

PADEP Frac and Flowback Water Analytical Data - Inorganics

Count		26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11		10	
Lab. Sample ID		I2009024616	I2009023709	I2009023279	I2009019320	I2008040338	I2008039138	I2008038894	I2008036904	I2008036905	I2008036902	I2008036903	I2008035924	I2008035925	I2008034381	I2008024550	I2008023681	I2008021776	I2008021512	I2008022064
Collector No.		9516001	9516001	9516001	9516001	9516001	9516001	9516001	9516009	9516012	9516003	9516006	9516005	9516006	9514003	9516002	9516002	9521001	9501006	9633001
County		Greene	Clearfield	Tioga	Somerset	Clearfield	Clearfield	Clearfield	Centre County	Centre County	Susquehanna	Susquehanna	Centre	Centre		Huntington	Butler	Warren	Washington	Tioga
Type of Sample		Frac Flow Back	Pit Drill Water	Pit Water	Frac Flow Back				Frac Water H#1	Frac Water H#2			Frac Water H#1	Frac Water H#2		Frac Water	Frac Water	Pit Water	Frac Tank	
Well Name		Consol USX #66	Hutton #1H	Benson 130D	Yoder	Bosnall 7	Bosnall 7	Bosnall 7	Litke H7	Litke H8	Teel 7	Costello # 1	Litke H7	Litke H8		Hess 2073	R. Blauser Trust 1		Zappi Constance 2H	Root # 1
Permit No.		059-25137	033-26803	117-20205	111-20268	033-26585	033-26585	033-26585	027-21478	027-21479	115-20045	115-20036	027-21478	027-21479		061-20004	019-21476		125-23048	117-20197
Date		7/8/2009	7/1/2009	6/24/2009	5/29/2009	11/5/2008	10/27/2008	10/23/2008	10/9/2008	10/9/2008	10/9/2008	10/9/2008	10/2/2008	10/2/2008	9/17/2008	7/1/2008	6/25/2008	6/10/2009	6/10/2008	6/10/2008
Collector		Fuller	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Renwick	Tersine	Tersine	Nader	Matinko	Maykowski
TEST	UNITS					SAC 957	SAC 957	SAC 957	SAC 957	SAC 957	SAC 957	SAC 957			SAC 957	SAC 957	SAC 957			
SPECIFIC CON	umhos/cm	19,240	26,700	Cancelled	57,100	178,200	137,000	10,990							109,500	46,200	39,200	9,030	120,600	87,600
pH	pH units	5.1	11.6	Cancelled	7.0	6.1	6.3	7.5	6.1	6.2	7.7	7.4			6.8	5.9	7.6	6.7	6.4	6.6
ALKALINITY	mg/L	29	607	Cancelled	298	106	112	238	90	152	241	223	102	134	101	309	273	65	130	146
HOT ACIDITY	mg/L	293	-847	-40	-112	275	164	-164	62	99	-121	-192	43	93	111	1,480	-177		144	
OIL & GREASE	mg/L	270	162	Cancelled	<5.0															
AMMONIA-N T	mg/L	29	3	9	34	150	147	20	108	114	32	30	88		105	8			80	
Hardness T	mg/L	1,933	1,439	2,001	6,202	51,054	30,790	671	4,003	3,920	784	749	21,418	31,257	21,226	4,310	3,024	1,413	11,050	12,659
SULFATE - IC	mg/L	296	384	6	15	<5	7	30	<5	<5	<5	<5	27	<11	246	51	25		49	
TDS @105 C	mg/L	13,888	15,100	9,252	42,150	197,102	181,462	7,516	227,898	240,288	50,672	47,806	109,128	142,220	62,440	33,682	28,850	6,618	135,618	70,334
TSS WASH 3X	mg/L	392	9,890	25	6	120	720	54	80	90	60	6	58	90	138	258	132		160	
BROMIDE	mg/L	62	300	40	150	8	548	45	637	637	142	174	490	654	616	148	154		528	
CHLORIDE	mg/L	6,868	8,006	4,715	23,469	105,305	70,562	3,735	96,992	92,642	24,910	25,551	58,100	74,200	51,800	17,987	14,666	3,298	60,240	37,460
OSMOTIC PRES	MOSM	338	432	207	1,141	5,560	4,670	197	6,640	5,440	1,219	1,283	7,080	8,360	2,516	928	769		2,425	
Phenols-Dist	ug/L	Cancelled	420																	
ALUMINIUM D	ug/L	<200	Cancelled	<200	<200	<200	< 200	< 200	<200	<200	<200	<200	<200	<200	<200	200	<200		<200	
ALUMINIUM T	ug/L	11,100	77,470	417	<200	<200	< 200	< 200	<200	<200	<200	<200	<200	<200	<200	3,670	<200		<200	
Antimony D	ug/L				<200	< 20	7	<100	<100	<100	<100	<100	<100	<100	<2	<20	<20		<20	
Antimony T	ug/L				<200	< 20	7	<100	<100	<100	<100	<100	<100	<100	<2	<20	<20		<50	
ARSENIC D	ug/L	<30	Cancelled	<30	<150	<300	< 30	< 30	<150	<150	<150	<150	<150	<3	46	<30				
ARSENIC T	ug/L	42	108	<30	<150	<300	< 30	< 30	<150	<150	<150	<150	<150	<3	54	<30			<75	
BARIUM D	ug/L	4,480	Cancelled	294,200	314,000	1,430,000	1,090,000	40,150	4,590,000	4,860,000	1,430,000	1,870,000	2,020,000	3,440,000	18,100	14,900	161,000			
BARIUM T	ug/L	5,260	3,384	308,000	336,000	1,610,000	1,060,000	37,760	4,660,000	5,570,000	1,460,000	1,890,000	2,210,000	4,010,000	19,300	29,300	161,000		39,100	
BERYLLIUM D	ug/L	<1.0	Cancelled	<1.0	<1.0	<1.0	< 1	< 1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	
BERYLLIUM T	ug/L	1	7	<1.0	<1.0	<1.0	< 1	< 1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	
CADMIUM D	ug/L	<10	Cancelled	<10	<50	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	
CADMIUM T	ug/L	<10	<10	<10	<10	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	
CALCIUM D	mg/L	559	Cancelled	677	2,010	15,900	11,000	247	1,420	1,190	110	104	7,410	9,540	6,670	1,290	1,030			
CALCIUM T	mg/L	730	Cancelled	705	2,120	17,900	10,800	230	1,420	1,380	112	100	7,570	11,000	7,340	1,350	1,040	452	3,726	4,256
CHROMIUM D	ug/L	<50	Cancelled	<50	<50	<50	< 50	< 50	<50	<50	<50	<50	<50	<50	<50	<50	<50		<50	
CHROMIUM T	ug/L	98	312	<50	<50	<50	< 50	< 50	<50	<50	<50	<50	<50	<50	<50	<50	<50		<50	
COPPER D	ug/L	16	Cancelled	<10	10	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	200	120			
COPPER T	ug/L	920	544	<10	14	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	1,400	132		84	
IRON D	ug/L	178,000	Cancelled	2,304	34,600	112,600	76,500	19,240	64,880	33,000	7,090	14,590	36,650	76,500	14,700	232,000	2,610			
IRON T	ug/L	64,200	141,000	3,136	36,900	132,200	95,000	21,020	86,390	150,300	19,640	17,100	41,080	94,540	21,200	295,000	3,430		26,300	
LEAD D	ug/L	30	Cancelled	<10	<10	<100	< 10	< 10	<50	<50	<50	<50	<50	<50	<1	42	<10			
LEAD T	ug/L	472	970	<10	<10	<100	< 10	< 10	<50	<50	<50	<50	<50	<50	<1	450	<10		<25	
LITHIUM D	ug/L	4,150	Cancelled	5,820	10,500	87,060	69,490	4,440	66,480	56,490	81,550	93,850	39,950	40,630	36,800	10,400	17,200			
LITHIUM T	ug/L	4,490	256	6,040	11,200	101,300	69,570	4,170	68,220	58,470	92,360	91,000	42,200	44,830	41,300	11,100	16,500		47,600	
MAGNESIUM D	mg/L	65	Cancelled	56	203	1,350	94	25	109	98	120	123	570	98	790	609	218		109	
MAGNESIUM T	mg/L	26	31	58	219	1,530	920	23	110	114	122	121	605	912	698	227	103	69	421	490
MANGANESE D	ug/L	2,330	Cancelled	864	2,420	3,260	3,030	670	7,620	11,150	1,110	970	4,300	7,000	2,910	29,400	553			
MANGANESE T	ug/L	1,020	2,197	916	2,590	3,460	3,170	640	7,710	11,600	1,230	950	4,560	7,720	3,290	31,100	535		3,450	
NICKEL D	ug/L	<50	Cancelled	61	<50	320	< 50	< 50	9,430	1,310	<50	520	360	520	<50	<50	<50			
NICKEL T	ug/L	95	327	63	<50	400	< 50	< 50	11,680	1,360	<50	540	510	11,630	<50	<50	<50		<50	
POTASSIUM D	mg/L	95	Cancelled	42	79	890	616	20	241	99	54	57	174	173	130	40	68			
POTASSIUM T	mg/L	173	5,240	43	84	1,010	581	18	238	187	57	55	189	850	137	41	64	9	337	103
SILVER D	ug/L	<10	Cancelled	<10	<10	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	
SILVER T	ug/L	<10	<10	<10	<10	<10	< 10	< 10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	
SODIUM D	mg/L	3,090	Cancelled	1,880	10,600	37,800	25,200	2,350	39,900	37,400	1,210	1,280	22,900	28,100	20,500	9,530	7,910			
SODIUM T	mg/L	3,260	2,110	1,930	11,300															

PADEP Frac and Flowback Water Analytical Data - Inorganics

Count		9	8	7	6	5	4	3	2	1				
Lab. Sample ID		I2008021529	I2008021192	I2008021167	I2008020996	I2008020488	I2008020954	I2008019225	I2008019226	I2008010587	I2008010586			
Collector No.		505084	2359071	9618426	505082	2442605	9501005	9516007	9516008	9516	9516			Collector No
County		Greene	Westmoreland	Butler	Fayette	Tioga	Washington	Washington	Clearfield	Lycoming	Lycoming	Butler	Washington	Location
Type of Sample		Pit water	Frac Tank	R Blauser Trust 1	Frac Return - Pit		Frac Return Tank	Frac Flow Back	Frac Flow Back	Frac (957)	Frac (966)			Type of sample
Well Name		Swartz 4	Skokut 2A	Vertical Well	Szuhay 5	Root #1	Cowden Unit 1	Truck at HRT	Truck at HRT	Kensinger Unit	Kensinger Unit			Well Name
Permit No.			129-27331	019-21476	051-23926	117-20197	125-23023			081-20063	081-20063			Permit
Date		6/10/2009	6/5/2008	6/5/2008	6/4/2008	6/3/2008	6/3/2008	5/23/2008	5/23/2008	3/28/2008	3/28/2008	3/12/2008	3/11/2008	Date
Collector		Yantko	Higgins	Harold	Yantko	Stephens	Matinko	Tersine	Tersine	Tersine	Tersine	Tersine	Tersine	Collector
TEST	UNITS							SAC 957	SAC 957	SAC 957	SAC 966			TEST
SPECIFIC CON	umhos/cm	34,300	35,500		566	41,800	71,200	36,000	130,700	90,600	89,400			SPECIFIC CON
pH	pH units	7.6	7.5		6.9	6.9	6.6	7.0	6.0	6.7	6.8			pH
ALKALINITY	mg/L	182	312		211	122	143	195	55	167	163			ALKALINITY
HOT ACIDITY	mg/L	-104	-242	Cancelled	-51	20	12	-93	271	-75	-71			HOT ACIDITY
OIL & GREASE	mg/L									52				OIL & GREASE
AMMONIA-N T	mg/L	28	18		1	27	70	112	30	50	41			AMMONIA-N T
Hardness T	mg/L	3,145	2,333	14,434	279		13,262	32,046	5,721	7,198	6,761			Hardness T
SULFATE - IC	mg/L	35	23	59	75	21	226	22	<1	<5	<5			SULFATE - IC
TDS @105 C	mg/L	30,214	25,844		838	30,948	69,742	27,476	130,476	73,084	73,084			TDS @105 C
TSS WASH 3X	mg/L	10	168		<5		60	30	200	158	142			TSS WASH 3X
BROMIDE	mg/L	103	166	572	22		349	31	479	204	201			BROMIDE
CHLORIDE	mg/L	13,160	13,719	51,882	21	16,443	30,224	14,304	67,270	39,784	39,145			CHLORIDE
OSMOTIC PRES	MOSM	645	690	2,437	11		1,467	670	3,140	1,975	1,941			OSMOTIC PRES
Phenols-Dist	ug/L													Phenols-Dist
ALUMINIUM D	ug/L						Cancelled	<200	<200	<200	<200			ALUMINIUM D
ALUMINIUM T	ug/L	<200	916	<200	<200	400	1,510	<200	<200	<200	<200			ALUMINIUM T
Antimony D	ug/L						Cancelled	<50	<20	<20	<20			Antimony D
Antimony T	ug/L	<20	<20		<2	<20	<20	<50	<20	<20	<20			Antimony T
ARSENIC D	ug/L						Cancelled	<75	<30	<30	<30			ARSENIC D
ARSENIC T	ug/L	<30	<30	<300	<3	<30	<30	<75	<30	<30	<30			ARSENIC T
BARIUM D	ug/L						Cancelled	922,000	4,160	491,400	499,000			BARIUM D
BARIUM T	ug/L	44,900	81,800	7,440	148	283,000	10,100	1,060,000	4,070	512,200	485,800			BARIUM T
BERYLLIUM D	ug/L						Cancelled	<1	<1	<1	<1			BERYLLIUM D
BERYLLIUM T	ug/L	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1			BERYLLIUM T
CADMIUM D	ug/L						Cancelled	<10	<10	<10	<10			CADMIUM D
CADMIUM T	ug/L	<10	<10		<10	<20	<10	<10	<10	<10	<10			CADMIUM T
CALCIUM D	mg/L						Cancelled	9,790	1,700	2,300	2,350			CALCIUM D
CALCIUM T	mg/L	1,080	760		83	1,390	4,540	11,500	2,000	2,520	2,370			CALCIUM T
CHROMIUM D	ug/L						Cancelled	<50	<50	<50	<50			CHROMIUM D
CHROMIUM T	ug/L	<50	<50	<50	<50	<100	<50	<50	<50	<50	<50			CHROMIUM T
COPPER D	ug/L						Cancelled	<10	101	<10	<10			COPPER D
COPPER T	ug/L	<10	<10	<10	67	<20	50	<10	157	<10	<10			COPPER T
IRON D	ug/L						Cancelled	60,400	7,140	21,800	22,150			IRON D
IRON T	ug/L	7,900	30,600	102,000	15,500	11,100	29,800	122,000	18,700	29,910	31,500			IRON T
LEAD D	ug/L						Cancelled	27	<10	146	111			LEAD D
LEAD T	ug/L	<10	<10	<100	5	10	32	154	34	146	139			LEAD T
LITHIUM D	ug/L						Cancelled	63,900	9,700	74,970	74,450			LITHIUM D
LITHIUM T	ug/L	8,120	8,360	65,200	<25		26,100	71,800	10,700	79,980	72,010			LITHIUM T
MAGNESIUM D	mg/L						Cancelled	695	165	202	207			MAGNESIUM D
MAGNESIUM T	mg/L	108	105	530	18	165	464	800	175	218	203			MAGNESIUM T
MANGANESE D	ug/L						Cancelled	6,480	866	1,892	1,854			MANGANESE D
MANGANESE T	ug/L	500	1,228	3,000	306	696	1,620	7,850	949	1,882	2,040			MANGANESE T
NICKEL D	ug/L						Cancelled	<50	<50	90	96			NICKEL D
NICKEL T	ug/L	<50	<50	<50	66	100	50	<50	<50	84	101			NICKEL T
POTASSIUM D	mg/L						Cancelled	536	391	71	70			POTASSIUM D
POTASSIUM T	mg/L	251	47		4	36	161	617	415	76	65			POTASSIUM T
SILVER D	ug/L						Cancelled	<10	<10	<10	<10			SILVER D
SILVER T	ug/L	<10	<10	<10	<10	<20	<10	<10	<10	<10	<10			SILVER T
SODIUM D	mg/L						Cancelled	21,400	5,530	18,500	19,200			SODIUM D
SODIUM T	mg/L	6,640	7,870	24,500	13	7,730	13,400	28,300	6,060	20,700	18,600			SODIUM T
SELENIUM D	ug/L						Cancelled	181	<70	<70	<70			SELENIUM D
SELENIUM T	ug/L	<70	<70		<7		<70	181	<70	<70	<70			SELENIUM T
STRONTIUM D	ug/L						Cancelled							STRONTIUM D
STRONTIUM T	ug/L									<70				STRONTIUM T
THALLIUM T	ug/L	<20	<20		<2	<20	<20	<50	<20					THALLIUM T
THALLIUM D	ug/L						Cancelled	<50	<20	<20				THALLIUM D
ZINC D	ug/L						Cancelled	950	171	1,240	260			ZINC D
ZINC T	ug/L	<10	40	<10	22	<20	112	1,100	68	130	130			ZINC T
MBAS	mg/L					0					0			MBAS

Marcellus Shale Committee
2008/2009 Testing Results

Frac Fluid	Flowback
362 - 34,600	8,740 - 570,000
5.2 - 7.8	5.5 - 7.8
126	37 - 577
2.9 - 5.9	5.4 - 359
42 - 9,500	1,060 - 63,000
ND - 2,920	3.1 - 348
221 - 27,800	5,090 - 264,000
4 - 1040	6.8 - 3,220
ND - 107	35.5 - 1,600
30.7 - 3,560	2,460 - 181,000
0.189 - 2	0.0399 - 2.08
ND - 0.481	0.111 - 47.2
ND	ND
ND	ND
ND	0.112 - 0.14
ND - 0.111	0.0126 - 0.124
0.0396 - 11.7	0.222 - 5,070
0.0747 - 9.810	0.243 - 5150
ND - 0.04	ND - 0.08
ND - 0.087	ND - 0.093
ND - 0.05	ND 0.0515
ND - 0.0105	ND - 0.0512
13 - 3,260	12 - 19,100
9.9 - 329	11.6 - 16,400
ND - 0.05	ND - 0.207
ND - 0.050	0.0075 - 0.359
ND - 0.25	0.025 - 0.259
ND - 0.25	0.0225 - 2.28
0.137 - 14.3	0.192 - 242
0.137 - 14.3	0.192 - 242
0.0295 - 0.03	0.003 - 0.517
ND - 0.111	0.003 - 0.596
0.0387 - 16.4	0.0327 - 202
ND - 14.9	0.0338 - 201
1.72 - 266	1.83 - 1,460
1.36 - 235	1.84 - 1,380
0.0115 - 3.93	0.0278 - 7
0.0075 - 3.64	0.0139 - 7.32
ND - 0.452	0.0086 - 0.525
0.0104 - 0.457	0.007 - 0.519
2.31 - 16.6	0.184 - 2,920
ND - 0.0574	0.177 - 2,820
ND - 0.0574	0.0023 - 0.0521
ND - 0.125	0.00073 - 0.123
27.4 - 6,790	21.3 - 62,600
25.7 - 6,190	0.58 - 64,900
ND - 0.05	ND - 2.22
ND - 0.0353	ND - 0.0956
0.158 - 478	0.580 - 1,090
0.206 - 439	9.588 - 5,410
ND	ND
ND	ND
ND - 0.25	0.0257 - 2.93
0.0348 - 0.0457	0.0257 - 2.93