January 13, 2016

Payson Long New York State Department of Environmental Conservation 625 Broadway Albany, New York 12233

Subject: Korkay, Inc. Site #518014

**ISCO Remedial Action Progress Report** 

Dear Mr. Long,

This letter is to report on the In-Situ Chemical Oxidation (ISCO) injection work completed at the Korkay Site (NYSDEC ID: 518014) in October 2015. The work was completed in general accordance with the ISCO work plan (Work Plan) submitted to the New York State Department of Environmental Conservation (NYSDEC) in August 2015. The work was performed under New York State Superfund Standby Contract Work Assignment number D007626-20.1.

This letter provides an overview of the injection work completed. As described in the Work Plan, groundwater sampling will be conducted with select monitoring wells on a quarterly basis for two years following the injection, to monitor and evaluate the effectiveness of the remedial action. Reports documenting the results of each quarterly monitoring event and assessing contaminant trends will be submitted to NYSDEC following each event. At the completion of the two-year monitoring period, a final Remedial Construction Completion Report, certified by a New York State Professional Engineer, will be submitted to NYSDEC.

#### **Overview of Injection Work**

The injection work was completed by Regenesis Remediation Services (RRS), under AECOM's subcontract agreement with IYER Environmental Group (IEG). The injection work was completed between October 19, 2015 and October 23, 2015. An AECOM field engineer was on site during the work to monitor and document the injection work.

A project report to IEG from RRS is attached. As described in the RRS report, a total of 17,301.4 pounds of PersulfOx® and 3,320 pounds of ORC-A® were mixed with water and injected into the treatment area. The volume of PersufOx® and ORC-A® injected totaled 11,435 gallons. The treatment chemicals were injected into the treatment area through 95 injection points which were installed using direct-push (i.e., Geoprobe®) drilling techniques. The locations of the injection points are shown in a map provided in the attached RRS report. Details of the injection work are included in RRS's report.

AECOM 2

Mr. Payson Long January 13, 2015

Water used to mix the ISCO substrate was provided to RRS by AECOM. Since public water was not available for the work, AECOM hired a local trucking company to import potable water (total of approximately 10,000 gallons) obtained from a private artesian water-supply well. AECOM collected two samples of water from the tank trailers that supplied the water and submitted them to TestAmerica for analysis of volatile organic compounds (VOCs) to ensure potable water quality. A copy of the lab report for these analyses is attached. The lab reports show that VOCs associated with site-related groundwater contamination were not detected in the imported water. Low concentrations (10  $\mu$ g/L) of chloroform were detected in the samples. This was attributed to well chlorination treatment constituents or residuals in the tank trailer which did not present a concern, and NYSDEC approved the use of the water for the injection work.

Should you have any questions, please do not hesitate to contact me at <a href="mailto:walter.howard@aecom.com">walter.howard@aecom.com</a> or (518) 951-2387, or John Santacroce at <a href="mailto:John.Santacroce@aecom.com">John.Santacroce@aecom.com</a> or (518) 951-2265.

Yours sincerely,

Willa O. Hand

Walter Howard Project Manager Regenesis Remediation Services Report



December 9, 2015

Dharma Iyer Iyer Environmental Group PLLC (IEG) 44 Rolling Hills Drive Orchard Park, NY 14127

RE: Application Summary Report for Remedial Services using PersulfOx® and ORC-Advanced® at the Korkay Site located at 70 West Main Street, Broadalbin, NY

#### Regenesis Proposal No. MaD50041

Dear Dharma,

Regenesis Remediation Services (RRS) recently completed *in-situ* injection applications using PersulfOx® (PersulfOx) and ORC-Advanced® (ORC-A) at the Korkay site, 70 West Main Street, Broadalbin, NY. The scope of this work was to treat chlorinated and non-chlorinated volatile organic compounds (VOCs) including naphthalene, trimethylbenzene, xylenes, 1,2-dichlorobenzene, tetrachloroethene, and trichloroethene. The proposed treatment plan includes a single application event to reduce the chemical of concern concentrations via *in-situ* chemical oxidation (ISCO) and enhanced aerobic biodegradation. RRS employed Direct Push Technology (DPT) injection points to apply the remediation chemistry throughout the treatment area. A map of the site and the injection points for are shown in Figure 1.

Designed mix ratios (product to water) and standard mixing procedures were followed in preparing the solutions prior to injection. Please reference the Regenesis Remediation Proposal No. MaD50041 dated April 14, 2015 for more details on the remediation design and scope of work. An injection summary log showing quantities applied at each injection point location and other noteworthy observations are provided in Table 1.

#### **On-site Injection Work**

On-site work began on the morning of Monday, October 19, 2015 and was completed on Friday, October 23, 2015. During the application, a total of 17,301.40 (pounds) lbs of PersulfOx and 3,320 lbs of ORC-A were mixed with water and injected into the treatment area. The volume of PersulfOx and ORC injected totaled 11,435 gallons.

The entire treatment area is approximately 20,600 square feet (ft²). A total of 95 injection points were advanced during the injection event using a bottom-up approach. Injection points were labeled IP-1 through IP-99. Four injection points, IP-1, IP-7, IP-13 and IP-25 were removed from the injection plan. Please refer to Figure 1 for injection point placement.

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A 15% or 20% PersulfOx solution was co-applied with ORC-A. Each of the 95 DPT injection points received between 69 to 206 gallons of remediation chemistry in accordance to the project work plan. On average 182 lbs PersulfOx were injected per point. RRS adjusted the concentration of PersulfOx during the injection based on the site conditions and project schedule. A total of 36 lbs of ORC-A were injected per point in up to 92 injection points. RRS adjusted the number of points receiving ORC-A to correlate to the design, therefore, only 92 points received ORC-A. The quantities of PersulfOx and ORC-A applied to each injection point is summarized on Table 1.

Each of the DPT injection points were advanced using 1.50 inch O.D. Geoprobe ® injection rods. The remediation chemistry was applied utilizing DPT injection points. The bottom of the targeted treatment interval started from the top of a confining layer, which ranged in depth from 9.0 to 19 ft bgs. Injection points were installed to the top of the confining layer and then the remediation chemistry was injected through the injection downhole tooling via an expendable point tip in 2.0 to 4.0 ft thick intervals as the Geoprobe rods were withdrawn. The top of the treatment interval usually ended at 5.0 ft bgs, but ranged from 4.0 to 7.0 ft bgs in accordance with the work plan and site conditions. The treatment interval thickness therefore varied for each injection point between 4.0 to 12 feet thick. Please note that the injection interval was changed from the anticipated design (3.0 to 11 ft bgs) prior to commencing work to correlate to the confining layer at the bottom and PID readings from previous investigations at the top. This was done at the direction of AECOM on-site personnel. Minimal daylighting, or surfacing, of the remediation chemistry occurred while injecting within the treatment area. Low pressures and moderate flow rates observed indicate that the subsurface soils were conducive to injection. Injection flow rates were usually between 2.0 to 3.0 gallons per minute (gpm) and ranged from 1.8 to 4.5 gpm. Injection pressures were usually 10 to 15 pounds per square inch (psi), and ranged from 0 to 20 psi. Notes and full details are listed in the comments section of Table 1.

#### Conclusion

Overall, the full anticipated injection volumes of PersulfOx and ORC-A were successfully applied with the treatment areas, at the targeted treatment intervals. A total of 17,301.40 lbs of PesulfOx were applied into 95 injection points. A total of 3,320 lbs of ORC-A were applied into 92 injection points. Minor modifications were made to the injection plan during the application to redistribute the remediation chemistry where borehole refusal was encountered or to accommodate the allotted field schedule. In addition, the concentration of PersulfOx was increased from 15% to 20% for some injection points to redistribute the remediation chemistry that could not be injected into some injection points.

Little to no daylighting occurred during the injection; thus, indicating that the all of the product was injected at the targeted depths. Moderate pressures and flow rates indicate that the subsurface soils were conducive to injection.

Groundwater quality parameters should be collected from monitoring wells within the treatment area on a quarterly basis to obtain a measurement of the remediation chemistry activity during upcoming groundwater monitoring events. Groundwater monitoring parameters should include depth to groundwater, pH, temperature, ORP, DO, and specific conductivity.

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Regenesis appreciates the opportunity to work with lyer Environmental on this project, and will be available to answer any questions or provide interpretation of field data as it becomes available.

**REGENESIS** 

Chris Lee

Senior Technical Resource/Geologist

**Steve Barnes** 

Project Manager, Geologist

An A. Burns

Tables:

Table 1- Injection Summary Log

Figures:

Figure 1- Map of Injection Point Locations

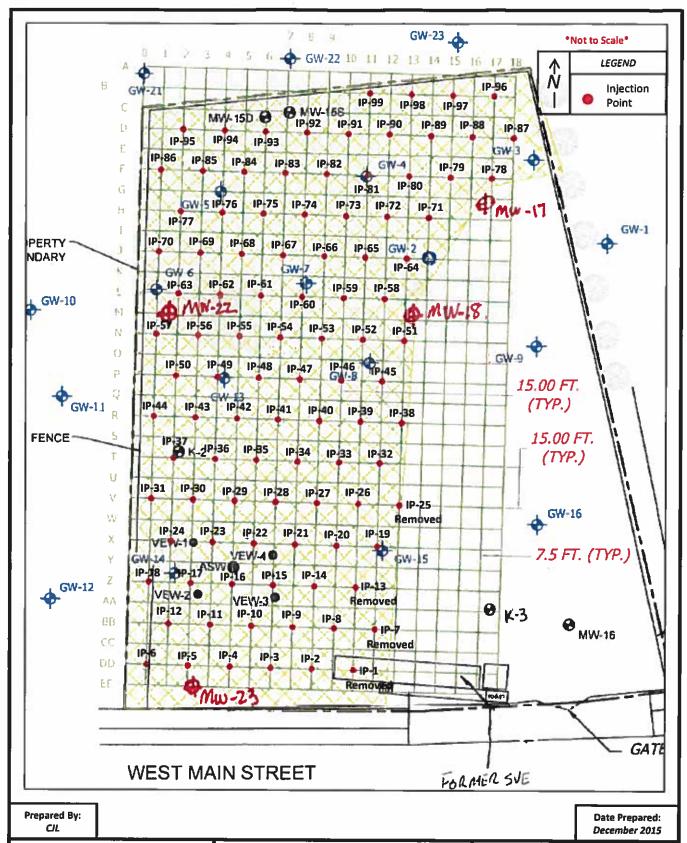




Figure 1 – Injection Locations Map Korkay 70 West Main Street Broadalbin, New York







Table	1
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									Tubic					
lais ation			Injection	Ave.	Ave.	Volume	of PersulfOx	Injected	Total			Pounds of	Pounds of	
Injection Point	Date	Time	Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval	gallons Per Location	Total Gallons at 15%	Total gallons at 20%	PersulfOx Injected Per Location	ORC-A Per Location	Comments
														Point Removed
1 DD11	Removed								0					
2 DD9	10/23/2015	16:30 16:50	9.5-14 5-9.5	13.0	2.8	102	204	102	204		204	386.41	72.17	Additional volume injected to make up for point Z11 refusal. 20% solution. Additional ORC-A to account for Z1 through Z7 not receiving ORC-A.
3 DD7	10/23/2015	16:52	9.5-14	10.0	2.2	0	54	54	108		108	204.57	36.09	20% solution
3 007	10/23/2013	17:27	5-9.5	10.0	2.3	54	108	54	100		100	204.57	30.03	
4.005	10/00/0015	13:32	11-15 8-11	12.0 8.0	2.8	0 48	48 84	48 36	400		400	007.00	00.00	20% solution
4 DD5	10/23/2015	13:58 14:22	8-11 5-8	8.0	2.7	84	120	36	120		120	227.30	36.09	
		15:41	14-18	16.0	2.4	0	48	48						20% solution
5 DD3	10/23/2015	16:08	10-14	16.0	2.2	48	96	48	144		144	272.76	36.09	2070 001011011
		16:37	6-10	12.0	2.3	96	144	48						
		13:25	11-15	20.0	2.7	0	48	48						20% soultion
6 DD1	10/23/2015	13:52	8-11	12.0	3.1	48	84	36	120		120	227.30	36.09	
		14:12	5-8	12.0	2.8	84	120	36						
														Point Removed
7 BB12	Removed								0		0			
		0.00	0.5.4.4	40.0										
8 BB10	10/23/2015	9:20 9:55	9.5-14 5-9.5	10.0 8.0	2.7	0 54	54 108	54 54	108		108	204.57	36.09	20% solution
		14:40	9.5-14	8.0	2.3	0	54	54						20% solution
9 BB8	10/23/2015	15:14	5-9.5	8.0	2.4	54	108	54	108		108	204.57	36.09	20 % Solution
		8:55	10.5-15	16.0	2.5	0	60	60						20% solution
10 BB6	10/23/2015	9:22	6-10.5	10.0	2.3	60	120	60	120		120	227.30	36.09	20 70 00 00 00 00
		12:03	14-18	10.0	2.3	0	48	48						20% solution
11 BB4	10/23/2015	12:33	10-14	12.0	2.2	48	96	48	144		144	272.76	36.09	
		13:02	6-10	10.0	2.4	96	144	48						
		8:45	14-18	16.0	3.8	0	48	48						20% solution
12 BB2	10/23/2015	9:14	10-14	13.0	2.8	48	96	48	144		144	272.76	36.09	
		9:41	6-10	14.0	3.0	96	144	48						
13 Z11	Damana d								0		0			Point Removed.
13 211	Removed								U		0			Hard refusal in area. Injected extra vol. into IP-2 (DD9).
		10:40	9-13	12.0	2.3	0	68	68						20% solution
14 Z9	10/23/2015	11:03	5-9	10.0	2.4	68	137	69	137		137	259.50	36.09	20 /0 301011011
		11.00	0.0	10.0		33		- 55						20% solution. No ORC-A to account for variation from design to
15 Z7	10/23/2015	12:22	9-13	13.0	2.8	0	48	48	137		137	259.50		field with number of pts.
		12:52	5-9	10.0	2.9	48	96	48						
16 Z5	10/23/2015	13:12	11-15	18.0	3.0	0	48	48	120		120	227.30		20% solution. No ORC-A to account for variation from design to field with number of pts.
10 23	10/23/2015	13:22	8-11	10.0	3.2	48	84	36	120		120	221.30	_	
		13:51	5-8	12.0	2.9	84	120	36						





Peter   Point   Poin				Injustion	Ave.	Ave.	Volume	of PersulfOx	Injected				Pounds of	Pounds of	
17 23   1023/2015   11:20		Date	Time	Depth	Pressure	Rate	Flow Meter		Injected Per		Gallons at		Injected Per	ORC-A Per	Comments
17.23   10/23/2015   13-22   14-18   14-0   2.8   96   48   144   48   144   272.76			44.00	4440	00.0	0.0	•	40	40						
12:10	17 Z3	10/23/2015								144		144	272.76		field with number of pts.
1821   1023/2015   15.22   14-18   14-0   2.8   48   96   48   48   144   144   272.76										-					
18   10   12   10   15   15   15   15   15   10   10															20% solution.
19 X12	18 Z1	10/23/2015			1					144		144	272.76		
19/12   10/23/2015   13:51   5-9   20.0   3.0   68   137   69   137   137   29:50   36.09   15% solution   15			16:00	6-10	10.0	2.7	96	144	48						
1351   5-9   200   3.0   68   137   699	19 X12	10/23/2015								137		137	259 50	36.09	20% solution
20 X10	10 X12	10/20/2010								107		107	200.00	00.00	
12:40	00.1/40	10/00/0015			1					454	454		044.40	00.00	15% solution
21 X8	20 X10	10/22/2015								154	154		211.19	36.09	
21 X8															20% solution
14:30	21 X8	10/22/2015								154	154		211.19	36.09	20 /6 Solution
22 X6										1					
14:25			13:40	10-14	10.0	3.1	0	68	68						15% solution
23 X4	22 X6	10/22/2015		7-10			68			171	171		234.51	36.09	
23 X4				4-7	10.0		120		51						
17:40 4-7 12.0 2.5 136 188 52  24 X2 10/22/2015 13:20 7-11 14.0 2.8 68 136 68 188 52  25 V13 Removed  26 V11 10/22/2015 10:30 9-13 12.0 2.4 0 68 68 137 69 137 10:20 5-8.5 13.0 2.2 68 137 69 10:20 5-8.5 13.0 2.2 68 137 69 10:20 5-8.5 13.0 2.7 60 120 60 120 60 120 120 227.30 36.09  17:40 4-7 12.0 2.5 136 188 52 15% solution 15% so															20% solution of persulfox
24 X2	23 X4	10/22/2015								188		188	356.10	36.09	
24 X2															AFOV. 1.6
14:00 4-7 14.0 2.5 136 188 52  25 V13 Removed  10:30 9-13 12.0 2.4 0 68 68 137 69 11:05 5-8.5 13.0 2.2 68 137 69 120 120 120 127.30 36.09  27 V9 10/22/2015 11:33 6-9.5 14.0 2.7 60 120 60 120 60 120 120 120 120 120 120 120 120 120 12	24 Y2	10/22/2015								100	100		257.92	36.00	15% Solution
25 V13 Removed    26 V11   10/22/2015   10:30   9-13   12:0   2.4   0   68   68   137   69   137   137   259.50   36.09   20% solution - extra volume to make up for diff in volum   27 V9   10/22/2015   10:51   9.5-13   18:0   2.8   0   60   60   60   120   60   60   60   60   60   60   60	24 72	10/22/2013								100	100		237.02	30.09	
26 V11 10/22/2015 10:30 9-13 12.0 2.4 0 68 68 137 137 259.50 36.09 20% solution - extra volume to make up for diff in volum 11:05 5-8.5 13.0 2.2 68 137 69 120 120 120 120 120 120 120 120 120 120			1 1100				700								Point Removed
26 V11 10/22/2015 11:05 5-8.5 13.0 2.2 68 137 69 137 137 259.50 36.09 27 V9 10/22/2015 10:51 9.5-13 18.0 2.8 0 60 60 120 60 120 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 11:33 6-9.5 14.0 2.7 60 120 60 120 60 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.09 20% solution - extra volume to make up for diff in volum 120 227.30 36.00 20% solution - extra volume to make up for diff in volum 120 227.30 36.00 20% solution - extra volume to make up for diff in volum 120 227.30 36.00 20% solution - extra volume to make up for diff in volum 120 227.30 36.00 20% solution - extra volume to make up for diff in volum 120 227.30 36.00 20% solution	25 V13	Removed								0					
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27 V9 10/22/2015 11:33 6-9.5 14.0 2.7 60 120 60 120 120 227.30 36.09 120 227.30 36.00 120 2	20 7	10/22/2010								101			200.00	00.00	
20 V7 40/20/2045 12:48 9.5-13 20.0 3.0 0 60 60 420 420 20% solution - extra volume to make up for diff in volum	27 V9	10/22/2015								120		120	227.30	36.09	20% solution - extra volume to make up for diff in volum
															20% solution - extra volume to make up for diff in volum
	28 V7	10/22/2015	13:30	6-9.5	15.0	2.2	60	120	60	120		120	227.30	36.09	
29 V5 10/22/2015 12:22 10.5-14 12:0 2.0 0 60 60 120 120 120 120 227:30 36:09 20% solution - extra volume to make up for diff in volum	29 V5	10/22/2015							60	120		120	227.30	36.09	20% solution - extra volume to make up for diff in volum
12:00 1115 10.0 2.7 0 60 60 120 120 120 120 120 120 120 120 120 12															20% solution - extra volume to make up for diff in volum
30 V3 10/22/2015 13:30 7-11 10:0 2.4 68 137 69 137 137 259.50 36:09	30 V3	10/22/2015								137		137	259.50	36.09	2070 Solution - Catta Volume to make up for all in Volum
31 V1 10/22/2015 13:48 11-15 12.0 2.1 0 68 68 137 137 259.50 36.09 20% solution - extra volume to make up for diff in volum	31 \/1	10/22/2015								137		137	259 50	36.09	20% solution - extra volume to make up for diff in volum
14.06 7-11 10.0 2.3 66 137 69	31 11	10/22/2019								137		137	233.30	30.03	Arov 1.c
32 T12	32 T12	10/22/2015								206	206		282 51	36.09	15% solution
12.00 11-13 12.0 2.3 106 137 09 200 200 200 200 200 200 200 200 200	02 112	10/22/2013								200	200		202.01	30.03	
10:25 15-19 16.0 3.1 0 68 68 1 15% solution				15-19	16.0	3.1	0	68	68						15% solution
33 T10 10/22/2015 11:10 11-15 15.0 2.7 68 137 69 206 206 282.51 36.09	33 T10	10/22/2015								206	206		282.51	36.09	
12:02 7-11 16.0 2.8 137 206 69 1 12:34 14-18 14.0 2.7 0 68 68 15% solution															15% solution
34 T8 10/22/2015 13:15 10-14 14:0 2.7 68 137 69 206 206 282.51 36.09	34 T8	10/22/2015								206	206		282.51	36.09	10/0 301011011
14:00 6-10 14.0 2.7 137 206 69									69						





#### Table 1

									lable	, .				
Injection Point	Date	Time	Injection Depth (feet)	Ave. Injection Pressure (psi)	Ave. Flow Rate (gpm)	Volume  Beginning Flow Meter (gal)	of PersulfOx Ending Flow Meter (gal)	Gallons Injected Per Interval	Total gallons Per Location	Total Gallons at 15%	Total gallons at 20%	Pounds of PersulfOx Injected Per Location	Pounds of ORC-A Per Location	Comments
		11:02	11-15	18.0	3.6	0	68	68						15% solution
35 T6	10/22/2015	11:20	8-11	14.0	3.4	68	120	52	171	171		234.51	36.09	1376 Solution
33 10	10/22/2013	11:40	5-8	14.0	3.4	120	171	51	1 '''	171		254.51	30.09	
		10:02	11-15	18.0	4.5	0	68	68						15% solution
36 T4	10/22/2015	10:25	8-11	12.0	2.8	68	120	52	171	171		234.51	36.09	1070 Column
00 1 1	10/22/2010	10:50	5-8	12.0	2.8	120	171	51				20	00.00	
		9:46	11-15	10.0	3.4	0	68	68						15% solution
37 T2	10/22/2015	10:00	8-11	12.0	3.4	68	120	52	171	171		234.51	36.09	
		10:14	5-8	8.0	2.8	120	171	51	1					
20 D42	40/00/0045	9:03	9-13	12.0	2.6	0	69	69	407	407		407.00	36.09	15% solution
38 R13	10/22/2015	9:28	5-9	12.0	3.0	69	137	68	137	137		187.88	36.09	
39 R11	10/22/2015	8:30	8-11	14.0	3.1	0	69	69	137	137		187.88	36.09	15% solution
39 K I I	10/22/2015	9:07	5-8	12.0	3.0	69	137	68	137	137		107.00	36.09	
40 R9	10/22/2015	7:48	7.5-12	14.0	3.4	0	60	60	120	120		164.57	36.09	15% solution
40103	10/22/2013	7:08	5-7.5	12.0	3.1	60	120	60	120	120		104.51	30.03	
41 R7	10/22/2015	7:55	7.5-12	16.0	3.7	0	60	60	120	120		164.57	36.09	15% solution
	10/22/2010	7:12	5-7.5	12.0	2.8	60	120	60	.20	.20		10 1.01	00.00	
42 R5	10/21/2015	8:22	7.5-12	12.0	3.0	0	60	60	120	120		164.57	36.09	15% solution
12.110		8:50	5-7.5	8.0	2.8	60	120	60		1_0				
43 R3	10/21/2015	10:13	7.5-12	16.0	2.4 3.0	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
		10:55	5-7.5	14.0	2.2									AFOV politica
44 R1	10/21/2015	10:30 11:25	8-11 5-8	12.0 12.0	2.2	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
		10:24	8-11	10.0	2.7	00	69	69						15% solution
45 P12	10/21/2015	10:55	5-8	10.0	2.2	69	137	68	137	137		187.88	36.09	1376 Solution
		10:49	8-11	12.0	2.0	0	60	60						15% solution
46 P10	10/21/2015	11:30	5-8	14.0	1.8	60	120	60	120	120		164.57	36.09	1070 00101011
		11:22	8-11	10.0	3.1	0	60	60						15% solution
47 P8	10/21/2015	12:05	5-8	12.0	2.4	60	120	60	120	120		164.57	36.09	
40.00	10/01/0015	12:00	8-11	14.0	2.3	0	60	60	400	400		404.55	22.22	15% solution
48 P6	10/21/2015	12:33	5-8	10.0	3.3	60	120	60	120	120		164.57	36.09	
40 D4	10/21/2015	13:57	8.5-12	14.0	3.6	0	60	60	120	120		164 F7	36.09	15% solution
49 P4	10/21/2015	14:23	5-8.5	12.0	3.5	60	120	60	120	120		164.57	36.09	
50 P2	10/21/2015	14:00	8-11	10.0	3.3	0	60	60	120	120		164.57	36.09	15% solution
30 FZ	10/21/2015	14:25	5-8	10.0	2.9	60	120	60	120	120		104.57	30.09	
51 N13	10/21/2015	14:32	9-13	14.0	2.5	0	68	68	137	137		187.88	36.09	15% solution
311113	10/21/2013	15:00	5-9	14.0	2.0	68	137	69	107	107		107.00	30.03	
52 N11	10/21/2015	15:02	9-13	12.0	3.0	0	68	68	137	137		187.88	36.09	15% solution
02 IVII	10/21/2010	15:38	5-9	10.0	2.0	68	137	69	137	107		107.00	30.03	
								Page 3						

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#### Table 1

									iabic					
Injection Point	Date	Time	Injection Depth (feet)	Ave. Injection Pressure (psi)	Ave. Flow Rate (gpm)	Beginning Flow Meter	of PersulfOx  Ending Flow Meter (gal)	Gallons Injected Per	Total gallons Per Location	Total Gallons at	Total gallons at 20%	Pounds of PersulfOx Injected Per Location	Pounds of ORC-A Per Location	
53 N9	10/21/2015	15:51	8.5-12	16.0	2.2	(gal)	60	Interval 60	120	15%		164.57	36.09	Comments 15% solution
00110	10/21/2010	16:22	5-8.5	12.0	2.0	60	120	60	120	120		101.07	00.00	
54 N7	10/21/2015	16:10 16:40	8.5-12 5-8.5	15.0 12.0	2.7 3.1	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
55 N5	10/21/2015	16:31 17:00	8.5-12 5-8.5	12.0 12.0	3.3 2.3	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
56 N3	10/21/2015	15:15 15:45	8.5-12 5-8.5	12.0 12.0	1.9 2.7	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
57 N1	10/21/2015	16:15 16:35	8.5-12 5-8.5	10.0	2.3 3.0	0	60 120	60 60	120	120		164.57	36.09	15% solution
58 L12	10/21/2015	16:45 17:12	8.5-12 5-8.5	14.0 14.0	2.2	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
59 L10	10/21/2015	17:22 17:31	8-11 5-8	10.0	3.1 2.4	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
60 L8	10/21/2015	8:22 8:50	8.5-12 5-8.5	12.0	2.3	0 60	60 120	60 60	120	120		164.57	36.09	15% solution
61 L6	10/21/2015	8:45 9:20	8.5-12 5-8.5	18.0	2.3	0	60 120	60	120	120		164.57	36.09	15% solution
62 L4	10/21/2015	9:00 9:28	7.5-10 5-7.5	14.0	2.5	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
63 L2	10/21/2015	7:34 8:05	7.5-10 5-7.5	12.0	2.7	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
64 J13	10/20/2015	16:58 17:24	7.5-10 5-7.5	14.0	2.2	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
65 J11	10/20/2015	16:40 17:02	7.5-10 5-7.5	12.0	2.5	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
66 J9	10/20/2015	16:00 16:20	7.5-10 5-7.5	10.0	2.3	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
67 J7	10/20/2015	15:32 15:55	7.5-10 5-7.5	16.0 12.0	2.1	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
68 J5	10/20/2015	15:25 15:51	7.5-10 5-7.5	8.0	2.4	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
69 J3	10/20/2015	15:02 15:33	7.5-10 5-7.5	10.0	2.4	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
70 J1	10/20/2015	14:28 14:39	7.5-10 5-7.5	12.0	2.8	0 43	43 86	43	- 86	86		117.94	36.09	15% solution
		17.00	07.0	10.0	2.0	70	00	Page 4						





#### Table 1

			Injection	Ave.	Ave.	Volume	of PersulfOx	Injected				Pounds of	Pounds of	
Injection Point	Date	Time	Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval	Total gallons Per Location	Total Gallons at 15%	Total gallons at 20%	PersulfOx Injected Per Location	ORC-A Per Location	Comments
71 H14	10/20/2015	14:22 14:41	7.5-10 5-7.5	10.0 12.0	2.5 2.2	0 43	43 86	43 43	- 86	86		117.94	36.09	15% solution
72 H12	10/20/2015	14:13 14:25	7.5-10 5-7.5	14.0 12.0	1.7 2.4	0 43	43 86	43 43	86	86		117.94		Refusal @2'. Off set 3' and red re drill 15% solution
73 H10	10/20/2015	14:04 14:20	7.5-10 5-7.5	16.0 12.0	2.2 2.3	0 43	43 86	43 43	- 86	86		117.94		Refusal @ 2'. Offset 2' and re drill 15% solution
74 H8	10/20/2015	11:10 11:45	7.5-10 5-7.5	20.0 12.0	2.7 2.8	0 43	43 86	43 43	86	86		117.94	36.09	15% solution
75 H6	10/20/2015	11:30 11:55	7.5-10 5-7.5	12.0 12.0	3.0 2.8	0 43	43 86	43 43	- 86	86		117.94	36.09	15% solution
76 H4	10/20/2015	11:39 12:04	7.5-10 5-7.5	12.0 10.0	2.0 2.0	0 43	43 86	43 43	86	86		117.94	36.09	15% solution
77 H2	10/20/2015	11:52 12:21	7.5-10 5-7.5	10.0 10.0	2.3 2.1	0 43	43 86	43 43	- 86	86		117.94	36.09	15% solution
78 F17	10/20/2015	10:55 11:14	8-11 5-8	10.0 10.0	2.4 2.7	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
79 F15	10/20/2015	10:23 10:41	8-11 5-8	8.0 8.0	2.3	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
80 F13	10/20/2015	10:15 10:38	8-11 5-8	14.0 12.0	3.0 2.4	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
81 F11	10/20/2015	9:54 10:33	8-11 5-8	6.0 0.0	3.4 3.7	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
82 F9	10/20/2015	10:12 10:46	8-11 5-8	4.0 0.0	3.0 3.4	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
83 F7	10/20/2015	10:19 10:26	8-11 5-8	0.0	3.5 3.3	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
84 F5	10/20/2015	9:11 9:46	8-11 5-8	10.0 12.0	1.8 2.0	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
85 F3	10/20/2015	9:41 10:05	8-11 5-8	11.0 2.0	2.5 3.2	0 51	51 103	51 52	103	103		141.25	36.09	15% solution
86 F1	10/20/2015	8:14 8:45	8-11 5-8	0.0	3.6 3.1	0 51	51 103	51 52	103	103		141.25	36.09	15% solution

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#### Table 1

Part											, i				
Point   Poin				Injection	-		Volume	of PersulfOx	Injected					Pounds of	
87 D8		Date	Time	Depth	Pressure	Rate	Flow Meter	Ending Flow Meter (gal)	Injected Per	Per Location	Gallons at		Injected Per		Comments
88 D16	97 D19	10/20/2015								103	103		1/1 25	36.00	15% solution
88 P1	01 010	10/20/2013							_	103	103		141.23	30.09	
89 D14	88 D16	10/20/2015								103	103		141 25	36.09	15% solution
Section   10/20/2015   11:55   5-8   8.0   3.2   51   103   52   103   103   141.25   36.09     15% solution	00 010	10/20/2013	_							105	100		141.20	30.03	
90 D12	89 D14	10/20/2015								103	103		141.25	36.09	15% solution
90 12	00 5	10/20/2010									.00		20	00.00	
91 D10	90 D12	10/20/2015								103	103		141.25	36.09	15% solution
92 D8   10/19/2015   14:02   5-8   5.0   3.0   52   103   51   103   103   141.25   36.09   15% solution   141.25   36.09   15% solution   15															AFD/ ask time
10/19/2015   14:25   8:11   8:0   3.2   0   51   51   103   52   103   103   141.25   36.09   15% solution	91 D10	10/19/2015								103	103		141.25	36.09	15% Solution
92 D8   10/20/2015   7:49   5-8   8.0   3.3   51   103   52   103   103   141.25   36.09     15% solution     15% solution   15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution     15% solution		10/10/2015													15% solution
93 D6	92 D8									103	103		141.25	36.09	1376 301411011
10/19/2015   13:55   5-8   6.0   3.0   51   103   52   103   103   141.25   36.09															15% solution
94 D4	93 D6	10/19/2015								103	103		141.25	36.09	1070 001011011
94 D4															15% solution
95 D2 10/19/2015	94 D4	10/19/2015					34			137	137		187.88	36.09	
95   10/20/2015   7:44   5-8   7.0   3.0   60   120   60   120   120   120   120   164.57   36.09			14:41	5-8	8.0	3.3	86	137	51						
10/20/2015	05.00	10/19/2015	14:15	8-11			0			120	120		164.57	26.00	15% solution
96 B17 10/19/2015 11:29 5-7.5 5.0 2.5 43 86 86 86 86 86 117.94 36.09  97 B15 10/19/2015 11:10 8-11 5.0 2.1 0 43 43 86 86 86 86 117.94 36.09  98 B13 10/19/2015 11:50 7-9 6.0 2.4 43 86 43 86 43 86 86 86 86 86 86 86 86 86 86 86 86 86	93 DZ	10/20/2015								120	120		104.57	30.09	
97 B15	96 B17	10/19/2015								86	86		117 04	36.09	15% solution
97 B15	30 017	10/13/2013								00	00		117.54	30.03	
98 B13	97 B15	10/19/2015								86	86		117.94	36.09	15% solution
98 B13 10/19/2015 12:23 5-7 6.0 2.5 34 69 35 69 69 94.63 36.09  99 B11 10/19/2015 11:42 7-9 2.0 2.5 0 34 34 69 35 69 69 94.63 36.09 15% solution ORC completed at 13:10 on 10/19															1450/ 147
99 B11 10/19/2015 11:42 7-9 2.0 2.5 0 34 34 69 35 69 69 94.63 36.09 15% solution ORC completed at 13:10 on 10/19	98 B13	10/19/2015								69	69		94.63	36.09	15% SOIUTION
99 B11 10/19/2015 12:15 5-7 2.0 2.6 34 69 35 69 69 94.63 36.09 ORC completed at 13:10 on 10/19				_			_								150/ polytion
	99 B11	10/19/2015								69	69		94.63	36.09	
			12.10	J-1	2.0	2.0	34			11/25	0227	2000	17201 40	2220.00	Torro completed at 10.10 on 10/13

Injection Water Laboratory Analytical Report



THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo 10 Hazelwood Drive Amherst, NY 14228-2298 Tel: (716)691-2600

TestAmerica Job ID: 480-89174-1

Client Project/Site: Korkay, Inc. #518014

#### For:

New York State D.E.C. 625 Broadway 4th Floor Albany, New York 12233

Attn: Mr. Payson Long

Authorized for release by: 10/16/2015 9:36:26 AM

Judy Stone, Senior Project Manager (484)685-0868

judy.stone@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.

TestAmerica Job ID: 480-89174-1

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Judy Stone Senior Project Manager 10/16/2015 9:36:26 AM

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

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## **Definitions/Glossary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

Reporting Limit or Requested Limit (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)

Toxicity Equivalent Quotient (Dioxin)

Relative Percent Difference, a measure of the relative difference between two points

TestAmerica Job ID: 480-89174-1

### Glossary

RL

RPD

TEF

TEQ

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
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)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio

#### **Case Narrative**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

Job ID: 480-89174-1

**Laboratory: TestAmerica Buffalo** 

**Narrative** 

Job Narrative 480-89174-1

#### Receipt

The sample was received on 10/15/2015 9:00 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2° C.

#### **GC/MS VOA**

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-268910 recovered above the upper control limit for several analytes. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: SLA TRUCKING (480-89174-1).

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-268910 recovered outside acceptance criteria, low biased, for 2-Hexanone, Naphthalene, and 4-Methyl-2-pentanone. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. The following sample is impacted: SLA TRUCKING (480-89174-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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## **Client Sample Results**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

Lab Sample ID: 480-89174-1

**Matrix: Water** 

**Client Sample ID: SLA TRUCKING** 

Date Collected: 10/12/15 09:30 Date Received: 10/15/15 09:00

Method: 8260C - Volatile Organ Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND	<u> </u>	1.0	0.35	ug/L		•	10/15/15 17:59	
1,1,1-Trichloroethane	ND		1.0		ug/L			10/15/15 17:59	
1,1,2,2-Tetrachloroethane	ND		1.0		ug/L			10/15/15 17:59	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0		ug/L			10/15/15 17:59	
1,1,2-Trichloroethane	ND		1.0		ug/L			10/15/15 17:59	
1,1-Dichloroethane	ND		1.0		ug/L			10/15/15 17:59	
1,1-Dichloroethene	ND		1.0		ug/L			10/15/15 17:59	
1,1-Dichloropropene	ND		1.0		ug/L			10/15/15 17:59	
1,2,3-Trichlorobenzene	ND		1.0		ug/L			10/15/15 17:59	
1,2,3-Trichloropropane	ND		1.0		ug/L			10/15/15 17:59	
1,2,4-Trichlorobenzene	ND		1.0		ug/L			10/15/15 17:59	
1,2,4-Trimethylbenzene	ND		1.0		ug/L			10/15/15 17:59	
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			10/15/15 17:59	
1,2-Dibromoethane	ND		1.0		ug/L			10/15/15 17:59	
1,2-Dichlorobenzene	ND		1.0		ug/L			10/15/15 17:59	
1,2-Dichloroethane	ND		1.0		ug/L			10/15/15 17:59	
1,2-Dichloropropane	ND		1.0	0.72				10/15/15 17:59	
1,3,5-Trimethylbenzene	ND		1.0		ug/L			10/15/15 17:59	
1,3-Dichlorobenzene	ND		1.0	0.78				10/15/15 17:59	
1,3-Dichloropropane	ND		1.0		ug/L			10/15/15 17:59	
1,4-Dichlorobenzene	ND		1.0		ug/L			10/15/15 17:59	
2,2-Dichloropropane	ND		1.0		ug/L			10/15/15 17:59	
2-Butanone (MEK)	ND		10		ug/L			10/15/15 17:59	
2-Chlorotoluene	ND		1.0		ug/L			10/15/15 17:59	
2-Hexanone	ND		5.0		ug/L			10/15/15 17:59	
4-Chlorotoluene	ND		1.0		ug/L			10/15/15 17:59	
4-Isopropyltoluene	ND		1.0		ug/L			10/15/15 17:59	
4-Methyl-2-pentanone (MIBK)	ND		5.0		ug/L			10/15/15 17:59	
Acetone	ND		10		ug/L			10/15/15 17:59	
Benzene	ND		1.0		ug/L			10/15/15 17:59	
Bromobenzene	ND		1.0		ug/L			10/15/15 17:59	
Bromodichloromethane	ND		1.0		ug/L			10/15/15 17:59	
Bromoform	ND		1.0		ug/L ug/L			10/15/15 17:59	
Bromomethane	ND		1.0		ug/L			10/15/15 17:59	
Carbon disulfide	ND ND		1.0		ug/L ug/L			10/15/15 17:59	
Carbon tetrachloride	ND ND		1.0		-				
Carbon tetrachionde	ND		1.0		ug/L			10/15/15 17:59 10/15/15 17:59	
Chlorobenzene Chlorobromomethane	ND ND		1.0		ug/L			10/15/15 17:59	
Chloroethane	ND ND		1.0		ug/L			10/15/15 17:59	
Chloroform			1.0		ug/L ug/L			10/15/15 17:59	
Chloromethane	<b>10</b> ND		1.0		-			10/15/15 17:59	
					ug/L				
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/15/15 17:59	
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/15/15 17:59	
Cyclohexane	ND		1.0		ug/L			10/15/15 17:59	
Dibromochloromethane	ND		1.0		ug/L			10/15/15 17:59	
Dibromomethane	ND		1.0		ug/L			10/15/15 17:59	
Dichlorodifluoromethane	ND		1.0		ug/L			10/15/15 17:59	
Ethylbenzene Hexachlorobutadiene	ND ND		1.0		ug/L ug/L			10/15/15 17:59 10/15/15 17:59	

TestAmerica Buffalo

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## **Client Sample Results**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

**Client Sample ID: SLA TRUCKING** 

Date Collected: 10/12/15 09:30 Date Received: 10/15/15 09:00 Lab Sample ID: 480-89174-1

**Matrix: Water** 

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
lodomethane	ND		1.0	0.30	ug/L			10/15/15 17:59	1
Isopropylbenzene	ND		1.0	0.79	ug/L			10/15/15 17:59	1
m,p-Xylene	ND		2.0	0.66	ug/L			10/15/15 17:59	1
Methyl acetate	ND		2.5	1.3	ug/L			10/15/15 17:59	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			10/15/15 17:59	1
Methylcyclohexane	ND		1.0	0.16	ug/L			10/15/15 17:59	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/15/15 17:59	1
Naphthalene	ND		1.0	0.43	ug/L			10/15/15 17:59	1
n-Butylbenzene	ND		1.0	0.64	ug/L			10/15/15 17:59	1
N-Propylbenzene	ND		1.0	0.69	ug/L			10/15/15 17:59	1
o-Xylene	ND		1.0	0.76	ug/L			10/15/15 17:59	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			10/15/15 17:59	1
Styrene	ND		1.0	0.73	ug/L			10/15/15 17:59	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			10/15/15 17:59	1
Tetrachloroethene	ND		1.0	0.36	ug/L			10/15/15 17:59	1
Toluene	ND		1.0	0.51	ug/L			10/15/15 17:59	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/15/15 17:59	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/15/15 17:59	1
Trichloroethene	ND		1.0	0.46	ug/L			10/15/15 17:59	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/15/15 17:59	1
Vinyl acetate	ND		5.0	0.85	ug/L			10/15/15 17:59	1
Vinyl chloride	ND		1.0	0.90	ug/L			10/15/15 17:59	1
Xylenes, Total	ND		2.0	0.66	ug/L			10/15/15 17:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	110		66 - 137		10/15/15 17:59	1
4-Bromofluorobenzene (Surr)	90		73 - 120	1	10/15/15 17:59	1
Dibromofluoromethane (Surr)	121		60 - 140	1	10/15/15 17:59	1
Toluene-d8 (Surr)	96		71 - 126	1	10/15/15 17:59	1

TestAmerica Buffalo

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#### **Lab Chronicle**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

**Client Sample ID: SLA TRUCKING** 

TestAmerica Job ID: 480-89174-1

Lab Sample ID: 480-89174-1

**Matrix: Water** 

Date Collected: 10/12/15 09:30 Date Received: 10/15/15 09:00

ı		Batch	Batch		Dilution	Batch	Prepared		
	Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
	Total/NA	Analysis	8260C		1	268910	10/15/15 17:59	GVF	TAL BUF

#### **Laboratory References:**

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TestAmerica Buffalo

## **Certification Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014 TestAmerica Job ID: 480-89174-1

## Laboratory: TestAmerica Buffalo The certifications listed below are applicable to this report.

Authority	Program	<b>EPA</b> Region	Certification ID	<b>Expiration Date</b>
New York	NELAP	2	10026	03-31-16

## **Method Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

3

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

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#### **Protocol References:**

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

#### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

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## **Sample Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89174-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-89174-1	SLA TRUCKING	Water	10/12/15 09:30	10/15/15 09:00

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**Custody Record** Chain of

Temperature on Receipt

Drinking Water? Yes □ No

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**TestAmerica** 

Special Instructions/ Conditions of Receipt (A fee may be assessed if samples are retained longer than 1 month) Time chain of Custody Number 291674 Page\_ Date irt-いい Date 10/12/15 480-89174 Chain of Custody more space is needed) Analysis (Attach list if Lab Number Months Archive For 297EB QC Requirements (Specify, TUDY STANE HOBN Disposal By Lab Containers & Preservatives HO₽N 2. Received By 1. Received By 3. Received By ЮH HONGO (Area Code)/Fax Number EONH †OSZH səıdun 3 ☐ Retum To Client WARRA Sample Disposal 1105 Time Carrier/Waybill Number Matrix 518-951 Site Contact SAM G pes Telephone Number Project Manager snoenb<sub>b</sub> 41 Other\_ ☐ Unknown 850 Date Time COLXAY SITE (518014) GOWASIN WY ☐ 21 Days 10/2/2 ☐ Poison B Date Ho BRITISH AMERICAN BLOD. ☐ 14 Days (Containers for each sample may be combined on one line) Skin Irritant Sample I.D. No. and Description ☐ 7 Days SLA TRUCKING 24 Hours 48 Hours 1. Relinquished By Possible Hazard Identification Turn Around Time Required I.ATHAM AECOM 3 Relinquished By Comments 2. Relinquished By TAL-4124 (1007) Page 12 of 13

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

## **Login Sample Receipt Checklist**

Client: New York State D.E.C. Job Number: 480-89174-1

Login Number: 89174 List Source: TestAmerica Buffalo

List Number: 1

Creator: Janish, Carl M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
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?	True	
There are no discrepancies between the sample IDs on the containers 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	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	aecom
Samples received within 48 hours of sampling.	False	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

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## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Buffalo 10 Hazelwood Drive Amherst, NY 14228-2298 Tel: (716)691-2600

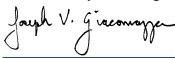
TestAmerica Job ID: 480-89392-1

Client Project/Site: Korkay, Inc. #518014

#### For:

New York State D.E.C. 625 Broadway 4th Floor Albany, New York 12233

Attn: Mr. Payson Long



Authorized for release by: 10/21/2015 8:51:14 AM

Joe Giacomazza, Project Management Assistant II joe.giacomazza@testamericainc.com

Designee for

Judy Stone, Senior Project Manager (484)685-0868 judy.stone@testamericainc.com

----- LINKS -----

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Joseph V. gireomogen

Joe Giacomazza

Project Management Assistant II

10/21/2015 8:51:14 AM

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Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89392-1

## **Table of Contents**

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### **Definitions/Glossary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014 TestAmerica Job ID: 480-89392-1

#### **Qualifiers**

#### **GC/MS VOA**

Qualifier **Qualifier Description** 

LCS or LCSD is outside acceptance limits.

#### **Glossary**

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight ba

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery **CFL** Contains Free Liquid **CNF** Contains no Free Liquid

DER Duplicate error ratio (normalized absolute difference)

Dil Fac Dilution Factor

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 MLMinimum Level (Dioxin)

NC Not Calculated

Not detected at the reporting limit (or MDL or EDL if shown) ND

**PQL Practical Quantitation Limit** 

**Quality Control** QC Relative error ratio **RER** 

RL Reporting Limit or Requested Limit (Radiochemistry)

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) **TEQ** 

TestAmerica Buffalo

#### **Case Narrative**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89392-1

Job ID: 480-89392-1

**Laboratory: TestAmerica Buffalo** 

**Narrative** 

Job Narrative 480-89392-1

#### Receipt

The sample was received on 10/20/2015 2:00 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.3° C.

#### **GC/MS VOA**

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-269738 recovered above the upper control limit for Carbon disulfide and Vinyl acetate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: SLA #2 (480-89392-1).

Method(s) 8260C: The following sample was improperly preserved in the field: SLA #2 (480-89392-1). The preservative used is not compatible with the analytes requested.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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## **Client Sample Results**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89392-1

Lab Sample ID: 480-89392-1

**Matrix: Water** 

Client Sample ID: SLA #2
Date Collected: 10/19/15 10:00
Date Received: 10/20/15 02:00

Method: 8260C - Volatile Organ Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L		<del>-</del>	10/20/15 17:22	
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			10/20/15 17:22	
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	-			10/20/15 17:22	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.31	-			10/20/15 17:22	
1,1,2-Trichloroethane	ND		1.0	0.23	-			10/20/15 17:22	
1,1-Dichloroethane	ND		1.0	0.38	-			10/20/15 17:22	
1,1-Dichloroethene	ND		1.0	0.29	-			10/20/15 17:22	
1,1-Dichloropropene	ND		1.0	0.72	-			10/20/15 17:22	
1,2,3-Trichlorobenzene	ND		1.0	0.41	-			10/20/15 17:22	
1,2,3-Trichloropropane	ND		1.0	0.89	-			10/20/15 17:22	
1,2,4-Trichlorobenzene	ND		1.0	0.41	_			10/20/15 17:22	
1,2,4-Trimethylbenzene	ND		1.0	0.75	-			10/20/15 17:22	
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39				10/20/15 17:22	
1,2-Dibromoethane	ND		1.0	0.73	-			10/20/15 17:22	
1,2-Dichlorobenzene	ND		1.0	0.79	-			10/20/15 17:22	
1,2-Dichloroethane	ND		1.0	0.21	ug/L			10/20/15 17:22	
1,2-Dichloropropane	ND		1.0	0.72	-			10/20/15 17:22	
1,3,5-Trimethylbenzene	ND		1.0	0.77	-			10/20/15 17:22	
1,3-Dichlorobenzene	ND		1.0	0.78	-			10/20/15 17:22	
1,3-Dichloropropane	ND		1.0	0.75	-			10/20/15 17:22	
1,4-Dichlorobenzene	ND		1.0	0.84	_			10/20/15 17:22	
2,2-Dichloropropane	ND		1.0	0.40				10/20/15 17:22	
2-Butanone (MEK)	ND		10		ug/L			10/20/15 17:22	
2-Chlorotoluene	ND		1.0	0.86	-			10/20/15 17:22	
2-Hexanone	ND		5.0		ug/L			10/20/15 17:22	
4-Chlorotoluene	ND		1.0	0.84	_			10/20/15 17:22	
4-Isopropyltoluene	ND		1.0	0.31	-			10/20/15 17:22	
4-Methyl-2-pentanone (MIBK)	ND		5.0		ug/L			10/20/15 17:22	
Acetone	ND		10		ug/L			10/20/15 17:22	
Benzene	ND		1.0	0.41	ū			10/20/15 17:22	
Bromobenzene	ND		1.0	0.80	-			10/20/15 17:22	
Bromodichloromethane	ND		1.0	0.39	-			10/20/15 17:22	
Bromoform	ND		1.0	0.26	_			10/20/15 17:22	
Bromomethane	ND		1.0	0.69	-			10/20/15 17:22	
Carbon disulfide	ND		1.0	0.09	-			10/20/15 17:22	
Carbon tetrachloride	ND		1.0		ug/L			10/20/15 17:22	
Chlorobenzene	ND		1.0	0.75				10/20/15 17:22	
Chlorobromomethane	ND ND		1.0					10/20/15 17:22	
Chloroethane	ND ND	*	1.0	0.87	-			10/20/15 17:22	
					ug/L				
Chloroform	9.0		1.0		ug/L			10/20/15 17:22	
Chloromethane	ND		1.0	0.35	-			10/20/15 17:22	
cis-1,2-Dichloroethene	ND		1.0		ug/L			10/20/15 17:22	
cis-1,3-Dichloropropene	ND		1.0		ug/L			10/20/15 17:22	
Cyclohexane	ND		1.0	0.18	-			10/20/15 17:22	
Dibromochloromethane	ND		1.0	0.32				10/20/15 17:22	
Dibromomethane	ND		1.0		ug/L			10/20/15 17:22	
Dichlorodifluoromethane	ND		1.0	0.68	ug/L			10/20/15 17:22	
Ethylbenzene	ND		1.0	_	ug/L			10/20/15 17:22	

TestAmerica Buffalo

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## **Client Sample Results**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014 TestAmerica Job ID: 480-89392-1

Lab Sample ID: 480-89392-1

Matrix: Water

Client Sample ID: SLA #2

Date Collected: 10/19/15 10:00 Date Received: 10/20/15 02:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
lodomethane	ND		1.0	0.30	ug/L			10/20/15 17:22	1
Isopropylbenzene	ND		1.0	0.79	ug/L			10/20/15 17:22	1
m,p-Xylene	ND		2.0	0.66	ug/L			10/20/15 17:22	1
Methyl acetate	ND		2.5	1.3	ug/L			10/20/15 17:22	1
Methyl tert-butyl ether	ND		1.0	0.16	ug/L			10/20/15 17:22	1
Methylcyclohexane	ND		1.0	0.16	ug/L			10/20/15 17:22	1
Methylene Chloride	ND		1.0	0.44	ug/L			10/20/15 17:22	1
Naphthalene	ND		1.0	0.43	ug/L			10/20/15 17:22	1
n-Butylbenzene	ND		1.0	0.64	ug/L			10/20/15 17:22	1
N-Propylbenzene	ND		1.0	0.69	ug/L			10/20/15 17:22	1
o-Xylene	ND		1.0	0.76	ug/L			10/20/15 17:22	1
sec-Butylbenzene	ND		1.0	0.75	ug/L			10/20/15 17:22	1
Styrene	ND		1.0	0.73	ug/L			10/20/15 17:22	1
tert-Butylbenzene	ND		1.0	0.81	ug/L			10/20/15 17:22	1
Tetrachloroethene	ND		1.0	0.36	ug/L			10/20/15 17:22	1
Toluene	ND		1.0	0.51	ug/L			10/20/15 17:22	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			10/20/15 17:22	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			10/20/15 17:22	1
Trichloroethene	ND		1.0	0.46	ug/L			10/20/15 17:22	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			10/20/15 17:22	1
Vinyl acetate	ND		5.0	0.85	ug/L			10/20/15 17:22	1
Vinyl chloride	ND		1.0	0.90	ug/L			10/20/15 17:22	1
Xylenes, Total	ND		2.0	0.66	ug/L			10/20/15 17:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	94		66 - 137		10/20/15 17:22	1
4-Bromofluorobenzene (Surr)	97		73 - 120		10/20/15 17:22	1
Dibromofluoromethane (Surr)	96		60 - 140		10/20/15 17:22	1
Toluene-d8 (Surr)	92		71 - 126		10/20/15 17:22	1

#### **Lab Chronicle**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014 TestAmerica Job ID: 480-89392-1

Lab Sample ID: 480-89392-1

**Matrix: Water** 

Client Sample ID: SLA #2 Date Collected: 10/19/15 10:00 Date Received: 10/20/15 02:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	269738	10/20/15 17:22	SWO	TAL BUF

#### **Laboratory References:**

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

## **Certification Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014 TestAmerica Job ID: 480-89392-1

## Laboratory: TestAmerica Buffalo The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	<b>Expiration Date</b>
New York	NELAP	2	10026	03-31-16

## **Method Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89392-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF

#### **Protocol References:**

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

#### Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

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TestAmerica Buffalo

## **Sample Summary**

Client: New York State D.E.C. Project/Site: Korkay, Inc. #518014

TestAmerica Job ID: 480-89392-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-89392-1	SLA #2	Water	10/19/15 10:00	10/20/15 02:00

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Custody Record Chain of

TAL-4124 (1007)

Temperature on Receipt \_

Not

Drinking Water? Yes□

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NYSAS FO ACOM	Project Manager	Vanager 08/5/	ORYSN LONG		Date   0   9   5	Chain of Custody Number
Address	Tolando	Telephone Mimber (Area Code)/Eav Mimber	/Eav Mumber		Cot Mirmbor	10000
G25 BROADWAY	oudere :	3	518-402-		Lab ivuilber	Page / of /
State Zip Code	Site Con	How All	Lab Contact		Analysis (Attach list if more space is needed)	
ocation (State)	CarrierA	Carrier/Waybill Number		(50 \$70/\ S	-	Special Instructions/
ct/Purchase Order/Cluote No.		Matrix	Containers & Preservatives	NATS ISCB)		Conditions of Receipt
Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date Time	suoeupA bed. IloS	Angres.  \$OSCH  \$ONH  IOH  HOEN  \oddsyctory	; ; ;	Á	
51A #2	12/19/15 10:00	×	×	~	pojen	STATES AND TEL
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			+111	1/4		
				)		
Possible Hazard Identification  Non-Hazard	☐ Poison B ☐ Unknown	Sample Disposal	ĭ¥ Disposal By Lab	Archive For	(A fee may be a Months longer than 1 m	(A fee may be assessed if samples are retained longer than 1 month)
Turn Around Time Required  24 Hours	21 Days Other		Ö	ify)		
OBy Howard	Date;	15 15:30	1. Received By	3		1500 Time
	Date / 01918	-	2. Received Striff	YOU CAT	JIE 0200	
3. Relinquished By	Date	Time	3. Meeived By			Date Time
otac						

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample, PINK - Field Copy

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10/21/2015

Client: New York State D.E.C.

Job Number: 480-89392-1

Login Number: 89392 List Source: TestAmerica Buffalo

List Number: 1

Creator: Williams, Christopher S

Question	Answer	Commen
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
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	
s the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and he 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	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	AECOM
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

TestAmerica Buffalo