PADEP Frac and Flowback Water Analytical Data - Inorganics

Count		41	40	39	38	37	36	35	34	33		32	31	30	29	28	27
Lab. Sample ID		I2009040669	I2009040670	I2009040668	I2009039138	I2009036416	I2009034711	I2009034062	I2009032714	I2009032141	I2009032140	I2009031667	I2009030043	I2009028552	I2009026849	I2009026811	I2009025480
Collector No.		9516003	9522002	9522001	9522001	9522001	9522001	9522001	9516001	9522002	9522001	9522001	9522001	9522001	9516014	9516013	9516010
County		Susquehanna	Susquehanna	Clinton	Tioga	Tioga	Tioga	Indiana	Westmoreland	Susquehanna	Susquehanna	Clinton	Fayette	Fayette	Tioga	Fayette	Clearfield
Type of Sample		Frac Flow Back	Frac Flow Back	Frac Flow Back	Frac Flow Back	Frac Flow Back	Frac Flow Back	Frac Flow Back	Tank Frac Water	Tank Frac Water	Tank Frac Water	Frac Flow Back	Frac Flow Back	Frac Flow Back	Frad Flow Back	Frac Flow Back	Pit Drill Water
Well Name		J. Grimsley 1	J. Grimsley H2	COP Tract 285 2H	Smith K 253 1H	Bowers 408 1H	White 262 1H	Ind. Co. Airport 8391H	Eaglehouse Unit #7 1H	Hubbard 6H	Hubbard 5H	COP Tract 653 1001H	W. Smith #1	Bezjak #26	Courtney 255	LEE #11	Hutton #1H
Permit No.		115-20095	115-20171	035-21155	117-20268	117-20325	117-20295	063-36435	129-27856	035-20147	035-20148	035-21162	051-24098	051-24209	117-20293	051-24206	033-26803
Date		11/19/2009	11/19/2009	11/18/2009	11/4/2009	10/16/2009	10/1/2009	9/25/2009	9/14/2009	9/9/2009	9/9/2009	9/2/2009	8/19/2009	8/5/2009	7/23/2009	7/22/2009	7/14/2009
Collector		Tersine	Fuller	Fuller	Fuller	Fuller	Fuller	Fuller/Tersine	Tersine	Fuller	Fuller	Fuller	Fuller	Fuller	Fuller	Fuller	Fuller
TEST	UNITS								SAC 957								
SPECIFIC CON	umhos/cm	43,600	28,900	72,200	86,100	86,700	88,300	101,700	103,200	20,800	35,900	>111,900	43,700	60,500	<1.0	17,650	21,900
pH	pH units	Cancelled	7.7	7.6	6.5	6.8	6.7	6.9	6.6	7.8	7.6	6.3	6.9	7.2	5.7	7.8	10.8
ALKALINITY	mg/L	Cancelled	212	247	124	123	99	152	240	346	318	235	165	199	15	172	939
HOT ACIDITY	mg/L	Cancelled	-169	-13	56	-38	-93	-75	-54	-296	-263	-81	-43	-134	310	-115	-1,182
OIL & GREASE	mg/L	<5	<5	639	6	Cancelled	<5	21		Cancelled	Cancelled	11	Cancelled	Cancelled	Cancelled	Cancelled	Cancelled
AMMONIA-N T	mg/L	31	36	61	52	60	51	107	72	31	36	118	34	80	232	51	1
Hardness T	mg/L	1,520	855	6,300	2,010	9,984	11,126	14,568	13,010	432	1,065	34,530	3,920	7,759	61,345	2,776	Cancelled
SULFATE - IC	mg/L	<5	<5	<5	<5	<5	<5	11	<5	12	7	<5	16	394	<5	279	420
TDS @105 C	mg/L	31,012	18,828	91,810	150,468	71,334	70,030	128,446	96,448	13,240	23,862	169,974	29,734	45,550	290,770	11,554	13,700
TSS WASH 3X	mg/L	128	90	22	50	26	18	8	220	12	80	202	552	42	14	108	10,260
BROMIDE	mg/L	112	69	217	232	256	274	283	382	80	119	613	133	233	887	Cancelled	<2.2
CHLORIDE	mg/L	16,777	10,278	47,030	39,294	35,157	34,156	46,390	48,679	7,489	13,600	83,505	Cancelled	24,975	69,226	6,226	388
OSMOTIC PRES	MOSM	857	548	1,531	1,863	1,820	1,902	2,232	2,220	396	693	3,160	874	Cancelled	7,960	307	373
Phenols-Dist	ug/L	239	90	66	<50	<50	<50	Cancelled		41	53	<25	<50	<25	Cancelled	Cancelled	Cancelled
ALUMINUM D	ug/L	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	490	<200	<200	286	Cancelled
ALUMINUM T	ug/L	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	1,600	<200	<200	1,862	87,700
Antimony D	ug/L								<50								
Antimony T	ug/L								<50								
ARSENIC D	ug/L	<75	<75	<150	<75	<30	<30	<30	<75	<30	<30	<150	52	<150	<150	<30	<3.0
ARSENIC T	ug/L	<75	<75	<150	<75	<30	<75	<30	<75	<30	<30	<150	105	<150	<150	<30	145
BARIUM D	ug/L	861,000	340,000	1,200,000	1,760,000	2,400	180	1,320,000	1,960,000	409,900	871,900	6,270,000	74,560	8,520	6,660,000	8,890	Cancelled
BARIUM T	ug/L	976,000	398,000	1,120,000	1,840,000	1,660,000	1,110,000	1,430,000	1,740,000	369,600	868,400	7,090,000	98,100	8,240	7,000,000	10,930	2,494
BERYLLIUM D	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	Cancelled
BERYLLIUM T	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	11
CADMIUM D	ug/L	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	Cancelled
CADMIUM T	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10.0
CALCIUM D	mg/L	475	233	2,360	346	2,540	1,150	5,361	3,880	172	364	11,200	1,180	2,410	21,000	925	Cancelled
CALCIUM T	mg/L	523	291	2,240	347	3,940	3,380	5,752	4,380	144	358	12,500	1,300	2,680	22,000	949	675
CHROMIUM D	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	Cancelled
CHROMIUM T	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	82	361
COPPER D	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	440	18	130	<10	Cancelled
COPPER T	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	1,670	33	150	32	702
IRON D	ug/L	6,500	620	27,200	91,500	27,200	47,400	38,700	64,200	10,260	11,180	194,000	52,720	22,000	136,000	21,020	Cancelled
IRON T	ug/L	17,700	12,000	26,300	94,600	28,000	49,100	40,500	79,900	9,160	14,120	222,000	89,000	22,800	14,400	25,790	171,000
LEAD D	ug/L	<10	<10	<10	<25	<10	<10	<10	<25	10	<10	<50	443	<50	<50	16	<1.0
LEAD T	ug/L	<10	<10	<10	<25	<10	<25	<10	<25	10	<10	<50	1,092	<50	<50	66	698
LITHIUM D	ug/L	59,000	36,300	45,400	46,500	44,600	42,300	42,100	35,800	34,740	57,280	75,900	13,340	14,300	163,000	8,167	Cancelled
LITHIUM T	ug/L	65,900	41,000	42,700	47,900	45,100	44,500	45,300	39,900	28,890	56,320	80,900	13,640	15,600	174,000	7,821	283
MAGNESIUM D	mg/L	47	27	182	272	32.0	346	43	442	21	43	719	159	234	1,460	96	Cancelled
MAGNESIUM T	mg/L	52	31	170	277	32.5	346	46	500	17	41	796	163	257	1,540	98	39
MANGANESE D	ug/L	780	280	800	2,900	2,100	2,640	7,400	10	210	350	4,990	1,670	497	8,980	535	Cancelled
MANGANESE T	ug/L	910	360	750	3,000	2,100	2,710	7,800	2,470	180	360	5,270	1,800	505	9,090	560	3,134
NICKEL D	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	Cancelled
NICKEL T	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	59	598
POTASSIUM D	mg/L	50	25	66	104	51	60	215	123	25	28	224	67	421	42	161	Cancelled
POTASSIUM T	mg/L	56	28	59	106	68	73	227	138	20	27	240	67	452	456	167	3,560
SILVER D	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	Cancelled
SILVER T	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
SODIUM D	mg/L	7,540	4,100	13,500	1,400	13,800	13,100	17,500	18,490	4,250	6,890	34,300	9,730	11,000	50,500	4,090	Cancelled
SODIUM T	mg/L	8,660	4,980	12,700	1,390	14,100	13,500	18,200	21,510	3,530	6,910	37,400	10,600	12,000	50,200	4,190	2,280
SELENIUM D	ug/L								<175								
SELENIUM T	ug/L								<175								
STRONTIUM D	ug/L	213,000	98,700	687,000	753,300	103,700	118,000	1,650,000		80,870	169,400	3,570,000	187,400	527,000	4,640,000		Cancelled
STRONTIUM T	ug/L	235,000	114,000	642,000	760,400	835,500	820,000	1,780,000		67,080	169,400	4,020,000	191,700	525,000	4,890,000	217,200	5,783
THALLIUM T	ug/L								<50								
THALLIUM D	ug/L								<50								Cancelled
ZINC D	ug/L	<10	<10	<10	<10	<10	100	<10	<10	<10	<10	<10	59	346	240	198	Cancelled
ZINC T	ug/L	<10	<10	<10	<10	<10	140	<10	<10	<10	<10	<10	41	481	<10	275	2,779
MBAS	mg/L	<.2	<.2	0.4	<2	1.8	<0.8	<0.8		<0.2	<0.2	0	79	89	<1.0	15	10

PALMERTON GROUP
Environmental Consulting Services
6296 Fly Road, East Syracuse, New York 13057

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	Bonsall 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	36		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																	
ALUMINUM D	ug/L	<200	Cancelled	<200	<200	<200	< 200	< 200	<200	<200	<200	<200	<200	<200	<200	200	<200			
ALUMINUM 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			<2	<20	<20			
Antimony T	ug/L					<200	< 20	7	<100	<100	<100	<100			<2	<20	<20		<50	
ARSENIC D	ug/L	<30	Cancelled	<30	<150	<300	< 30	< 30	<150	<150	<150	<150			<3	46	<30			
ARSENIC T	ug/L	42	108	<30	<150	<300	< 30	< 30	<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			
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			
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			
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			<1	42	<10			
LEAD T	ug/L	472	970	<10	<10	<100	< 10	< 10	<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	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			
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	39,300	22,500	2,240	41,900	42,100	1,230	1,250	24,400	3,190	23,500	10,100	7,990	1,345	24,200	16,870
SELENIUM D	ug/L					<700	120	< 70	<350	<350	<350	<350			<7	<70	<70			
SELENIUM T	ug/L					<700	108	< 70	<350	<350	<350	<350			<7	<70	<70		310	
STRONTIUM D	ug/L																			
STRONTIUM T	ug/L			138,200											<7					
THALLIUM T	ug/L					<200	< 20	< 20	<100	<100	<100	<100			<2	<20	<20		<50	
THALLIUM D	ug/L					<200	< 20	< 20	<100	<100	<100	<100			<2	<20	<20			
ZINC D	ug/L	456	Cancelled	210	23	<10.0	70	< 10	<10	120	<10	<10	<10	<10	<10	990	38			
ZINC T	ug/L	1,030	1,575	210	<10	<10.0	110	< 10	<10	100	<10	<10	<10	<10	<10	2,470	37		91	
MBAS	mg/L	Cancelled	16	Cancelled	19															

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6296 Fly Road, East Syracuse, New York 13057

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
ALUMINUM D	ug/L						Cancelled	<200	<200	<200	<200			ALUMINUM D
ALUMINUM T	ug/L	<200	916	<200	<200	400	1,510	<200	<200	<200	<200			ALUMINUM T
Antimony D	ug/L						Cancelled	<50	<20	<20				Antimony D
Antimony T	ug/L	<20	<20		<2	<20	<20	<50	<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					SELENIUM D
SELENIUM T	ug/L	<70	<70		<7		<70	181	<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
SPECIFIC CON	362 - 34,600	8,740 - 570,000
pH	5.2 - 7.8	5.5 - 7.8
ALKALINITY	126	37 - 577
AMMONIA-N T	2.9 - 5.9	5.4 - 359
Hardness T	42 - 9,500	1,060 - 63,000
SULFATE - IC	ND - 2,920	3.1 - 348
TDS @105 C	221 - 27,800	5,090 - 264,000
TSS WASH 3X	4 - 1040	6.8 - 3,220
BROMIDE	ND - 107	35.5 - 1,600
CHLORIDE	30.7 - 3,560	2,460 - 181,000
ALUMINUM D	0.189 - 2	0.0399 - 2.08
ALUMINUM T	ND - 0.481	0.111 - 47.2
Antimony D	ND	ND
Antimony T	ND	ND
ARSENIC D	ND	0.112 - 014
ARSENIC T	ND - 0.111	0.0126 - 0.124
BARIUM D	0.0396 - 11.7	0.222 - 5,070
BARIUM T	0.0747 - 9.810	0.243 - 5150
BERYLLIUM D	ND - 0.04	ND - 0.08
BERYLLIUM T	ND - 0.087	ND - 0.093
CADMIUM D	ND - 0.05	ND 0.0515
CADMIUM T	ND - 0.0105	ND - 0.0512
CALCIUM D	13 - 3,260	12 - 19,100
CALCIUM T	9.9 - 329	11.6 - 16,400
CHROMIUM D	ND - 0.05	ND - 0.207
CHROMIUM T	ND - 0.050	0.0075 - 0.359
COPPER D	ND - 0.25	0.025 - 0.259
COPPER T	ND - 0.25	0.0225 - 2.28
IRON D	0.137 - 14.3	0.192 - 242
IRON T	0.137 - 14.3	0.192 - 242
LEAD D	0.0295 - 0.03	0.003 - 0.517
LEAD T	ND - 0.111	0.003 - 0.596
LITHIUM D	0.0387 - 16.4	0.0327 - 202
LITHIUM T	ND - 14.9	0.0338 - 201
MAGNESIUM D	1.72 - 266	1.83 - 1.460
MAGNESIUM T	1.36 - 235	1.84 - 1,380
MANGANESE D	0.0115 - 3.93	0.0278 - 7
MANGANESE T	0.0075 - 3.64	0.0139 - 7.32
NICKEL D	ND - 0.452	0.0086 - 0.525
NICKEL T	0.0104 - 0.457	0.007 - 0.519
POTASSIUM D	2.31 - 16.6	0.184 - 2,920
POTASSIUM T	ND - 0.0574	0.177 - 2,820
SILVER D	ND - 0.0574	0.0023 - 0.0521
SILVER T	ND - 0.125	0.00073 - 0.123
SODIUM D	27.4 - 6,790	21.3 - 62,600
SODIUM T	25.7 - 6,190	0.58 - 64,900
SELENIUM D	ND - 0.05	ND - 2.22
SELENIUM T	ND - 0.0353	ND - 0.0956
STRONTIUM D	0.158 - 478	0.580 - 1,090
STRONTIUM T	0.206 - 439	9.588 - 5,410
THALLIUM T	ND	ND
THALLIUM D	ND	ND
ZINC D	ND - 0.25	0.0257 - 2.93
ZINC T	0.0348 - 0.0457	0.0257 - 2.93

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source: PADEP Right-to-Know Request - 2/1/2010