

Technical Report for

WPX Energy Rocky Mountain, LLC

WWLCOGJ: WPX RWF 11-35 BWQ

Accutest Job Number: D59550

Sampling Date: 07/08/14

Report to:

Western Water and Land, Inc.

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Total number of pages in report: 54



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



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Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Test results relate only to samples analyzed.

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Sample Summary

WPX Energy Rocky Mountain, LLC

Job No: D59550

WWLCOGJ: WPX RWF 11-35 BWQ

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D59550-1	07/08/14	10:20	RMK 07/09/14	AQ	Ground Water	COX 61751-F
D59550-1F	07/08/14	10:20	RMK 07/09/14	AQ	Groundwater Filtered	COX 61751-F
D59550-2	07/08/14	12:00	RMK 07/09/14	AQ	Ground Water	ROBERTS 27856
D59550-2F	07/08/14	12:00	RMK 07/09/14	AQ	Groundwater Filtered	ROBERTS 27856



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: WPX Energy Rocky Mountain, LLC

Job No D59550

Site: WWLCOGJ: WPX RWF 11-35 BWQ

Report Date 7/22/2014 12:28:58 PM

On 07/09/2014, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D59550 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ **Batch ID:** V7V1494

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59613-1MS, D59613-2DUP were used as the QC samples indicated.

Volatiles by GC By Method RSK175 MOD

Matrix AQ **Batch ID:** GFB533

- All samples were analyzed within the recommended method holding time.
- Sample(s) D59544-1AMS, D59544-1AMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- D59550-1,-2: The pH of the sample was >2 at time of analysis.

Extractables by GC By Method SW846-8015B

Matrix AQ **Batch ID:** OP10216

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D59273-15MS, D59273-15MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method EPA 200.7

Matrix AQ **Batch ID:** MP13383

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59297-1FMS, D59297-1FMSD were used as the QC samples for the metals analysis.

Metals By Method EPA 200.8

Matrix AQ **Batch ID:** MP13394

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59550-1FMS, D59550-1FMSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method EPA 300.0/SW846 9056

Matrix AQ **Batch ID:** GP13004

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59517-1MS, D59517-1MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.
- D59550-2 for Bromide: Elevated detection limit due to matrix interference.
- D59550-2 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.
- D59550-1 for Nitrogen, Nitrite: Elevated detection limit due to matrix interference.
- D59550-1 for Bromide: Elevated detection limit due to matrix interference.

Wet Chemistry By Method HACH IRB-BART

Matrix AQ **Batch ID:** MB395

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SLYM-BART

Matrix AQ **Batch ID:** MB396

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH SRB-BART

Matrix AQ **Batch ID:** MB397

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method HACH8190/SM4500P-B/E

Matrix AQ **Batch ID:** GP13082

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59578-1DUP, D59578-1MS, D59578-1MSD were used as the QC samples for the Phosphorus, Total analysis.

Wet Chemistry By Method SM 2320B-2011

Matrix AQ **Batch ID:** GN25555

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59560-3MS, D59560-3MSD, D59601-1DUP were used as the QC samples for the Alkalinity, Total as CaCO₃ analysis.

Matrix AQ **Batch ID:** GN25558

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix AQ **Batch ID:** GN25559

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM 2510B-2011

Matrix AQ	Batch ID: GP13003
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- Sample(s) D59564-4DUP were used as the QC samples for the Specific Conductivity analysis.

Wet Chemistry By Method SM 2540C-2011

Matrix AQ	Batch ID: GN25531
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- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D59478-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

Wet Chemistry By Method SM4500HB+-2011/9040C

Matrix AQ	Batch ID: GN25501
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- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: D59550-1, D59550-2

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D59550
 Account: WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ
 Collected: 07/08/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D59550-1 COX 61751-F

Methane ^a	0.0017	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3	354	5.0	2.0	mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3	354	5.0	2.0	mg/l	SM 2320B-2011
Bromide ^b	0.060 J	0.10	0.050	mg/l	EPA 300.0/SW846 9056
Chloride	6.2	1.0	0.80	mg/l	EPA 300.0/SW846 9056
Fluoride	0.37	0.20	0.10	mg/l	EPA 300.0/SW846 9056
Iron Reducing Bacteria	74500	25		CFU/ml	HACH IRB-BART
Nitrogen, Nitrate	1.5	0.10	0.060	mg/l	EPA 300.0/SW846 9056
Phosphorus, Total	0.013	0.010	0.0080	mg/l	HACH8190/SM4500P-B/E
Slime Forming Bacteria	66500	500		CFU/ml	HACH SLYM-BART
Solids, Total Dissolved	602	10	5.0	mg/l	SM 2540C-2011
Specific Conductivity	802	1.0		umhos/cm	SM 2510B-2011
Sulfate	146	5.0	2.0	mg/l	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria	1200	200		CFU/ml	HACH SRB-BART
pH	7.55			su	SM4500HB+ -2011/9040C

D59550-1F COX 61751-F

Barium	91.5	4.0	0.16	ug/l	EPA 200.8
Boron	37.3 J	50	6.6	ug/l	EPA 200.7
Calcium	80400	400	66	ug/l	EPA 200.7
Iron	3.3 J	10	3.2	ug/l	EPA 200.7
Magnesium	56400	200	29	ug/l	EPA 200.7
Manganese	16.2	5.0	0.29	ug/l	EPA 200.7
Potassium	6060	1000	230	ug/l	EPA 200.7
Selenium	3.3	0.80	0.42	ug/l	EPA 200.8
Sodium	53000	400	36	ug/l	EPA 200.7
Strontium	947	5.0	0.12	ug/l	EPA 200.7

D59550-2 ROBERTS 27856

Methane ^a	0.00087	0.00080	0.00040	mg/l	RSK175 MOD
Alkalinity, Bicarbonate as CaCO3	347	5.0	2.0	mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3	347	5.0	2.0	mg/l	SM 2320B-2011
Bromide ^b	0.054 J	0.10	0.050	mg/l	EPA 300.0/SW846 9056
Chloride	6.3	1.0	0.80	mg/l	EPA 300.0/SW846 9056
Fluoride	0.38	0.20	0.10	mg/l	EPA 300.0/SW846 9056
Iron Reducing Bacteria	74500	25		CFU/ml	HACH IRB-BART
Nitrogen, Nitrate	1.5	0.10	0.060	mg/l	EPA 300.0/SW846 9056
Slime Forming Bacteria	66500	500		CFU/ml	HACH SLYM-BART
Solids, Total Dissolved	610	10	5.0	mg/l	SM 2540C-2011
Specific Conductivity	799	1.0		umhos/cm	SM 2510B-2011
Sulfate	146	5.0	2.0	mg/l	EPA 300.0/SW846 9056

Summary of Hits

Job Number: D59550
Account: WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ
Collected: 07/08/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Sulfate Reducing Bacteria		1200	200		CFU/ml	HACH SRB-BART
pH		7.60			su	SM4500HB+ -2011/9040C
D59550-2F	ROBERTS 27856					
Barium		95.7	4.0	0.16	ug/l	EPA 200.8
Boron		35.7 J	50	6.6	ug/l	EPA 200.7
Calcium		78200	400	66	ug/l	EPA 200.7
Iron		5.3 J	10	3.2	ug/l	EPA 200.7
Magnesium		54700	200	29	ug/l	EPA 200.7
Manganese		15.0	5.0	0.29	ug/l	EPA 200.7
Potassium		5940	1000	230	ug/l	EPA 200.7
Selenium		3.1	0.80	0.42	ug/l	EPA 200.8
Sodium		51600	400	36	ug/l	EPA 200.7
Strontium		931	5.0	0.12	ug/l	EPA 200.7

- (a) The pH of the sample was > 2 at time of analysis.
- (b) Elevated detection limit due to matrix interference.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: COX 61751-F Lab Sample ID: D59550-1 Matrix: AQ - Ground Water Method: SW846 8260B Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V27329.D	1	07/11/14	JL	n/a	n/a	V7V1494
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics + GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		62-130%
2037-26-5	Toluene-D8	97%		70-130%
460-00-4	4-Bromofluorobenzene	97%		69-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: COX 61751-F Lab Sample ID: D59550-1 Matrix: AQ - Ground Water Method: RSK175 MOD Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	FB11542.D	1	07/10/14	JJ	n/a	n/a	GFB533
Run #2							

Run #	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	22.0 Deg. C
Run #2				

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.0017	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) The pH of the sample was > 2 at time of analysis.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: COX 61751-F Lab Sample ID: D59550-1 Matrix: AQ - Ground Water Method: SW846-8015B SW846 3510C Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI13997.D	1	07/10/14	JJ	07/09/14	OP10216	GF1852
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	87%		10-130%		

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.1
4

Report of Analysis

Client Sample ID: COX 61751-F		Date Sampled: 07/08/14
Lab Sample ID: D59550-1		Date Received: 07/09/14
Matrix: AQ - Ground Water		Percent Solids: n/a
Project: WWLCOGJ: WPX RWF 11-35 BWQ		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	354	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Alkalinity, Carbonate	2.0 U	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Alkalinity, Total as CaCO3	354	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Bromide ^a	0.060 J	0.10	0.050	mg/l	2	07/09/14 15:18	JB	EPA 300.0/SW846 9056
Chloride	6.2	1.0	0.80	mg/l	2	07/09/14 15:18	JB	EPA 300.0/SW846 9056
Fluoride	0.37	0.20	0.10	mg/l	2	07/09/14 15:18	JB	EPA 300.0/SW846 9056
Iron Reducing Bacteria	74500	25		CFU/ml	1	07/14/14	MM	HACH IRB-BART
Nitrogen, Nitrate	1.5	0.10	0.060	mg/l	10	07/09/14 18:14	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	0.0060 U	0.0080	0.0060	mg/l	2	07/09/14 15:18	JB	EPA 300.0/SW846 9056
Phosphorus, Total	0.013	0.010	0.0080	mg/l	1	07/18/14 08:30	JB	HACH8190/SM4500P-B/E
Slime Forming Bacteria	66500	500		CFU/ml	1	07/14/14	MM	HACH SLYM-BART
Solids, Total Dissolved	602	10	5.0	mg/l	1	07/14/14	AK	SM 2540C-2011
Specific Conductivity	802	1.0		umhos/cm	1	07/09/14	JD	SM 2510B-2011
Sulfate	146	5.0	2.0	mg/l	10	07/09/14 18:14	JB	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria	1200	200		CFU/ml	1	07/14/14	MM	HACH SRB-BART
pH	7.55			su	1	07/10/14 13:50	SK	SM4500HB+ -2011/9040C

(a) Elevated detection limit due to matrix interference.

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: COX 61751-F Lab Sample ID: D59550-1F Matrix: AQ - Groundwater Filtered Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
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Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	91.5	4.0	0.16	ug/l	2	07/11/14	07/11/14 NT	EPA 200.8 ¹	EPA 200.8 ⁵
Boron	37.3 J	50	6.6	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Calcium	80400	400	66	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Iron	3.3 J	10	3.2	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Magnesium	56400	200	29	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Manganese	16.2	5.0	0.29	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Potassium	6060	1000	230	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Selenium	3.3	0.80	0.42	ug/l	2	07/11/14	07/14/14 NT	EPA 200.8 ³	EPA 200.8 ⁵
Sodium	53000	400	36	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴
Strontium	947	5.0	0.12	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ⁴

- (1) Instrument QC Batch: MA4981
- (2) Instrument QC Batch: MA4982
- (3) Instrument QC Batch: MA4987
- (4) Prep QC Batch: MP13383
- (5) Prep QC Batch: MP13394

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 J = Indicates a result > = MDL but < RL

4.2
4

Report of Analysis

Client Sample ID: ROBERTS 27856 Lab Sample ID: D59550-2 Matrix: AQ - Ground Water Method: SW846 8260B Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V27330.D	1	07/11/14	JL	n/a	n/a	V7V1494
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics + GRO

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		62-130%
2037-26-5	Toluene-D8	96%		70-130%
460-00-4	4-Bromofluorobenzene	97%		69-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.3
4

Report of Analysis

Client Sample ID: ROBERTS 27856 Lab Sample ID: D59550-2 Matrix: AQ - Ground Water Method: RSK175 MOD Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	FB11543.D	1	07/10/14	JJ	n/a	n/a	GFB533
Run #2							

Run #	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	22.0 Deg. C
Run #2				

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.00087	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) The pH of the sample was > 2 at time of analysis.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

4.3
4

Report of Analysis

Client Sample ID: ROBERTS 27856 Lab Sample ID: D59550-2 Matrix: AQ - Ground Water Method: SW846-8015B SW846 3510C Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI13999.D	1	07/10/14	JJ	07/09/14	OP10216	GF1852
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1060 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	85%		10-130%		

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

4.3
4

Report of Analysis

Client Sample ID: ROBERTS 27856 Lab Sample ID: D59550-2 Matrix: AQ - Ground Water Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	347	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Alkalinity, Carbonate	2.0 U	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Alkalinity, Total as CaCO3	347	5.0	2.0	mg/l	1	07/15/14	JD	SM 2320B-2011
Bromide ^a	0.054 J	0.10	0.050	mg/l	2	07/09/14 15:32	JB	EPA 300.0/SW846 9056
Chloride	6.3	1.0	0.80	mg/l	2	07/09/14 15:32	JB	EPA 300.0/SW846 9056
Fluoride	0.38	0.20	0.10	mg/l	2	07/09/14 15:32	JB	EPA 300.0/SW846 9056
Iron Reducing Bacteria	74500	25		CFU/ml	1	07/14/14	MM	HACH IRB-BART
Nitrogen, Nitrate	1.5	0.10	0.060	mg/l	10	07/09/14 18:29	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	0.0060 U	0.0080	0.0060	mg/l	2	07/09/14 15:32	JB	EPA 300.0/SW846 9056
Phosphorus, Total	0.0080 U	0.010	0.0080	mg/l	1	07/18/14 08:30	JB	HACH8190/SM4500P-B/E
Slime Forming Bacteria	66500	500		CFU/ml	1	07/14/14	MM	HACH SLYM-BART
Solids, Total Dissolved	610	10	5.0	mg/l	1	07/14/14	AK	SM 2540C-2011
Specific Conductivity	799	1.0		umhos/cm	1	07/09/14	JD	SM 2510B-2011
Sulfate	146	5.0	2.0	mg/l	10	07/09/14 18:29	JB	EPA 300.0/SW846 9056
Sulfate Reducing Bacteria	1200	200		CFU/ml	1	07/14/14	MM	HACH SRB-BART
pH	7.60			su	1	07/10/14 13:50	SK	SM4500HB+ -2011/9040C

(a) Elevated detection limit due to matrix interference.

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 J = Indicates a result > = MDL but < RL

4.3
4

Report of Analysis

Client Sample ID: ROBERTS 27856 Lab Sample ID: D59550-2F Matrix: AQ - Groundwater Filtered Project: WWLCOGJ: WPX RWF 11-35 BWQ	Date Sampled: 07/08/14 Date Received: 07/09/14 Percent Solids: n/a
---------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	95.7	4.0	0.16	ug/l	2	07/11/14	07/11/14 NT	EPA 200.8 ¹	EPA 200.8 ⁴
Boron	35.7 J	50	6.6	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Calcium	78200	400	66	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Iron	5.3 J	10	3.2	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Magnesium	54700	200	29	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Manganese	15.0	5.0	0.29	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Potassium	5940	1000	230	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Selenium	3.1	0.80	0.42	ug/l	2	07/11/14	07/11/14 NT	EPA 200.8 ¹	EPA 200.8 ⁴
Sodium	51600	400	36	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³
Strontium	931	5.0	0.12	ug/l	1	07/10/14	07/11/14 KV	EPA 200.7 ²	EPA 200.7 ³

- (1) Instrument QC Batch: MA4981
- (2) Instrument QC Batch: MA4982
- (3) Prep QC Batch: MP13383
- (4) Prep QC Batch: MP13394

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 J = Indicates a result > = MDL but < RL

4.4
4

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D59550
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1494-MB	7V27315.D	1	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.25	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.31	ug/l	
108-88-3	Toluene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	3.0	1.5	ug/l	
	TPH-GRO (C6-C10)	ND	200	200	ug/l	

CAS No.	Surrogate Recoveries	Limits
17060-07-0	1,2-Dichloroethane-D4	97% 62-130%
2037-26-5	Toluene-D8	97% 70-130%
460-00-4	4-Bromofluorobenzene	97% 69-130%

Blank Spike Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1494-BS	7V27316.D	1	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	50.9	102	70-130
100-41-4	Ethylbenzene	50	50.6	101	70-130
108-88-3	Toluene	50	50.6	101	70-130
1330-20-7	Xylene (total)	150	155	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	62-130%
2037-26-5	Toluene-D8	97%	70-130%
460-00-4	4-Bromofluorobenzene	96%	69-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V1494-BS	7V27317.D	1	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
	TPH-GRO (C6-C10)	2200	1960	89	39-144

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	96%	62-130%
2037-26-5	Toluene-D8	97%	70-130%
460-00-4	4-Bromofluorobenzene	96%	69-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59613-1MS	7V27319.D	5	07/11/14	JL	n/a	n/a	V7V1494
D59613-1	7V27318.D	1	07/11/14	JL	n/a	n/a	V7V1494
D59613-1	7V27321.D	5	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	D59613-1 ug/l	Spike Q	MS ug/l	MS %	Limits
71-43-2	Benzene	0.64	J	250	255	102 62-130
100-41-4	Ethylbenzene	ND		250	258	103 63-130
108-88-3	Toluene	ND		250	255	102 60-130
1330-20-7	Xylene (total)	ND		750	791	105 67-130

CAS No.	Surrogate Recoveries	MS	D59613-1	D59613-1	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	97%	98%	62-130%
2037-26-5	Toluene-D8	97%	97%	96%	70-130%
460-00-4	4-Bromofluorobenzene	96%	97%	98%	69-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59613-1MS	7V27320.D	5	07/11/14	JL	n/a	n/a	V7V1494
D59613-1	7V27318.D	1	07/11/14	JL	n/a	n/a	V7V1494
D59613-1	7V27321.D	5	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	D59613-1 ug/l	Spike Q	MS ug/l	MS %	Limits
	TPH-GRO (C6-C10)	ND	11000	9670	88	19-168

CAS No.	Surrogate Recoveries	MS	D59613-1	D59613-1	Limits
17060-07-0	1,2-Dichloroethane-D4	101%	97%	98%	62-130%
2037-26-5	Toluene-D8	98%	97%	96%	70-130%
460-00-4	4-Bromofluorobenzene	99%	97%	98%	69-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59613-2DUP	7V27323.D	1	07/11/14	JL	n/a	n/a	V7V1494
D59613-2	7V27322.D	1	07/11/14	JL	n/a	n/a	V7V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D59550-1, D59550-2

CAS No.	Compound	D59613-2 ug/l	DUP Q	D59613-2 ug/l	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	30
	TPH-GRO (C6-C10)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D59613-2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	98%	62-130%
2037-26-5	Toluene-D8	97%	97%	70-130%
460-00-4	4-Bromofluorobenzene	97%	96%	69-130%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D59550
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB533-MB	FB11535.D	1	07/10/14	JJ	n/a	n/a	GFB533

The QC reported here applies to the following samples:

Method: RSK175 MOD

D59550-1, D59550-2

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

7.1.1

7

Blank Spike Summary

Job Number: D59550
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB533-BS	FB11536.D	10	07/10/14	JJ	n/a	n/a	GFB533

The QC reported here applies to the following samples:

Method: RSK175 MOD

D59550-1, D59550-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.51	0.568	111	70-130
74-84-0	Ethane	0.956	0.986	103	70-130
74-98-6	Propane	1.4	1.47	105	67-130

7.2.1
7

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D59544-1AMS	FB11538.D	10	07/10/14	JJ	n/a	n/a	GFB533
D59544-1AMSD	FB11539.D	10	07/10/14	JJ	n/a	n/a	GFB533
D59544-1A	FB11537.D	1	07/10/14	JJ	n/a	n/a	GFB533

The QC reported here applies to the following samples:

Method: RSK175 MOD

D59550-1, D59550-2

CAS No.	Compound	D59544-1A		MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
		mg/l	Q							
74-82-8	Methane	0.0046	0.51	0.634	123	0.51	0.489	95	26	51-155/30
74-84-0	Ethane	ND	0.956	1.09	114	0.956	0.846	88	25	58-130/30
74-98-6	Propane	ND	1.4	1.62	116	1.4	1.25	89	26	46-130/30

7.3.1
7

* = Outside of Control Limits.

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D59550
Account: WILLCOP WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10216-MB	FI13992.D	1	07/10/14	JJ	07/09/14	OP10216	GF1851

The QC reported here applies to the following samples:

Method: SW846-8015B

D59550-1, D59550-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	89% 10-130%

Blank Spike Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10216-BS	FI13994.D	1	07/10/14	JJ	07/09/14	OP10216	GF1851

The QC reported here applies to the following samples:

Method: SW846-8015B

D59550-1, D59550-2

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	2.62	52	33-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	92%	10-130%

8.2.1

8

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D59550
 Account: WILLCOP WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP10216-MS	FI13996.D	1	07/10/14	JJ	07/09/14	OP10216	GFI851
OP10216-MSD	FI13998.D	1	07/10/14	JJ	07/09/14	OP10216	GFI851
D59273-15	FI14000.D	1	07/10/14	JJ	07/09/14	OP10216	GFI851

The QC reported here applies to the following samples:

Method: SW846-8015B

D59550-1, D59550-2

CAS No.	Compound	D59273-15 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	2.35	47	5	2.10	42	11	33-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D59273-15	Limits
84-15-1	o-Terphenyl	92%	72%	95%	10-130%

8.3.1
8

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13383
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 07/10/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	8.6	11		
Antimony	30	3.2	21		
Arsenic	25	5.2	9		
Barium	10	1.4	1.4		
Beryllium	10	.8	1.7		
Boron	50	6.7	6.6	0.60	<50
Cadmium	10	.4	.36		
Calcium	400	2.2	66	7.6	<400
Chromium	10	.4	1.4		
Cobalt	5.0	.4	.51		
Copper	10	1.2	1.5		
Iron	10	2.2	3.2	2.0	<10
Lead	50	3.6	4.1		
Lithium	5.0	1.9	1.9		
Magnesium	200	14	29	0.40	<200
Manganese	5.0	.01	.29	2.3	<5.0
Molybdenum	10	.8	1.1		
Nickel	30	.9	.87		
Phosphorus	100	15	24		
Potassium	1000	130	230	10.1	<1000
Selenium	50	8.8	9.3		
Silicon	50	5.2	5.6		
Silver	30	.4	.4		
Sodium	400	4.9	36	31.5	<400
Strontium	5.0	.01	.12	0.0	<5.0
Thallium	10	2.9	4.9		
Tin	50	13	13		
Titanium	10	.15	.43		
Uranium	50	3.7	3.9		
Vanadium	10	.4	.39		
Zinc	30	.6	1.9		

Associated samples MP13383: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

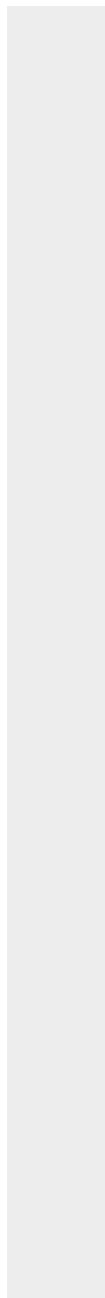
QC Batch ID: MP13383
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 07/10/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13383
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 07/10/14

Metal	D59297-1F Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron	7.4	1050	1000	104.3	70-130
Cadmium	anr				
Calcium	30800	57100	25000	105.2	70-130
Chromium	anr				
Cobalt					
Copper	anr				
Iron	19.0	5130	5000	102.2	70-130
Lead	anr				
Lithium					
Magnesium	6630	32500	25000	103.5	70-130
Manganese	3.8	502	500	99.6	70-130
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium	1820	28300	25000	105.9	70-130
Selenium					
Silicon					
Silver					
Sodium	17700	43700	25000	104.0	70-130
Strontium	269	790	500	104.2	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP13383: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

9.1.2
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

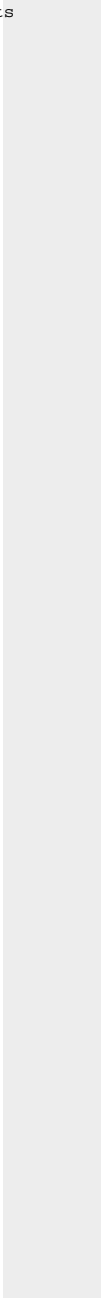
QC Batch ID: MP13383
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 07/10/14

Metal	D59297-1F Original MS	SpikeLot ICPALL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13383
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 07/10/14

Metal	D59297-1F Original MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	7.4	1070	1000	106.3	1.9	20
Cadmium	anr					
Calcium	30800	58400	25000	110.4	2.3	20
Chromium	anr					
Cobalt						
Copper	anr					
Iron	19.0	5160	5000	102.8	0.6	20
Lead	anr					
Lithium						
Magnesium	6630	32900	25000	105.1	1.2	20
Manganese	3.8	514	500	102.0	2.4	20
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium	1820	28500	25000	106.7	0.7	20
Selenium						
Silicon						
Silver						
Sodium	17700	44000	25000	105.2	0.7	20
Strontium	269	793	500	104.8	0.4	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP13383: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

9.1.2
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

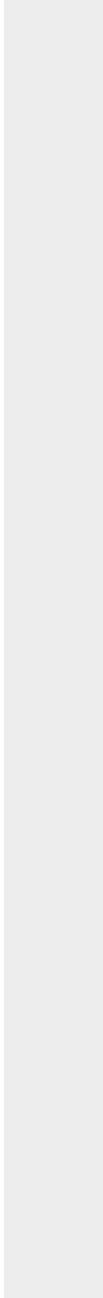
QC Batch ID: MP13383
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 07/10/14

Metal	D59297-1F Original MSD	SpikeLot ICPALL2 % Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested



9.1.2
9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13383
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 07/10/14

Metal	BSP Result	SpikeLot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1050	1000	105.0	85-115
Cadmium	anr			
Calcium	26900	25000	107.6	85-115
Chromium	anr			
Cobalt				
Copper	anr			
Iron	5130	5000	102.6	85-115
Lead	anr			
Lithium				
Magnesium	25700	25000	102.8	85-115
Manganese	512	500	102.4	85-115
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	25900	25000	103.6	85-115
Selenium				
Silicon				
Silver				
Sodium	25400	25000	101.6	85-115
Strontium	521	500	104.2	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP13383: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

9.1.3
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

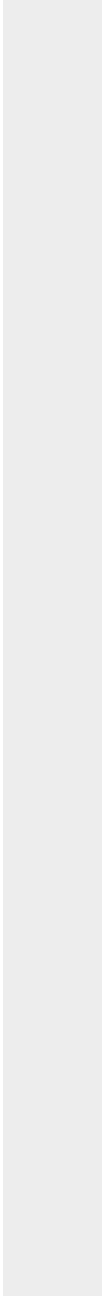
QC Batch ID: MP13383
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 07/10/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13394
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 07/11/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079	0.031	<2.0
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	-0.020	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP13394: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

9.2.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13394
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 07/11/14

Metal	D59550-1F Original MS		SpikeLot ICPAL2 % Rec		QC Limits
Aluminum	anr				
Antimony					
Arsenic					
Barium	91.5	509	400	104.4	70-130
Beryllium					
Boron					
Cadmium					
Calcium	anr				
Chromium					
Cobalt					
Copper	anr				
Iron	anr				
Lead	anr				
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel					
Phosphorus					
Potassium	anr				
Selenium	3.3	182	200	89.4	70-130
Silver					
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP13394: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.2.2
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13394
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 07/11/14

Metal	D59550-1F Original MSD		SpikeLot ICPAL2 % Rec		MSD RPD	QC Limit
Aluminum	anr					
Antimony						
Arsenic						
Barium	91.5	513	400	105.4	0.8	20
Beryllium						
Boron						
Cadmium						
Calcium	anr					
Chromium						
Cobalt						
Copper	anr					
Iron	anr					
Lead	anr					
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel						
Phosphorus						
Potassium	anr					
Selenium	3.3	178	200	87.4	2.2	20
Silver						
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP13394: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.2.2
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D59550
 Account: WILLCOP - WPX Energy Rocky Mountain, LLC
 Project: WWLCOGJ: WPX RWF 11-35 BWQ

QC Batch ID: MP13394
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 07/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony				
Arsenic				
Barium	414	400	103.5	85-115
Beryllium				
Boron				
Cadmium				
Calcium	anr			
Chromium				
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel				
Phosphorus				
Potassium	anr			
Selenium	206	200	103.0	85-115
Silver				
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP13394: D59550-1F, D59550-2F

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

9.2.3
 9

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN25558	5.0	0.0	mg/l	100	97.3	97.3	90-110%
Alkalinity, Carbonate	GN25559	5.0	0.0	mg/l	100	97.3	97.3	80-120%
Alkalinity, Total as CaCO3	GN25555	5.0	0.0	mg/l	100	97.3	97.3	90-110%
Bromide	GP13004/GN25484	0.050	0.0	mg/l	0.5	0.547	109.4	90-110%
Chloride	GP13004/GN25484	0.50	0.0	mg/l	5	4.98	99.6	90-110%
Fluoride	GP13004/GN25484	0.10	0.0	mg/l	1	1.03	103.0	90-110%
Iron Reducing Bacteria	MB395	25	<25	CFU/ml				
Nitrogen, Nitrate	GP13004/GN25484	0.010	0.0	mg/l	0.1	0.104	104.0	90-110%
Nitrogen, Nitrite	GP13004/GN25484	0.0040	0.0	mg/l	0.05	0.0543	108.6	90-110%
Phosphorus, Total	GP13082/GN25644	0.010	0.0	mg/l	0.38	0.39	103.9	80-120%
Slime Forming Bacteria	MB396	500	<500	CFU/ml				
Solids, Total Dissolved	GN25531	10	0.0	mg/l	400	418	104.5	90-110%
Specific Conductivity	GP13003/GN25482			umhos/cm	99.6	97	97.8	90-110%
Sulfate	GP13004/GN25484	0.50	0.0	mg/l	5	5.05	101.0	90-110%
Sulfate Reducing Bacteria	MB397	200	<200	CFU/ml				
pH	GN25501			su	8.00	8.00	100.0	99.1-100.9%

Associated Samples:

Batch MB395: D59550-1, D59550-2
 Batch MB396: D59550-1, D59550-2
 Batch MB397: D59550-1, D59550-2
 Batch GN25501: D59550-1, D59550-2
 Batch GN25531: D59550-1, D59550-2
 Batch GN25555: D59550-1, D59550-2
 Batch GN25558: D59550-1, D59550-2
 Batch GN25559: D59550-1, D59550-2
 Batch GP13003: D59550-1, D59550-2
 Batch GP13004: D59550-1, D59550-2
 Batch GP13082: D59550-1, D59550-2

(*) Outside of QC limits

10.1
10

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN25555	D59601-1	mg/l	378	373	1.3	0-20%
Phosphorus, Total	GP13082/GN25644	D59578-1	mg/l	0.39	0.38	2.6	0-20%
Solids, Total Dissolved	GN25531	D59478-2	mg/l	696	720	3.4	0-20%
Specific Conductivity	GP13003/GN25482	D59564-4	umhos/cm	18700	18800	0.2	0-20%

Associated Samples:

Batch GN25531: D59550-1, D59550-2

Batch GN25555: D59550-1, D59550-2

Batch GP13003: D59550-1, D59550-2

Batch GP13082: D59550-1, D59550-2

(*) Outside of QC limits

10.2
10

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN25555	D59560-3	mg/l	119	100	226	107.1	80-120%
Bromide	GP13004/GN25484	D59517-1	mg/l	0.0	0.5	0.55	110.0	80-120%
Chloride	GP13004/GN25484	D59517-1	mg/l	0.64	5	5.4	95.2	80-120%
Fluoride	GP13004/GN25484	D59517-1	mg/l	0.066	1	1.1	103.4	80-120%
Nitrogen, Nitrate	GP13004/GN25484	D59517-1	mg/l	0.045	0.1	0.15	105.0	80-120%
Nitrogen, Nitrite	GP13004/GN25484	D59517-1	mg/l	0.0	0.05	0.053	106.0	80-120%
Phosphorus, Total	GP13082/GN25644	D59578-1	mg/l	0.39	0.40	0.78	97.5	80-120%
Sulfate	GP13004/GN25484	D59517-1	mg/l	8.8	5	14.1	106.0	80-120%

Associated Samples:

Batch GN25555: D59550-1, D59550-2

Batch GP13004: D59550-1, D59550-2

Batch GP13082: D59550-1, D59550-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D59550
Account: WILLCOP - WPX Energy Rocky Mountain, LLC
Project: WWLCOGJ: WPX RWF 11-35 BWQ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN25555	D59560-3	mg/l	119	100	215	4.8	20%
Bromide	GP13004/GN25484	D59517-1	mg/l	0.0	0.5	0.55	0.0	20%
Chloride	GP13004/GN25484	D59517-1	mg/l	0.64	5	5.5	1.8	20%
Fluoride	GP13004/GN25484	D59517-1	mg/l	0.066	1	1.1	0.0	20%
Nitrogen, Nitrate	GP13004/GN25484	D59517-1	mg/l	0.045	0.1	0.15	0.0	20%
Nitrogen, Nitrite	GP13004/GN25484	D59517-1	mg/l	0.0	0.05	0.054	1.9	20%
Phosphorus, Total	GP13082/GN25644	D59578-1	mg/l	0.39	0.40	0.77	1.3	20%
Sulfate	GP13004/GN25484	D59517-1	mg/l	8.8	5	14.1	0.0	20%

Associated Samples:

Batch GN25555: D59550-1, D59550-2

Batch GP13004: D59550-1, D59550-2

Batch GP13082: D59550-1, D59550-2

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits