

US EPA ARCHIVE DOCUMENT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
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Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-2106-1

Client Project/Site: West Lake Landfill

For:

Engineering Management Support, Inc.
7220 W. Jefferson AVE
Suite 406
Lakewood, Colorado 80235

Attn: Mr. Paul Rosasco

Rhonda Ridenhower

Authorized for release by:
4/30/2013 4:50:02 PM

Rhonda Ridenhower
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Job ID: 160-2106-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: Engineering Management Support, Inc.

Project: West Lake Landfill

Report Number: 160-2106-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 04/16/2013; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.0 C.

VOLATILE ORGANIC COMPOUNDS (GC MS)

Samples PZ-106-KS (160-2106-1) and TRIP BLANK (160-2106-2) were analyzed for volatile organic compounds (GC MS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 04/19/2013.

Analytical batch 47062

ICAL-8260C-L5mL-RSD15Low

The ICAL %RSD meet the QC limits of 15%RSD or less for all compounds. The ICV %D meets the QC limits of 20%D or less for all compounds. Isobutanol was from the initial calibration lowest point due to poor response. The surrogate compounds (Dibromofluoromethane, 1,2-Dichloroethane-d4, Toluene-d8 and 4-Bromofluorobenzene) were not spiked at the initial calibration highest point because the recoveries do not warrant the high concentration. The initial calibration still meets the TestAmerica's point selection

Case Narrative

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Job ID: 160-2106-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

policy. No further action is required.

No difficulties were encountered during the VOCs analyses.

All quality control parameters were within the acceptance limits.

METALS (ICP)-Dissolved

Sample PZ-106-KS (160-2106-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/18/2013 and analyzed on 04/24/2013.

The following samples were diluted to bring the concentration of target analytes (calcium and sodium) within the calibration range: (160-2109-3 MS), (160-2109-3 MSD), (160-2109-3 SD), I-65 (160-2109-3), PZ-106-KS (160-2106-1). Elevated reporting limits (RLs) are provided.

Due to the high concentration of calcium, the matrix spike / matrix spike duplicate (MS/MSD) for batch 46729 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No other difficulties were encountered during the ICP analysis.

All other quality control parameters were within the acceptance limits.

TOTAL METALS (ICP)

Sample PZ-106-KS (160-2106-1) was analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/18/2013 and analyzed on 04/23/2013 and 04/24/2013.

The following samples were diluted to bring the concentration of target analytes (calcium and sodium) within the calibration range: (160-2109-3 MS), (160-2109-3 MSD), (160-2109-3 SD), I-65 (160-2109-3), PZ-106-KS (160-2106-1). Elevated reporting limits (RLs) are provided.

Due to the high concentration of calcium, the matrix spike / matrix spike duplicate (MS/MSD) for batch 47746 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No other difficulties were encountered during the metals analysis.

All other quality control parameters were within the acceptance limits.

DISSOLVED MERCURY (CVAA)

Sample PZ-106-KS (160-2106-1) was analyzed for dissolved mercury (CVAA) in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 04/25/2013 and analyzed on 04/26/2013.

No difficulties were encountered during the mercury analysis.

All quality control parameters were within the acceptance limits.

TOTAL MERCURY

Sample PZ-106-KS (160-2106-1) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 04/25/2013 and analyzed on 04/26/2013.

No difficulties were encountered during the mercury analysis.

All quality control parameters were within the acceptance limits.

ANIONS

Sample PZ-106-KS (160-2106-1) was analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 04/16/2013.

Case Narrative

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Job ID: 160-2106-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

The following samples were diluted to bring the concentrations of Chloride and Sulfate within the calibration range in IC batch 47805: PZ-106-KS (160-2106-1). Elevated reporting limits (RLs) are provided.
No difficulties were encountered during the anions analysis.

All quality control parameters were within the acceptance limits.

ALKALINITY

Sample PZ-106-KS (160-2106-1) was analyzed for alkalinity in accordance with EPA Method 310.1. The samples were analyzed on 04/29/2013.

No difficulties were encountered during the alkalinity analysis.

All quality control parameters were within the acceptance limits

Login Sample Receipt Checklist

Client: Engineering Management Support, Inc.

Job Number: 160-2106-1

Login Number: 2106

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	True	

Definitions/Glossary

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Method Summary

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL SL
6010C	Metals (ICP)	SW846	TAL SL
7470A	Mercury (CVAA)	SW846	TAL SL
300.0	Anions, Ion Chromatography	MCAWW	TAL SL
310.1	Alkalinity	MCAWW	TAL SL

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Sample Summary

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-2106-1	PZ-106-KS	Water	04/15/13 15:39	04/16/13 09:15
160-2106-2	TRIP BLANK	Water	04/15/13 15:39	04/16/13 09:15

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Detection Summary

Client: Engineering Management Support, Inc.
 Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Client Sample ID: PZ-106-KS

Lab Sample ID: 160-2106-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	240		200	80	ug/L	1		6010C	Total/NA
Arsenic	2.1	J	10	2.0	ug/L	1		6010C	Total/NA
Barium	46	J	50	4.0	ug/L	1		6010C	Total/NA
Calcium	56000	E	1000	110	ug/L	1		6010C	Total/NA
Calcium	60000		5000	530	ug/L	5		6010C	Total/NA
Iron	540		100	28	ug/L	1		6010C	Total/NA
Lead	1.5	J	10	1.5	ug/L	1		6010C	Total/NA
Magnesium	36000		1000	130	ug/L	1		6010C	Total/NA
Manganese	6.1	J	15	3.3	ug/L	1		6010C	Total/NA
Nickel	15	J	40	13	ug/L	1		6010C	Total/NA
Potassium	2000	J	5000	1700	ug/L	1		6010C	Total/NA
Sodium	61000		1000	320	ug/L	1		6010C	Total/NA
Zinc	27		20	5.2	ug/L	1		6010C	Total/NA
Arsenic	2.0	J	10	2.0	ug/L	1		6010C	Dissolved
Barium	45	J	50	4.0	ug/L	1		6010C	Dissolved
Calcium	56000	E	1000	110	ug/L	1		6010C	Dissolved
Calcium	60000		5000	530	ug/L	5		6010C	Dissolved
Cobalt	5.1	J	50	4.0	ug/L	1		6010C	Dissolved
Iron	380		100	28	ug/L	1		6010C	Dissolved
Magnesium	36000		1000	130	ug/L	1		6010C	Dissolved
Manganese	10	J	15	3.3	ug/L	1		6010C	Dissolved
Potassium	2000	J	5000	1700	ug/L	1		6010C	Dissolved
Sodium	63000		1000	320	ug/L	1		6010C	Dissolved
Zinc	6.8	J B	20	5.2	ug/L	1		6010C	Dissolved
Nitrate as N	0.0042	J	0.020	0.0040	mg/L	1		300.0	Total/NA
Bromide	0.041	J	0.25	0.025	mg/L	1		300.0	Total/NA
Sulfate	12		0.50	0.050	mg/L	1		300.0	Total/NA
Alkalinity	390		5.0	0.54	mg/L	1		310.1	Total/NA
Chloride - DL	13		2.0	0.20	mg/L	10		300.0	Total/NA

Client Sample ID: TRIP BLANK

Lab Sample ID: 160-2106-2

No Detections.

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This Detection Summary does not include radiochemical test results.

TestAmerica St. Louis

Client Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Client Sample ID: PZ-106-KS

Lab Sample ID: 160-2106-1

Date Collected: 04/15/13 15:39

Matrix: Water

Date Received: 04/16/13 09:15

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.29	ug/L			04/19/13 02:00	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.43	ug/L			04/19/13 02:00	1
1,1,2-Trichloroethane	ND		5.0	0.57	ug/L			04/19/13 02:00	1
1,1-Dichloroethane	ND		5.0	0.39	ug/L			04/19/13 02:00	1
1,1-Dichloroethene	ND		5.0	0.37	ug/L			04/19/13 02:00	1
1,2,4-Trichlorobenzene	ND		5.0	0.55	ug/L			04/19/13 02:00	1
1,2-Dibromo-3-chloropropane	ND		10	1.2	ug/L			04/19/13 02:00	1
1,2-Dibromoethane	ND		5.0	0.44	ug/L			04/19/13 02:00	1
1,2-Dichlorobenzene	ND		5.0	0.28	ug/L			04/19/13 02:00	1
1,2-Dichloroethane	ND		5.0	0.37	ug/L			04/19/13 02:00	1
1,2-Dichloropropane	ND		5.0	0.32	ug/L			04/19/13 02:00	1
1,3-Dichlorobenzene	ND		5.0	0.23	ug/L			04/19/13 02:00	1
1,4-Dichlorobenzene	ND		5.0	0.35	ug/L			04/19/13 02:00	1
2-Butanone (MEK)	ND		20	0.39	ug/L			04/19/13 02:00	1
2-Hexanone	ND		20	0.59	ug/L			04/19/13 02:00	1
4-Methyl-2-pentanone (MIBK)	ND		20	0.33	ug/L			04/19/13 02:00	1
Acetone	ND		20	6.7	ug/L			04/19/13 02:00	1
Benzene	ND		5.0	0.25	ug/L			04/19/13 02:00	1
Bromodichloromethane	ND		5.0	0.25	ug/L			04/19/13 02:00	1
Bromoform	ND		5.0	0.37	ug/L			04/19/13 02:00	1
Bromomethane	ND		10	0.40	ug/L			04/19/13 02:00	1
Carbon disulfide	ND		5.0	0.37	ug/L			04/19/13 02:00	1
Carbon tetrachloride	ND		5.0	0.36	ug/L			04/19/13 02:00	1
Chlorobenzene	ND		5.0	0.38	ug/L			04/19/13 02:00	1
Chloroethane	ND		10	0.38	ug/L			04/19/13 02:00	1
Chloroform	ND		5.0	0.15	ug/L			04/19/13 02:00	1
Chloromethane	ND		10	0.55	ug/L			04/19/13 02:00	1
cis-1,2-Dichloroethene	ND		5.0	0.16	ug/L			04/19/13 02:00	1
cis-1,3-Dichloropropene	ND		5.0	0.34	ug/L			04/19/13 02:00	1
Cyclohexane	ND		10	0.36	ug/L			04/19/13 02:00	1
Dibromochloromethane	ND		5.0	0.33	ug/L			04/19/13 02:00	1
Dichlorodifluoromethane	ND		10	0.45	ug/L			04/19/13 02:00	1
Ethylbenzene	ND		5.0	0.30	ug/L			04/19/13 02:00	1
Isopropylbenzene	ND		5.0	0.26	ug/L			04/19/13 02:00	1
Methyl acetate	ND		5.0	2.3	ug/L			04/19/13 02:00	1
Methyl tert-butyl ether	ND		5.0	0.40	ug/L			04/19/13 02:00	1
Methylcyclohexane	ND		10	0.26	ug/L			04/19/13 02:00	1
Methylene Chloride	ND		5.0	1.7	ug/L			04/19/13 02:00	1
m-Xylene & p-Xylene	ND		5.0	0.57	ug/L			04/19/13 02:00	1
o-Xylene	ND		5.0	0.32	ug/L			04/19/13 02:00	1
Styrene	ND		5.0	0.35	ug/L			04/19/13 02:00	1
Tetrachloroethene	ND		5.0	0.28	ug/L			04/19/13 02:00	1
Toluene	ND		5.0	1.0	ug/L			04/19/13 02:00	1
trans-1,2-Dichloroethene	ND		5.0	0.18	ug/L			04/19/13 02:00	1
trans-1,3-Dichloropropene	ND		5.0	0.35	ug/L			04/19/13 02:00	1
Trichloroethene	ND		5.0	0.29	ug/L			04/19/13 02:00	1
Trichlorofluoromethane	ND		5.0	0.22	ug/L			04/19/13 02:00	1
Vinyl chloride	ND		5.0	0.43	ug/L			04/19/13 02:00	1
Xylenes, Total	ND		10	0.85	ug/L			04/19/13 02:00	1

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Client Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Client Sample ID: PZ-106-KS

Lab Sample ID: 160-2106-1

Date Collected: 04/15/13 15:39

Matrix: Water

Date Received: 04/16/13 09:15

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115		82 - 121		04/19/13 02:00	1
Dibromofluoromethane (Surr)	103		85 - 119		04/19/13 02:00	1
1,2-Dichloroethane-d4 (Surr)	103		82 - 132		04/19/13 02:00	1
Toluene-d8 (Surr)	108		85 - 115		04/19/13 02:00	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	240		200	80	ug/L		04/18/13 13:32	04/23/13 16:11	1
Antimony	ND		10	4.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Arsenic	2.1	J	10	2.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Barium	46	J	50	4.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Beryllium	ND		5.0	0.61	ug/L		04/18/13 13:32	04/23/13 16:11	1
Cadmium	ND		5.0	0.91	ug/L		04/18/13 13:32	04/23/13 16:11	1
Calcium	56000	E	1000	110	ug/L		04/18/13 13:32	04/23/13 16:11	1
Calcium	60000		5000	530	ug/L		04/18/13 13:32	04/24/13 15:39	5
Chromium	ND		10	3.1	ug/L		04/18/13 13:32	04/23/13 16:11	1
Cobalt	ND		50	4.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Copper	ND		25	4.6	ug/L		04/18/13 13:32	04/23/13 16:11	1
Iron	540		100	28	ug/L		04/18/13 13:32	04/23/13 16:11	1
Lead	1.5	J	10	1.5	ug/L		04/18/13 13:32	04/23/13 16:11	1
Magnesium	36000		1000	130	ug/L		04/18/13 13:32	04/23/13 16:11	1
Manganese	6.1	J	15	3.3	ug/L		04/18/13 13:32	04/23/13 16:11	1
Nickel	15	J	40	13	ug/L		04/18/13 13:32	04/23/13 16:11	1
Potassium	2000	J	5000	1700	ug/L		04/18/13 13:32	04/23/13 16:11	1
Selenium	ND		15	2.7	ug/L		04/18/13 13:32	04/23/13 16:11	1
Silver	ND		10	6.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Sodium	61000		1000	320	ug/L		04/18/13 13:32	04/23/13 16:11	1
Thallium	ND		20	4.0	ug/L		04/18/13 13:32	04/23/13 16:11	1
Vanadium	ND		50	4.1	ug/L		04/18/13 13:32	04/23/13 16:11	1
Zinc	27		20	5.2	ug/L		04/18/13 13:32	04/23/13 16:11	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		200	80	ug/L		04/18/13 13:30	04/24/13 16:23	1
Antimony	ND		10	4.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Arsenic	2.0	J	10	2.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Barium	45	J	50	4.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Beryllium	ND		5.0	0.61	ug/L		04/18/13 13:30	04/24/13 16:23	1
Cadmium	ND		5.0	0.91	ug/L		04/18/13 13:30	04/24/13 16:23	1
Calcium	56000	E	1000	110	ug/L		04/18/13 13:30	04/24/13 16:23	1
Calcium	60000		5000	530	ug/L		04/18/13 13:30	04/24/13 16:52	5
Chromium	ND		10	3.1	ug/L		04/18/13 13:30	04/24/13 16:23	1
Cobalt	5.1	J	50	4.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Copper	ND		25	4.6	ug/L		04/18/13 13:30	04/24/13 16:23	1
Iron	380		100	28	ug/L		04/18/13 13:30	04/24/13 16:23	1
Lead	ND		10	1.5	ug/L		04/18/13 13:30	04/24/13 16:23	1
Magnesium	36000		1000	130	ug/L		04/18/13 13:30	04/24/13 16:23	1
Manganese	10	J	15	3.3	ug/L		04/18/13 13:30	04/24/13 16:23	1
Nickel	ND		40	13	ug/L		04/18/13 13:30	04/24/13 16:23	1
Potassium	2000	J	5000	1700	ug/L		04/18/13 13:30	04/24/13 16:23	1

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Client Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Client Sample ID: PZ-106-KS

Lab Sample ID: 160-2106-1

Date Collected: 04/15/13 15:39

Matrix: Water

Date Received: 04/16/13 09:15

Method: 6010C - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		15	2.7	ug/L		04/18/13 13:30	04/24/13 16:23	1
Silver	ND		10	6.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Sodium	63000		1000	320	ug/L		04/18/13 13:30	04/24/13 16:23	1
Thallium	ND		20	4.0	ug/L		04/18/13 13:30	04/24/13 16:23	1
Vanadium	ND		50	4.1	ug/L		04/18/13 13:30	04/24/13 16:23	1
Zinc	6.8	J B	20	5.2	ug/L		04/18/13 13:30	04/24/13 16:23	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.060	ug/L		04/25/13 10:43	04/26/13 16:10	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.060	ug/L		04/25/13 10:44	04/26/13 16:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.0042	J	0.020	0.0040	mg/L			04/16/13 19:38	1
Bromide	0.041	J	0.25	0.025	mg/L			04/16/13 19:38	1
Sulfate	12		0.50	0.050	mg/L			04/16/13 19:38	1
Iodide	ND		1.0	0.10	mg/L			04/16/13 16:41	1
Alkalinity	390		5.0	0.54	mg/L			04/29/13 10:24	1

General Chemistry - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		2.0	0.20	mg/L			04/16/13 19:53	10

Client Sample ID: TRIP BLANK

Lab Sample ID: 160-2106-2

Date Collected: 04/15/13 15:39

Matrix: Water

Date Received: 04/16/13 09:15

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.29	ug/L			04/19/13 00:14	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.43	ug/L			04/19/13 00:14	1
1,1,2-Trichloroethane	ND		5.0	0.57	ug/L			04/19/13 00:14	1
1,1-Dichloroethane	ND		5.0	0.39	ug/L			04/19/13 00:14	1
1,1-Dichloroethene	ND		5.0	0.37	ug/L			04/19/13 00:14	1
1,2,4-Trichlorobenzene	ND		5.0	0.55	ug/L			04/19/13 00:14	1
1,2-Dibromo-3-chloropropane	ND		10	1.2	ug/L			04/19/13 00:14	1
1,2-Dibromoethane	ND		5.0	0.44	ug/L			04/19/13 00:14	1
1,2-Dichlorobenzene	ND		5.0	0.28	ug/L			04/19/13 00:14	1
1,2-Dichloroethane	ND		5.0	0.37	ug/L			04/19/13 00:14	1
1,2-Dichloropropane	ND		5.0	0.32	ug/L			04/19/13 00:14	1
1,3-Dichlorobenzene	ND		5.0	0.23	ug/L			04/19/13 00:14	1
1,4-Dichlorobenzene	ND		5.0	0.35	ug/L			04/19/13 00:14	1
2-Butanone (MEK)	ND		20	0.39	ug/L			04/19/13 00:14	1
2-Hexanone	ND		20	0.59	ug/L			04/19/13 00:14	1
4-Methyl-2-pentanone (MIBK)	ND		20	0.33	ug/L			04/19/13 00:14	1
Acetone	ND		20	6.7	ug/L			04/19/13 00:14	1
Benzene	ND		5.0	0.25	ug/L			04/19/13 00:14	1

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Client Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 160-2106-2

Date Collected: 04/15/13 15:39

Matrix: Water

Date Received: 04/16/13 09:15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		5.0	0.25	ug/L			04/19/13 00:14	1
Bromoform	ND		5.0	0.37	ug/L			04/19/13 00:14	1
Bromomethane	ND		10	0.40	ug/L			04/19/13 00:14	1
Carbon disulfide	ND		5.0	0.37	ug/L			04/19/13 00:14	1
Carbon tetrachloride	ND		5.0	0.36	ug/L			04/19/13 00:14	1
Chlorobenzene	ND		5.0	0.38	ug/L			04/19/13 00:14	1
Chloroethane	ND		10	0.38	ug/L			04/19/13 00:14	1
Chloroform	ND		5.0	0.15	ug/L			04/19/13 00:14	1
Chloromethane	ND		10	0.55	ug/L			04/19/13 00:14	1
cis-1,2-Dichloroethene	ND		5.0	0.16	ug/L			04/19/13 00:14	1
cis-1,3-Dichloropropene	ND		5.0	0.34	ug/L			04/19/13 00:14	1
Cyclohexane	ND		10	0.36	ug/L			04/19/13 00:14	1
Dibromochloromethane	ND		5.0	0.33	ug/L			04/19/13 00:14	1
Dichlorodifluoromethane	ND		10	0.45	ug/L			04/19/13 00:14	1
Ethylbenzene	ND		5.0	0.30	ug/L			04/19/13 00:14	1
Isopropylbenzene	ND		5.0	0.26	ug/L			04/19/13 00:14	1
Methyl acetate	ND		5.0	2.3	ug/L			04/19/13 00:14	1
Methyl tert-butyl ether	ND		5.0	0.40	ug/L			04/19/13 00:14	1
Methylcyclohexane	ND		10	0.26	ug/L			04/19/13 00:14	1
Methylene Chloride	ND		5.0	1.7	ug/L			04/19/13 00:14	1
m-Xylene & p-Xylene	ND		5.0	0.57	ug/L			04/19/13 00:14	1
o-Xylene	ND		5.0	0.32	ug/L			04/19/13 00:14	1
Styrene	ND		5.0	0.35	ug/L			04/19/13 00:14	1
Tetrachloroethene	ND		5.0	0.28	ug/L			04/19/13 00:14	1
Toluene	ND		5.0	1.0	ug/L			04/19/13 00:14	1
trans-1,2-Dichloroethene	ND		5.0	0.18	ug/L			04/19/13 00:14	1
trans-1,3-Dichloropropene	ND		5.0	0.35	ug/L			04/19/13 00:14	1
Trichloroethene	ND		5.0	0.29	ug/L			04/19/13 00:14	1
Trichlorofluoromethane	ND		5.0	0.22	ug/L			04/19/13 00:14	1
Vinyl chloride	ND		5.0	0.43	ug/L			04/19/13 00:14	1
Xylenes, Total	ND		10	0.85	ug/L			04/19/13 00:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		82 - 121		04/19/13 00:14	1
Dibromofluoromethane (Surr)	101		85 - 119		04/19/13 00:14	1
1,2-Dichloroethane-d4 (Surr)	99		82 - 132		04/19/13 00:14	1
Toluene-d8 (Surr)	105		85 - 115		04/19/13 00:14	1

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QC Sample Results

Client: Engineering Management Support, Inc.
 Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 160-47062/2

Matrix: Water

Analysis Batch: 47062

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.29	ug/L			04/18/13 23:48	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.43	ug/L			04/18/13 23:48	1
1,1,2-Trichloroethane	ND		5.0	0.57	ug/L			04/18/13 23:48	1
1,1-Dichloroethane	ND		5.0	0.39	ug/L			04/18/13 23:48	1
1,1-Dichloroethene	ND		5.0	0.37	ug/L			04/18/13 23:48	1
1,2,4-Trichlorobenzene	ND		5.0	0.55	ug/L			04/18/13 23:48	1
1,2-Dibromo-3-chloropropane	ND		10	1.2	ug/L			04/18/13 23:48	1
1,2-Dibromoethane	ND		5.0	0.44	ug/L			04/18/13 23:48	1
1,2-Dichlorobenzene	ND		5.0	0.28	ug/L			04/18/13 23:48	1
1,2-Dichloroethane	ND		5.0	0.37	ug/L			04/18/13 23:48	1
1,2-Dichloropropane	ND		5.0	0.32	ug/L			04/18/13 23:48	1
1,3-Dichlorobenzene	ND		5.0	0.23	ug/L			04/18/13 23:48	1
1,4-Dichlorobenzene	ND		5.0	0.35	ug/L			04/18/13 23:48	1
2-Butanone (MEK)	ND		20	0.39	ug/L			04/18/13 23:48	1
2-Hexanone	ND		20	0.59	ug/L			04/18/13 23:48	1
4-Methyl-2-pentanone (MIBK)	ND		20	0.33	ug/L			04/18/13 23:48	1
Acetone	ND		20	6.7	ug/L			04/18/13 23:48	1
Benzene	ND		5.0	0.25	ug/L			04/18/13 23:48	1
Bromodichloromethane	ND		5.0	0.25	ug/L			04/18/13 23:48	1
Bromoform	ND		5.0	0.37	ug/L			04/18/13 23:48	1
Bromomethane	ND		10	0.40	ug/L			04/18/13 23:48	1
Carbon disulfide	ND		5.0	0.37	ug/L			04/18/13 23:48	1
Carbon tetrachloride	ND		5.0	0.36	ug/L			04/18/13 23:48	1
Chlorobenzene	ND		5.0	0.38	ug/L			04/18/13 23:48	1
Chloroethane	ND		10	0.38	ug/L			04/18/13 23:48	1
Chloroform	ND		5.0	0.15	ug/L			04/18/13 23:48	1
Chloromethane	ND		10	0.55	ug/L			04/18/13 23:48	1
cis-1,2-Dichloroethene	ND		5.0	0.16	ug/L			04/18/13 23:48	1
cis-1,3-Dichloropropene	ND		5.0	0.34	ug/L			04/18/13 23:48	1
Cyclohexane	ND		10	0.36	ug/L			04/18/13 23:48	1
Dibromochloromethane	ND		5.0	0.33	ug/L			04/18/13 23:48	1
Dichlorodifluoromethane	ND		10	0.45	ug/L			04/18/13 23:48	1
Ethylbenzene	ND		5.0	0.30	ug/L			04/18/13 23:48	1
Isopropylbenzene	ND		5.0	0.26	ug/L			04/18/13 23:48	1
Methyl acetate	ND		5.0	2.3	ug/L			04/18/13 23:48	1
Methyl tert-butyl ether	ND		5.0	0.40	ug/L			04/18/13 23:48	1
Methylcyclohexane	ND		10	0.26	ug/L			04/18/13 23:48	1
Methylene Chloride	ND		5.0	1.7	ug/L			04/18/13 23:48	1
m-Xylene & p-Xylene	ND		5.0	0.57	ug/L			04/18/13 23:48	1
o-Xylene	ND		5.0	0.32	ug/L			04/18/13 23:48	1
Styrene	ND		5.0	0.35	ug/L			04/18/13 23:48	1
Tetrachloroethene	ND		5.0	0.28	ug/L			04/18/13 23:48	1
Toluene	ND		5.0	1.0	ug/L			04/18/13 23:48	1
trans-1,2-Dichloroethene	ND		5.0	0.18	ug/L			04/18/13 23:48	1
trans-1,3-Dichloropropene	ND		5.0	0.35	ug/L			04/18/13 23:48	1
Trichloroethene	ND		5.0	0.29	ug/L			04/18/13 23:48	1
Trichlorofluoromethane	ND		5.0	0.22	ug/L			04/18/13 23:48	1
Vinyl chloride	ND		5.0	0.43	ug/L			04/18/13 23:48	1

TestAmerica St. Louis



QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 160-47062/2

Matrix: Water

Analysis Batch: 47062

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		10	0.85	ug/L			04/18/13 23:48	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	109		82 - 121		04/18/13 23:48	1
Dibromofluoromethane (Surr)	101		85 - 119		04/18/13 23:48	1
1,2-Dichloroethane-d4 (Surr)	99		82 - 132		04/18/13 23:48	1
Toluene-d8 (Surr)	106		85 - 115		04/18/13 23:48	1

Lab Sample ID: LCS 160-47062/4

Matrix: Water

Analysis Batch: 47062

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	50.0	49.4		ug/L		99	85 - 115
1,1,1-Trichloroethane	50.0	49.5		ug/L		99	85 - 115
1,1,2,2-Tetrachloroethane	50.0	47.0		ug/L		94	84 - 115
1,1,2-Trichloroethane	50.0	47.2		ug/L		94	85 - 115
1,1-Dichloroethane	50.0	50.2		ug/L		100	85 - 115
1,1-Dichloroethene	50.0	48.8		ug/L		98	85 - 118
1,1-Dichloropropene	50.0	50.7		ug/L		101	85 - 115
1,2,3-Trichlorobenzene	50.0	49.5		ug/L		99	72 - 120
1,2,3-Trichloropropane	50.0	48.7		ug/L		97	80 - 115
1,2,4-Trichlorobenzene	50.0	49.9		ug/L		100	75 - 124
1,2,4-Trimethylbenzene	50.0	52.7		ug/L		105	85 - 115
1,2-Dibromo-3-chloropropane	50.0	46.2		ug/L		92	71 - 123
1,2-Dibromoethane	50.0	48.0		ug/L		96	85 - 115
1,2-Dichloro-1,1,2,2-tetrafluoroethane	50.0	48.5		ug/L		97	47 - 130
1,2-Dichlorobenzene	50.0	49.9		ug/L		100	85 - 115
1,2-Dichloroethane	50.0	48.3		ug/L		97	79 - 122
1,2-Dichloroethene, Total	100	98.4		ug/L		98	85 - 115
1,2-Dichloropropane	50.0	50.2		ug/L		100	85 - 115
1,3,5-Trimethylbenzene	50.0	53.5		ug/L		107	85 - 117
1,3-Dichlorobenzene	50.0	50.7		ug/L		101	85 - 115
1,3-Dichloropropane	50.0	48.5		ug/L		97	84 - 115
1,4-Dichlorobenzene	50.0	49.6		ug/L		99	85 - 115
1,4-Dioxane	1000	998		ug/L		100	26 - 141
1-Butanol	500	484		ug/L		97	49 - 132
2,2-Dichloropropane	50.0	51.0		ug/L		102	85 - 127
2-Butanone (MEK)	50.0	50.7		ug/L		101	71 - 123
2-Chloro-1,3-butadiene	50.0	53.4		ug/L		107	70 - 115
2-Chloroethyl vinyl ether	50.0	37.7		ug/L		75	64 - 125
2-Chlorotoluene	50.0	52.0		ug/L		104	83 - 119
2-Hexanone	50.0	45.7		ug/L		91	66 - 121
2-Nitropropane	100	89.7		ug/L		90	63 - 115
4-Chlorotoluene	50.0	52.6		ug/L		105	84 - 118
4-Isopropyltoluene	50.0	53.6		ug/L		107	85 - 119
4-Methyl-2-pentanone (MIBK)	50.0	48.1		ug/L		96	74 - 123

TestAmerica St. Louis

QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 160-47062/4

Matrix: Water

Analysis Batch: 47062

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	46.5		ug/L		93	51 - 140
Acetonitrile	250	234		ug/L		93	44 - 140
Acrolein	250	222		ug/L		89	79 - 115
Acrylonitrile	250	244		ug/L		98	78 - 126
Allyl chloride	50.0	50.7		ug/L		101	76 - 119
Benzene	50.0	49.2		ug/L		98	85 - 115
Bromobenzene	50.0	51.8		ug/L		104	85 - 115
Bromochloromethane	50.0	48.7		ug/L		97	84 - 117
Bromodichloromethane	50.0	49.5		ug/L		99	85 - 117
Bromoform	50.0	48.9		ug/L		98	85 - 115
Bromomethane	50.0	48.0		ug/L		96	70 - 135
Carbon disulfide	50.0	48.7		ug/L		97	85 - 123
Carbon tetrachloride	50.0	49.9		ug/L		100	85 - 118
Chlorobenzene	50.0	49.9		ug/L		100	85 - 115
Chloroethane	50.0	50.3		ug/L		101	75 - 125
Chloroform	50.0	49.0		ug/L		98	85 - 115
Chloromethane	50.0	46.9		ug/L		94	73 - 132
cis-1,2-Dichloroethene	50.0	49.8		ug/L		100	85 - 115
cis-1,3-Dichloropropene	50.0	50.5		ug/L		101	85 - 127
Cyclohexane	50.0	51.6		ug/L		103	73 - 115
Cyclohexanone	500	510		ug/L		102	29 - 122
Dibromochloromethane	50.0	49.0		ug/L		98	85 - 115
Dibromomethane	50.0	47.9		ug/L		96	85 - 115
Dichlorodifluoromethane	50.0	44.9		ug/L		90	62 - 115
Ethyl acetate	100	92.3		ug/L		92	67 - 119
Ethyl ether	100	96.0		ug/L		96	77 - 115
Ethyl methacrylate	50.0	44.7		ug/L		89	67 - 115
Ethylbenzene	50.0	51.0		ug/L		102	85 - 115
Hexachlorobutadiene	50.0	49.8		ug/L		100	74 - 127
Iodomethane	50.0	49.8		ug/L		100	83 - 124
Isobutanol	1000	907		ug/L		91	51 - 136
Isopropylbenzene	50.0	54.3		ug/L		109	85 - 124
Methacrylonitrile	250	246		ug/L		98	70 - 115
Methyl acetate	50.0	45.3		ug/L		91	73 - 135
Methyl methacrylate	50.0	45.9		ug/L		92	61 - 115
Methyl tert-butyl ether	50.0	48.5		ug/L		97	73 - 115
Methylcyclohexane	50.0	51.9		ug/L		104	85 - 134
Methylene Chloride	50.0	49.0		ug/L		98	84 - 115
m-Xylene & p-Xylene	100	104		ug/L		104	85 - 115
Naphthalene	50.0	47.9		ug/L		96	70 - 123
n-Butylbenzene	50.0	52.1		ug/L		104	85 - 116
n-Hexane	50.0	50.6		ug/L		101	85 - 139
N-Propylbenzene	50.0	54.2		ug/L		108	85 - 117
o-Xylene	50.0	53.9		ug/L		108	85 - 115
Propionitrile	250	236		ug/L		94	66 - 115
sec-Butylbenzene	50.0	53.1		ug/L		106	85 - 118
Styrene	50.0	54.0		ug/L		108	85 - 115
tert-Butylbenzene	50.0	54.2		ug/L		108	85 - 124

TestAmerica St. Louis



QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 160-47062/4

Matrix: Water

Analysis Batch: 47062

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrachloroethene	50.0	50.5		ug/L		101	85 - 115
Tetrahydrofuran	250	231		ug/L		93	63 - 117
Toluene	50.0	51.3		ug/L		103	85 - 115
trans-1,2-Dichloroethene	50.0	48.6		ug/L		97	85 - 115
trans-1,3-Dichloropropene	50.0	49.4		ug/L		99	85 - 123
trans-1,4-Dichloro-2-butene	50.0	43.4		ug/L		87	77 - 115
Trichloroethene	50.0	48.4		ug/L		97	85 - 115
Trichlorofluoromethane	50.0	49.0		ug/L		98	85 - 116
Vinyl acetate	50.0	49.3		ug/L		99	39 - 124
Vinyl chloride	50.0	47.8		ug/L		96	68 - 133
Xylenes, Total	150	158		ug/L		105	

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	107		82 - 121
Dibromofluoromethane (Surr)	102		85 - 119
1,2-Dichloroethane-d4 (Surr)	97		82 - 132
Toluene-d8 (Surr)	103		85 - 115

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 160-46729/1-A

Matrix: Water

Analysis Batch: 47746

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 46729

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		200	80	ug/L		04/18/13 13:30	04/24/13 16:09	1
Antimony	ND		10	4.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Arsenic	ND		10	2.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Barium	ND		50	4.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Beryllium	ND		5.0	0.61	ug/L		04/18/13 13:30	04/24/13 16:09	1
Cadmium	ND		5.0	0.91	ug/L		04/18/13 13:30	04/24/13 16:09	1
Calcium	ND		1000	110	ug/L		04/18/13 13:30	04/24/13 16:09	1
Chromium	ND		10	3.1	ug/L		04/18/13 13:30	04/24/13 16:09	1
Cobalt	ND		50	4.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Copper	ND		25	4.6	ug/L		04/18/13 13:30	04/24/13 16:09	1
Iron	ND		100	28	ug/L		04/18/13 13:30	04/24/13 16:09	1
Lead	ND		10	1.5	ug/L		04/18/13 13:30	04/24/13 16:09	1
Magnesium	ND		1000	130	ug/L		04/18/13 13:30	04/24/13 16:09	1
Manganese	ND		15	3.3	ug/L		04/18/13 13:30	04/24/13 16:09	1
Nickel	ND		40	13	ug/L		04/18/13 13:30	04/24/13 16:09	1
Potassium	ND		5000	1700	ug/L		04/18/13 13:30	04/24/13 16:09	1
Selenium	ND		15	2.7	ug/L		04/18/13 13:30	04/24/13 16:09	1
Silver	ND		10	6.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Sodium	ND		1000	320	ug/L		04/18/13 13:30	04/24/13 16:09	1
Thallium	ND		20	4.0	ug/L		04/18/13 13:30	04/24/13 16:09	1
Vanadium	ND		50	4.1	ug/L		04/18/13 13:30	04/24/13 16:09	1
Zinc	6.60	J	20	5.2	ug/L		04/18/13 13:30	04/24/13 16:09	1

TestAmerica St. Louis

QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 160-46729/2-A

Matrix: Water

Analysis Batch: 47746

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 46729

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10000	10000		ug/L		100	80 - 120
Antimony	500	533		ug/L		107	80 - 120
Arsenic	1000	1030		ug/L		103	80 - 120
Barium	1000	998		ug/L		100	80 - 120
Beryllium	1000	999		ug/L		100	80 - 120
Cadmium	1000	1050		ug/L		105	80 - 120
Calcium	10000	10600		ug/L		106	80 - 120
Chromium	1000	1060		ug/L		106	80 - 120
Cobalt	1000	1080		ug/L		108	80 - 120
Copper	1000	1070		ug/L		107	80 - 120
Iron	10000	10100		ug/L		101	80 - 120
Lead	1000	1080		ug/L		108	80 - 120
Magnesium	10000	10100		ug/L		101	80 - 120
Manganese	1000	1030		ug/L		103	80 - 120
Nickel	1000	1090		ug/L		109	80 - 120
Potassium	10000	9700		ug/L		97	80 - 120
Selenium	1000	1040		ug/L		104	80 - 120
Silver	100	97.6		ug/L		98	80 - 120
Sodium	10000	9750		ug/L		98	80 - 120
Thallium	200	224		ug/L		112	80 - 120
Vanadium	1000	1000		ug/L		100	80 - 120
Zinc	1000	1060		ug/L		106	80 - 120

Lab Sample ID: MB 160-46730/1-A

Matrix: Water

Analysis Batch: 47506

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 46730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		200	80	ug/L		04/18/13 13:32	04/23/13 16:04	1
Antimony	ND		10	4.0	ug/L		04/18/13 13:32	04/23/13 16:04	1
Arsenic	ND		10	2.0	ug/L		04/18/13 13:32	04/23/13 16:04	1
Barium	ND		50	4.0	ug/L		04/18/13 13:32	04/23/13 16:04	1
Beryllium	ND		5.0	0.61	ug/L		04/18/13 13:32	04/23/13 16:04	1
Cadmium	ND		5.0	0.91	ug/L		04/18/13 13:32	04/23/13 16:04	1
Calcium	ND		1000	110	ug/L		04/18/13 13:32	04/23/13 16:04	1
Chromium	ND		10	3.1	ug/L		04/18/13 13:32	04/23/13 16:04	1
Cobalt	ND		50	4.0	ug/L		04/18/13 13:32	04/23/13 16:04	1
Copper	ND		25	4.6	ug/L		04/18/13 13:32	04/23/13 16:04	1
Iron	ND		100	28	ug/L		04/18/13 13:32	04/23/13 16:04	1
Lead	ND		10	1.5	ug/L		04/18/13 13:32	04/23/13 16:04	1
Magnesium	ND		1000	130	ug/L		04/18/13 13:32	04/23/13 16:04	1
Manganese	ND		15	3.3	ug/L		04/18/13 13:32	04/23/13 16:04	1
Nickel	ND		40	13	ug/L		04/18/13 13:32	04/23/13 16:04	1
Potassium	ND		5000	1700	ug/L		04/18/13 13:32	04/23/13 16:04	1
Selenium	ND		15	2.7	ug/L		04/18/13 13:32	04/23/13 16:04	1
Silver	ND		10	6.0	ug/L		04/18/13 13:32	04/23/13 16:04	1
Sodium	ND		1000	320	ug/L		04/18/13 13:32	04/23/13 16:04	1
Thallium	ND		20	4.0	ug/L		04/18/13 13:32	04/23/13 16:04	1

TestAmerica St. Louis

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QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 160-46730/1-A

Matrix: Water

Analysis Batch: 47506

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 46730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vanadium	ND		50	4.1	ug/L		04/18/13 13:32	04/23/13 16:04	1
Zinc	ND		20	5.2	ug/L		04/18/13 13:32	04/23/13 16:04	1

Lab Sample ID: LCS 160-46730/2-A

Matrix: Water

Analysis Batch: 47506

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 46730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10000	9750		ug/L		98	80 - 120
Antimony	500	524		ug/L		105	80 - 120
Arsenic	1000	1030		ug/L		103	80 - 120
Barium	1000	1010		ug/L		101	80 - 120
Beryllium	1000	1010		ug/L		101	80 - 120
Cadmium	1000	1010		ug/L		101	80 - 120
Calcium	10000	10300		ug/L		103	80 - 120
Chromium	1000	1040		ug/L		104	80 - 120
Cobalt	1000	1050		ug/L		105	80 - 120
Copper	1000	1040		ug/L		104	80 - 120
Iron	10000	10100		ug/L		101	80 - 120
Lead	1000	1060		ug/L		106	80 - 120
Magnesium	10000	9850		ug/L		98	80 - 120
Manganese	1000	1000		ug/L		100	80 - 120
Nickel	1000	1050		ug/L		105	80 - 120
Potassium	10000	9580		ug/L		96	80 - 120
Selenium	1000	1030		ug/L		103	80 - 120
Silver	100	94.8		ug/L		95	80 - 120
Sodium	10000	9630		ug/L		96	80 - 120
Thallium	200	211		ug/L		105	80 - 120
Vanadium	1000	973		ug/L		97	80 - 120
Zinc	1000	1030		ug/L		103	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 160-47767/1-A

Matrix: Water

Analysis Batch: 48038

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 47767

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.060	ug/L		04/25/13 10:43	04/26/13 16:06	1

Lab Sample ID: LCS 160-47767/2-A

Matrix: Water

Analysis Batch: 48038

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 47767

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.00	1.01		ug/L		101	80 - 120

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TestAmerica St. Louis

QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: MB 160-47768/1-A

Matrix: Water

Analysis Batch: 48038

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 47768

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.060	ug/L		04/25/13 10:44	04/26/13 16:28	1

Lab Sample ID: LCS 160-47768/2-A

Matrix: Water

Analysis Batch: 48038

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 47768

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.00	0.975		ug/L		98	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 160-47801/3

Matrix: Water

Analysis Batch: 47801

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iodide	ND		1.0	0.10	mg/L			04/16/13 16:12	1

Lab Sample ID: LCS 160-47801/4

Matrix: Water

Analysis Batch: 47801

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iodide	4.00	3.96		mg/L		99	90 - 110

Lab Sample ID: 160-2106-1 MS

Matrix: Water

Analysis Batch: 47801

Client Sample ID: PZ-106-KS

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iodide	ND		4.00	3.91		mg/L		98	90 - 110

Lab Sample ID: 160-2106-1 DU

Matrix: Water

Analysis Batch: 47801

Client Sample ID: PZ-106-KS

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Iodide	ND		ND		mg/L		NC	20

Lab Sample ID: MB 160-47805/9

Matrix: Water

Analysis Batch: 47805

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.020	0.0040	mg/L			04/16/13 19:08	1
Chloride	ND		0.20	0.020	mg/L			04/16/13 19:08	1
Bromide	ND		0.25	0.025	mg/L			04/16/13 19:08	1
Sulfate	ND		0.50	0.050	mg/L			04/16/13 19:08	1

TestAmerica St. Louis



QC Sample Results

Client: Engineering Management Support, Inc.
 Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 160-47805/10
 Matrix: Water
 Analysis Batch: 47805

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	0.400	0.386		mg/L		96	90 - 110
Chloride	2.00	1.94		mg/L		97	90 - 110
Bromide	2.00	1.98		mg/L		99	90 - 110
Sulfate	8.00	7.71		mg/L		96	90 - 110

Lab Sample ID: 160-2106-1 MS
 Matrix: Water
 Analysis Batch: 47805

Client Sample ID: PZ-106-KS
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	0.0042	J	0.400	0.373		mg/L		92	90 - 110
Bromide	0.041	J	2.00	1.95		mg/L		95	90 - 110
Sulfate	12		4.00	15.8		mg/L		102	90 - 110

Lab Sample ID: 160-2106-1 DU
 Matrix: Water
 Analysis Batch: 47805

Client Sample ID: PZ-106-KS
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrate as N	0.0042	J	ND		mg/L		NC	20
Bromide	0.041	J	0.0465	J	mg/L		12	20
Sulfate	12		11.7		mg/L		0.08	20

Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 160-2106-1 MS
 Matrix: Water
 Analysis Batch: 47805

Client Sample ID: PZ-106-KS
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride - DL	13		20.0	32.4		mg/L		98	90 - 110

Lab Sample ID: 160-2106-1 DU
 Matrix: Water
 Analysis Batch: 47805

Client Sample ID: PZ-106-KS
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride - DL	13		12.9		mg/L		0.02	20

Method: 310.1 - Alkalinity

Lab Sample ID: MB 160-48101/1
 Matrix: Water
 Analysis Batch: 48101

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		1.3	0.14	mg/L			04/29/13 10:24	1

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QC Sample Results

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 310.1 - Alkalinity (Continued)

Lab Sample ID: LCS 160-48101/3

Matrix: Water

Analysis Batch: 48101

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	400	374		mg/L		94	90 - 110

Lab Sample ID: LLCS 160-48101/2

Matrix: Water

Analysis Batch: 48101

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	200	188		mg/L		94	90 - 110

Lab Sample ID: 160-2106-1 MS

Matrix: Water

Analysis Batch: 48101

Client Sample ID: PZ-106-KS

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity	390		20.0	410	4	mg/L		100	80 - 120

Lab Sample ID: 160-2106-1 DU

Matrix: Water

Analysis Batch: 48101

Client Sample ID: PZ-106-KS

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Alkalinity	390		400		mg/L		3	20

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QC Association Summary

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

GC/MS VOA

Analysis Batch: 47062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	8260C	
160-2106-2	TRIP BLANK	Total/NA	Water	8260C	
LCS 160-47062/4	Lab Control Sample	Total/NA	Water	8260C	
MB 160-47062/2	Method Blank	Total/NA	Water	8260C	

Metals

Prep Batch: 46729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Dissolved	Water	3010A	
LCS 160-46729/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-46729/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 46730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	3010A	
LCS 160-46730/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 160-46730/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 47506

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	6010C	46730
LCS 160-46730/2-A	Lab Control Sample	Total/NA	Water	6010C	46730
MB 160-46730/1-A	Method Blank	Total/NA	Water	6010C	46730

Analysis Batch: 47746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	6010C	46730
160-2106-1	PZ-106-KS	Dissolved	Water	6010C	46729
160-2106-1	PZ-106-KS	Dissolved	Water	6010C	46729
LCS 160-46729/2-A	Lab Control Sample	Total/NA	Water	6010C	46729
MB 160-46729/1-A	Method Blank	Total/NA	Water	6010C	46729

Prep Batch: 47767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	7470A	
LCS 160-47767/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 160-47767/1-A	Method Blank	Total/NA	Water	7470A	

Prep Batch: 47768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Dissolved	Water	7470A	
LCS 160-47768/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 160-47768/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 48038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	7470A	47767
160-2106-1	PZ-106-KS	Dissolved	Water	7470A	47768
LCS 160-47767/2-A	Lab Control Sample	Total/NA	Water	7470A	47767

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QC Association Summary

Client: Engineering Management Support, Inc.
 Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Metals (Continued)

Analysis Batch: 48038 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 160-47768/2-A	Lab Control Sample	Total/NA	Water	7470A	47768
MB 160-47767/1-A	Method Blank	Total/NA	Water	7470A	47767
MB 160-47768/1-A	Method Blank	Total/NA	Water	7470A	47768

General Chemistry

Analysis Batch: 47801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 DU	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 MS	PZ-106-KS	Total/NA	Water	300.0	
LCS 160-47801/4	Lab Control Sample	Total/NA	Water	300.0	
MB 160-47801/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 47805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 - DL	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 DU - DL	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 DU	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 MS - DL	PZ-106-KS	Total/NA	Water	300.0	
160-2106-1 MS	PZ-106-KS	Total/NA	Water	300.0	
LCS 160-47805/10	Lab Control Sample	Total/NA	Water	300.0	
MB 160-47805/9	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 48101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-2106-1	PZ-106-KS	Total/NA	Water	310.1	
160-2106-1 DU	PZ-106-KS	Total/NA	Water	310.1	
160-2106-1 MS	PZ-106-KS	Total/NA	Water	310.1	
LCS 160-48101/3	Lab Control Sample	Total/NA	Water	310.1	
LLCS 160-48101/2	Lab Control Sample	Total/NA	Water	310.1	
MB 160-48101/1	Method Blank	Total/NA	Water	310.1	

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Surrogate Summary

Client: Engineering Management Support, Inc.
Project/Site: West Lake Landfill

TestAmerica Job ID: 160-2106-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	12DCE	TOL
		(82-121)	(85-119)	(82-132)	(85-115)
160-2106-1	PZ-106-KS	115	103	103	108
160-2106-2	TRIP BLANK	108	101	99	105
LCS 160-47062/4	Lab Control Sample	107	102	97	103
MB 160-47062/2	Method Blank	109	101	99	106

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)