

**PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701**



Analytical Report

Prepared for:

Christine Alderman
Cimarex
600 N. Marinfeld, Ste. 600
Midland, TX 79701

Project: Assault SWD
Project Number: [none]
Location: None Given
Lab Order Number: 7H10012



NELAP/TCEQ # T104704516-16-7

Report Date: 08/13/17

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Midland TX, 79701

Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
12	7H10012-01	Water	08/10/17 10:15	08-10-2017 18:51
7A	7H10012-02	Water	08/10/17 11:40	08-10-2017 18:51
7B	7H10012-03	Water	08/10/17 12:05	08-10-2017 18:51
7C	7H10012-04	Water	08/10/17 12:20	08-10-2017 18:51
7D	7H10012-05	Water	08/10/17 12:35	08-10-2017 18:51
9	7H10012-06	Water	08/10/17 13:10	08-10-2017 18:51
7	7H10012-07	Water	08/10/17 14:10	08-10-2017 18:51
10	7H10012-08	Water	08/10/17 15:05	08-10-2017 18:51
8	7H10012-09	Water	08/10/17 15:15	08-10-2017 18:51
11	7H10012-10	Water	08/10/17 16:00	08-10-2017 18:51
DUP 8/10	7H10012-11	Water	08/10/17 00:00	08-10-2017 18:51

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12
7H10012-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		88.7 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		100 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	72.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	72.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1109	08/11/17	08/11/17	EPA 300.0	
Chloride	1630	25.0	mg/L	50	P7H1109	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	6990	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	8.11		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	5300	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1800	50.0	mg/L	50	P7H1109	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	660	50.0	mg/L	10	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Magnesium	241	50.0	mg/L	10	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Potassium	24.1	50.0	mg/L	10	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2, J
Sodium	1170	50.0	mg/L	10	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Hardness	2640	50.0	mg/L	10	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2

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7A

7H10012-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		95.2 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		103 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	75.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	75.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	1.25	mg/L	25	P7H1109	08/11/17	08/11/17	EPA 300.0	
Chloride	40.0	12.5	mg/L	25	P7H1109	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2190	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.78		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.90		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2140	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1200	25.0	mg/L	25	P7H1109	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	624	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Magnesium	27.1	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Potassium	7.10	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Sodium	52.2	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Hardness	16700	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2

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7B

7H10012-03 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		89.7 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		97.6 %	70-130		P7H1308	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	85.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	85.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	0.280	0.0500	mg/L	1	P7H1109	08/11/17	08/11/17	EPA 300.0	
Chloride	51.4	12.5	mg/L	25	P7H1109	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2280	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.84		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2000	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1170	25.0	mg/L	25	P7H1109	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	592	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Magnesium	30.4	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Potassium	7.00	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Sodium	63.2	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2
Hardness	1600	5.00	mg/L	1	P7H1103	08/11/17	08/12/17	EPA 6010B	QAL2

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7C

7H10012-04 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		94.8 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		103 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	82.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	82.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	50.8	12.5	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2390	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.89		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2180	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1090	25.0	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	474	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	28.0	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	6.39	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	64.9	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	1300	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Project: Assault SWD
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7D
7H10012-05 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		93.5 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		103 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	95.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	95.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	63.6	12.5	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2390	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.87		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2240	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1180	25.0	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	594	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	37.3	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	8.21	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	88.8	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	1640	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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9

7H10012-06 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: 1-Chlorooctane		96.4 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Surrogate: o-Terphenyl		104 %	70-130		P7H1309	08/11/17	08/11/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/11/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	70.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	70.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	1630	25.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	7750	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	8.44		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.70		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	6040	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1710	50.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	676	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	264	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	27.6	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	1270	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	2770	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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7

7H10012-07 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/13/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/13/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/13/17	TX 1005	
Surrogate: 1-Chlorooctane		135 %	70-130		P7H1309	08/11/17	08/13/17	TX 1005	S-GC1
Surrogate: o-Terphenyl		164 %	70-130		P7H1309	08/11/17	08/13/17	TX 1005	S-GC1
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/13/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	70.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	70.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	40.2	0.500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2170	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.93		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.70		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2310	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1160	25.0	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	461	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	18.2	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	5.11	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	32.9	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	1230	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Midland TX, 79701

Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

Fax: (432) 571-7832

10
7H10012-08 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: 1-Chlorooctane		95.1 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: o-Terphenyl		104 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/12/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	77.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	77.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	1420	25.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	7160	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	8.40		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.70		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	5540	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1640	50.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	550	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	195	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	21.8	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	939	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	2170	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

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8

7H10012-09 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: 1-Chlorooctane		90.6 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: o-Terphenyl		98.1 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/12/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	90.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	90.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	67.8	12.5	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	2420	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	7.97		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	2150	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1180	25.0	mg/L	25	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	497	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	31.1	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	6.72	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	75.6	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	1370	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Project Number: [none]
Project Manager: Christine Alderman

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11

7H10012-10 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: 1-Chlorooctane		91.6 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: o-Terphenyl		96.8 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/12/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	60.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	60.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	2090	50.0	mg/L	100	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	9300	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	8.62		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.80		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	6470	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1690	100	mg/L	100	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	751	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	166	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	28.4	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	1820	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	2560	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Project Manager: Christine Alderman

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DUP 8/10
7H10012-11 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Permian Basin Environmental Lab, L.P.

Organics by GC

C6-C12	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C12-C28	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
>C28-C35	ND	2.50	mg/L	1	P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: 1-Chlorooctane		91.6 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Surrogate: o-Terphenyl		98.0 %	70-130		P7H1309	08/11/17	08/12/17	TX 1005	
Total Hydrocarbon nC6-nC35	ND	2.50	mg/L	1	[CALC]	08/11/17	08/12/17	[CALC]	

General Chemistry Parameters by EPA / Standard Methods

Total Alkalinity	72.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Carbonate Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bicarbonate Alkalinity	72.0	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Hydroxide Alkalinity	ND	10.0	mg/L	1	P7H1120	08/11/17	08/11/17	EPA 310.1M	
Bromide	ND	0.0500	mg/L	1	P7H1110	08/11/17	08/11/17	EPA 300.0	
Chloride	1570	25.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	
Specific Conductance (EC)	7720	5.00	umhos/cm	1	P7H1217	08/11/17	08/11/17	EPA 120.1	
Dissolved Oxygen	6.00		mg/L	1	P7H1118	08/11/17	08/11/17	CHEMets	QAL1
pH	8.18		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Temperature	22.90		pH Units	1	P7H1119	08/11/17	08/11/17	EPA 150.1	
Total Dissolved Solids	5920	20.0	mg/L	1	P7H1121	08/11/17	08/11/17	EPA 160.1	
Sulfate	1670	50.0	mg/L	50	P7H1110	08/11/17	08/11/17	EPA 300.0	

Total Metals by EPA / Standard Methods

Calcium	670	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Magnesium	261	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Potassium	27.9	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Sodium	1260	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2
Hardness	2750	5.00	mg/L	1	P7H1104	08/12/17	08/12/17	EPA 6010B	QAL2

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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1308 - TX 1005

Blank (P7H1308-BLK1)

Prepared & Analyzed: 08/11/17

C6-C12	ND	2.50	mg/L							
>C12-C28	ND	2.50	"							
>C28-C35	ND	2.50	"							
Surrogate: 1-Chlorooctane	9.48		"	9.38		101	70-130			
Surrogate: o-Terphenyl	4.89		"	4.69		104	70-130			

LCS (P7H1308-BS1)

Prepared & Analyzed: 08/11/17

C6-C12	79.7	2.50	mg/L	93.8		85.0	75-125			
>C12-C28	76.0	2.50	"	93.8		81.1	75-125			
Surrogate: 1-Chlorooctane	10.0		"	9.38		107	70-130			
Surrogate: o-Terphenyl	4.84		"	4.69		103	70-130			

LCS Dup (P7H1308-BSD1)

Prepared & Analyzed: 08/11/17

C6-C12	80.5	2.50	mg/L	93.8		85.9	75-125	0.956	20	
>C12-C28	75.8	2.50	"	93.8		80.8	75-125	0.297	20	
Surrogate: 1-Chlorooctane	10.1		"	9.38		108	70-130			
Surrogate: o-Terphenyl	4.89		"	4.69		104	70-130			

Duplicate (P7H1308-DUP1)

Source: 7H10011-05

Prepared & Analyzed: 08/11/17

C6-C12	0.957	2.50	mg/L		1.75			58.5	20	R3
>C12-C28	ND	2.50	"		ND				20	
Surrogate: 1-Chlorooctane	8.15		"	9.38		86.9	70-130			
Surrogate: o-Terphenyl	4.22		"	4.69		90.0	70-130			

Batch P7H1309 - TX 1005

Blank (P7H1309-BLK1)

Prepared & Analyzed: 08/11/17

C6-C12	ND	2.50	mg/L							
>C12-C28	ND	2.50	"							
>C28-C35	ND	2.50	"							
Surrogate: 1-Chlorooctane	10.5		"	9.38		113	70-130			
Surrogate: o-Terphenyl	5.56		"	4.69		119	70-130			

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Organics by GC - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1309 - TX 1005

LCS (P7H1309-BS1)

Prepared & Analyzed: 08/11/17

C6-C12	83.0	2.50	mg/L	93.8		88.5	75-125			
>C12-C28	78.9	2.50	"	93.8		84.1	75-125			
Surrogate: 1-Chlorooctane	10.2		"	9.38		109	70-130			
Surrogate: o-Terphenyl	5.05		"	4.69		108	70-130			

LCS Dup (P7H1309-BSD1)

Prepared & Analyzed: 08/11/17

C6-C12	86.7	2.50	mg/L	93.8		92.5	75-125	4.37	20	
>C12-C28	82.6	2.50	"	93.8		88.1	75-125	4.61	20	
Surrogate: 1-Chlorooctane	10.7		"	9.38		115	70-130			
Surrogate: o-Terphenyl	5.28		"	4.69		113	70-130			

Matrix Spike (P7H1309-MS1)

Source: 7H10012-05

Prepared: 08/11/17 Analyzed: 08/12/17

C6-C12	81.7	2.50	mg/L	93.8	ND	87.1	75-125			
>C12-C28	82.8	2.50	"	93.8	ND	88.3	75-125			
Surrogate: 1-Chlorooctane	8.72		"	9.38		93.0	70-130			
Surrogate: o-Terphenyl	4.22		"	4.69		90.0	70-130			

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Project Manager: Christine Alderman

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1109 - * DEFAULT PREP *****

LCS (P7H1109-BS1)

Prepared & Analyzed: 08/11/17

Bromide	5.62	0.0500	mg/L	5.00		112	80-120			
Sulfate	43.1	1.00	"	40.0		108	85-115			
Chloride	42.4	0.500	"	40.0		106	85-115			

LCS Dup (P7H1109-BSD1)

Prepared & Analyzed: 08/11/17

Chloride	42.5	0.500	mg/L	40.0		106	85-115	0.236	20	
Bromide	5.60	0.0500	"	5.00		112	80-120	0.392	20	
Sulfate	43.2	1.00	"	40.0		108	85-115	0.155	20	

Duplicate (P7H1109-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Chloride	46.7	0.500	mg/L		46.7			0.0685	20	
Sulfate	1560	25.0	"		1560			0.378	20	
Bromide	ND	0.0500	"		0.185				20	

Duplicate (P7H1109-DUP2)

Source: 7H10011-11

Prepared & Analyzed: 08/11/17

Bromide	0.514	0.0500	mg/L		0.106			132	20	R2
Sulfate	1480	25.0	"		1480			0.213	20	
Chloride	23.9	0.500	"		23.4			2.34	20	

Matrix Spike (P7H1109-MS1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Sulfate	1760	25.0	mg/L	200	1560	98.4	80-120			
Chloride	253	12.5	"	200	46.7	103	80-120			
Bromide	26.8	1.25	"	25.0	ND	107	75-125			

Batch P7H1110 - * DEFAULT PREP *****

Blank (P7H1110-BLK1)

Prepared & Analyzed: 08/11/17

Sulfate	ND	1.00	mg/L							
Chloride	ND	0.500	"							
Bromide	ND	0.0500	"							

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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

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General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1110 - * DEFAULT PREP *****

LCS (P7H1110-BS1)

Prepared & Analyzed: 08/11/17

Sulfate	40.7	1.00	mg/L	40.0		102	85-115			
Chloride	42.2	0.500	"	40.0		105	85-115			
Bromide	5.79	0.100	"	5.00		116	80-120			

LCS Dup (P7H1110-BSD1)

Prepared & Analyzed: 08/11/17

Bromide	5.66	0.100	mg/L	5.00		113	80-120	2.34	20	
Sulfate	39.9	1.00	"	40.0		99.8	85-115	2.02	20	
Chloride	41.5	0.500	"	40.0		104	85-115	1.58	20	

Duplicate (P7H1110-DUP1)

Source: 7H10012-04

Prepared & Analyzed: 08/11/17

Bromide	ND	0.0500	mg/L		ND				20	
Chloride	54.2	12.5	"		50.8			6.48	20	
Sulfate	1170	25.0	"		1090			7.28	20	

Matrix Spike (P7H1110-MS1)

Source: 7H10012-04

Prepared & Analyzed: 08/11/17

Bromide	17.2	1.25	mg/L	25.0	ND	68.7	75-125			QM-07
Sulfate	1370	25.0	"	200	1090	141	80-120			QM-07
Chloride	262	12.5	"	200	50.8	106	80-120			

Batch P7H1118 - * DEFAULT PREP *****

Duplicate (P7H1118-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Dissolved Oxygen	6.00		mg/L		6.00			0.00	200	QAL1
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Batch P7H1119 - * DEFAULT PREP *****

Duplicate (P7H1119-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

pH	7.63		pH Units		7.69			0.783	20	
Temperature	23.60		"		23.40			0.851	200	

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Midland TX, 79701

Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

Fax: (432) 571-7832

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1119 - * DEFAULT PREP *****

Duplicate (P7H1119-DUP2)

Source: 7H10012-04

Prepared & Analyzed: 08/11/17

pH	7.93		pH Units		7.89			0.506	20	
Temperature	23.00		"		22.80			0.873	200	

Batch P7H1120 - * DEFAULT PREP *****

Blank (P7H1120-BLK1)

Prepared & Analyzed: 08/11/17

Total Alkalinity	ND	10.0	mg/L							
Carbonate Alkalinity	ND	10.0	"							
Bicarbonate Alkalinity	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							

Blank (P7H1120-BLK2)

Prepared & Analyzed: 08/11/17

Total Alkalinity	ND	10.0	mg/L							
Carbonate Alkalinity	ND	10.0	"							
Bicarbonate Alkalinity	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							

Duplicate (P7H1120-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Total Alkalinity	90.0	10.0	mg/L		90.0			0.00	20	
Carbonate Alkalinity	ND	10.0	"		ND				20	
Bicarbonate Alkalinity	90.0	10.0	"		90.0			0.00	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	

Duplicate (P7H1120-DUP2)

Source: 7H10012-04

Prepared & Analyzed: 08/11/17

Total Alkalinity	80.0	10.0	mg/L		82.0			2.47	20	
Carbonate Alkalinity	ND	10.0	"		ND				20	
Bicarbonate Alkalinity	80.0	10.0	"		82.0			2.47	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	

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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

Fax: (432) 571-7832

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1121 - * DEFAULT PREP *****

Blank (P7H1121-BLK1)

Prepared & Analyzed: 08/11/17

Total Dissolved Solids	ND	20.0	mg/L
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Blank (P7H1121-BLK2)

Prepared & Analyzed: 08/11/17

Total Dissolved Solids	ND	20.0	mg/L
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Duplicate (P7H1121-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Total Dissolved Solids	2800	20.0	mg/L	2690	4.01	20
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Duplicate (P7H1121-DUP2)

Source: 7H10012-04

Prepared & Analyzed: 08/11/17

Total Dissolved Solids	2220	20.0	mg/L	2180	1.82	20
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Batch P7H1217 - * DEFAULT PREP *****

Duplicate (P7H1217-DUP1)

Source: 7H10011-01

Prepared & Analyzed: 08/11/17

Specific Conductance (EC)	2880	5.00	umhos/cm	2820	2.11	20
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Duplicate (P7H1217-DUP2)

Source: 7H11010-01

Prepared & Analyzed: 08/12/17

Specific Conductance (EC)	2720	5.00	umhos/cm	2650	2.61	20
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Duplicate (P7H1217-DUP3)

Source: 7H12001-11

Prepared & Analyzed: 08/12/17

Specific Conductance (EC)	2700	5.00	umhos/cm	2750	1.83	20
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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

Fax: (432) 571-7832

Total Metals by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1103 - * DEFAULT PREP *****

Blank (P7H1103-BLK1)

Prepared: 08/11/17 Analyzed: 08/12/17

Calcium	8.10	5.00	mg/L							QAL2
Magnesium	0.158	5.00	"							J, QAL2
Potassium	0.112	5.00	"							J, QAL2
Sodium	0.339	5.00	"							J, QAL2
Hardness	20.9	30.0	"							J, QAL2

LCS (P7H1103-BS1)

Prepared: 08/11/17 Analyzed: 08/12/17

Calcium	55.6	5.00	mg/L	50.0		111	80-120			QAL2
Magnesium	54.1	5.00	"	50.0		108	80-120			QAL2
Potassium	54.9	5.00	"	50.0		110	80-120			QAL2
Sodium	57.7	5.00	"	50.0		115	80-120			QAL2

Duplicate (P7H1103-DUP1)

Source: 7H10011-01

Prepared: 08/11/17 Analyzed: 08/12/17

Calcium	780	5.00	mg/L		568			31.5	20	R2, QAL2
Magnesium	35.1	5.00	"		27.5			24.4	20	R2, QAL2
Potassium	6.78	5.00	"		5.20			26.4	20	R2, QAL2
Sodium	59.3	5.00	"		46.1			25.2	20	R2, QAL2
Hardness	2090	5.00	"		1530			31.0	20	R2, QAL2

Matrix Spike (P7H1103-MS1)

Source: 7H10011-01

Prepared: 08/11/17 Analyzed: 08/12/17

Calcium	702	5.00	mg/L	50.0	568	267	75-125			QM-07, QAL2
Magnesium	92.4	5.00	"	50.0	27.5	130	75-125			QM-07, QAL2
Potassium	72.6	5.00	"	50.0	5.20	135	75-125			QM-07, QAL2
Sodium	117	5.00	"	50.0	46.1	142	75-125			QM-07, QAL2

Batch P7H1104 - * DEFAULT PREP *****

Blank (P7H1104-BLK1)

Prepared & Analyzed: 08/12/17

Calcium	0.655	5.00	mg/L							QAL2, J
Magnesium	ND	5.00	"							QAL2
Potassium	0.115	5.00	"							QAL2, J
Sodium	ND	5.00	"							QAL2
Hardness	1.66	5.00	"							QAL2, J

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Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

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Total Metals by EPA / Standard Methods - Quality Control
Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P7H1104 - * DEFAULT PREP *****

LCS (P7H1104-BS1)

Prepared & Analyzed: 08/12/17

Calcium	53.6	5.00	mg/L	50.0		107	80-120			QAL2
Magnesium	54.1	5.00	"	50.0		108	80-120			QAL2
Potassium	57.4	5.00	"	50.0		115	80-120			QAL2
Sodium	58.1	5.00	"	50.0		116	80-120			QAL2

Duplicate (P7H1104-DUP1)

Source: 7H10012-04

Prepared & Analyzed: 08/12/17

Calcium	545	5.00	mg/L		474			14.0	20	QAL2
Magnesium	31.3	5.00	"		28.0			11.0	20	QAL2
Potassium	6.90	5.00	"		6.39			7.70	20	QAL2
Sodium	72.2	5.00	"		64.9			10.6	20	QAL2
Hardness	1490	5.00	"		1300			13.8	20	QAL2

Matrix Spike (P7H1104-MS1)

Source: 7H10012-04

Prepared & Analyzed: 08/12/17

Calcium	577	5.00	mg/L	50.0	474	207	75-125			QAL2, QM-07
Magnesium	104	5.00	"	50.0	28.0	153	75-125			QAL2, QM-07
Potassium	87.1	5.00	"	50.0	6.39	161	75-125			QAL2, QM-07
Sodium	144	5.00	"	50.0	64.9	157	75-125			QAL2, QM-07

Notes and Definitions

S-GC1	Surrogate recovery outside of control limits. A second analysis confirmed the original results..
R3	The RPD exceeded the acceptance limit due to sample matrix effects.
R2	The RPD exceeded the acceptance limit.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QAL2	Certification in process for this analyte.
QAL1	The Laboratory is not NELAC Certified for this analyte or analysis.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:



Date:

8/13/2017

Brent Barron, Laboratory Director/Technical Director

Cimarex
600 N. Marinfeld, Ste. 600
Midland TX, 79701

Project: Assault SWD
Project Number: [none]
Project Manager: Christine Alderman

Fax: (432) 571-7832

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If you have received this material in error, please notify us immediately at 432-686-7235.

CHAIN OF CUSTODY RECORD

Facility Name Assault SWD		Analytical Laboratory Name Perriman Basin Environmental Lab		Today's Date 8/10/2017	
Address		Address 1400 E. Hwy Midland TX		City Midland TX	
City		State NM/TX		Zip 79701	
Contact Name and Report to: Cimarex position is change					
Sample Group Identifier		Phone 432-571-7800		Fax 432-571-7832	
Site/Project Name or Identifier HSCU12SWD		Carrier Waybill Number			
		/Anib		(1005)	
		1		Of 1	
Analysis/Analytes					

Station Name or Sample ID	Sample Date	Time 24 hrs	Matrix	Sample Top Btm	Size	Containers Type No.	Y	Filtered N	Preservative	Comments
17	8/10/17	1015	Water	N/A	N/A	500 ml 400 ml 9/1/17			Not in HC	Sampler TC/B3
7A		1140								
7B		1205								
7C		1220								
7D		1235								
9		1310								
7		1410								
10		1505								
8		1515								
11		1600								
Dupe-8/10	8/10/17	0000								

Notes: TX Middle times; Samplers N⁶ Environment! Brandon Brown + Trey Churnak

Potential Hazardous Characteristics	Sample Disposal
☒ Non-Haz ☐ RCRA D001, 2&3, or 4 ☐ RCRA Listed ☐ Radioactive ☐ Unknown	☐ Disposal by Lab ☐ Return to Client ☐ Hold pending further instructions

1. Relinquished by <u>Tracy Cheneza</u>	<u>NT6Ean/m</u>	Date <u>8/10/17</u>	Time <u>1:55:0</u>	2. Received by <u>Prash Brown</u>	<u>NT6Ean/m</u>	Date <u>8/10/17</u>	Time <u>5:50</u>	
3. Relinquished by <u>Prash Brown</u>	<u>PT6E</u>	Date <u>8/10/17</u>	Time <u>16:20</u>	4. Received by <u>Prash Brown</u>	<u>NT6E</u>	Date <u>8/10/17</u>	Time <u>16:20</u>	
5. Relinquished by <u>Prash Brown</u>	<u>NT6E</u>	Date <u>8/10/17</u>	Time <u>18:51</u>	6. Received by <u>Prash Brown</u>	<u>NT6E</u>	Date <u>8/10/17</u>	Time <u>18:51</u>	
Comments	Samples released by or H.P. name						Date	Time
Comments	Send invoice to ESH Department							