

MEMO

From: Sandra Thiel
To: Water Right File 75-7524
Date: June 28, 2017
Re: System Capacity and Recommended Rate

The storage vault below the spring has the following dimensions: 24 long X 16 feet wide with a water depth of 6 feet

$24 \times 16 \times 6 = 2,304$ cubic feet

Pump room $8' \times 8' \times 6 = 384$

Water storage vault $2,304 - \text{pump room } 384 = 1,920$ cubic feet

Convert cubic feet to acre feet $1,920 / 43560.0004435 = 0.044$ af

$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$

$0.04 \text{ rate} \times 1 \text{ day} \times 1.9835 = 0.08 \text{ AF}$

The storage capacity of the vault is 0.044 AF which is less than 0.08. No storage use is required.

Fill:

$1,920 \text{ cubic feet} \times 7.48052 \text{ (conversion from cubic feet to gallons)} = 14,362.6$ gallons of storage in the vault

Measurements averaged 0.04 cfs

$0.04 \text{ cfs} \times 3600 \text{ (seconds in an hour)} = 144$ cubic feet per hour

$1,920 \text{ cubic feet storage capacity} / 144 \text{ cubic feet per hour} = 13$ hours to fill the vault

Empty:

Three sprinklers at 50 gallons per minute each (see attached big gun performance attachment) for 150 gallons per minute

$150 \text{ gpm} / 448.8 = 0.33$ cfs

$150 \text{ gallons per minute} \times 60 = 9,000$ gallons per hour

$14,362 \text{ gallons storage capacity} / 9,000 = 1.6$

1.6 hours to empty the vault 150 gallons per minute

$5 \text{ acres} \times 0.03 = 0.15$ cfs

Permit allows 0.12 cfs

The system capacity based on the sprinklers as shown above is 0.33 cfs

Measurements averaged 0.04 cfs

Recommended Rate 0.04 cfs

BIG GUN® PERFORMANCE (U.S. UNITS)

Flow and diameter (feet) information at various pressures with different nozzle sizes. (See information at bottom of page 11)

75 TAPER RING NOZZLE — 24° TRAJECTORY

PSI	0.4"		0.45"		0.5"		0.55"		0.6"		0.65"		0.7"		0.75"		0.8"	
	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.
25*	—	—	—	—	—	—	42	146	50	155	59	161	69	167	80	174	91	182
30*	—	—	—	—	37	158	45	158	55	165	64	172	75	182	87	187	99	192
35	—	—	32	154	40	164	49	172	59	178	69	191	81	196	93	202	106	208
40	27	149	35	160	43	171	52	180	63	190	74	198	87	204	98	213	112	221
45	29	155	37	167	46	180	56	189	67	198	79	206	91	214	104	223	118	230
50	30	161	39	174	48	186	59	195	70	203	83	212	95	220	109	230	123	237
55	32	165	41	179	50	193	62	203	74	213	87	221	100	230	115	239	130	247
60	33	169	42	184	53	198	64	208	77	220	91	228	104	237	120	245	136	254
65	35	172	44	189	55	205	67	216	80	227	95	237	109	247	125	254	142	263
70	36	175	45	194	57	210	69	221	83	232	98	243	113	254	129	260	147	270
75	37	179	47	201	59	217	72	228	86	239	101	250	117	261	134	268	153	277
80	39	182	49	207	61	222	74	234	89	244	105	256	121	266	138	274	158	283

* Operating at pressures above 80 PSI provides better performance.

100 TAPER BORE NOZZLE — 24° TRAJECTORY

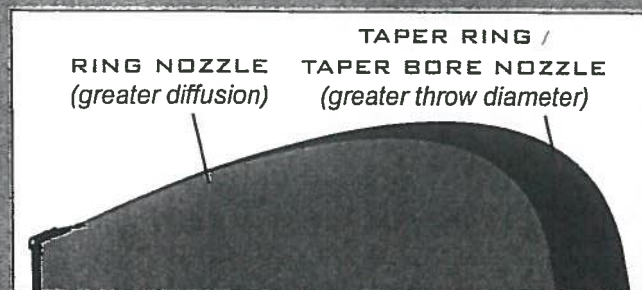
PSI	0.6"		0.65"		0.7"		0.75"		0.8"		0.85"		0.9"		1.0"	
	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.
40	47	191	57	202	66	213	78	222	91	230	103	240	118	250	134	256
50	50	205	64	215	74	225	87	235	100	245	115	256	130	265	150	273
60	55	215	69	227	81	240	96	250	110	260	126	270	143	280	164	288
70	60	225	75	238	88	250	103	263	120	275	136	283	155	295	177	302
80	64	235	79	248	94	260	110	273	128	285	146	295	165	305	189	314
90	68	245	83	258	100	270	117	283	135	295	155	305	175	315	201	326
100	72	255	87	268	106	280	123	293	143	305	163	316	185	325	212	336
110	76	265	92	278	111	290	129	303	150	315	171	324	195	335	222	344

150 TAPER BORE NOZZLE — 24° TRAJECTORY

PSI	0.7"		0.8"		0.9"		1.0"		1.1"		1.2"		1.3"		1.4"	
	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.
50	100	250	130	270	165	290	205	310	255	330	300	345	350	360	408	373
60	110	265	143	285	182	305	225	325	275	345	330	365	385	380	446	396
70	120	280	155	300	197	320	245	340	295	360	355	380	415	395	483	412
80	128	290	165	310	210	335	260	355	315	375	380	395	445	410	516	427
90	135	300	175	320	223	345	275	365	335	390	405	410	475	425	547	442
100	143	310	185	330	235	355	290	375	355	400	425	420	500	440	577	458
110	150	320	195	340	247	365	305	385	370	410	445	430	525	450	605	471
120	157	330	204	350	258	375	320	395	385	420	465	440	545	460	632	481

200 TAPER BORE NOZZLE — 27° TRAJECTORY

PSI	1.05"		1.1"		1.2"		1.3"		1.4"		1.5"		1.6"		1.75"		1.9"	
	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.	GPM	DIAM. FT.
60	250	345	285	355	330	375	385	390	445	410	515	430	585	445	695	470	825	495
70	270	360	310	380	355	395	415	410	480	430	555	450	630	465	755	495	890	515
80	290	375	330	395	380	410	445	430	515	450	590	470	675	485	805	515	950	535
90	310	390	350	410	405	425	475	445	545	465	625	485	715	505	855	535	1005	555
100	325	400	370	420	425	440	500	460	575	480	660	500	755	520	900	550	1060	575
110	340	410	390	430	445	450	525	470	605	495	695	515	790	535	945	565	1110	590
120	355	420	405	440	465	460	545	480	630	505	725	530	825	550	985	580	1160	605
130	370	425	425	445	485	465	565	485	655	515	755	540	860	560	1025	590	1210	620



See opposite page for nozzle descriptions.

RING NOZZLE



TAPER BORE NOZZLE



TAPER/RING NOZZLE

