

**APPENDIX R:**

**Calculations**

**Desktop Soils Analysis for Lots 5D, 5E, and 5G Located on Pittston Blvd. (Calcs applicable to Alternatives 1 - 5)**

See Map in Appendix H-1 for Lot Locations

**Requirements for Alternate On-Lot Systems**

	Depth to Bedrock	Area (SF)	Area (AC)	Percentage	Slope
1. Peat Based System	>1.33'		>.83'	0-12%	
2. CO-OP RFS III System	>1.33'		>.83'	0-12%	
3. A/B Soils System	>1.33'		>.83'	0-12%	

Lot No.	Soil Type	Area (SF)	Area (AC)	Percentage	Depth to Bedrock		Slope	Req't Met
					1.5' to 3.5'	>5'		
5E	OXF	18,541	0.43	0.62	1.5' to 3.5'	>6'	Steep	possible
	Wtb	11,565	0.27	0.38	>5'	1.5' to 3.5'	3 to 8%	yes
<b>Totals</b>		30,106	0.69	1.00				yes

Lot No.	Soil Type	Area (SF)	Area (AC)	Percentage	Depth to Bedrock		Slope	Req't Met
					>6'	>5'		
5D	Vrb	46,259	1.06	0.71	>6'	.5' to 1.5'	0 to 8%	yes
	Wtb	7,685	0.18	0.12	>5'	1.5' to 3.5'	3 to 8%	yes
	BrB	9,879	0.23	0.15	>5'	1.5' to 3'	3 to 8%	yes
	RdB	1,461	0.03	0.02	>6'	.5' to 1.5'	3 to 8%	yes
<b>Totals</b>		65,284	1.50	1				probable

Lot No.	Soil Type	Area (SF)	Area (AC)	Percentage	Depth to Bedrock		Slope	Req't Met
					>6'	>5'		
5G	RdB	27,242	0.63	0.90	>6'	.5' to 1.5'	3 to 8%	yes
	ChA	2,388	0.05	0.08	>6'	>6'	0 to 3%	yes
	BrC	804	0.02	0.03	>5'	1.5' to 3'	8 to 15%	probable
<b>Totals</b>		30,434	0.70	1.00				yes

**Alternative 1 - Plains Sewer Collection System Capacity Calculations**

Capacity Evaluation for Plains Township Sewer Authority - EXISTING CONDITIONS  
 assumes Manning's n = 0.015 for VCP  
 0.015 for DIP

Pipe Material	STREET NAME	UPSTREAM MANHOLE		DOWNSTREAM MANHOLE		PIPE DIAM. IN.	LENGTH (FT)	SLOPE (FT/FT)	X-SECT AREA (FT <sup>2</sup> )	VELOCITY (Ft/s)	FULL PIPE CAPACITY (cfs)	FULL PIPE CAPACITY (MGD)	(A)	(B)	(C)	(D)
		#	ELEV.	#	ELEV.								DESIGN AVG CAPACITY (MGD)	Est Existing AVG Flow (MGD)	Est. Prop. AVG Flow (MGD)	Excess Capacity AVG Flow (MGD)
DIP	E.MT.RD.	3	1024.5	2	1020.2	10	215	0.02	0.55	4.9	2.69	1.74	0.580	0.01	0.191	0.389
DIP	E.MT.RD.	2	1020.1	1	1016.1	10	200	0.02	0.55	4.9	2.69	1.74	0.580	0.01	0.191	0.389
DIP	E.MT.RD.	1	1016	29	1010.9	10	200	0.02	0.55	4.9	2.69	1.74	0.580	0.01	0.191	0.389
DIP	E.MT.RD.	29	1010.98	28	1006.84	10	255	0.0162	0.55	4.4	2.42	1.57	0.522	0.01	0.191	0.331
DIP	E.MT.RD.	28	1006.84	27	1005	10	244	0.0075	0.55	3.0	1.65	1.07	0.355	0.01	0.191	0.164
DIP	E.MT.RD.	27	999.86	26	998.46	10	148	0.0095	0.55	3.4	1.85	1.20	0.400	0.132	0.313	0.087
DIP	E.MT.RD.	26	998.46	25	996.93	10	138	0.0111	0.55	3.7	2.00	1.30	0.432	0.132	0.313	0.119
DIP	E.MT.RD.	25	996.93	24	995.74	10	149	0.008	0.55	3.1	1.70	1.10	0.367	0.132	0.313	0.054
DIP	E.MT.RD.	24	995.74	23	994.13	10	149.5	0.0108	0.55	3.6	1.98	1.28	0.426	0.132	0.313	0.113
DIP	E.MT.RD.	23	994.13	22	988.17	10	150	0.04	0.55	7.0	3.81	2.46	0.820	0.132	0.313	0.507
DIP	E.MT.RD.	22	988.17	21	985.91	10	152.5	0.0148	0.55	4.2	2.32	1.50	0.499	0.132	0.313	0.186
DIP	E.MT.RD.	21	985.91	20	979.55	10	343.5	0.0185	0.55	4.7	2.59	1.67	0.558	0.132	0.313	0.245
DIP	E.MT.RD.	20	979.55	20A	969.01	10	162.5	0.0649	0.55	8.9	4.85	3.13	1.045	0.132	0.313	0.732
DIP	E.MT.RD.	20A	969.01	19	957.28	10	240	0.0488	0.55	7.7	4.20	2.72	0.906	0.132	0.313	0.593
DIP	E.MT.RD.	19	957.28	18	942.74	10	239.2	0.0608	0.55	8.6	4.69	3.03	1.011	0.132	0.313	0.698
DIP	E.MT.RD.	18	942.74	17	917.32	10	385.3	0.066	0.55	9.0	4.89	3.16	1.053	0.132	0.313	0.740
DIP	E.MT.RD.	17	917.32	16	890.98	12	414.8	0.0635	0.79	9.9	7.80	5.04	1.680	0.22	0.401	1.279
DIP	E.MT.RD.	16	890.98	15	882.97	12	172.7	0.0464	0.79	8.5	6.67	4.31	1.436	0.22	0.401	1.035
DIP	E.MT.RD.	15	882.97	14	873.6	12	169	0.0554	0.79	9.3	7.28	4.71	1.570	0.22	0.401	1.169
DIP	E.MT.RD.	14	873.6	13	864.51	12	120	0.0758	0.79	10.8	8.52	5.51	1.836	0.22	0.401	1.435
DIP	E.MT.RD.	13	864.51	12	856.24	12	140	0.0591	0.79	9.6	7.52	4.86	1.621	0.22	0.401	1.220
DIP	E.MT.RD.	12	856.24	11	848.2	12	159.5	0.0504	0.79	8.8	6.95	4.49	1.497	0.22	0.401	1.096
DIP	E.MT.RD.	11	848.2	10	839.14	12	152.5	0.0594	0.79	9.6	7.54	4.88	1.625	0.22	0.401	1.224
DIP	E.MT.RD.	10	839.14	9	813.99	12	400.3	0.0628	0.79	9.9	7.76	5.01	1.671	0.22	0.401	1.270
DIP	E.MT.RD.	9	813.99	8	805.98	12	133.4	0.06	0.79	9.7	7.58	4.90	1.633	0.22	0.401	1.232
DIP	E.MT.RD.	8	805.98	7	799.52	12	119.3	0.0541	0.79	9.2	7.20	4.65	1.551	0.22	0.401	1.150
DIP	E.MT.RD.	7	799.52	6	794.26	12	124	0.0424	0.79	8.1	6.37	4.12	1.373	0.22	0.401	0.972
DIP	E.MT.RD.	6	794.26	5	788.47	12	119	0.0487	0.79	8.7	6.83	4.41	1.472	0.22	0.401	1.071
DIP	E.MT.RD.	5	788.47	4	786.83	12	132.57	0.0124	0.79	4.4	3.45	2.23	0.743	0.22	0.401	0.342
VCP	Jumper RD.	4	786.83	3A	777.65	12	114.36	0.0531	0.79	9.1	7.13	4.61	1.537	0.22	0.401	1.136
VCP	Jumper RD.	3A	777.65	3	754.03	12	285.08	0.0829	0.79	11.3	8.91	5.76	1.920	0.22	0.401	1.519
VCP	Jumper RD.	3	754.03	2A	728.89	12	320.36	0.0785	0.79	11.0	8.67	5.60	1.868	0.22	0.401	1.467
VCP	Jumper RD.	2A	728.89	2	719.84	12	136.13	0.0594	0.79	9.6	7.54	4.88	1.625	0.22	0.401	1.224
VCP	Jumper RD.	2	719.84	1	705.88	12	199.09	0.0701	0.79	10.4	8.19	5.30	1.765	0.22	0.401	1.364
VCP	Jumper RD.	1	705.88	1A	702.62	12	48.45	0.0673	0.79	10.2	8.03	5.19	1.730	0.22	0.401	1.329
VCP	SR 315	1A(D155)	700.19	D-154	698.92	12	77.4	0.02	0.79	5.6	4.38	2.83	0.943	0.35	0.531	0.412
VCP	SR 315	D-154	698.92	D-153	695.17	12	133.9	0.02	0.79	5.6	4.38	2.83	0.943	0.35	0.531	0.412
VCP	SR 315	D-153	695.17	D-152	684.93	12	400	0.03	0.79	6.8	5.36	3.46	1.155	0.35	0.531	0.624
VCP	SR 315	D-152	684.93	D-32	679.53	12	270	0.02	0.79	5.6	4.38	2.83	0.943	0.35	0.531	0.412
VCP	ROW	D-32	673.94	D-31	671.11	21	132.2	0.0214	2.41	8.4	20.14	13.02	5.207	0.909	1.09	4.117
VCP	ROW	D-31	671.11	D-30	668.37	21	235.4	0.0116	2.41	6.2	14.83	9.58	3.834	0.909	1.09	2.744
VCP	ROW	D-30	668.37	D-29	665.09	21	234.6	0.014	2.41	6.8	16.29	10.53	4.211	0.909	1.09	3.121
newPVC	ROW	D-29	665.09	D-27	661.66	21	340+/-	0.01	2.41	5.7	13.77	8.90	3.559	0.909	1.09	2.469
VCP	ROW	D-27	661.66	D-26	661.34	21	147.3	0.0022	2.41	2.7	6.46	4.17	1.669	0.909	1.09	0.579
VCP	ROW	D-26	661.34	D-25	660.85	21	318.7	0.0015	2.41	2.2	5.33	3.45	1.379	0.909	1.09	0.289

Pipe Material	STREET NAME	UPSTREAM MANHOLE #	UPSTREAM MANHOLE ELEV.	DOWNSTREAM MANHOLE #	DOWNSTREAM MANHOLE ELEV.	PIPE DIAM. IN.	LENGTH (FT)	SLOPE (FT/FT)	X-SECT AREA (FT <sup>2</sup> )	VELOCITY (Ft/s)	FULL PIPE CAPACITY (cfs)	FULL PIPE CAPACITY (MGD)	DESIGN AVG CAPACITY (MGD)	Est Existing AVG Flow (MGD)	Est. Prop. AVG Flow (MGD)	Capacity AVG Flow (MGD)
VCP	ROW	D-25	660.85	D-24	659.46	21	385	0.0036	2.41	3.4	8.26	5.34	2.136	0.909	1.09	1.046
VCP	ROW	D24	659.46	D-23	658.71	21	154.5	0.0048	2.41	4.0	9.54	6.16	2.466	0.909	1.09	1.376
VCP	ROW	D-23	658.71	D-22	657.86	21	190.2	0.0045	2.41	3.8	9.23	5.97	2.388	0.909	1.09	1.298
VCP	ROW	D-22	657.86	D-21	656.57	21	326	0.004	2.41	3.6	8.71	5.63	2.251	0.909	1.09	1.161
VCP	ROW	D-21	656.57	D-20	651.73	21	407	0.0119	2.41	6.2	15.02	9.71	3.883	0.909	1.09	2.793
VCP	ROW	D-20	651.73	D-19	650.59	21	311.5	0.0037	2.41	3.5	8.37	5.41	2.165	0.909	1.09	1.075
VCP	ROW	D-19	650.59	D-18	649.79	21	106	0.0075	2.41	5.0	11.92	7.71	3.082	0.909	1.09	1.992
VCP	ROW	D-18	649.79	D-17	648.39	21	327	0.0043	2.41	3.8	9.03	5.84	2.334	0.909	1.09	1.244
VCP	ROW	D-17	648.39	D-16	647.04	21	328.7	0.0041	2.41	3.7	8.81	5.70	2.279	0.909	1.09	1.189
VCP	ROW	D-16	647.04	D-15	645.25	21	297	0.006	2.41	4.4	10.66	6.89	2.757	0.909	1.09	1.667
VCP	ROW	D-15	645.25	D-14	639.65	21	312	0.0179	2.41	7.7	18.42	11.91	4.762	0.909	1.09	3.672
VCP	ROW	D-14	639.65	D-13	634.02	21	261	0.0216	2.41	8.4	20.23	13.08	5.231	0.909	1.09	4.141
VCP	ROW	D-13	634.02	D-12	631.51	21	190	0.0132	2.41	6.6	15.82	10.22	4.089	0.909	1.09	2.999
VCP	ROW	D-12	631.51	D-11	630.54	21	262	0.007	2.41	4.8	11.52	7.44	2.978	1.48	1.661	1.317
VCP	ROW	D-11	630.54	D-10	629.04	21	213.3	0.007	2.41	4.8	11.52	7.44	2.978	1.48	1.661	1.317
VCP	ROW	D-10	629.04	D-9	627.12	21	381	0.005	2.41	4.0	9.73	6.29	2.517	1.48	1.661	0.856
VCP	ROW	D-9	627.12	D-8	624.87	21	344	0.0065	2.41	4.6	11.10	7.17	2.870	1.48	1.661	1.209
VCP	ROW	D-8	624.87	D-7	615.81	21	230	0.0394	2.41	11.4	27.32	17.66	7.065	1.48	1.661	5.404
VCP	ROW	D-7	615.81	D-6	615.26	21	116	0.0047	2.41	3.9	9.44	6.10	2.440	1.48	1.661	0.779
VCP	ROW	D-6	615.26	D-5	613.14	21	393	0.0054	2.41	4.2	10.12	6.54	2.616	1.48	1.661	0.955
VCP	ROW	D-5	613.14	D-4	610.19	21	409	0.0072	2.41	4.9	11.68	7.55	3.020	1.48	1.661	1.359
VCP	ROW	D-4	610.19	D-3	607.74	21	410.8	0.006	2.41	4.4	10.66	6.89	2.757	1.48	1.661	1.096
VCP	ROW	D-3	607.74	D-2	606.41	21	313	0.0043	2.41	3.8	9.03	5.84	2.334	1.48	1.661	0.673
VCP	ROW	D-2	606.41	D-1	605.28	21	244.5	0.0046	2.41	3.9	9.34	6.04	2.414	1.48	1.661	0.753
VCP	ROW	D-1	605.28	56+30	602.11	21	150	0.02	2.41	8.1	19.47	12.58	5.034	1.48	1.661	3.373
VCP	ROW	56+30	602.11	42+10	587.94	21	1420	0.01	2.41	5.7	13.77	8.90	3.559	1.48	1.661	1.898
VCP	Cleveland St	42+10	587.94	37+03	584.87	21	507	0.006	2.41	4.4	10.66	6.89	2.757	1.48	1.661	1.096
VCP	Cleveland St	37+03	584.87	36+85	584.73	21	18	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	North St.	36+85	583.9	34+92	582.36	21	193	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	Center St.	34+92	582.36	33+00	580.82	21	192	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	Center St.	33+00	580.82	30+40	578.74	21	260	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	30+40	578.74	29+05	577.66	21	135	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	29+05	577.66	27+55	576.46	21	150	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	27+55	576.46	25+70	574.98	21	185	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	25+70	574.98	23+30	573.06	21	240	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	23+30	573.06	22+20	572.18	21	110	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	22+20	572.18	20+00	570.42	21	220	0.008	2.41	5.1	12.31	7.96	3.184	1.48	1.661	1.523
VCP	ROW	20+00	570.42	16+30	568.52	24	370	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553
VCP	ROW	16+30	568.52	13+00	567.2	24	330	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553
VCP	ROW	13+00	567.2	10+50	566.2	24	250	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553
VCP	ROW	10+50	566.2	8+50	565	24	200	0.006	3.14	4.8	15.22	9.84	3.937	1.48	1.661	2.276
VCP	ROW	8+50	565	5+10	563.64	24	340	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553
VCP	ROW	5+10	563.64	1+70(4+40)	562.28	24	340	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553
VCP	ROW	(4+40)	562.28	(1+08)	560.95	24	332	0.004	3.14	4.0	12.43	8.04	3.214	1.48	1.661	1.553

(A) = Full pipe Capacity / 3 peaking factor (for pipe sizes less than 21")

(A) = Full pipe Capacity / 2.5 peaking factor (for pipe sizes equal to or greater than 21")

(B) - estimated based on EDU information obtained from PTSA for large commercial users; number of residential EDUs connecting into the system were also estimated

(C) = Existing Flow + 150,000 gpd (Proposed BCT Flow)

(D) = Design Capacity - Total Proposed Flow

### **Alternative 3 - Land Application Calculations**

Parcel 6A	Chippewa	Morris	Wellsboro	Oquaga	Chippewa	Chippewa	Oquaga	Wellsboro	Rexford	Wayland	Morris	Lackawanna	Muck	Lackawanna	Oquaga
Soil Type	CIA	MsB	WmB	OpD	CIB	CnB	OXF	WmD	RdA	Wa	MsB	LcD	Mu	LcB	OpB
Area (SF)	2,205,401	2,020,149	1,000,285	258,750	188,576	110,746	26,815	27,719	139,453	122,061	35,290	262,695	235,755	101,002	89,878
	100,646	154,097	1,647,819	205,080		8,666	242,645	191,295		18,790		10,398		129,135	
	247,876		128,229	7,875		299,370		58,249		165,252					
			30,692												
			136,179												
			510,298												
			79,589												
			94,769												
			86,356												
			47,051												
Totals (SF)	2,553,923	2,174,245	3,761,266	471,704	188,576	418,783	269,460	277,263	139,453	306,102	35,290	273,093	235,755	230,136	89,878
Totals (Acres)	58.63	49.91	86.35	10.83	4.33	9.61	6.19	6.37	3.20	7.03	0.81	6.27	5.41	5.28	2.06
Total Parcel Area (Acres)	262.28														
% of Total Area	22.35%	19.03%	32.92%	4.13%	1.65%	3.67%	2.36%	2.43%	1.22%	2.68%	0.31%	2.39%	2.06%	2.01%	0.79%

Spray Irrigation Permeability	N	N	Y	Y	N	N	N	Y	N	N	N	Y	N	Y	Y
Area			0.060	0.080				0.060				0.075		0.075	0.080
			5.18	0.87				0.38				0.47		0.40	0.17
			86	11				6				6		5	2
Check	1.00	ok													
	11,433,242														
	262.47	ok													

Bear Creek Parcel 6A

Area 115 acres

Month	Forest Adj PE (inches)	Suitable Days	Precipitation (P) 50% Prob inches/month	Precipitation (P) 90% Prob inches/month	Perm (K) 100% inches/month	Perm (K) 10% in/month	WW Load 10% K in/month	WW Load ac-in/month	WW Load gallons/month	WW Load Suitable Day gpd
January	0	0	2.46	2.88	0	0	0	0		
February	0	0	2.08	2.43	0	0	0	0		
March	0.62	8	2.69	3.14	11.52	1.15	0.00	0		
April	1.57	21	3.28	3.83	30.24	3.02	0.76	88	2,381,785	113,418
May	3.60	30	3.69	4.31	43.20	4.32	3.60	415	11,256,574	375,219
June	5.41	30	3.97	4.64	43.20	4.32	5.09	585	15,889,773	529,659
July	6.00	31	3.74	4.37	44.64	4.46	6.09	700	19,018,959	613,515
August	5.15	30	3.1	3.62	43.20	4.32	5.84	672	18,246,472	608,216
September	3.45	30	3.86	4.51	43.20	4.32	3.26	375	10,182,259	339,409
October	1.78	17	3.02	3.53	24.48	2.45	0.70	81	2,195,023	129,119
November	0.62	12	3.12	3.65	17.28	1.73	0	0		
December	0	0	2.55	2.98	0	0	0	0		
	28.20	209	37.56	43.90				25.35		

Sources:  
 Climatology of the US No. 81 Supplement No. 1  
 Monthly Precipitation Probabilities 1970 - 2000 Normals, Pennsylvania  
 WB Scranton Airport  
 Comparative Climatic Data through 1976, April 1977  
 Number of Suitable Days - Temperature > 32 C

Avoca, PA

Partial Yr. Spray

Month	Forest Adj PE (inches)	Precipitation (P) 90% Prob inches/month	Precip - Evap (Gal/Month)
January	0	2.88	220,952
February	0	2.43	186,821
March	0.62	3.14	194,171
April	1.57	3.83	173,771
May	3.60	4.31	54,965
June	5.41	4.64	-59,053
July	6.00	4.37	-124,993
August	5.15	3.62	-117,049
September	3.45	4.51	81,402
October	1.78	3.53	134,103
November	0.62	3.65	232,553
December	0	2.98	229,036
	<hr/> 28.20	<hr/> 43.90	<hr/> 1,206,679

### Spray Field Loadings - Parcel 6A

$$L_{w(p)} = ET - P + W_p$$

$L_{w(p)}$  = wastewater hydraulic loading rate based on soil permeability, in/month

ET = design evapotranspiration rate, in/month

P = design precipitation rate, in/month

$W_p$  = design percolation rate, in/month = Permeability K(100%) x 10%

#### Soil Permeability based on Hydraulic Conductivity Tests

k, Permeability (in/hr) = 0.06

Permeability (K) 100% = Operating days x 24 hrs x k

Month	Calendar Days	Operating Days	ET (in/month)	P (in/month)	Permeability (K) 100% (in/hr)	$W_p$ (in/month)	$L_{w(p)}$ (in/month)	$L_{w(p)}$ (in/week)
January	31	0	0.00	2.88	0.00	0.00	0.00	0.00
February	28	0	0.00	2.43	0.00	0.00	0.00	0.00
March	31	8	0.62	3.14	11.52	1.15	0.00	0.00
April	30	21	1.57	3.83	30.24	3.02	0.76	0.18
May	31	30	3.60	4.31	43.20	4.32	3.61	0.82
June	30	30	5.41	4.64	43.20	4.32	5.09	1.19
July	31	31	6.00	4.37	44.64	4.46	6.09	1.38
August	31	30	5.15	3.62	43.20	4.32	5.85	1.32
September	30	30	3.45	4.51	43.20	4.32	3.26	0.76
October	31	17	1.78	3.53	24.48	2.45	0.70	0.16
November	30	12	0.62	3.65	17.28	1.73	0.00	0.00
December	31	0	0.00	2.98	0.00	0.00	0.00	0.00
	365	209	28.20	43.89				
						<b>Total (March - Oct.)</b>	25.37	
						<b>Average (March - Oct.)</b>	3.17	0.72



## **Alternative 4 - Land Application Calculations**

## Full Yr. Spray

Month	Forest Adj PE (inches)	Precipitation (P) 90% Prob inches/month	Precip - Evap (Gal/Month)
January	0	2.88	851,016
February	0	2.43	719,558
March	0.62	3.14	747,867
April	1.57	3.83	669,293
May	3.60	4.31	211,702
June	5.41	4.64	-227,448
July	6.00	4.37	-481,422
August	5.15	3.62	-450,824
September	3.45	4.51	313,529
October	1.78	3.53	516,510
November	0.62	3.65	895,701
December	0	2.98	882,151
	<hr/> 28.20	<hr/> 43.90	4,647,632

### Spray Field Loadings Parcel 6

$$L_{w(p)} = ET - P + W_p$$

$L_{w(p)}$  = wastewater hydraulic loading rate based on soil permeability, in/month

ET = design evapotranspiration rate, in/month

P = design precipitation rate, in/month

$W_p$  = design percolation rate, in/month = Permeability K(100%) x 10%

#### Soil Permeability based on Hydraulic Conductivity Tests

k, Permeability (in/hr) = 0.07

Permeability (K) 100% = Operating days x 24 hrs x k

Month	Calendar Days	Operating Days	ET (in/month)	P (in/month)	Permeability (K) 100% (in/month)	$W_p$ (in/month)	$L_{w(p)}$ (in/month)	$L_{w(p)}$ (in/week)
January	31	0	0.00	2.88	0.00	0.00	0.00	0.00
February	28	0	0.00	2.43	0.00	0.00	0.00	0.00
March	31	8	0.62	3.14	13.44	1.34	0.00	0.00
April	30	21	1.57	3.83	35.28	3.53	1.27	0.30
May	31	30	3.60	4.31	50.40	5.04	4.33	0.98
June	30	30	5.41	4.64	50.40	5.04	5.81	1.36
July	31	31	6.00	4.37	52.08	5.21	6.84	1.54
August	31	30	5.15	3.62	50.40	5.04	6.57	1.48
September	30	30	3.45	4.51	50.40	5.04	3.98	0.93
October	31	17	1.78	3.53	28.56	2.86	1.11	0.25
November	30	12	0.62	3.65	20.16	2.02	0.00	0.00
December	31	0	0.00	2.98	0.00	0.00	0.00	0.00
	365	209		43.89				
					<b>Total (March - Oct.)</b>		29.90	
					<b>Average (March - Oct.)</b>		3.74	0.85

Parcel 6	Wellsboro	Oquaga	Lackawanna	Oquaga	Morris	Chippewa	Water	Lackawanna	Arnot	Arnot	Chippewa	Oquaga	Wellsboro	Chippewa	Muck	Lackawanna	Morris	Arnot	Morris	Morris
Soil Type	WmB	OpD	LcB	OpB	MsB	CnB	W	LcD	ArB	ArD	CIA	OXF	WmD	CIB	Mu	LcB	MoB	ASF	MsC	MsB
Area (SF)	3,907,388	6,066,527	574,302	197,609	196,456	346,417	449,353	770,223	278,152	1,466,717	811,270	274,135	415,404	439,042	763,441	480,267	730,078	196,425	48,796	90,391
	942,390	2,200,977	761,014	494,224	1,245,296	497,187		370,938			161,716	246,084	215,284					284,269		4,517
	1,707,178	2,057,285	2,405,831	682,963	1,430,637	325,440						713,637	22,413							
	1,686,563	2,603,401		400,904	350,828	52,273						17,594								
	524,249			1,154,668	1,851,303															
				804,790																
				290,612																
				37,176																
				77,633																
				57,618																
Totals (SF)	8,767,769	12,928,190	3,741,147	4,198,196	5,074,520	1,221,317	449,353	1,141,161	278,152	1,466,717	972,986	1,251,451	653,101	439,042	763,441	480,267	730,078	480,694	48,796	94,909
Totals (Acres)	201.28	296.79	85.88	96.38	116.49	28.04	10.32	26.20	6.39	33.67	22.34	28.73	14.99	10.08	17.53	11.03	16.76	11.04	1.12	2.18
Total Parcel Area (Acres)	1037.22																			

% of Total Area	19.41%	28.61%	8.28%	9.29%	11.23%	2.70%	0.99%	2.53%	0.62%	3.25%	2.15%	2.77%	1.45%	0.97%	1.69%	1.06%	1.62%	1.06%	0.11%	0.21%
Spray Irrigation	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	Y	N	N	Y	N	N	N	N
Permeability	0.06	0.08	0.08	0.08				0.08					0.06			0.08				
Area	12.076816	23.7432318	6.441368931	7.710184954				1.964808791					0.8995882			0.826906308				0.073
Check	201.28	296.79	85.88	96.38				26.20					14.99			11.03				733
1.00	ok																			
45,192,692																				
1037.48	ok																			

Bear Creek Parcel 6

Area	733 acres										
Month	Forest Adj PE (inches)	Suitable Days	Precipitation (P) 50% Prob inches/month	Precipitation (P) 90% Prob inches/month	Perm (K) 100% inches/month	Perm (K) 10% in/month	WW Load 10% K in/month	WW Load ac-in/month	WW Load gallons/month	WW Load Suitable Day gpd	
January	0	0	2.46	2.88	0	0	0	0	0		
February	0	0	2.08	2.43	0	0	0	0	0		
March	0.62	8	2.69	3.14	13.44	1.34	0.00	0			
April	1.57	21	3.28	3.83	35.28	3.53	1.27	929	25,212,848	1,200,612	
May	3.60	30	3.69	4.31	50.40	5.04	4.32	3,170	86,079,220	2,869,307	
June	5.41	30	3.97	4.64	50.40	5.04	5.81	4,258	115,610,825	3,853,694	
July	6.00	31	3.74	4.37	52.08	5.21	6.83	5,010	136,033,678	4,388,183	
August	5.15	30	3.1	3.62	50.40	5.04	6.56	4,811	130,632,218	4,354,407	
September	3.45	30	3.86	4.51	50.40	5.04	3.98	2,918	79,231,627	2,641,054	
October	1.78	17	3.02	3.53	28.56	2.86	1.11	814	22,111,670	1,300,686	
November	0.62	12	3.12	3.65	20.16	2.02	0	0			
December	0	0	2.55	2.98	0	0	0	0			
	28.20	209	37.56	43.90			29.89				

Sources:  
 Climatology of the US No. 81 Supplement No. 1  
 Monthly Precipitation Probabilities 1970 - 2000 Normals, Pennsylvania  
 Wilkes-Barre Airport  
 Narrative Climatic Data through 1976, April 1977  
 Number of Suitable Days - Temperature > 32 C



**Alternative 5 - On-Lot Sewage Disposal System Calculations**

\*Community On-Lot Systems per PA Code 73.

Alternative 5 → Community On-Lot System (On Parcel 6)

ADF (SA1 & 2) = 150,000 gpd

Provide Dosing Tanks in series as need:

→ 3,500 gallon tanks [Total cap. = 2 x 225,000 gallons = 450,000 gallons]  
Per 73.45(3).

\* go with large CIP tanks

Provide Pressurized Distribution – Pump & Pump Tanks

Distribution piping bed > 2,500 SF 73.44 (c)

Max lateral length → 100'  
Pipe sizes as needed

Dosing Tanks → 73.45 → Min. 100 gallon capacity

Adsorption Area → 73.55 → Elevated Mounds

Min. 1 ft of sand under aggregate

Aggregate – 6" under pipes; 2" over pipes + pipe dia  $\approx$  12" ±

Adsorption Area

Apprx. # EDU's=470 (S.A.1&2)

Use flow of 400 gpd/EDU per 73.17(a)

So Peak Daily Flow = 400  $\frac{\text{gpd}}{\text{edu}}$  x 470 EDU's= 188,000 gpd

Loading = 2.5 ft<sup>2</sup>/gpd

Area: 188,000 gpd x 2.5 ft<sup>2</sup>/gpd = 470,000 ft<sup>2</sup>

5,000 ft<sup>2</sup>/bed

$\frac{470,000 \text{ ft}^2}{1} \times \frac{1 \text{ bed}}{5,000 \text{ ft}^2} = \underline{94 \text{ beds}}$