1260	MS	1825689-68	ND	0.065763	0.084746	mg/kg		77.6		60 - 120
	MSD	1825689-68	ND	0.065017	0.082508	mg/kg	1.1	78.8	30	60 - 120
Decachlorobiphenyl (Surrogate)	MS	1825689-68	ND	0.018305	0.020339	mg/kg		90.0		40 - 120
	MSD	1825689-68	ND	0.018482	0.019802	mg/kg	1.0	93.3		40 - 120

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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: B024359						
Benzene	B024359-BLK1	ND	mg/kg	0.0050	0.0013	
Bromodichloromethane	B024359-BLK1	ND	mg/kg	0.0050	0.00084	
Bromoform	B024359-BLK1	ND	mg/kg	0.0050	0.0015	
Bromomethane	B024359-BLK1	ND	mg/kg	0.0050	0.0016	
Carbon tetrachloride	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
Chlorobenzene	B024359-BLK1	ND	mg/kg	0.0050	0.0013	
Chloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.0014	
Chloroform	B024359-BLK1	ND	mg/kg	0.0050	0.00063	
Chloromethane	B024359-BLK1	ND	mg/kg	0.0050	0.0014	
Dibromochloromethane	B024359-BLK1	ND	mg/kg	0.0050	0.00099	
1,2-Dichlorobenzene	B024359-BLK1	ND	mg/kg	0.0050	0.00081	
1,3-Dichlorobenzene	B024359-BLK1	ND	mg/kg	0.0050	0.0014	
1,4-Dichlorobenzene	B024359-BLK1	ND	mg/kg	0.0050	0.0015	
1,1-Dichloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.00085	
1,1-Dichloroethene	B024359-BLK1	ND	mg/kg	0.0050	0.0012	
trans-1,2-Dichloroethene	B024359-BLK1	ND	mg/kg	0.0050	0.0014	
1,2-Dichloropropane	B024359-BLK1	ND	mg/kg	0.0050	0.00081	
cis-1,3-Dichloropropene	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
trans-1,3-Dichloropropene	B024359-BLK1	ND	mg/kg	0.0050	0.0012	
Ethylbenzene	B024359-BLK1	ND	mg/kg	0.0050	0.0015	
Methylene chloride	B024359-BLK1	ND	mg/kg	0.010	0.0024	
Methyl t-butyl ether	B024359-BLK1	ND	mg/kg	0.0050	0.00050	
1,1,2,2-Tetrachloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
Tetrachloroethene	B024359-BLK1	ND	mg/kg	0.0050	0.0013	
Toluene	B024359-BLK1	ND	mg/kg	0.0050	0.0012	
1,1,1-Trichloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloroethane	B024359-BLK1	ND	mg/kg	0.0050	0.00077	
Trichloroethene	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
Trichlorofluoromethane	B024359-BLK1	ND	mg/kg	0.0050	0.0011	
1,1,2-Trichloro-1,2,2-trifluoroethane	B024359-BLK1	ND	mg/kg	0.0050	0.0013	
Vinyl chloride	B024359-BLK1	ND	mg/kg	0.0050	0.0016	
Total Xylenes	B024359-BLK1	ND	mg/kg	0.010	0.0034	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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: B024359						
Acrolein	B024359-BLK1	ND	mg/kg	0.050	0.0073	
Acrylonitrile	B024359-BLK1	ND	mg/kg	0.020	0.0047	
1,2-Dichloroethane-d4 (Surrogate)	B024359-BLK1	117	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	B024359-BLK1	101	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	B024359-BLK1	103	%	74 - 121 (LCL - UCL)		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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	
QC Batch ID: B024359										
Benzene	B024359-BS1	LCS	0.11913	0.12500	mg/kg	95.3		70 - 130		
Bromodichloromethane	B024359-BS1	LCS	0.13254	0.12500	mg/kg	106		70 - 130		
Chlorobenzene	B024359-BS1	LCS	0.12891	0.12500	mg/kg	103		70 - 130		
Chloroethane	B024359-BS1	LCS	0.13283	0.12500	mg/kg	106		70 - 130		
1,4-Dichlorobenzene	B024359-BS1	LCS	0.13232	0.12500	mg/kg	106		70 - 130		
1,1-Dichloroethane	B024359-BS1	LCS	0.11791	0.12500	mg/kg	94.3		70 - 130		
1,1-Dichloroethene	B024359-BS1	LCS	0.12180	0.12500	mg/kg	97.4		70 - 130		
Toluene	B024359-BS1	LCS	0.12845	0.12500	mg/kg	103		70 - 130		
Trichloroethene	B024359-BS1	LCS	0.13058	0.12500	mg/kg	104		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B024359-BS1	LCS	0.049730	0.050000	mg/kg	99.5		70 - 121		
Toluene-d8 (Surrogate)	B024359-BS1	LCS	0.050350	0.050000	mg/kg	101		81 - 117		
4-Bromofluorobenzene (Surrogate)	B024359-BS1	LCS	0.048730	0.050000	mg/kg	97.5		74 - 121		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Volatile Organic Analysis (EPA Method 8240)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
								Percent Recovery	RPD	Percent Recovery
QC Batch ID: B024359		Used client sample: N								
Benzene	MS	1825689-80	ND	0.13040	0.12500	mg/kg		104		70 - 130
	MSD	1825689-80	ND	0.11770	0.12500	mg/kg	10.2	94.2	20	70 - 130
Bromodichloromethane	MS	1825689-80	ND	0.14272	0.12500	mg/kg		114		70 - 130
	MSD	1825689-80	ND	0.12628	0.12500	mg/kg	12.2	101	20	70 - 130
Chlorobenzene	MS	1825689-80	ND	0.14524	0.12500	mg/kg		116		70 - 130
	MSD	1825689-80	ND	0.12157	0.12500	mg/kg	17.7	97.3	20	70 - 130
Chloroethane	MS	1825689-80	ND	0.13377	0.12500	mg/kg		107		70 - 130
	MSD	1825689-80	ND	0.12592	0.12500	mg/kg	6.0	101	20	70 - 130
1,4-Dichlorobenzene	MS	1825689-80	ND	0.14900	0.12500	mg/kg		119		70 - 130
	MSD	1825689-80	ND	0.12367	0.12500	mg/kg	18.6	98.9	20	70 - 130
1,1-Dichloroethane	MS	1825689-80	ND	0.13103	0.12500	mg/kg		105		70 - 130
	MSD	1825689-80	ND	0.11853	0.12500	mg/kg	10.0	94.8	20	70 - 130
1,1-Dichloroethene	MS	1825689-80	ND	0.12601	0.12500	mg/kg		101		70 - 130
	MSD	1825689-80	ND	0.11841	0.12500	mg/kg	6.2	94.7	20	70 - 130
Toluene	MS	1825689-80	ND	0.14080	0.12500	mg/kg		113		70 - 130
	MSD	1825689-80	ND	0.12115	0.12500	mg/kg	15.0	96.9	20	70 - 130
Trichloroethene	MS	1825689-80	ND	0.14065	0.12500	mg/kg		113		70 - 130
	MSD	1825689-80	ND	0.12528	0.12500	mg/kg	11.6	100	20	70 - 130
1,2-Dichloroethane-d4 (Surrogate)	MS	1825689-80	ND	0.051900	0.050000	mg/kg		104		70 - 121
	MSD	1825689-80	ND	0.052850	0.050000	mg/kg	1.8	106		70 - 121
Toluene-d8 (Surrogate)	MS	1825689-80	ND	0.049940	0.050000	mg/kg		99.9		81 - 117
	MSD	1825689-80	ND	0.049030	0.050000	mg/kg	1.8	98.1		81 - 117
4-Bromofluorobenzene (Surrogate)	MS	1825689-80	ND	0.050700	0.050000	mg/kg		101		74 - 121
	MSD	1825689-80	ND	0.049460	0.050000	mg/kg	2.5	98.9		74 - 121

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Reported: 09/24/2018 8:26
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: B023625						
Acenaphthene	B023625-BLK1	ND	mg/kg	0.10	0.0077	
Acenaphthylene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
Aldrin	B023625-BLK1	ND	mg/kg	0.10	0.014	
Aniline	B023625-BLK1	ND	mg/kg	0.20	0.036	
Anthracene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
Benzidine	B023625-BLK1	ND	mg/kg	3.0	0.078	
Benzo[a]anthracene	B023625-BLK1	ND	mg/kg	0.10	0.0094	
Benzo[b]fluoranthene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
Benzo[k]fluoranthene	B023625-BLK1	ND	mg/kg	0.10	0.0098	
Benzo[a]pyrene	B023625-BLK1	ND	mg/kg	0.10	0.011	
Benzo[g,h,i]perylene	B023625-BLK1	ND	mg/kg	0.10	0.023	
Benzoic acid	B023625-BLK1	ND	mg/kg	0.50	0.019	
Benzyl alcohol	B023625-BLK1	ND	mg/kg	0.10	0.057	
Benzyl butyl phthalate	B023625-BLK1	ND	mg/kg	0.10	0.011	
alpha-BHC	B023625-BLK1	ND	mg/kg	0.10	0.014	
beta-BHC	B023625-BLK1	ND	mg/kg	0.10	0.0088	
delta-BHC	B023625-BLK1	ND	mg/kg	0.10	0.0092	
gamma-BHC (Lindane)	B023625-BLK1	ND	mg/kg	0.10	0.0092	
bis(2-Chloroethoxy)methane	B023625-BLK1	ND	mg/kg	0.10	0.0072	
bis(2-Chloroethyl) ether	B023625-BLK1	ND	mg/kg	0.10	0.026	
bis(2-Chloroisopropyl)ether	B023625-BLK1	ND	mg/kg	0.10	0.033	
bis(2-Ethylhexyl)phthalate	B023625-BLK1	ND	mg/kg	0.20	0.011	
4-Bromophenyl phenyl ether	B023625-BLK1	ND	mg/kg	0.10	0.0099	
4-Chloroaniline	B023625-BLK1	ND	mg/kg	0.10	0.012	
2-Chloronaphthalene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
4-Chlorophenyl phenyl ether	B023625-BLK1	ND	mg/kg	0.10	0.0088	
Chrysene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
4,4'-DDD	B023625-BLK1	ND	mg/kg	0.10	0.016	
4,4'-DDE	B023625-BLK1	ND	mg/kg	0.10	0.022	
4,4'-DDT	B023625-BLK1	ND	mg/kg	0.10	0.012	
Dibenzo[a,h]anthracene	B023625-BLK1	ND	mg/kg	0.10	0.023	
Dibenzofuran	B023625-BLK1	ND	mg/kg	0.10	0.0071	
1,2-Dichlorobenzene	B023625-BLK1	ND	mg/kg	0.10	0.066	

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Marine Research Specialists
4744 Telephone Rd
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Suite A
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Reported: 09/24/2018 8:26
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: B023625						
1,3-Dichlorobenzene	B023625-BLK1	ND	mg/kg	0.10	0.066	
1,4-Dichlorobenzene	B023625-BLK1	ND	mg/kg	0.10	0.067	
3,3-Dichlorobenzidine	B023625-BLK1	ND	mg/kg	0.20	0.015	
Dieldrin	B023625-BLK1	ND	mg/kg	0.10	0.025	
Diethyl phthalate	B023625-BLK1	ND	mg/kg	0.10	0.0086	
Dimethyl phthalate	B023625-BLK1	ND	mg/kg	0.10	0.010	
Di-n-butyl phthalate	B023625-BLK1	ND	mg/kg	0.10	0.0067	
2,4-Dinitrotoluene	B023625-BLK1	ND	mg/kg	0.10	0.033	
2,6-Dinitrotoluene	B023625-BLK1	ND	mg/kg	0.10	0.0089	
Di-n-octyl phthalate	B023625-BLK1	ND	mg/kg	0.10	0.012	
1,2-Diphenylhydrazine	B023625-BLK1	ND	mg/kg	0.10	0.0067	
Endosulfan I	B023625-BLK1	ND	mg/kg	0.20	0.027	
Endosulfan II	B023625-BLK1	ND	mg/kg	0.20	0.027	
Endosulfan sulfate	B023625-BLK1	ND	mg/kg	0.10	0.014	
Endrin	B023625-BLK1	ND	mg/kg	0.20	0.029	
Endrin aldehyde	B023625-BLK1	ND	mg/kg	0.50	0.019	
Fluoranthene	B023625-BLK1	ND	mg/kg	0.10	0.020	
Fluorene	B023625-BLK1	ND	mg/kg	0.10	0.0076	
Heptachlor	B023625-BLK1	ND	mg/kg	0.10	0.0095	
Heptachlor epoxide	B023625-BLK1	ND	mg/kg	0.10	0.016	
Hexachlorobenzene	B023625-BLK1	ND	mg/kg	0.10	0.0073	
Hexachlorobutadiene	B023625-BLK1	ND	mg/kg	0.10	0.0078	
Hexachlorocyclopentadiene	B023625-BLK1	ND	mg/kg	0.10	0.0072	
Hexachloroethane	B023625-BLK1	ND	mg/kg	0.10	0.062	
Indeno[1,2,3-cd]pyrene	B023625-BLK1	ND	mg/kg	0.10	0.022	
Isophorone	B023625-BLK1	ND	mg/kg	0.10	0.020	
2-Methylnaphthalene	B023625-BLK1	ND	mg/kg	0.10	0.011	
Naphthalene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
2-Naphthylamine	B023625-BLK1	ND	mg/kg	3.0	0.037	
2-Nitroaniline	B023625-BLK1	ND	mg/kg	0.10	0.013	
3-Nitroaniline	B023625-BLK1	ND	mg/kg	0.20	0.024	
4-Nitroaniline	B023625-BLK1	ND	mg/kg	0.20	0.029	
Nitrobenzene	B023625-BLK1	ND	mg/kg	0.10	0.0095	

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Reported: 09/24/2018 8:26
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: B023625						
N-Nitrosodimethylamine	B023625-BLK1	ND	mg/kg	0.10	0.018	
N-Nitrosodi-N-propylamine	B023625-BLK1	ND	mg/kg	0.10	0.057	
N-Nitrosodiphenylamine	B023625-BLK1	ND	mg/kg	0.10	0.013	
Phenanthrene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
Pyrene	B023625-BLK1	ND	mg/kg	0.10	0.020	
1,2,4-Trichlorobenzene	B023625-BLK1	ND	mg/kg	0.10	0.0067	
4-Chloro-3-methylphenol	B023625-BLK1	ND	mg/kg	0.20	0.011	
2-Chlorophenol	B023625-BLK1	ND	mg/kg	0.10	0.055	
2,4-Dichlorophenol	B023625-BLK1	ND	mg/kg	0.10	0.015	
2,4-Dimethylphenol	B023625-BLK1	ND	mg/kg	0.10	0.011	
4,6-Dinitro-2-methylphenol	B023625-BLK1	ND	mg/kg	0.50	0.019	
2,4-Dinitrophenol	B023625-BLK1	ND	mg/kg	0.50	0.015	
2-Methylphenol	B023625-BLK1	ND	mg/kg	0.10	0.069	
3- & 4-Methylphenol	B023625-BLK1	ND	mg/kg	0.20	0.14	
2-Nitrophenol	B023625-BLK1	ND	mg/kg	0.10	0.0067	
4-Nitrophenol	B023625-BLK1	ND	mg/kg	0.20	0.026	
Pentachlorophenol	B023625-BLK1	ND	mg/kg	0.20	0.023	
Phenol	B023625-BLK1	ND	mg/kg	0.10	0.063	
2,4,5-Trichlorophenol	B023625-BLK1	ND	mg/kg	0.20	0.015	
2,4,6-Trichlorophenol	B023625-BLK1	ND	mg/kg	0.20	0.0068	
2-Fluorophenol (Surrogate)	B023625-BLK1	51.5	%	20 - 130 (LCL - UCL)		
Phenol-d5 (Surrogate)	B023625-BLK1	21.5	%	30 - 130 (LCL - UCL) S09		
Nitrobenzene-d5 (Surrogate)	B023625-BLK1	75.1	%	30 - 130 (LCL - UCL)		
2-Fluorobiphenyl (Surrogate)	B023625-BLK1	128	%	30 - 140 (LCL - UCL)		
2,4,6-Tribromophenol (Surrogate)	B023625-BLK1	76.4	%	20 - 150 (LCL - UCL)		
p-Terphenyl-d14 (Surrogate)	B023625-BLK1	115	%	30 - 150 (LCL - UCL)		

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Marine Research Specialists
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Reported: 09/24/2018 8:26
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		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: B023625										
Acenaphthene	B023625-BS1	LCS	1.3971	1.6502	mg/kg	84.7		50 - 130		
1,4-Dichlorobenzene	B023625-BS1	LCS	2.0231	1.6502	mg/kg	123		50 - 130		
2,4-Dinitrotoluene	B023625-BS1	LCS	1.9535	1.6502	mg/kg	118		50 - 130		
Hexachlorobenzene	B023625-BS1	LCS	1.7755	1.3201	mg/kg	134		40 - 130		L21
Hexachlorobutadiene	B023625-BS1	LCS	1.5762	1.6502	mg/kg	95.5		50 - 130		
Hexachloroethane	B023625-BS1	LCS	1.7477	1.6502	mg/kg	106		50 - 130		
Nitrobenzene	B023625-BS1	LCS	1.7448	1.6502	mg/kg	106		50 - 130		
N-Nitrosodi-N-propylamine	B023625-BS1	LCS	1.5164	1.6502	mg/kg	91.9		40 - 120		
Pyrene	B023625-BS1	LCS	1.5869	1.6502	mg/kg	96.2		40 - 150		
1,2,4-Trichlorobenzene	B023625-BS1	LCS	1.8010	1.6502	mg/kg	109		50 - 120		
4-Chloro-3-methylphenol	B023625-BS1	LCS	1.5405	1.6502	mg/kg	93.4		50 - 130		
2-Chlorophenol	B023625-BS1	LCS	1.8228	1.6502	mg/kg	110		50 - 130		
2-Methylphenol	B023625-BS1	LCS	1.4415	1.6502	mg/kg	87.4		50 - 130		
3- & 4-Methylphenol	B023625-BS1	LCS	3.0020	3.3003	mg/kg	91.0		50 - 130		
4-Nitrophenol	B023625-BS1	LCS	1.0936	1.6502	mg/kg	66.3		30 - 130		
Pentachlorophenol	B023625-BS1	LCS	1.1213	1.3201	mg/kg	84.9		20 - 130		
Phenol	B023625-BS1	LCS	1.5222	1.6502	mg/kg	92.2		40 - 120		
2,4,6-Trichlorophenol	B023625-BS1	LCS	1.4157	1.6502	mg/kg	85.8		50 - 130		
2-Fluorophenol (Surrogate)	B023625-BS1	LCS	1.0763	1.3201	mg/kg	81.5		20 - 130		
Phenol-d5 (Surrogate)	B023625-BS1	LCS	1.0789	1.3201	mg/kg	81.7		30 - 130		
Nitrobenzene-d5 (Surrogate)	B023625-BS1	LCS	0.95079	1.3201	mg/kg	72.0		30 - 130		
2-Fluorobiphenyl (Surrogate)	B023625-BS1	LCS	0.97824	1.3201	mg/kg	74.1		30 - 140		
2,4,6-Tribromophenol (Surrogate)	B023625-BS1	LCS	1.0230	1.3201	mg/kg	77.5		20 - 150		
p-Terphenyl-d14 (Surrogate)	B023625-BS1	LCS	0.60413	0.66007	mg/kg	91.5		30 - 150		

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Reported: 09/24/2018 8:26
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

Table with columns: Constituent, Type, Source Sample ID, Source Result, Result, Spike Added, Units, RPD, Percent Recovery, Control Limits RPD, Percent Recovery, Lab Quals. Includes QC Batch ID: B023625 and Used client sample: N.

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Reported: 09/24/2018 8:26
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	Percent Recovery	Lab
QC Batch ID: B023625		Used client sample: N									
2-Fluorophenol (Surrogate)	MS	1825689-62	ND	1.0047	1.3423	mg/kg		74.8	20 - 130		
	MSD	1825689-62	ND	0.97487	1.3423	mg/kg	3.0	72.6	20 - 130		
Phenol-d5 (Surrogate)	MS	1825689-62	ND	0.96520	1.3423	mg/kg		71.9	30 - 130		
	MSD	1825689-62	ND	0.94490	1.3423	mg/kg	2.1	70.4	30 - 130		
Nitrobenzene-d5 (Surrogate)	MS	1825689-62	ND	0.90568	1.3423	mg/kg		67.5	30 - 130		
	MSD	1825689-62	ND	0.87636	1.3423	mg/kg	3.3	65.3	30 - 130		
2-Fluorobiphenyl (Surrogate)	MS	1825689-62	ND	0.83201	1.3423	mg/kg		62.0	30 - 140		
	MSD	1825689-62	ND	0.81770	1.3423	mg/kg	1.7	60.9	30 - 140		
2,4,6-Tribromophenol (Surrogate)	MS	1825689-62	ND	0.90831	1.3423	mg/kg		67.7	20 - 150		
	MSD	1825689-62	ND	0.89804	1.3423	mg/kg	1.1	66.9	20 - 150		
p-Terphenyl-d14 (Surrogate)	MS	1825689-62	ND	0.53111	0.67114	mg/kg		79.1	30 - 150		
	MSD	1825689-62	ND	0.52856	0.67114	mg/kg	0.5	78.8	30 - 150		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B023825						
Oil and Grease	B023825-BLK1	ND	mg/kg	50	19	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: B023825										
Oil and Grease	B023825-BS1	LCS	799.40	790.42	mg/kg	101		59	117	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
								Percent Recovery	RPD	Percent Recovery
QC Batch ID: B023825		Used client sample: N								
Oil and Grease	DUP	1825689-21	ND	ND		mg/kg			30	
	MS	1825689-21	ND	828.97	796.78	mg/kg		104		56 - 111
	MSD	1825689-21	ND	827.62	798.39	mg/kg	0.2	104	30	56 - 111

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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: B\H0326						
Moisture	B\H0326-BLK1	ND	%	0.05	0.05	
QC Batch ID: B023791						
Ammonia as N	B023791-BLK1	ND	mg/kg	10	5.0	
QC Batch ID: B023794						
Total Cyanide	B023794-BLK1	ND	mg/kg	0.50	0.15	
QC Batch ID: B023847						
Total Kjeldahl Nitrogen	B023847-BLK1	ND	mg/kg	40	16	
QC Batch ID: B023848						
Total Phosphate	B023848-BLK1	ND	mg/kg	30	19	
QC Batch ID: B023869						
Nitrate as NO3	B023869-BLK1	ND	mg/kg	4.4	1.2	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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		Lab
								Percent Recovery	RPD	
QC Batch ID: B023791										
Ammonia as N	B023791-BS1	LCS	98.157	98.039	mg/kg	100		80 - 120		
QC Batch ID: B023794										
Total Cyanide	B023794-BS1	LCS	13.792	14.423	mg/kg	95.6		80 - 120		
QC Batch ID: B023847										
Total Kjeldahl Nitrogen	B023847-BS1	LCS	390.14	400.00	mg/kg	97.5		90 - 110		
QC Batch ID: B023848										
Total Phosphate	B023848-BS1	LCS	605.33	613.20	mg/kg	98.7		85 - 115		
QC Batch ID: B023869										
Nitrate as NO3	B023869-BS1	LCS	22.460	22.358	mg/kg	100		90 - 110		
QC Batch ID: B024174										
pH	B024174-BS1	LCS	3.9780	4.0000	pH Units	99.4		95 - 105		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Chemical Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
								Percent Recovery	RPD	Percent Recovery
QC Batch ID: B023676		Used client sample: N								
Solids	DUP	1826539-01	95.030	94.980		%	0.1		20	
QC Batch ID: B023791		Used client sample: N								
Ammonia as N	DUP	1826716-02	2694.7	2639.6		mg/kg	2.1		20	
	MS	1826716-02	2694.7	3031.2	96.154	mg/kg		350		80 - 120 A03
	MSD	1826716-02	2694.7	2872.5	90.909	mg/kg	5.4	196	20	80 - 120 A03
QC Batch ID: B023794		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
Total Cyanide	DUP	1826961-01	4.3583	4.2347		mg/kg	2.9		20	
	MS	1826961-01	4.3583	50.062	49.020	mg/kg		93.2		80 - 120
	MSD	1826961-01	4.3583	51.656	50.000	mg/kg	3.1	94.6	20	80 - 120
QC Batch ID: B023847		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
Total Kjeldahl Nitrogen	DUP	1826961-01	35694	35385		mg/kg	0.9		20	
	MS	1826961-01	35694	34103	400.00	mg/kg		-398		90 - 110 A03
	MSD	1826961-01	35694	34257	400.00	mg/kg	0.5	-359	20	90 - 110 A03
QC Batch ID: B023848		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
Total Phosphate	DUP	1826961-01	70838	69746		mg/kg	1.6		20	
	MS	1826961-01	70838	69008	613.20	mg/kg		-298		80 - 120 A03
	MSD	1826961-01	70838	69072	613.20	mg/kg	0.1	-288	20	80 - 120 A03
QC Batch ID: B023869		Used client sample: N								
Nitrate as NO3	DUP	1826827-01	1.2838	ND		mg/kg			20	
	MS	1826827-01	1.2838	211.64	223.58	mg/kg		94.1		80 - 120
	MSD	1826827-01	1.2838	209.36	223.58	mg/kg	1.1	93.1	20	80 - 120
QC Batch ID: B024174		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
pH	DUP	1826961-01	6.1880	6.1640		pH Units	0.4		20	

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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B024258						
Total Dissolved Solids @ 180 C	B024258-BLK1	ND	mg/L	6.7	6.7	
QC Batch ID: B024367						
Hexavalent Chromium	B024367-BLK1	ND	mg/L	0.20	0.070	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	
QC Batch ID: B024258										
Total Dissolved Solids @ 180 C	B024258-BS1	LCS	585.00	586.00	mg/L	99.8		90 - 110		
QC Batch ID: B024367										
Hexavalent Chromium	B024367-BS1	LCS	5.1059	5.0000	mg/L	102		85 - 115		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Modified WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: B024258		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
Total Dissolved Solids @ 180 C	DUP	1826961-01	5350.0	5600.0		mg/L	4.6		20	
QC Batch ID: B024367		Used client sample: Y - Description: BC1 Composite Biosolids, 08/29/2018 08:20								
Hexavalent Chromium	DUP	1826961-01	ND	ND		mg/L			20	
	MS	1826961-01	ND	4.3026	5.2632	mg/L		81.8		85 - 115 Q03
	MSD	1826961-01	ND	4.2952	5.2632	mg/L	0.2	81.6	20	85 - 115 Q03

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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: B023757						
Copper	B023757-BLK1	0.030906	mg/L	0.10	0.012	J

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
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		Lab
								Percent Recovery	RPD	
QC Batch ID: B023757										
Copper	B023757-BS1	LCS	22.837	20.000	mg/L	114		85	115	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

WET Test (STLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits		Lab Quals
									RPD	Percent Recovery	
QC Batch ID: B023757		Used client sample: N									
Copper	DUP	1826221-01RE1	0.095668	0.061185		mg/L	44.0		20		J,A02
	MS	1826221-01RE1	0.095668	22.508	20.408	mg/L		110		75 - 125	
	MSD	1826221-01RE1	0.095668	22.884	20.408	mg/L	1.7	112	20	75 - 125	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
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: B023526						
Antimony	B023526-BLK1	0.38070	mg/kg	5.0	0.33	J
Arsenic	B023526-BLK1	ND	mg/kg	1.0	0.40	
Barium	B023526-BLK1	ND	mg/kg	0.50	0.18	
Beryllium	B023526-BLK1	ND	mg/kg	0.50	0.047	
Cadmium	B023526-BLK1	ND	mg/kg	0.50	0.052	
Chromium	B023526-BLK1	0.15993	mg/kg	0.50	0.050	J
Cobalt	B023526-BLK1	ND	mg/kg	2.5	0.098	
Copper	B023526-BLK1	ND	mg/kg	1.0	0.050	
Lead	B023526-BLK1	ND	mg/kg	2.5	0.28	
Molybdenum	B023526-BLK1	ND	mg/kg	2.5	0.050	
Nickel	B023526-BLK1	ND	mg/kg	0.50	0.15	
Selenium	B023526-BLK1	ND	mg/kg	1.0	0.98	
Silver	B023526-BLK1	ND	mg/kg	0.50	0.067	
Thallium	B023526-BLK1	ND	mg/kg	5.0	0.64	
Vanadium	B023526-BLK1	ND	mg/kg	0.50	0.11	
Zinc	B023526-BLK1	0.29795	mg/kg	2.5	0.087	J
Boron	B023526-BLK1	ND	mg/kg	5.0	0.50	
QC Batch ID: B023814						
Mercury	B023814-BLK1	ND	mg/kg	0.16	0.019	
QC Batch ID: B023997						
Total Hexavalent Chromium	B023997-BLK1	ND	mg/kg	1.0	0.30	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: B023526										
Antimony	B023526-BS1	LCS	100.58	100.00	mg/kg	101		75 - 125		
Arsenic	B023526-BS1	LCS	20.243	20.000	mg/kg	101		75 - 125		
Barium	B023526-BS1	LCS	102.44	100.00	mg/kg	102		75 - 125		
Beryllium	B023526-BS1	LCS	10.311	10.000	mg/kg	103		75 - 125		
Cadmium	B023526-BS1	LCS	10.359	10.000	mg/kg	104		75 - 125		
Chromium	B023526-BS1	LCS	110.93	100.00	mg/kg	111		75 - 125		
Cobalt	B023526-BS1	LCS	107.89	100.00	mg/kg	108		75 - 125		
Copper	B023526-BS1	LCS	96.340	100.00	mg/kg	96.3		75 - 125		
Lead	B023526-BS1	LCS	104.09	100.00	mg/kg	104		75 - 125		
Molybdenum	B023526-BS1	LCS	101.19	100.00	mg/kg	101		75 - 125		
Nickel	B023526-BS1	LCS	113.99	100.00	mg/kg	114		75 - 125		
Selenium	B023526-BS1	LCS	17.979	20.000	mg/kg	89.9		75 - 125		
Silver	B023526-BS1	LCS	10.889	10.000	mg/kg	109		75 - 125		
Thallium	B023526-BS1	LCS	115.36	100.00	mg/kg	115		75 - 125		
Vanadium	B023526-BS1	LCS	105.30	100.00	mg/kg	105		75 - 125		
Zinc	B023526-BS1	LCS	101.76	100.00	mg/kg	102		75 - 125		
Boron	B023526-BS1	LCS	99.259	100.00	mg/kg	99.3		75 - 125		
QC Batch ID: B023814										
Mercury	B023814-BS1	LCS	0.73712	0.80000	mg/kg	92.1		80 - 120		
QC Batch ID: B023997										
Total Hexavalent Chromium	B023997-BS1	LCS	44.250	40.000	mg/kg	111		80 - 120		

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits		
								Percent Recovery	RPD	Percent Recovery
QC Batch ID: B023526		Used client sample: N								
Antimony	DUP	1826962-01	0.99140	0.55014		mg/kg	57.2		20	J,A02
	MS	1826962-01	0.99140	102.17	100.00	mg/kg		101		16 - 119
	MSD	1826962-01	0.99140	104.28	100.00	mg/kg	2.0	103	20	16 - 119
Arsenic	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	20.316	20.000	mg/kg		102		75 - 125
	MSD	1826962-01	ND	20.174	20.000	mg/kg	0.7	101	20	75 - 125
Barium	DUP	1826962-01	0.81140	0.59013		mg/kg	31.6		20	A02
	MS	1826962-01	0.81140	52.978	100.00	mg/kg		52.2		75 - 125 Q03
	MSD	1826962-01	0.81140	50.006	100.00	mg/kg	5.8	49.2	20	75 - 125 Q03
Beryllium	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	10.246	10.000	mg/kg		102		75 - 125
	MSD	1826962-01	ND	10.487	10.000	mg/kg	2.3	105	20	75 - 125
Cadmium	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	10.938	10.000	mg/kg		109		75 - 125
	MSD	1826962-01	ND	10.968	10.000	mg/kg	0.3	110	20	75 - 125
Chromium	DUP	1826962-01	0.92846	0.97403		mg/kg	4.8		20	
	MS	1826962-01	0.92846	112.73	100.00	mg/kg		112		75 - 125
	MSD	1826962-01	0.92846	111.86	100.00	mg/kg	0.8	111	20	75 - 125
Cobalt	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	108.43	100.00	mg/kg		108		75 - 125
	MSD	1826962-01	ND	108.33	100.00	mg/kg	0.1	108	20	75 - 125
Copper	DUP	1826962-01	1.2772	1.1914		mg/kg	7.0		20	
	MS	1826962-01	1.2772	109.53	100.00	mg/kg		108		75 - 125
	MSD	1826962-01	1.2772	102.72	100.00	mg/kg	6.4	101	20	75 - 125
Lead	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	106.04	100.00	mg/kg		106		75 - 125
	MSD	1826962-01	ND	105.70	100.00	mg/kg	0.3	106	20	75 - 125
Molybdenum	DUP	1826962-01	0.35388	0.12195		mg/kg	97.5		20	J,A02
	MS	1826962-01	0.35388	99.954	100.00	mg/kg		99.6		75 - 125
	MSD	1826962-01	0.35388	99.898	100.00	mg/kg	0.1	99.5	20	75 - 125
Nickel	DUP	1826962-01	0.48827	0.56873		mg/kg	15.2		20	
	MS	1826962-01	0.48827	116.40	100.00	mg/kg		116		75 - 125
	MSD	1826962-01	0.48827	116.20	100.00	mg/kg	0.2	116	20	75 - 125
Selenium	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	17.766	20.000	mg/kg		88.8		75 - 125
	MSD	1826962-01	ND	18.631	20.000	mg/kg	4.8	93.2	20	75 - 125
Silver	DUP	1826962-01	ND	ND		mg/kg			20	
	MS	1826962-01	ND	10.786	10.000	mg/kg		108		75 - 125
	MSD	1826962-01	ND	10.747	10.000	mg/kg	0.4	107	20	75 - 125

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

Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits		Lab Quals
									RPD	Percent Recovery	
QC Batch ID: B023526		Used client sample: N									
Thallium	DUP	1826962-01	ND	ND		mg/kg			20		
	MS	1826962-01	ND	120.40	100.00	mg/kg		120		75 - 125	
	MSD	1826962-01	ND	122.39	100.00	mg/kg	1.6	122	20	75 - 125	
Vanadium	DUP	1826962-01	18.203	12.147		mg/kg	39.9		20		Q01
	MS	1826962-01	18.203	118.32	100.00	mg/kg		100		75 - 125	
	MSD	1826962-01	18.203	120.65	100.00	mg/kg	2.0	102	20	75 - 125	
Zinc	DUP	1826962-01	12.156	8.5781		mg/kg	34.5		20		Q01
	MS	1826962-01	12.156	117.33	100.00	mg/kg		105		75 - 125	
	MSD	1826962-01	12.156	117.83	100.00	mg/kg	0.4	106	20	75 - 125	
Boron	DUP	1826962-01	ND	ND		mg/kg			20		
	MS	1826962-01	ND	94.094	100.00	mg/kg		94.1		75 - 125	
	MSD	1826962-01	ND	93.392	100.00	mg/kg	0.7	93.4	20	75 - 125	
QC Batch ID: B023814		Used client sample: N									
Mercury	DUP	1827224-01	0.021746	0.026667		mg/kg	20.3		20		J,A02
	MS	1827224-01	0.021746	0.82175	0.79365	mg/kg		101		80 - 120	
	MSD	1827224-01	0.021746	0.82095	0.79365	mg/kg	0.1	101	20	80 - 120	
QC Batch ID: B023997		Used client sample: N									
Total Hexavalent Chromium	DUP	1826574-01	0.69600	0.65400		mg/kg	6.2		20		J
	MS	1826574-01	0.69600	43.014	40.000	mg/kg		106		75 - 125	
	MSD	1826574-01	0.69600	43.278	40.000	mg/kg	0.6	106	20	75 - 125	

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Reported: 09/24/2018 8:26
Project: Biosolids from MBWWTP
Project Number: [none]
Project Manager: Doug Coats

Notes And Definitions

- J Estimated Value (CLP Flag)
- MDL Method Detection Limit
- ND Analyte Not Detected
- PQL Practical Quantitation Limit
- A02 The difference between duplicate readings is less than the quantitation limit.
- A03 The sample concentration was 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.
- L21 The Laboratory Control Sample Soil (LCSS) recovery is not within laboratory established control limits.
- pH1:3 pH result reported on a 1:3 dilution of sample
- Q01 Sample precision is not within the control limits.
- Q03 Matrix spike recovery(s) was(were) not within the control limits.
- S09 The surrogate recovery for this compound was not within the control limits.

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