

4-9-85

T-1

Critical Casing Storage Times

Well	Q (gpm)	assumed t_c (min)	S (at assumed t_c) (ft)	Q/ S gpm/ft	Calculated t_c (min)
PSMW-1	0.22	6.0	2.8	0.079	11.5
-2	0.068	18.0	3.0	0.023	39.6
-3	1.3	0.9	4.1	0.317	2.9
-6	1.05	3.5	2.9	0.362	2.5
-8a	2.28	0.65	2.0	1.14	0.8

$$t_c = \frac{0.6 (d_c^2 - d_p^2)}{q/s} = \frac{0.910}{q/s}$$

$$d_c = 2.067 \text{ in}$$

$$d_p = 1.66 \text{ in}^2$$

4-10-85

T-2

Recharge Condition

Well	$\frac{h}{L}$ (min.)
PSMW-1	10.4
PSMW-2	4.0
PSMW-3	134
PSMW-6	35
PSMW-8A	28

T-3

4-10-85

Entrance Velocity Through Screens

Well	Q (gpm)	b (ft)	A (in ²)	Ve (fps)
PS11.W-1	0.22	14.9	139	.0005
2	0.068	15.4	143	.0002
3	1.30	13.6	126	.003
6	1.05	9.2	86	.004
8A	2.28	16.2	151	.005

$$A = 9.3 \frac{\text{in}^2}{\text{ft}} \times b(\text{ft})$$

$$V_e = \frac{Q \frac{\text{gal}}{\text{min}}}{A \frac{\text{in}^2}}{7.48 \frac{\text{gal}}{\text{ft}^3}} \times \frac{1 \text{ft}^3}{144 \text{in}^2} \times \frac{1 \text{min}}{60 \text{sec}}$$

$$V_e = \frac{0.321 Q}{A}$$

where

Q = pumping rate, in gpm

A = entrance area in screen, in sq. in.

Ve = entrance velocity, in fps

Note: Pipe base has 84 - $\frac{3}{8}$ dia. holes / foot = 9.3 in²/ft.
Wire wrap has 10.8 in²/ft at .010" slots

49-85

T - 4
Adjusted T Values

Well	T_1 (gpd/ft)	$T_1 \times 4$ (gpd/ft)	T_2 (gpd/ft)	Selected \bar{T} (gpd/ft)	Q/s (gpm/ft)
PSMW-1	27	108		108^{21}	0.079
2	6	24		24^{21}	0.023
3	100	400	858^{11}	400^{21}	0.317
6	100	400	480^{31}	480^{31}	0.362
8	365	1460	1505^{31}	1505^{31}	1.14

$$T_2 = \frac{4 T_1}{E}$$

$$E = 100\% = 1.00$$

- ¹¹ Recharge affected
- ²¹ Computed from T_1
- ³¹ From time-drawdown curve after t_c

T = 5

4-10-85

Validity of Jacob Soln

$u \approx 0.01$

~~$u \approx 0.05$~~

$Wu = 4.04$

~~$Wu = 2.47$~~

$ST = Wu (114.6) (Q)$

$S = \frac{W(u) (114.6) (Q)}{T} = \frac{4.04 (114.6) (Q)}{T} = \frac{463 Q}{T}$

$u = 0.01$

Well

	Q	T	$\frac{S}{(Q)}$
1	.22	108	0.9
2	.068	24	1.3
3	1.3	400	1.5
β	1.05	480	1.0
84	2.28	1505	0.7

Hydraulic Conductivities Adjusted For Casing Storage

Well	T (gpd/ft)	b ^{1/2} (ft)	K (ft/day)	Previous K (ft/day)
PSMW-1	108	14.9	0.97	0.20
PSMW-2	24	15.4	0.21	0.04
PSMW-3	400	13.6	3.9	0.71
PSMW-6	480	9.2	7.0	1.1
PSMW-8A	1505	16.2	12.4	5.9

1/ Average during test.

$$T \frac{\text{gal}}{\text{day} \cdot \text{ft}} \times \frac{\text{ft}^2}{7.48 \text{ gal}} \times \frac{1}{b \text{ ft}} = K \frac{\text{ft}}{\text{day}}$$

T-7
K - Values

Bjorklund & Maxwell, 1961

$$12 \frac{\text{gpd}}{\text{ft}^2}$$

—

$$840 \frac{\text{gpd}}{\text{ft}^2}$$

or

$$1.6 \text{ ft/day}$$

—

$$112 \text{ ft/day}$$

Person Station Aquifer Test Values

$$0.21 \text{ ft/day}$$

—

$$12.4 \text{ ft/day}$$

Previous Unadjusted Aquifer Test Values

$$0.04 \text{ ft/day}$$

—

$$5.9 \text{ ft/day}$$

T - 8

4 Not Stabilized
21 for portion of curve used

Step test Data

Well	Available Drawdown b (ft)	a (cpm)	set (ft)	t (min)	s/b (%)
PSMW-1	18.0	0.14	1.04	6.0	6
		* 0.22	2.8 ³	12.0	16
		1.60	13.9 ⁴	1.0	77
PSMW-2	18.6	* 0.068	3.0 ³	20.0	16
		0.40	12.05	1.0	70
		1.48	13.05 ¹	6.0	70
PSMW-3	18.1	1.12	3.93	110	22
		* 1.3	4.1 ³	0.9	23
		1.73	5.66	25.0	31
		2.21	10.74	20.0	59
PSMW-6	12.6	* 1.05	3.9	35	31
		1.6	9.01	5.0	72
PSMW-8A	18.7	1.48	1.75	2.5	9
		1.74	2.08	2.0	11
		1.86	2.19	2.0	12
		1.98	2.43	2.0	13
		2.10	2.54	1.0	14
		* 2.28	3.0	0.65	16

* Constant Rate Test