Appendix R - 90-Day Follow-Up Request and ODEQ Response

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November 12, 2015

By Federal Express (Tracking Number: 774959919868)

Donald A. Hensch, P.E.
Engineering Manager, RCRA Permits and Corrective Action
Land Protection Division
Oklahoma Department of Environmental Quality
707 N. Robinson
Oklahoma City, OK 73102

RE: 90-day Follow-Up Report
Regarding the August 14, 2015 Notification of Statistically Significant Results
Stormwater Retention Pond, Permit No. 000396549
Wynnewood Refining Company, LLC
Wynnewood, Oklahoma

Dear Mr. Hensch:

On behalf of Wynnewood Refining Company (WRC), please find this letter WRC's follow-up report regarding our August 14, 2015 notification that a statistically significant result was indicated in the June 2015 groundwater samples from a well associated with the closed Storm Water Retention Pond (SWRP) at the Wynnewood Refinery in Wynnewood, Oklahoma. This follow-up report is being submitted in accordance with paragraph b of Section V-H4 of our RCRA Operations and Post-Closure Permit No. 000396549.

Please call me at the number above if you have any questions.

Sincerely,

Sam A. McCormick
Project Manager

SAM:jdm

cc: Curtis Miles – Wynnewood Refining Company, LLC
Bob Morris – Wynnewood Refining Company, LLC
Jerome McSorley – CVR Energy, Inc.
Christine Warford – WSP | Parsons Brinkerhoff

Enclosure:
90-day Follow-Up Report
Regarding the August 14, 2015
Notification of Statistically Significant Results
Stormwater Retention Pond
Wynnewood Refining Company, LLC
November 12, 2015

June 2015 RCRA Sampling Event

The June 2015 RCRA sampling event for the closed Storm Water Retention Pond (SWRP) was atypical in several respects. Due to significant and prolonged rainfall during the spring, the groundwater elevations recorded in June 2015 were the highest elevations recorded in the last eight years and were three to five feet higher than the groundwater elevations recorded in December 2014. Savage Creek, which is located along the southeast side of the SWRP, is typically an intermittent "loosing" stream with the base of the channel above the water table. However, during the high groundwater elevations in June 2015, the bank of Savage Creek became a localized groundwater discharge source (i.e., a "gaining" stream). The net effect of the excessive rainfall was to temporarily alter the prevailing southwest groundwater gradient at the SWRP (Figure 1, December 2014) and swing it around to the south-southeast, perpendicular to the axis of the Savage Creek channel (Figure 2, June 2015). For reference, SWM-5 is typically the upgradient well for the SWRP, but in June 2015 the upgradient well was SMW-11.

Second, the purge water produced prior to sampling the wells at the SWRP in June 2015 was unusually turbid. Although the purge parameters eventually stabilized, the purge water had a distinct orange tint in some wells. Wynnewood Refining Company (WRC) believes this is related to the washing of fines into the well from groundwater rising into the dry unsaturated zone above the ordinary high water table elevation.

Third, unusually high concentrations of arsenic were reported from the June 2015 sampling event in three monitoring wells (SMW-9D, SMW-11, and SMW-21). Arsenic concentrations decreased from December to June in the other five monitoring wells. No other monitoring parameter (DRO, GRO, BETX, barium, chromium, lead, selenium, and vanadium) showed any indication of a significant change. A comparison of the arsenic concentrations from December 2014 and June 2015 are shown on Table 1.

Table 1: December 2014 and June 2015 SWRP well arsenic analytical data (mg/l), SWRP wells

	SMW-5	SMW-5D	SMW-9	SMW-9D	SMW-11	SMW-11D	SMW-21	SMW-21D
December 2014	0.0022	0.0095	0.0086	0.016	0.0242	0.0163	0.0203	0.01475
June 2015	0.0017	0.0084	0.0026	0.209	0.03	0.0093	0.052	0.0113

Using the Mann-Kendall trend evaluation specified in the permit, a statistically significant increase in arsenic was indicated only for monitoring well SMW-11.

September 2015 Sampling Event

In anticipation of approval of the Comprehensive Remediation Plan submitted to ODEQ on August 14, 2015, the wells at the SWRP were redeveloped in August 2015 and resampled in September 2015 as part of a site-wide groundwater sampling event using all available monitoring wells. A quarterly groundwater elevation measurement event also took place in September 2015.

The monitoring wells at the SWRP were redeveloped on August 23, 2015. The wells were redeveloped with the aid of a drill rig-mounted diaphragm style pump that created a vacuum to purge groundwater. The pump consisted of tubing that matched the inner diameter of the well casing, acting as a surge block during pumping. The wells yielded between 15 and 60 gallons of groundwater during redevelopment. The produced groundwater was transferred to the Refinery wastewater treatment plant. Only one well (SWM-21D) had any sediment at the bottom of the well, which was removed during the redevelopment. The initially produced water from two wells (SMW-9D and SMW-21D) was cloudy with red sediment for the first 5 gallons of water, and then cleared up as redevelopment continued. A third well (SMW-5D) initially produced a small amount of fine grained black material, but this quickly cleared up. The other seven wells produced only clear water throughout the

redevelopment process. Rusty encrustations were cleaned off of two of the dedicated low-flow sampling pumps (SMW-9D and SWM-11D) before replacing them in the wells.

Groundwater elevation measurements for the SWRP were collected on September 3, 2015. Groundwater elevations in September 2015 were 1 to 2 feet lower than in June 2015. The local groundwater gradient in the vicinity of the SWRP and Savage Creek in September 2015 (Figure 3) is similar to the June 2015 gradient. Site-wide, however, groundwater gradients are returning to the more normal regional southwest gradient. In September 2015, SWM-5 and SMW-11 were essentially both upgradient wells, with the groundwater elevation of SMW-11 being 0.22 feet higher than the groundwater elevation in SMW-5 (similar to the difference in June 2015).

Groundwater samples were collected from the SWRP monitoring wells on September 8 and 9, 2015, using the dedicated low-flow sampling pumps. The laboratory analytical report for the monitoring wells at the SWRP is included as Attachment A.

Table 2 below compares arsenic concentrations between the June 2015 and September 2015 sampling events.

Table 2: June 2015 and September 2015 arsenic analytical data (mg/l), SWRP wells

	SMW-5	SMW-5D	SMW-9	SMW-9D	SMW-11	SMW-11D	SMW-21	SMW-21D
June 2015	0.0017	0.0084	0.0026	0.209	0.03	0.0093	0.052	0.0113
September 2015	ND(0.005)	0.011	0.006	0.014	0.038	0.013	0.021	0.015

A Mann-Kendall analysis of the data from the September 2015 sampling event (Attachment B) concludes that the increasing trend for arsenic in SMW-11 continues to be statistically significant. However, an intrawell parametric tolerance limit test for SMW-11 could not confirm any statistically significant increase.

Although the data set for the June 2015 statistical analysis did not indicate a statistically significant increase for arsenic in SWM-21, because the Mann-Kendall output is from a rolling data set of the preceding 16 sampling events, the result for the September 2015 data set (dropping off the oldest of the data points from the June 2015 analysis) concluded that the increasing trend for arsenic in SMW-21 is also statistically significant. The actual concentration for arsenic at SMW-21 in September 2015 was half the value of the concentration in June 2015 and, if the June 2015 sampling result is considered an outlier, the September value falls in line with prior sampling results that are not statistically significant. The intrawell parametric tolerance limit test for SMW-21 confirms that the September 2015 value is not statistically significant.

There were no statistically significant trends identified in any other wells for arsenic, nor for any other parameter, in the September 2015 data.

Additional wells in the vicinity of the SWRP were sampled in conjunction with the site-wide groundwater sampling event during September 2015 using low-flow sampling techniques and a portable pneumatic pump that was decontaminated between wells. Groundwater samples were collected from 17 additional wells in the vicinity of the SWRP. The arsenic concentration values for these wells are shown on Table 1. The analytical data reports for the complete site-wide sampling event, along with isoconcentration maps for selected parameters, will be submitted to ODEQ with the next Semi-Annual Groundwater Remediation Progress Report in March 2016.

Table 3: September 2015 arsenic analytical data (mg/l), non-SWRP wells

Monitoring Well	Arsenic Concentration	Monitoring Well	Arsenic Concentration
Shallow Wells		**Deep Wells**	
SMW-1	ND(0.005)	SMW-2D	0.038
SMW-2	ND(0.005)	SMW-4D	0.012
SMW-3	ND(0.005)	SMW-10D	0.022
SMW-4	ND(0.005)	SMW-13D	0.011
SMW-7	ND(0.005)	SMW-14D	ND(0.005)
SMW-10	ND(0.005)	SMW-22D	ND(0.005)
SMW-13	0.03		
SMW-14	0.013		
SMW-19	0.022		
SMW-23	0.053		
LMW-3-O	ND(0.005)		

One well, SMW-13, located cross gradient and 200 feet from the SWRP and on the other side of Savage Creek has a shallow aquifer arsenic value similar to the value observed in SMW-11. Monitoring well, SMW-10D, located 120 feet upgradient from SMW-11D reported an arsenic concentration in the deeper portion of the alluvial aquifer at twice the value of that reported in SMW-11D for September 2015.

An isoconcentration map of dissolved arsenic in groundwater in the vicinity of the SWRP is shown on Figure 4 for the wells screened in the shallowest part of the alluvial aquifer. Figure 5 is an isoconcentration map for arsenic in the wells screened deeper in the alluvial aquifer.

Discussion

Two wells (SMW-9D and SWM-21) show a dramatic decrease in arsenic concentrations between June and September 2015. The other eight wells show a slight increase in arsenic concentrations indicating that these wells were relatively clean and redevelopment made no incremental difference in the amount of entrained sediment in the groundwater samples. The decrease in arsenic concentration for SWM-9D is most likely the result of removing sediment from this well during redevelopment. The high arsenic concentration in SMW-21 in June 2015 can be considered an anomalous outlier that could not be confirmed by the subsequent sampling event.

The mapped area of the dissolved arsenic plume in the vicinity of the SWRP is approximately four times the size of the SWRP. The long axis of the plume in the shallowest part of the alluvial aquifer is about 700 feet and the width is about 250 feet (Figure 4). The long axis of the plume is oriented east-west, extending about 500 feet east of the SWRP and bears no discernable relationship to current or typical groundwater gradients. The arsenic plume in the deeper part of the alluvial aquifer is more bell shaped, with a north-south axis of about 500 feet and an east-west axis of about 600 feet (Figure 5). The highest concentration of arsenic in these deeper wells is found at SMW-10D, upgradient from the SWRP. There are other, unrelated, dissolved arsenic plumes within the Refinery.

It is clear from the distribution of dissolved arsenic in the shallow and deeper parts of the alluvial aquifer that the SWRP is not the source of the arsenic in the groundwater. The location of the SWRP is merely coincidental with the plumes as arsenic concentrations are evident both upgradient (deeper wells) and cross gradient (shallow wells) at concentrations equal to or greater than those present in wells at the SWRP.

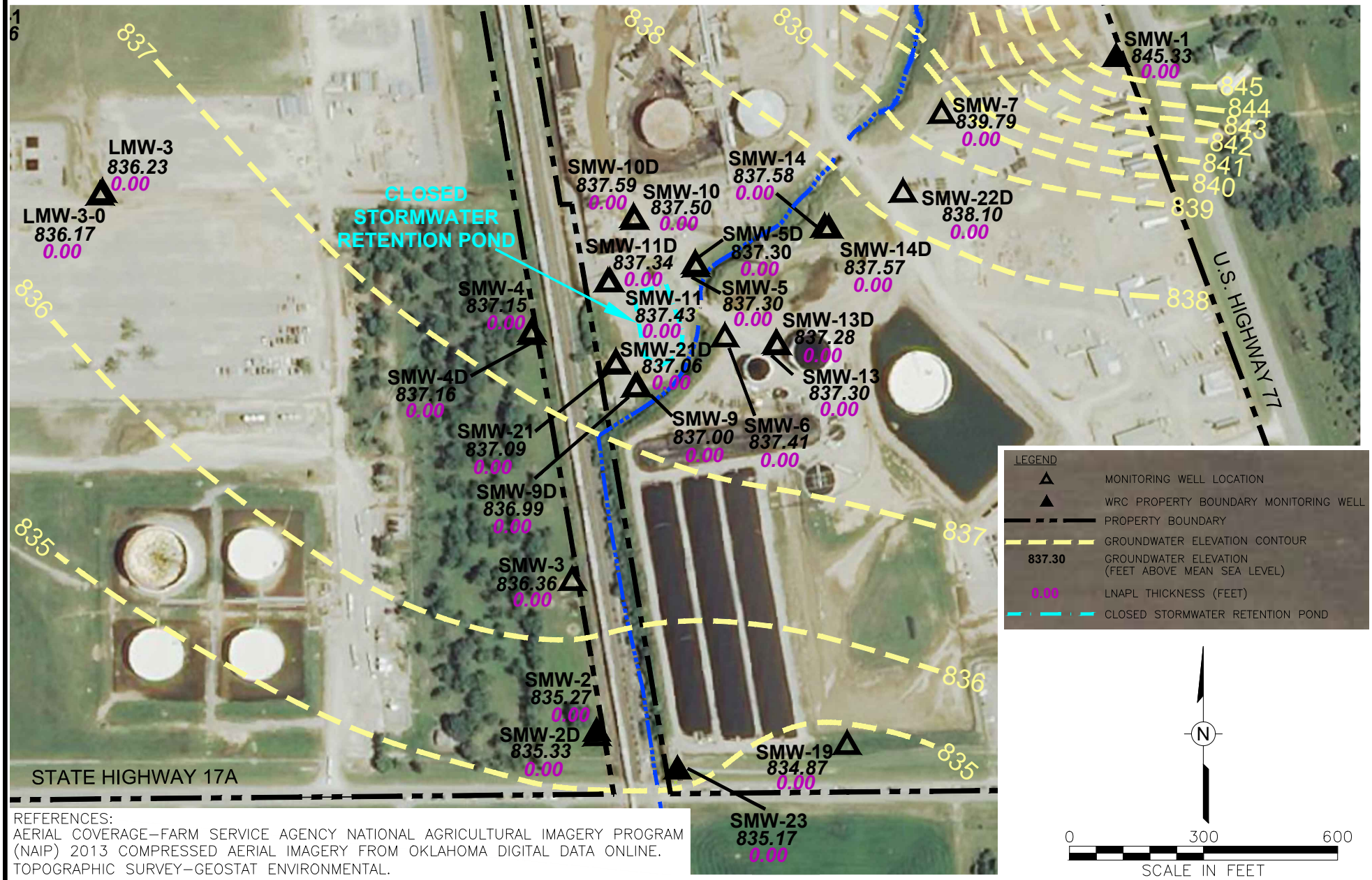
Conclusions

WRC concludes that, based on the evidence from the September 2015 site-wide sampling event, the arsenic in groundwater at the SWRP is from a source other than the regulated unit. The isoconcentration plume maps clearly demonstrate that the distribution of arsenic is unrelated to the location of the SWRP.

The statistically significant increase in arsenic in monitoring well SMW-11 in June 2015 was not the result from an error in sampling, analysis, or evaluation; therefore, WRC does not believe that any changes to the detection monitoring program are necessary at this time.

WRC believes that the southeast groundwater gradient measured in June and September 2015 is a temporary phenomenon related to the very heavy spring rainfall in this area. WRC will continue to monitor groundwater elevations quarterly. Should groundwater fail to return to its historical south-southwest gradient, WRC will submit a permit modification to reorganize the SWRP monitoring well network and recognize SMW-11 as an upgradient well.

Figures



REFERENCES:
AERIAL COVERAGE–FARM SERVICE AGENCY NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) 2013 COMPRESSED AERIAL IMAGERY FROM OKLAHOMA DIGITAL DATA ONLINE.
TOPOGRAPHIC SURVEY–GEOSTAT ENVIRONMENTAL.

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
123 North Third Street, Suite 507
Minneapolis, Minnesota 55401
(612) 343-0510
www.wspgroup.com/usa

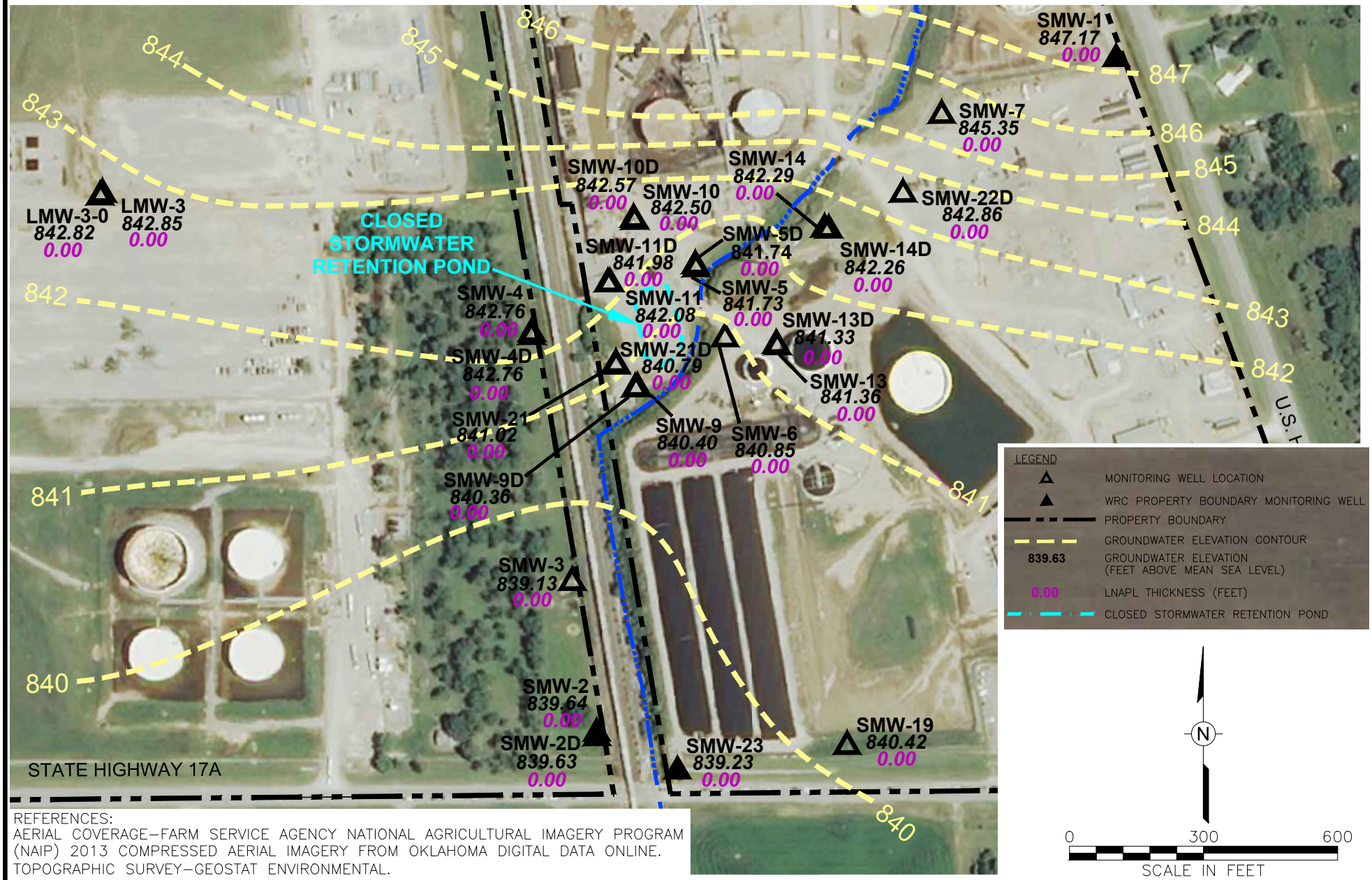
Figure 1

GROUNDWATER ELEVATION
MONITORING WELL LOCATION MAP
(DECEMBER 2014)

WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

PREPARED FOR
WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

Drawn By: LS 11/9/2015
Checked:
Approved:
DWG Name: 00028249–154



REFERENCES:
AERIAL COVERAGE–FARM SERVICE AGENCY NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) 2013 COMPRESSED AERIAL IMAGERY FROM OKLAHOMA DIGITAL DATA ONLINE.
TOPOGRAPHIC SURVEY–GEOSTAT ENVIRONMENTAL.

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
123 North Third Street, Suite 507
Minneapolis, Minnesota 55401
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www.wspgroup.com/usa

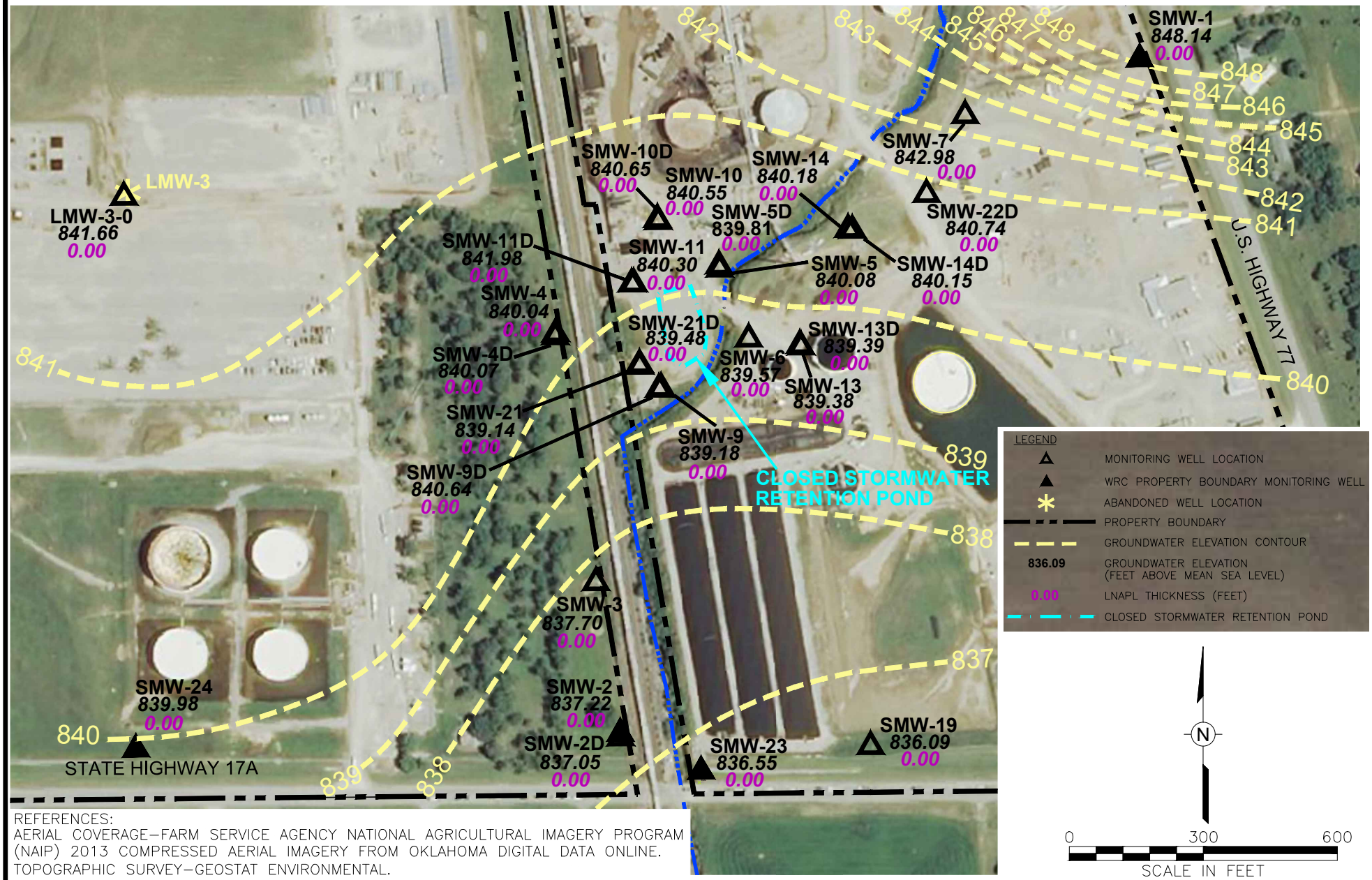
Figure 2

GROUNDWATER ELEVATION
MONITORING WELL LOCATION MAP
(JUNE 2015)

WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

PREPARED FOR
WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

Drawn By: LS 11/9/2015
Checked:
Approved:
DWG Name: 00028249–191



REFERENCES:
AERIAL COVERAGE–FARM SERVICE AGENCY NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) 2013 COMPRESSED AERIAL IMAGERY FROM OKLAHOMA DIGITAL DATA ONLINE.
TOPOGRAPHIC SURVEY–GEOSTAT ENVIRONMENTAL.

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WSP USA Corp.
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www.wspgroup.com/usa

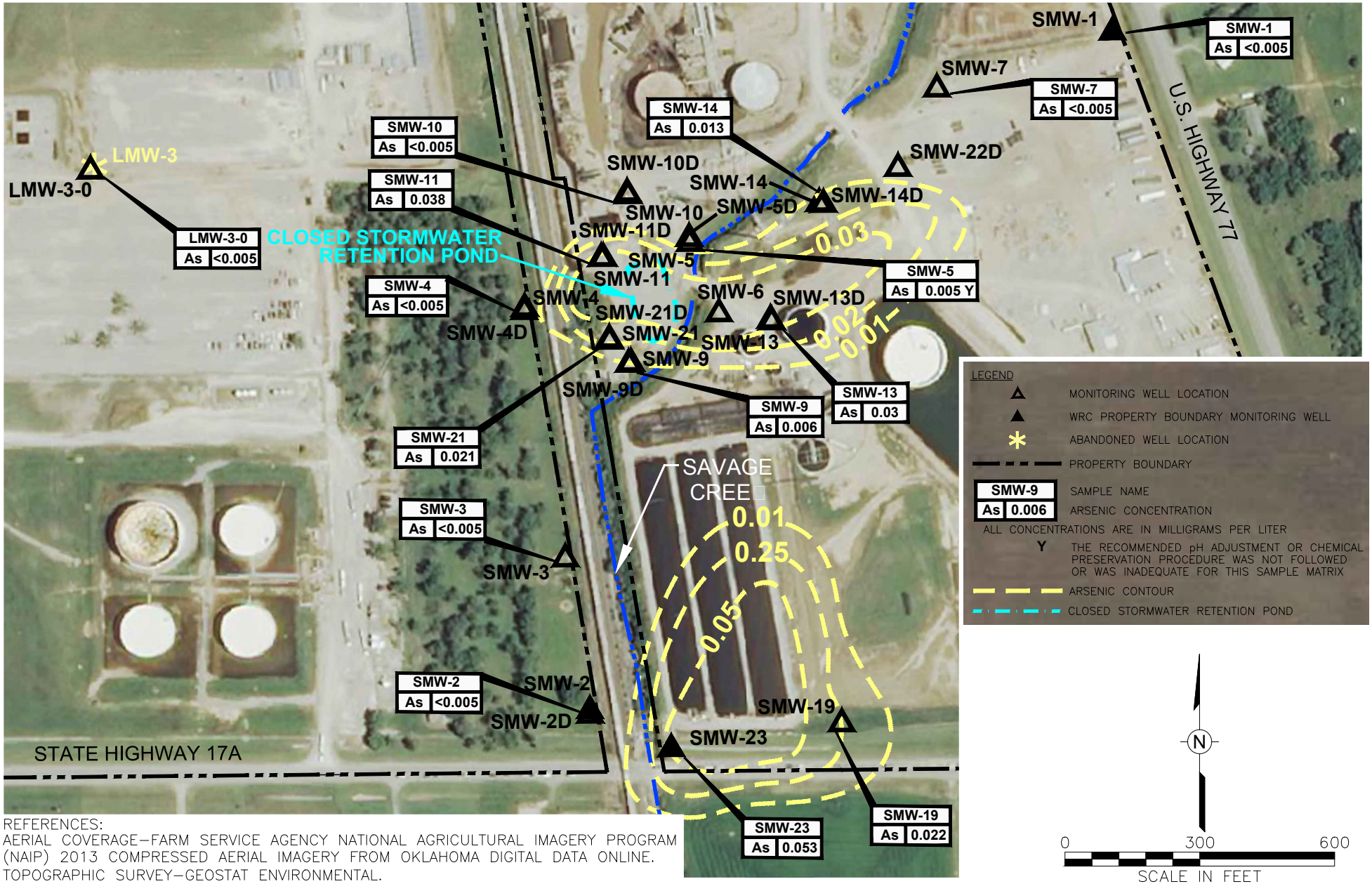
Figure 3

GROUNDWATER ELEVATION
MONITORING WELL LOCATION MAP
(SEPTEMBER 2015)

WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

PREPARED FOR
WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

Drawn By: LS 11/9/2015
Checked:
Approved:
DWG Name: 00028249–200



REFERENCES:
AERIAL COVERAGE–FARM SERVICE AGENCY NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) 2013 COMPRESSED AERIAL IMAGERY FROM OKLAHOMA DIGITAL DATA ONLINE.
TOPOGRAPHIC SURVEY–GEOSTAT ENVIRONMENTAL.

WSP | PARSONS BRINCKERHOFF
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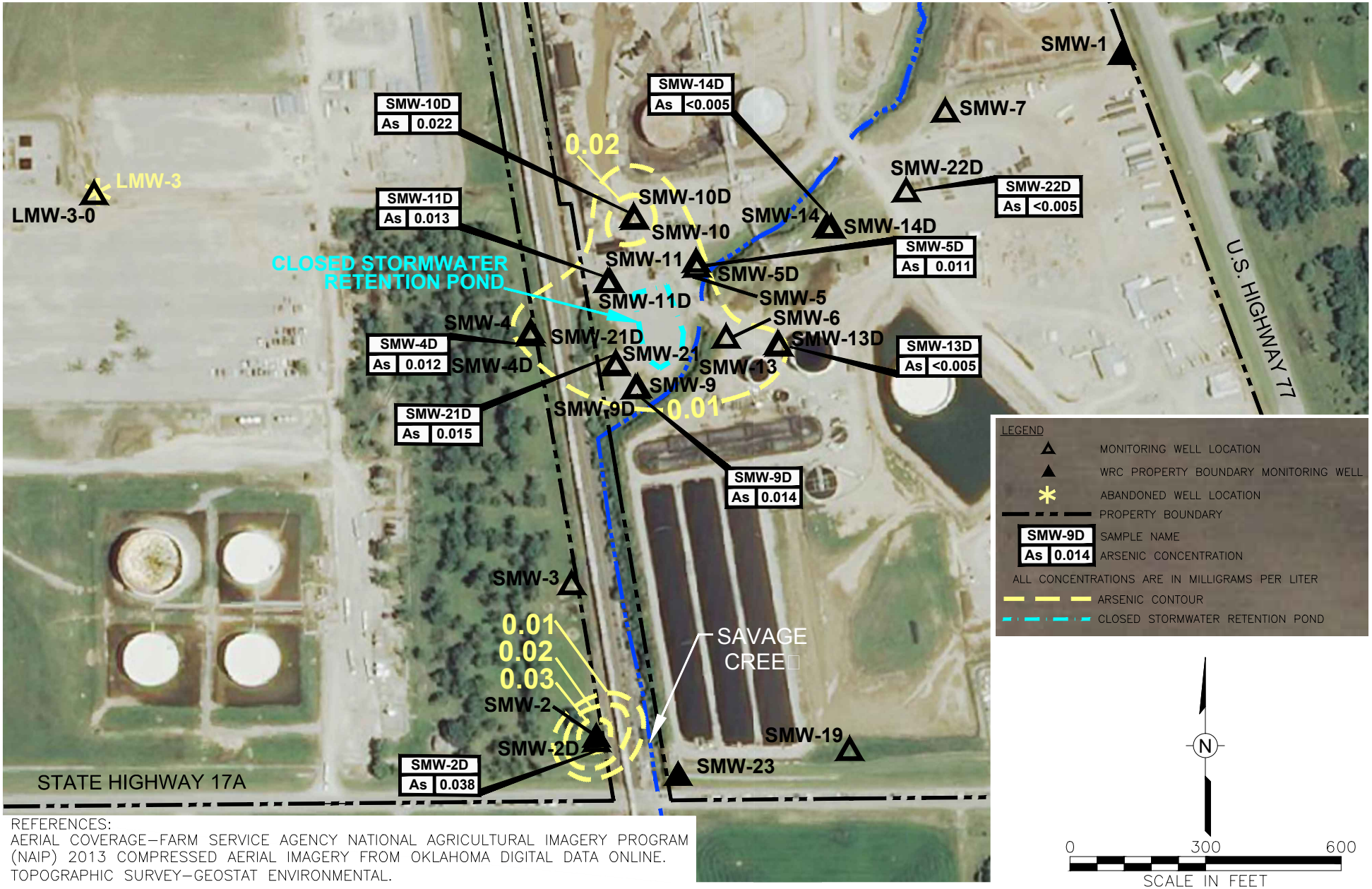
Figure 4

TOTAL ARSENIC IN SHALLOW GROUNDWATER (SEPTEMBER 2015)

WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

PREPARED FOR
WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

Drawn By: LS 11/9/2015
Checked:
Approved:
DWG Name: 00028249–201



REFERENCES:
AERIAL COVERAGE–FARM SERVICE AGENCY NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP) 2013 COMPRESSED AERIAL IMAGERY FROM OKLAHOMA DIGITAL DATA ONLINE.
TOPOGRAPHIC SURVEY–GEOSTAT ENVIRONMENTAL.

WSP | PARSONS BRINCKERHOFF
WSP USA Corp.
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Minneapolis, Minnesota 55401
(612) 343-0510
www.wspgroup.com/usa

Figure 5

TOTAL ARSENIC IN DEEP GROUNDWATER
(SEPTEMBER 2015)

WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

PREPARED FOR
WYNNEWOOD REFINING COMPANY, LLC
WYNNEWOOD, OKLAHOMA

Drawn By: LS 11/9/2015
Checked:
Approved:
DWG Name: 00028249–202

Attachment A – Analytical Report

Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date and Time Received: 09/11/2015 1630
Continental File No.: 8462
Continental Order No.: 128433
Project ID: WRC Wynnewood

Dear Mr. McCormick:

This laboratory report, containing the samples indicated below, includes 72 pages for the analytical report, 1 page(s) for the chain of custody and/or analysis request, and 7 page(s) for the sample receipt form.

CAS LAB ID #	SAMPLE DESCRIPTION	SAMPLE TYPE	DATE SAMPLED
15090819	WRCSMW-5(090815)	Liquid	9/8/2015
15090820	WRCSMW-5D(090815)	Liquid	9/8/2015
15090821	WRCEB(090815)	Liquid	9/8/2015
15090822	WRCSMW-9(090815)	Liquid	9/8/2015
15090823	WRCSMW-9D(090815)	Liquid	9/8/2015
15090824	WRCDUP1	Liquid	9/8/2015
15090825	WRCSMW-21(090915)	Liquid	9/9/2015
15090825R	WRCSMW-21(090915)	Liquid	9/9/2015
15090826	WRCSMW-21D(090915)	Liquid	9/9/2015
15090827	WRCSMW-11(090915)	Liquid	9/9/2015
15090828	WRCSMW-11D(090915)	Liquid	9/9/2015

The Appendix and Quality Control sections are integral parts of this laboratory report and may contain important data qualifiers.

All results are reported on a wet weight basis unless otherwise stated.

Samples will be retained for thirty days unless Continental is otherwise notified.

Continental is accredited by the State of Kansas through the National Environmental Laboratory Accreditation Program (NELAP). The results contained in this report were obtained using Continental's Standard Operating Procedures. These procedures are in substantial compliance with the approved methods referenced and the standards published by NELAP unless otherwise noted in the Appendix and Quality Control sections of this report.

Thank you for choosing Continental for this project.

CONTINENTAL ANALYTICAL SERVICES, INC.

Clifford J. Baker
Technical Manager
cjbaker@cas-lab.com

Gregory J. Groene
Project Manager
gjgroene@cas-lab.com

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090819
Sample Description: WRCSMW-5(090815)

Date Sampled: 09/08/2015
Time Sampled: 1100

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	28	µg/L	1.0	20	7194/393
Oklahoma DRO	330	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090819
Sample Description: WRCSMW-5(090815)

Date Sampled: 09/08/2015
Time Sampled: 1100

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090819
Sample Description: WRCSMW-5(090815)

Date Sampled: 09/08/2015
Time Sampled: 1100

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(50) M	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(50) M	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	ND(0.5)	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090819
Sample Description: WRCSMW-5(090815)

Date Sampled: 09/08/2015
Time Sampled: 1100

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	ND(0.005) Y	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.142 Y	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001) Y	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005) Y	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001) Y	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002) Y	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005) Y	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002) Y	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1124	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1216	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 0839	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1603	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1428	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0854	150916-2	7IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090819

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090820
Sample Description: WRCSMW-5D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1140

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	490	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090820
Sample Description: WRCSMW-5D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1140

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/159
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/159
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090820
Sample Description: WRCSMW-5D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1140

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
2-Butanone	ND(10)	µg/L	1.0	10	7466/159
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
2-Hexanone	ND(5)	µg/L	1.0	5	7466/159
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/159
Acetone	ND(10)	µg/L	1.0	10	7466/159
Acrolein	ND(25) EV	µg/L	1.0	25	7466/159
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/159
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/159
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/159
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/159
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
MTBE	ND(0.5)	µg/L	1.0	0.5	7466/159
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/159
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/159
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/159
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/159
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090820
Sample Description: WRCSMW-5D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1140

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/159
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/159
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/159
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/159
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/159
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/159
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/159
Arsenic, Total, ICP-MS	0.011	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.203	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1149	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1245	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 0925	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/17/15 1507	1MS8260	1MS8260	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1433	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0900	150916-2	7IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090820

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090821
Sample Description: WRCEB(090815)

Date Sampled: 09/08/2015
Time Sampled: 1300

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	ND(100)	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090821
Sample Description: WRCEB(090815)

Date Sampled: 09/08/2015
Time Sampled: 1300

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090821
Sample Description: WRCEB(090815)

Date Sampled: 09/08/2015
Time Sampled: 1300

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	0.8	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	ND(0.5)	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090821
Sample Description: WRCEB(090815)

Date Sampled: 09/08/2015
Time Sampled: 1300

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1214	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1314	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1011	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1638	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1437	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0905	150916-2	7IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090821

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090822
Sample Description: WRCSMW-9(090815)

Date Sampled: 09/08/2015
Time Sampled: 1405

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	38 G	µg/L	1.0	20	7194/393
Oklahoma DRO	1200	µg/L	4.0	400	7272/365
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090822
Sample Description: WRCSMW-9(090815)

Date Sampled: 09/08/2015
Time Sampled: 1405

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090822
Sample Description: WRCSMW-9(090815)

Date Sampled: 09/08/2015
Time Sampled: 1405

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	19.0	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090822
Sample Description: WRCSMW-9(090815)

Date Sampled: 09/08/2015
Time Sampled: 1405

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	1.4	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	0.006	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.056	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1238	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/22/15 2231	150914-6	2EX4265	SPA	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1058	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1714	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1441	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0910	150916-2	7IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090822

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090823
Sample Description: WRCSMW-9D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	380	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090823
Sample Description: WRCSMW-9D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090823
Sample Description: WRCSMW-9D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	1.2	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090823
Sample Description: WRCSMW-9D(090815)

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	0.014	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.161	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1303	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1411	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1146	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1749	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1446	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0916	150916-2	7IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090823

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090824
Sample Description: WRCDUP1

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	320	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090824
Sample Description: WRCDUP1

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090824
Sample Description: WRCDUP1

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	1.1	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090824
Sample Description: WRCDUP1

Date Sampled: 09/08/2015
Time Sampled: 1450

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	0.014	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.16	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1328	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1440	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1234	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1825	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1450	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0932	150916-2	8IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090824

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	1100	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(3)	µg/L	5.0	3	7466/158
1,1,1-Trichloroethane	ND(3)	µg/L	5.0	3	7466/158
1,1,2,2-Tetrachloroethane	ND(3)	µg/L	5.0	3	7466/158
1,1,2-Trichloroethane	ND(3)	µg/L	5.0	3	7466/158
1,1-Dichloroethane	ND(3)	µg/L	5.0	3	7466/158
1,1-Dichloroethene	ND(3)	µg/L	5.0	3	7466/158
1,1-Dichloropropene	ND(3)	µg/L	5.0	3	7466/158
1,2,3-Trichloropropane	ND(5.0)	µg/L	5.0	5	7466/158
1,2,4-Trimethylbenzene	ND(3)	µg/L	5.0	3	7466/158
1,2-Dibromo-3-chloropropane	ND(25)	µg/L	5.0	25	7466/158
1,2-Dibromoethane	ND(3)	µg/L	5.0	3	7466/158
1,2-Dichlorobenzene	ND(3)	µg/L	5.0	3	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(3)	µg/L	5.0	3	7466/158
1,2-Dichloropropane	ND(3)	µg/L	5.0	3	7466/158
1,3,5-Trimethylbenzene	ND(3)	µg/L	5.0	3	7466/158
1,3-Dichlorobenzene	ND(3)	µg/L	5.0	3	7466/158
1,3-Dichloropropane	ND(3)	µg/L	5.0	3	7466/158
1,4-Dichlorobenzene	ND(3)	µg/L	5.0	3	7466/158
2,2-Dichloropropane	ND(3)	µg/L	5.0	3	7466/158
2-Butanone	ND(50)	µg/L	5.0	50	7466/158
2-Chlorotoluene	ND(3)	µg/L	5.0	3	7466/158
2-Hexanone	ND(30)	µg/L	5.0	30	7466/158
4-Chlorotoluene	ND(3)	µg/L	5.0	3	7466/158
4-Isopropyltoluene	ND(3)	µg/L	5.0	3	7466/158
4-Methyl-2-Pentanone	ND(30)	µg/L	5.0	30	7466/158
Acetone	ND(50)	µg/L	5.0	50	7466/158
Acrolein	ND(130) EV	µg/L	5.0	130	7466/158
Acrylonitrile	ND(50)	µg/L	5.0	50	7466/158
Benzene	ND(3)	µg/L	5.0	3	7466/158
Bromobenzene	ND(3)	µg/L	5.0	3	7466/158
Bromochloromethane	ND(5.0)	µg/L	5.0	5	7466/158
Bromodichloromethane	ND(3)	µg/L	5.0	3	7466/158
Bromoform	ND(3)	µg/L	5.0	3	7466/158
Bromomethane	ND(5.0)	µg/L	5.0	5	7466/158
Carbon disulfide	ND(5.0)	µg/L	5.0	5	7466/158
Carbon tetrachloride	ND(3)	µg/L	5.0	3	7466/158
Chlorobenzene	ND(3)	µg/L	5.0	3	7466/158
Chloroethane	ND(3)	µg/L	5.0	3	7466/158
Chloroform	ND(3)	µg/L	5.0	3	7466/158
Chloromethane	ND(3)	µg/L	5.0	3	7466/158
Dibromochloromethane	ND(3)	µg/L	5.0	3	7466/158
Dibromomethane	ND(5.0)	µg/L	5.0	5	7466/158
Dichlorodifluoromethane	ND(3) QC	µg/L	5.0	3	7466/158
Ethylbenzene	ND(3)	µg/L	5.0	3	7466/158
Hexane	ND(5.0)	µg/L	5.0	5	7466/158
Isopropylbenzene	ND(3)	µg/L	5.0	3	7466/158
MTBE	ND(3)	µg/L	5.0	3	7466/158
Methyl iodide	ND(5.0)	µg/L	5.0	5	7466/158
Methylene chloride	ND(3)	µg/L	5.0	3	7466/158
Styrene	ND(3)	µg/L	5.0	3	7466/158
Tetrachloroethene	ND(3)	µg/L	5.0	3	7466/158
Toluene	ND(3)	µg/L	5.0	3	7466/158
Trichloroethene	ND(3)	µg/L	5.0	3	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(3)	µg/L	5.0	3	7466/158
Vinyl acetate	ND(30) EV	µg/L	5.0	30	7466/158
Vinyl chloride	ND(3) QC	µg/L	5.0	3	7466/158
cis-1,2-Dichloroethene	ND(3)	µg/L	5.0	3	7466/158
cis-1,3-Dichloropropene	ND(3)	µg/L	5.0	3	7466/158
m+p-Xylene	ND(5.0)	µg/L	5.0	5	7466/158
n-Butylbenzene	ND(3)	µg/L	5.0	3	7466/158
n-Propylbenzene	ND(3)	µg/L	5.0	3	7466/158
o-Xylene	ND(3)	µg/L	5.0	3	7466/158
sec-butylbenzene	ND(3)	µg/L	5.0	3	7466/158
tert-Butylbenzene	ND(3)	µg/L	5.0	3	7466/158
trans-1,2-Dichloroethene	ND(3)	µg/L	5.0	3	7466/158
trans-1,3-dichloropropene	ND(3)	µg/L	5.0	3	7466/158
trans-1,4-Dichloro-2-butene	ND(25)	µg/L	5.0	25	7466/158
Cyclohexane	ND(25)	µg/L	5.0	25	7466/158
Methylcyclohexane	ND(25)	µg/L	5.0	25	7466/158
Arsenic, Total, ICP-MS	0.021	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.278	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1353	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1509	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1322	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 2200	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1454	150916-2	2MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 0937	150916-2	8IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090825

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825R
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

A laboratory number ending with R is from a second preparation and/or analysis of the sample.

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/161
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/161
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/161
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/161
2-Butanone	ND(10)	µg/L	1.0	10	7466/161
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/161
2-Hexanone	ND(5)	µg/L	1.0	5	7466/161
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/161
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/161
4-Methyl-2-Pentanone	ND(5) QC	µg/L	1.0	5	7466/161
Acetone	ND(10)	µg/L	1.0	10	7466/161
Acrolein	ND(25) EV	µg/L	1.0	25	7466/161
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/161
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/161
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/161
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/161
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/161
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/161
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/161
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/161

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090825R
Sample Description: WRCSMW-21(090915)

Date Sampled: 09/09/2015
Time Sampled: 0936

A laboratory number ending with R is from a second preparation and/or analysis of the sample.

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/161
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/161
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/161
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
MTBE	2.0	µg/L	1.0	0.5	7466/161
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/161
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/161
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/161
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/161
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/161
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/161
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/161
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/161
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/161
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/161
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/161
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/161
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/161
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/161
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/161
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/161
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/161
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/161
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/161

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
M8260B Volatiles	N/A	09/21/15 1935	1MS8264	1MS8264	GMA	8260B
Volatile Analysis Preparation Method						5030B

Conclusion of Lab Number: 15090825R

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090826
Sample Description: WRCSMW-21D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1040

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	ND(20)	µg/L	1.0	20	7194/393
Oklahoma DRO	380	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
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10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090826
Sample Description: WRCSMW-21D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1040

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090826
Sample Description: WRCSMW-21D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1040

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	0.8	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090826
Sample Description: WRCSMW-21D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1040

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	0.015	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.202	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1418	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1538	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1540	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1902	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1521	150916-2	3MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 1003	150916-2	8IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
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Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090826

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090827
Sample Description: WRCSMW-11(090915)

Date Sampled: 09/09/2015
Time Sampled: 1126

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	73	µg/L	1.0	20	7194/395
Oklahoma DRO	3400	µg/L	5.0	500	7272/365
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/183
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/183
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/183
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/183
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/183
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/183
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/183
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/183
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/183
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/183
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/183
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/183
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/183
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/183
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/183
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/183
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/183
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/183

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090827
Sample Description: WRCSMW-11(090915)

Date Sampled: 09/09/2015
Time Sampled: 1126

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/183
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/183
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/183
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/183
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/183
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/183
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/183
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/183
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/183
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/183
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/183
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/183
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/183
Phenanthrene	ND(5)	µg/L	1.0	5	7470/183
Phenol	ND(5)	µg/L	1.0	5	7470/183
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/183
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/159
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/159
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090827
Sample Description: WRCSMW-11(090915)

Date Sampled: 09/09/2015
Time Sampled: 1126

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/159
2-Butanone	ND(10)	µg/L	1.0	10	7466/159
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
2-Hexanone	ND(5)	µg/L	1.0	5	7466/159
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/159
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/159
Acetone	ND(10)	µg/L	1.0	10	7466/159
Acrolein	ND(25) EV	µg/L	1.0	25	7466/159
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/159
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/159
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/159
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/159
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/159
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/159
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/159
Isopropylbenzene	4.9	µg/L	1.0	0.5	7466/159
MTBE	0.6	µg/L	1.0	0.5	7466/159
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/159
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/159
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/159
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/159
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090827
Sample Description: WRCSMW-11(090915)

Date Sampled: 09/09/2015
Time Sampled: 1126

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/159
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/159
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/159
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/159
n-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
n-Propylbenzene	2.1	µg/L	1.0	0.5	7466/159
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/159
sec-butylbenzene	1.4	µg/L	1.0	0.5	7466/159
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/159
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/159
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/159
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/159
Arsenic, Total, ICP-MS	0.038	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.4	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/23/15 1047	1GC2266	1GC2266	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/22/15 2300	150914-6	2EX4265	SPA	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1627	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/17/15 1543	1MS8260	1MS8260	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1525	150916-2	3MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 1009	150916-2	8IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090827

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090828
Sample Description: WRCSMW-11D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1206

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Oklahoma GRO	36	µg/L	1.0	20	7194/393
Oklahoma DRO	350	µg/L	1.0	100	7272/371
TCL/HSL Extractables					
1,2,4-Trichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/184
1,2-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/184
1,3-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/184
1,4-Dichlorobenzene	ND(5.0)	µg/L	1.0	5.0	7470/184
2,4,5-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/184
2,4,6-Trichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/184
2,4-Dichlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/184
2,4- and 2,5-Dimethylphenol	ND(10)	µg/L	1.0	10	7470/184
2,4-Dinitrophenol	ND(25)	µg/L	1.0	25	7470/184
2,4-Dinitrotoluene	ND(5)	µg/L	1.0	5	7470/184
2,6-Dinitrotoluene	ND(5.0)	µg/L	1.0	5.0	7470/184
2-Chloronaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/184
2-Chlorophenol	ND(5.0)	µg/L	1.0	5.0	7470/184
2-Methylnaphthalene	ND(5.0)	µg/L	1.0	5.0	7470/184
2-Nitroaniline	ND(50)	µg/L	1.0	50	7470/184
2-Nitrophenol	ND(5.0)	µg/L	1.0	5.0	7470/184
3,3'-Dichlorobenzidine	ND(10) EV	µg/L	1.0	10	7470/184
3-Nitroaniline	ND(10)	µg/L	1.0	10	7470/184
4,6-Dinitro-2-Methylphenol	ND(25)	µg/L	1.0	25	7470/184
4-Bromophenyl-Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/184
4-Chloro-3-Methylphenol	ND(20)	µg/L	1.0	20	7470/184
4-Chloroaniline	ND(20)	µg/L	1.0	20	7470/184
4-Chlorophenyl Phenylether	ND(5.0)	µg/L	1.0	5.0	7470/184
Methylphenol (3 & 4)	ND(5)	µg/L	1.0	5	7470/184
4-Nitroaniline	ND(10)	µg/L	1.0	10	7470/184
4-Nitrophenol	ND(25)	µg/L	1.0	25	7470/184
Acenaphthene	ND(5.0)	µg/L	1.0	5.0	7470/184
Acenaphthylene	ND(5.0)	µg/L	1.0	5.0	7470/184
Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/184
Benzo(a)Anthracene	ND(5.0)	µg/L	1.0	5.0	7470/184
Benzo(a)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/184
Benzo(b)+(j)fluoranthene	ND(5)	µg/L	1.0	5	7470/184
Benzo(g,h,i)Perylene	ND(5.0)	µg/L	1.0	5.0	7470/184
Benzo(k)Fluoranthene	ND(5)	µg/L	1.0	5	7470/184
Benzoic Acid	ND(50) EV	µg/L	1.0	50	7470/184
Benzyl Alcohol	ND(20)	µg/L	1.0	20	7470/184
Bis(2-Chloroethoxy)Methane	ND(5.0)	µg/L	1.0	5.0	7470/184

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090828
Sample Description: WRCSMW-11D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1206

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Bis(2-Chloroethyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/184
Bis(2-Chloroisopropyl)Ether	ND(5.0)	µg/L	1.0	5.0	7470/184
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Butylbenzylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Chrysene	ND(5.0)	µg/L	1.0	5.0	7470/184
Di-n-Butylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Di-n-Octylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Dibenzo(a,h)Anthracene	ND(5)	µg/L	1.0	5	7470/184
Dibenzofuran	ND(5.0)	µg/L	1.0	5.0	7470/184
Diethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Dimethylphthalate	ND(5.0)	µg/L	1.0	5.0	7470/184
Fluoranthene	ND(5.0)	µg/L	1.0	5.0	7470/184
Fluorene	ND(5.0)	µg/L	1.0	5.0	7470/184
Hexachlorobenzene	ND(5)	µg/L	1.0	5	7470/184
Hexachlorobutadiene	ND(5)	µg/L	1.0	5	7470/184
Hexachlorocyclopentadiene	ND(5.0)	µg/L	1.0	5.0	7470/184
Hexachloroethane	ND(5.0)	µg/L	1.0	5.0	7470/184
Indeno(1,2,3-cd)Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/184
Isophorone	ND(5.0) IV	µg/L	1.0	5.0	7470/184
2-Methylphenol	ND(5.0)	µg/L	1.0	5.0	7470/184
n-Nitrosodi-n-Propylamine	ND(5.0)	µg/L	1.0	5.0	7470/184
N-Nitrosodiphenylamine	ND(5.0)	µg/L	1.0	5.0	7470/184
Naphthalene	ND(5.0)	µg/L	1.0	5.0	7470/184
Nitrobenzene	ND(5.0)	µg/L	1.0	5.0	7470/184
Pentachlorophenol	ND(20)	µg/L	1.0	20	7470/184
Phenanthrene	ND(5)	µg/L	1.0	5	7470/184
Phenol	ND(5)	µg/L	1.0	5	7470/184
Pyrene	ND(5.0)	µg/L	1.0	5.0	7470/184
M8260B Volatiles					
1,1,1,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,1-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2,2-Tetrachloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1,2-Trichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,1-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2,3-Trichloropropane	ND(1.0)	µg/L	1.0	1.0	7466/158
1,2,4-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dibromo-3-chloropropane	ND(5.0)	µg/L	1.0	5.0	7466/158
1,2-Dibromoethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090828
Sample Description: WRCSMW-11D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1206

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
1,2-Dichloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3,5-Trimethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
1,3-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
1,4-Dichlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
2,2-Dichloropropane	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Butanone	ND(10)	µg/L	1.0	10	7466/158
2-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
2-Hexanone	ND(5)	µg/L	1.0	5	7466/158
4-Chlorotoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Isopropyltoluene	ND(0.5)	µg/L	1.0	0.5	7466/158
4-Methyl-2-Pentanone	ND(5)	µg/L	1.0	5	7466/158
Acetone	ND(10)	µg/L	1.0	10	7466/158
Acrolein	ND(25) EV	µg/L	1.0	25	7466/158
Acrylonitrile	ND(10)	µg/L	1.0	10	7466/158
Benzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromochloromethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Bromodichloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromoform	ND(0.5)	µg/L	1.0	0.5	7466/158
Bromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon disulfide	ND(1.0)	µg/L	1.0	1.0	7466/158
Carbon tetrachloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Chlorobenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloroform	ND(0.5)	µg/L	1.0	0.5	7466/158
Chloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromochloromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Dibromomethane	ND(1.0)	µg/L	1.0	1.0	7466/158
Dichlorodifluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Ethylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
Hexane	ND(1.0)	µg/L	1.0	1.0	7466/158
Isopropylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
MTBE	1.1	µg/L	1.0	0.5	7466/158
Methyl iodide	ND(1.0)	µg/L	1.0	1.0	7466/158
Methylene chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
Styrene	ND(0.5)	µg/L	1.0	0.5	7466/158
Tetrachloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
Toluene	ND(0.5)	µg/L	1.0	0.5	7466/158
Trichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Lab Number: 15090828
Sample Description: WRCSMW-11D(090915)

Date Sampled: 09/09/2015
Time Sampled: 1206

Analysis	Concentration	Units	Dilution Factor	LOQ	Book/Page
Trichlorofluoromethane	ND(0.5)	µg/L	1.0	0.5	7466/158
Vinyl acetate	ND(5) EV	µg/L	1.0	5	7466/158
Vinyl chloride	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
cis-1,3-Dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
m+p-Xylene	ND(1.0)	µg/L	1.0	1.0	7466/158
n-Butylbenzene	ND(1.0) M	µg/L	1.0	0.5	7466/158
n-Propylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
o-Xylene	ND(0.5)	µg/L	1.0	0.5	7466/158
sec-butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
tert-Butylbenzene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,2-Dichloroethene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,3-dichloropropene	ND(0.5)	µg/L	1.0	0.5	7466/158
trans-1,4-Dichloro-2-butene	ND(5.0)	µg/L	1.0	5.0	7466/158
Cyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Methylcyclohexane	ND(5.0)	µg/L	1.0	5.0	7466/158
Arsenic, Total, ICP-MS	0.013	mg/L	1.0	0.005	7202/715
Barium, Total, ICP-MS	0.114	mg/L	1.0	0.005	7202/715
Cadmium, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Chromium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Lead, Total, ICP-MS	ND(0.001)	mg/L	1.0	0.001	7202/715
Mercury, Total	ND(0.0002)	mg/L	1.0	0.0002	7203/778
Selenium, Total, ICP-MS	ND(0.005)	mg/L	1.0	0.005	7202/715
Silver, Total, ICP-MS	ND(0.002)	mg/L	1.0	0.002	7202/715

Analysis	Date/Time Prepared	Date/Time Analyzed	QC Batch	Inst. Batch	Analyst	Method(s)
Oklahoma GRO	N/A	09/21/15 1507	1GC2264	1GC2264	LPL	OK GRO
Oklahoma DRO	09/14/15 1600	09/21/15 1635	150914-6	1EX4264	LPL	OK DRO
TCL/HSL Extractables	09/15/15 1400	09/18/15 1713	150915-2	1MS7261	BLP	8270C
M8260B Volatiles	N/A	09/16/15 1937	1MS8259	1MS8259	GMA	8260B
Arsenic, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Barium, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Cadmium, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Chromium, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Lead, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Mercury, Total	09/16/15 1000	09/16/15 1529	150916-2	3MA3259	JDL	7470A
Selenium, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A
Silver, Total, ICP-MS	09/16/15 0717	09/17/15 1014	150916-2	8IP3260	KMW	6020A

-Continued-

Sample Results

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Volatile Analysis Preparation Method	5030B
GC/FID Volatile Preparation Method	5030B
Mercury Total Preparation Method	7470A
Base Neutral/Acid Preparation Method	625/3510C
ICP-MS Metals Total Preparation Method	3010A
OK DRO Preparation Method	OK DRO

Conclusion of Lab Number: 15090828

Appendix

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
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ND indicates not detected with the LOQ (Limit of Quantitation) in parentheses. The LOQ value has been adjusted for the dilution factor and percent solids, as applicable. Due to rounding of significant figures, the LOQ value may vary slightly from the reported concentration. The LOQ is the lowest concentration of the analytical standard that was used for calibrating the instrument. If an analytical standard is analyzed at the LOQ, an error of as much as +/- 50% can be expected. N/A, if present, indicates not applicable.

Not all samples were received at a temperature of less than 6 degrees Celsius. Refer to the enclosed Cooler/Sample Receipt Form(s) for the affected cooler(s) and sample(s).

No analysis with a holding time of seventy-two hours or less was performed in this Continental order.

EV - Using the recommended analytical procedure, this analyte routinely yields low and/or variable recoveries. The stated reporting limit or concentration is an estimated value.

G - The reported concentration includes a significant amount of individual compound(s) at concentrations not typically found in petroleum hydrocarbon patterns.

IV - The initial calibration verification (ICV) standard for this analyte was above the method or SOP limit. The reported sample concentration is estimated.

M - The Limit of Quantitation (LOQ) is higher than normal due to matrix interferences.

QC - QC data qualifiers were noted. See the Quality Control Report.

Y - The recommended pH adjustment or chemical preservation procedure was not followed or was inadequate for this sample matrix.

Accreditation Summary

Client: Coffeyville Resources
Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
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NELAP accreditation is issued under each EPA regulatory program for a given matrix/analyte/method combination. Continental is NELAP accredited for each matrix/analyte/method and EPA program cited in this Laboratory Report, except for those listed in the table below and for analyses performed in the field. For most of the analyses listed in the table, NELAP accreditation is not offered under the listed EPA program and Continental is NELAP accredited for the analysis, using the same analytical technology, but under a different EPA program. Continental's full NELAP accreditation status may be viewed at www.kdheks.gov/envlab. Note that unless qualified otherwise in the Laboratory Report, Continental performs all analyses, including each analysis listed in the table below, utilizing NELAP protocol.

Test	Analysis	Matrix-Regulatory Program	Method	CAS NELAP Accredited in Other Reg. Program

CAS is accredited for all analytes.

Quality Control Report
Batch Summary

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Test Code	Testname	QC Batch	Method Blank Date/Time Analyzed	LCS Date/Time Analyzed	MS Lab No. Date/Time Analyzed
CL108	Oklahoma GRO	1GC2264	BLK1GC2264 09/21/15 1033	LCS1GC2264 09/21/15 1008	
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090828					
CL108	Oklahoma GRO	1GC2266	BLK1GC2266 09/23/15 1023	LCS1GC2266 09/23/15 0958	
Lab numbers associated with this batch: 15090827					
CL122	Oklahoma DRO	150914-6	150914BLK6 09/21/15 1050	150914LCS6 09/21/15 1118	
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
MS116	TCL/HSL Extractables	150915-2	150915BLK2 09/18/15 0707	150915LCS2 09/18/15 0753	15090825MS 09/18/15 1407
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
MS771	M8260B Volatiles	1MS8259	BLK1MS8259 09/16/15 1527	LCS1MS8259 09/16/15 1415	15090825MS 09/16/15 2236
Lab numbers associated with this batch: 15090819 15090821 15090822 15090823 15090824 15090825 15090826 15090828					
MS771	M8260B Volatiles	1MS8260	BLK1MS8260 09/17/15 1431	LCS1MS8260 09/17/15 1320	15090839MS 09/17/15 2141
Lab numbers associated with this batch: 15090820 15090827					
MS771	M8260B Volatiles	1MS8264	BLK1MS8264 09/21/15 1304	LCS1MS8264 N/A	15090825RS 09/21/15 2011
Lab numbers associated with this batch: 15090825R					
SL333	Mercury, Total	150916-2	150916BLK2 09/16/15 1420	150916LCS2 09/16/15 1424	15090825MS 09/16/15 1459
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL052	Arsenic, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL053	Barium, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					

Quality Control Report
Batch Summary

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Test Code	Testname	QC Batch	Method Blank Date/Time Analyzed	LCS Date/Time Analyzed	MS Lab No. Date/Time Analyzed
SL056	Cadmium, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL058	Chromium, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL061	Lead, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL073	Selenium, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					
SL075	Silver, Total, ICP-MS	150916-2	150916BLK2 09/17/15 0844	150916LCS2 09/17/15 0849	15090825MS 09/17/15 0942
Lab numbers associated with this batch: 15090819 15090820 15090821 15090822 15090823 15090824 15090825 15090826 15090827 15090828					

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 150914-6	**For samples prepared on: 09/14/2015 1600**					**Spiked sample:**						
Oklahoma DRO	ND(100)	90.3	80.0-120	500	µg/L	MN	MN	80.0-120		µg/L	**	20.0
QC Batch: 150915-2	**For samples prepared on: 09/15/2015 1400**					**Spiked sample: 15090825**						
TCL/HSL Extractables												
1,2,4-Trichlorobenzene	ND(5.0)	74.1	61.6-106	25.0	µg/L	80.2	80.9	55.8-110	25.0	µg/L	0.90	20.0
1,2-Dichlorobenzene	ND(5.0)	77.6	59.7-108	25.0	µg/L	80.7	82.0	44.8-117	25.0	µg/L	1.60	11.4
1,3-Dichlorobenzene	ND(5.0)	71.0	53.3-105	25.0	µg/L	74.4	79.6	34.7-115	25.0	µg/L	6.80	14.6
1,4-Dichlorobenzene	ND(5.0)	72.1	59.7-102	25.0	µg/L	74.8	79.0	44.3-112	25.0	µg/L	5.50	8.4
2,4,5-Trichlorophenol	ND(5.0)	93.0	74.2-120	50.0	µg/L	100.	98.4	6.30-169	50.0	µg/L	1.60	44.5
2,4,6-Trichlorophenol	ND(5.0)	94.6	77.8-115	50.0	µg/L	103	99.6	75.6-118	50.0	µg/L	3.40	13.2
2,4-Dichlorophenol	ND(5.0)	92.7	79.4-109	50.0	µg/L	97.5	94.9	77.4-108	50.0	µg/L	2.70	9.7
2,4- and 2,5-Dimethylphenol	ND(10)	86.9	23.4-114	50.0	µg/L	95.6	93.4	0.10-158	50.0	µg/L	2.30	14.1
2,4-Dinitrophenol	ND(25)	91.3	53.9-121	50.0	µg/L	114	109	60.5-133	50.0	µg/L	4.50	16.9
2,4-Dinitrotoluene	ND(5)	97.4	76.8-118	25.0	µg/L	97.4	96.6	78.4-116	25.0	µg/L	0.80	17.3
2,6-Dinitrotoluene	ND(5.0)	98.1	75.0-116	25.0	µg/L	101	96.5	66.3-127	25.0	µg/L	4.60	12.1
2-Chloronaphthalene	ND(5.0)	82.0	69.1-108	25.0	µg/L	90.3	88.5	66.2-110	25.0	µg/L	2.00	18.0
2-Chlorophenol	ND(5.0)	84.0	70.2-100	50.0	µg/L	85.8	89.4	75.1-95.6	50.0	µg/L	4.10	11.0
2-Methylnaphthalene	ND(5.0)	82.4	65.5-111	25.0	µg/L	89.3	87.4	63.4-114	25.0	µg/L	2.20	17.6
2-Nitroaniline	ND(50)	95.6	67.0-113	25.0	µg/L	101	101	75.3-109	25.0	µg/L	0.8	11.2
2-Nitrophenol	ND(5.0)	93.4	80.0-111	50.0	µg/L	103	103	79.1-115	50.0	µg/L	0.0	12.3
3,3'-Dichlorobenzidine	ND(10) EV	101 EV	36.7-114	25.0	µg/L	0.0 EV	0.0 EV	0.10-122	25.0	µg/L	**	15.7
3-Nitroaniline	ND(10)	89.8	61.2-105	25.0	µg/L	79.1	79.0	0.10-165	25.0	µg/L	0.2	11.6
4,6-Dinitro-2-Methylphenol	ND(25)	85.7	63.1-114	50.0	µg/L	99.6	98.9	72.5-115	50.0	µg/L	0.70	12.2
4-Bromophenyl-Phenylether	ND(5.0)	88.4	63.1-116	25.0	µg/L	99.2	99.7	62.5-120	25.0	µg/L	0.50	14.4
4-Chloro-3-Methylphenol	ND(20)	93.0	76.3-112	50.0	µg/L	96.5	94.1	72.5-108	50.0	µg/L	2.50	18.9
4-Chloroaniline	ND(20)	93.3	72.2-111	25.0	µg/L	79.2	71.1	43.2-123	25.0	µg/L	200	12.8
4-Chlorophenyl Phenylether	ND(5.0)	84.3	66.3-113	25.0	µg/L	93.4	90.8	68.8-111	25.0	µg/L	2.80	17.9
Methylphenol (3 & 4)	ND(5)	77.0	52.1-91.6	50.0	µg/L	73.5	74.3	49.5-90.4	50.0	µg/L	1.10	12.1
4-Nitroaniline	ND(10)	90.2	37.4-131	25.0	µg/L	86.4	86.0	26.7-124	25.0	µg/L	0.50	20.1
4-Nitrophenol	ND(25)	41.9	24.7-51.4	50.0	µg/L	47.6	41.2	21.9-61.5	50.0	µg/L	200	35.0
Acenaphthene	ND(5.0)	83.0	71.3-109	25.0	µg/L	91.0	90.1	75.1-104	25.0	µg/L	1.00	14.4
Acenaphthylene	ND(5.0)	87.5	73.3-108	25.0	µg/L	95.6	94.0	57.0-115	25.0	µg/L	1.70	16.4
Anthracene	ND(5.0)	91.0	71.4-115	25.0	µg/L	94.8	96.0	68.5-111	25.0	µg/L	1.30	11.3
Benzo(a)Anthracene	ND(5.0)	96.2	80.7-110	25.0	µg/L	103	102	82.6-106	25.0	µg/L	1.00	11.2
Benzo(a)Pyrene	ND(5.0)	90.0	68.3-111	25.0	µg/L	98.6	96.0	53.1-116	25.0	µg/L	2.70	11.8
Benzo(b)+(j)fluoranthene	ND(5)	81.4	66.8-111	25.0	µg/L	96.6	90.9	59.3-117	25.0	µg/L	6.10	13.4
Benzo(g,h,i)Perylene	ND(5.0)	99.4	60.5-122	25.0	µg/L	100.	105	39.3-133	25.0	µg/L	4.90	19.8
Benzo(k)Fluoranthene	ND(5)	88.3	81.8-112	25.0	µg/L	97.1	100	77.1-116	25.0	µg/L	2.90	15.0
Benzoic Acid	ND(50) EV	67.9 EV	15.1-56.2	50.0	µg/L	101 EV	100 EV	0.10-94.6	50.0	µg/L	1.00	20.0
Benzyl Alcohol	ND(20)	84.5	53.3-100	25.0	µg/L	83.2	83.2	72.7-85.5	25.0	µg/L	0.0	8.2
Bis(2-Chloroethoxy)Methane	ND(5.0)	98.5	75.3-109	25.0	µg/L	103	99.3	80.2-107	25.0	µg/L	3.70	11.9
Bis(2-Chloroethyl)Ether	ND(5.0)	89.9	68.7-109	25.0	µg/L	91.8	92.3	73.6-106	25.0	µg/L	0.50	16.4
Bis(2-Chloroisopropyl)Ether	ND(5.0)	93.7	47.4-115	25.0	µg/L	95.8	97.3	60.2-109	25.0	µg/L	1.60	13.5
Bis(2-Ethylhexyl)Phthalate	ND(5.0)	115	60.7-181	25.0	µg/L	124	122	51.2-153	25.0	µg/L	1.60	24.4
Butylbenzylphthalate	ND(5.0)	106	71.4-130	25.0	µg/L	113	113	71.7-130	25.0	µg/L	0.0	15.1
Chrysene	ND(5.0)	96.6	78.6-114	25.0	µg/L	103	101	81.4-108	25.0	µg/L	2.00	9.4
Di-n-Butylphthalate	ND(5.0)	97.8	77.4-120	25.0	µg/L	108	105	68.2-125	25.0	µg/L	2.80	16.8
Di-n-Octylphthalate	ND(5.0)	91.2	57.8-145	25.0	µg/L	116	116	49.9-158	25.0	µg/L	0.0	17.3
Dibenzo(a,h)Anthracene	ND(5)	96.4	60.4-124	25.0	µg/L	98.6	102	42.2-132	25.0	µg/L	3.40	21.4
Dibenzofuran	ND(5.0)	86.8	75.9-109	25.0	µg/L	95.0	92.5	71.5-110	25.0	µg/L	2.70	11.9
Diethylphthalate	ND(5.0)	95.7	78.1-114	25.0	µg/L	99.6	95.8	72.8-117	25.0	µg/L	3.90	22.5
Dimethylphthalate	ND(5.0)	94.8	78.4-111	25.0	µg/L	102	96.9	77.2-112	25.0	µg/L	5.10	10.8

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 150915-2	**For samples prepared on: 09/15/2015 1400**					**Spiked sample: 15090825**						
Fluoranthene	ND(5.0)	88.2	71.2-120	25.0	µg/L	102	104	58.4-130	25.0	µg/L	1.90	17.2
Fluorene	ND(5.0)	86.1	73.8-112	25.0	µg/L	94.3	95.3	78.4-109	25.0	µg/L	1.10	14.2
Hexachlorobenzene	ND(5)	84.2	60.2-116	25.0	µg/L	95.4	94.7	55.6-121	25.0	µg/L	0.70	11.4
Hexachlorobutadiene	ND(5)	64.4	48.1-108	25.0	µg/L	74.0	73.6	42.1-113	25.0	µg/L	0.50	22.6
Hexachlorocyclopentadiene	ND(5.0)	55.9	17.4-94.8	25.0	µg/L	63.6	63.5	27.9-95.9	25.0	µg/L	0.20	18.5
Hexachloroethane	ND(5.0)	68.8	54.2-105	25.0	µg/L	73.9	77.0	49.5-110	25.0	µg/L	4.10	18.9
Indeno(1,2,3-cd)Pyrene	ND(5.0)	98.0	60.6-119	25.0	µg/L	100.	103	42.2-135	25.0	µg/L	3.00	19.1
Isophorone	ND(5.0) IV	96.2 IV	74.2-108	25.0	µg/L	99.2 IV	97.1 IV	76.7-107	25.0	µg/L	2.10	11.0
2-Methylphenol	ND(5.0)	81.1	29.6-130	50.0	µg/L	81.1	80.8	52.0-99.4	50.0	µg/L	0.40	13.0
n-Nitrosodi-n-Propylamine	ND(5.0)	100.	66.7-114	25.0	µg/L	99.9	98.8	63.9-121	25.0	µg/L	1.10	15.6
N-Nitrosodiphenylamine	ND(5.0)	96.2	35.4-162	25.0	µg/L	101	102	0.10-223	25.0	µg/L	1.00	12.0
Naphthalene	ND(5.0)	81.6	68.5-109	25.0	µg/L	88.3	86.6	75.7-104	25.0	µg/L	1.90	13.8
Nitrobenzene	ND(5.0)	87.9	72.5-107	25.0	µg/L	92.4	91.1	51.7-150	25.0	µg/L	1.40	12.8
Pentachlorophenol	ND(20)	99.2	43.0-126	50.0	µg/L	120	121	27.8-155	50.0	µg/L	0.80	24.6
Phenanthrene	ND(5)	92.3	76.2-110	25.0	µg/L	97.4	97.2	81.3-108	25.0	µg/L	0.20	15.3
Phenol	ND(5)	39.2	25.6-46.0	50.0	µg/L	38.1	38.7	27.9-43.0	50.0	µg/L	1.60	12.9
Pyrene	ND(5.0)	96.3	65.1-122	25.0	µg/L	100.	101	69.4-127	25.0	µg/L	1.00	13.1
Surrogate Data:												
NITROBENZENE-d5	82.9	83.7	68.0-104	100	µg/L	89.4	90.4	68.0-104	100	µg/L		
2-FLUOROBIPHENYL	67.3	69.4	59.1-96.4	100	µg/L	81.3	81.8	59.1-96.4	100	µg/L		
TERPHENYL-d14	103	100.	67.6-136	100	µg/L	102	103	67.6-136	100	µg/L		
PHENOL-d6	36.4	36.6	24.7-44.2	150	µg/L	35.8	37.1	24.7-44.2	150	µg/L		
2-FLUOROPHENOL	58.2	57.9	40.5-66.5	150	µg/L	59.0	62.7	40.5-66.5	150	µg/L		
2,4,6-TRIBROMOPHENOL	92.2	99.5	64.3-122	150	µg/L	107	108	64.3-122	150	µg/L		
QC Batch: 150916-2	**For samples prepared on: 09/16/2015 0717**					**Spiked sample: 15090825**						
Arsenic, Total, ICP-MS	ND(5)	99.9	80.0-120	500	µg/L	100.	101	80.0-120	500	µg/L	1.00	20.0
Barium, Total, ICP-MS	ND(5)	105	80.0-120	1500	µg/L	106	107	80.0-120	1500	µg/L	0.90	20.0
Cadmium, Total, ICP-MS	ND(1)	100.	80.0-120	500	µg/L	98.1	98.5	80.0-120	500	µg/L	0.40	20.0
Chromium, Total, ICP-MS	ND(5)	105	80.0-120	500	µg/L	104	104	80.0-120	500	µg/L	0.0	20.0
Lead, Total, ICP-MS	ND(1)	106	80.0-120	500	µg/L	106	106	80.0-120	500	µg/L	0.0	20.0
Mercury, Total	ND(0.2)	97.1	80.0-120	5.0	µg/L	94.4	96.0	80.0-120	5.0	µg/L	1.70	20.0
Selenium, Total, ICP-MS	ND(5)	98.4	80.0-120	500	µg/L	95.9	96.9	80.0-120	500	µg/L	1.00	20.0
Silver, Total, ICP-MS	ND(2)	97.2	80.0-120	100	µg/L	94.7	95.1	80.0-120	100	µg/L	0.40	20.0
QC Batch: 1GC2264	**For sample analyzed on: 09/21/2015**					**Spiked sample:**						
Oklahoma GRO	ND(20)	104	80.0-120	200	µg/L	MN	MN	80.0-120		µg/L	**	20.0
Surrogate Data:												
4-BFB (8015D)	94.4	97.2	84.0-121	20.0	µg/L	MN	MN	84.0-121		µg/L	**	
FLUOROBENZENE (8015D)	103	105	71.7-132	20.0	µg/L	MN	MN	71.7-132		µg/L	**	
QC Batch: 1GC2266	**For sample analyzed on: 09/23/2015**					**Spiked sample:**						
Oklahoma GRO	ND(20)	108	80.0-120	200	µg/L	MN	MN	80.0-120		µg/L	**	20.0
Surrogate Data:												
4-BFB (8015D)	98.4	95.8	84.0-121	20.0	µg/L	MN	MN	84.0-121		µg/L	**	
FLUOROBENZENE (8015D)	104	98.6	71.7-132	20.0	µg/L	MN	MN	71.7-132		µg/L	**	
QC Batch: 1MS8259	**For sample analyzed on: 09/16/2015**					**Spiked sample: 15090825**						
M8260B Volatiles												
1,1,1,2-Tetrachloroethane	ND(0.5)	103	80.0-120	10.0	µg/L	100.	103	85.7-114	50.0	µg/L	3.00	8.5
1,1,1-Trichloroethane	ND(0.5)	98.7	80.0-120	10.0	µg/L	97.6	105	78.1-119	50.0	µg/L	7.30	9.1
1,1,2,2-Tetrachloroethane	ND(0.5)	98.1	78.3-120	10.0	µg/L	108	103	75.6-117	50.0	µg/L	4.70	10.1

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
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10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 1MS8259	**For sample analyzed on: 09/16/2015**					**Spiked sample: 15090825**						
1,1,2-Trichloroethane	ND(0.5)	98.3	80.0-120	10.0	µg/L	107	104	79.2-117	50.0	µg/L	2.80	11.5
1,1-Dichloroethane	ND(0.5)	101	77.4-120	10.0	µg/L	105	106	74.8-124	50.0	µg/L	0.90	9.2
1,1-Dichloroethene	ND(0.5)	101	78.7-120	10.0	µg/L	102	107	78.2-118	50.0	µg/L	4.80	9.4
1,1-Dichloropropene	ND(0.5)	101	80.0-120	10.0	µg/L	101	101	81.7-116	50.0	µg/L	0.0	10.3
1,2,3-Trichloropropane	ND(1.0)	95.4	77.0-120	10.0	µg/L	106	102	75.1-124	50.0	µg/L	3.80	12.9
1,2,4-Trimethylbenzene	ND(0.5)	103	80.0-120	10.0	µg/L	103	102	85.5-126	50.0	µg/L	1.00	7.8
1,2-Dibromo-3-chloropropane	ND(5.0)	100.	67.2-120	10.0	µg/L	103	107	60.2-121	50.0	µg/L	3.80	17.9
1,2-Dibromoethane	ND(0.5)	98.6	80.0-120	10.0	µg/L	104	101	74.4-122	50.0	µg/L	2.90	10.4
1,2-Dichlorobenzene	ND(0.5)	100	80.0-120	10.0	µg/L	102	102	85.7-113	50.0	µg/L	0.0	8.0
1,2-Dichloroethane	ND(0.5)	95.7	73.7-120	10.0	µg/L	103	102	71.0-120	50.0	µg/L	1.00	10.2
1,2-Dichloropropane	ND(0.5)	96.1	76.8-120	10.0	µg/L	103	97.5	74.8-118	50.0	µg/L	5.50	9.5
1,3,5-Trimethylbenzene	ND(0.5)	103	80.0-120	10.0	µg/L	103	101	84.3-125	50.0	µg/L	2.00	9.5
1,3-Dichlorobenzene	ND(0.5)	102	80.0-120	10.0	µg/L	103	103	89.7-109	50.0	µg/L	0.0	7.9
1,3-Dichloropropane	ND(0.5)	102	80.0-120	10.0	µg/L	108	104	83.1-114	50.0	µg/L	3.80	10.3
1,4-Dichlorobenzene	ND(0.5)	103	80.0-120	10.0	µg/L	104	102	86.0-110	50.0	µg/L	1.90	7.8
2,2-Dichloropropane	ND(0.5)	104	80.0-122	10.0	µg/L	93.5	101	65.0-128	50.0	µg/L	7.70	10.8
2-Butanone	ND(10)	96.6	57.0-132	40.0	µg/L	121	117	54.8-152	200	µg/L	3.40	16.0
2-Chlorotoluene	ND(0.5)	104	80.0-120	10.0	µg/L	104	102	81.9-125	50.0	µg/L	1.90	9.4
2-Hexanone	ND(5)	104	64.7-127	40.0	µg/L	115	117	69.2-126	200	µg/L	1.70	11.8
4-Chlorotoluene	ND(0.5)	104	80.0-120	10.0	µg/L	105	102	84.7-120	50.0	µg/L	2.90	10.0
4-Isopropyltoluene	ND(0.5)	104	80.0-127	10.0	µg/L	99.5	101	83.0-128	50.0	µg/L	1.50	10.3
4-Methyl-2-Pentanone	ND(5)	96.5	63.5-121	40.0	µg/L	111	113	69.4-126	200	µg/L	1.80	12.2
Acetone	ND(10)	91.3	46.7-152	40.0	µg/L	118	121	51.5-157	200	µg/L	2.50	33.6
Acrolein	ND(25) EV	96.2 EV	0.10-208	40.0	µg/L	94.8 EV	104 EV	0.10-191	200	µg/L	9.30	49.9
Acrylonitrile	ND(10)	95.1	63.4-128	40.0	µg/L	109	110	63.4-149	200	µg/L	0.90	16.9
Benzene	ND(0.5)	99.0	80.0-120	10.0	µg/L	103	102	79.6-118	50.0	µg/L	1.00	9.8
Bromobenzene	ND(0.5)	103	80.0-120	10.0	µg/L	107	103	89.8-108	50.0	µg/L	3.80	8.7
Bromochloromethane	ND(1.0)	95.3	79.8-120	10.0	µg/L	101	101	70.8-128	50.0	µg/L	0.0	14.0
Bromodichloromethane	ND(0.5)	96.2	78.3-120	10.0	µg/L	102	100	72.6-119	50.0	µg/L	2.00	10.2
Bromoform	ND(0.5)	102	69.9-124	10.0	µg/L	105	104	58.6-123	50.0	µg/L	1.00	13.3
Bromomethane	ND(1.0)	94.9	63.0-125	10.0	µg/L	92.1	105	60.6-127	50.0	µg/L	13.1	18.1
Carbon disulfide	ND(1.0)	102	76.2-126	20.0	µg/L	101	108	72.9-139	100	µg/L	6.70	13.1
Carbon tetrachloride	ND(0.5)	99.4	80.0-120	10.0	µg/L	95.8	102	78.8-122	50.0	µg/L	6.30	13.1
Chlorobenzene	ND(0.5)	104	80.0-120	10.0	µg/L	103	102	88.0-114	50.0	µg/L	1.00	7.2
Chloroethane	ND(0.5)	95.2	74.6-123	10.0	µg/L	93.9	104	75.5-126	50.0	µg/L	10.2	13.9
Chloroform	ND(0.5)	92.2	78.2-120	10.0	µg/L	95.2	96.2	74.1-120	50.0	µg/L	1.00	9.7
Chloromethane	ND(0.5)	90.4	63.5-129	10.0	µg/L	91.5	103	62.5-130	50.0	µg/L	11.8	19.0
Dibromochloromethane	ND(0.5)	102	80.0-120	10.0	µg/L	103	101	75.8-117	50.0	µg/L	2.00	10.0
Dibromomethane	ND(1.0)	95.0	75.3-120	10.0	µg/L	102	101	75.2-125	50.0	µg/L	1.00	12.2
Dichlorodifluoromethane	ND(0.5)	91.1	61.4-132	10.0	µg/L	84.4	102 MP	59.3-129	50.0	µg/L	18.9	14.6
Ethylbenzene	ND(0.5)	106	80.0-120	10.0	µg/L	104	105	89.1-114	50.0	µg/L	1.00	6.5
Hexane	ND(1.0)	106	77.0-127	20.0	µg/L	98.8	98.7	56.5-129	100	µg/L	0.10	14.0
Isopropylbenzene	ND(0.5)	103	80.0-120	10.0	µg/L	98.8	104	84.8-121	50.0	µg/L	5.10	9.7
MTBE	ND(0.5)	91.8	67.5-120	10.0	µg/L	98.0	104	69.5-124	50.0	µg/L	5.90	11.0
Methyl iodide	ND(1.0)	102	78.4-120	20.0	µg/L	104	109	78.4-120	100	µg/L	4.70	20.0
Methylene chloride	ND(0.5)	94.1	74.9-120	10.0	µg/L	98.1	101	74.2-117	50.0	µg/L	2.90	10.4
Styrene	ND(0.5)	106	80.0-120	10.0	µg/L	105	106	73.6-128	50.0	µg/L	0.90	6.5
Tetrachloroethene	ND(0.5)	103	80.0-123	10.0	µg/L	100.	96.6	81.5-124	50.0	µg/L	3.50	10.0
Toluene	ND(0.5)	103	80.0-120	10.0	µg/L	103	100.	89.7-116	50.0	µg/L	3.00	8.0
Trichloroethene	ND(0.5)	101	80.0-120	10.0	µg/L	102	100.	81.4-118	50.0	µg/L	2.00	12.1
Trichlorofluoromethane	ND(0.5)	98.9	78.5-124	10.0	µg/L	95.6	107	78.6-123	50.0	µg/L	11.3	11.5
Vinyl acetate	ND(5) EV	96.9 EV	63.4-120	20.0	µg/L	106 EV	100 EV	52.1-110	100	µg/L	5.80	16.7

Quality Control Report
Method Blank, LCS, MS/MSD Data

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10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 1MS8259	**For sample analyzed on: 09/16/2015**					**Spiked sample: 15090825**						
Vinyl chloride	ND(0.5)	95.7	67.8-130	10.0	µg/L	92.8	109 MP	70.1-127	50.0	µg/L	16.1	14.3
cis-1,2-Dichloroethene	ND(0.5)	96.7	80.0-120	10.0	µg/L	99.5	103	77.8-119	50.0	µg/L	3.50	12.8
cis-1,3-Dichloropropene	ND(0.5)	101	78.2-120	10.0	µg/L	104	102	71.7-111	50.0	µg/L	1.90	9.3
m+p-Xylene	ND(1.0)	105	80.0-120	20.0	µg/L	103	104	88.6-116	100	µg/L	1.00	6.7
n-Butylbenzene	ND(0.5)	103	80.0-122	10.0	µg/L	98.2	101	76.5-131	50.0	µg/L	2.80	14.1
n-Propylbenzene	ND(0.5)	107	80.0-122	10.0	µg/L	106	103	83.0-128	50.0	µg/L	2.90	9.6
o-Xylene	ND(0.5)	102	80.0-120	10.0	µg/L	101	103	88.3-115	50.0	µg/L	2.00	8.1
sec-butylbenzene	ND(0.5)	103	80.0-121	10.0	µg/L	101	101	87.0-124	50.0	µg/L	0.0	11.8
tert-Butylbenzene	ND(0.5)	101	80.0-122	10.0	µg/L	100	99.5	82.4-125	50.0	µg/L	0.50	11.7
trans-1,2-Dichloroethene	ND(0.5)	99.1	80.0-120	10.0	µg/L	100.	106	82.2-119	50.0	µg/L	5.80	9.0
trans-1,3-dichloropropene	ND(0.5)	103	80.0-120	10.0	µg/L	104	102	76.4-108	50.0	µg/L	1.90	9.3
trans-1,4-Dichloro-2-butene	ND(5.0)	99.5	52.2-142	20.0	µg/L	104	105	52.2-142	100	µg/L	1.00	20.0
Cyclohexane	ND(5.0)	96.3	75.8-127	20.0	µg/L	92.9	100.	86.6-123	100	µg/L	7.40	20.0
Methylcyclohexane	ND(5.0)	98.7	75.2-126	20.0	µg/L	94.6	100.	75.2-126	100	µg/L	5.50	20.0
Surrogate Data:												
1,2-DICHLOROETHANE-d4	93.5	92.0	74.3-123	10.0	µg/L	99.2	97.8	74.3-123	50.0	µg/L		
TOLUENE-d8	99.2	105	80.0-120	10.0	µg/L	103	101	80.0-120	50.0	µg/L		
4-BFB(MS)	98.8	100.	80.0-120	10.0	µg/L	103	99.5	80.0-120	50.0	µg/L		
QC Batch: 1MS8260	**For sample analyzed on: 09/17/2015**					**Spiked sample: 15090839**						
M8260B Volatiles						MN	MN					
1,1,1,2-Tetrachloroethane	ND(0.5)	102	80.0-120	10.0	µg/L			85.7-114	10.0	µg/L	**	8.5
1,1,1-Trichloroethane	ND(0.5)	99.3	80.0-120	10.0	µg/L			78.1-119	10.0	µg/L	**	9.1
1,1,2,2-Tetrachloroethane	ND(0.5)	103	78.3-120	10.0	µg/L			75.6-117	10.0	µg/L	**	10.1
1,1,2-Trichloroethane	ND(0.5)	103	80.0-120	10.0	µg/L			79.2-117	10.0	µg/L	**	11.5
1,1-Dichloroethane	ND(0.5)	104	77.4-120	10.0	µg/L			74.8-124	10.0	µg/L	**	9.2
1,1-Dichloroethene	ND(0.5)	102	78.7-120	10.0	µg/L			78.2-118	10.0	µg/L	**	9.4
1,1-Dichloropropene	ND(0.5)	102	80.0-120	10.0	µg/L			81.7-116	10.0	µg/L	**	10.3
1,2,3-Trichloropropane	ND(1.0)	98.6	77.0-120	10.0	µg/L			75.1-124	10.0	µg/L	**	12.9
1,2,4-Trimethylbenzene	ND(0.5)	105	80.0-120	10.0	µg/L			85.5-126	10.0	µg/L	**	7.8
1,2-Dibromo-3-chloropropane	ND(5.0)	97.9	67.2-120	10.0	µg/L			60.2-121	10.0	µg/L	**	17.9
1,2-Dibromoethane	ND(0.5)	104	80.0-120	10.0	µg/L			74.4-122	10.0	µg/L	**	10.4
1,2-Dichlorobenzene	ND(0.5)	102	80.0-120	10.0	µg/L			85.7-113	10.0	µg/L	**	8.0
1,2-Dichloroethane	ND(0.5)	97.4	73.7-120	10.0	µg/L			71.0-120	10.0	µg/L	**	10.2
1,2-Dichloropropane	ND(0.5)	99.2	76.8-120	10.0	µg/L			74.8-118	10.0	µg/L	**	9.5
1,3,5-Trimethylbenzene	ND(0.5)	104	80.0-120	10.0	µg/L			84.3-125	10.0	µg/L	**	9.5
1,3-Dichlorobenzene	ND(0.5)	105	80.0-120	10.0	µg/L			89.7-109	10.0	µg/L	**	7.9
1,3-Dichloropropane	ND(0.5)	106	80.0-120	10.0	µg/L			83.1-114	10.0	µg/L	**	10.3
1,4-Dichlorobenzene	ND(0.5)	104	80.0-120	10.0	µg/L			86.0-110	10.0	µg/L	**	7.8
2,2-Dichloropropane	ND(0.5)	106	80.0-122	10.0	µg/L			65.0-128	10.0	µg/L	**	10.8
2-Butanone	ND(10)	107	57.0-132	40.0	µg/L			54.8-152	40.0	µg/L	**	16.0
2-Chlorotoluene	ND(0.5)	106	80.0-120	10.0	µg/L			81.9-125	10.0	µg/L	**	9.4
2-Hexanone	ND(5)	108	64.7-127	40.0	µg/L			69.2-126	40.0	µg/L	**	11.8
4-Chlorotoluene	ND(0.5)	106	80.0-120	10.0	µg/L			84.7-120	10.0	µg/L	**	10.0
4-Isopropyltoluene	ND(0.5)	105	80.0-127	10.0	µg/L			83.0-128	10.0	µg/L	**	10.3
4-Methyl-2-Pentanone	ND(5)	102	63.5-121	40.0	µg/L			69.4-126	40.0	µg/L	**	12.2
Acetone	ND(10)	113	46.7-152	40.0	µg/L			51.5-157	40.0	µg/L	**	33.6
Acrolein	ND(25) EV	98.1 EV	0.10-208	40.0	µg/L			0.10-191	40.0	µg/L	**	49.9
Acrylonitrile	ND(10)	99.7	63.4-128	40.0	µg/L			63.4-149	40.0	µg/L	**	16.9
Benzene	ND(0.5)	101	80.0-120	10.0	µg/L			79.6-118	10.0	µg/L	**	9.8
Bromobenzene	ND(0.5)	105	80.0-120	10.0	µg/L			89.8-108	10.0	µg/L	**	8.7
Bromochloromethane	ND(1.0)	95.2	79.8-120	10.0	µg/L			70.8-128	10.0	µg/L	**	14.0

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 1MS8260	**For sample analyzed on: 09/17/2015**					**Spiked sample: 15090839**						
Bromodichloromethane	ND(0.5)	99.2	78.3-120	10.0	µg/L			72.6-119	10.0	µg/L	**	10.2
Bromoform	ND(0.5)	104	69.9-124	10.0	µg/L			58.6-123	10.0	µg/L	**	13.3
Bromomethane	ND(1.0)	92.6	63.0-125	10.0	µg/L			60.6-127	10.0	µg/L	**	18.1
Carbon disulfide	ND(1.0)	102	76.2-126	20.0	µg/L			72.9-139	20.0	µg/L	**	13.1
Carbon tetrachloride	ND(0.5)	96.5	80.0-120	10.0	µg/L			78.8-122	10.0	µg/L	**	13.1
Chlorobenzene	ND(0.5)	104	80.0-120	10.0	µg/L			88.0-114	10.0	µg/L	**	7.2
Chloroethane	ND(0.5)	92.1	74.6-123	10.0	µg/L			75.5-126	10.0	µg/L	**	13.9
Chloroform	ND(0.5)	93.3	78.2-120	10.0	µg/L			74.1-120	10.0	µg/L	**	9.7
Chloromethane	ND(0.5)	86.7	63.5-129	10.0	µg/L			62.5-130	10.0	µg/L	**	19.0
Dibromochloromethane	ND(0.5)	104	80.0-120	10.0	µg/L			75.8-117	10.0	µg/L	**	10.0
Dibromomethane	ND(1.0)	97.2	75.3-120	10.0	µg/L			75.2-125	10.0	µg/L	**	12.2
Dichlorodifluoromethane	ND(0.5)	84.5	61.4-132	10.0	µg/L			59.3-129	10.0	µg/L	**	14.6
Ethylbenzene	ND(0.5)	107	80.0-120	10.0	µg/L			89.1-114	10.0	µg/L	**	6.5
Hexane	ND(1.0)	106	77.0-127	20.0	µg/L			56.5-129	20.0	µg/L	**	14.0
Isopropylbenzene	ND(0.5)	103	80.0-120	10.0	µg/L			84.8-121	10.0	µg/L	**	9.7
MTBE	ND(0.5)	95.7	67.5-120	10.0	µg/L			69.5-124	10.0	µg/L	**	11.0
Methyl iodide	ND(1.0)	103	78.4-120	20.0	µg/L			78.4-120	20.0	µg/L	**	20.0
Methylene chloride	ND(0.5)	96.8	74.9-120	10.0	µg/L			74.2-117	10.0	µg/L	**	10.4
Styrene	ND(0.5)	107	80.0-120	10.0	µg/L			73.6-128	10.0	µg/L	**	6.5
Tetrachloroethene	ND(0.5)	105	80.0-123	10.0	µg/L			81.5-124	10.0	µg/L	**	10.0
Toluene	ND(0.5)	102	80.0-120	10.0	µg/L			89.7-116	10.0	µg/L	**	8.0
Trichloroethene	ND(0.5)	100.	80.0-120	10.0	µg/L			81.4-118	10.0	µg/L	**	12.1
Trichlorofluoromethane	ND(0.5)	97.4	78.5-124	10.0	µg/L			78.6-123	10.0	µg/L	**	11.5
Vinyl acetate	ND(5) EV	101 EV	63.4-120	20.0	µg/L			52.1-110	20.0	µg/L	**	16.7
Vinyl chloride	ND(0.5)	92.9	67.8-130	10.0	µg/L			70.1-127	10.0	µg/L	**	14.3
cis-1,2-Dichloroethene	ND(0.5)	99.8	80.0-120	10.0	µg/L			77.8-119	10.0	µg/L	**	12.8
cis-1,3-Dichloropropene	ND(0.5)	104	78.2-120	10.0	µg/L			71.7-111	10.0	µg/L	**	9.3
m+p-Xylene	ND(1.0)	106	80.0-120	20.0	µg/L			88.6-116	20.0	µg/L	**	6.7
n-Butylbenzene	ND(0.5)	105	80.0-122	10.0	µg/L			76.5-131	10.0	µg/L	**	14.1
n-Propylbenzene	ND(0.5)	110.	80.0-122	10.0	µg/L			83.0-128	10.0	µg/L	**	9.6
o-Xylene	ND(0.5)	103	80.0-120	10.0	µg/L			88.3-115	10.0	µg/L	**	8.1
sec-butylbenzene	ND(0.5)	104	80.0-121	10.0	µg/L			87.0-124	10.0	µg/L	**	11.8
tert-Butylbenzene	ND(0.5)	101	80.0-122	10.0	µg/L			82.4-125	10.0	µg/L	**	11.7
trans-1,2-Dichloroethene	ND(0.5)	100.	80.0-120	10.0	µg/L			82.2-119	10.0	µg/L	**	9.0
trans-1,3-dichloropropene	ND(0.5)	106	80.0-120	10.0	µg/L			76.4-108	10.0	µg/L	**	9.3
trans-1,4-Dichloro-2-butene	ND(5.0)	106	52.2-142	20.0	µg/L			52.2-142	20.0	µg/L	**	20.0
Cyclohexane	ND(5.0)	95.5	75.8-127	20.0	µg/L			86.6-123	20.0	µg/L	**	20.0
Methylcyclohexane	ND(5.0)	99.0	75.2-126	20.0	µg/L			75.2-126	20.0	µg/L	**	20.0
Surrogate Data:												
1,2-DICHLOROETHANE-d4	91.3	93.5	74.3-123	10.0	µg/L	MN	MN	74.3-123	10.0	µg/L	**	
TOLUENE-d8	103	104	80.0-120	10.0	µg/L	MN	MN	80.0-120	10.0	µg/L	**	
4-BFB(MS)	103	101	80.0-120	10.0	µg/L	MN	MN	80.0-120	10.0	µg/L	**	
QC Batch: 1MS8264	**For sample analyzed on: 09/21/2015**					**Spiked sample: 15090825R**						
M8260B Volatiles												
1,1,1,2-Tetrachloroethane	ND(0.5)	101	80.0-120	10.0	µg/L	104	103	85.7-114	10.0	µg/L	1.00	8.5
1,1,1-Trichloroethane	ND(0.5)	93.9	80.0-120	10.0	µg/L	94.6	97.6	78.1-119	10.0	µg/L	3.10	9.1
1,1,2,2-Tetrachloroethane	ND(0.5)	101	78.3-120	10.0	µg/L	101	105	75.6-117	10.0	µg/L	3.90	10.1
1,1,2-Trichloroethane	ND(0.5)	104	80.0-120	10.0	µg/L	102	105	79.2-117	10.0	µg/L	2.90	11.5
1,1-Dichloroethane	ND(0.5)	100.	77.4-120	10.0	µg/L	99.8	103	74.8-124	10.0	µg/L	3.20	9.2
1,1-Dichloroethene	ND(0.5)	99.1	78.7-120	10.0	µg/L	99.4	103	78.2-118	10.0	µg/L	3.60	9.4
1,1-Dichloropropene	ND(0.5)	99.8	80.0-120	10.0	µg/L	99.4	101	81.7-116	10.0	µg/L	1.60	10.3

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 1MS8264	**For sample analyzed on: 09/21/2015**					**Spiked sample: 15090825R**						
1,2,3-Trichloropropane	ND(1.0)	96.6	77.0-120	10.0	µg/L	96.6	104	75.1-124	10.0	µg/L	7.40	12.9
1,2,4-Trimethylbenzene	ND(0.5)	102	80.0-120	10.0	µg/L	104	104	85.5-126	10.0	µg/L	0.0	7.8
1,2-Dibromo-3-chloropropane	ND(5.0)	95.0	67.2-120	10.0	µg/L	96.0	107	60.2-121	10.0	µg/L	10.8	17.9
1,2-Dibromoethane	ND(0.5)	99.7	80.0-120	10.0	µg/L	98.4	103	74.4-122	10.0	µg/L	4.60	10.4
1,2-Dichlorobenzene	ND(0.5)	98.2	80.0-120	10.0	µg/L	102	104	85.7-113	10.0	µg/L	1.90	8.0
1,2-Dichloroethane	ND(0.5)	97.2	73.7-120	10.0	µg/L	93.8	102	71.0-120	10.0	µg/L	8.40	10.2
1,2-Dichloropropane	ND(0.5)	98.9	76.8-120	10.0	µg/L	96.1	101	74.8-118	10.0	µg/L	5.00	9.5
1,3,5-Trimethylbenzene	ND(0.5)	103	80.0-120	10.0	µg/L	105	103	84.3-125	10.0	µg/L	1.90	9.5
1,3-Dichlorobenzene	ND(0.5)	104	80.0-120	10.0	µg/L	103	103	89.7-109	10.0	µg/L	0.0	7.9
1,3-Dichloropropane	ND(0.5)	105	80.0-120	10.0	µg/L	102	107	83.1-114	10.0	µg/L	4.80	10.3
1,4-Dichlorobenzene	ND(0.5)	102	80.0-120	10.0	µg/L	102	102	86.0-110	10.0	µg/L	0.0	7.8
2,2-Dichloropropane	ND(0.5)	103	80.0-122	10.0	µg/L	93.8	95.0	65.0-128	10.0	µg/L	1.30	10.8
2-Butanone	ND(10)	111	57.0-132	40.0	µg/L	102	116	54.8-152	40.0	µg/L	12.8	16.0
2-Chlorotoluene	ND(0.5)	105	80.0-120	10.0	µg/L	104	104	81.9-125	10.0	µg/L	0.0	9.4
2-Hexanone	ND(5)	109	64.7-127	40.0	µg/L	111	122	69.2-126	40.0	µg/L	9.40	11.8
4-Chlorotoluene	ND(0.5)	105	80.0-120	10.0	µg/L	105	103	84.7-120	10.0	µg/L	1.90	10.0
4-Isopropyltoluene	ND(0.5)	103	80.0-127	10.0	µg/L	105	102	83.0-128	10.0	µg/L	2.90	10.3
4-Methyl-2-Pentanone	ND(5)	102	63.5-121	40.0	µg/L	95.5	111 MP	69.4-126	40.0	µg/L	15.0	12.2
Acetone	ND(10)	106	46.7-152	40.0	µg/L	102	112	51.5-157	40.0	µg/L	9.30	33.6
Acrolein	ND(25) EV	95.2 EV	0.10-208	40.0	µg/L	84.1 EV	91.4 EV	0.10-191	40.0	µg/L	8.30	49.9
Acrylonitrile	ND(10)	98.6	63.4-128	40.0	µg/L	92.0	105	63.4-149	40.0	µg/L	13.2	16.9
Benzene	ND(0.5)	101	80.0-120	10.0	µg/L	99.7	103	79.6-118	10.0	µg/L	3.30	9.8
Bromobenzene	ND(0.5)	105	80.0-120	10.0	µg/L	104	103	89.8-108	10.0	µg/L	1.00	8.7
Bromochloromethane	ND(1.0)	94.8	79.8-120	10.0	µg/L	90.8	97.3	70.8-128	10.0	µg/L	6.90	14.0
Bromodichloromethane	ND(0.5)	98.1	78.3-120	10.0	µg/L	92.8	98.6	72.6-119	10.0	µg/L	6.10	10.2
Bromoform	ND(0.5)	103	69.9-124	10.0	µg/L	95.6	104	58.6-123	10.0	µg/L	8.40	13.3
Bromomethane	ND(1.0)	101	63.0-125	10.0	µg/L	98.8	108	60.6-127	10.0	µg/L	8.90	18.1
Carbon disulfide	ND(1.0)	95.6	76.2-126	20.0	µg/L	96.4	100.	72.9-139	20.0	µg/L	3.70	13.1
Carbon tetrachloride	ND(0.5)	94.2	80.0-120	10.0	µg/L	92.6	94.6	78.8-122	10.0	µg/L	2.10	13.1
Chlorobenzene	ND(0.5)	104	80.0-120	10.0	µg/L	105	104	88.0-114	10.0	µg/L	1.00	7.2
Chloroethane	ND(0.5)	99.7	74.6-123	10.0	µg/L	100	105	75.5-126	10.0	µg/L	4.90	13.9
Chloroform	ND(0.5)	91.4	78.2-120	10.0	µg/L	89.0	92.2	74.1-120	10.0	µg/L	3.50	9.7
Chloromethane	ND(0.5)	105	63.5-129	10.0	µg/L	104	113	62.5-130	10.0	µg/L	8.30	19.0
Dibromochloromethane	ND(0.5)	104	80.0-120	10.0	µg/L	99.8	103	75.8-117	10.0	µg/L	3.20	10.0
Dibromomethane	ND(1.0)	97.4	75.3-120	10.0	µg/L	90.4	97.5	75.2-125	10.0	µg/L	7.60	12.2
Dichlorodifluoromethane	ND(0.5)	81.8	61.4-132	10.0	µg/L	80.9	86.0	59.3-129	10.0	µg/L	6.10	14.6
Ethylbenzene	ND(0.5)	106	80.0-120	10.0	µg/L	110.	108	89.1-114	10.0	µg/L	1.80	6.5
Hexane	ND(1.0)	97.7	77.0-127	20.0	µg/L	104	97.3	56.5-129	20.0	µg/L	6.70	14.0
Isopropylbenzene	ND(0.5)	101	80.0-120	10.0	µg/L	105	103	84.8-121	10.0	µg/L	1.90	9.7
MTBE	ND(0.5)	88.4	67.5-120	10.0	µg/L	87.4	96.6	69.5-124	10.0	µg/L	10.0	11.0
Methyl iodide	ND(1.0)	97.9	78.4-120	20.0	µg/L	98.1	102	78.4-120	20.0	µg/L	3.90	20.0
Methylene chloride	ND(0.5)	93.4	74.9-120	10.0	µg/L	94.0	94.5	74.2-117	10.0	µg/L	0.50	10.4
Styrene	ND(0.5)	106	80.0-120	10.0	µg/L	105	104	73.6-128	10.0	µg/L	1.00	6.5
Tetrachloroethene	ND(0.5)	105	80.0-123	10.0	µg/L	108	105	81.5-124	10.0	µg/L	2.80	10.0
Toluene	ND(0.5)	106	80.0-120	10.0	µg/L	108	106	89.7-116	10.0	µg/L	1.90	8.0
Trichloroethene	ND(0.5)	100.	80.0-120	10.0	µg/L	97.8	101	81.4-118	10.0	µg/L	3.20	12.1
Trichlorofluoromethane	ND(0.5)	90.5	78.5-124	10.0	µg/L	90.5	94.9	78.6-123	10.0	µg/L	4.70	11.5
Vinyl acetate	ND(5) EV	98.6 EV	63.4-120	20.0	µg/L	85.2 EV	92.2 EV	52.1-110	20.0	µg/L	7.90	16.7
Vinyl chloride	ND(0.5)	96.7	67.8-130	10.0	µg/L	96.0	107	70.1-127	10.0	µg/L	10.8	14.3
cis-1,2-Dichloroethene	ND(0.5)	97.3	80.0-120	10.0	µg/L	95.1	98.2	77.8-119	10.0	µg/L	3.20	12.8
cis-1,3-Dichloropropene	ND(0.5)	103	78.2-120	10.0	µg/L	92.1	99.3	71.7-111	10.0	µg/L	7.50	9.3
m+p-Xylene	ND(1.0)	105	80.0-120	20.0	µg/L	108	107	88.6-116	20.0	µg/L	0.90	6.7

Quality Control Report
Method Blank, LCS, MS/MSD Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Method Blank	LCS % Rec	LCS Limits	LCS Spike Level	Units	Spiked Sample (% Recovery) MS	MSD	MS/MSD Limits	MS/MSD Spike Level	Units	Spiked Sample Precision Data RPD	Limit
QC Batch: 1MS8264	**For sample analyzed on: 09/21/2015**					**Spiked sample: 15090825R**						
n-Butylbenzene	ND(0.5)	103	80.0-122	10.0	µg/L	106	104	76.5-131	10.0	µg/L	1.90	14.1
n-Propylbenzene	ND(0.5)	107	80.0-122	10.0	µg/L	109	104	83.0-128	10.0	µg/L	4.70	9.6
o-Xylene	ND(0.5)	103	80.0-120	10.0	µg/L	106	104	88.3-115	10.0	µg/L	1.90	8.1
sec-butylbenzene	ND(0.5)	103	80.0-121	10.0	µg/L	105	102	87.0-124	10.0	µg/L	2.90	11.8
tert-Butylbenzene	ND(0.5)	102	80.0-122	10.0	µg/L	104	102	82.4-125	10.0	µg/L	1.90	11.7
trans-1,2-Dichloroethene	ND(0.5)	98.8	80.0-120	10.0	µg/L	96.4	101	82.2-119	10.0	µg/L	4.70	9.0
trans-1,3-dichloropropene	ND(0.5)	105	80.0-120	10.0	µg/L	98.3	104	76.4-108	10.0	µg/L	5.60	9.3
trans-1,4-Dichloro-2-butene	ND(5.0)	102	52.2-142	20.0	µg/L	95.0	101	52.2-142	20.0	µg/L	6.10	20.0
Cyclohexane	ND(5.0)	91.9	75.8-127	20.0	µg/L	95.7	97.8	86.6-123	20.0	µg/L	2.20	20.0
Methylcyclohexane	ND(5.0)	94.0	75.2-126	20.0	µg/L	101	101	75.2-126	20.0	µg/L	0.0	20.0
Surrogate Data:												
1,2-DICHLOROETHANE-d4	91.1	90.1	74.3-123	10.0	µg/L	88.8	95.4	74.3-123	10.0	µg/L		
TOLUENE-d8	105	104	80.0-120	10.0	µg/L	108	108	80.0-120	10.0	µg/L		
4-BFB(MS)	103	102	80.0-120	10.0	µg/L	96.9	98.5	80.0-120	10.0	µg/L		

Data Qualifiers:

MN - The MS/MSD sample analyses were not performed on a sample from this Continental order number.

EV - Using the recommended analytical procedure, this analyte routinely yields low and/or variable recoveries. The stated reporting limit or concentration is an estimated value.

IV - The initial calibration verification (ICV) standard for this analyte was above the method or SOP limit. The reported sample concentration is estimated.

MP - The MS/MSD recoveries for this analyte exceeded the method or laboratory precision control limit. The reported sample concentration is estimated.

** - RPD calculation not applicable/not available for this analysis.

Quality Control Report
Sample Surrogate Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Surrogate	Date Prepared	Date Analyzed	Spike Level	Units	% Recovery	Acceptable % Limits
Lab Number: 15090819		**Sample Description: WRCSMW-5(090815)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	95.4	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	105	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	88.5	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	76.0	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	109	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	37.0	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	60.9	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	101	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	92.7	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	102	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	101	80.0-120
Lab Number: 15090820		**Sample Description: WRCSMW-5D(090815)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	99.0	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	109	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	88.1	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	68.7	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	113	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	34.7	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	56.8	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	103	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/17/2015	10	µg/L	92.9	74.3-123
TOLUENE-d8		09/17/2015	10	µg/L	101	80.0-120
4-BFB(MS)		09/17/2015	10	µg/L	102	80.0-120
Lab Number: 15090821		**Sample Description: WRCEB(090815)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	94.4	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	104	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	93.0	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	77.1	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	114	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	37.5	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	61.6	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	102	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	92.4	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	102	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	100.	80.0-120
Lab Number: 15090822		**Sample Description: WRCSMW-9(090815)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	93.2	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	98.9	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	92.7	68.0-104

Quality Control Report
Sample Surrogate Data

Client: Coffeyville Resources
Attn: Sam McCormick
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Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Surrogate	Date Prepared	Date Analyzed	Spike Level	Units	% Recovery	Acceptable % Limits
Lab Number: 15090822		**Sample Description: WRCSMW-9(090815)**				
TCL/HSL Extractables						
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	77.0	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	101	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	34.4	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	56.1	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	108	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	93.9	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	103	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	101	80.0-120
Lab Number: 15090823		**Sample Description: WRCSMW-9D(090815)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	95.0	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	104	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	91.2	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	76.9	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	109	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	37.3	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	61.7	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	105	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	94.5	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	102	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	103	80.0-120
Lab Number: 15090824		**Sample Description: WRCDUP1**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	92.6	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	100.	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	77.7	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	62.9	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	97.4	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	29.8	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	49.2	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	93.1	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	94.1	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	101	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	100.	80.0-120
Lab Number: 15090825		**Sample Description: WRCSMW-21(090915)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	92.5	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	101	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	88.9	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	74.5	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	99.3	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	35.6	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	57.8	40.5-66.5

Quality Control Report
Sample Surrogate Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Surrogate	Date Prepared	Date Analyzed	Spike Level	Units	% Recovery	Acceptable % Limits
Lab Number: 15090825		**Sample Description: WRCSMW-21(090915)**				
TCL/HSL Extractables						
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	103	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	50	µg/L	96.4	74.3-123
TOLUENE-d8		09/16/2015	50	µg/L	103	80.0-120
4-BFB(MS)		09/16/2015	50	µg/L	104	80.0-120
Lab Number: 15090825R		**Sample Description: WRCSMW-21(090915)**				
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/21/2015	10	µg/L	90.8	74.3-123
TOLUENE-d8		09/21/2015	10	µg/L	106	80.0-120
4-BFB(MS)		09/21/2015	10	µg/L	96.9	80.0-120
Lab Number: 15090826		**Sample Description: WRCSMW-21D(090915)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	94.4	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	102	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	89.1	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	75.4	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	102	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	34.7	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	59.4	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	100.	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	98.3	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	104	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	102	80.0-120
Lab Number: 15090827		**Sample Description: WRCSMW-11(090915)**				
GC/FID Volatile						
4-BFB (8015D)		09/23/2015	20	µg/L	96.9	84.0-121
FLUOROBENZENE (8015D)		09/23/2015	20	µg/L	99.3	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	88.7	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	78.0	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	114	67.6-136
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	33.1	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	58.6	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	108	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/17/2015	10	µg/L	94.1	74.3-123
TOLUENE-d8		09/17/2015	10	µg/L	105	80.0-120
4-BFB(MS)		09/17/2015	10	µg/L	100.	80.0-120
Lab Number: 15090828		**Sample Description: WRCSMW-11D(090915)**				
GC/FID Volatile						
4-BFB (8015D)		09/21/2015	20	µg/L	94.7	84.0-121
FLUOROBENZENE (8015D)		09/21/2015	20	µg/L	98.2	71.7-132
TCL/HSL Extractables						
NITROBENZENE-d5	09/15/2015	09/18/2015	100	µg/L	92.5	68.0-104
2-FLUOROBIPHENYL	09/15/2015	09/18/2015	100	µg/L	76.6	59.1-96.4
TERPHENYL-d14	09/15/2015	09/18/2015	100	µg/L	102	67.6-136

Quality Control Report
Sample Surrogate Data

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Surrogate	Date Prepared	Date Analyzed	Spike Level	Units	% Recovery	Acceptable % Limits
Lab Number: 15090828		**Sample Description: WRCSMW-11D(090915)**				
TCL/HSL Extractables						
PHENOL-d6	09/15/2015	09/18/2015	150	µg/L	36.6	24.7-44.2
2-FLUOROPHENOL	09/15/2015	09/18/2015	150	µg/L	61.6	40.5-66.5
2,4,6-TRIBROMOPHENOL	09/15/2015	09/18/2015	150	µg/L	105	64.3-122
M8260B Volatiles						
1,2-DICHLOROETHANE-d4		09/16/2015	10	µg/L	93.2	74.3-123
TOLUENE-d8		09/16/2015	10	µg/L	104	80.0-120
4-BFB(MS)		09/16/2015	10	µg/L	100.	80.0-120

Quality Control Report
Continuing Calib. Blank Report

Client: Coffeyville Resources
Attn: Sam McCormick
10 E. Cambridge Circle Dr.
Kansas City, KS 66103

Date Reported: 10/12/2015
Date Received: 09/11/2015
Continental File No: 8462
Continental Order No: 128433

Analysis	Date of Analysis	Instrument Batch ID	Units	Result
Arsenic, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Arsenic, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Arsenic, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Barium, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Barium, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Barium, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Cadmium, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Cadmium, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Cadmium, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Chromium, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Chromium, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Chromium, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Lead, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Lead, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Lead, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Mercury, Total	09/16/2015	2MA3259	CCB acceptable for this Instrument Batch.	
Mercury, Total	09/16/2015	3MA3259	CCB acceptable for this Instrument Batch.	
Mercury, Total	09/16/2015	4MA3259	CCB acceptable for this Instrument Batch.	
Selenium, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Selenium, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Selenium, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	
Silver, Total, ICP-MS	09/17/2015	7IP3260	CCB acceptable for this Instrument Batch.	
Silver, Total, ICP-MS	09/17/2015	8IP3260	CCB acceptable for this Instrument Batch.	
Silver, Total, ICP-MS	09/17/2015	9IP3260	CCB acceptable for this Instrument Batch.	

Quality Control Report
Continuing Calibration Report

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Date Reported: 10/12/2015
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Continental File No: 8462
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Analysis	Date of Analysis	Instrument Batch ID	Amount in Standard	Amount Detected	Units	Percent Recovery
Oklahoma GRO	09/21/2015	1GC2264	CCV recovery acceptable for this Instrument Batch.			
Oklahoma GRO	09/21/2015	2GC2264	CCV recovery acceptable for this Instrument Batch.			
Oklahoma GRO	09/23/2015	1GC2266	CCV recovery acceptable for this Instrument Batch.			
Oklahoma GRO	09/23/2015	2GC2266	CCV recovery acceptable for this Instrument Batch.			
Oklahoma DRO	09/21/2015	1EX4264	CCV recovery acceptable for this Instrument Batch.			
Oklahoma DRO	09/21/2015	2EX4264	CCV recovery acceptable for this Instrument Batch.			
Oklahoma DRO	09/22/2015	2EX4265	CCV recovery acceptable for this Instrument Batch.			
Oklahoma DRO	09/22/2015	3EX4265	CCV recovery acceptable for this Instrument Batch.			
TCL/HSL Extractables	09/18/2015		CCV recovery acceptable except as qualified below.			
Benzoic Acid	09/18/2015	1MS7261	50.0	92.0	µg/ml	184 EV CH
Isophorone	09/18/2015	1MS7261	50.0	51.5	µg/ml	103 IV

Samples associated with this Continuing Calibration Verification:

Laboratory Number	Instrument Batch	Sample Description
15090819	1MS7261	WRCSMW-5(090815)
15090820	1MS7261	WRCSMW-5D(090815)
15090821	1MS7261	WRCEB(090815)
15090822	1MS7261	WRCSMW-9(090815)
15090823	1MS7261	WRCSMW-9D(090815)
15090824	1MS7261	WRCDUP1
15090825	1MS7261	WRCSMW-21(090915)
15090826	1MS7261	WRCSMW-21D(090915)
15090827	1MS7261	WRCSMW-11(090915)
15090828	1MS7261	WRCSMW-11D(090915)

Analysis	Date of Analysis	Instrument Batch ID	Amount in Standard	Amount Detected	Units	Percent Recovery
M8260B Volatiles	09/16/2015	1MS8259	CCV recovery acceptable for this Instrument Batch.			
M8260B Volatiles	09/17/2015	2MS8259	CCV recovery acceptable for this Instrument Batch.			
M8260B Volatiles	09/17/2015	1MS8260	CCV recovery acceptable for this Instrument Batch.			
M8260B Volatiles	09/17/2015	2MS8260	CCV recovery acceptable for this Instrument Batch.			
M8260B Volatiles	09/21/2015	1MS8264	CCV recovery acceptable for this Instrument Batch.			
M8260B Volatiles	09/21/2015	2MS8264	CCV recovery acceptable for this Instrument Batch.			
Arsenic, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.			
Arsenic, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.			
Arsenic, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.			
Barium, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.			
Barium, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.			
Barium, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.			
Cadmium, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.			
Cadmium, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.			
Cadmium, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.			
Chromium, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.			
Chromium, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.			

Quality Control Report
Continuing Calibration Report

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Chromium, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.
Lead, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.
Lead, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.
Lead, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.
Selenium, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.
Selenium, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.
Selenium, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.
Silver, Total, ICP-MS	09/17/2015	7IP3260	CCV recovery acceptable for this Instrument Batch.
Silver, Total, ICP-MS	09/17/2015	8IP3260	CCV recovery acceptable for this Instrument Batch.
Silver, Total, ICP-MS	09/17/2015	9IP3260	CCV recovery acceptable for this Instrument Batch.
Mercury, Total	09/16/2015	2MA3259	CCV recovery acceptable for this Instrument Batch.
Mercury, Total	09/16/2015	3MA3259	CCV recovery acceptable for this Instrument Batch.
Mercury, Total	09/16/2015	4MA3259	CCV recovery acceptable for this Instrument Batch.

Data Qualifiers:
EV - Using the recommended analytical procedure, this analyte routinely yields low and/or variable recoveries. The stated reporting limit or concentration is an estimated value.

CH - The continuing calibration verification (CCV) standard recovery for this analyte was above the method or SOP limit. The reported concentration for this analyte may be biased high.

IV - The initial calibration verification (ICV) standard for this analyte was above the method or SOP limit. The reported sample concentration is estimated.

Continental Analytical Services, Inc.
525 N. 8th Street, Salina, KS 67401
(785)827-1273 (800)535-3076 Fax (785)823-7830
www.cas-lab.com

CHAIN OF CUSTODY RECORD

Continental Order Number: 128433

Client/Reporting Information	Invoice Information
Company Name: Coffeyville Resources, LLC	Company Name: Coffeyville Resources, LLC
Address: 10 East Cambridge Circle Dr. / Suite 250	Address: 10 East Cambridge Circle Dr. / Suite 250
City: Kansas City State: Kansas Zip: 66103	City: Kansas City State: Kansas Zip: 66103
Contact: Sam McCormick / Jerome McSorley	Contact: Sam McCormick
E-mail: samccormick@cvrenergy.com /	E-mail:
Phone Number: 913-982-0457 Fax Number:	Phone Number: 913-982-0457 Fax Number:
Sampler's Name / Company:(Printed) Jerome McSorley CVR Energy	Sampler's Name:(Signature)
Project Name: WRC CRP Sampling - Sept 2015	Facility Name / Address: WRC Wynnewood, OK
	Purchase Order Number:

Discrepancies See C/S RF
mus
9-11-15

SAMPLE IDENTIFICATION (30 Characters or less)	Matrix (Sample Type)	Regulatory Program	Date Sampled	Time Sampled	C-Composite G-Grab	Total Containers	Number of Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	OTHER:	VOCs (8260) - 3x glass 40 ml vials (HCL)	Oklahoma GRO (8021/8015) - 3x glass 40 ml vials (HCL)	Oklahoma DRO (8000/8100) - 2x amber 1L (HCL)	SVOCs (8270) - 2x amber 1L	Metals 8 - 1 plastic 250 ml (HNO3)					COMMENTS
WRCSMW-5(090815)	GW	R	Sept 8, 2015	11:00	G	11	8		1		2		X	X	X	X	X					
WRCSMW-5D(090815)	GW	R	Sept 8, 2015	11:40	G	11	8		1		2		X	X	X	X	X					
WRCEB090815	GW	R	Sept 8, 2015	13:00	G	11	8		1		2		X	X	X	X	X					Deionized water
WRCSMW-9(090815)	GW	R	Sept 8, 2015	14:05	G	11	8		1		2		X	X	X	X	X					
WRCSMW-9D(090815)	GW	R	Sept 8, 2015	14:50	G	11	8		1		2		X	X	X	X	X					
WRCDUP1	GW	R	Sept 8, 2015	14:50	G	11	8		1		2		X	X	X	X	X					
WRCSMW-21(090915)	GW	R	Sept 9, 2015	9:36	G	11	8		1		2		X	X	X	X	X					
WRCSMW-21(090915) MS/MSD	GW	R	Sept 9, 2015	9:36	G	12	8		1		3		X	X	X	X	X					Metals in 500 ml
WRCSMW-21D(090915)	GW	R	Sept 9, 2015	10:40	G	11	8		1		2		X	X	X	X	X					
WRCSMW-11(090915)	GW	R	Sept 9, 2015	11:26	G	11	8		1		2		X	X	X	X	X					
WRCSMW-11D(090915)	GW	R	Sept 9, 2015	12:06	G	11	8		1		2		X	X	X	X	X					

Matrix (Sample Type): DW=Drinking Water, GW=Ground Water, WW=Waste Water, W=Wipe, S=Solid/Soil, SL=Sludge, A=Air, OL= Oil/Organic Liquid, O=Other,

Regulatory Program: N=NPDES, R=RCRA, D=Drinking Water, SL=503 Sludge, O=Other, nR=Non RCRA
IMW

(Please note if non-standard turnaround. Rush & Emergency subject to additional charge)
Standard TAT: (15 working days) Rush TAT: (5 working days) Emergency TAT: (3 working days)

RELINQUISHED BY:	DATE: 9-11-15	TIME: 11:40	RECEIVED BY:	DATE: 9/11/15	TIME: 1140
RELINQUISHED BY:	DATE: 9/11/15	TIME: 1630	RECEIVED BY:	DATE:	TIME:
RECEIVED AT LAB BY:	DATE: 9-11-15	TIME: 16:30	SHIPPED VIA: AIRBILL:	SEAL #: SEAL DATE:	

PLEASE NOTE THE ATTACHED CONTINENTAL SAMPLE ACCEPTANCE POLICY

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

SMW-5 MW-5D

Cooler 1 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 3918 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____
Seal Name: _____ Seal Date: _____
Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 9.4 Corrected Reading (°C) 8.9
Temperature. By: Temperature Blank Surface Temperature
Thermo. ID No.: 585 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☐ **No** ☒ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐
☐ Container label absent
☐ Chain of Custody incomplete [see detail below]
☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
☐ Date or Time sampled obtained from container label
☐ Chain of Custody missing sampler's name
☐ Chain of Custody missing matrix (sample type)
☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody
☐ Sample listed on Chain of Custody, not received
☐ Sample identification on container and Chain of Custody do not agree
☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
☒ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
☐ Broken or leaking containers (detail actions below)
☐ Sample container type or labeled chemical preservation inappropriate
☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

WMSEB SMW-9

Cooler 2 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 4116 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____
Seal Name: _____ Seal Date: _____
Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 2.3 Corrected Reading (°C) 1.8
Temperature. By: Temperature Blank Surface Temperature
Thermo. ID No.: 585 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☒ **No** ☐ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐
☐ Container label absent
☐ Chain of Custody incomplete [see detail below]
☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
☐ Date or Time sampled obtained from container label
☐ Chain of Custody missing sampler's name
☐ Chain of Custody missing matrix (sample type)
☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody
☐ Sample listed on Chain of Custody, not received
☐ Sample identification on container and Chain of Custody do not agree
☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
☐ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
☐ Broken or leaking containers (detail actions below)
☐ Sample container type or labeled chemical preservation inappropriate
☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

MW-9D WRC DUP 1

Cooler 3 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 4012 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____

Seal Name: _____ Seal Date: _____

Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 6.6 Corrected Reading (°C) 6.1

Temperature. By: Temperature Blank Surface Temperature

Thermo. ID No.: 585 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☐ **No** ☒ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

- ☐ Chain of Custody not present - information taken from:
  - Cover Letter ☐ Container ☐
  - PO ☐ CAS Proj. Mgr. ☐
- ☐ Container label absent
- ☐ Chain of Custody incomplete [see detail below]
- ☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
- ☐ Date or Time sampled obtained from container label
- ☐ Chain of Custody missing sampler's name
- ☐ Chain of Custody missing matrix (sample type)
- ☐ Missing relinquished information: signature date time
- ☐ Sample excluded from Chain of Custody
- ☐ Sample listed on Chain of Custody, not received
- ☐ Sample identification on container and Chain of Custody do not agree
- ☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
- ☒ Cooler temperature exceeded 0.1 - 6.0 °C requirement [Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
- ☐ Broken or leaking containers (detail actions below)
- ☐ Sample container type or labeled chemical preservation inappropriate
- ☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

MW-20 MW-21

Cooler 4 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 4096 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____

Seal Name: _____ Seal Date: _____

Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 2.0 Corrected Reading (°C) 1.5

Temperature. By: Temperature Blank Surface Temperature

Thermo. ID No.: 525 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☒ **No** ☐ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐

☐ Container label absent

☐ Chain of Custody incomplete [see detail below]

☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)

☐ Date or Time sampled obtained from container label

☐ Chain of Custody missing sampler's name

☐ Chain of Custody missing matrix (sample type)

☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody

☐ Sample listed on Chain of Custody, not received

☐ Sample identification on container and Chain of Custody do not agree

☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]

☐ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]

☐ Broken or leaking containers (detail actions below)

☐ Sample container type or labeled chemical preservation inappropriate

☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

MW-21 MSD TRIP BLANK 2 LA

Cooler 5 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: Y161 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____
Seal Name: _____ Seal Date: _____
Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 4.0 Corrected Reading (°C) 3.5
Temperature. By: Temperature Blank Surface Temperature
Thermo. ID No.: 595 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☑ **No** ☐ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐
☐ Container label absent
☐ Chain of Custody incomplete [see detail below]
☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
☐ Date or Time sampled obtained from container label
☐ Chain of Custody missing sampler's name
☐ Chain of Custody missing matrix (sample type)
☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody
☐ Sample listed on Chain of Custody, not received
☐ Sample identification on container and Chain of Custody do not agree
☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
☐ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
☐ Broken or leaking containers (detail actions below)
☐ Sample container type or labeled chemical preservation inappropriate
☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 84602

Sample ID's in cooler:

MW-11 MW-11D

Cooler 6 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 3909 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____
Seal Name: _____ Seal Date: _____
Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 2.6 Corrected Reading (°C) 2.1
Temperature. By: Temperature Blank Surface Temperature
Thermo. ID No.: 595 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☒ **No** ☐ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐
☐ Container label absent
☐ Chain of Custody incomplete [see detail below]
☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
☐ Date or Time sampled obtained from container label
☐ Chain of Custody missing sampler's name
☐ Chain of Custody missing matrix (sample type)
☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody
☐ Sample listed on Chain of Custody, not received
☐ Sample identification on container and Chain of Custody do not agree
☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
☐ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
☐ Broken or leaking containers (detail actions below)
☐ Sample container type or labeled chemical preservation inappropriate
☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Continental Analytical Services, Inc.
Cooler/Sample Receipt Form (C/S RF)

CAS Order No.: 128433

Client Name: Coffeyville Res. **CAS File No.:** 8462

Sample ID's in cooler:

VOC''

Cooler 7 **of** 7 **for this CAS Order No.**

Cooler Identification: CAS Cooler #: 3463 / Client's Cooler / Box / Letter / Hand-delivered
Other: _____

Date/Time Cooler Received: 9 / 11 / 15 16 : 30

Delivered By: UPS / FedX / AB Express / Field Svcs / Mail / Walk-In / Other: _____

Custody Seal: Present: Intact / Broken Absent: X Seal No: _____
Seal Name: _____ Seal Date: _____
Seal matches Chain of Custody: Yes / No / N/A

Type of Packing Material: Blue Ice / Ice / Melted Ice / Bubble / Foam / Paper / Peanuts / Vermiculite / None / Other: _____

Cooler Temperature (°C): Original Reading (°C) 2.6 Corrected Reading (°C) 2.1
Temperature. By: Temperature Blank Surface Temperature
Thermo. ID No.: 585 Thermo. Correction Factor (°C): -0.5

☐ Evidence of Cooling and date received = date sampled

Sample Receipt Discrepancies: ☒ **No** ☐ **Yes** **(See below for discrepancies.)**

Note: If discrepancies are present, CAS will proceed with analyses until/unless directed otherwise by the client.

☐ Chain of Custody not present - information taken from:
Cover Letter ☐ Container ☐
PO ☐ CAS Proj. Mgr. ☐
☐ Container label absent
☐ Chain of Custody incomplete [see detail below]
☐ Chain of Custody missing date/time sampled (excl. TB or Dup.)
☐ Date or Time sampled obtained from container label
☐ Chain of Custody missing sampler's name
☐ Chain of Custody missing matrix (sample type)
☐ Missing relinquished information: signature date time

☐ Sample excluded from Chain of Custody
☐ Sample listed on Chain of Custody, not received
☐ Sample identification on container and Chain of Custody do not agree
☐ Air bubbles in Aqueous VOA vials larger than pea-size [approx. 6 mm]
☐ Cooler temperature exceeded 0.1 - 6.0 °C requirement
[Do not mark if samples do not require cooling to 0.1 - 6.0 °C.]
☐ Broken or leaking containers (detail actions below)
☐ Sample container type or labeled chemical preservation inappropriate
☐ Other discrepancies: _____

Detail to discrepancies/comments:

Completed by: MWS **Date Completed:** 9-11-15

Attachment B – Statistical Analysis

GeoStat Environmental, LLC

Office (620) 241-6090 Fax (620) 241-6490

November 7, 2015

Mr. Jerome McSorley, PG
Geologist
CVR Energy, Inc.
1207 Sovereign Row
Oklahoma City, OK 73108

RE: GeoStat Support for CVR Energy, Inc. - Statistical Analysis for Groundwater Data at the Wynnewood Facility

Dear Mr. McSorley;

Attached please find results of the 8 year rolling average Mann-Kendall statistical analysis for groundwater samples taken from monitoring wells associated with the closed storm water retention pond at the Wynnewood refinery facility. Analysis included Sen's Slope (Mann-Kendall) trend analysis, intra-well tolerance limit analysis, time series plots, and box & whisker plots. Statistical analysis was completed for analyzed constituents utilizing all available data from May 2008 through September 2015. Monitoring wells analyzed consist of:

Upgradient Wells:
SMW-5, SMW-5D

Downgradient Wells:
SMW-9, SMW-9D, SMW-11, SMW-11D, SMW-21, SMW-21D

Appropriate statistical methodology from 40 CFR 258.53 (g) were utilized to analyze these constituents. TPH (as GRO and DRO), BTEX, and arsenic levels were evaluated using the Sen's Slope (Mann-Kendall) trend evaluation in accordance with the EPA Practical Methods for Data Analysis, EPA QA/G-9 QA00 Update, July 2000, Section 4.3.4, as outlined in Attachment 13 of the WRC RCRA permit. The trend evaluation compares results from the latest 16 sampling events (8 years) and determines if the analyte concentration in the well is increasing, decreasing, or stable/no trend. Copies of the Sen's Slope (Mann-Kendall) trend evaluation charts are included below.

The TPH Mann-Kendall trend evaluation tables show TPH (as GRO and DRO) concentrations as slightly increasing in one shallow SWRP well (SMW-21), however the trend since June 2012 has been flat, and with the exception of the 2011 detected values, the trend has been basically stable since 2009. TPH (as GRO and DRO) concentrations are stable or trending down in the remaining SWRP wells. Of note, TPH (as GRO and DRO) concentrations have been generally trending down in all deep and shallow wells since 2010.

Previous Mann-Kendall trend evaluations indicated that both upgradient and downgradient well locations showed increasing TPH trends, suggesting that the increasing trend in TPH is the result of TPH (from an upgradient source) migrating past the SWRP. The September 2015 analysis generally confirms the previous results, as the trend in the upgradient wells is similar to that observed for the downgradient wells.

The arsenic Sen's Slope (Mann-Kendall) trend evaluation show an overall downward trend for arsenic in two shallow SWRP wells (SMW-5 and SMW-9) and a stable trend (SMW-9D) and slight uptrend in three deep SWRP wells (SMW-5D, SMW-11D and SMW-21D). Note that the trend in SMW-21D has been decreasing since June 2011, while the last three events at upgradient well SMW-5D have exhibited increasing detections. Two shallow SWRP wells (SMW-11 and SMW-21) exhibit an upward trend. For the additional RCRA metals, (barium, chromium, lead, selenium, vanadium) analysis indicated the trends were either stable or trending down.

Benzene, ethylbenzene, toluene, xylene (BTEX) was not detected above the respective practical quantitation limit (PQL) in any monitoring well in June 2015. A limited number of BTEX detections below the PQL (J flagged) were noted, therefore Sen's Slope (Mann-Kendall) analysis was completed for BTEX. Analysis indicated either a stable trend (sampling data either non-detect or below the applicable PQL) or a decreasing trend.

Intra-well tolerance limit analysis was also completed. As shown on the summary table and graphical analysis, no statistical exceedances were noted for analyzed constituents associated with sampling data for the September 2015 sampling event.

GeoStat appreciates the opportunity to provide our technical services to you on this project. Please call me at (620) 241-6090, if you have any questions regarding this report.

Sincerely,
***GeoStat* Environmental, LLC**

Kurt Shobe, MS, PG, CHMM
Project Manager

Wynnewood September 2015 Sen's Slope/Mann-Kendall

Constituent	Well	Slope	Mann-K.	Critical	Sig.	N	Alpha
Arsenic (mg/l)	**SMW-11**	**0.002716**	**69**	**53**	**Yes**	**16**	**0.02**
Arsenic (mg/l)	**SMW-21**	**0.001...**	**64**	**53**	**Yes**	**16**	**0.02**
Arsenic (mg/l)	SMW-21D	0.000...	21	53	No	16	0.02
Arsenic (mg/l)	**SMW-5 (bg)**	**-0.00...**	**-67**	**-53**	**Yes**	**16**	**0.02**
Arsenic (mg/l)	SMW-5D (bg)	0.000...	45	53	No	16	0.02
Arsenic (mg/l)	SMW-9	-0.00...	-33	-53	No	16	0.02
Arsenic (mg/l)	SMW-9D	0.000...	31	53	No	16	0.02
Arsenic (mg/l)	SMW-11D	0.000...	10	53	No	16	0.02
Barium (mg/L)	SMW-11	-0.00...	0	53	No	16	0.02
Barium (mg/L)	SMW-21	0.010628	42	53	No	16	0.02
Barium (mg/L)	SMW-21D	-0.00...	-8	-53	No	16	0.02
Barium (mg/L)	SMW-5 (bg)	0.002...	8	53	No	16	0.02
Barium (mg/L)	SMW-5D (bg)	-0.00...	-6	-53	No	16	0.02
Barium (mg/L)	**SMW-9**	**-0.01...**	**-64**	**-53**	**Yes**	**16**	**0.02**
Barium (mg/L)	SMW-9D	-0.00...	-15	-53	No	16	0.02
Barium (mg/L)	SMW-11D	0	0	53	No	16	0.02
benzene (ug/l)	SMW-11	0	-44	-53	No	16	0.02
benzene (ug/l)	SMW-21	0	-30	-53	No	16	0.02
benzene (ug/l)	SMW-21D	0	-32	-53	No	16	0.02
benzene (ug/l)	SMW-5 (bg)	0	-44	-53	No	16	0.02
benzene (ug/l)	**SMW-5D (bg)**	**-0.10513**	**-64**	**-53**	**Yes**	**16**	**0.02**
benzene (ug/l)	SMW-9	0	-33	-53	No	16	0.02
benzene (ug/l)	SMW-9D	0	-33	-53	No	16	0.02
benzene (ug/l)	SMW-11D	0	-32	-53	No	16	0.02
Chromium (mg/l)	**SMW-11**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-21**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-21D**	**-0.00...**	**-56**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-5 (bg)**	**-0.00...**	**-57**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-5D (bg)**	**-0.00...**	**-60**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-9**	**-0.00...**	**-60**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-9D**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Chromium (mg/l)	**SMW-11D**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Ethylbenzene (ug/l)	SMW-11	0	-33	-53	No	16	0.02
Ethylbenzene (ug/l)	SMW-21	0	-9	-53	No	16	0.02
Ethylbenzene (ug/l)	SMW-21D	0	-33	-53	No	16	0.02
Ethylbenzene (ug/l)	SMW-5 (bg)	0	-33	-53	No	16	0.02
Ethylbenzene (ug/l)	**SMW-5D (bg)**	**-0.10305**	**-61**	**-53**	**Yes**	**16**	**0.02**
Ethylbenzene (ug/l)	SMW-9	0	-33	-53	No	16	0.02
Ethylbenzene (ug/l)	SMW-9D	0	-33	-53	No	16	0.02
Ethylbenzene (ug/l)	SMW-11D	0	-33	-53	No	16	0.02
GRO+DRO (ug/l)	SMW-11	-96.27	-10	-53	No	16	0.02
GRO+DRO (ug/l)	SMW-21	26.2	20	53	No	16	0.02
GRO+DRO (ug/l)	SMW-21D	-30.962	-31	-53	No	16	0.02
GRO+DRO (ug/l)	**SMW-5 (bg)**	**-71.084**	**-54**	**-53**	**Yes**	**16**	**0.02**
GRO+DRO (ug/l)	SMW-5D (bg)	4.1945	13	53	No	16	0.02
GRO+DRO (ug/l)	SMW-9	-72.892	-40	-53	No	16	0.02
GRO+DRO (ug/l)	SMW-9D	-47.609	-40	-53	No	16	0.02
GRO+DRO (ug/l)	SMW-11D	-31.402	-40	-53	No	16	0.02
Lead (mg/l)	**SMW-11**	**-0.00...**	**-72**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-21**	**-0.00...**	**-72**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-21D**	**-0.00...**	**-70**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-5 (bg)**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-5D (bg)**	**-0.00...**	**-64**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-9**	**-0.00...**	**-68**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-9D**	**-0.00...**	**-56**	**-53**	**Yes**	**16**	**0.02**
Lead (mg/l)	**SMW-11D**	**-0.00...**	**-68**	**-53**	**Yes**	**16**	**0.02**
Selenium (mg/l)	**SMW-11**	**-0.00...**	**-62**	**-53**	**Yes**	**16**	**0.02**
Selenium (mg/l)	SMW-21	-0.00...	-52	-53	No	16	0.02
Selenium (mg/l)	**SMW-21D**	**-0.00...**	**-63**	**-53**	**Yes**	**16**	**0.02**
Selenium (mg/l)	SMW-5 (bg)	-2.2e-11	-17	-53	No	16	0.02
Selenium (mg/l)	**SMW-5D (bg)**	**-0.00...**	**-56**	**-53**	**Yes**	**16**	**0.02**
Selenium (mg/l)	SMW-9	0	12	53	No	16	0.02
Selenium (mg/l)	**SMW-9D**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
Selenium (mg/l)	**SMW-11D**	**-0.00...**	**-58**	**-53**	**Yes**	**16**	**0.02**
toluene (ug/l)	SMW-11	0	-42	-53	No	16	0.02
toluene (ug/l)	SMW-21	-0.04...	-36	-53	No	16	0.02
toluene (ug/l)	SMW-21D	0	-33	-53	No	16	0.02
toluene (ug/l)	SMW-5 (bg)	0	-41	-53	No	16	0.02

Wynnewood September 2015 Sen's Slope/Mann-Kendall

Constituent	Well	Slope	Mann-K.	Critical	Sig.	N	Alpha
toluene (ug/l)	SMW-5D (bg)	0	-33	-53	No	16	0.02
toluene (ug/l)	SMW-9	-0.06...	-50	-53	No	16	0.02
toluene (ug/l)	SMW-9D	-0.03...	-48	-53	No	16	0.02
toluene (ug/l)	SMW-11D	0	-33	-53	No	16	0.02

Wynnewood September 2015 Tolerance Limit

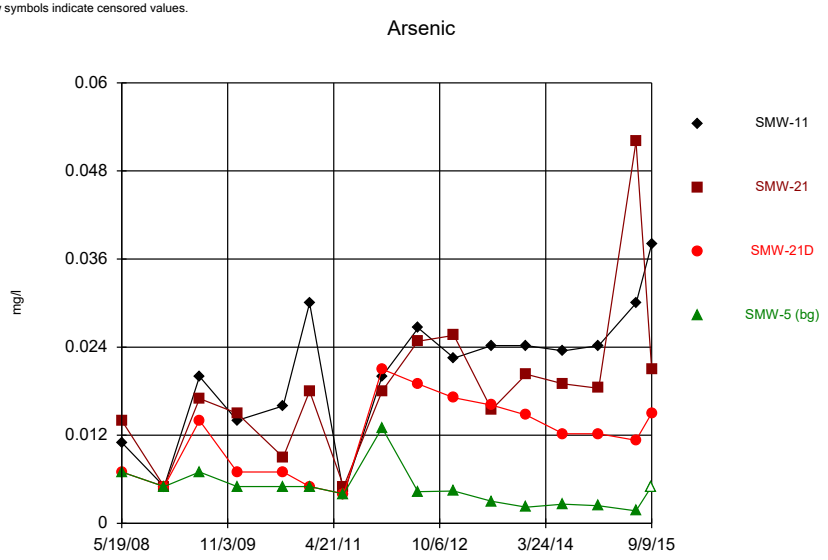
Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Arsenic (mg/l)	SMW-11	0.044928	9/9/2015	0.038	No	15	0	No	0.01	Intra
Arsenic (mg/l)	SMW-21	0.06156	9/9/2015	0.021	No	15	0	sqrt(x)	0.01	Intra
Arsenic (mg/l)	SMW-21D	0.028467	9/9/2015	0.015	No	15	0	No	0.01	Intra
Arsenic (mg/l)	SMW-5	0.015193	9/8/2015	<0.005	No	15	0	sqrt(x)	0.01	Intra
Arsenic (mg/l)	SMW-5D	0.016925	9/8/2015	0.011	No	15	0	x^(1/3)	0.01	Intra
Arsenic (mg/l)	SMW-9	0.037767	9/8/2015	0.006	No	15	0	No	0.01	Intra
Arsenic (mg/l)	SMW-9D	0.209	9/8/2015	0.014	No	15	0	n/a	0.46329	NP Intra(normal...
Arsenic (mg/l)	SMW-11D	0.029189	9/9/2015	0.013	No	15	0	No	0.01	Intra
Barium (mg/L)	SMW-11	0.83487	9/9/2015	0.4	No	15	0	No	0.01	Intra
Barium (mg/L)	SMW-21	0.643	9/9/2015	0.278	No	15	0	n/a	0.46329	NP Intra(normal...
Barium (mg/L)	SMW-21D	0.28484	9/9/2015	0.202	No	15	0	No	0.01	Intra
Barium (mg/L)	SMW-5	0.26797	9/8/2015	<0.005	No	15	0	No	0.01	Intra
Barium (mg/L)	SMW-5D	0.31752	9/8/2015	0.203	No	15	0	sqrt(x)	0.01	Intra
Barium (mg/L)	SMW-9	0.21778	9/8/2015	0.056	No	15	0	No	0.01	Intra
Barium (mg/L)	SMW-9D	1.05	9/8/2015	0.161	No	15	0	n/a	0.46329	NP Intra(normal...
Barium (mg/L)	SMW-11D	0.27216	9/9/2015	0.114	No	15	0	No	0.01	Intra
benzene (ug/l)	SMW-11	5	9/9/2015	<0.5	No	15	86.667	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-21	5	9/9/2015	<3 (D)	No	15	66.667	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-21D	5	9/9/2015	<0.5	No	15	93.333	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-5	5	9/8/2015	<0.5	No	15	93.333	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-5D	5	9/8/2015	<0.5	No	15	53.333	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-9	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-9D	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
benzene (ug/l)	SMW-11D	5	9/9/2015	<0.5	No	15	93.333	n/a	0.46329	NP Intra(NDs)
Chromium (mg/l)	SMW-11	0.01	9/9/2015	<0.005	No	15	53.333	n/a	0.46329	NP Intra(NDs)
Chromium (mg/l)	SMW-21	0.01	9/9/2015	<0.005	No	15	46.667	n/a	0.46329	NP Intra(normal...
Chromium (mg/l)	SMW-21D	0.01	9/9/2015	<0.005	No	15	46.667	n/a	0.46329	NP Intra(normal...
Chromium (mg/l)	SMW-5	0.01	9/8/2015	<0.005	No	15	40	n/a	0.46329	NP Intra(normal...
Chromium (mg/l)	SMW-5D	0.01	9/8/2015	<0.005	No	15	46.667	n/a	0.46329	NP Intra(normal...
Chromium (mg/l)	SMW-9	0.01	9/8/2015	<0.005	No	15	46.667	n/a	0.46329	NP Intra(normal...
Chromium (mg/l)	SMW-9D	0.01	9/8/2015	<0.005	No	15	53.333	n/a	0.46329	NP Intra(NDs)
Chromium (mg/l)	SMW-11D	0.01	9/9/2015	<0.005	No	15	53.333	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-11	5	9/9/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-21	5	9/9/2015	<3 (D)	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-21D	5	9/9/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-5	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-5D	5	9/8/2015	<0.5	No	15	53.333	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-9	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-9D	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
Ethylbenzene (ug/l)	SMW-11D	5	9/9/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
GRO+DRO (ug/l)	SMW-11	11834	9/8/2015	3473	No	15	0	x^(1/3)	0.01	Intra
GRO+DRO (ug/l)	SMW-21	3327.8	9/8/2015	1100	No	15	0	sqrt(x)	0.01	Intra
GRO+DRO (ug/l)	SMW-21D	1410.2	9/8/2015	380	No	15	0	sqrt(x)	0.01	Intra
GRO+DRO (ug/l)	SMW-5	1654	9/8/2015	358	No	15	0	No	0.01	Intra
GRO+DRO (ug/l)	SMW-5D	1030	9/8/2015	490	No	15	0	n/a	0.46329	NP Intra(normal...
GRO+DRO (ug/l)	SMW-9	1736.7	9/8/2015	1238	No	15	6.6667	No	0.01	Intra
GRO+DRO (ug/l)	SMW-9D	3303.2	9/8/2015	380	No	15	0	x^(1/3)	0.01	Intra
GRO+DRO (ug/l)	SMW-11D	1336.6	9/8/2015	386	No	15	0	sqrt(x)	0.01	Intra
Lead (mg/l)	SMW-11	0.005	9/9/2015	<0.001	No	15	40	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-21	0.005	9/9/2015	<0.001	No	15	40	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-21D	0.005	9/9/2015	<0.001	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-5	0.005	9/8/2015	<0.001	No	15	40	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-5D	0.005	9/8/2015	<0.001	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-9	0.005	9/8/2015	<0.001	No	15	46.667	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-9D	0.005	9/8/2015	<0.001	No	15	13.333	n/a	0.46329	NP Intra(normal...
Lead (mg/l)	SMW-11D	0.005	9/9/2015	<0.001	No	15	46.667	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-11	0.006	9/9/2015	<0.005	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-21	0.006	9/9/2015	<0.005	No	15	0	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-21D	0.005	9/9/2015	<0.005	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-5	0.028269	9/8/2015	<0.005	No	15	0	x^(1/3)	0.01	Intra
Selenium (mg/l)	SMW-5D	0.005	9/8/2015	<0.005	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-9	0.017	9/8/2015	<0.005	No	15	0	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-9D	0.005	9/8/2015	<0.005	No	15	6.6667	n/a	0.46329	NP Intra(normal...
Selenium (mg/l)	SMW-11D	0.005	9/9/2015	<0.005	No	15	6.6667	n/a	0.46329	NP Intra(normal...
toluene (ug/l)	SMW-11	5	9/9/2015	<0.5	No	15	93.333	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-21	5	9/9/2015	<3 (D)	No	15	60	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-21D	5	9/9/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-5	5	9/8/2015	<0.5	No	15	86.667	n/a	0.46329	NP Intra(NDs)

Wynnewood September 2015 Tolerance Limit

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
toluene (ug/l)	SMW-5D	5	9/8/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-9	5	9/8/2015	<0.5	No	15	60	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-9D	5	9/8/2015	<0.5	No	15	80	n/a	0.46329	NP Intra(NDs)
toluene (ug/l)	SMW-11D	5	9/9/2015	<0.5	No	15	100	n/a	0.46329	NP Intra(NDs)

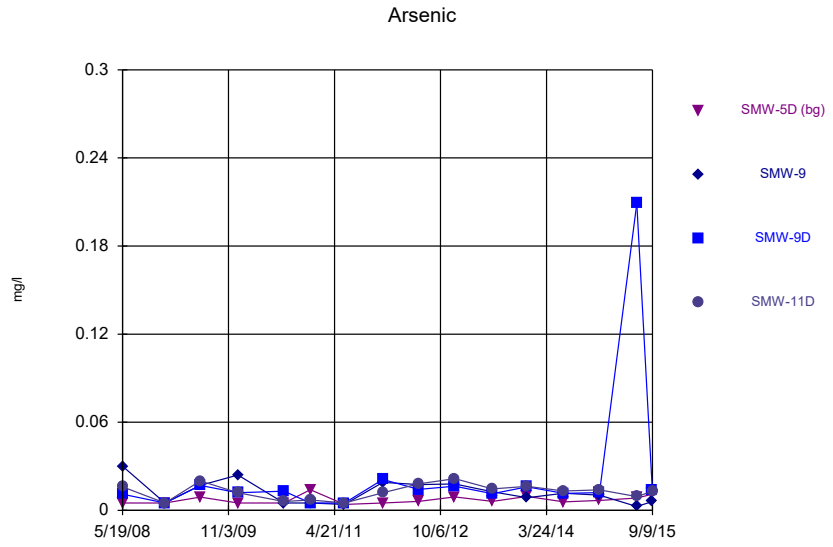
Appendix A
Time Series, Box & Whisker Plots

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



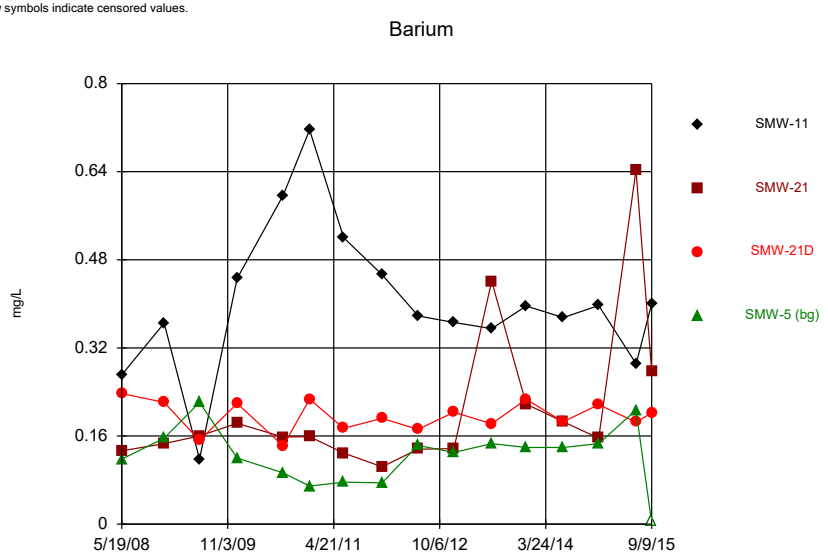
Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA



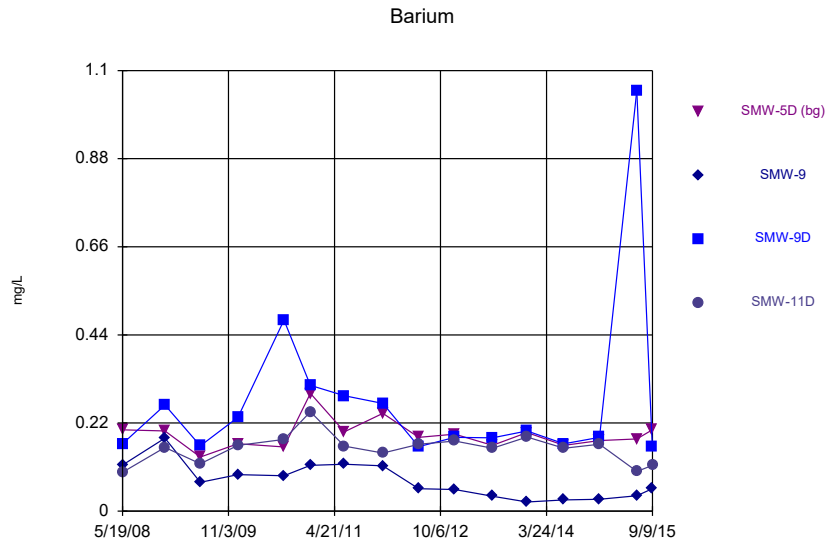
Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

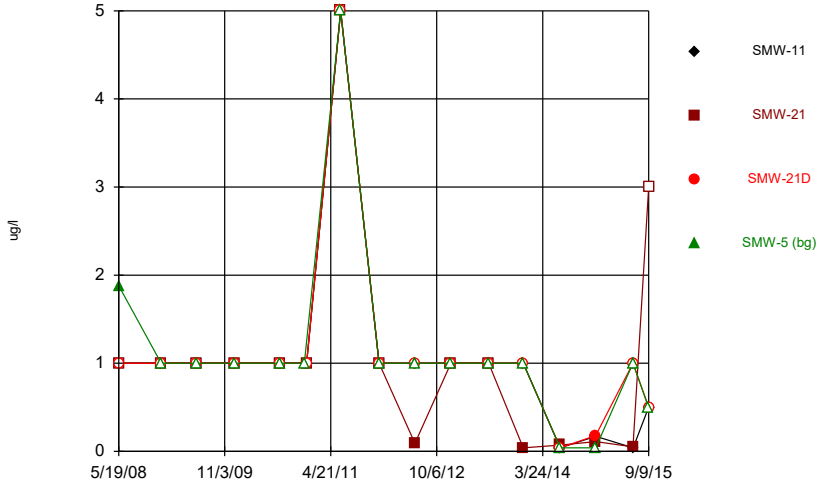
v.9.2.17 Sanitas software licensed to Geostat. EPA



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

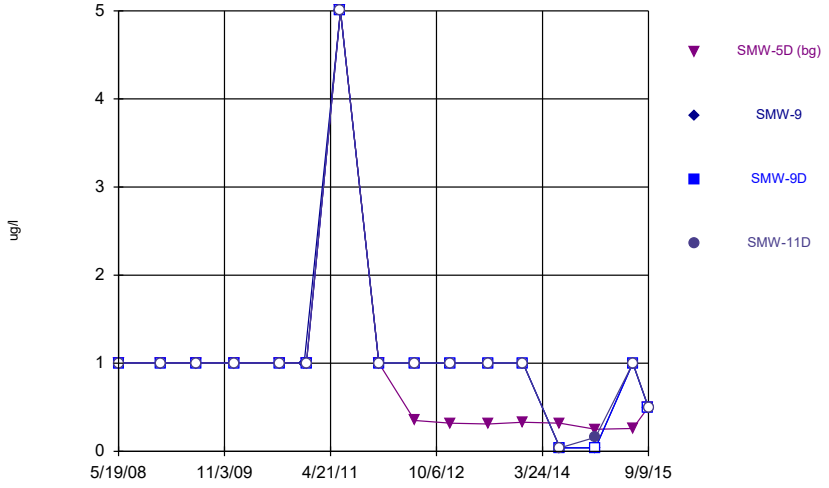
benzene



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

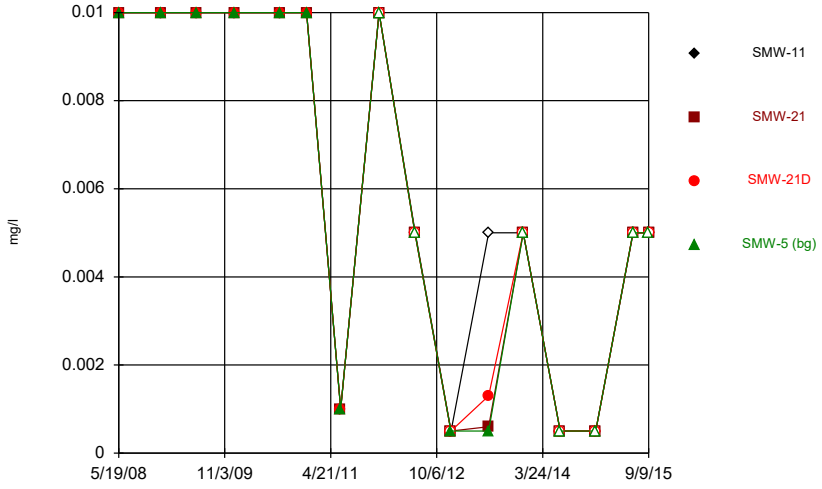
benzene



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Chromium



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

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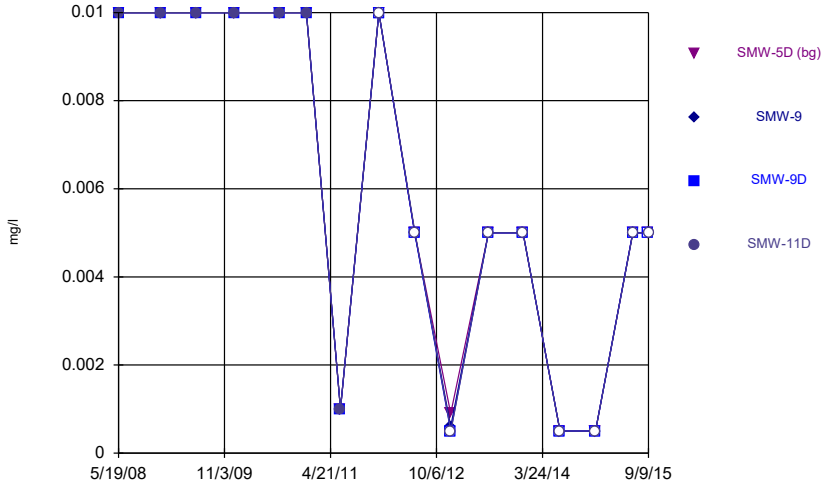
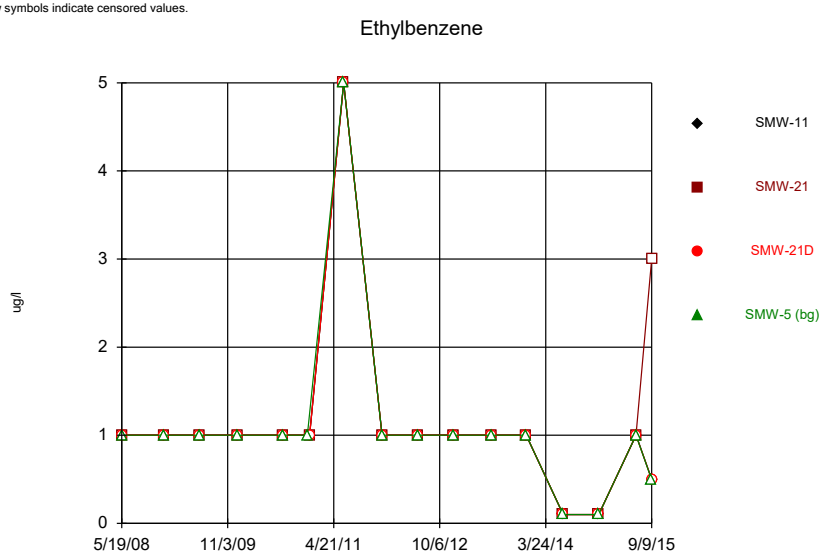
Hollow symbols indicate censored values.

Chromium



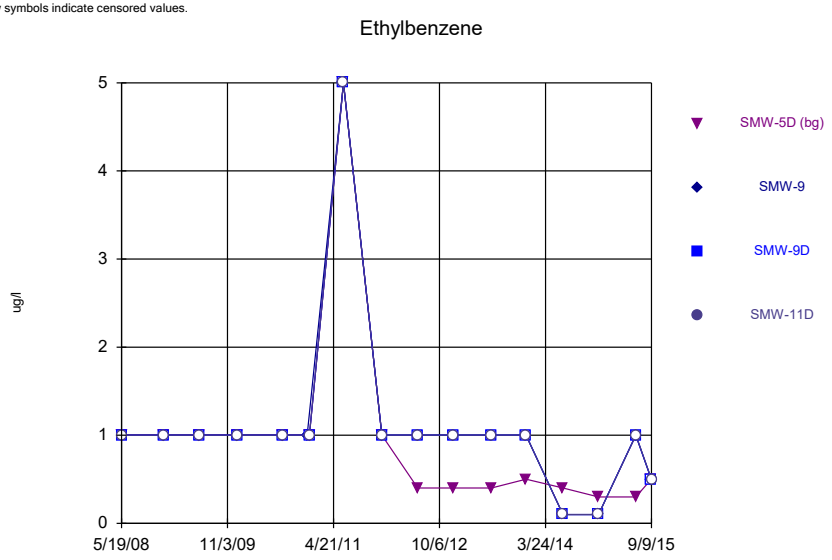
Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



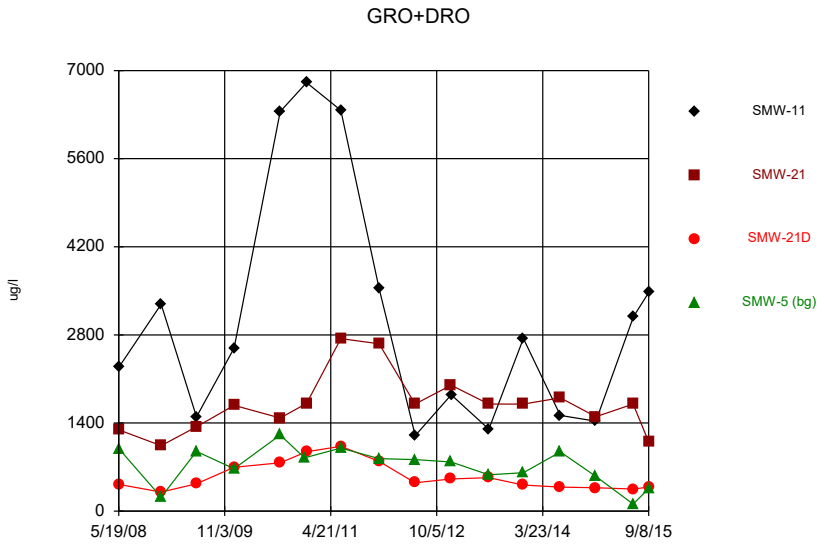
Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Time Series Analysis Run 11/6/2015 3:30 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA



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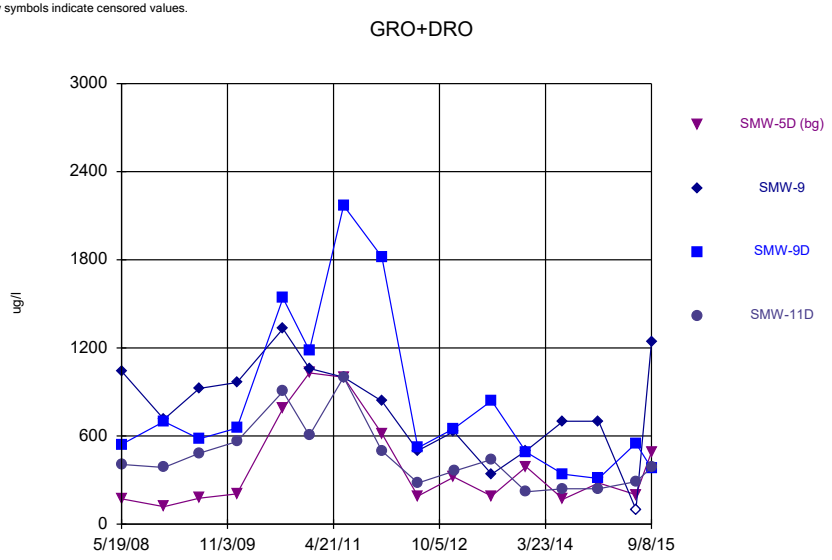

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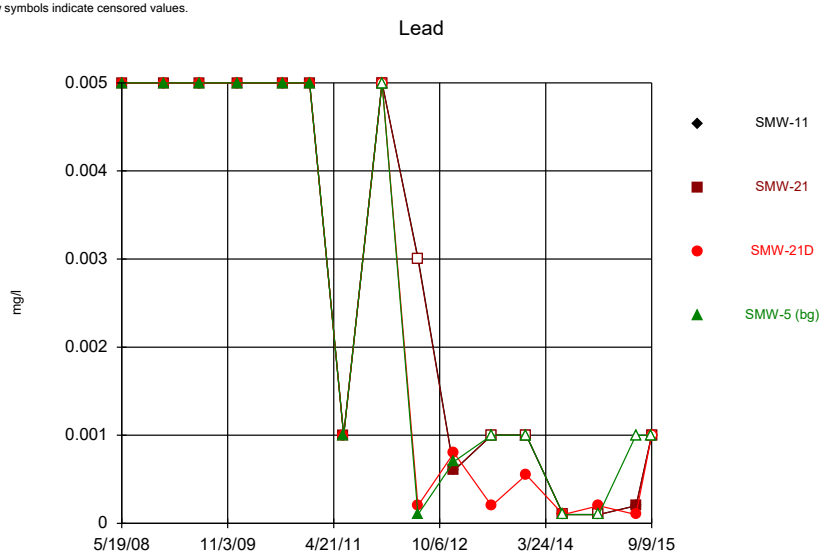

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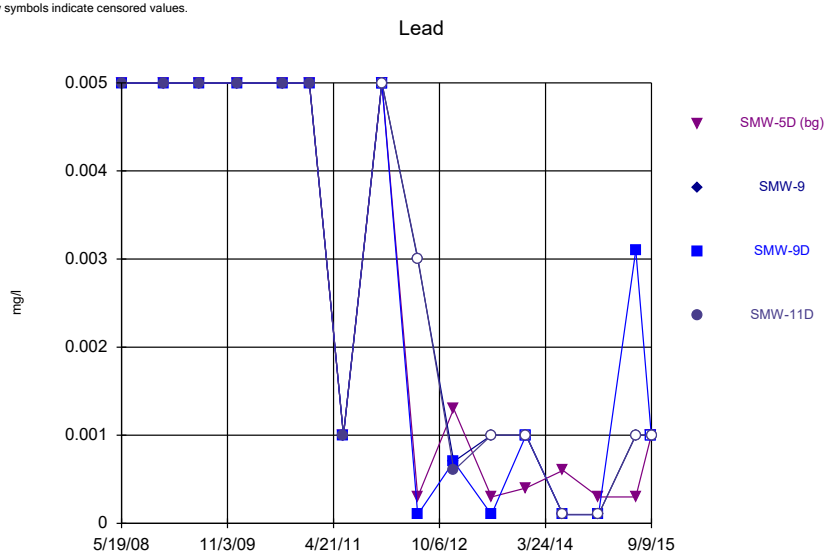

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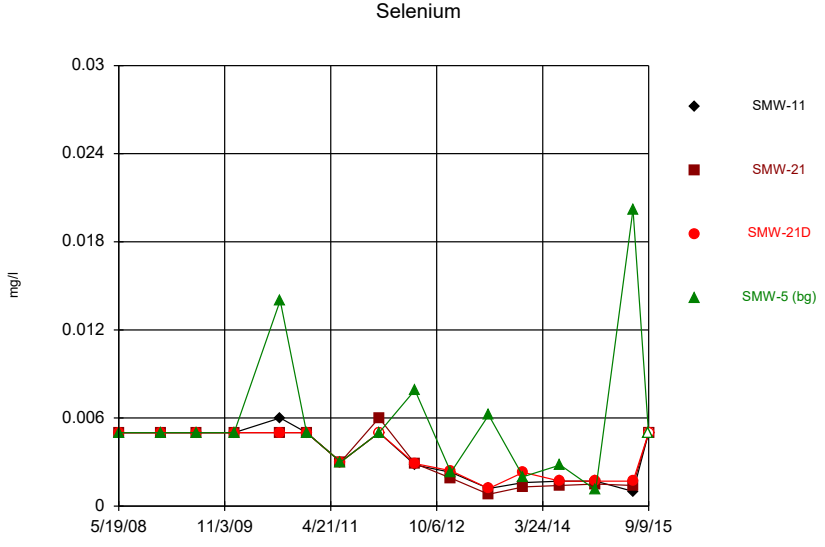

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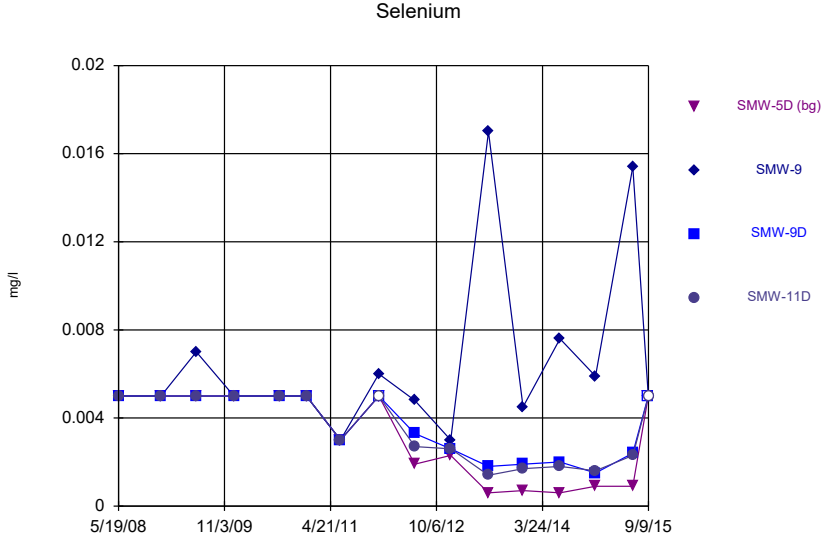

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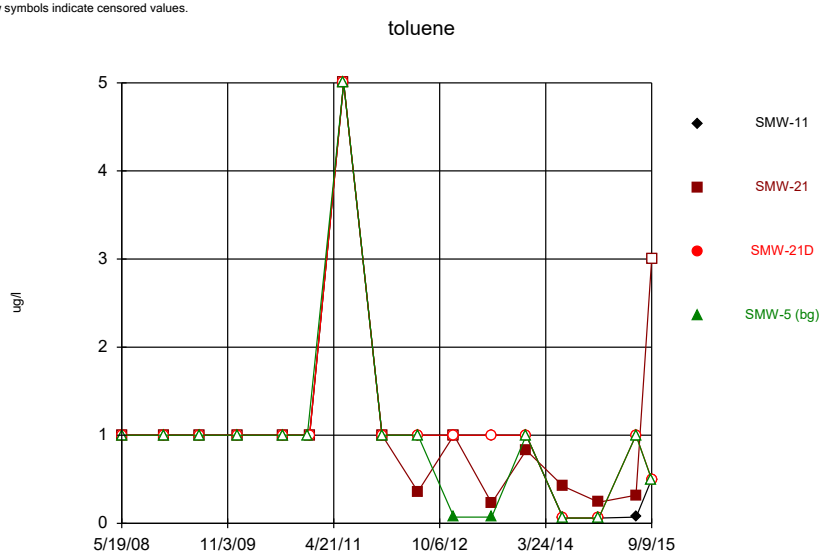

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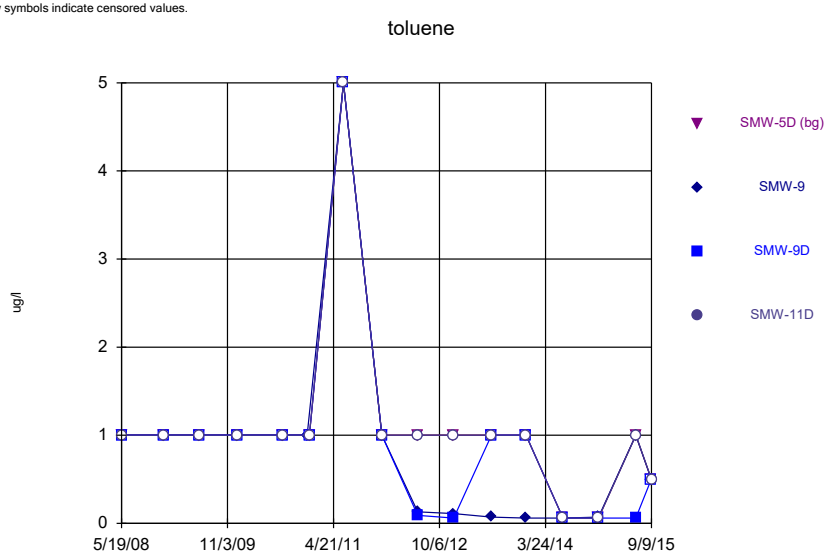

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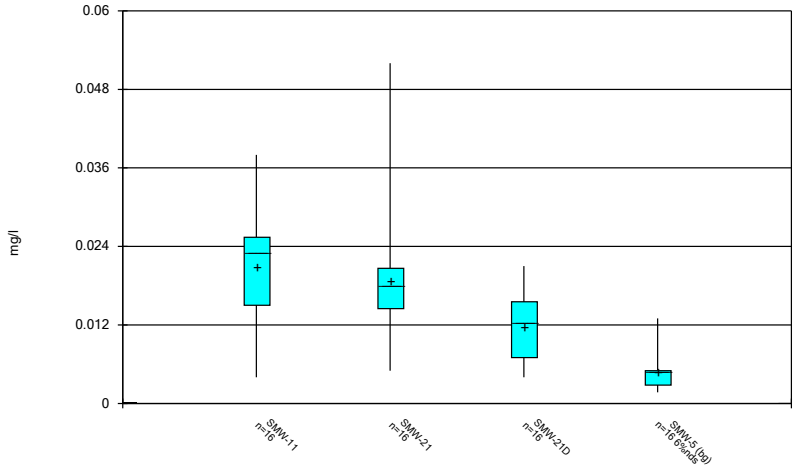
v.9.2.17 Sanitas software licensed to Geostat. EPA

Arsenic



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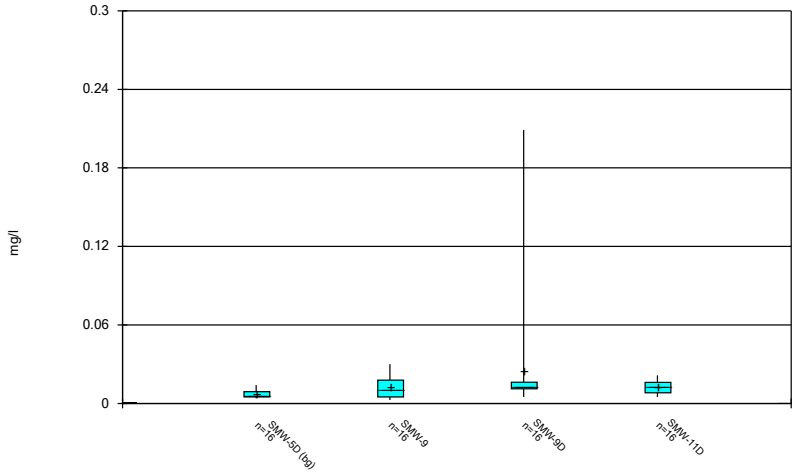
v.9.2.17 Sanitas software licensed to Geostat. EPA

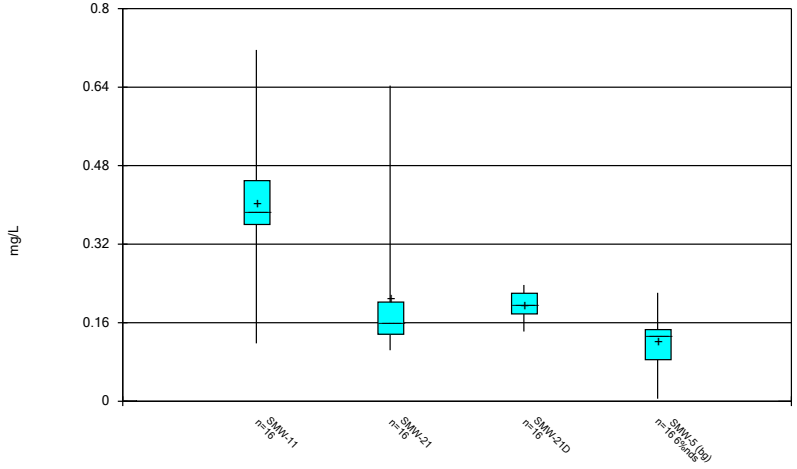
Arsenic



Box & Whiskers Plot Analysis Run 11/6/2015 3:31 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

Barium



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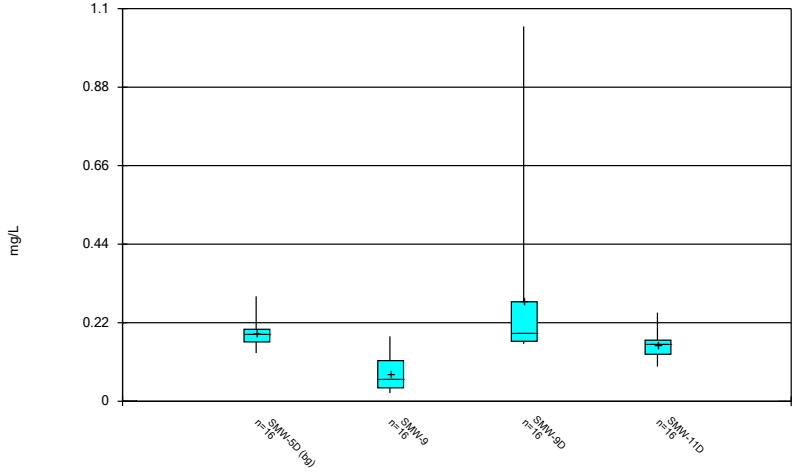
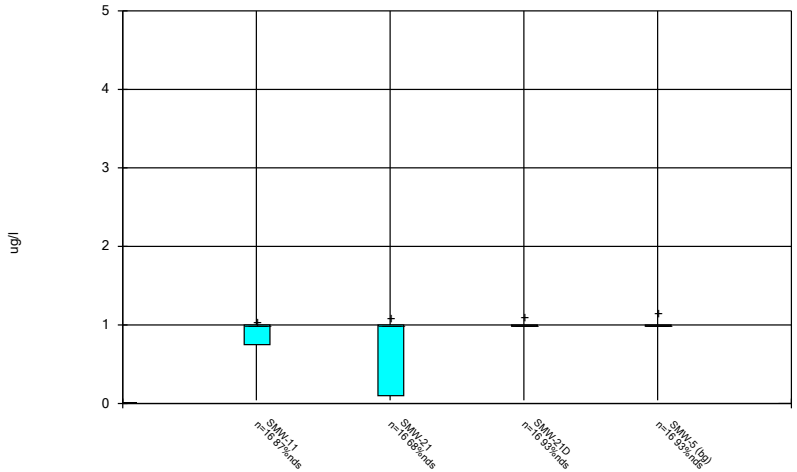


Box & Whiskers Plot Analysis Run 11/6/2015 3:31 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

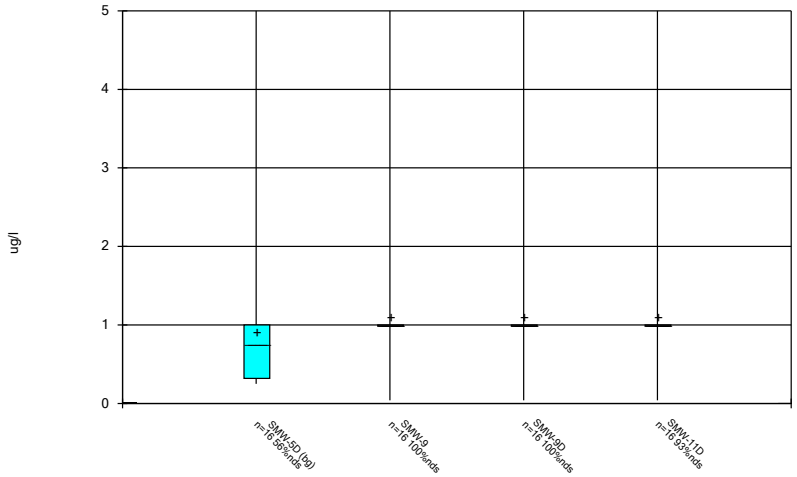
benzene



Box & Whiskers Plot Analysis Run 11/6/2015 3:31 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

benzene



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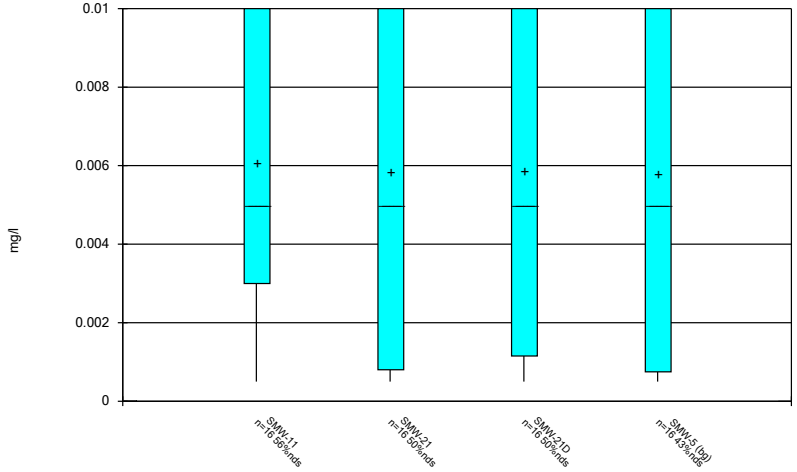
v.9.2.17 Sanitas software licensed to Geostat. EPA

Chromium



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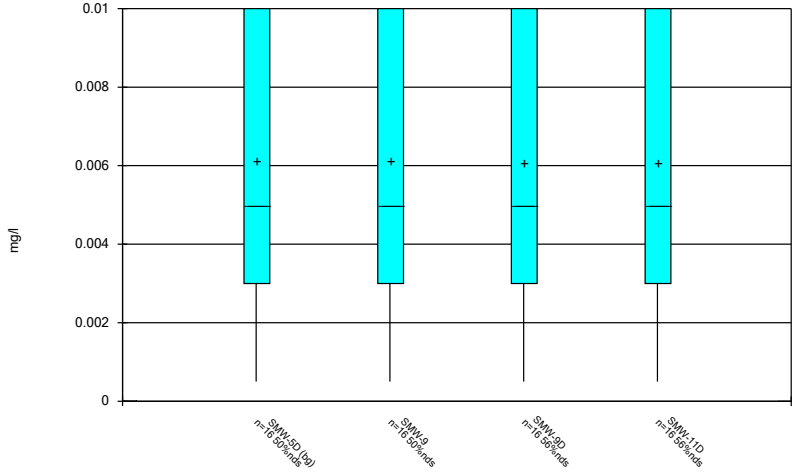

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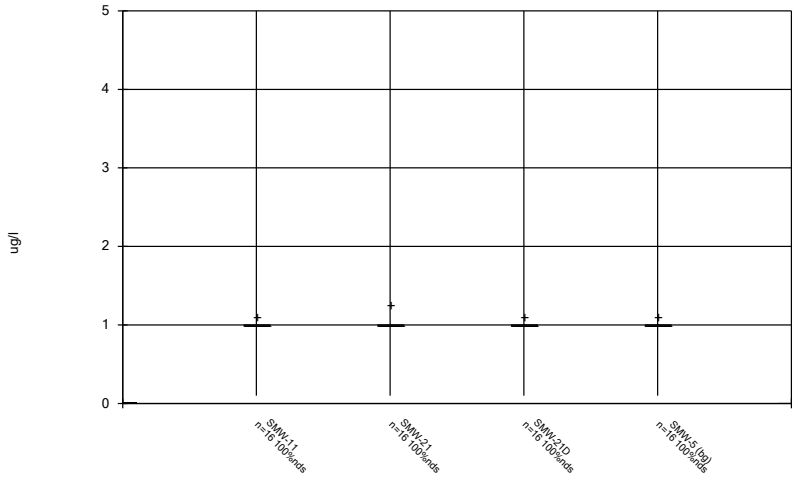
v.9.2.17 Sanitas software licensed to Geostat. EPA

Ethylbenzene



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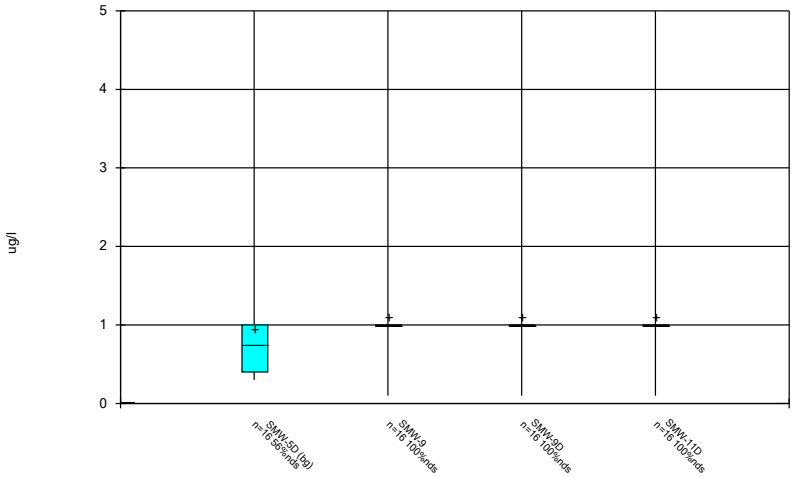
v.9.2.17 Sanitas software licensed to Geostat. EPA

Ethylbenzene



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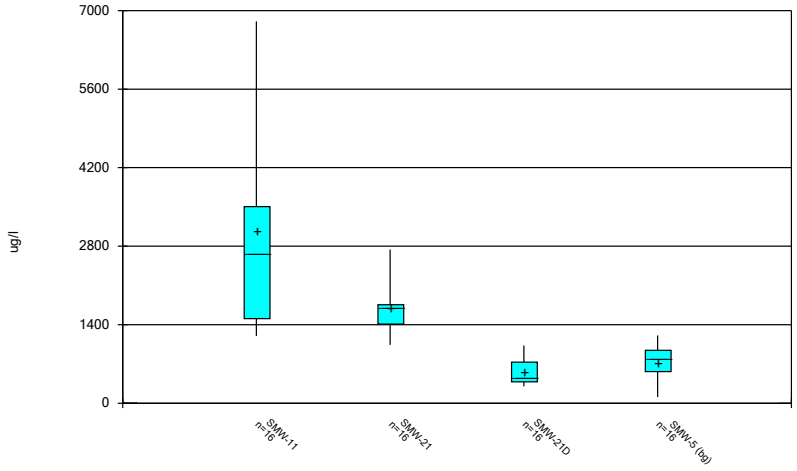
v.9.2.17 Sanitas software licensed to Geostat. EPA

GRO+DRO



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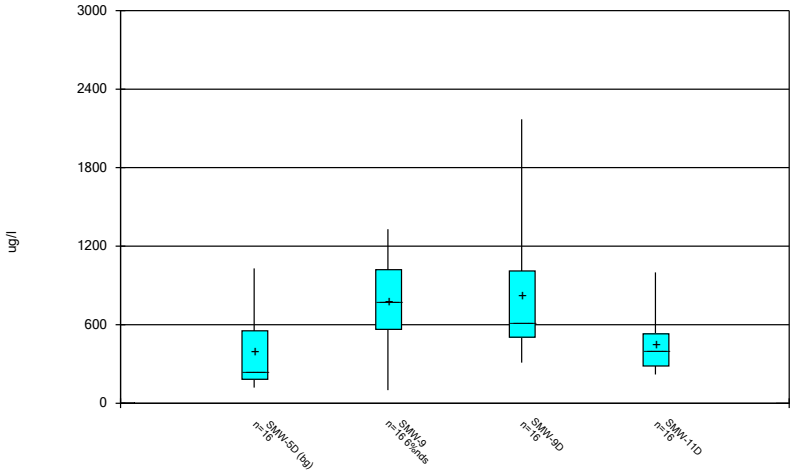
v.9.2.17 Sanitas software licensed to Geostat. EPA

GRO+DRO



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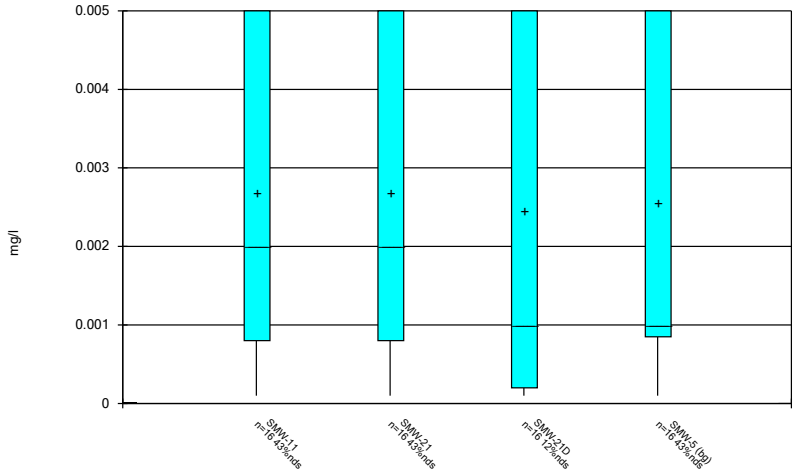
v.9.2.17 Sanitas software licensed to Geostat. EPA

Lead



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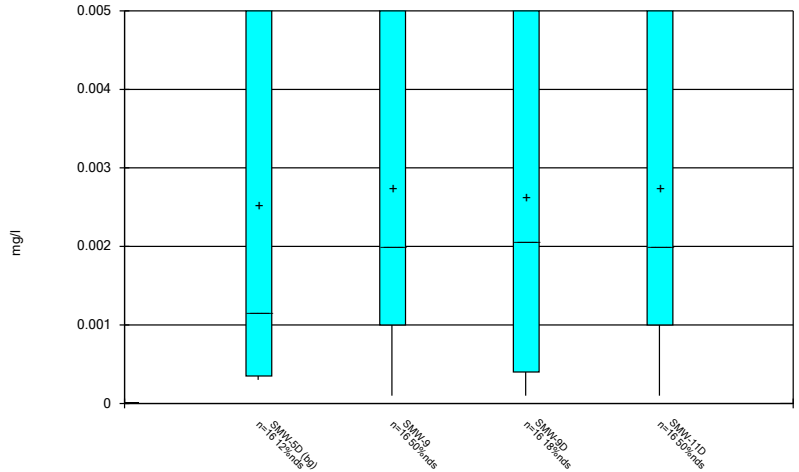

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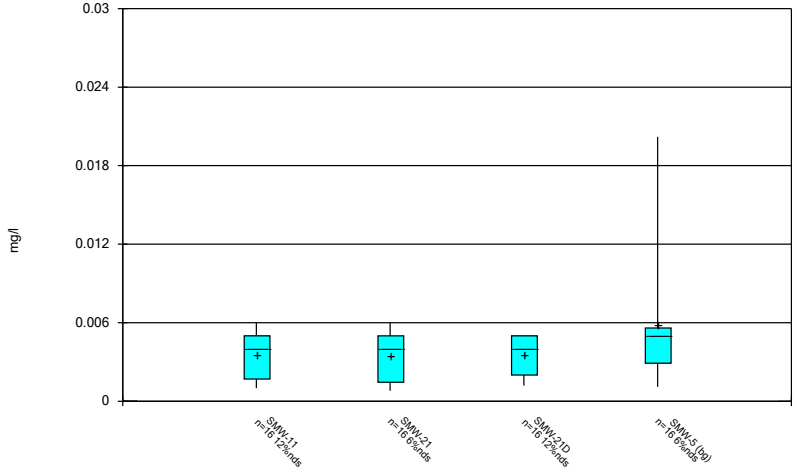
v.9.2.17 Sanitas software licensed to Geostat. EPA

Selenium



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v.9.2.17 Sanitas software licensed to Geostat. EPA

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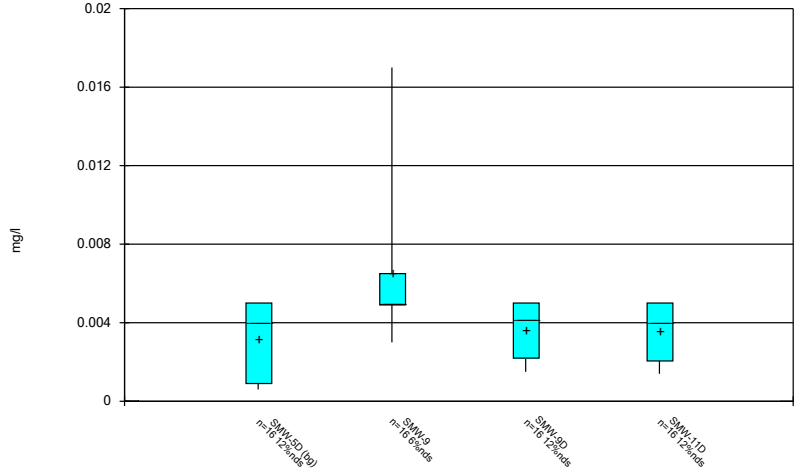

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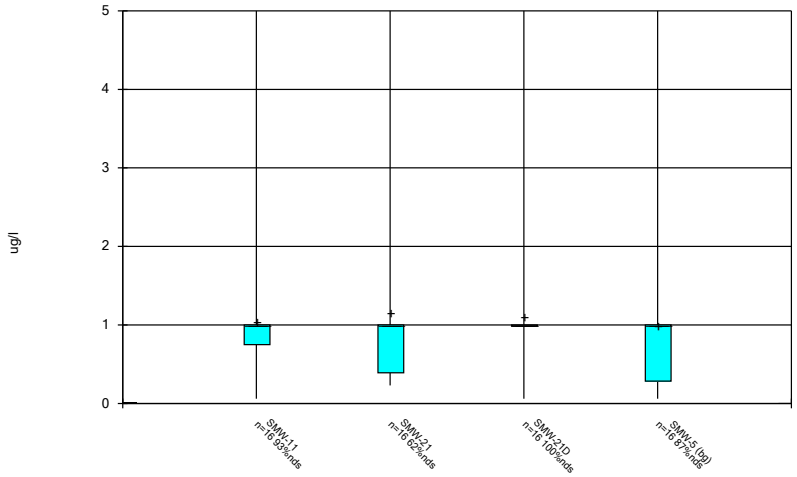
toluene



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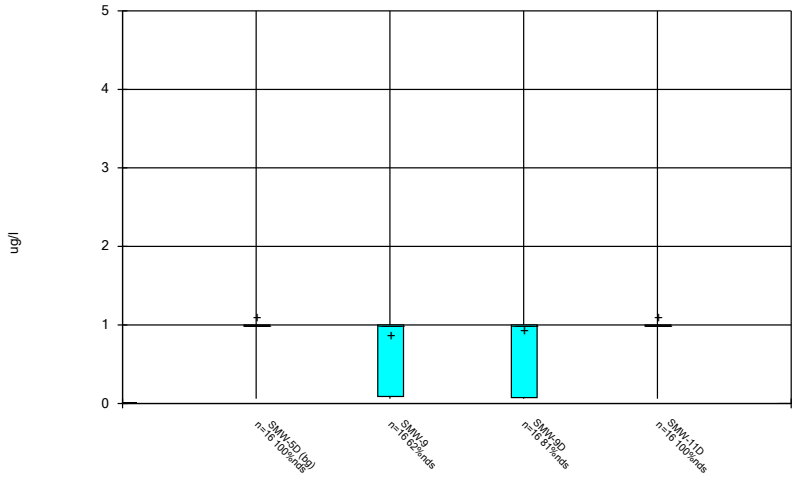
toluene



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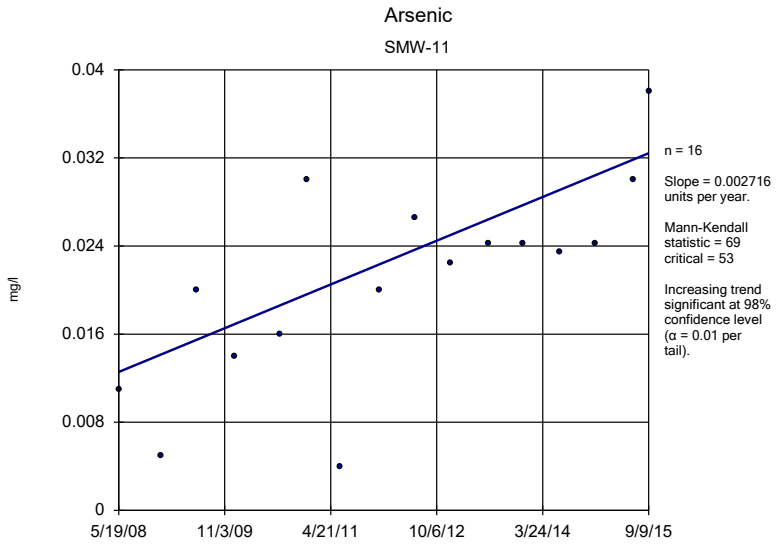
Appendix B
Mann-Kendall Graphs

v.9.2.17 Sanitas software licensed to Geostat. EPA



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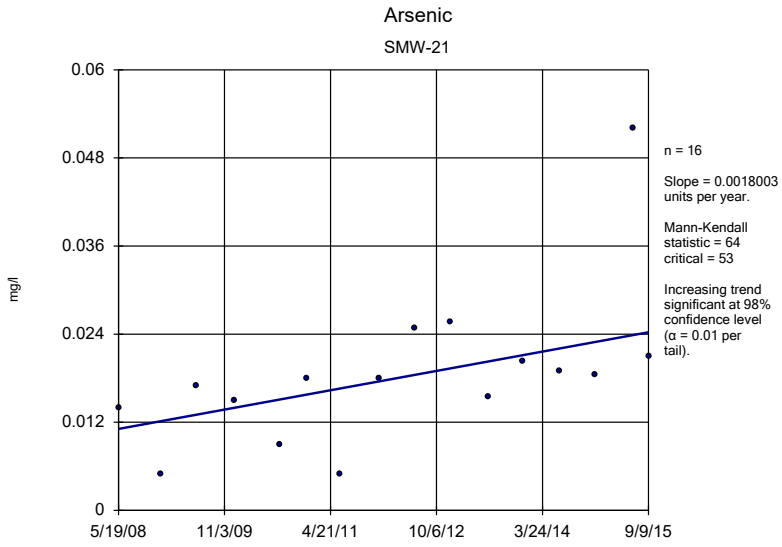

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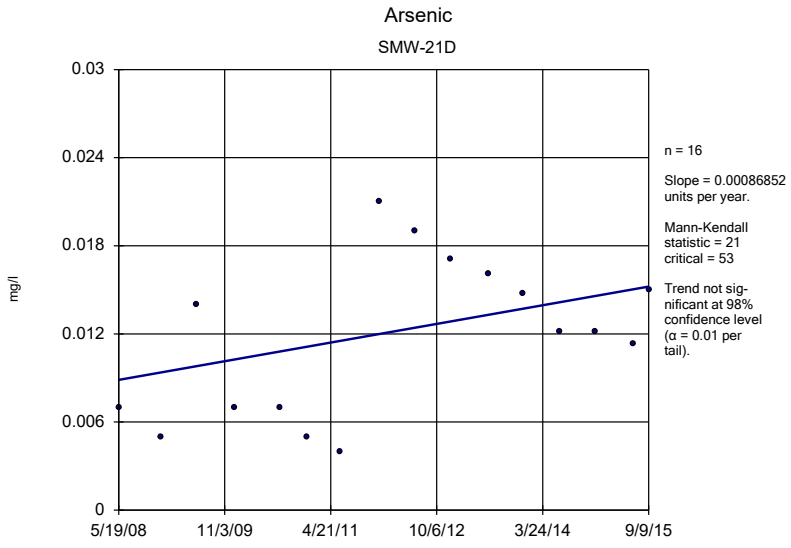

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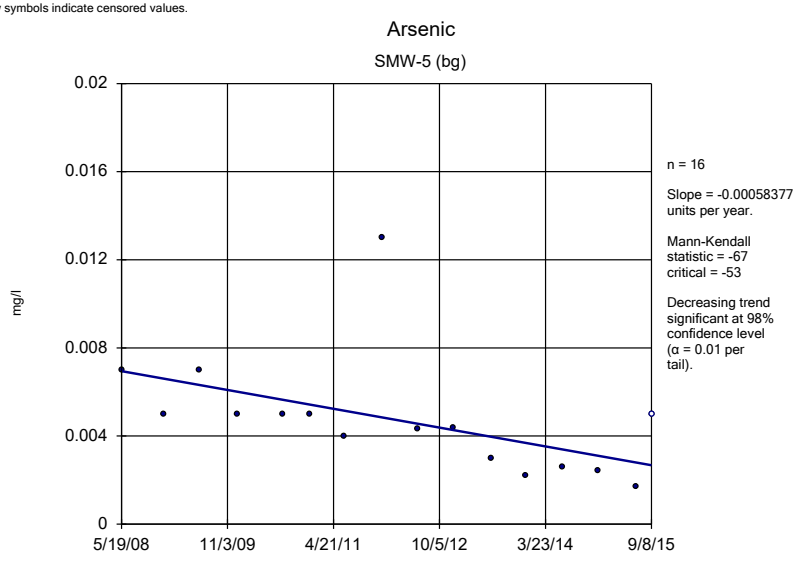

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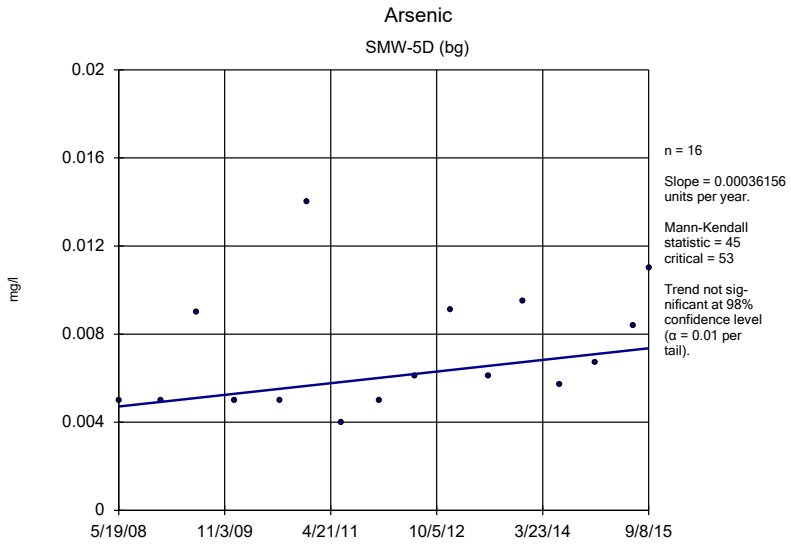

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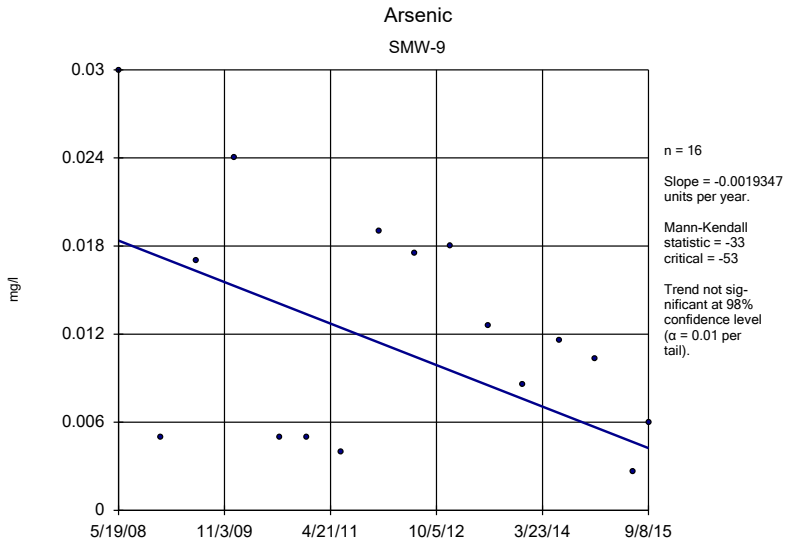

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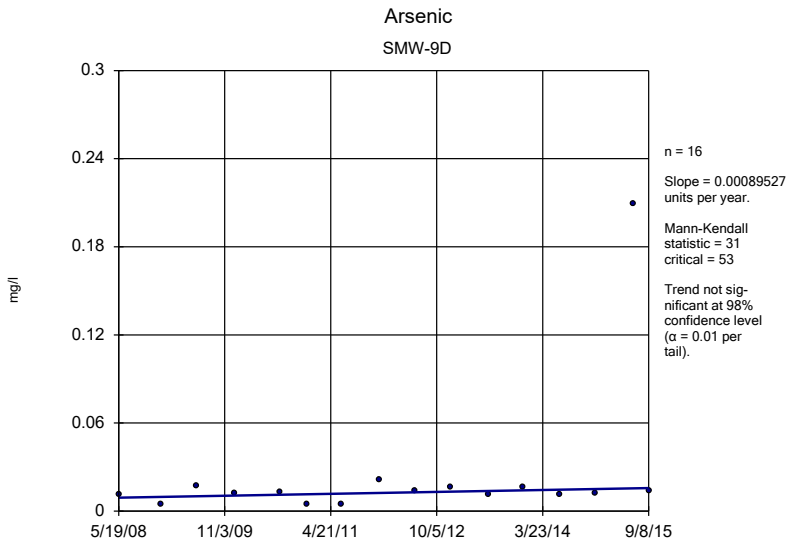

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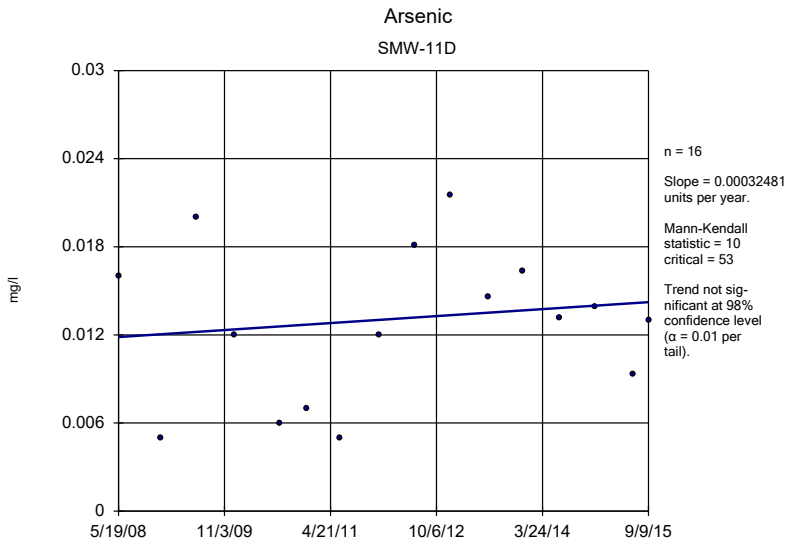

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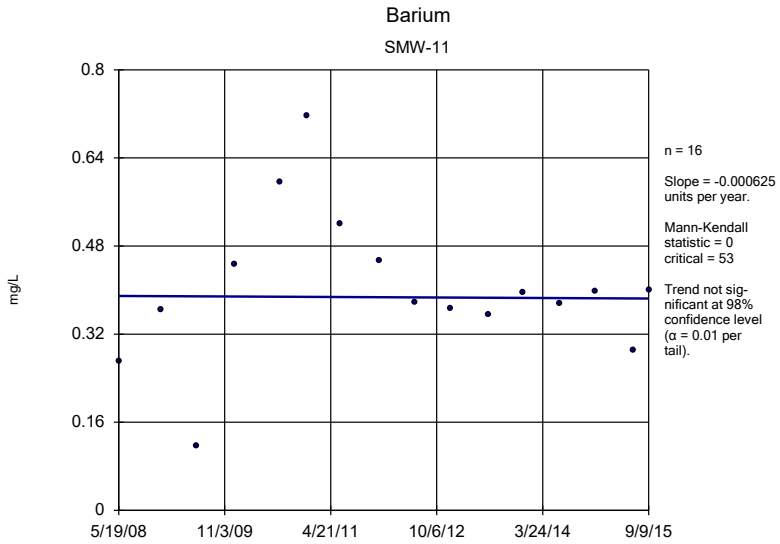

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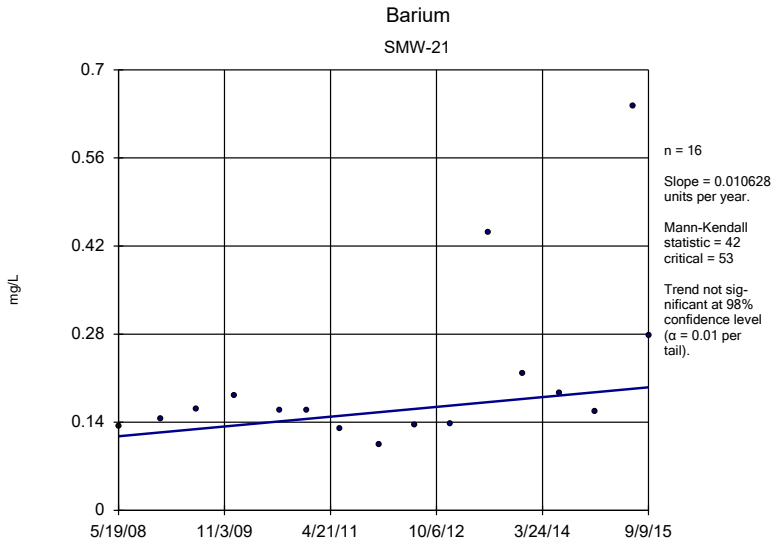

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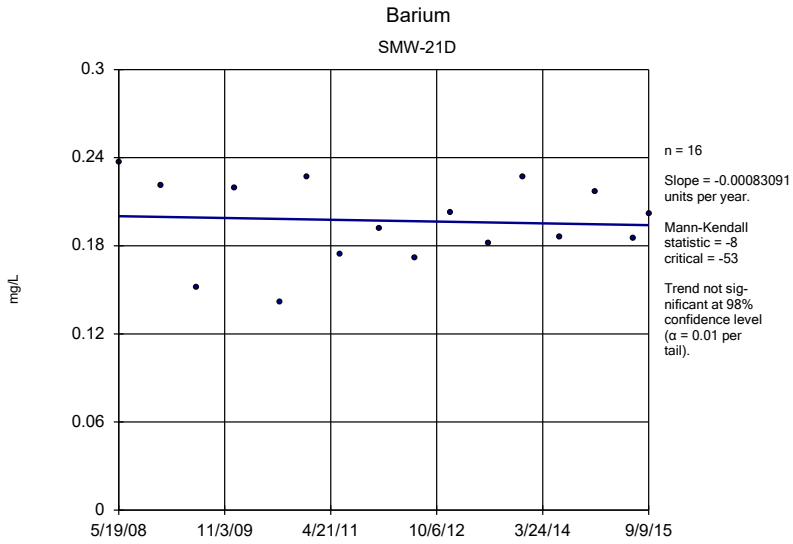

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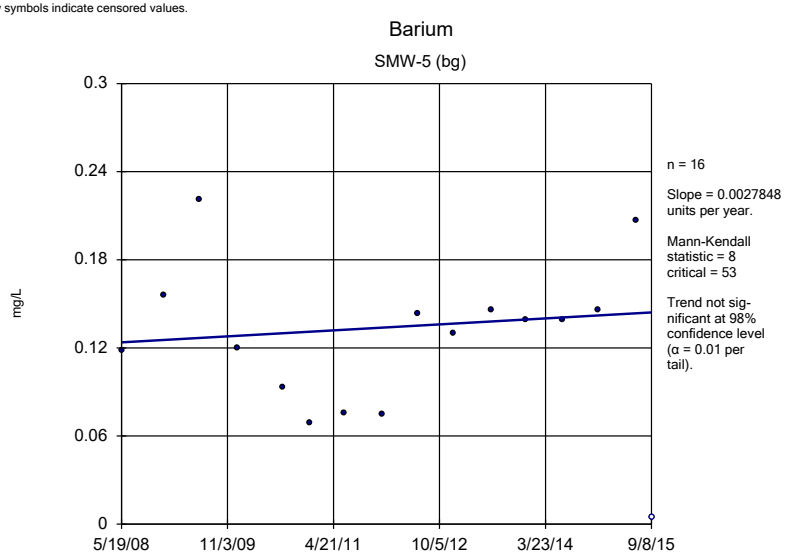

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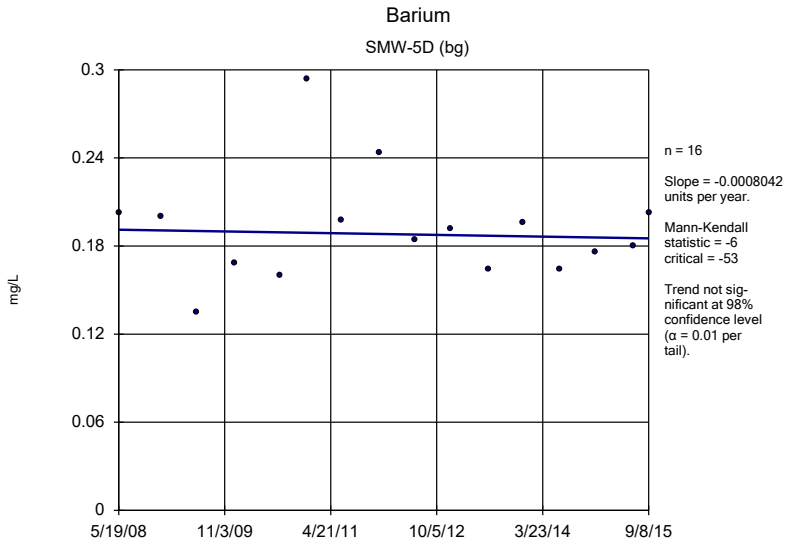

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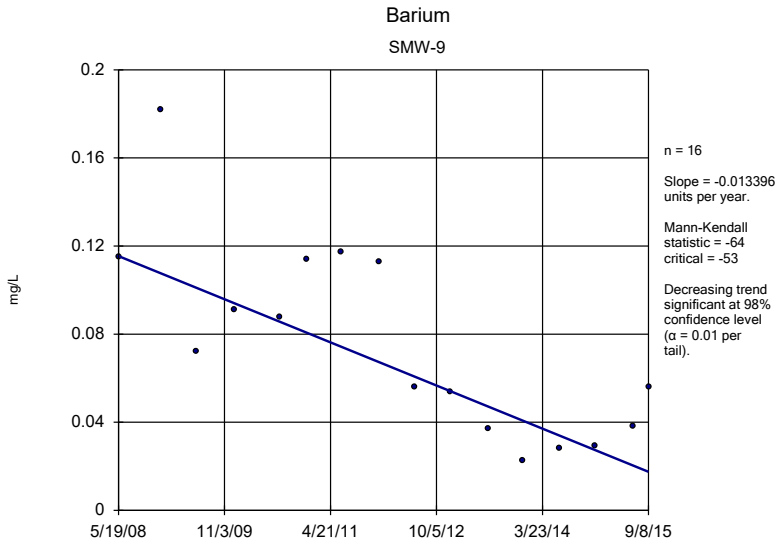

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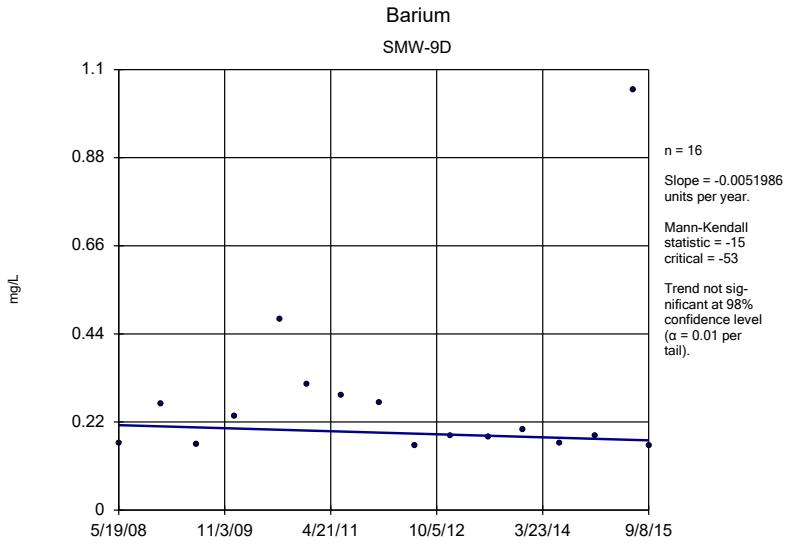

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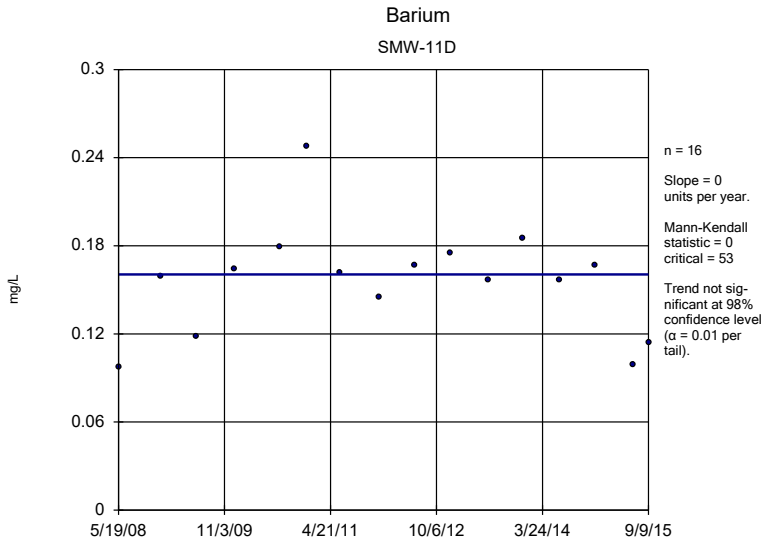

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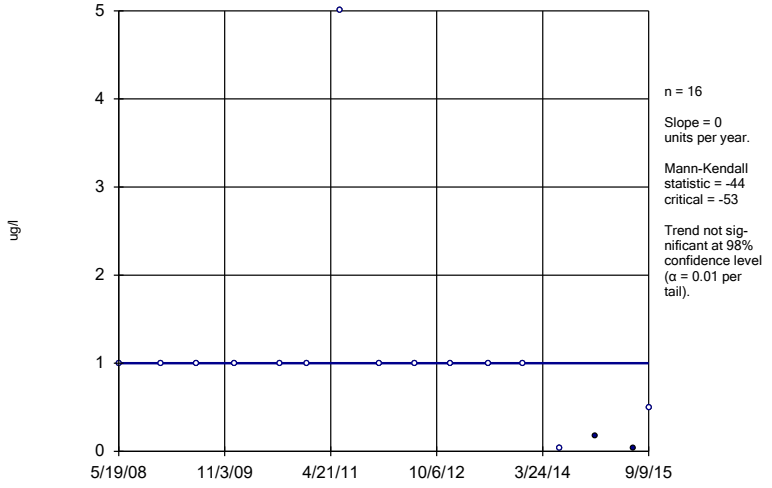
Hollow symbols indicate censored values.

benzene

SMW-11



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Slope = 0
units per year.

Mann-Kendall
statistic = -44
critical = -53

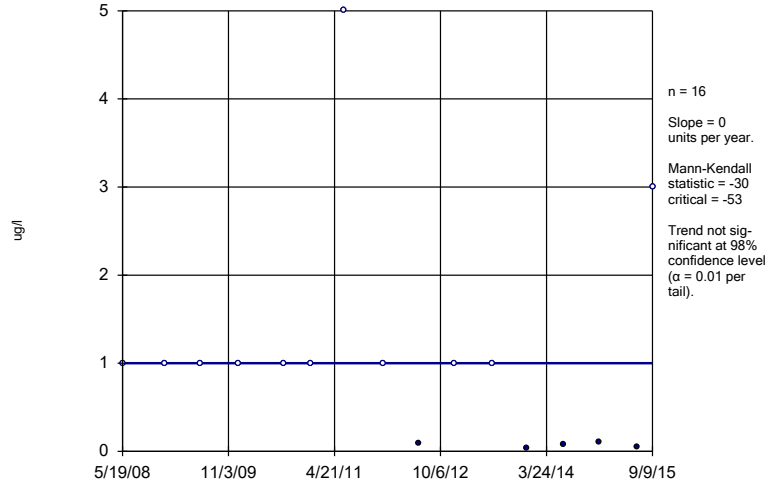
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-21



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Mann-Kendall
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critical = -53

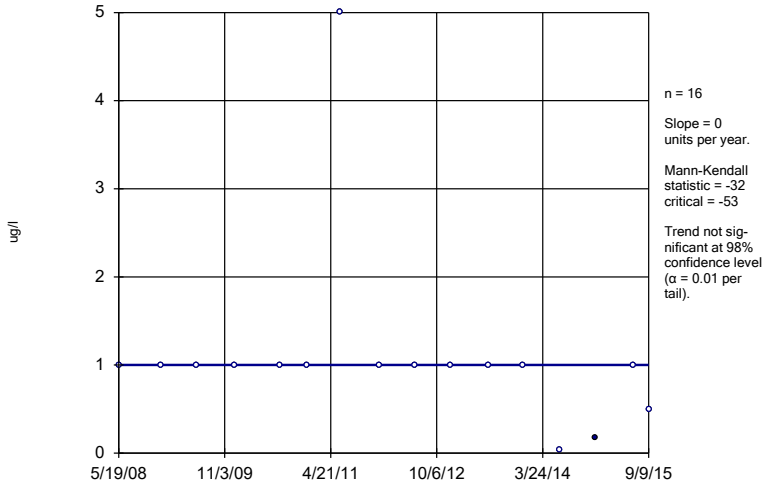
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-21D



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Slope = 0
units per year.

Mann-Kendall
statistic = -32
critical = -53

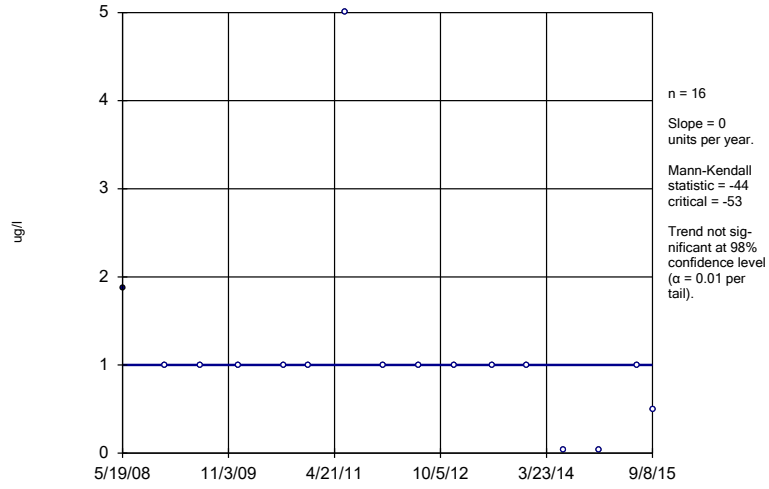
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-5 (bg)



n = 16

Slope = 0
units per year.

Mann-Kendall
statistic = -44
critical = -53

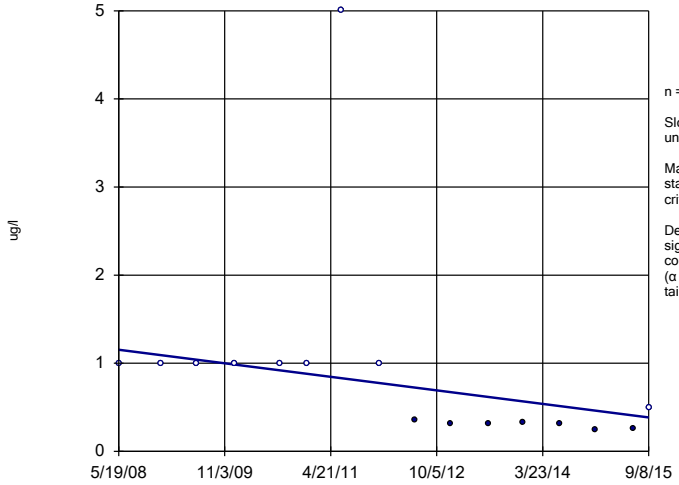
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-5D (bg)



n = 16

Slope = -0.10513 units per year.

Mann-Kendall statistic = -64 critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

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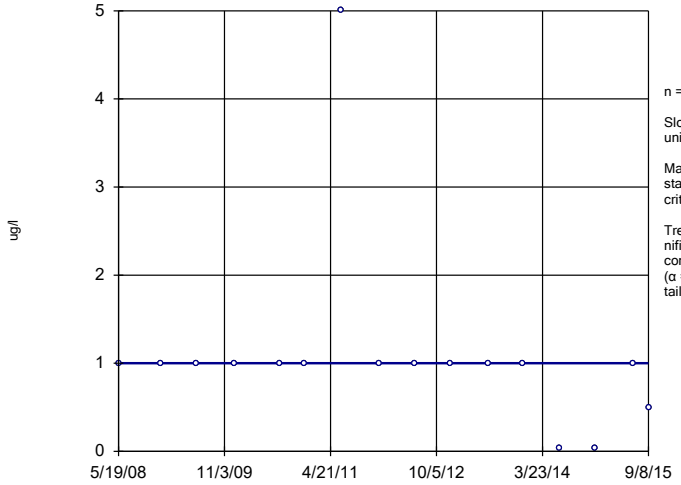
Hollow symbols indicate censored values.

benzene

SMW-9



n = 16

Slope = 0 units per year.

Mann-Kendall statistic = -33 critical = -53

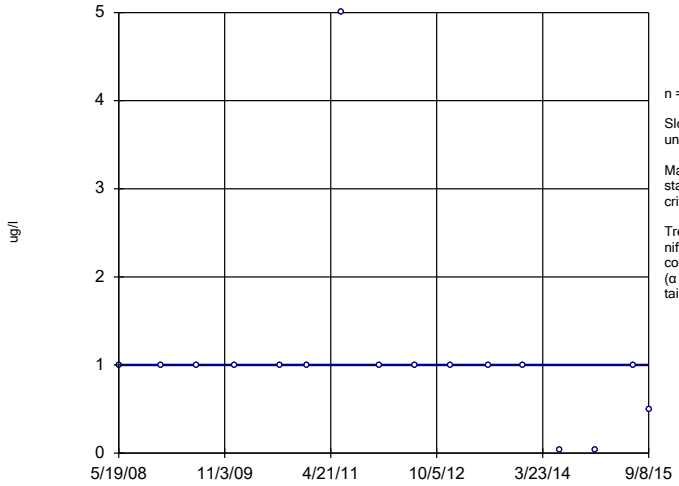
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-9D



n = 16

Slope = 0 units per year.

Mann-Kendall statistic = -33 critical = -53

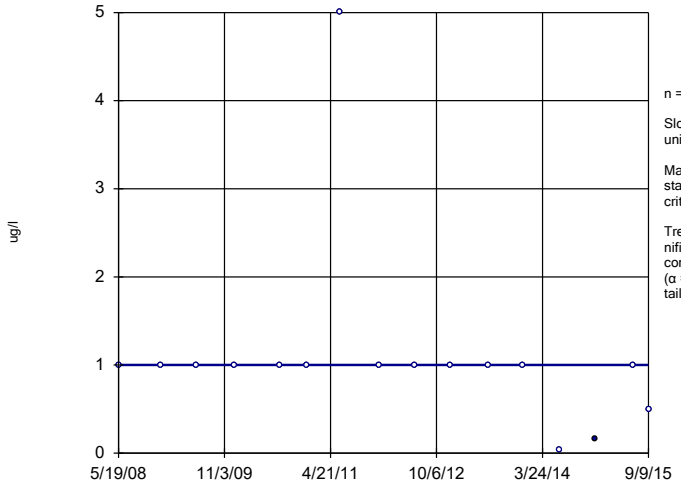
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

benzene

SMW-11D



n = 16

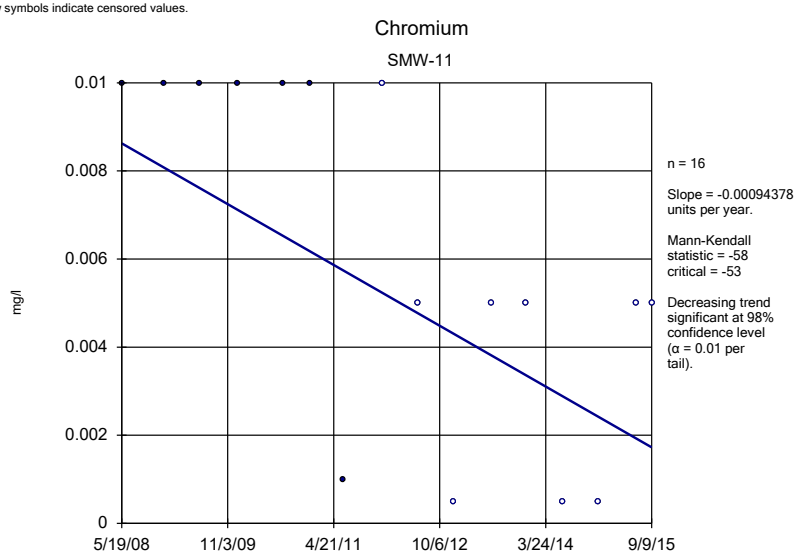
Slope = 0 units per year.

Mann-Kendall statistic = -32 critical = -53

Trend not significant at 98% confidence level (α = 0.01 per tail).

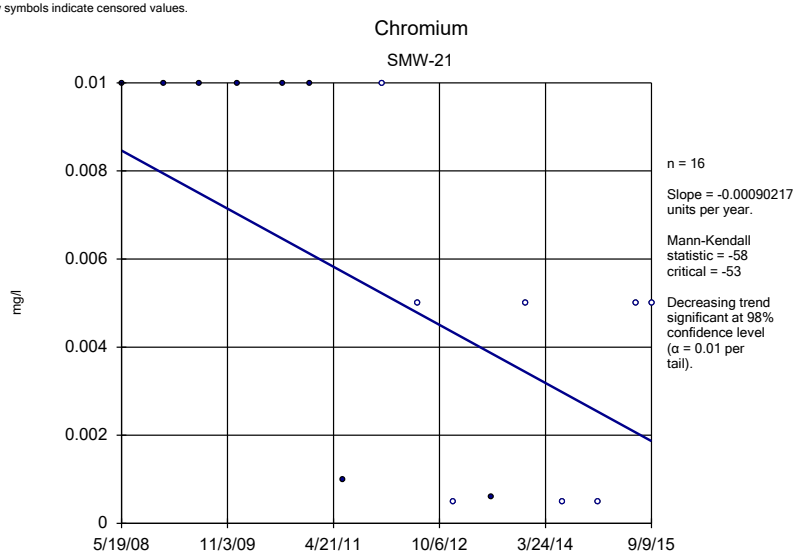
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



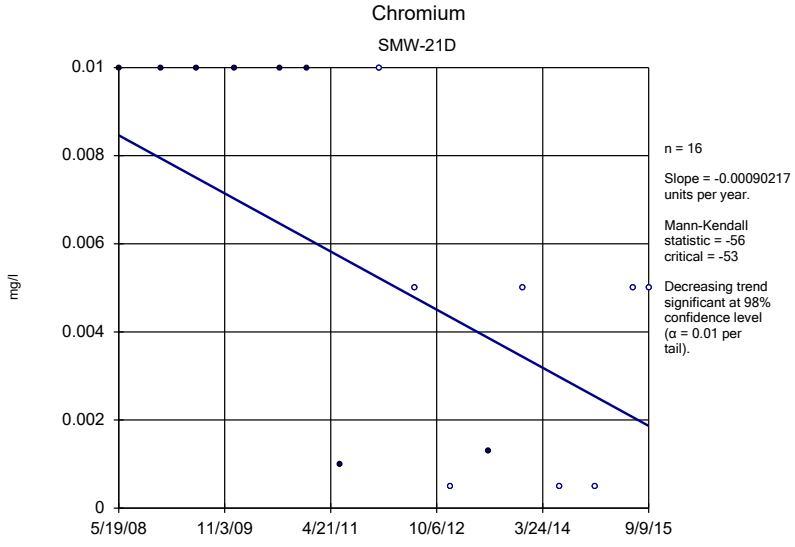
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



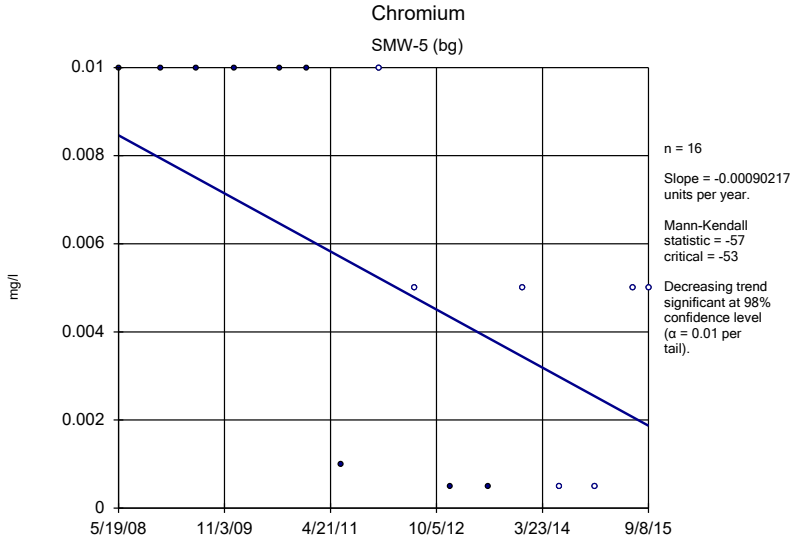
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



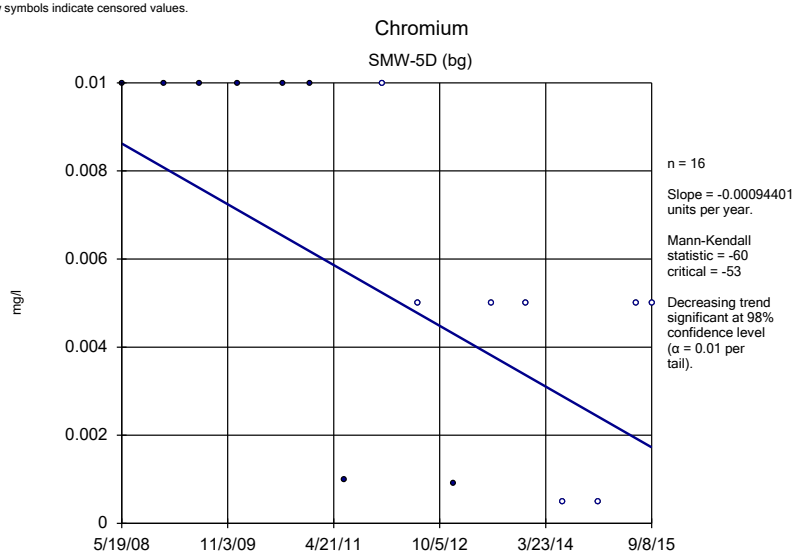
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



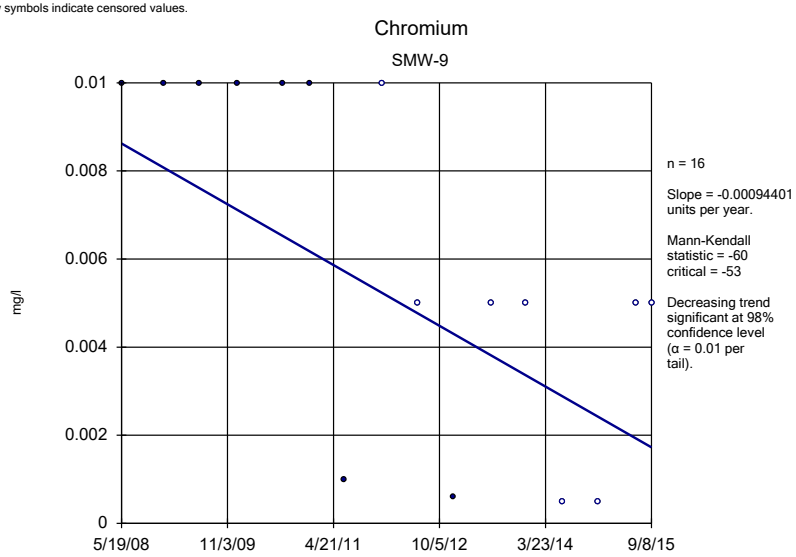
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



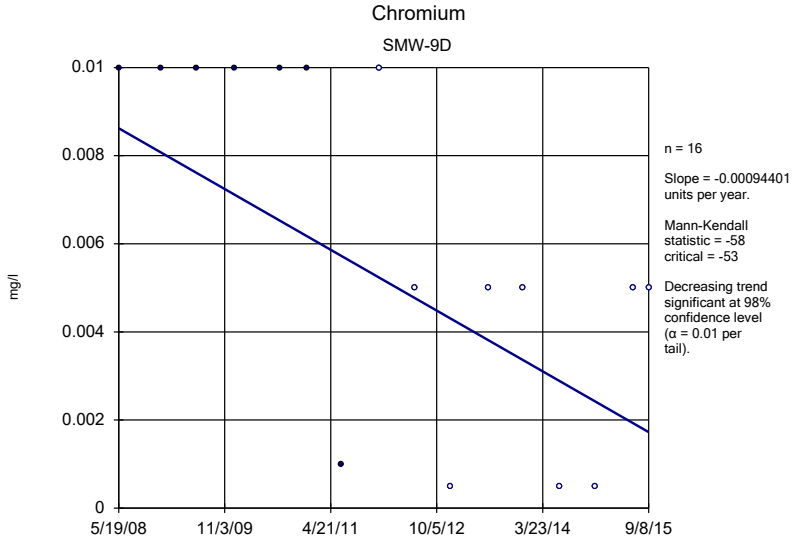
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



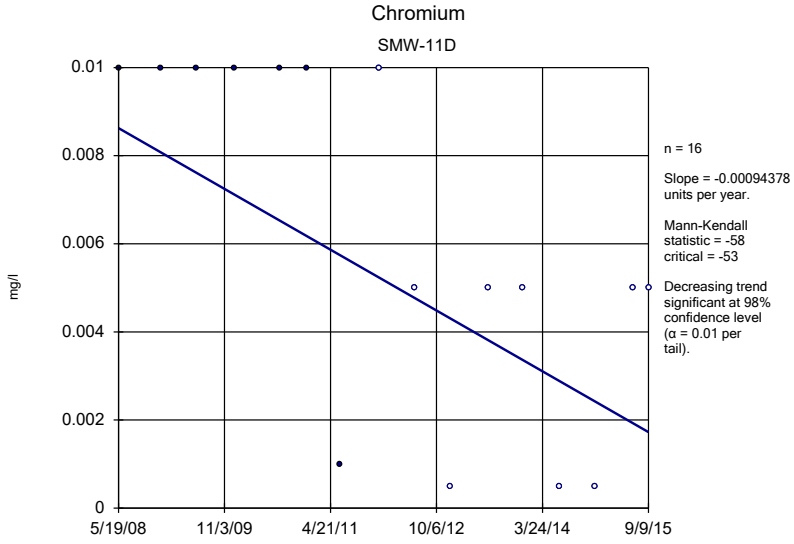
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

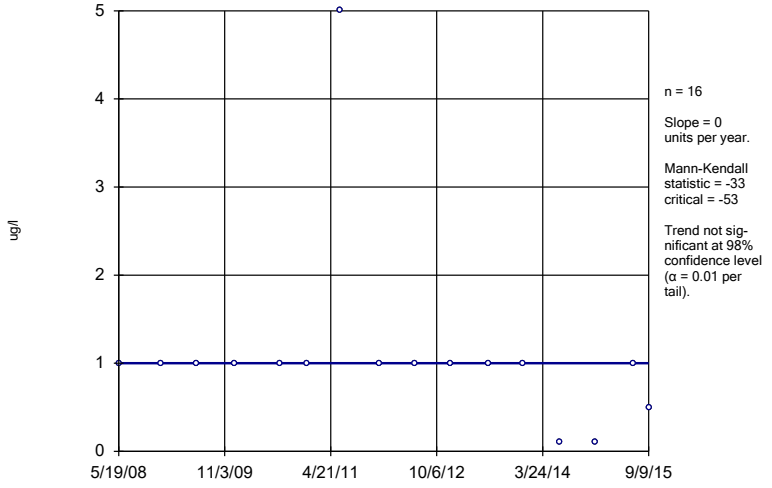


Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Ethylbenzene

SMW-11



n = 16

Slope = 0
units per year.

Mann-Kendall
statistic = -33
critical = -53

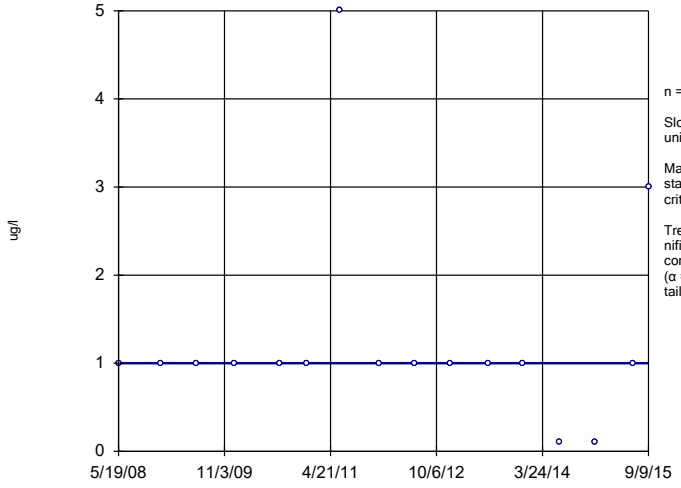
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Ethylbenzene

SMW-21



n = 16

Slope = 0
units per year.

Mann-Kendall
statistic = -9
critical = -53

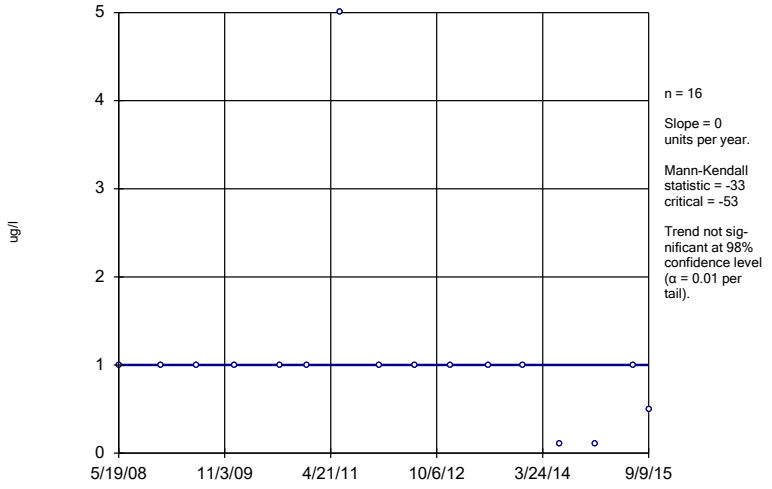
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Ethylbenzene

SMW-21D



n = 16

Slope = 0
units per year.

Mann-Kendall
statistic = -33
critical = -53

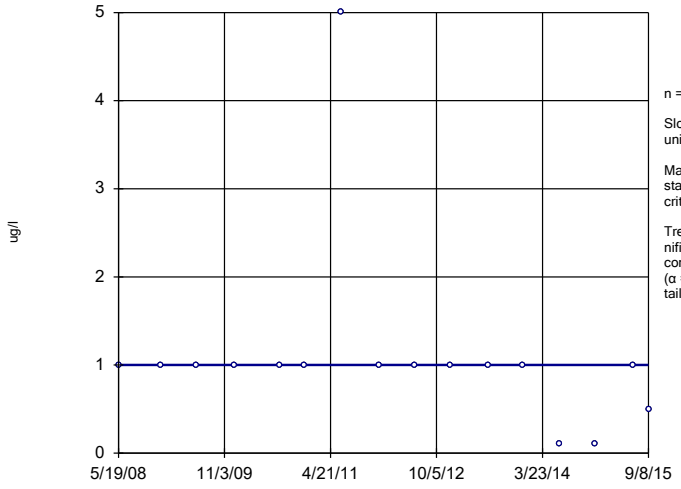
Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Ethylbenzene

SMW-5 (bg)



n = 16

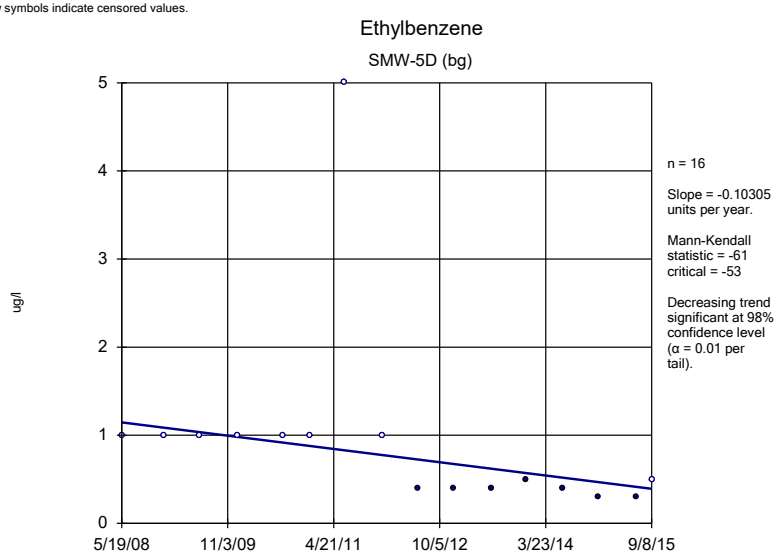
Slope = 0
units per year.

Mann-Kendall
statistic = -33
critical = -53

Trend not sig-
nificant at 98%
confidence level
(α = 0.01 per
tail).

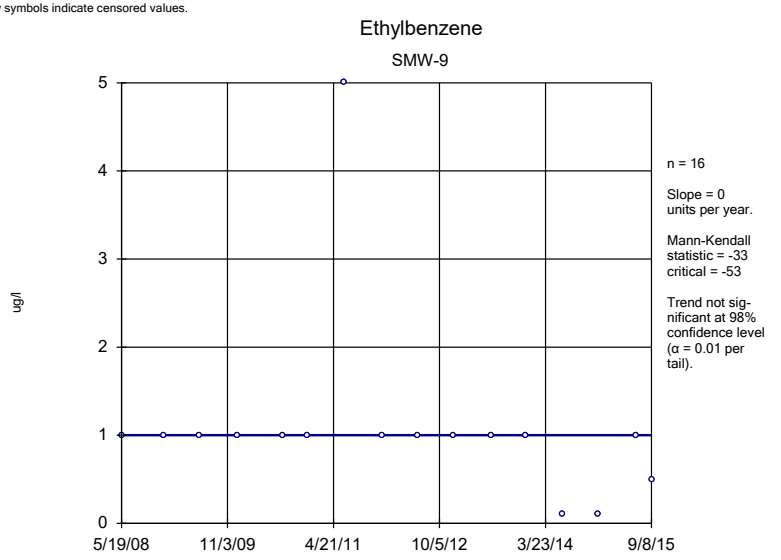
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



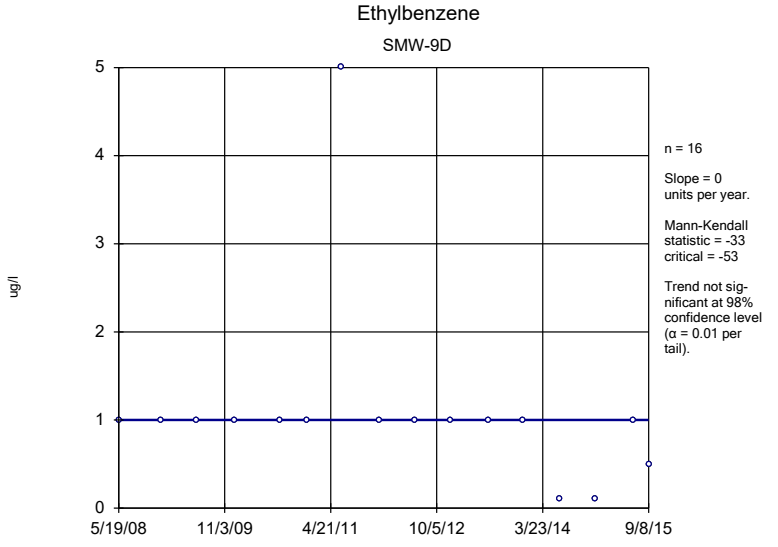
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



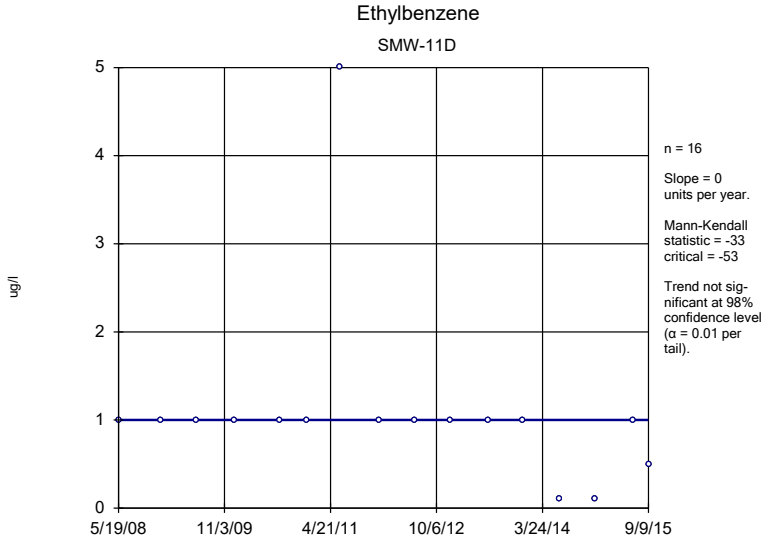
Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

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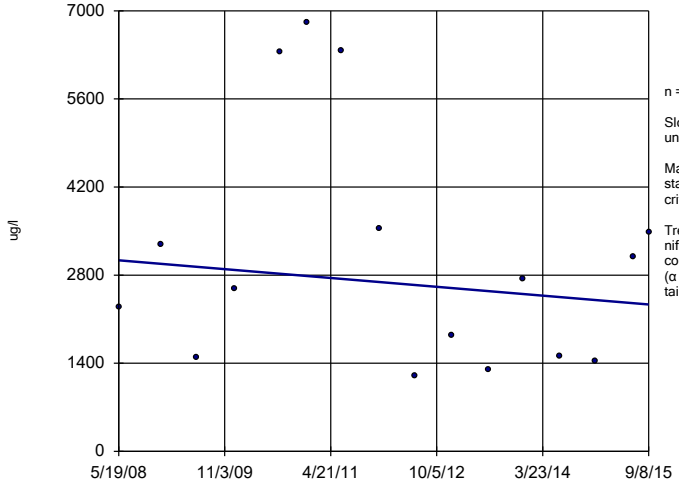
GRO+DRO

SMW-11



n = 16

Slope = -96.27 units per year.

Mann-Kendall statistic = -10 critical = -53

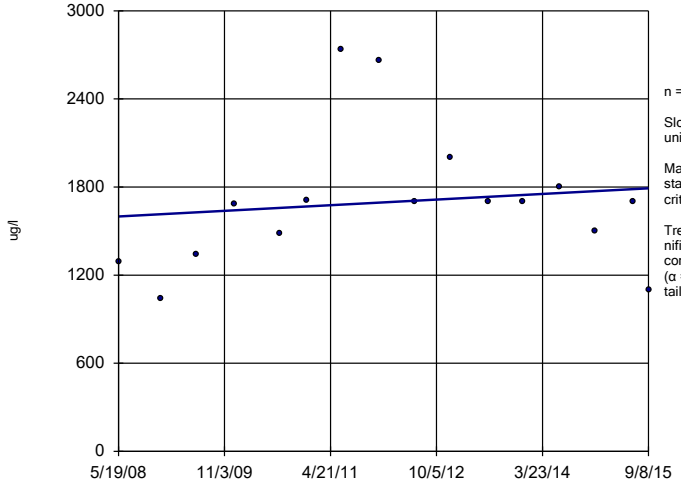
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

GRO+DRO

SMW-21



n = 16

Slope = 26.2 units per year.

Mann-Kendall statistic = 20 critical = 53

Trend not significant at 98% confidence level (α = 0.01 per tail).

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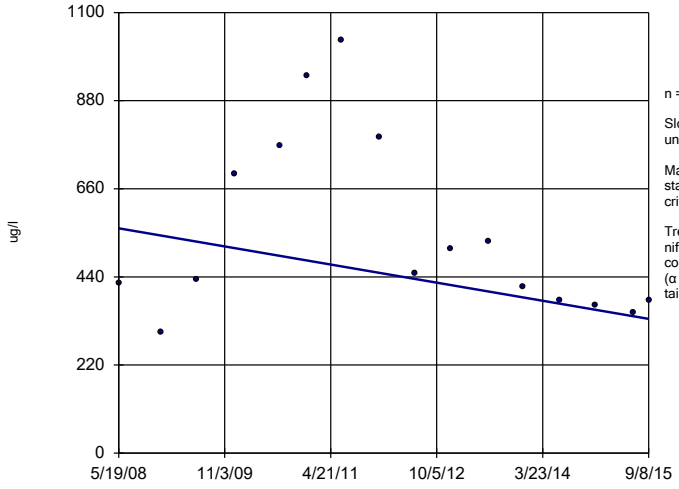
GRO+DRO

SMW-21D



n = 16

Slope = -30.962 units per year.

Mann-Kendall statistic = -31 critical = -53

Trend not significant at 98% confidence level (α = 0.01 per tail).

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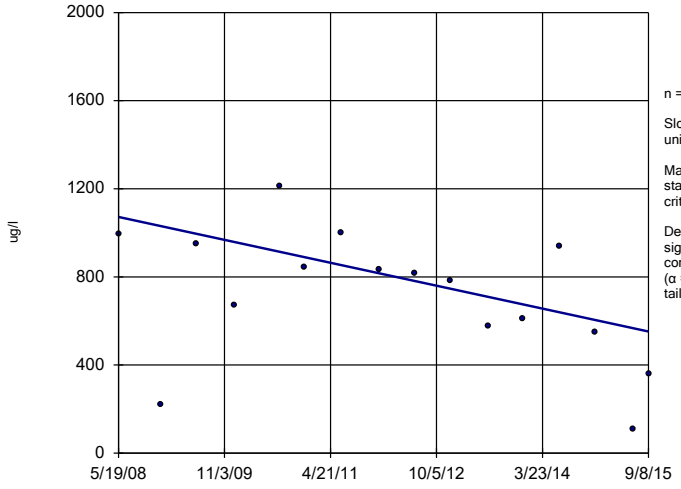
GRO+DRO

SMW-5 (bg)



n = 16

Slope = -71.084 units per year.

Mann-Kendall statistic = -54 critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:36 PM View: Wynnewood master 012615

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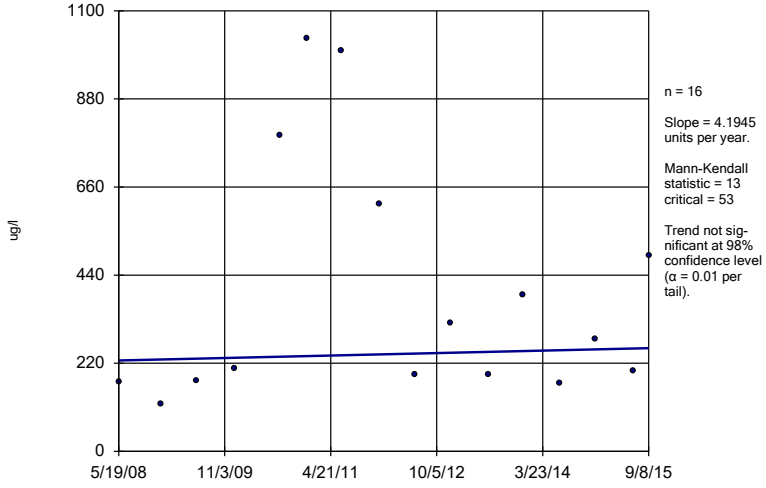
GRO+DRO

SMW-5D (bg)



n = 16

Slope = 4.1945 units per year.

Mann-Kendall statistic = 13 critical = 53

Trend not significant at 98% confidence level (α = 0.01 per tail).

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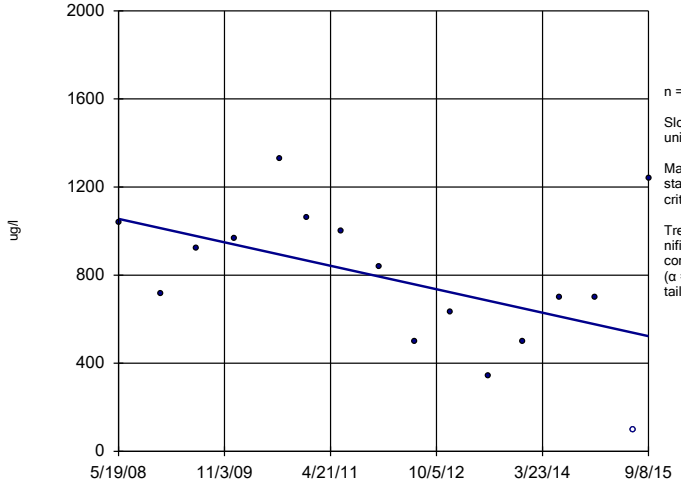
Hollow symbols indicate censored values.

GRO+DRO

SMW-9



n = 16

Slope = -72.892 units per year.

Mann-Kendall statistic = -40 critical = -53

Trend not significant at 98% confidence level (α = 0.01 per tail).

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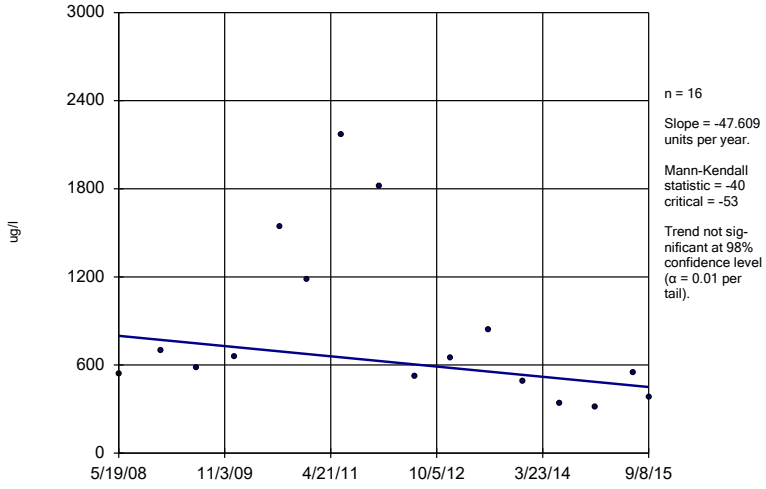
GRO+DRO

SMW-9D



n = 16

Slope = -47.609 units per year.

Mann-Kendall statistic = -40 critical = -53

Trend not significant at 98% confidence level (α = 0.01 per tail).

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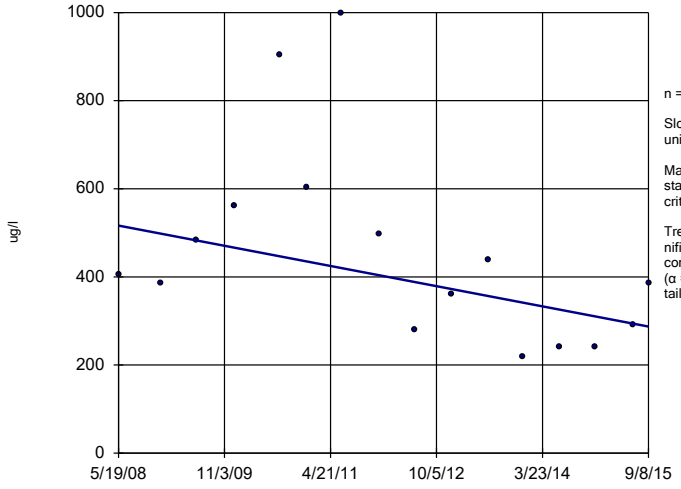
GRO+DRO

SMW-11D



n = 16

Slope = -31.402 units per year.

Mann-Kendall statistic = -40 critical = -53

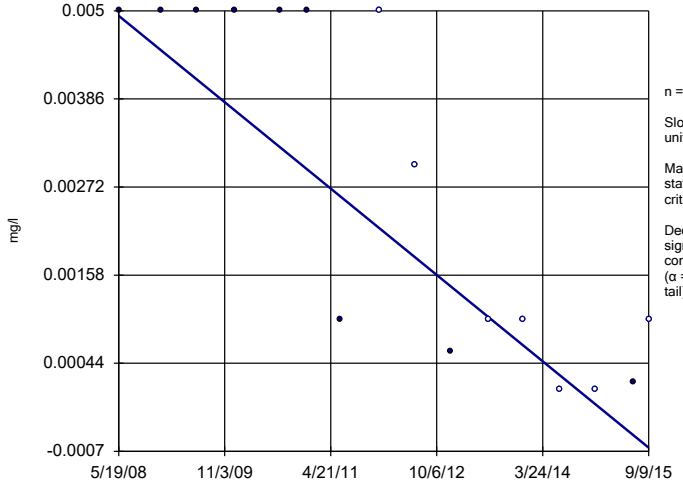
Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-11



n = 16

Slope = -0.00076414 units per year.

Mann-Kendall statistic = -72
critical = -53

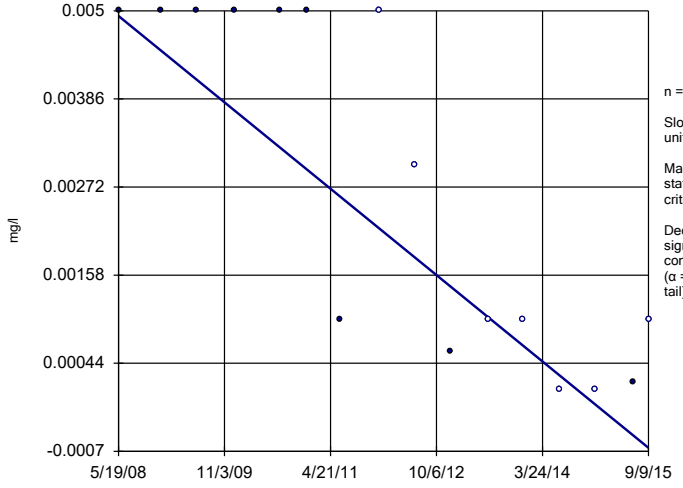
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-21



n = 16

Slope = -0.00076414 units per year.

Mann-Kendall statistic = -72
critical = -53

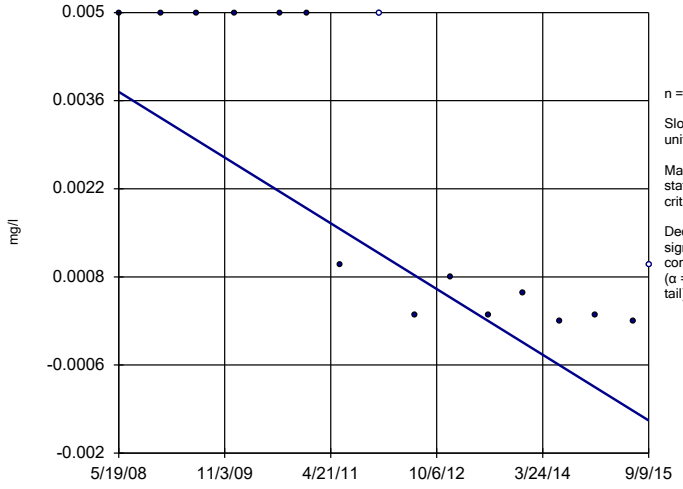
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-21D



n = 16

Slope = -0.00071431 units per year.

Mann-Kendall statistic = -70
critical = -53

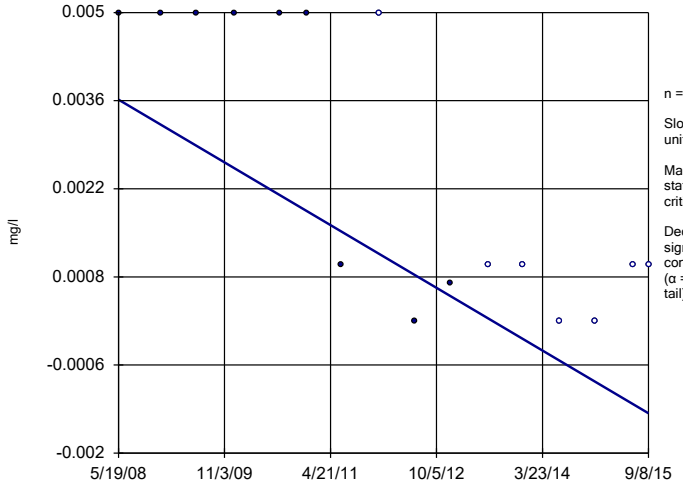
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-5 (bg)



n = 16

Slope = -0.0006819 units per year.

Mann-Kendall statistic = -58
critical = -53

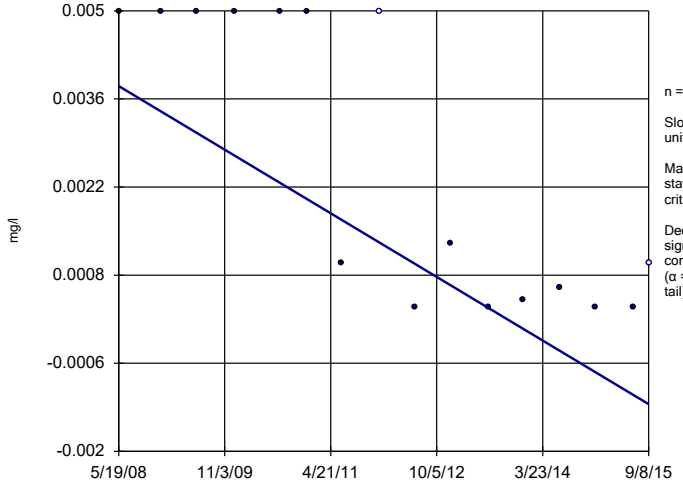
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-5D (bg)



n = 16

Slope = -0.00069136 units per year.

Mann-Kendall statistic = -64
critical = -53

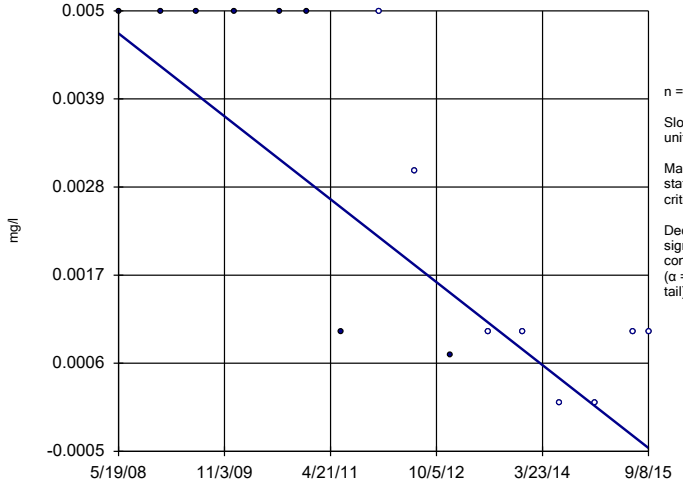
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-9



n = 16

Slope = -0.00070815 units per year.

Mann-Kendall statistic = -68
critical = -53

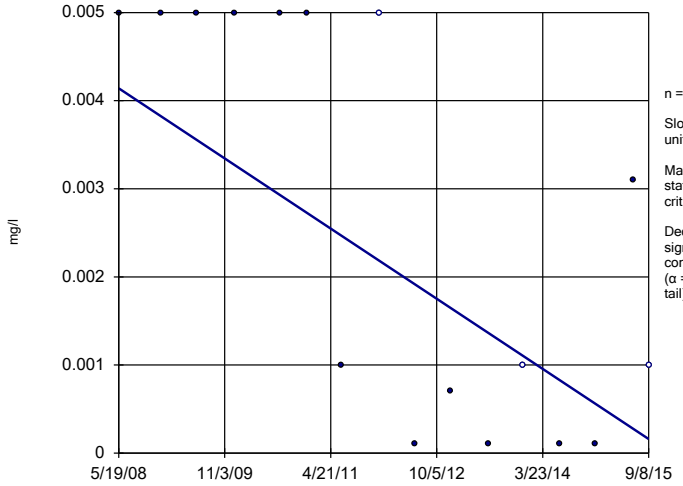
Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Lead

SMW-9D



n = 16

Slope = -0.00054472 units per year.

Mann-Kendall statistic = -56
critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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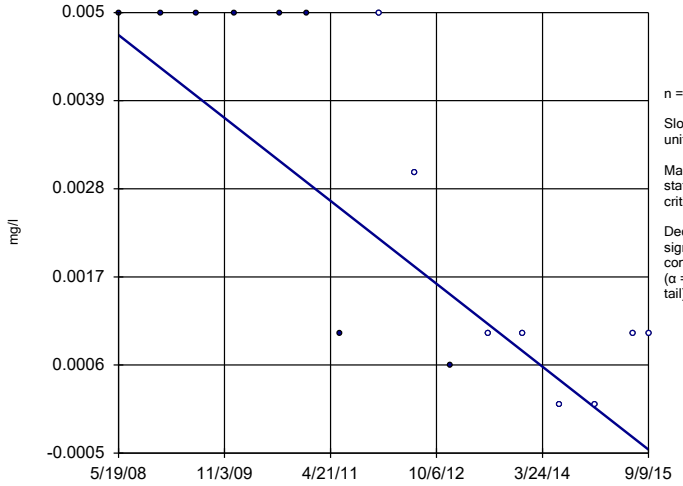
Hollow symbols indicate censored values.

Lead

SMW-11D



n = 16

Slope = -0.00070799 units per year.

Mann-Kendall statistic = -68
critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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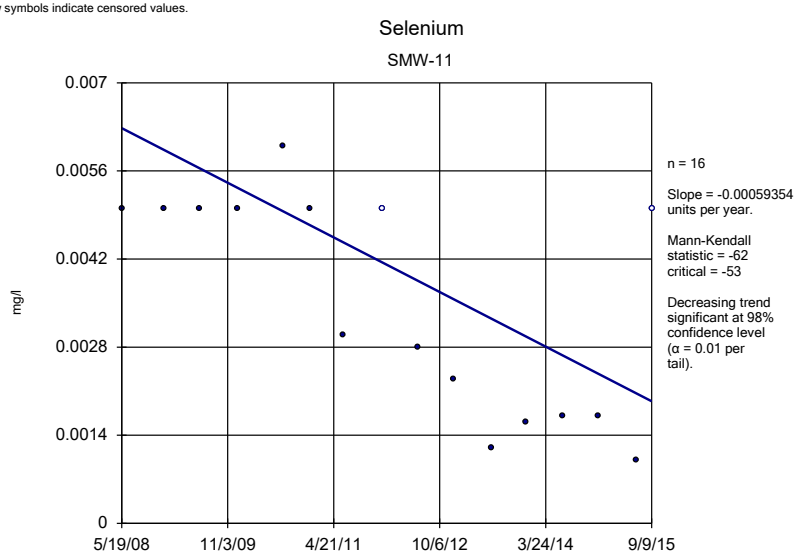
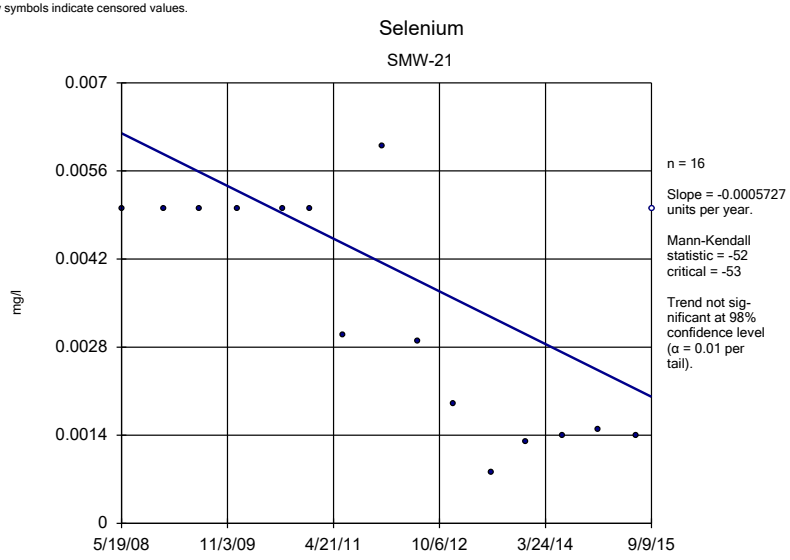
Hollow symbols indicate censored values.



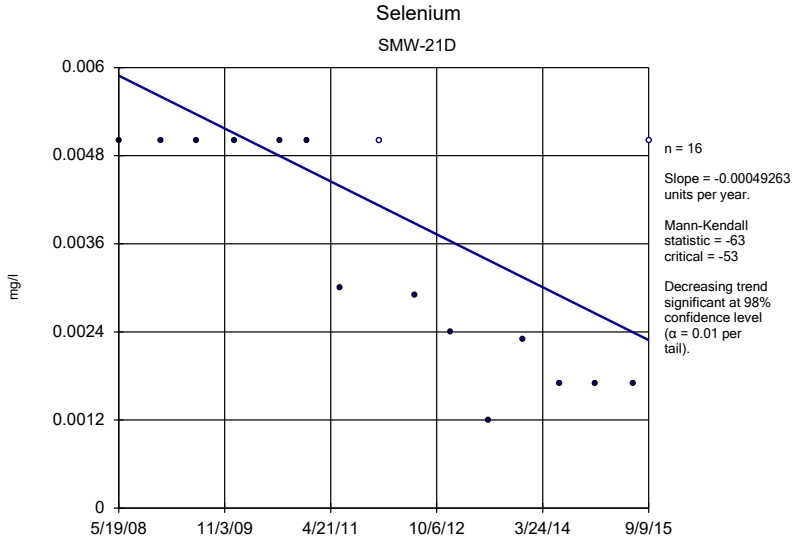
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



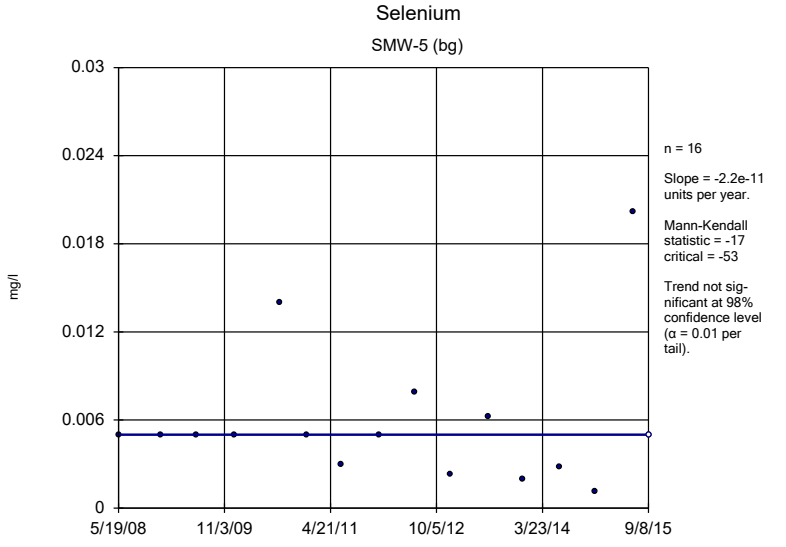
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

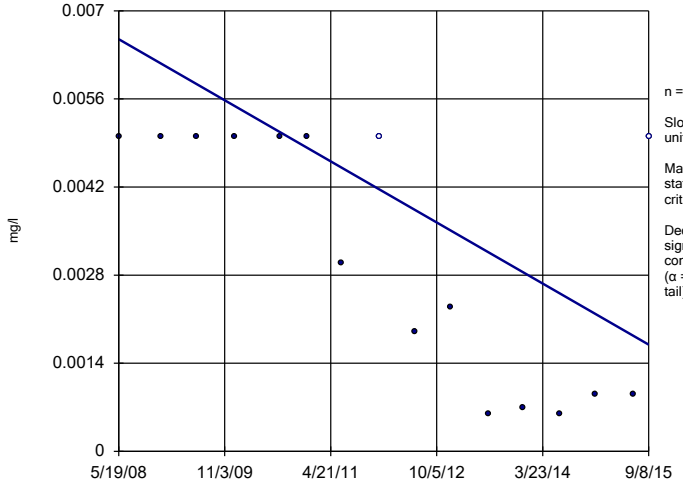


Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Selenium

SMW-5D (bg)



n = 16

Slope = -0.00066421 units per year.

Mann-Kendall statistic = -56
critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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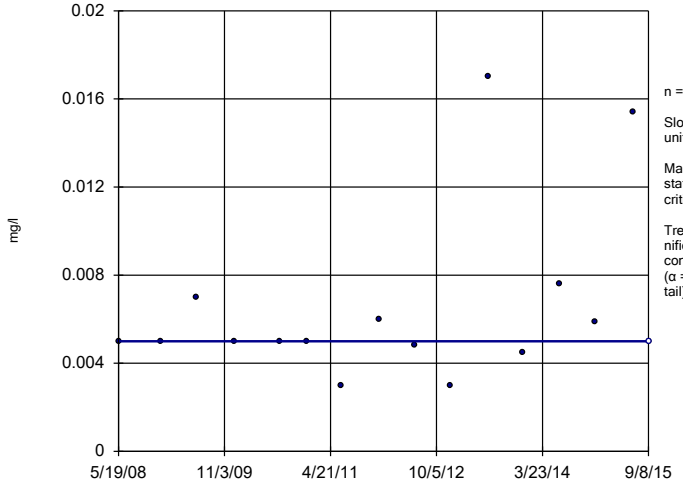
Hollow symbols indicate censored values.

Selenium

SMW-9



n = 16

Slope = 0 units per year.

Mann-Kendall statistic = 12
critical = 53

Trend not significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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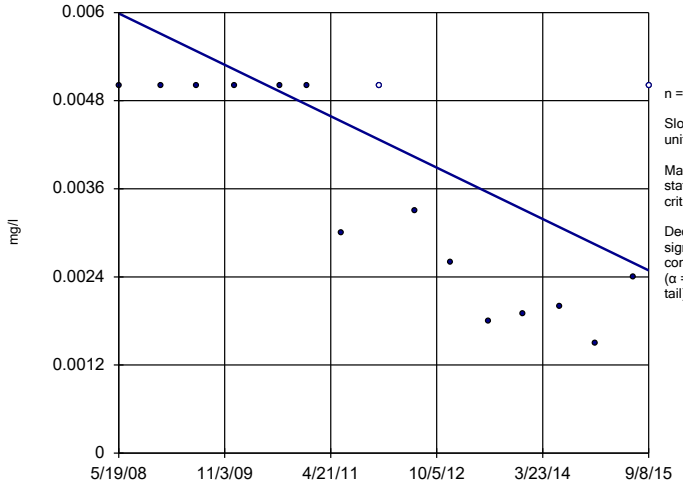
Hollow symbols indicate censored values.

Selenium

SMW-9D



n = 16

Slope = -0.00047895 units per year.

Mann-Kendall statistic = -58
critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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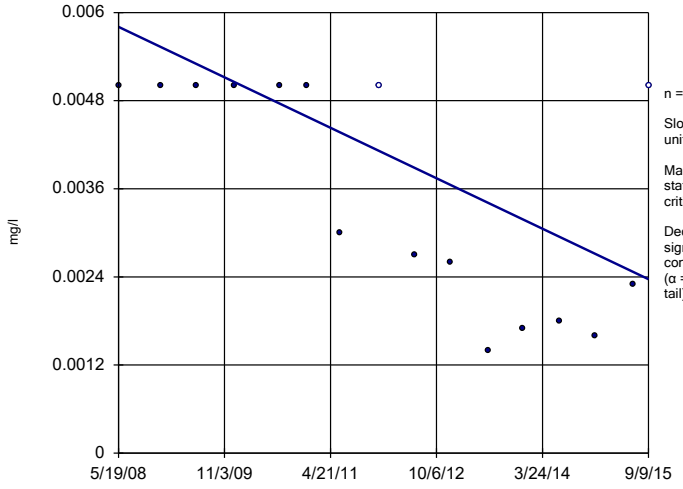
Hollow symbols indicate censored values.

Selenium

SMW-11D



n = 16

Slope = -0.00047015 units per year.

Mann-Kendall statistic = -58
critical = -53

Decreasing trend significant at 98% confidence level (α = 0.01 per tail).

Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

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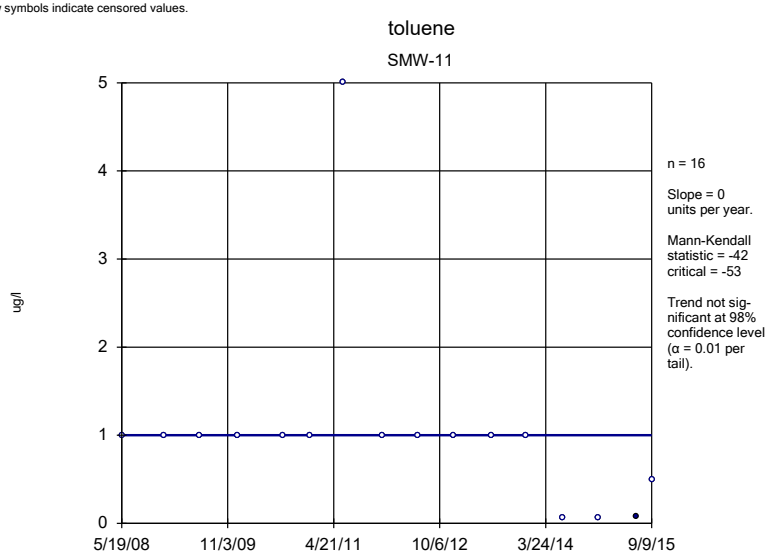
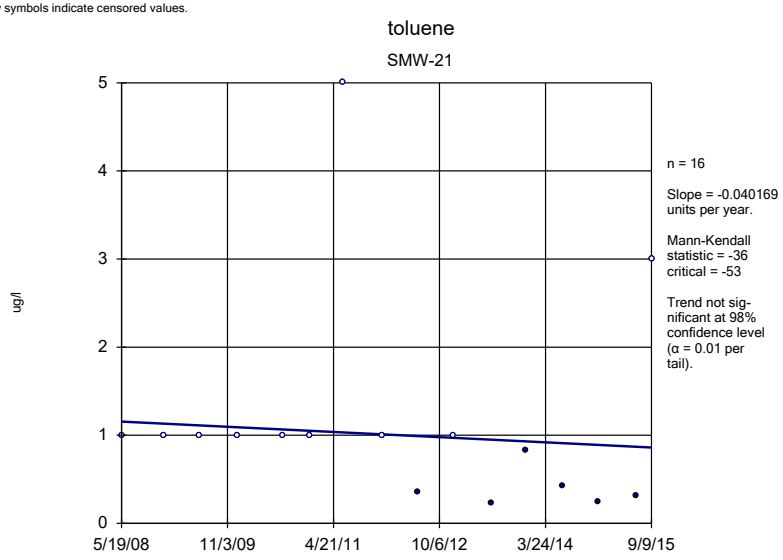
Hollow symbols indicate censored values.



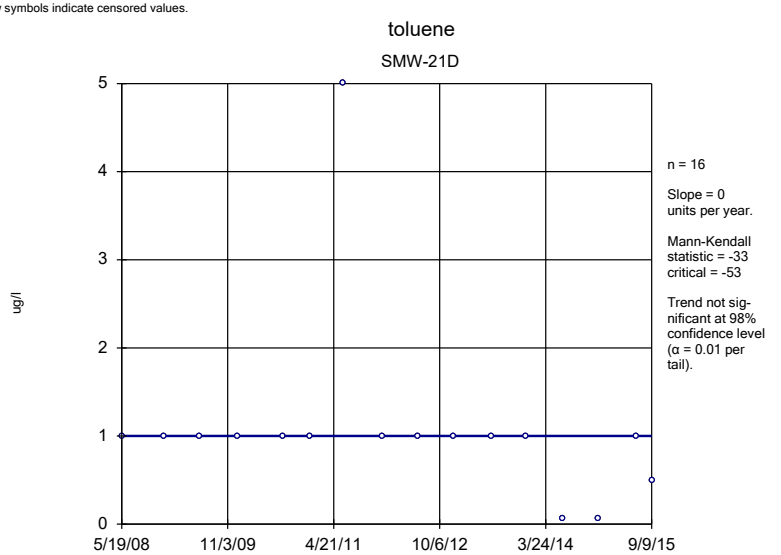
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



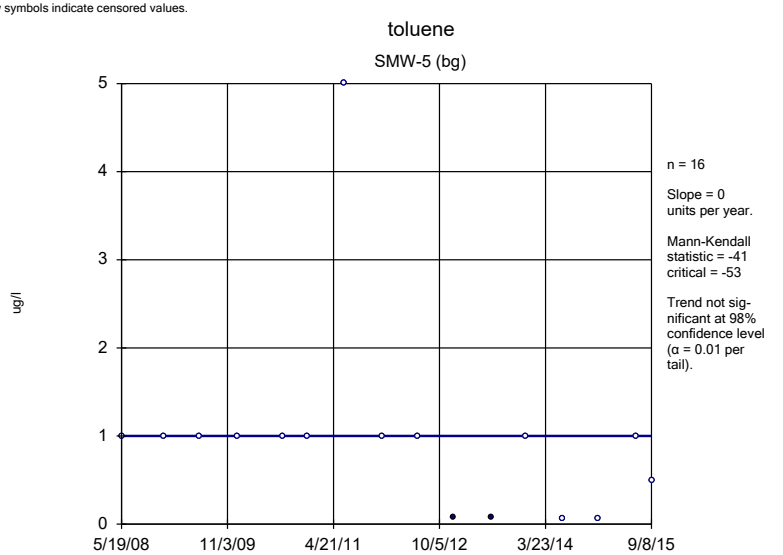
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



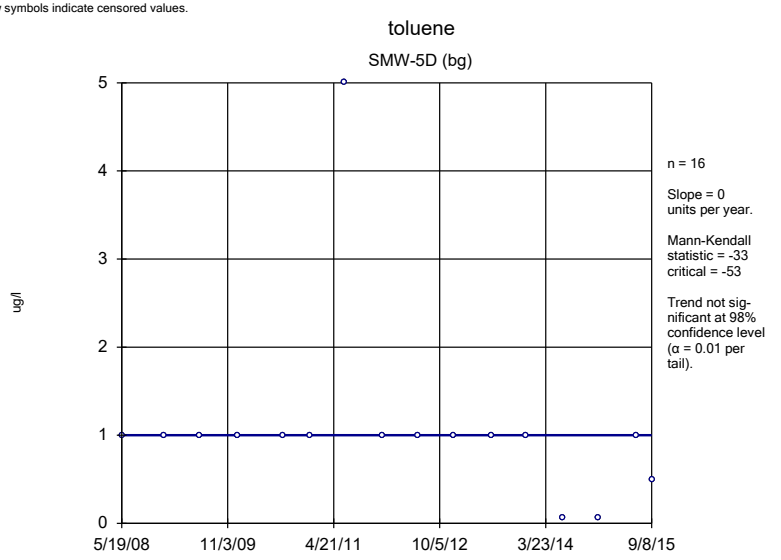
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



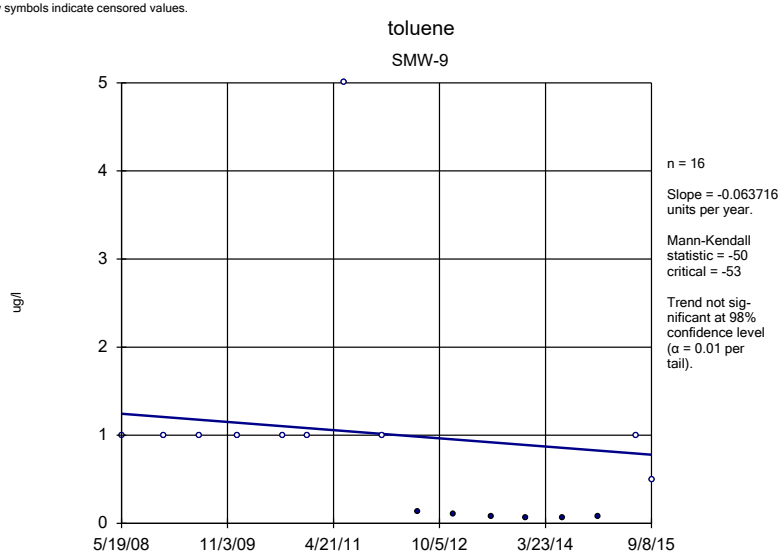
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



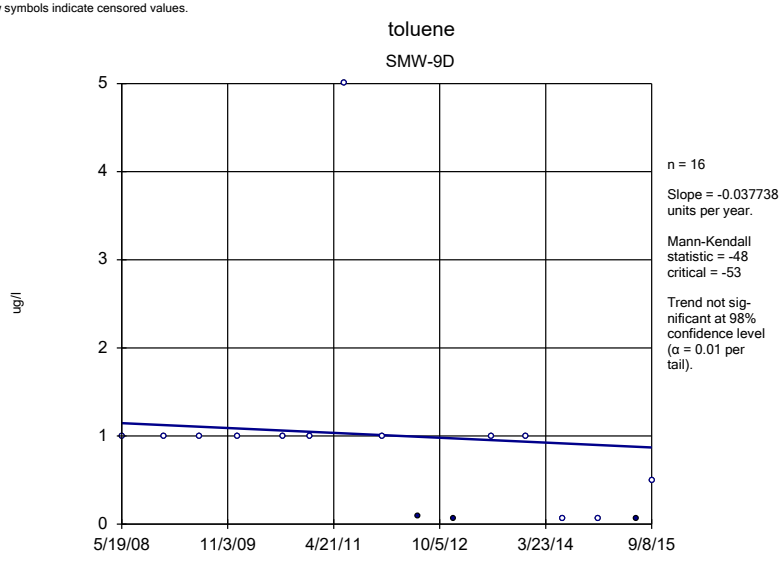
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



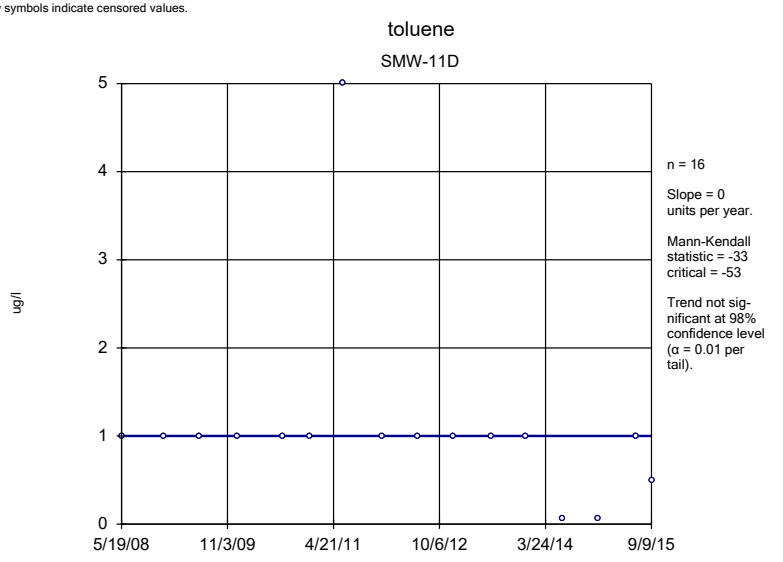
Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/6/2015 3:37 PM View: Wynnewood master 012615

Appendix C
Tolerance Limit Graphs

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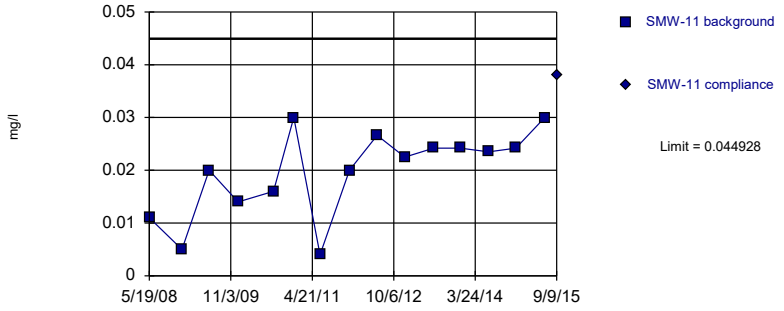
Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.01968, Std. Dev.=0.0081392, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91264, critical = 0.881. Report alpha = 0.01.

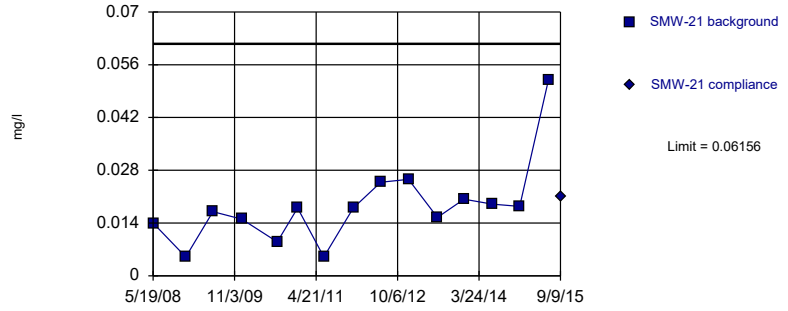
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=0.13079, Std. Dev.=0.037823, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.89549, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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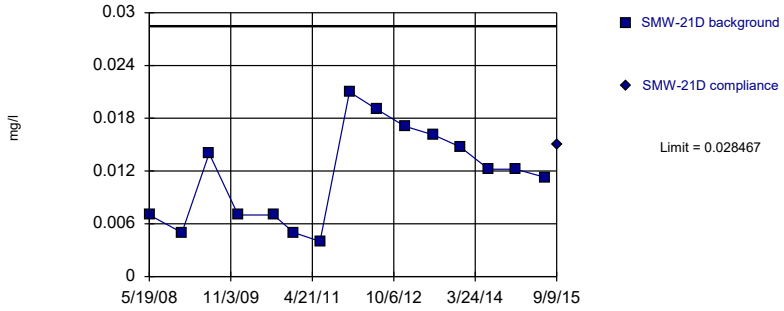
Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.01151, Std. Dev.=0.0054665, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.93852, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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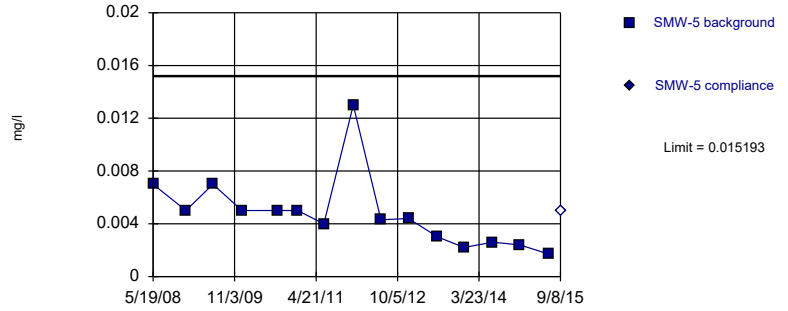
Hollow symbols indicate censored values.

Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=0.066815, Std. Dev.=0.018196, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9123, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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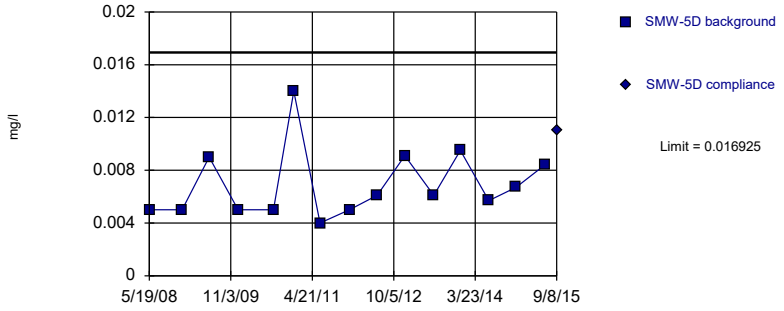
Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary (based on cube root transformation): Mean=0.18795, Std. Dev.=0.02218, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.89063, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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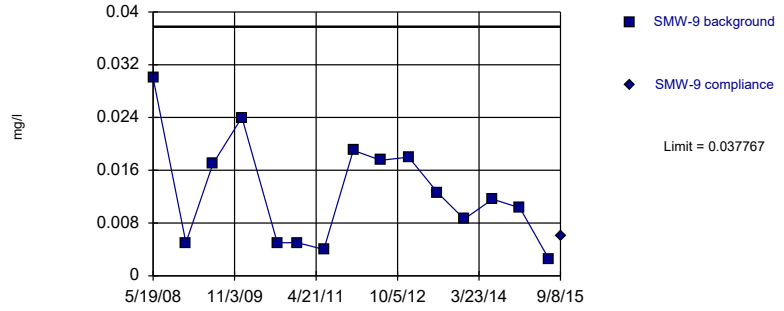
Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.01268, Std. Dev.=0.0080872, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.93039, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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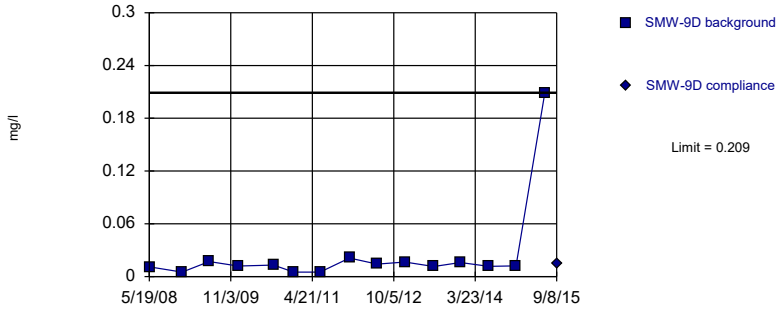
Within Limit

Arsenic

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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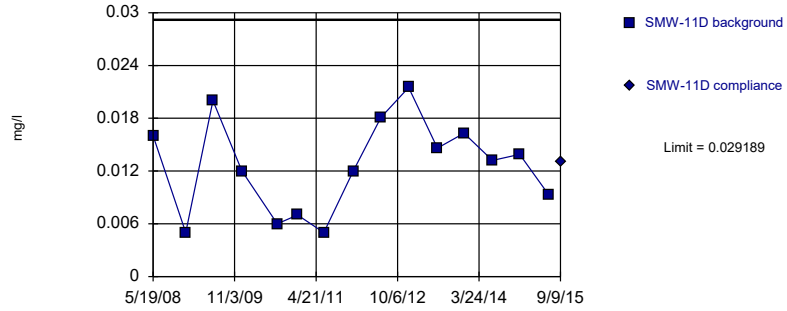
Within Limit

Arsenic

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.01266, Std. Dev.=0.0053286, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.95065, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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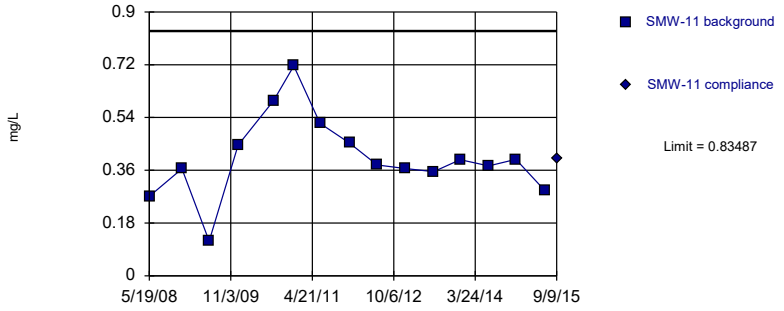
Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.40293, Std. Dev.=0.13924, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.94279, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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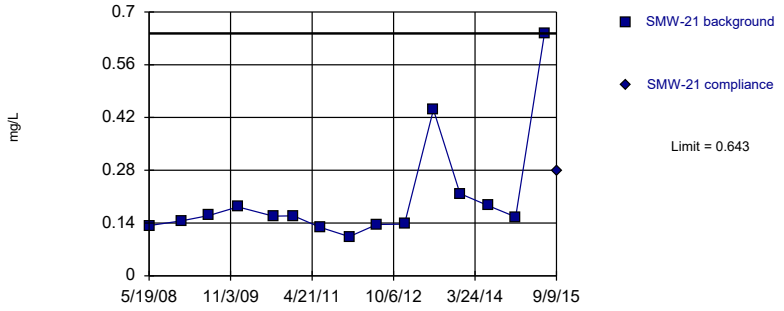
Within Limit

Barium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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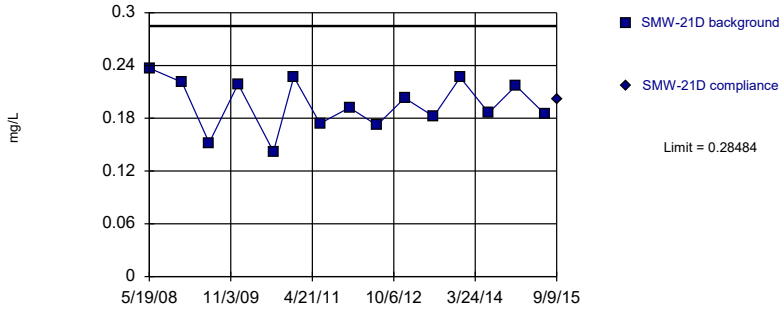
Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.1957, Std. Dev.=0.028735, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.94833, critical = 0.881. Report alpha = 0.01.

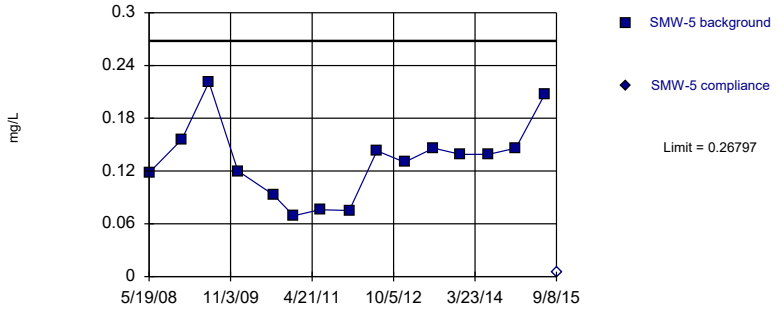
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.13187, Std. Dev.=0.043876, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.92666, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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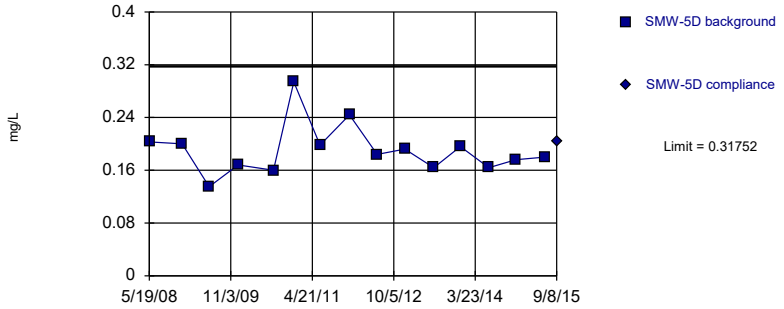
Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=0.43465, Std. Dev.=0.041532, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.90439, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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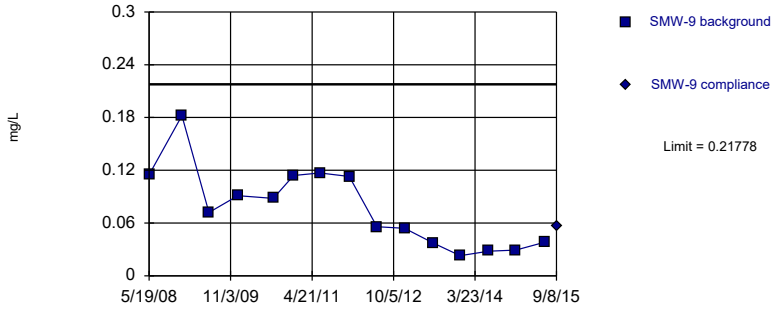
Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.077133, Std. Dev.=0.045341, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91227, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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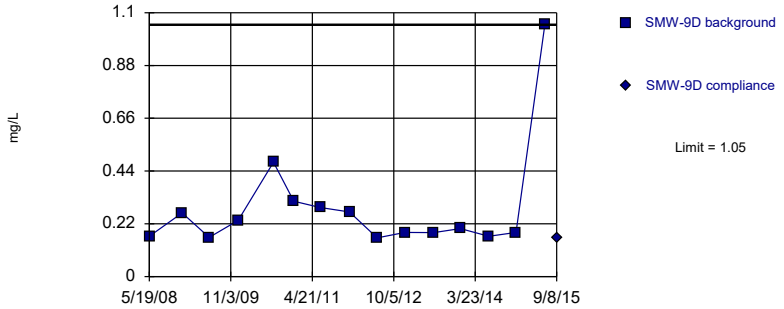
Within Limit

Barium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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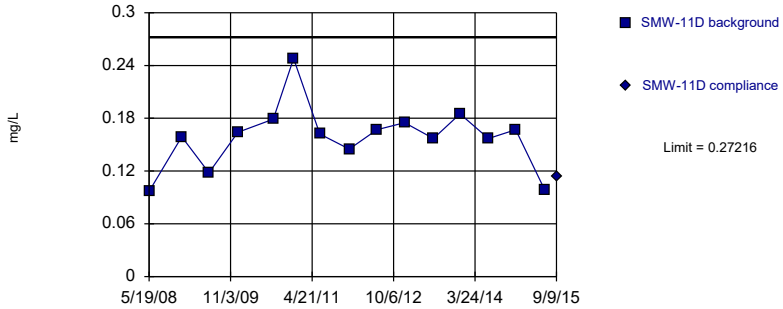
Within Limit

Barium

Intrawell Parametric



95% coverage. Background Data Summary: Mean=0.15859, Std. Dev.=0.036611, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.89458, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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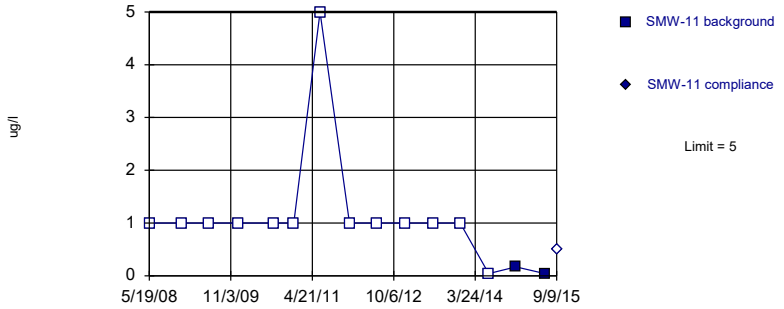
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 86.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

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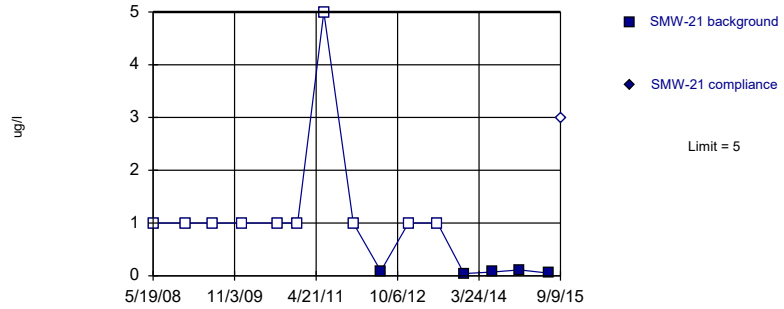
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 66.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

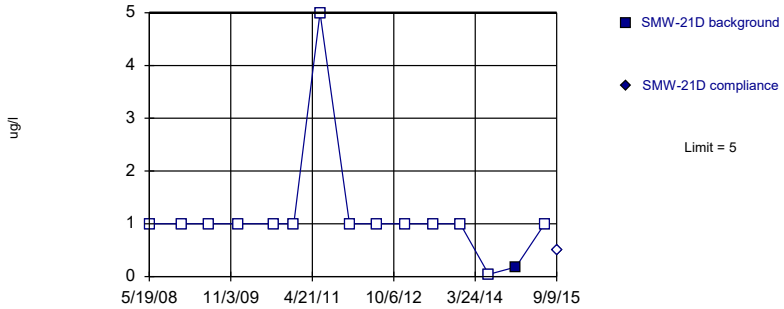
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 93.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

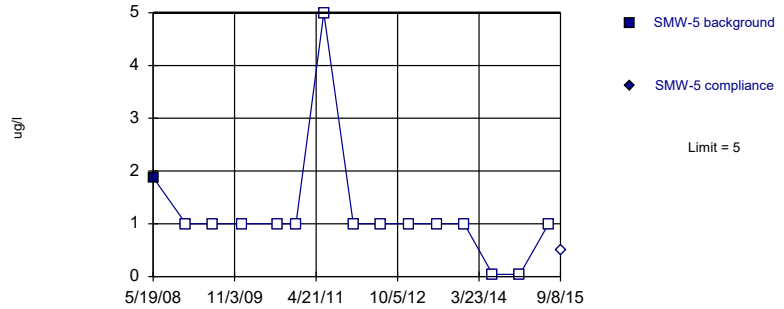
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 93.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

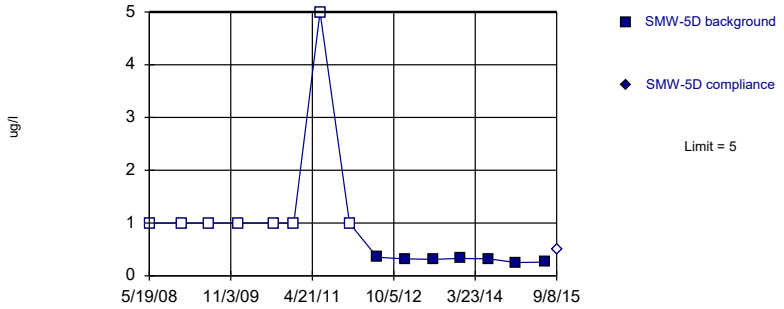
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

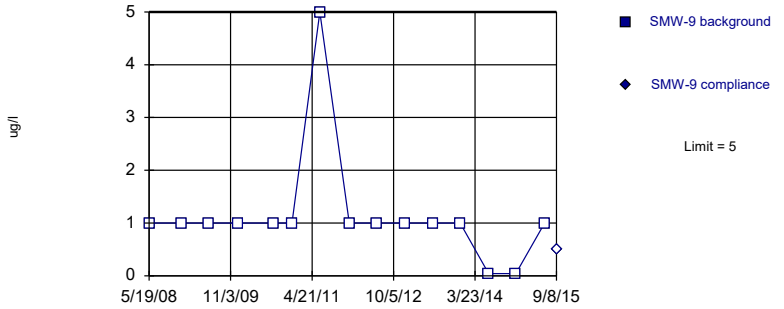
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

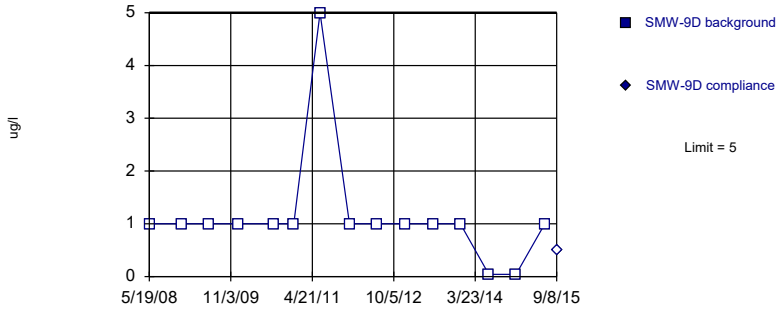
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

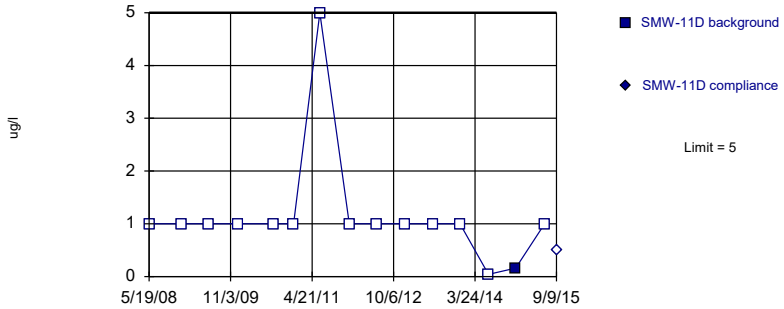
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

benzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 93.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

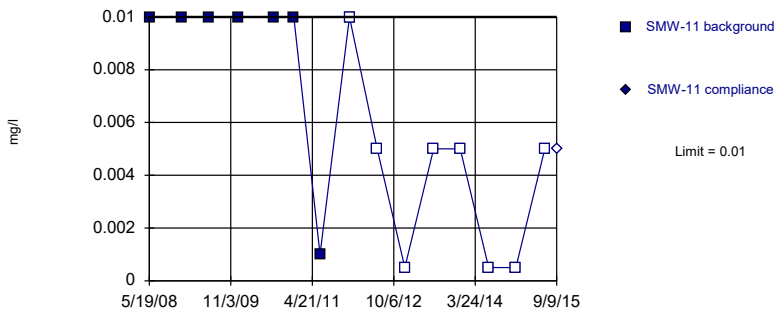
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

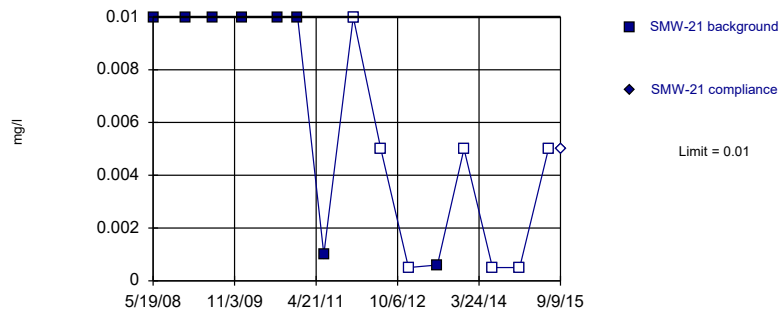
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 46.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

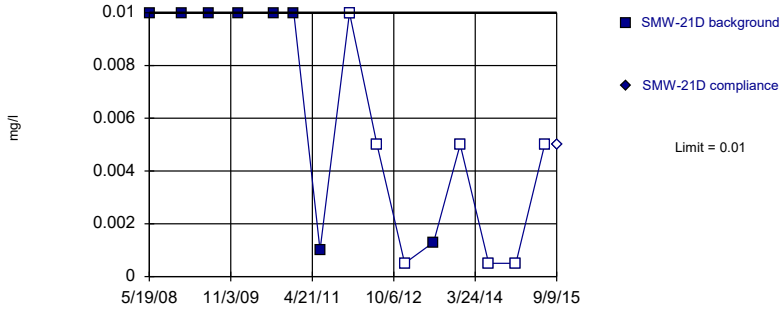
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 46.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

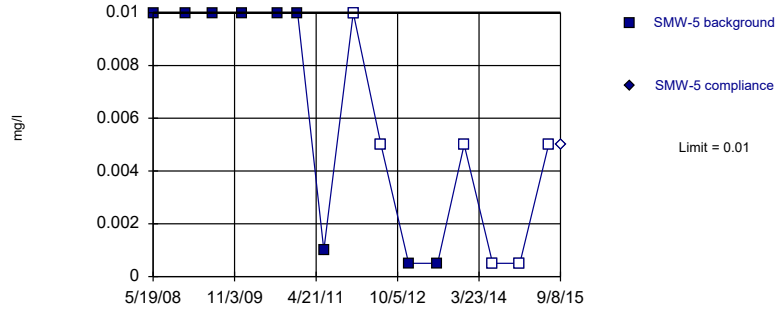
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 40% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

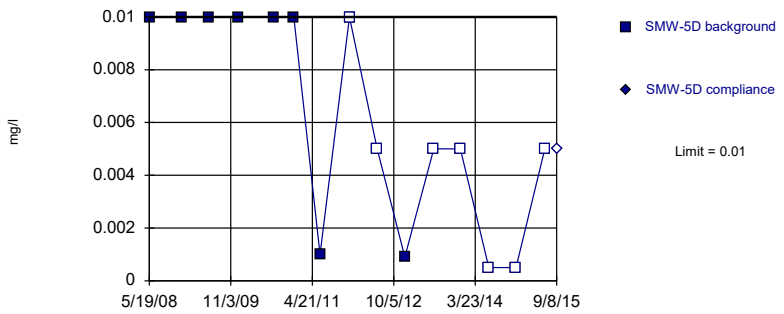
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 46.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

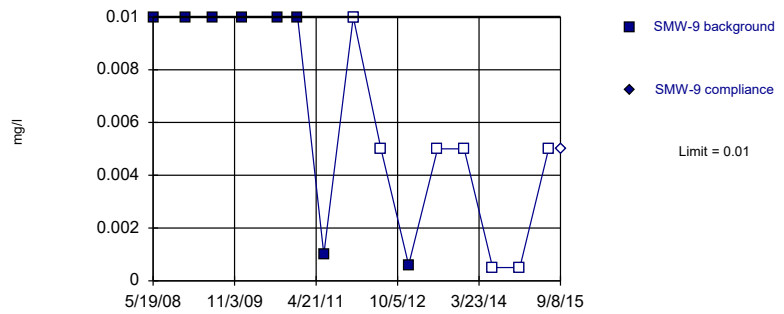
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 46.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

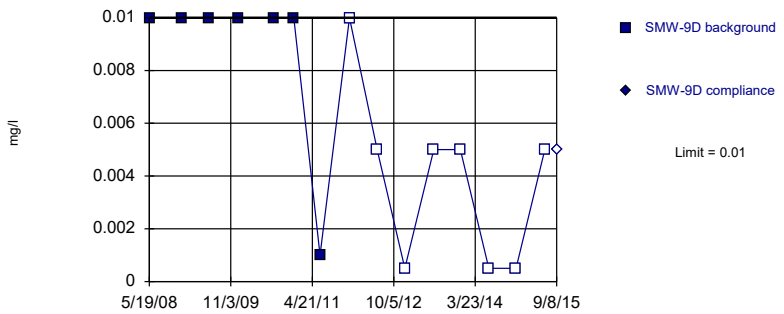
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

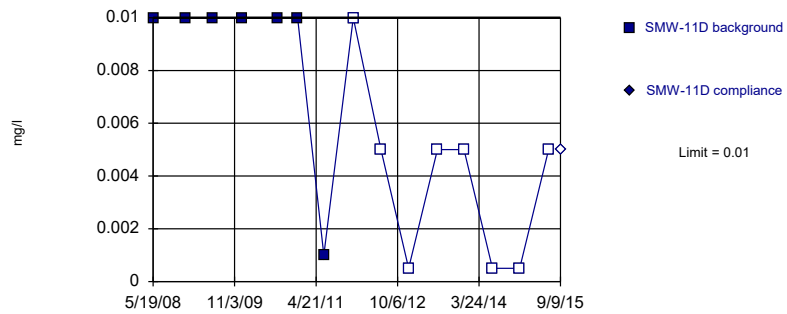
Tolerance Limit Analysis Run 11/6/2015 3:33 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Chromium

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

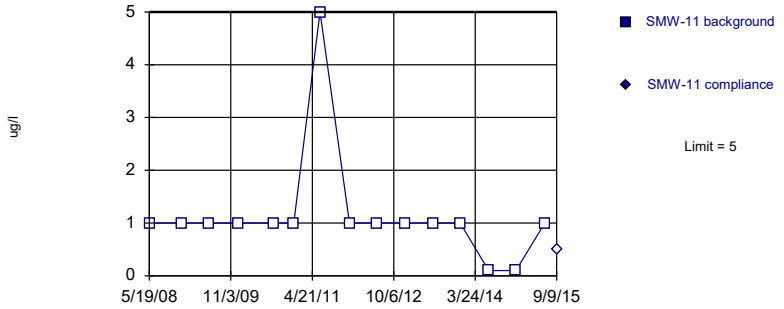
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

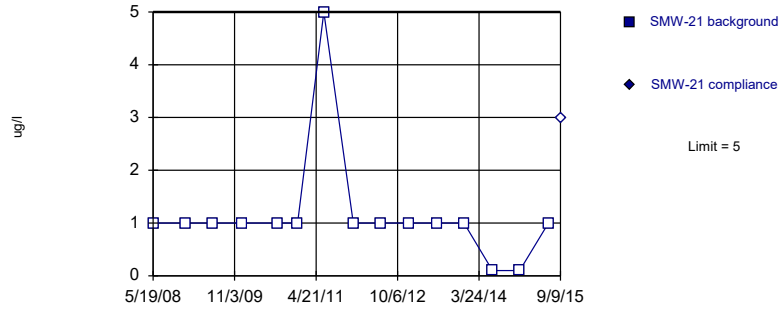
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

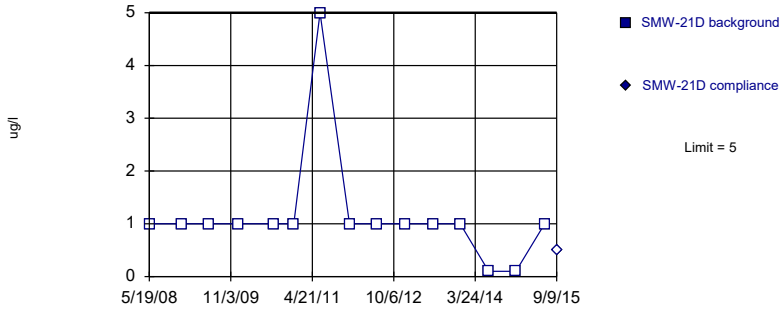
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

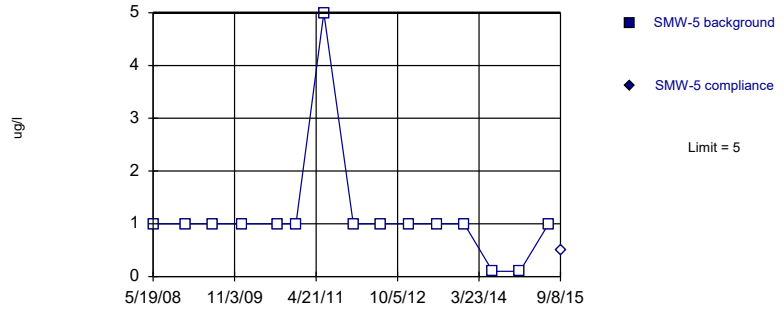
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

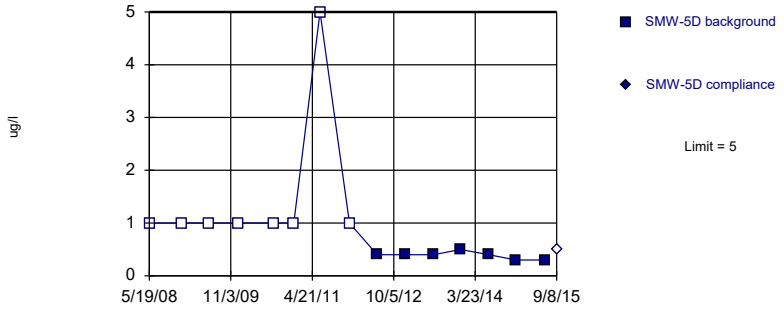
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 53.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

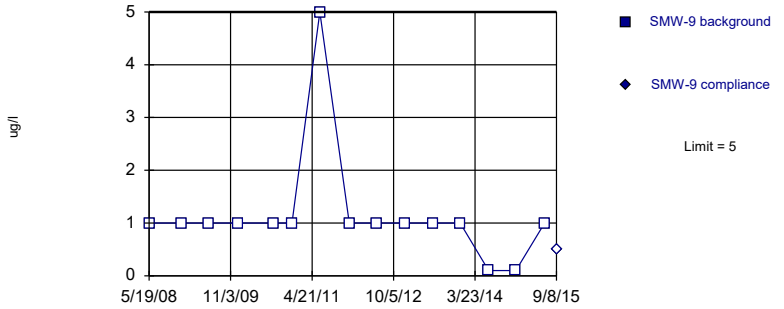
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

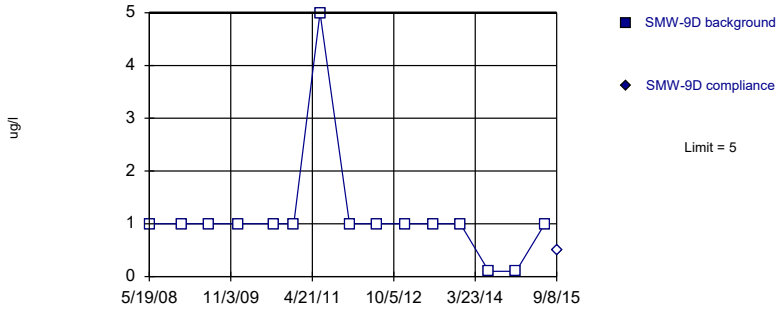
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

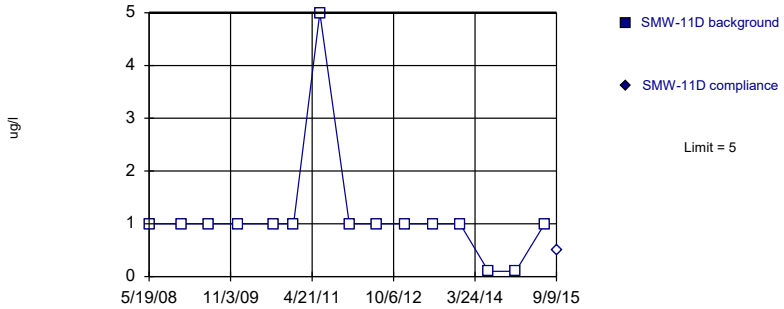
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Ethylbenzene

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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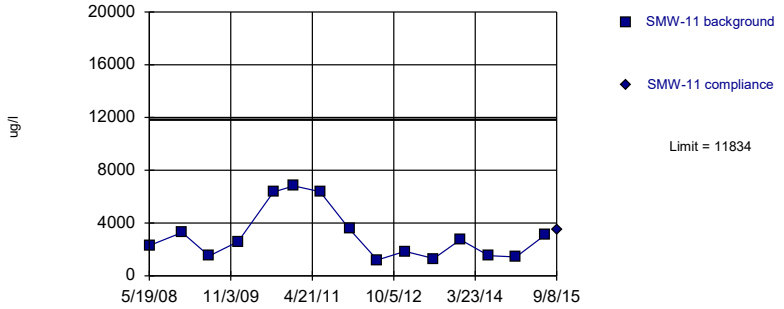
Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary (based on cube root transformation): Mean=13.972, Std. Dev.=2.8421, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.88886, critical = 0.881. Report alpha = 0.01.

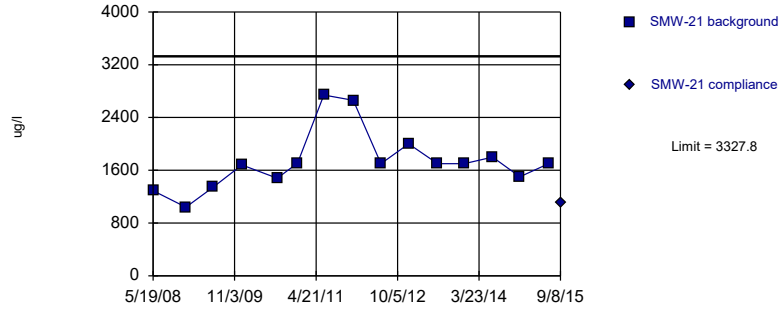
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=41.354, Std. Dev.=5.2656, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.89799, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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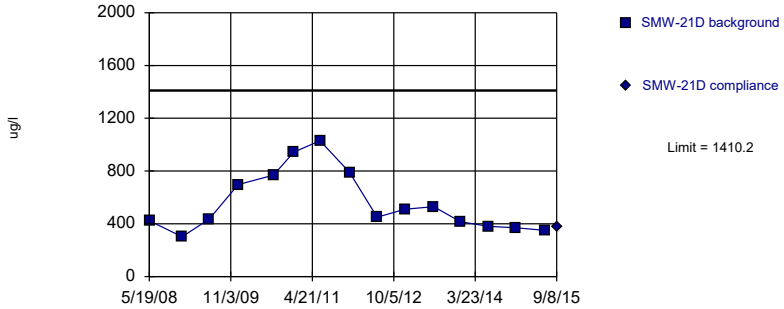
Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=23.23, Std. Dev.=4.6172, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.90219, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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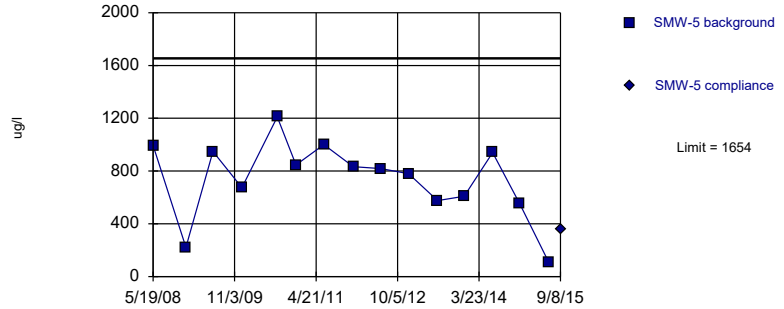
Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary: Mean=740.53, Std. Dev.=294.49, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.93709, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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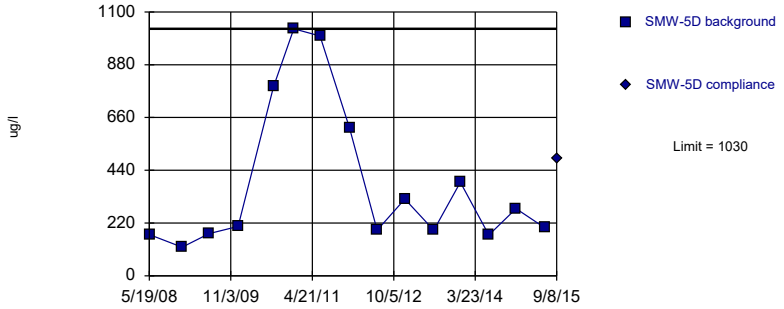
Within Limit

GRO+DRO

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

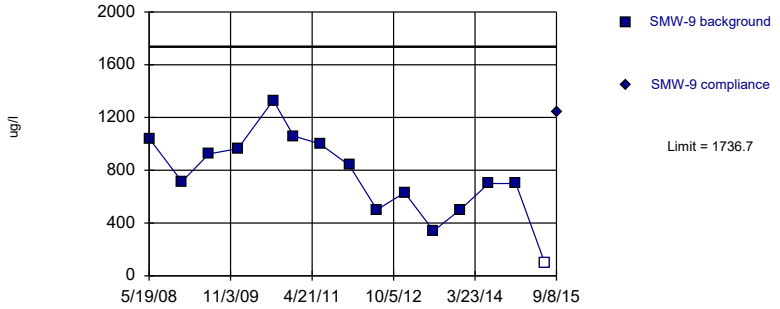
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary: Mean=756.07, Std. Dev.=316.14, n=15, 6.6667% NDs. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.98039, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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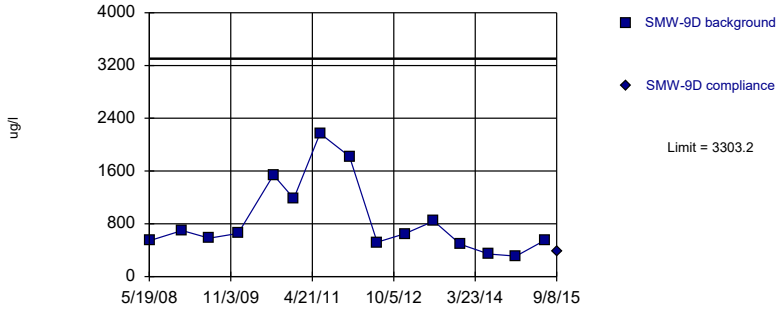
Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary (based on cube root transformation): Mean=9.1526, Std. Dev.=1.8505, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8944, critical = 0.881. Report alpha = 0.01.

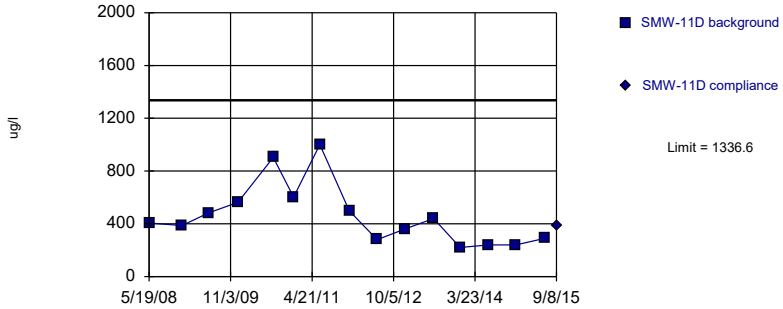
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA

Within Limit

GRO+DRO

Intrawell Parametric



95% coverage. Background Data Summary (based on square root transformation): Mean=20.904, Std. Dev.=5.047, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91544, critical = 0.881. Report alpha = 0.01.

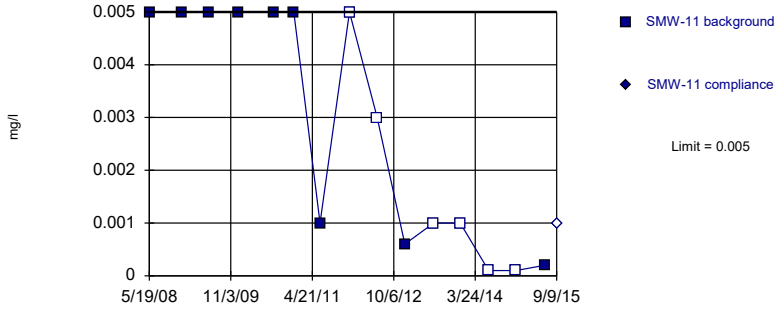
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Lead

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 40% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

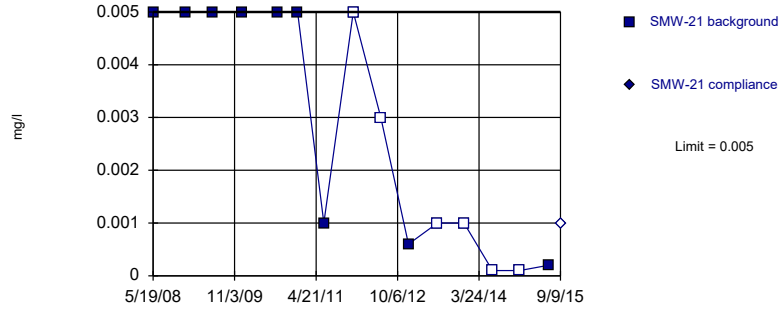
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

Lead

Intrawell Non-parametric



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Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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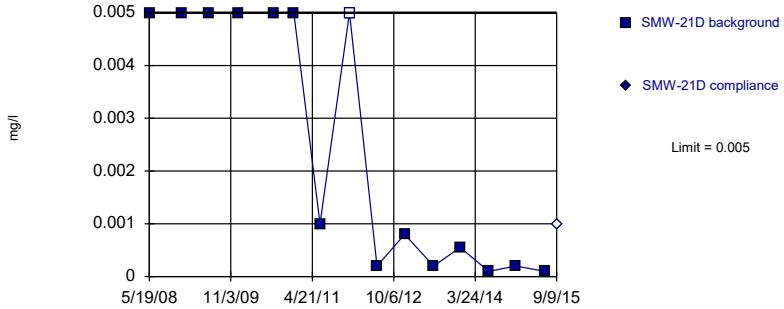
Within Limit

Lead

Intrawell Non-parametric



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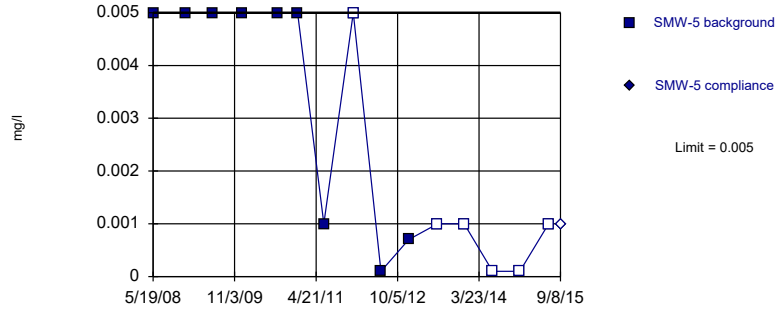
Within Limit

Lead

Intrawell Non-parametric



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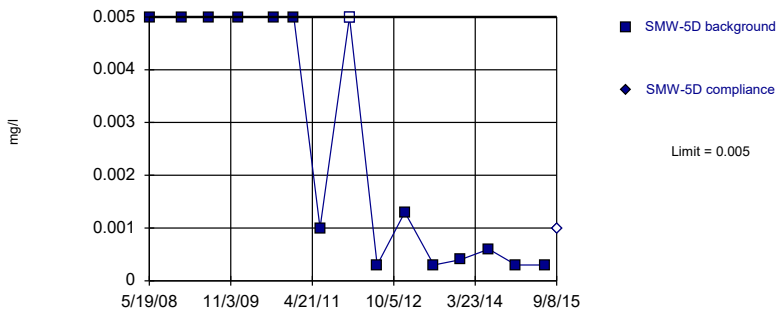
Within Limit

Lead

Intrawell Non-parametric



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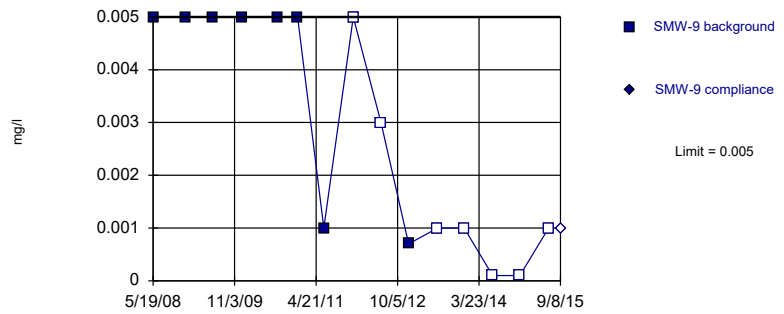
Within Limit

Lead

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 46.667% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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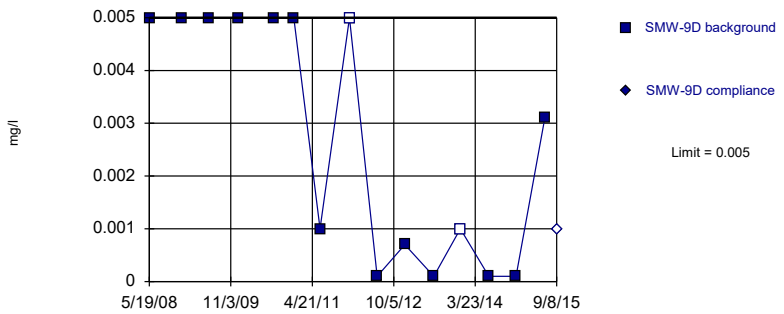
Within Limit

Lead

Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 15 background values. 13.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
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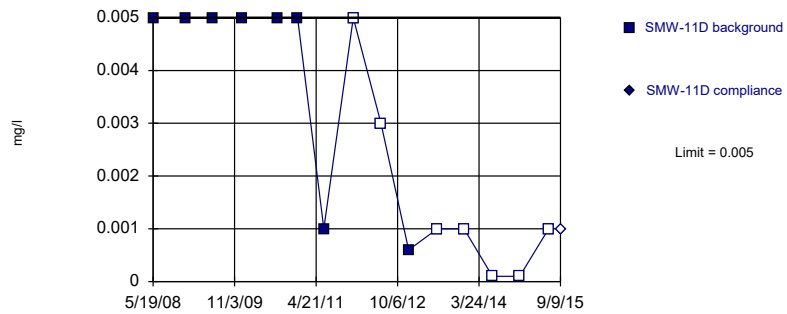
Within Limit

Lead

Intrawell Non-parametric



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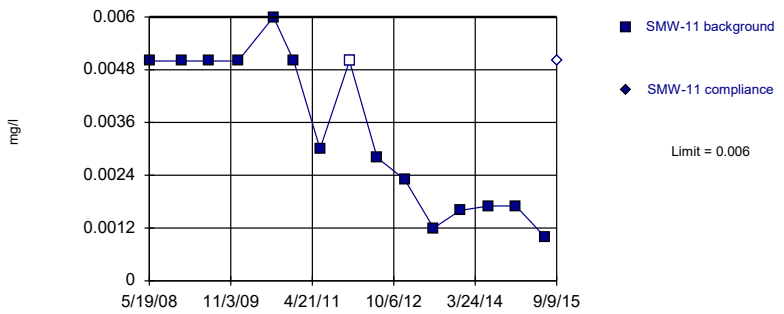
Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.
Within Limit

Selenium

Intrawell Non-parametric



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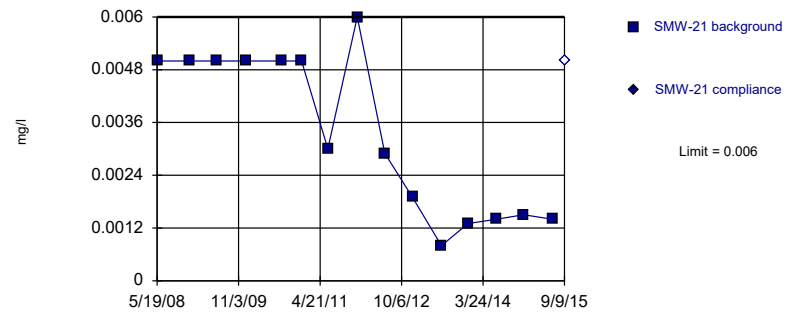
Within Limit

Selenium

Intrawell Non-parametric



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Within Limit

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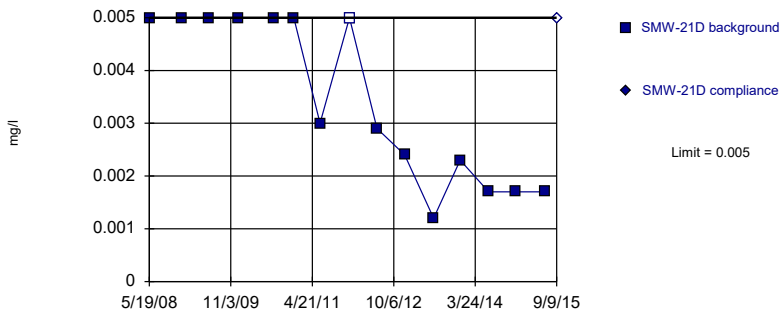
Intrawell Non-parametric



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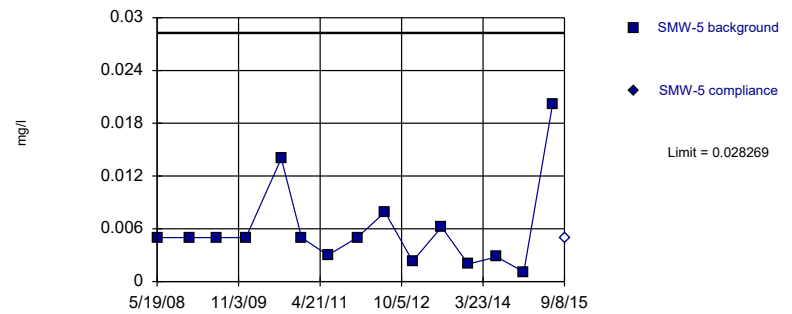
Within Limit

Selenium

Intrawell Parametric



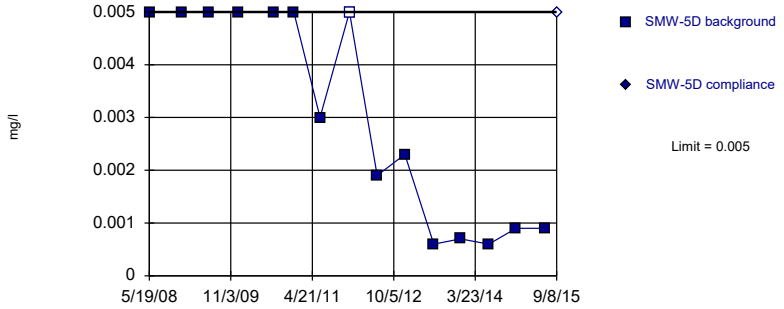
95% coverage. Background Data Summary (based on cube root transformation): Mean=0.17124, Std. Dev.=0.043, n=15. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.91059, critical = 0.881. Report alpha = 0.01.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.
Within Limit

Selenium

Intrawell Non-parametric



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Within Limit

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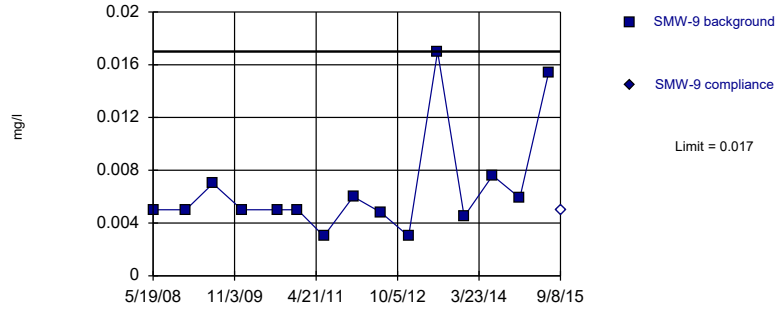

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Within Limit

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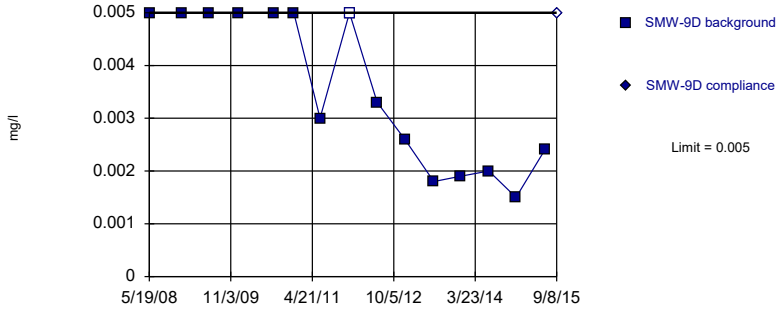

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Within Limit

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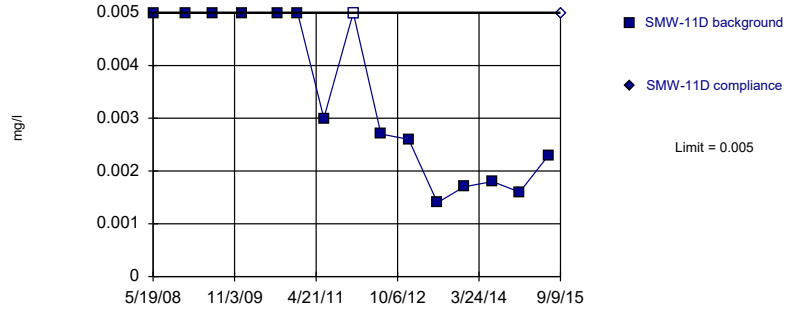

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Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

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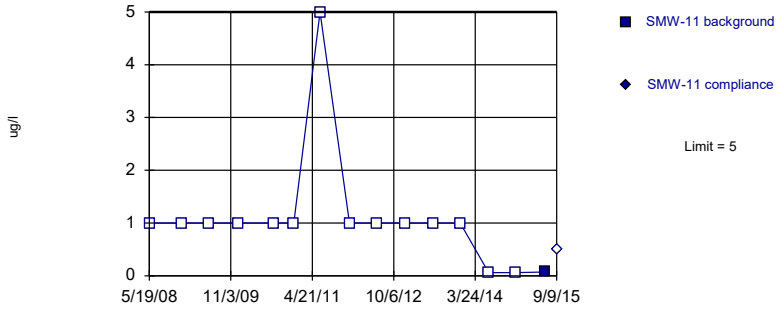
Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 93.333% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

v.9.2.17 Sanitas software licensed to Geostat. EPA
Hollow symbols indicate censored values.

Within Limit

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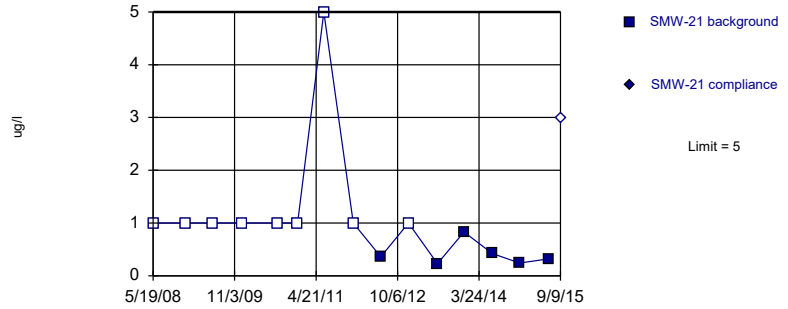
Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 60% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

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Hollow symbols indicate censored values.

Within Limit

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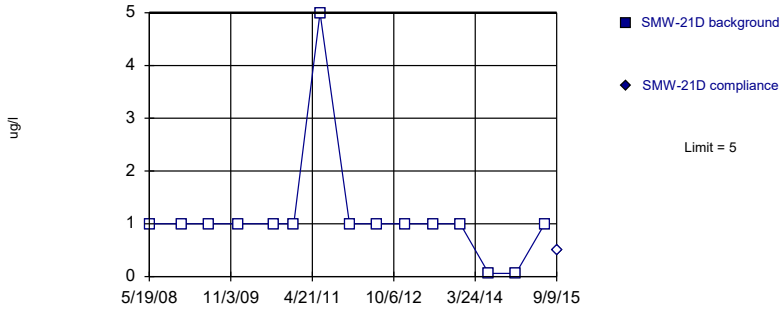
Intrawell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 15 background values. 100% NDs. 73.633% coverage at alpha=0.01; 81.836% coverage at alpha=0.05; 95.508% coverage at alpha=0.5. Report alpha = 0.46329.

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Within Limit

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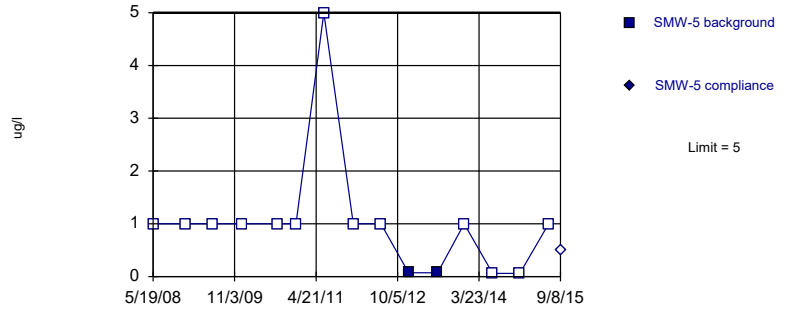
Intrawell Non-parametric



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Within Limit

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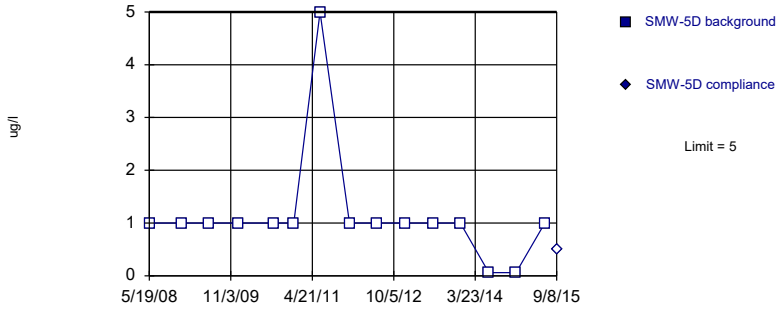

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Within Limit

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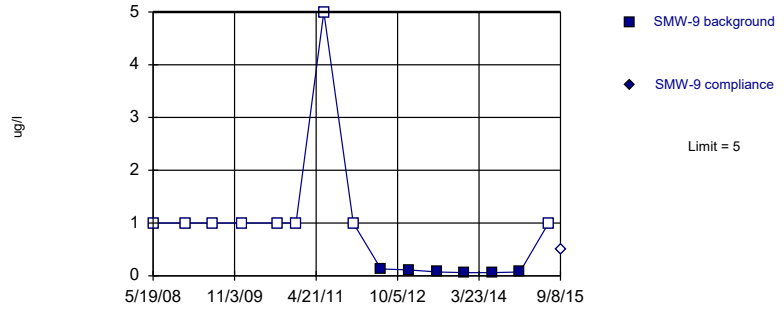

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Within Limit

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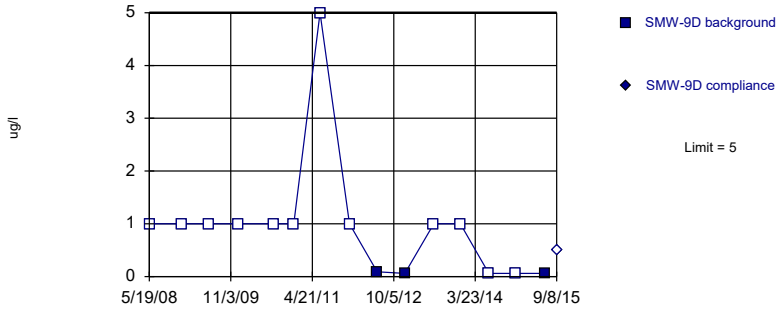
Intrawell Non-parametric



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Within Limit

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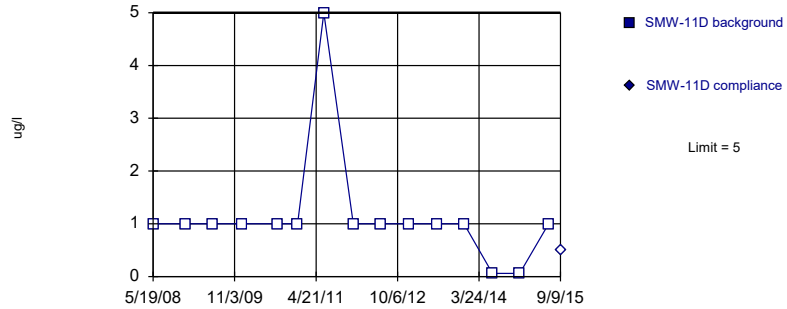
Intrawell Non-parametric



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Tolerance Limit Analysis Run 11/6/2015 3:34 PM View: Wynnewood master 012615

SCOTT A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

MARY FALLIN
Governor

December 17, 2015

Mr. Sam McCormick
Project Manager
Wynnewood Refining Company
10 East Cambridge Circle Drive, Suite 250
Kansas City, Kansas 66103

Re: 90-Day Report on Statistically Significant Results from First 2015 Stormwater Retention Pond (SWRP) Groundwater Monitoring Report, Wynnewood Refining Company (WRC), Wynnewood Oklahoma
EPA ID#OKD000396549

Dear Mr. McCormick:

The Land Protection Division of the Department of Environmental Quality (DEQ) received your letter dated November 12, 2015, that transmitted the above-referenced report prepared by CVR Energy, Inc. and WSP Environment & Energy.

The report documents the September re-sampling of the SWRP wells in response to a statistically significant increase in arsenic levels in well SMW-11 noted in the June 2015 sampling event. As allowed by Permit Section V(H)(4)(a), WRC has submitted the report to demonstrate that a source other than a regulated unit caused the increase.

The re-sampling event for the SWRP wells took place as part of a facility-wide sampling event required under DEQ Consent Order No. 15-056 (CO), and conducted in anticipation of DEQ's acceptance of WRC's Comprehensive Remediation Plan (CRP).

While the CRP was under review, DEQ gave approval for several operations that affect groundwater monitoring at the SWRP, as outlined below:

- Plugging of LMW-3, requested by WRC August 10, 2015, and approved by DEQ on August 12, 2015, with field work completed in August, 2015.
- Re-development of the monitoring wells at the SWRP, requested August 10, 2015, approved by DEQ August 12, 2015, with field work conducted in late August, 2015.
- Installation of SMW-24 and SMW-25, requested by WRC August 10, 2015, and approved by DEQ August 12, 2015, with field work completed in late August, 2015.
- Installation of recovery well SBR-1, requested by WRC November 4, 2015, and approved by DEQ November 5, 2015, field work was completed the week of December 1.
- Site-wide groundwater monitoring, requested by WRC August 26, 2015, and approved by DEQ September 8, 2015.

The June 2015 SWRP sampling event noted a statistically significant increase in arsenic in SMW-11. The September re-sampling event confirmed that the increasing trend for arsenic in SMW-11 continues to be statistically significant. Additionally, arsenic levels in SMW-21 are also statistically significant for the September re-sampling event.

It should be noted that while the overall trend for arsenic in SMW-21 has shown a statistically significant increase, the amount of arsenic noted in the September 2015 event is roughly half the amount noted in June 2015.

The report makes note that groundwater flow has historically been south-southwest, but in both the June and September sampling events flow was toward the south-southeast. Groundwater levels were also elevated in both sampling events (three to five feet higher than 2014 levels in the June sampling event, and one to three feet higher than 2014 levels in the September sampling event).

The report notes that SWRP is not the source of the arsenic in the groundwater, DEQ concurs that it is unlikely that the SWRP is the source of arsenic; however, the mobility of arsenic from soil and rock formations into groundwater is related to the reducing conditions created in the petroleum plumes around the SWRP area. For example, SWM-23 had a Diesel Range Organic level of 1,600 µg/L in the 1st semi-annual groundwater monitoring report. While the arsenic is not a direct release from the refinery, the petroleum plumes leading to the conditions that increase arsenic in groundwater are related to refinery releases.

According to permit conditions, WRC would normally be required to submit a permit modification and go into Compliance Monitoring and from there possibly into Corrective Action. However, CO item B(13) requires the submission of a site-wide remediation plan, and CO item 18(a)(i-ii) requires the installation of a remediation system downgradient of the SWRP. Submission of the Comprehensive Remediation Plan on August 12, 2015, and the scheduled installation of the recovery system noted on the previous page satisfy both the permit requirements and the CO requirements.

The report is accepted as submitted. Questions may be directed to Adrian Simmons at (405) 702-5217.

Sincerely,

Donald A. Hensch, P.E.
Engineering Manager
RCRA Permits and Corrective Actions Section
Land Protection Division

DAH/as

cc: David Vogler (6PD-O), EPA Region 6