Appendix A

Summary of Monitor Well Information

MONITOR WELL REPORT FOR GUNNISON
REPORT DATE: 7/10/2000 2:56 pm

LOCATION CODE	INSTALL DATE	NORTH COORD. (FT STATE-PLANE)	EAST COORD. (FT STATE-PLANE)	GROUND ELEV. (FT NGVD)	BORE HOLE DEPTH (FT BLS)	BORE HOLE DIA. (INCHES)	TOP OF CASING ELEV. (FT NGVD)	WELL DEPTH (FT BLS)	CASING DIAMETER (INCHES)	TOP OF SCREEN DEPTH (FT BLS)	SCREEN LENGTH	ZONE OF COMPL.	STATUS
001	09/1983	258100.51	1588241.49	7653.90	20.0	6.875	7653.87	18.00	2.0	8.0	5.00	AL	Active
002	09/1983	257024.23	1588219.26	7646.93	20.0	6.875	7649.26	20.00	2.0	10.0	5.00	AL	Active
003	09/1983	257392.74	1586894.41	7647.95	20.0	6.875	7649.69	20.00	2.0	10.0	5.00	AL	Active
004	09/1983	257028.86	1587595.19	7662.42	40.0	6.875	7664.41	40.00	2.0	30.0	5.00	AL	Abandoned
005	09/1983	256740.29	1586946.30	7644.40	20.0	6.875	7645.66	20.00	2.0	10.0	5.00	AL	Active
006	09/1983	256218.08	1587452.00	7645.10	20.0	6.875	7647.19	20.00	2.0	10.0	5.00	AL	Active
007	09/1983	256170.13	1587683.40	7644.20	21.0	6.875	7646.21	21.00	2.0	11.0	5.00	AL	Abandoned
008	09/1983	256117.28	1587685.95	7643.92	50.0	12.875	7645.41	50.00	8.0	30.0	20.00	AL	Abandoned
009	09/1983	256016.92	1587625.87	7644.01	20.0	6.875	7645.38	20.00	2.0	10.0	5.00	AL	Active
010	09/1983	256007.65	1587265.30	7643.95	18.0	6.875	7645.90	18.00	2.0	8.0	5.00	AL	Abandoned
011	09/1983	256019.15	1586999.27	7642.65	20.0	6.875	7644.45	20.00	2.0	10.0	5.00	AL	Abandoned
012	09/1983	255777.22	1587543.59	7643.25	20.0	6.875	7645.46	20.00	2.0	10.0	5.00	AL	Active
013	09/1983	255507.42	1586799.22	7641.70	21.0	6.875	7643.75	21.00	2.0	11.0	5.00	AL	Active
014	09/1983	255338.81	1587416.46	7642.11	20.0	6.875	7644.07	20.00	2.0	10.0	5.00	AL	Abandoned
041	11/1999	256046.62	1585590.42	7635.75	63.3	10.0	7637.63	63.23	6.0	30.6	30.00	AL	Active
042	11/1999	256023.46	1585576.81	7635.51	58.0	6.0	7637.33	56.50	2.0	43.6	10.00	AL	Active
043	11/1999	256020.09	1585615.72	7635.77	58.0	6.0	7637.72	56.50	2.0	43.6	10.00	AL	Active
044	11/1999	254721.26	1585635.05	7631.03	64.0	10.0	7632.10	63.36	6.0	30.7	30.00	AL	Active
045	11/1999	254682.40	1585593.58	7631.08	54.0	6.0	7632.98	53.67	2.0	40.8	10.00	AL	Active
046	11/1999	254695.45	1585666.69	7630.80	53.5	6.0	7632.82	53.19	2.0	40.5	10.00	AL	Active
047	11/1999	253874.11	1584319.59	7623.52	63.1	10.0	7625.25	63.06	6.0	30.4	30.00	AL	Active

LOCATION CODE	INSTALL DATE	NORTH COORD. (FT STATE-PLANE)	EAST COORD. (FT STATE-PLANE)	GROUND ELEV. (FT NGVD)	BORE HOLE DEPTH (FT BLS)	BORE HOLE DIA. (INCHES)	TOP OF CASING ELEV. (FT NGVD)	WELL DEPTH (FT BLS)	CASING DIAMETER (INCHES)	TOP OF SCREEN DEPTH (FT BLS)	SCREEN LENGTH	ZONE OF COMPL.	STATUS
048	11/1999	253851.98	1584304.37	7623.53	54.0	6.0	7625.38	53.76	2.0	41.0	10.00	AL	Active
049	11/1999	253852.63	1584355.92	7624.31	53.3	6.0	7626.04	53.30	2.0	40.4	10.00	AL	Active
058	09/1994	252153.90	1581442.53	7603.99	19.8	7.3	7606.72	19.80	4.0	14.8	5.00	AL	Active
059	09/1994	252236.85	1581587.06	7605.91	20.0	7.3	7606.15	20.00	4.0	15.0	5.00	AL	Active
060	09/1994	252837.34	1580397.87	7603.07	20.0	7.3	7605.33	20.00	4.0	15.0	5.00	AL	Active
061	09/1994	252891.00	1580461.67	7603.54	20.0	7.3	7605.00	20.00	4.0	15.0	5.00	AL	Active
088	09/1994	253713.63	1581439.69	7611.42	19.0	7.3	7613.72	19.00	4.0	14.0	5.00	AL	Active
096	09/1994	254974.22	1582392.12	7620.02	20.0	7.3	7621.06	20.00	4.0	15.0	5.00	AL	Active
097	09/1994	255024.96	1582247.89	7619.36	20.0	7.3	7618.92	20.00	4.0	15.0	5.00	AL	Active
101	09/1983	258095.02	1588241.42	7653.67	51.5	6.875	7653.32	51.50	2.0	41.5	5.00	AL	Active
102	09/1983	257024.54	1588225.86	7647.28	52.0	6.875	7649.21	52.00	2.0	42.0	5.00	AL	Active
103	09/1983	257393.91	1586887.73	7647.81	50.0	6.875	7649.58	50.00	2.0	40.0	5.00	AL	Active
104	09/1983	257039.75	1587596.08	7662.48	70.0	6.25	7664.49	70.00	2.0	60.0	5.00	AL	Abandoned
105	09/1983	256740.29	1586950.86	7644.56	52.0	6.875	7646.11	52.00	2.0	42.0	5.00	AL	Active
106	09/1983	256218.18	1587446.91	7645.18	55.0	6.875	7647.30	44.00	2.0	34.0	5.00	AL	Active
107	09/1983	256172.24	1587685.37	7644.87	53.0	6.875	7646.37	53.00	2.0	43.0	5.00	AL	Active
109	09/1983	256018.25	1587620.33	7644.05	60.0	6.875	7645.10	55.00	2.0	45.0	5.00	AL	Active
110	09/1983	256007.34	1587271.40	7644.02	48.5	6.875	7645.81	48.50	2.0	38.5	5.00	AL	Abandoned
111	09/1983	256021.50	1586991.21	7642.60	52.0	6.875	7644.52	52.00	2.0	42.0	5.00	AL	Abandoned
112	09/1983	255775.92	1587539.05	7643.21	50.0	6.875	7644.84	50.00	2.0	40.0	5.00	AL	Active
113	09/1983	255506.47	1586804.77	7641.91	51.0	6.875	7643.83	51.00	2.0	41.0	5.00	AL	Active
120	12/1984	256083.08	1585613.81	7635.84	41.0	6.0	7638.70	24.70	2.0	17.7	5.00	AL	Active
121	12/1984	256056.77	1585596.20	7635.77	102.5	6.0	7637.82	100.00	2.0	93.0	5.00	AL	Active

LOCATION CODE	INSTALL DATE	NORTH COORD. (FT STATE-PLANE)	EAST COORD. (FT STATE-PLANE)	GROUND ELEV. (FT NGVD)	BORE HOLE DEPTH (FT BLS)	BORE HOLE DIA. (INCHES)	TOP OF CASING ELEV. (FT NGVD)	WELL DEPTH (FT BLS)	CASING DIAMETER (INCHES)	TOP OF SCREEN DEPTH (FT BLS)	SCREEN LENGTH	ZONE OF COMPL.	STATUS
122	12/1984	256060.07	1585618.71	7635.64	100.0	6.0	7638.10	85.00	2.0	78.0	5.00	AL	Active
123	01/1985	256076.12	1585597.11	7635.78	61.0	6.0	7638.81	61.00	2.0	53.0	5.00	AL	Active
125	12/1984	254744.48	1585636.79	7631.35	24.8	6.0	7633.52	24.80	2.0	17.8	5.00	AL	Active
126	01/1985	254734.80	1585625.45	7631.36	61.0	6.0	7634.14	61.00	2.0	54.0	5.00	AL	Active
127	12/1984	254726.25	1585615.09	7631.34	103.0	6.0	7634.64	101.00	2.0	94.0	5.00	AL	Active
130	12/1984	255019.87	1587194.27	7639.63	26.0	6.0	7641.48	25.00	2.0	18.0	5.00	AL	Abandoned
132	12/1984	255020.19	1587215.38	7639.74	100.5	6.0	7641.57	100.50	2.0	93.5	5.00	AL	Abandoned
133	01/1985	256218.42	1587503.53	7645.49	21.0	6.0	7646.98	21.00	2.0	14.0	5.00	AL	Active
134	01/1985	256225.16	1587510.23	7645.57	21.0	6.0	7646.72	21.00	2.0	14.0	5.00	AL	Active
135	12/1984	253890.71	1584319.55	7623.60	25.0	6.0	7627.03	25.00	2.0	18.0	5.00	AL	Active
136	01/1985	253889.25	1584328.12	7623.36	61.0	6.0	7626.24	60.00	2.0	53.0	5.00	AL	Active
137	12/1984	253892.78	1584335.26	7624.59	112.0	6.0	7626.11	100.00	2.0	93.0	5.00	AL	Abandoned
140	01/1985	254960.89	1588515.12	7639.70	26.0	6.0	7641.76	25.00	2.0	18.0	5.00	AL	Active
141	01/1985	254947.13	1588514.59	7639.56	61.0	6.0	7641.80	60.00	2.0	53.0	5.00	AL	Active
142	01/1985	254932.05	1588514.43	7639.46	100.0	6.0	7641.40	98.50	2.0	91.5	5.00	AL	Active
145	01/1985	253454.31	1586418.89	7630.76	27.0	6.0	7632.53	25.00	2.0	18.0	5.00	AL	Abandoned
147	01/1985	253468.09	1586403.14	7630.69	101.0	6.0	7632.64	100.00	2.0	93.0	5.00	AL	Abandoned
155	01/1985	251961.57	1584356.92	7618.87	27.0	6.0	7620.70	25.00	2.0	18.0	5.00	AL	Abandoned
157	01/1985	251969.16	1584335.35	7618.84	101.0	6.0	7620.55	97.00	2.0	90.0	5.00	AL	Abandoned
160	12/1984	252904.45	1580481.68	7603.74	75.0	6.0	7604.39	58.00	2.0	51.0	5.00	AL	Active
161	11/1984	252893.50	1580474.64	7603.64	100.0	6.0	7605.63	100.00	2.0	93.0	5.00	AL	Active
163	12/1984	254663.11	1580111.40	7611.08	61.0	6.0	7613.21	61.00	2.0	54.0	5.00	AL	Active

LOCATION CODE	INSTALL DATE	NORTH COORD. (FT STATE-PLANE)	EAST COORD. (FT STATE-PLANE)	GROUND ELEV. (FT NGVD)	BORE HOLE DEPTH (FT BLS)	BORE HOLE DIA. (INCHES)	TOP OF CASING ELEV. (FT NGVD)	WELL DEPTH (FT BLS)	CASING DIAMETER (INCHES)	TOP OF SCREEN DEPTH (FT BLS)	SCREEN LENGTH	ZONE OF COMPL.	STATUS
170	11/1984	255467.63	1586810.48	7641.72	141.0	6.25	7643.92	141.00	2.0	134.0	5.00	AL	Active
181	01/1985	253295.41	1583128.56	7616.86	28.0	6.0	7619.07	25.00	2.0	18.0	5.00	AL	Active
183	01/1985	253309.56	1583115.95	7616.66	101.0	6.0	7617.82	100.00	2.0	93.0	5.00	AL	Active
184	01/1985	252870.39	1581543.66	7606.88	61.0	6.0	7608.76	60.00	2.0	53.0	5.00	AL	Abandoned
185	01/1985	252862.76	1581545.42	7606.95	101.0	6.0	7608.87	100.00	2.0	93.0	5.00	AL	Abandoned
186	01/1985	254571.86	1583989.44	7625.34	61.0	6.0	7627.21	60.00	2.0	53.0	5.00	AL	Active
187	01/1985	254570.46	1583996.53	7625.40	101.0	6.0	7627.01	100.00	2.0	93.0	5.00	AL	Active
188	01/1985	253701.31	1581431.99	7611.61	61.0	6.0	7613.65	60.00	2.0	53.0	5.00	AL	Active
189	01/1985	253692.52	1581428.10	7611.88	101.0	6.0	7613.56	100.00	2.0	93.0	5.00	AL	Active
194	01/1985	256532.59	1584375.31	7634.43	94.0	6.0	7636.26	83.00	2.0	76.0	5.00	AL	Abandoned
195	01/1985	256521.09	1584369.50	7634.22	60.0	6.0	7636.41	60.00	2.0	53.0	5.00	AL	Abandoned
196	01/1985	255029.30	1582252.99	7619.82	60.0	6.0	7621.72	60.00	2.0	53.0	5.00	AL	Active
197	01/1985	255022.91	1582240.62	7619.88	100.0	6.0	7621.70	100.00	2.0	93.0	5.00	AL	Active
198	01/1985	255102.89	1582594.52	7620.00	72.0	6.0	-	67.50	2.0	60.5	5.00	AL	Abandoned

ZONES OF COMPLETION:
AL ALLUVIUM

Appendix B

Monitor Well Logs (CD-ROM)

Appendix C

Ground Water Elevations (CD-ROM)

Appendix D

Summary of Ground Water Quality (1997–1999)

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0001	05/27/1999	220	478	-70	313	7.06	76.9	<0.001	26.4	0.582	2.51	14.9
		10/12/1999	224	467	-95	330	7.12	80.5	<0.0003	47	0.869	3.11	15
GUN01	0002	06/10/1998	215	566	97	~325	7.18	78.7	<0.001	25.9	<0.003	2.29	15.4
		09/25/1998	233	—	60	368	6.86	84.1	<0.001	26	<0.004	2.76	16.1
		05/27/1999	211	552	189	315	7.01	78.8	<0.001	22.3	<0.006	2.39	15.5
		10/12/1999	237	592	38	328	7.42	81.3	<0.0003	35.1	<0.009	2.55	15.8
GUN01	0003	09/25/1998	203	—	49	298	7.08	66.2	<0.001	3.46	0.0199	2.36	12.2
GUN01	0006	06/04/1997	129	2510	31	2300	6.38	574	<0.001	22.1	2.74	4.99	24.9
		06/10/1998	260	2370	92	~2330	6.71	586	<0.001	25.3	4.73	4.28	20
		09/30/1998	260	2540	123	2380	6.56	643	0.0016	20.9	0.164	5.77	27.4
		06/01/1999	247	2460	34	~2160	6.54	611	<0.001	28.7	2.94	4.85	26.1
		10/06/1999	264	2420	35	2280	6.96	585	0.0004	19.4	0.053	5.12	23.3
GUN01	0009	09/24/1998	188	2310	-1	2260	6.19	611	<0.001	51.9	3.72	4.09	19.1
GUN01	0012	09/24/1998	244	2480	-14	2300	6.50	625	<0.001	54.7	6.33	5.2	21.3
GUN01	0013	06/04/1997	171	477	37	260	7.17	68.4	<0.001	3.04	<0.001	2.8	9.67
		06/09/1998	158	411	72	250	7.29	63.9	<0.001	1.49	<0.003	2.3	7.82
		09/29/1998	245	422	84	268	7.29	89.7	<0.001	2.4	<0.004	2.48	9.38
		05/26/1999	227	582	251	225	6.99	100	<0.001	3.86	<0.006	2.3	12.5
		10/05/1999	253	519	4	290	7.22	86.6	<0.0003	3.28	<0.009	2.34	10.9
GUN01	0014	06/05/1997	236	1773	190	1500	6.91	383	<0.001	18.4	<0.001	3.88	27.8
		06/09/1998	199	1102	86	1060	6.65	258	<0.001	20	<0.003	3.02	17.2
		09/24/1998	203	1808	72	1450	6.26	357	<0.001	21.7	0.0575	4.5	24.5
		05/28/1999	204	2070	91	1780	6.56	463	<0.001	44.9	0.0742	3.81	30.3
		10/06/1999	226	1852	20	1470	6.96	390	<0.0003	27.1	0.0415	4.28	25.3

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0001	05/27/1999	0.0736	2.02	11.7	<0.26	<0.14	<0.78	19.7	<0.001	0.0025
		10/12/1999	0.17	2.38	12.3	<0.06	<0.14	<0.93	18.1	<0.0001	~0.0023
GUN01	0002	06/10/1998	<0.001	4.93	9.68	<0.11	<0.14	<0.56	22.7	---	0.0028
		09/25/1998	0.0068	5.72	11.6	0.14	0.19	<0.7	20.8	<0.001	0.0031
		05/27/1999	<0.001	4.56	9.76	<0.14	0.09	<0.43	20.3	<0.001	0.0025
		10/12/1999	0.0019	6.38	11.2	<0.08	0.15	<0.82	21.1	0.0002	~0.0022
GUN01	0003	09/25/1998	0.0085	3.03	5.36	<0.14	0.16	<0.69	17.4	<0.001	0.0232
GUN01	0006	06/04/1997	2.85	0.38	12.8	<0.19	0.09	<0.9	1330	---	0.88
		06/10/1998	2.38	<0.143	11	<0.06	<0.16	<0.63	1390	---	1.22
		09/30/1998	1.43	0.83	14.9	<0.07	<0.11	<0.56	1340	<0.001	0.947
		06/01/1999	1.83	0.541	12.9	<0.1	<0.16	<0.93	1290	<0.001	0.921
		10/06/1999	0.557	0.428	12.5	<0.09	<0.13	<0.74	~1300	<0.0001	0.903
GUN01	0009	09/24/1998	1.28	2.67	13.8	<0.06	0.16	<0.73	1060	<0.001	1.09
GUN01	0012	09/24/1998	2.16	1.04	15.5	<0.05	<0.11	<0.69	1120	<0.001	1.16
GUN01	0013	06/04/1997	<0.001	6.33	4.1	<0.15	0.14	<0.7	43.7	---	0.0439
		06/09/1998	<0.001	1.06	4.39	<0.11	<0.15	<0.6	42.2	---	0.0417
		09/29/1998	<0.001	1.06	5.79	<0.08	<0.12	<0.78	28.9	<0.001	0.0647
		05/26/1999	<0.001	3.85	4.22	<0.22	<0.14	<0.83	53.8	<0.001	0.0582
		10/05/1999	<0.0008	0.234	4.54	<0.06	<0.12	<0.71	24.9	<0.0001	0.04
GUN01	0014	06/05/1997	0.594	6.98	11.4	<0.22	0.06	<0.7	801	---	0.62
		06/09/1998	0.173	2.21	8.81	<0.12	<0.15	<0.61	549	---	0.494
		09/24/1998	0.0159	0.922	11.9	<0.11	<0.11	<0.68	732	<0.001	0.608
		05/28/1999	2.53	1.39	12.3	0.12	<0.15	<0.86	959	<0.001	0.947
		10/06/1999	0.068	0.638	12.6	<0.07	<0.12	<0.7	813	<0.0001	0.692

decommissioned Gravel Pit

C38

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0058	06/04/1997	210	580	168	358	7.02	84.7	<0.001	9.02	0.0041	2.02	19.2
		06/11/1998	199	530	100	~315	6.90	73.1	<0.001	6.72	0.0259	1.82	15.2
		06/11/1998	---	---	---	~317	---	73	<0.001	6.94	0.0271	1.81	15.2
		09/28/1998	205	554	78	~303	6.69	81.8	<0.001	5.77	0.0512	2.31	16.8
		05/26/1999	144	502	77	467	6.81	73.9	<0.001	10.9	<0.0507	1.81	15.5
		10/11/1999	209	507	-24	305	6.89	71.5	<0.0003	4.98	0.0348	1.99	14.4
GUN01	0059	06/04/1997	243	761	223	502	7.15	116	<0.001	5.37	<0.001	2.42	26
		06/10/1998	217	697	92	~432	6.93	101	<0.001	8.08	<0.003	1.79	20.7
		09/29/1998	203	619	101	380	6.59	92.7	<0.001	5.17	0.0119	2.08	18.6
		05/26/1999	195	620	77	383	6.87	93.6	<0.001	6.11	<0.0215	1.8	19.5
		10/11/1999	209	539	-8	325	6.81	77.8	<0.0003	5.06	<0.009	1.81	15.6
GUN01	0060	10/02/1998	133	289	44	137	6.63	39.9	<0.001	1.56	<0.004	1.24	8.23
		05/26/1999	114	338	84	198	6.90	47.3	<0.001	1.88	<0.006	1.11	9.95
		10/13/1999	125	234	12	113	7.18	31.1	<0.0003	0.801	<0.009	1.03	6.24
GUN01	0061	10/01/1998	118	300	36	152	6.95	40.1	<0.001	1.61	<0.004	1.29	8.27
		05/26/1999	107	337	73	208	6.96	48.2	<0.001	<5.24	<0.007	1.13	10.2
		10/13/1999	107	238	24	120	7.00	31.2	<0.0003	0.852	<0.009	1.04	6.27
GUN01	0088	06/03/1997	108	245	9	137	7.10	31.1	<0.001	1.41	<0.001	1	6.99
		06/11/1998	95	249	37	~133	6.87	32.6	<0.001	1.05	<0.003	0.908	6.66
		09/29/1998	111	262	36	135	7.01	35.7	<0.001	0.882	<0.004	1.15	7.24
		05/27/1999	78	236	-17	155	7.08	37	<0.001	2.01	<0.006	0.96	7.65
		05/27/1999	---	---	---	155	---	37.2	<0.001	1.74	<0.0077	0.991	7.71
		10/08/1999	108	293	21	137	7.06	39.6	<0.0003	1.54	<0.009	1.06	7.91
GUN01	0096	10/02/1998	107	253	36	130	6.69	34.3	<0.001	0.816	<0.004	1.02	7.18
		05/26/1999	97	243	276	150	6.66	33.3	<0.001	1.16	<0.006	0.78	7
		10/12/1999	144	253	15	135	6.91	33.6	<0.0003	1	<0.009	0.9	6.88

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0058	06/04/1997	0.757	0.0228	6.67	<0.12	<0.1	<1.2	80.2	---	0.0071
		06/11/1998	1.07	<0.0286	6.3	0.14	<0.12	<0.49	61.9	---	0.0061
		06/11/1998	1.06	<0.0226	6.28	<0.14	<0.13	<0.51	61.9	---	0.006
		09/28/1998	1.21	1.44	8.13	<0.12	0.13	<0.79	69.6	<0.001	0.0061
		05/26/1999	1.09	<0.01	5.97	<0.14	<0.15	<0.84	63.3	<0.001	0.0052
		10/11/1999	1.17	0.49	6.41	<0.09	<0.13	<0.85	62.3	<0.0001	~0.0048
GUN01	0059	06/04/1997	0.219	0.33	7.39	<0.2	0.14	<0.7	159	---	0.0209
		06/10/1998	0.92	<0.0708	6.58	<0.13	<0.13	<0.5	125	---	0.008
		09/29/1998	0.809	0.775	6.69	<0.08	0.23	<0.79	100	<0.001	0.0063
		05/26/1999	0.846	0.0619	6.32	<0.16	<0.15	<0.83	98.4	<0.001	0.0067
		10/11/1999	0.671	0.2	6.49	<0.13	<0.12	<0.8	79.2	<0.0001	~0.0044
GUN01	0060	10/02/1998	0.0532	0.219	3.19	<0.07	<0.12	<0.62	23.6	<0.001	0.0019
		05/26/1999	0.042	0.0275	3.52	<0.09	<0.16	<0.88	39.1	<0.001	0.0028
		10/13/1999	0.0222	<0.0295	3.45	<0.12	<0.14	<0.88	16.2	<0.0001	0.0006
GUN01	0061	10/01/1998	0.107	0.338	4.64	<0.08	<0.11	<0.58	26.8	<0.001	0.002
		05/26/1999	0.119	0.0476	4.3	<0.17	<0.13	<0.79	---	<0.001	0.0031
		10/13/1999	0.0645	0.0671	3.47	<0.19	<0.13	<0.86	17.5	<0.0001	0.0007
GUN01	0088	06/03/1997	<0.001	0.376	3.66	<0.17	0.06	<0.7	18.5	---	0.0013
		06/11/1998	<0.001	0.42	3.6	<0.09	<0.12	<0.5	21.3	---	0.0012
		09/29/1998	<0.001	0.473	3.84	<0.08	<0.13	<0.9	21.8	<0.001	0.001
		05/27/1999	<0.001	0.453	3.4	<0.08	<0.15	<0.85	22.5	<0.001	0.0014
		05/27/1999	<0.001	0.462	3.51	<0.12	<0.15	<0.85	22.8	<0.001	0.0014
		10/08/1999	<0.0019	<0.0313	4.05	<0.1	<0.13	<0.86	31	<0.0001	~0.0008
GUN01	0096	10/02/1998	<0.001	0.358	4.83	<0.09	<0.11	<0.57	15.9	<0.001	<0.001
		05/26/1999	<0.001	0.237	3.28	<0.25	<0.15	<0.85	18.9	<0.001	0.0011
		10/12/1999	0.0011	0.0858	3.67	<0.07	<0.15	<0.95	18.8	<0.0001	~0.0011

15-20 ft screen shallow @ Cul de sac by Tomenah Crk

15-20 ft screen shallow @ Cul de sac

15-20 ft deep screen Sh - dry tank wells by Gun R

Sh 15-20 ft screen dry tank wells by Gun River

14-19 ft screen on NF Gun Riv

C39

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0097	10/01/1998	117	236	45	130	6.96	32.5	<0.001	0.605	<0.004	1.14	6.49
		05/27/1999	82	223	175	132	6.77	31	<0.001	1.04	<0.006	0.867	6.35
		05/27/1999	—	—	—	143	—	31.2	<0.001	1.02	<0.0068	0.914	6.37
		10/12/1999	94	212	41	110	6.96	28.7	<0.0003	0.671	<0.009	0.95	5.58
GUN01	0101	05/27/1999	209	494	203	277	7.40	70.2	<0.001	20.6	<0.006	2.15	14.9
		10/12/1999	194	474	-65	250	7.60	63.5	<0.0003	19.7	<0.009	1.97	13.6
GUN01	0102	06/10/1998	243	599	79	~337	7.41	85.2	<0.001	21.5	<0.003	1.69	17.9
		09/25/1998	278	—	34	355	7.28	87.3	<0.001	21.8	<0.004	1.84	18.1
		05/27/1999	240	597	-43	365	7.13	86.2	<0.001	20.1	<0.006	1.75	18.1
		10/12/1999	236	572	-40	323	7.72	84.4	<0.0003	18	<0.009	1.6	17.4
GUN01	0103	09/25/1998	203	—	-38	308	6.92	67.8	<0.001	4.28	0.0119	2.05	14.6
GUN01	0106	06/04/1997	35	—	29	1760	5.28	399	0.0012	21.3	2.77	3.72	31.2
		06/04/1997	—	—	—	1760	—	403	0.0011	21.3	2.81	3.73	31.4
		06/10/1998	40	1857	84	~1720	5.62	375	0.0014	25.8	2.57	3.36	27.3
		06/10/1998	—	—	—	~1730	—	387	0.001	25.7	2.64	3.46	28.2
		09/30/1998	38	1938	48	1700	5.34	406	0.0021	23.4	2.21	3.74	28.9
		06/01/1999	37	1901	-103	~1700	5.23	401	0.0014	28.4	2.32	3.72	28.8
		10/06/1999	22	1884	12	1720	5.43	393	0.0018	27	1.89	3.46	26.3
GUN01	0107	09/24/1998	86	829	-41	727	5.85	131	0.0012	27.4	0.0842	2.43	25.2
GUN01	0109	09/24/1998	70	1735	-34	253	5.73	285	<0.001	35.6	0.17	3.18	46.2
GUN01	0112	09/24/1998	82	1622	-55	1420	5.88	285	0.0186	35.5	0.0885	3	38.6
GUN01	0113	06/05/1997	204	1584	138	1320	6.72	319	<0.001	9.7	0.0772	3.26	29.3
		06/09/1998	208	1032	85	1160	6.59	276	<0.001	9.5	0.0588	2.82	24.3
		09/29/1998	195	992	60	867	6.57	213	<0.001	5.5	0.063	2.6	19.4
		05/26/1999	196	1184	16	235	6.51	215	<0.001	6.39	0.126	2.69	20.9
		10/05/1999	182	895	23	632	6.74	159	<0.0003	4.16	<0.072	2.33	14.3

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0097	10/01/1998	<0.001	0.509	2.92	<0.09	<0.12	<0.62	12.4	<0.001	0.001
		05/27/1999	<0.001	0.898	3.18	<0.33	<0.15	<0.86	16.2	<0.001	<0.001
		05/27/1999	<0.001	0.898	2.98	<0.25	<0.14	<0.84	16.2	<0.001	<0.001
		10/12/1999	0.0011	0.196	3.11	<0.05	<0.12	<0.81	13.6	<0.0001	~0.0003
GUN01	0101	05/27/1999	0.0031	3.85	5.87	<0.16	<0.15	<0.87	17.7	<0.001	0.0036
		10/12/1999	<0.0018	4.5	5.74	<0.05	<0.13	<0.81	17.5	<0.0001	~0.0031
GUN01	0102	06/10/1998	<0.001	5.67	6.95	<0.06	<0.13	<0.51	23.6	---	0.0043
		09/25/1998	0.001	6.11	8.62	<0.1	<0.11	<0.72	21.7	<0.001	0.0043
		05/27/1999	<0.001	5.71	6.54	<0.17	<0.14	<0.84	23.2	<0.001	0.004
		10/12/1999	0.0008	5.78	7	<0.07	<0.13	<0.82	22.5	<0.0001	~0.0035
GUN01	0103	09/25/1998	1.5	3.6	12	<0.07	<0.11	<0.72	36.3	<0.001	0.0074
GUN01	0106	06/04/1997	20	0.0327	19.9	<0.18	0.05	<1	1110	---	<0.001
		06/04/1997	20.3	<0.029	20.2	<0.2	0.11	<0.8	1110	---	<0.001
		06/10/1998	18.6	<0.0936	18.6	<0.05	<0.16	<0.65	1100	---	<0.001
		06/10/1998	18.1	<0.0621	19.1	<0.07	<0.14	<0.58	1080	---	<0.001
		09/30/1998	19.1	0.39	20.9	<0.06	<0.11	<0.57	1040	<0.001	<0.001
		06/01/1999	18.6	0.077	19.3	<0.1	<0.15	<0.88	1000	<0.001	<0.001
		10/06/1999	16.9	<0.0419	18.4	<0.05	<0.13	<0.77	~1050	<0.0001	<0.0002
GUN01	0107	09/24/1998	9.99	1.16	26.6	<0.07	<0.11	<0.7	316	<0.001	0.004
GUN01	0109	09/24/1998	20.9	0.351	29.5	<0.05	<0.15	<0.97	827	<0.001	0.0021
GUN01	0112	09/24/1998	19.5	1.1	28.4	<0.09	<0.11	<0.68	790	<0.001	0.0045
GUN01	0113	06/05/1997	7.37	0.0254	16.1	<0.17	<0.04	<0.8	721	---	0.361
		06/09/1998	6.43	<0.0863	14.8	<0.09	<0.14	<0.55	639	---	0.326
		09/29/1998	5.01	0.42	13.7	<0.12	<0.11	<0.73	422	<0.001	0.229
		05/26/1999	5.29	0.0264	14.6	<0.14	<0.14	<0.82	436	<0.001	0.226
		10/05/1999	3.55	<0.0157	12.1	<0.06	<0.13	<0.73	278	<0.0001	0.17

15-20 ft screen
west of NF Gunnison River
in Subdivision

@ airport
int - 42-47 ft screen

@ airport int
42-47 ft screen

int @ airport 42-47 ft
screen

int 34-39 ft screen
on main
mill site

on mill 43-48 ft
site screen

on mill site int
45-50 ft screen

int = 40-45 ft screen

int - 41-46 ft
corner of mill site

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Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0120	06/11/1998	178	370	35	~227	7.44	54.6	<0.001	4.41	<0.003	2.61	10.4
		06/11/1998	---	---	---	~220	---	58.9	<0.001	4.45	0.0106	2.58	10.8
		09/29/1998	188	384	99	215	7.74	55.7	<0.001	5.8	0.0164	3.22	10.4
		05/28/1999	136	299	36	193	8.11	43.7	<0.001	2.19	<0.0226	2.38	7.97
		10/07/1999	149	375	89	237	7.67	53.5	<0.0003	6.87	0.01	2.64	9.72
GUN01	0121	06/11/1998	249	525	-139	~340	7.20	76.1	<0.001	4.18	0.388	4.21	14.8
		09/29/1998	156	372	9	233	7.82	67.9	<0.001	3.78	0.255	4.31	13.6
		05/28/1999	157	396	-125	247	7.67	64	<0.001	4	0.135	4.33	12.6
		10/07/1999	117	309	-96	150	8.51	40.5	<0.0003	3.79	<0.009	3.16	8.81
GUN01	0122	06/04/1997	286	798	106	467	6.74	118	<0.001	4.17	0.259	8.77	21.9
		06/11/1998	404	755	-50	~438	6.81	117	<0.001	4.5	0.212	8.07	19.9
		09/29/1998	410	824	108	452	6.81	122	<0.001	4.13	0.0985	8.23	20.9
		05/28/1999	395	838	1	485	6.72	126	<0.001	4.27	0.287	8.81	21.5
		10/07/1999	409	819	8	455	7.00	118	<0.0003	4.32	0.311	8.09	19.7
GUN01	0123	06/11/1998	164	384	60	~225	6.86	55.7	<0.001	3.75	<0.003	2.33	10.5
		09/29/1998	199	426	58	210	7.18	62.1	<0.001	6.2	0.0411	2.78	11.9
		05/28/1999	142	335	108	205	6.75	48.2	<0.001	<2.98	<0.0087	2.1	9.04
		10/07/1999	175	409	0	230	7.00	57.2	<0.0003	8.13	<0.009	2.44	10.8
GUN01	0125	06/05/1997	208	634	90	2900	7.16	87.1	<0.001	5.16	<0.001	2.42	20.1
		06/10/1998	216	638	112	~385	7.14	82.5	<0.001	5.52	<0.003	3.43	17.4
		10/01/1998	229	523	66	302	7.14	72.7	<0.001	3.92	<0.004	2.33	15
		06/02/1999	212	575	109	~345	6.89	82.6	<0.001	4.96	<0.013	2.26	17.3
		10/06/1999	225	492	18	235	7.34	70.7	<0.0003	4.44	<0.009	2.24	14.1
		10/06/1999	---	---	---	252	---	69.7	<0.0003	4.38	<0.009	2.21	14

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L	
GUN01	0120	06/11/1998	0.384	<0.245	6.03	<0.13	<0.14	<0.57	24.7	---	0.0028	sh - 18-23 ft well cluster 41
		06/11/1998	0.49	<0.241	7.45	<0.1	<0.14	<0.58	24.8	---	0.0029	
		09/29/1998	0.411	1.13	7.73	<0.08	0.12	<0.78	20.7	<0.001	0.0024	
		05/28/1999	0.247	0.0951	5.16	<0.21	<0.15	<0.86	19.1	<0.001	0.0015	
		10/07/1999	0.394	<0.01	6.39	<0.08	<0.12	<0.74	18	<0.0001	0.0016	
GUN01	0121	06/11/1998	0.0998	<0.0312	13.5	<0.1	0.14	<0.53	34.1	---	0.0027	deep - 93-98 ft well cluster 41
		09/29/1998	0.093	1.34	14.3	<0.06	0.57	<0.76	30.6	<0.001	0.002	
		05/28/1999	0.0788	0.134	13.4	<0.16	0.58	<0.81	30.1	<0.001	0.0015	
		10/07/1999	0.0358	<0.0387	9.3	<0.08	0.51	<0.71	28.1	<0.0001	0.0008	
GUN01	0122	06/04/1997	0.142	0.0317	23.3	<0.13	0.2	<0.4	35.3	---	<0.001	deep 78-83 ft well cluster 41
		06/11/1998	0.143	<0.011	21.7	<0.06	<0.13	<0.52	37.4	---	0.0011	
		09/29/1998	0.114	1.32	22.3	<0.06	0.34	<0.75	35	<0.001	0.0011	
		05/28/1999	0.141	0.0775	23.4	<0.12	<0.14	<0.85	35.7	<0.001	<0.001	
		10/07/1999	0.123	<0.0161	22.6	<0.08	<0.12	<0.73	35.1	<0.0001	0.0003	
GUN01	0123	06/11/1998	0.186	<0.0489	5.59	<0.12	<0.13	<0.53	27.7	---	0.0022	int 53-58 well cluster 41
		09/29/1998	0.0476	0.793	5.64	<0.08	0.17	<0.76	17.6	<0.001	0.0027	
		05/28/1999	0.191	0.0455	4.44	<0.17	<0.15	<0.86	24.4	<0.001	<0.001	
		10/07/1999	0.377	<0.0213	5.34	<0.07	<0.12	<0.73	16.1	<0.0001	0.0015	
GUN01	0125	06/05/1997	0.248	0.0522	15.4	<0.1	0.09	<0.7	101	---	0.019	sh 18-23 ft well cluster 44
		06/10/1998	0.222	<0.0773	14	<0.13	<0.16	<0.63	112	---	0.0183	
		10/01/1998	0.188	0.326	12.3	<0.09	<0.18	<0.88	40.8	<0.001	0.0147	
		06/02/1999	0.215	0.144	13.8	0.11	<0.14	<0.86	70.1	<0.001	0.0158	
		10/06/1999	0.169	<0.0631	10.7	<0.07	<0.14	<0.81	33.5	<0.0001	0.0123	
		10/06/1999	0.166	<0.0492	10.6	<0.07	<0.12	<0.75	34.1	<0.0001	0.0119	

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Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0126	06/05/1997	231	543	91	322	7.17	76.9	<0.001	4.01	0.0177	3.32	15.8
		06/10/1998	208	523	101	~293	7.26	73.8	<0.001	4.48	<0.003	2.59	13.4
		10/01/1998	259	1217	52	870	6.92	181	<0.001	5.66	0.0198	3.35	40.8
		06/02/1999	199	478	114	~282	6.94	73.5	<0.001	4.07	<0.0064	2.68	13.5
		10/06/1999	257	949	-55	808	7.16	170	<0.0003	6.43	0.015	3.06	37.8
GUN01	0127	06/05/1997	251	1533	100	1270	7.14	259	<0.001	5.65	<0.001	2.93	66.5
		06/10/1998	258	1532	107	~1190	7.26	254	<0.001	5.92	<0.003	2.92	59.9
		10/01/1998	260	1515	78	1190	7.20	252	<0.001	5.25	<0.004	2.72	59.3
		06/02/1999	260	1509	98	~1180	7.00	253	<0.001	6	<0.0123	2.78	59.3
		10/07/1999	273	1389	51	1120	7.34	229	<0.0003	5.98	<0.009	2.46	53.1
		10/07/1999	---	---	---	1080	---	228	<0.0003	5.94	<0.009	2.46	52.5
GUN01	0130	06/03/1997	230	1422	27	1110	6.81	272	<0.001	9.92	0.008	3.15	26
		06/09/1998	178	447	78	375	6.98	102	<0.001	2.84	<0.003	2.08	8.44
		09/24/1998	213	942	66	570	6.52	179	<0.001	7.12	<0.004	3.12	15.5
		05/28/1999	229	2060	115	1810	6.47	451	<0.001	40.3	<0.022	3.57	43.4
		10/06/1999	---	153	72	---	7.64	---	---	---	---	---	---
GUN01	0132	06/03/1997	172	455	-5	280	7.51	64.2	<0.001	3.38	0.0288	1.94	15.3
		06/03/1997	---	---	---	275	---	62.3	<0.001	3.38	<0.001	1.87	14.9
		06/09/1998	172	369	81	270	7.61	58.9	<0.001	2.62	<0.003	1.74	12.9
		09/24/1998	168	400	21	270	7.73	59.4	<0.001	2.53	<0.004	1.93	12.9
		09/24/1998	---	---	---	262	---	54.9	<0.001	2.53	0.32	1.85	11.9
		05/28/1999	180	393	73	240	7.67	57.7	<0.001	2.42	<0.006	1.87	12.8
		10/06/1999	157	315	50	198	7.79	53.7	<0.0003	2.5	<0.009	1.67	11.6
GUN01	0133	09/24/1998	290	2610	68	2460	6.34	674	0.0125	24.2	3.99	6.32	23.9

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L	
GUN01	0126	06/05/1997	0.0212	0.121	6.81	<0.15	0.15	<0.8	59	---	0.0149	int 54-59 ft well cluster 44
		06/10/1998	<0.001	<0.107	7.19	<0.09	<0.15	<0.6	47.3	---	0.0162	
		10/01/1998	0.0508	0.655	24.1	<0.07	<0.12	<0.61	387	<0.001	0.0289	
		06/02/1999	<0.001	0.216	7	<0.1	<0.14	<0.82	33.3	<0.001	0.0138	
		10/06/1999	0.0454	<0.032	24.3	<0.07	<0.13	<0.78	389	<0.0001	0.0268	
GUN01	0127	06/05/1997	<0.001	1.27	10	<0.11	0.06	<0.7	642	---	0.04	deep 94-99 ft well cluster 44
		06/10/1998	<0.001	1.27	10	<0.07	<0.15	<0.61	632	---	0.0395	
		10/01/1998	<0.001	2.23	10.7	<0.07	<0.13	<0.62	567	<0.001	0.0409	
		06/02/1999	<0.001	1.3	10.6	<0.1	<0.13	<0.81	563	<0.001	0.0383	
		10/07/1999	0.0017	1.42	9.26	<0.06	<0.14	<0.83	573	<0.0001	0.0373	
		10/07/1999	0.0015	1.39	8.96	<0.07	<0.13	<0.81	574	<0.0001	0.0381	
GUN01	0130	06/03/1997	0.0078	9.71	8.08	0.17	0.12	<0.7	557	---	0.337	abandoned @ gravel pit 18-23 ft shallow
		06/09/1998	0.003	1.56	5.54	<0.09	<0.14	<0.56	124	---	0.125	
		09/24/1998	0.0215	1.17	9.16	0.11	0.19	<0.68	282	<0.001	0.252	
		05/28/1999	2.8	0.58	16.7	<0.11	<0.16	<0.96	966	<0.001	0.576	
		10/06/1999	---	---	---	---	---	---	---	---	---	
GUN01	0132	06/03/1997	<0.001	2.76	5.25	<0.11	0.07	<0.7	41.2	---	0.0057	abandoned @ gravel pit 94-99 ft deep
		06/03/1997	<0.001	2.76	5.09	<0.21	0.2	<0.8	40.9	---	0.0057	
		06/09/1998	<0.001	2.84	4.88	<0.09	<0.15	<0.59	35.3	---	0.0054	
		09/24/1998	<0.001	3.53	5.27	<0.07	<0.11	<0.68	20.1	<0.001	0.0038	
		09/24/1998	0.0031	4.16	4.98	<0.08	<0.1	<0.66	20.1	<0.001	0.0035	
		05/28/1999	<0.001	2.82	4.74	<0.11	<0.15	<0.86	20.8	<0.001	0.0063	
		10/06/1999	0.0009	2.76	5.01	<0.09	<0.13	<0.76	19.2	<0.0001	0.0027	
GUN01	0133	09/24/1998	3.35	0.455	15.2	<0.07	<0.11	<0.68	1380	<0.001	2.19	onsite mill

C42

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0135	09/30/1998	248	532	32	287	6.97	74.8	<0.001	3.04	0.266	2.09	14.1
GUN01	0136	06/06/1997	1520	6840	-118	665	12.08	167	<0.001	3.96	<0.001	5.19	15.4
		06/11/1998	299	836	-174	~1050	9.61	227	<0.001	5.02	0.522	3.12	51
		09/30/1998	159	1061	-38	738	7.25	149	<0.001	4.15	0.0623	3.48	49.3
		05/28/1999	—	1243	-164	1000	7.47	204	<0.001	6.56	<0.0246	4.2	57.3
		10/08/1999	228	1066	-73	720	7.80	146	<0.0003	4.44	<0.009	4.06	42.7
GUN01	0140	09/28/1998	228	451	87	~297	7.15	76.5	<0.001	10.7	<0.004	2.41	16.4
GUN01	0141	09/28/1998	203	454	78	~237	7.89	67.6	<0.001	4.1	<0.004	1.87	14.7
		09/28/1998	—	—	—	~245	—	66.3	<0.001	3.99	<0.004	1.84	14.1
GUN01	0142	09/28/1998	169	397	73	~232	7.86	56.2	<0.001	2.69	<0.004	1.85	12.2
GUN01	0145	06/04/1997	234	579	34	352	7.10	87.6	<0.001	4.81	<0.001	2.71	17.2
		06/09/1998	189	557	55	358	7.01	83.8	<0.001	5.99	<0.003	2.48	14.6
		09/24/1998	257	522	71	325	7.24	80.3	<0.001	1.69	<0.004	3.06	13.9
		06/02/1999	162	598	147	~375	6.95	94	<0.001	7.65	<0.006	2.73	15.9
		10/07/1999	244	516	73	285	7.33	118	<0.0003	3.35	<0.009	4.23	20.4
GUN01	0147	06/04/1997	211	738	19	500	7.39	107	<0.001	3.49	<0.001	3.01	24.9
		06/09/1998	209	686	57	475	7.34	102	<0.001	3.48	<0.003	2.75	21.7
		09/24/1998	209	700	-4	460	7.35	99.8	<0.001	3.11	0.0074	2.89	21.1
		06/02/1999	212	567	141	~413	7.25	100	<0.001	3.79	<0.006	2.95	21.6
		10/07/1999	218	656	32	417	7.63	95.3	<0.0003	3.47	<0.009	2.57	20.2

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0135	09/30/1998	3.62	0.442	7.31	<0.08	0.18	<0.76	26.7	<0.001	0.0023
GUN01	0136	06/06/1997	<0.001	0.344	9.79	<0.16	0.46	<1.1	393	---	<0.001
		06/11/1998	0.29	0.666	9.69	<0.1	0.38	<0.53	531	---	0.0437
		09/30/1998	0.0993	0.432	10.4	<0.05	0.24	<0.8	404	<0.001	0.0363
		05/28/1999	0.183	4.36	14.1	0.28	<0.39	<2.19	489	0.0041	0.044
		10/08/1999	0.0878	0.305	9.97	<0.07	0.51	<0.75	431	<0.0001	~0.0287
GUN01	0140	09/28/1998	0.457	2.3	7.47	<0.1	<0.12	<0.79	25.8	<0.001	0.0058
GUN01	0141	09/28/1998	<0.001	2.26	5.07	<0.11	<0.12	<0.77	20.6	<0.001	0.005
		09/28/1998	<0.001	2.92	4.4	<0.1	<0.12	<0.77	20.7	<0.001	0.0051
GUN01	0142	09/28/1998	<0.001	3.43	6.73	<0.07	<0.12	<0.8	16.4	<0.001	0.0031
GUN01	0145	06/04/1997	0.157	0.472	4.53	<0.16	0.14	<0.4	70.3	---	0.0123
		06/09/1998	0.151	<0.0958	5.29	<0.12	<0.15	<0.57	79.7	---	0.01
		09/24/1998	0.136	0.212	6.53	<0.09	0.15	<0.69	11.3	<0.001	0.0086
		06/02/1999	0.25	0.0708	5.83	<0.1	<0.14	<0.83	120	<0.001	0.009
		10/07/1999	0.223	<0.0133	9.3	<0.09	<0.12	<0.73	28.6	<0.0001	0.0081
GUN01	0147	06/04/1997	<0.001	1.71	8.68	<0.19	0.06	<0.7	161	---	0.0263
		06/09/1998	<0.001	1.75	8.4	<0.08	<0.14	<0.56	138	---	0.0222
		09/24/1998	<0.001	1.92	8.94	<0.07	<0.1	<0.65	128	<0.001	0.0253
		06/02/1999	<0.001	1.76	8.34	<0.07	<0.14	<0.86	121	<0.001	0.0209
		10/07/1999	<0.0012	1.41	7.68	<0.06	<0.12	<0.74	129	<0.0001	0.0213

Sh - 18-23 well cluster 47

int - 53-58 well cluster 47

18-23 ft
53-58 ft
92-97 ft
well clust airport runw by gravel p

Sh 18-23 ft
deep 93-98 ft
abandon just west gravel pit

C43

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0155	06/05/1997	217	—	26	295	7.02	72.3	<0.001	2.72	0.0023	2.2	15
		09/30/1998	311	575	42	307	7.34	90.5	<0.001	1.95	0.0113	2.7	16.7
		06/02/1999	238	517	62	~295	6.98	81.8	<0.001	2.72	<0.0124	2	15.3
		10/07/1999	264	515	30	285	7.21	79.9	<0.0003	1.87	0.0139	2.24	14.3
GUN01	0157	06/05/1997	78	237	35	135	8.42	15.6	<0.001	2.3	<0.001	5.49	11.9
		06/02/1999	208	625	75	~380	7.34	87.9	<0.001	3.96	<0.0077	3.39	21.5
		10/07/1999	238	614	11	380	7.63	83.6	<0.0003	3.6	<0.009	3.1	20.4
GUN01	0160	10/01/1998	251	776	73	455	6.53	99.5	<0.001	16.9	<0.004	6.16	17.5
		05/26/1999	234	771	110	492	6.59	106	<0.001	16	<0.006	6.05	19.2
		10/13/1999	256	761	69	470	6.58	98.3	<0.0003	18	<0.009	5.85	16.9
GUN01	0161	10/01/1998	223	731	72	435	6.50	83.6	<0.001	0.292	0.0193	7.44	13.8
		05/26/1999	211	733	105	460	6.69	90.1	<0.001	20.1	<0.0307	7.82	14.9
		10/13/1999	230	727	68	437	6.58	85.1	<0.0003	19.8	<0.009	7.08	13.9
GUN01	0163	06/11/1998	222	557	95	~325	6.43	80.6	<0.001	5.07	<0.003	2.94	14.7
		10/02/1998	244	556	74	333	6.52	80.4	<0.001	4.36	<0.004	3.12	14.6
		05/26/1999	234	563	93	340	6.35	87.5	<0.001	4.96	<0.006	3.3	16.1
		10/13/1999	247	473	34	313	6.22	81.1	<0.0003	4.13	<0.009	2.83	14.6
GUN01	0170	06/05/1997	195	496	134	305	8.46	74.3	<0.001	3.9	<0.001	2.61	17.6
		06/09/1998	169	481	98	308	8.49	65.1	<0.001	3.43	<0.003	2.1	17.2
		05/26/1999	164	475	102	382	8.03	65.7	<0.001	3.85	<0.006	2.06	17.6
		10/06/1999	522	514	-111	160	11.28	40.8	<0.0003	3.71	<0.009	2.97	20.7
GUN01	0181	10/01/1998	231	802	61	550	6.87	124	<0.001	5.48	<0.004	2.07	25.7
		05/26/1999	249	1011	159	—	6.87	159	<0.001	5.04	<0.006	2.07	34.8
		10/12/1999	230	757	52	492	6.86	114	<0.0003	5.7	<0.009	1.91	23.7
GUN01	0183	05/26/1999	295	1203	140	348	6.35	186	<0.001	9.96	0.0193	7.9	32.7
		10/12/1999	321	1168	-74	838	6.46	175	<0.0003	9.25	<0.009	7.3	30

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0155	06/05/1997	0.6	<0.0291	4.23	<0.19	0.14	<0.8	23.9	---	0.0037
		09/30/1998	0.917	0.328	5.72	0.17	0.25	<0.76	9.76	<0.001	0.004
		06/02/1999	0.701	0.0824	4.81	0.18	<0.13	<0.78	24.5	<0.001	0.0036
		10/07/1999	0.738	<0.0231	5.07	0.19	<0.11	<0.71	11.6	<0.0001	0.0032
GUN01	0157	06/05/1997	<0.001	<0.0314	6.41	<0.16	0.2	<0.4	18.3	---	<0.001
		06/02/1999	0.0025	1.14	10.8	<0.1	0.21	<0.79	101	<0.001	0.0274
		10/07/1999	0.0276	1.34	10.5	<0.09	0.19	<0.73	106	<0.0001	0.0198
GUN01	0160	10/01/1998	0.0076	1.33	28	0.19	<0.11	<0.57	107	<0.001	0.0181
		05/26/1999	0.0107	0.946	27.2	<0.12	<0.15	<0.9	125	<0.001	0.0208
		10/13/1999	0.0079	1.01	31.4	<0.22	<0.14	<0.87	114	0.0002	0.0179
GUN01	0161	10/01/1998	0.0085	1.42	38.7	<0.13	<0.12	<0.59	1.97	<0.001	0.01
		05/26/1999	0.0079	1.1	40.8	<0.18	<0.15	<0.88	116	<0.001	0.0108
		10/13/1999	0.0064	1.1	39.5	<0.2	<0.14	<0.89	118	0.0006	0.01
GUN01	0163	06/11/1998	0.0123	0.897	8.82	<0.18	<0.14	<0.56	43.8	---	0.007
		10/02/1998	0.0131	1.11	9.4	<0.13	<0.11	<0.6	36.2	<0.001	0.0061
		05/26/1999	0.0148	0.893	9.48	<0.12	<0.15	<0.86	44.5	<0.001	0.0073
		10/13/1999	0.01	0.881	9.14	<0.18	<0.13	<0.86	41.7	0.0002	0.0065
GUN01	0170	06/05/1997	<0.001	2.88	5.54	<0.15	0.08	<0.7	72.6	---	0.0074
		06/09/1998	<0.001	2.8	5.2	<0.12	<0.15	<0.6	71.8	---	0.0071
		05/26/1999	0.001	2.79	4.36	<0.36	<0.14	<0.77	64.9	<0.001	0.0068
		10/06/1999	0.001	2.42	5.98	<0.07	0.14	<0.8	75	<0.0001	0.0032
GUN01	0181	10/01/1998	0.352	1.12	7.33	<0.07	<0.12	<0.58	181	<0.001	0.0212
		05/26/1999	0.214	0.299	7.09	<0.26	<0.13	<0.76	277	<0.001	0.0293
		10/12/1999	0.329	0.21	7.65	<0.06	<0.14	<0.92	175	<0.0001	~0.0184
GUN01	0183	05/26/1999	0.0046	1.08	32.2	<0.28	<0.14	<0.78	335	<0.001	0.0567
		10/12/1999	0.0038	1.11	32	<0.24	<0.16	2.87	349	<0.0001	~0.056

Sh 18-23 deep 92-95 — S. of gravel pits abandoned

int 57-56 deep 93-98 ft — N.F. Gunnison River @ confluence

int 54-59 ft most western well @ edge of golf course

deep - very deep 134-139 - SW corner of well site

Sh - 18-23 ft deep 93-98 — south of golf course plume.

C44

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0186	06/04/1997	263	1206	4	875	7.18	190	<0.001	4.91	<0.001	2.25	43.2
		06/11/1998	265	1042	130	~863	6.98	194	<0.001	5.16	<0.003	2.15	41.3
		09/30/1998	265	1175	63	828	7.45	192	<0.001	4.43	<0.004	2.16	40.9
		05/27/1999	264	1142	91	838	7.32	195	<0.001	4.98	<0.006	2.29	42
		10/12/1999	245	1089	5	810	7.29	175	<0.0003	4.76	<0.009	1.95	37
		10/12/1999	—	—	—	813	—	175	<0.0003	4.71	<0.009	2	37.4
GUN01	0188	06/03/1997	220	903	23	607	7.00	133	<0.001	11.3	0.0072	2.75	29
		06/11/1998	198	861	49	~577	6.96	126	<0.001	10.6	<0.003	2.49	25.7
		09/29/1998	220	897	-12	582	7.10	137	<0.001	10.3	<0.004	2.67	27.7
		05/27/1999	222	881	31	592	6.98	141	<0.001	10.4	<0.0079	2.85	29.2
		10/08/1999	212	866	-50	595	7.27	132	<0.0003	10.2	<0.009	2.42	26.6
GUN01	0189	06/05/1997	881	224	-5	1400	6.19	240	<0.001	93.3	6.16	35.9	29.4
		06/11/1998	915	2120	92	~1410	6.35	243	<0.001	95.4	5.79	33.6	27.7
		09/29/1998	925	2180	8	1390	6.20	248	<0.001	95	6.63	34.5	28.5
		05/27/1999	975	2210	78	1390	6.24	250	<0.001	95.2	6.5	34.8	28.7
		10/08/1999	925	2140	-20	1360	6.30	234	<0.0003	96.2	5.84	32.4	26.8
GUN01	0196	10/01/1998	1079	1997	58	1280	6.01	339	<0.001	7.35	8.82	34	29.5
		05/27/1999	1092	2050	-13	1330	5.91	354	<0.001	8.46	10.3	34.6	30.1
		10/12/1999	1065	1990	-17	1290	5.93	326	<0.0003	8.5	9.78	30.6	26.9
GUN01	0197	10/01/1998	1020	1926	41	1210	6.06	300	<0.001	13	8.12	30.9	25.8
		05/27/1999	972	1677	-84	1240	5.91	323	<0.001	14.3	8.5	33	27.6
		10/12/1999	995	1880	-28	1220	5.94	299	<0.0003	14.6	8.08	29.5	25.1

Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L	
GUN01	0186	06/04/1997	<0.001	0.351	6.82	0.31	<0.04	<0.7	392	---	0.042	int 53-58 ft
		06/11/1998	<0.001	0.357	7.04	<0.07	<0.14	<0.58	402	---	0.0414	cul de sac - east
		09/30/1998	<0.001	0.614	6.84	<0.07	<0.11	<0.73	353	<0.001	0.0421	of mill @ golf course
		05/27/1999	<0.001	0.33	7.05	<0.11	<0.13	<0.79	364	<0.001	0.0404	
		10/12/1999	0.0009	0.4	7.11	<0.08	<0.14	<0.89	365	<0.0001	~0.0387	
		10/12/1999	0.001	0.35	7.03	<0.07	<0.12	<0.77	362	<0.0001	~0.0383	
GUN01	0188	06/03/1997	<0.001	0.814	8.06	0.44	0.11	<0.6	230	---	0.0379	int 53-58
		06/11/1998	<0.001	0.805	7.34	<0.12	<0.12	<0.49	231	---	0.0335	
		09/29/1998	<0.001	0.979	8.3	<0.07	<0.11	<0.76	230	<0.001	0.0383	
		05/27/1999	<0.001	0.76	8.09	<0.08	<0.16	<0.9	230	<0.001	0.0372	@ NF
		10/08/1999	<0.0054	0.737	7.83	<0.08	<0.13	<0.82	231	<0.0001	~0.0354	Gunn River
GUN01	0189	06/05/1997	0.932	<0.0202	222	<0.22	0.86	0.5	152	---	0.0151	deep
		06/11/1998	0.882	<0.0309	208	<0.27	0.59	0.52	162	---	0.0152	93-98
		09/29/1998	0.936	0.34	212	0.33	0.9	<0.77	151	<0.001	0.0157	
		05/27/1999	0.921	<0.01	214	<0.1	0.63	1	155	<0.001	0.0151	
		10/08/1999	0.862	<0.01	206	0.15	0.57	<0.81	158	<0.0001	~0.0154	
GUN01	0196	10/01/1998	2.17	0.641	79.9	<0.09	<0.12	0.57	75.6	<0.001	0.0022	int 53-58
		05/27/1999	2.19	0.126	80.9	<0.26	0.17	<0.8	80.5	<0.001	0.0021	golf course
		10/12/1999	1.94	0.132	75.6	<0.04	0.22	<0.93	83.7	<0.0001	~0.0017	to west of
GUN01	0197	10/01/1998	1.7	0.42	84.3	<0.13	1.58	1.9	81.2	<0.001	0.0029	deep NF Gunn Riv
		05/27/1999	1.78	0.0777	89	<0.24	1.38	1.28	86.9	<0.001	0.0028	93-98
		10/12/1999	1.65	0.0379	84.8	<0.05	1.28	1.08	90.2	<0.0001	~0.0024	

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Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0455	06/02/1997	189	455	136	---	7.23	---	---	---	---	---	---
		10/02/1997	221	593	-75	---	7.14	---	---	---	---	---	---
		06/08/1998	188	485	103	---	6.96	---	---	---	---	---	---
		10/06/1999	91	228	111	---	7.30	---	---	---	---	---	---
GUN01	0461	06/08/1998	99	249	96	---	7.83	---	---	---	---	---	---
GUN01	0468	06/02/1997	216	576	218	525	7.50	118	<0.0011	6.04	8.02	2.48	24.5
		06/08/1998	196	693	22	450	7.33	98.7	<0.0011	4.65	12.7	2.39	20.2
		10/11/1999	239	737	-214	465	7.12	109	<0.0003	5.29	8.35	2.38	22.3
GUN01	0469	06/02/1997	103	265	81	---	6.93	---	---	---	---	---	---
		10/01/1997	119	277	36	---	6.82	---	---	---	---	---	---
		06/08/1998	96	352	138	---	7.20	---	---	---	---	---	---
		10/06/1999	101	257	72	---	6.68	---	---	---	---	---	---
GUN01	0472	06/02/1997	59	470	221	---	7.12	---	---	---	---	---	---
		10/02/1997	202	439	127	---	7.26	---	---	---	---	---	---
		06/08/1998	185	482	105	---	7.03	---	---	---	---	---	---
		10/06/1999	182	460	111	---	6.83	---	---	---	---	---	---
GUN01	0665	06/02/1997	107	276	77	---	7.29	---	---	---	---	---	---
		10/01/1997	113	212	121	---	6.95	---	---	---	---	---	---
		06/08/1998	106	272	146	---	7.26	---	---	---	---	---	---
		10/06/1999	110	237	65	---	6.60	---	---	---	---	---	---
GUN01	0667	06/02/1997	79	197	201	---	6.83	---	---	---	---	---	---
		10/01/1997	74	207	108	---	6.90	---	---	---	---	---	---
		06/08/1998	85	220	123	---	6.98	---	---	---	---	---	---
		10/06/1999	80	324	133	---	6.76	---	---	---	---	---	---

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0455	06/02/1997	---	---	---	---	---	---	---	---	0.029
		10/02/1997	---	---	---	---	---	---	---	---	0.022
		06/08/1998	---	---	---	---	---	---	---	---	0.0287
		10/06/1999	---	---	---	---	---	---	---	---	0.0032
GUN01	0461	06/08/1998	---	---	---	---	---	---	---	---	<0.0011
GUN01	0468	06/02/1997	0.215	0.284	10.5	<0.14	0.09	<0.8	177	---	0.0183
		06/08/1998	0.18	<0.316	8.7	<0.09	<0.15	<0.59	143	---	0.0175
		10/11/1999	0.188	0.273	9.77	<0.07	<0.12	<0.79	158	<0.0001	0.0155
GUN01	0469	06/02/1997	---	---	---	---	---	---	---	---	0.0014
		10/01/1997	---	---	---	---	---	---	---	---	0.002
		06/08/1998	---	---	---	---	---	---	---	---	0.0021
		10/06/1999	---	---	---	---	---	---	---	---	0.001
GUN01	0472	06/02/1997	---	---	---	---	---	---	---	---	0.0138
		10/02/1997	---	---	---	---	---	---	---	---	0.0117
		06/08/1998	---	---	---	---	---	---	---	---	0.0115
		10/06/1999	---	---	---	---	---	---	---	---	0.0138
GUN01	0665	06/02/1997	---	---	---	---	---	---	---	---	0.0011
		10/01/1997	---	---	---	---	---	---	---	---	0.0017
		06/08/1998	---	---	---	---	---	---	---	---	0.0024
		10/06/1999	---	---	---	---	---	---	---	---	0.0011
GUN01	0667	06/02/1997	---	---	---	---	---	---	---	---	<0.0011
		10/01/1997	---	---	---	---	---	---	---	---	<0.0011
		06/08/1998	---	---	---	---	---	---	---	---	<0.0011
		10/06/1999	---	---	---	---	---	---	---	---	<0.0002

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Summary of Ground Water Quality (1997 - 1999)

Site Code	Location Code	Date Sampled	Alk mg/L	EC umhos/cm	ORP mV	TDS mg/L	pH s.u.	Ca mg/L	Cd mg/L	Cl mg/L	Fe mg/L	K mg/L	Mg mg/L
GUN01	0680	06/02/1997	98	242	82	—	7.21	—	—	—	—	—	—
		10/02/1997	103	234	137	—	7.67	—	—	—	—	—	—
		06/08/1998	84	233	124	—	7.26	—	—	—	—	—	—
		10/06/1999	90	239	103	—	6.73	—	—	—	—	—	—
GUN01	0683	06/02/1997	108	300	108	—	7.27	—	—	—	—	—	—
		06/02/1997	—	—	—	—	—	—	—	—	—	—	—
		10/01/1997	117	265	109	—	7.24	—	—	—	—	—	—
		06/08/1998	99	281	128	—	6.82	—	—	—	—	—	—
		10/06/1999	87	225	106	—	6.96	—	—	—	—	—	—
		10/06/1999	—	—	—	—	—	—	—	—	—	—	—
GUN01	0685	06/02/1997	109	272	85	—	7.21	—	—	—	—	—	—
		10/01/1997	106	255	87	—	7.13	—	—	—	—	—	—
		06/08/1998	113	273	130	—	7.56	—	—	—	—	—	—
		10/06/1999	90	217	81	—	6.59	—	—	—	—	—	—

Summary of Ground Water Quality (1997 - 1999)

Cont tell where these wells are located.

Site Code	Location Code	Date Sampled	Mn mg/L	NO_3 mg/L	Na mg/L	Po-210 pCi/L	Ra-226 pCi/L	Ra-228 pCi/L	SO_4 mg/L	Se mg/L	U mg/L
GUN01	0680	06/02/1997	---	---	---	---	---	---	---	---	0.0014
		10/02/1997	---	---	---	---	---	---	---	---	0.0015
		06/08/1998	---	---	---	---	---	---	---	---	0.0012
		10/06/1999	---	---	---	---	---	---	---	---	0.0008
GUN01	0683	06/02/1997	---	---	---	---	---	---	---	---	0.0018
		06/02/1997	---	---	---	---	---	---	---	---	0.0018
		10/01/1997	---	---	---	---	---	---	---	---	0.0018
		06/08/1998	---	---	---	---	---	---	---	---	0.0032
		10/06/1999	---	---	---	---	---	---	---	---	0.0005
		10/06/1999	---	---	---	---	---	---	---	---	<0.0002
GUN01	0685	06/02/1997	---	---	---	---	---	---	---	---	0.0019
		10/01/1997	---	---	---	---	---	---	---	---	0.0021
		06/08/1998	---	---	---	---	---	---	---	---	0.002
		10/06/1999	---	---	---	---	---	---	---	---	0.0005

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Appendix E

Ground Water Analytical Results (CD-ROM)

Appendix F

Surface Water Analytical Results (CD-ROM)

Appendix G

Aquifer Pumping Test Calculation

Technical Task Cover Sheet

Discipline: Hydrogeology

Project:
UMTRA Ground Water

Site:
Gunnison, Colorado

Subject:
Gunnison Aquifer Test Data Analyses

Sources of Data:

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Task Order No. [MAC00-05] **File Index No.** [GWGUN13.2]

Proj. No. 341418003 **Calc. No.** U0082900 **Supersedes Calc. No.** NA

Calculated by	Date	Checked by	Date	Approved by	Date	DOE Concurrence (if required)	Date
[illegible]	7/13/00	[illegible]	7/13/00	[illegible]	13 July 2000		

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U.S. Department of Energy Grand Junction Office

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Appendix A—Step Test Data and Plots for Wells 041, 044, and 047
Appendix B—Well 041 Aquifer Test Data and Plots
Appendix C—Well 044 Aquifer Test Data and Plots
Appendix D—Well 047 Aquifer Test Data and Plots
Appendix E—City of Gunnison Production Well Aquifer Test Data and Plots

1.0 Introduction

Aquifer tests were completed at the Gunnison UMTRA Project site to collect the hydrogeologic data necessary to characterize the alluvial aquifer. These data were collected to further define the hydraulic parameters of the alluvial aquifer which will be used in ground water flow and transport modeling. Analyses of these data provide a range of transmissivity, hydraulic conductivity, and specific yield estimates for the alluvial aquifer.

Aquifer tests were conducted during November and December 1999 using newly installed wells 041, 044, and 047 as the pumping wells and surrounding wells as the observation wells. Each pumping well is screened within the alluvium downgradient from the site. The alluvial aquifer consists of gravelly sand and is up to 120 ft thick in the vicinity of the site. Locations of each well cluster are shown on Figure 1. To determine if the ground water chemistry changes after prolonged pumping, discharge samples were collected and analyzed from wells 044 and 047.

2.0 Test Procedures

This section provides the procedures that were used to analyze the data collected during the step tests and the aquifer tests. In addition, the procedures used to analyze the discharge water samples are also discussed.

2.1 Step Tests

Once the wells were installed and developed, a step test was completed on each of the three newly installed pumping wells to determine the sustainable pumping rate and specific capacity. Each test consisted of monitoring the drawdown in the pumping well at three or four different pumping rates, with each step lasting a minimum of 60 minutes or until the drawdown inside the pumping well stabilized.

Drawdown and pumping rate data were used to determine the specific capacity of the pumping wells using the software AquiferTest (Waterloo Hydrogeologic, Inc., Version 2.5.2). The specific capacity of a well is its yield per unit of drawdown, usually expressed as gallons per minute per foot (gpm/ft), which can be also expressed as ft^2/min after converting the pumping rate from gpm to cubic feet per min (ft^3/min).

2.2 Aquifer Tests

Aquifer tests were conducted to determine the transmissivity, hydraulic conductivity, and specific yield of the alluvial aquifer. These tests were completed at each of the new pumping wells using the sustainable pumping rate previously determined by the step test data. Water levels were monitored in the pumping wells and nearby observation wells prior to and during the aquifer test period and during the recovery test period, using both transducers connected to dataloggers and manually (using an electrical sounder). All water generated from each aquifer test was discharged 300 ft from the pumping well.

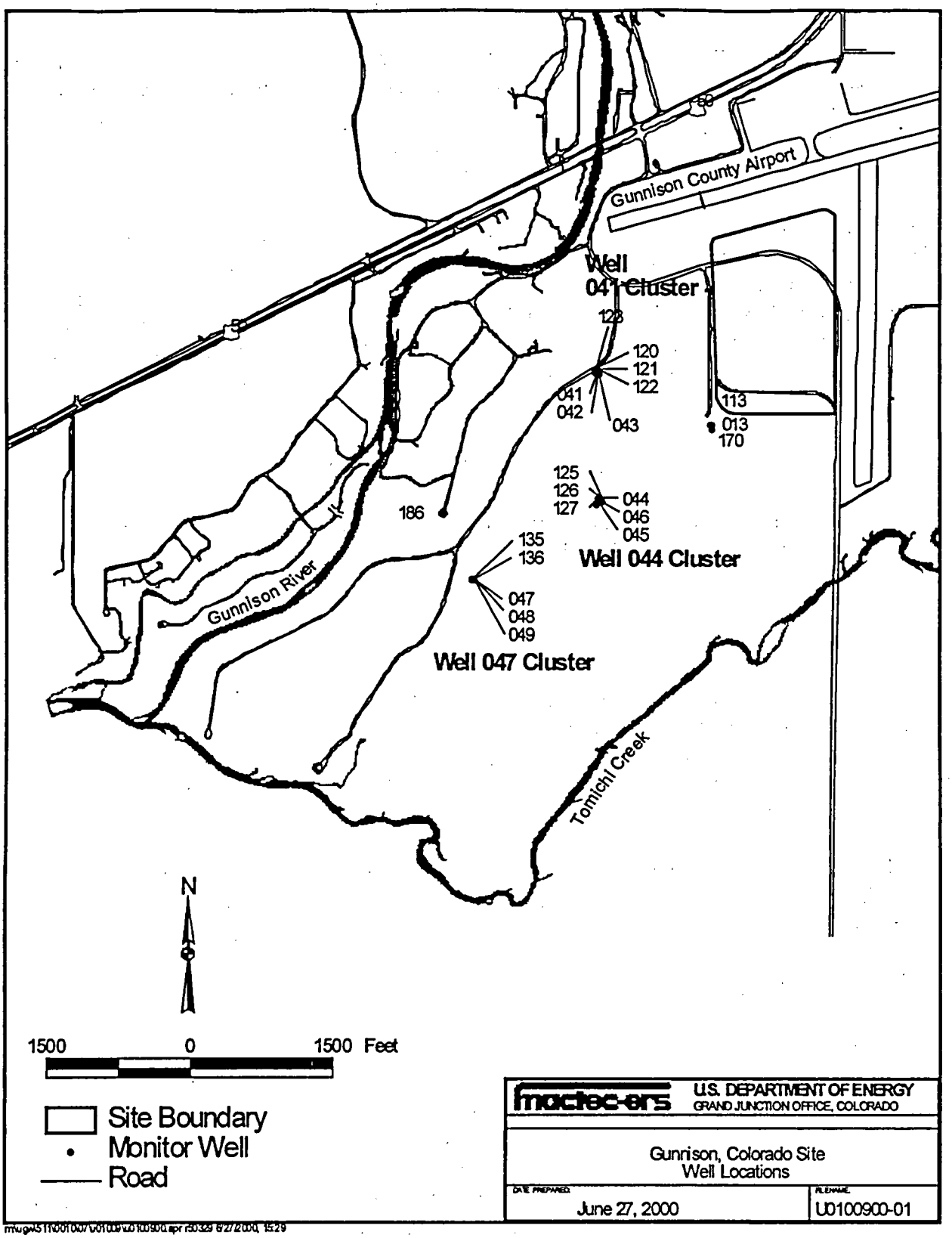

Figure 1. Well Location Map

Table 1 lists each testing location and the well construction details associated with the pumping wells and nearby observation wells.

Table 1. Gunnison Well Cluster Construction Information

Cluster	Well No.	Dia. (in)	Installation Date	Screen Interval (ft BGS)	r (ft)	Static Elevation of Ground Water (ft MSL)[a]	Observation or Pumping Well
041	041	6	Nov 99	31.0 – 60.4	-	7629.28	pumping
	042	2	Nov 99	43.8 – 53.3	26.8	7629.16	observation
	043	2	Nov 99	43.8 – 53.5	36.6	7629.28	observation
	120	2	Dec 84	18.5 – 23.5	43.9	7632.88	observation
	121	2	Dec 84	93.3 – 98.3	12.4	7627.51	observation
	122	2	Dec 84	78.1 – 83.1	32.0	7627.38	observation
	123	2	Jan 85	53.2 – 58.2	30.8	7629.14	observation
044	044	6	Nov 99	31.1 – 60.5	-	7623.47	pumping
	045	2	Nov 99	40.9 – 50.5	56.8	7623.29	observation
	046	2	Nov 99	40.7 – 50.2	40.9	7623.77	observation
	125	2	Dec 84	18.8 – 23.8	23.3	7624.39	observation
	126	2	Jan 85	53.2 – 58.2	16.4	7623.30	observation
	127	2	Dec 84	94.3 – 99.3	20.4	7622.73	observation
047	047	6	Nov 99	30.8 – 60.2	-	7618.54	pumping
	048	2	Nov 99	41.2 – 50.7	27.2	7618.51	observation
	049	2	Nov 99	40.6 – 50.1	42.1	7618.56	observation
	135	2	Dec 84	16.3 – 21.3	16.4	7619.91	observation
	136	2	Jan 85	53.2 – 58.2	17.3	7618.55	observation

[a]water levels measured between November 17 and November 22, 1999
Dia. = well diameter
r = distance to pumping well
MSL = mean sea level
BGS = below ground surface
in. = inches
ft = feet

Drawdown and residual drawdown data collected during the aquifer tests were analyzed using the software packages AquiferTest (Waterloo Hydrogeologic, Inc., Version 2.52) and AquiferWin32 (Environmental Simulations, Inc., Version 2.17). These software packages allow the user to analyze the data with a number of different analytical methods. Because the alluvial aquifer is unconfined, the drawdown data collected from observation wells during the pumping period of the tests were analyzed using the Theis Method modified for an unconfined aquifer (Theis 1935), the Neuman Method for Unconfined Aquifers with Partial Penetrating Wells (Neuman 1974), and the Cooper and Jacob Method modified for an unconfined aquifer (Cooper and Jacob 1946). Specific yield estimates were calculated using the Neuman Method (Neuman 1974). The data collected from the observation wells and pumping wells during the recovery phase of the aquifer tests were analyzed using the Theis Recovery Method (Kruseman and DeRidder 1991).

In addition to analyzing the data collected from the 041, 044, and 047 aquifer tests, aquifer test data collected by a consultant to the City of Gunnison (as part of the installation of new Production Wells) were also analyzed.

2.3 Discharge Samples

During the aquifer tests conducted at 044 and 047 locations (starting December 1, 1999, and November 20, 1999, respectively), samples of the discharge water were collected to determine if the water chemistry of the alluvial aquifer changed over the course of the test. The pH, temperature, and specific conductance of the discharge water were monitored throughout the test. Samples were collected and analyzed for uranium, nitrate, nitrite, ammonia, and sulfate at a mobile laboratory during the testing period. Details of the analysis associated with each constituent are provided in the ESL report *Expedited Site Characterization of the Ground Water Chemistry During Two Pumping Tests November 20 through December 2, 1999* (ESL-RPT-2000-2).

3.0 Results

This section presents the results obtained from the analysis of data collected during the step tests and aquifer tests.

3.1 Step Tests

The results from the step tests completed on wells 041, 044, and 047 will be discussed in Sections 3.1.1, 3.1.2, and 3.1.3, respectively.

3.1.1 Well 041 Step Test

A step test on well 041 was completed on November 18, 1999. Figure 2 is a graphical representation of the drawdown data collected from the pumping well and observation wells 042 and 043 during the test. A flow rate (Q) of 10 gallons per minute (gpm) was chosen for the initial step, which resulted in only 2.3 ft of drawdown in the pumping well after 60 minutes. The rate was increased to 20 gpm for 60 minutes (which caused a total drawdown of 8.6 ft in the pumping well) and to 30 gpm for another hour (which resulted in 20.9 ft of drawdown). For the final step, the pumping rate was set to 40 gpm. At this rate, after 60 minutes there was 45.3 ft of drawdown in the pumping well.

Subsequent aquifer tests conducted at this location generated 19.6 ft of drawdown in well 041 at a pumping rate of 35 gpm over a time period of approximately 19 hours, and 22.9 ft of drawdown at a pumping rate of 38 gpm over 72.25 hours. After review of the data, it was apparent that the well may have become more efficient during the aquifer testing (i.e., the well was further developed during the testing periods). As a result, a second step test was completed on December 1, 1999, to compare the results from the initial step test.

During this second step test (Figure 3), drawdowns of 12.9 ft and 22.6 ft were measured in pumping well 041 at flow rates of 30 and 40 gpm, respectively. The third step was initially run at a flow rate of 55 gpm. After less than 5 minutes of pumping at that rate, it was apparent that the flow rate was too high to sustain. The rate was eventually reduced to 45 gpm, which created 48.8 ft of drawdown in the pumping well. Only a 5 gpm increase in the flow rate resulted in 26.2 ft of added drawdown.

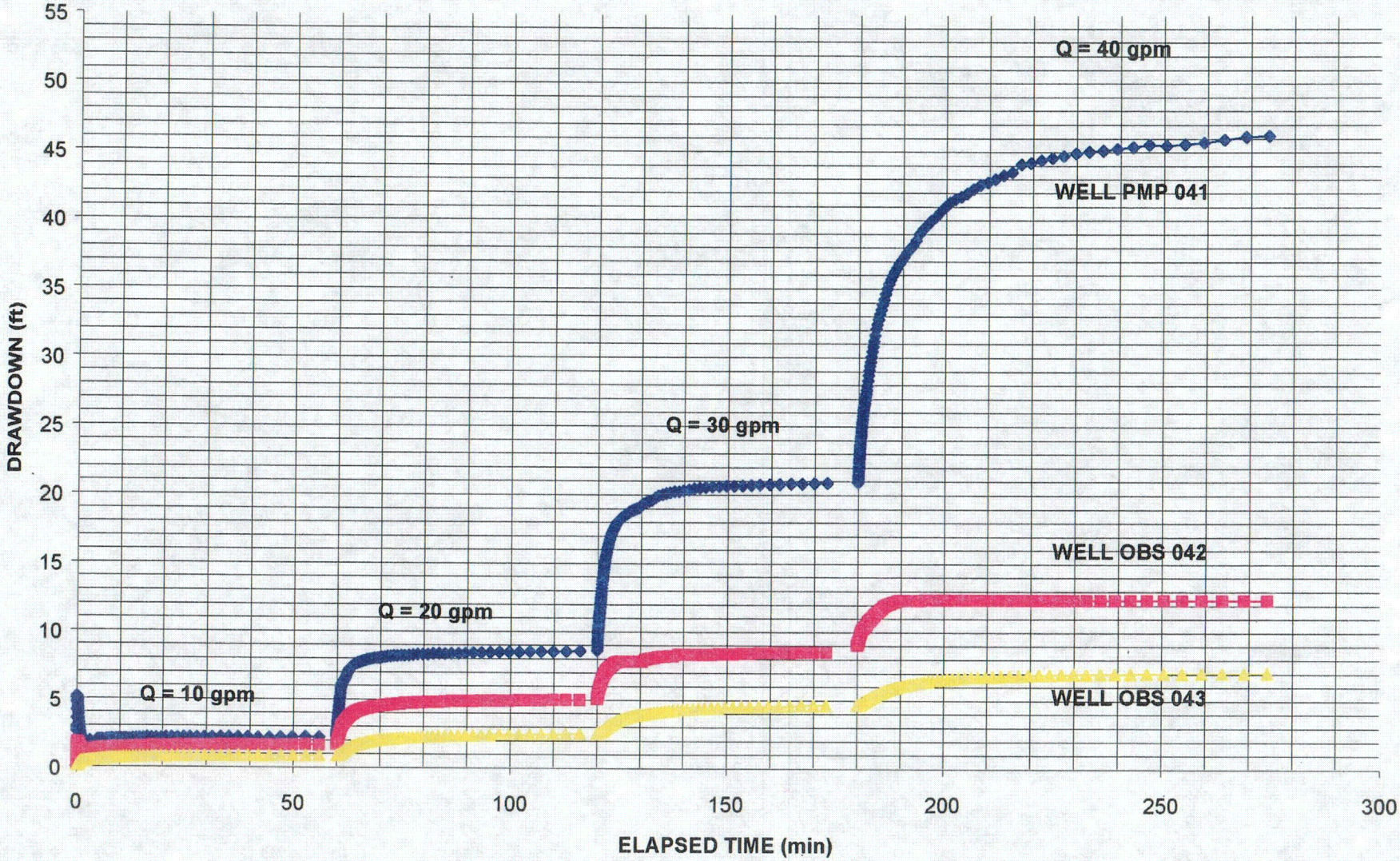

Figure 2. Well 041 Step Test 1 Data

C48

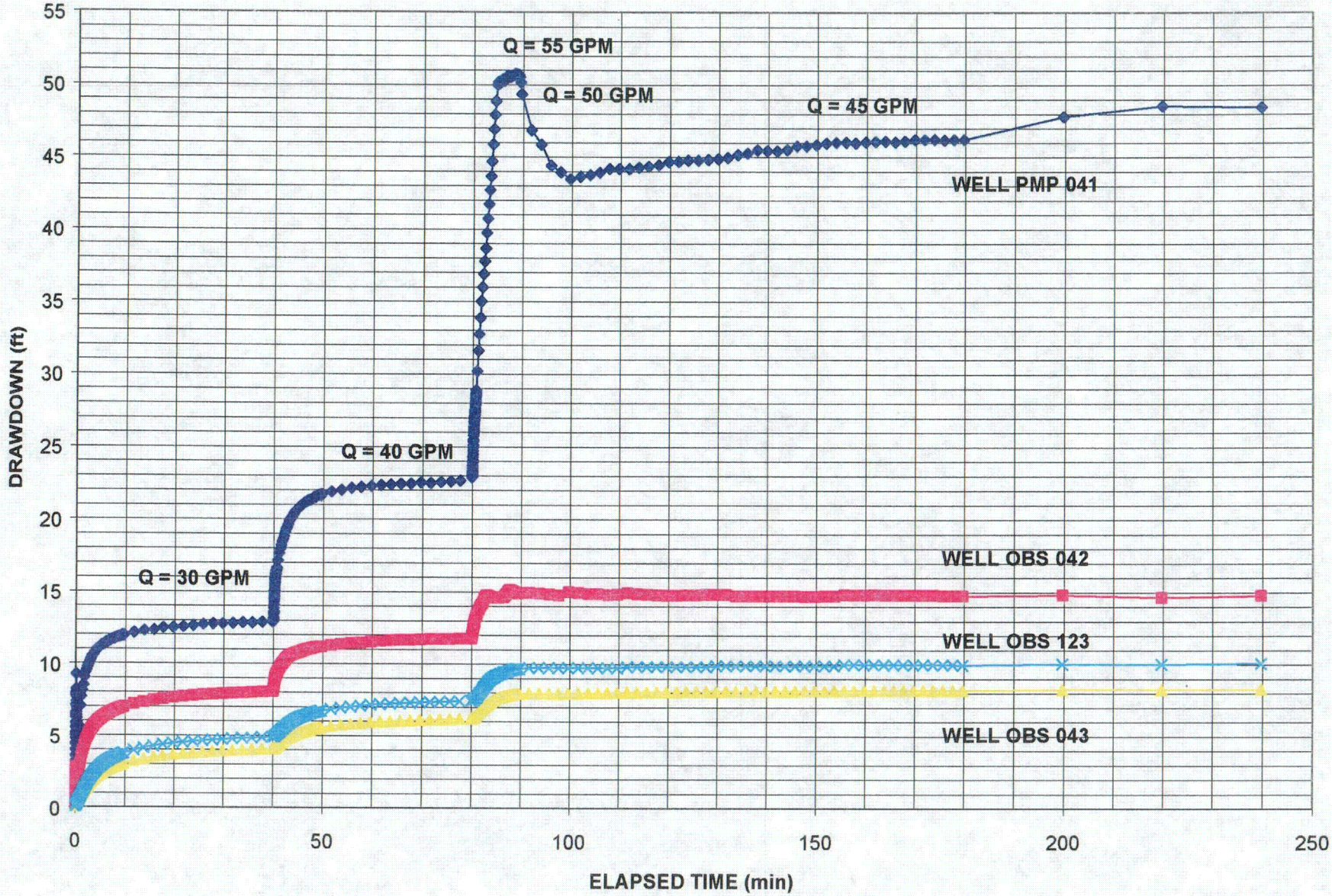

Figure 3. Well 041 Step Test 2 Data

C49

Analysis of the data collected during the first step test resulted in a specific capacity of 0.22 square feet per minute (ft^2/min) for flow rates between 10 and 30 gpm, and a reduced specific capacity of 0.06 ft^2/min for flow rates between 30 and 40 gpm. The specific capacity decreases with increased drawdown (Driscol 1986). Based on the data from the second test, the specific capacity for flow rates between 30 and 40 gpm increased to 0.13 ft^2/min. The computer-generated plots, and drawdown data collected from the datalogger are contained in Appendix A.

3.1.2 Well 044 Step Test

A step test on well 044 was completed on November 30, 1999. Figure 4 shows the drawdown data collected during the test. Flow rates of 20 gpm for 40 minutes and 40 gpm for 55 minutes resulted in 5.1 and 21.3 ft of drawdown measured in the pumping well, respectively. The flow rate was then increased to 55 gpm. After 15 minutes, the water level inside the pumping well was close to the intake of the submersible pump. The flow was reduced to 50 gpm, which created 42.3 ft of drawdown after 80 minutes of pumping.

Subsequent to this step test, an aquifer test was started on December 1, 1999. After approximately 41 hours of pumping at 50 gpm, there was 38.9 ft of drawdown measured in pumping well 044. Due to the discrepancy between the drawdown observed in the step test and the aquifer test, a second step test was conducted to confirm if the additional pumping during the aquifer test actually further developed the pumping well. A second step test was completed on December 7, 1999 (Figure 5). Flow rates of 52, 60, and 61 gpm resulted in drawdowns within the pumping well of 26.2, 38.2, and 45.5 ft, respectively. The 52 gpm step lasted 75 minutes, the 60 gpm step lasted 60 minutes, and the final step at 61 gpm lasted 40 minutes.

Analysis of the data collected from the first step test indicated the specific capacity for flow rates from 20 to 40 gpm was 0.17 ft^2/min, and decreased to 0.06 ft^2/min for flows greater than 40 gpm. The subsequent step test data indicated the specific capacity at the higher flow rates increased to 0.09 ft^2/min (the second test did not include steps with flow rates lower than 50 gpm). The computer-generated plots and drawdown data collected from the data logger are included in Appendix A.

3.1.3 Well 047 Step Test

The step test for well 047 was completed on November 20, 1999. Each step for this test lasted 40 minutes. During the initial step, the flow rate was set at 20 gpm and resulted in 3.9 ft of drawdown in the pumping well. Three additional steps were made at 35, 50, and 60 gpm, which resulted in 9.4, 19.8, and 32.6 ft of drawdown in the pumping well, respectively (Figure 6).

Analysis of the data collected during this step test indicated the specific capacity for flow rates below 40 gpm was 0.36 ft^2/min, while flow rates above 40 gpm result in a specific capacity of 0.12 ft^2/min. The computer-generated plots and drawdown data collected from the data logger are also included in Appendix A.

3.2 Aquifer Tests

The results obtained from the data collected during the aquifer tests completed at wells 041, 044, and 047 will be discussed in Sections 3.2.1, 3.2.2, and 3.2.3, respectively. Section 3.2.4 contains the results obtained from the aquifer tests conducted by the City of Gunnison on Production Well #7 and #10.

3.2.1 Well 041 Aquifer Test

An aquifer test was started on November 19, 1999, pumping 35 gpm from well 041. Drawdown data were collected from the pumping well and observation wells 042, 043, 120, 121, 122, and 123. Figure 7 is a cross-section showing well completions at this location. Observation wells 042, 043, and 123 are all screened within the same interval as the pumping well.

Unfortunately, below zero temperatures created problems for equipment exposed to the cold overnight. The generator running the pump unexpectedly shut down after only approximately 19 hours. As a result, there was no recovery data collected for this test. However, the data collected during the pumping phase of the test were used to determine the aquifer parameters.

A subsequent aquifer test was started on November 20, 1999. This second test ran for a total of 72.25 hours (4,335 minutes). During this time, a total of 165,074 gallons of ground water were removed from well 041, at an average rate of 38.1 gpm. A recovery test was started on November 23, 1999, after the pumping phase was completed.

A shorter aquifer test was completed on December 2, 1999. During the 8 hour test, 21,452 gallons were removed from pumping well 041, at an average pumping rate of 44.7 gpm. A recovery test was run overnight after the pumping phase was completed. Table 2 lists the drawdown measured in the pumping well and each observation well for the three tests completed at this location.

Table 2. Total Drawdown for Well 041 Aquifer Tests

		Test No.	041 Test 1	041 Test 2	041 Test 3
		Q (gpm)	35	38	45
Well	r (ft)	Scrn Inv (ft bgs)	s (ft)	s (ft)	s (ft)
Pmp 041	NA	31.0 - 60.4	19.56	22.95	48.83
Obs 042	26.8	43.8 - 53.3	10.6	11.12	14.6
Obs 043	36.6	43.8 - 53.5	5.7	6.2	8.14
Obs 120	43.9	18.5 - 23.5	0.28	0.33	0.31
Obs 121	12.4	93.3 - 98.8	0.96	1.01	1.08
Obs 122	32	78.1 - 83.1	1.03	1.12	1.24
Obs 123	30.8	53.2 - 58.2	6.82	7.43	10.01

Q = Pumping Rate
r = Distance to Pumping Well
Scrn Inv = Screened Interval (ft below ground surface [ft BGS])
s = Drawdown
Pmp = Pumping Well
Obs = Observation Well

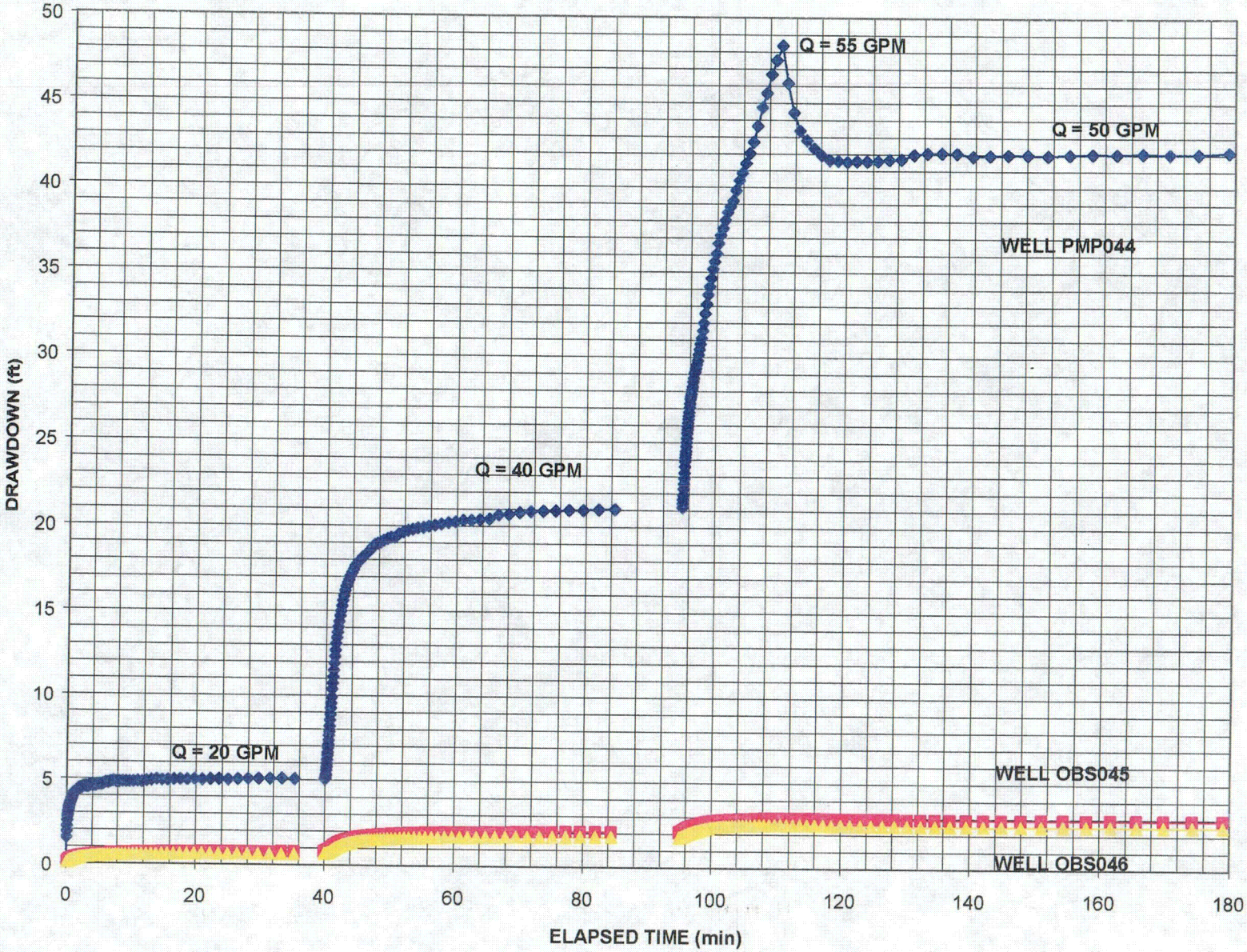

Figure 4. Well 044 Step Test 1 Data

C 50

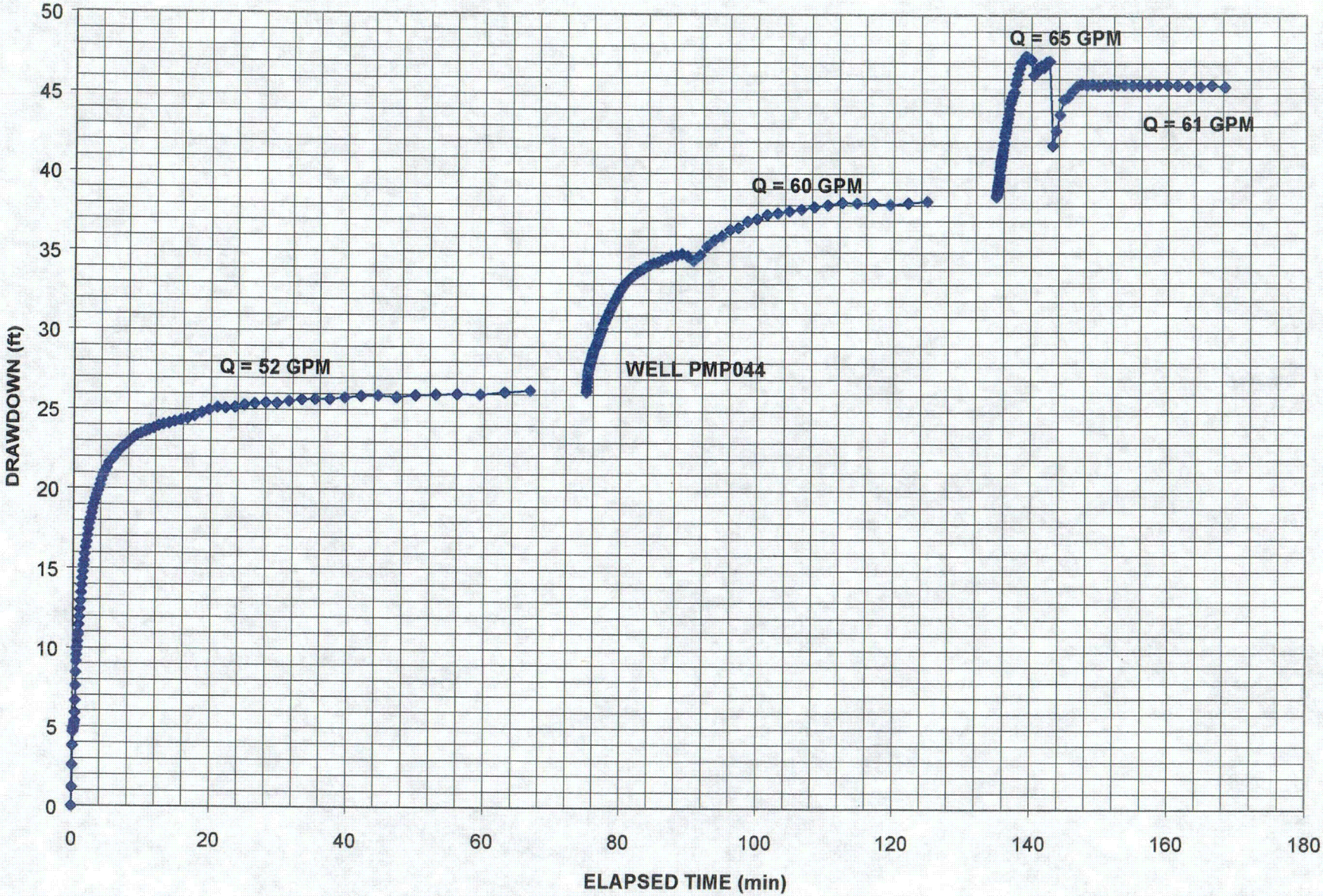

Figure 5. Well 044 Step Test 2 Data

C51

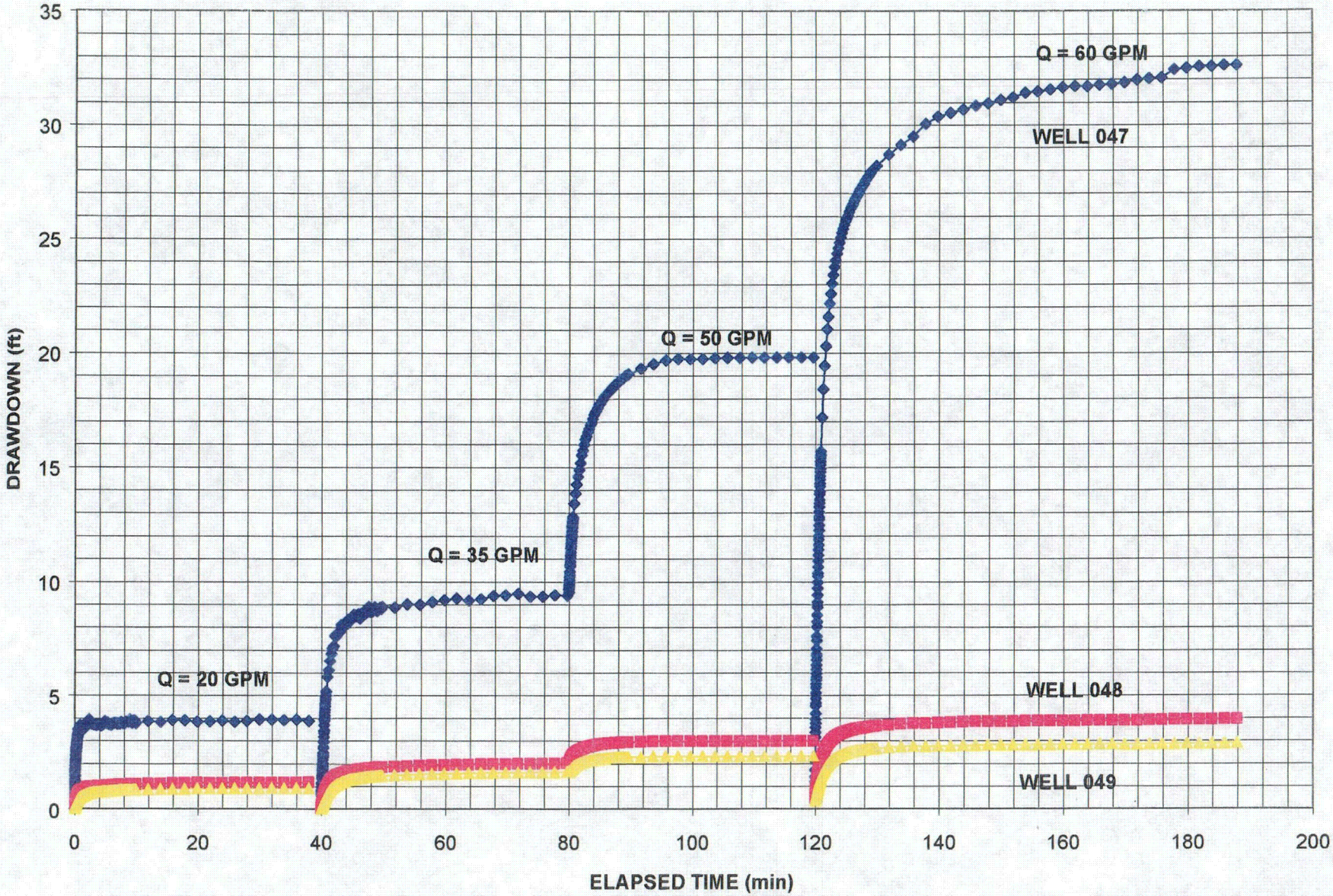

Figure 6. Well 047 Step Test Data

C52

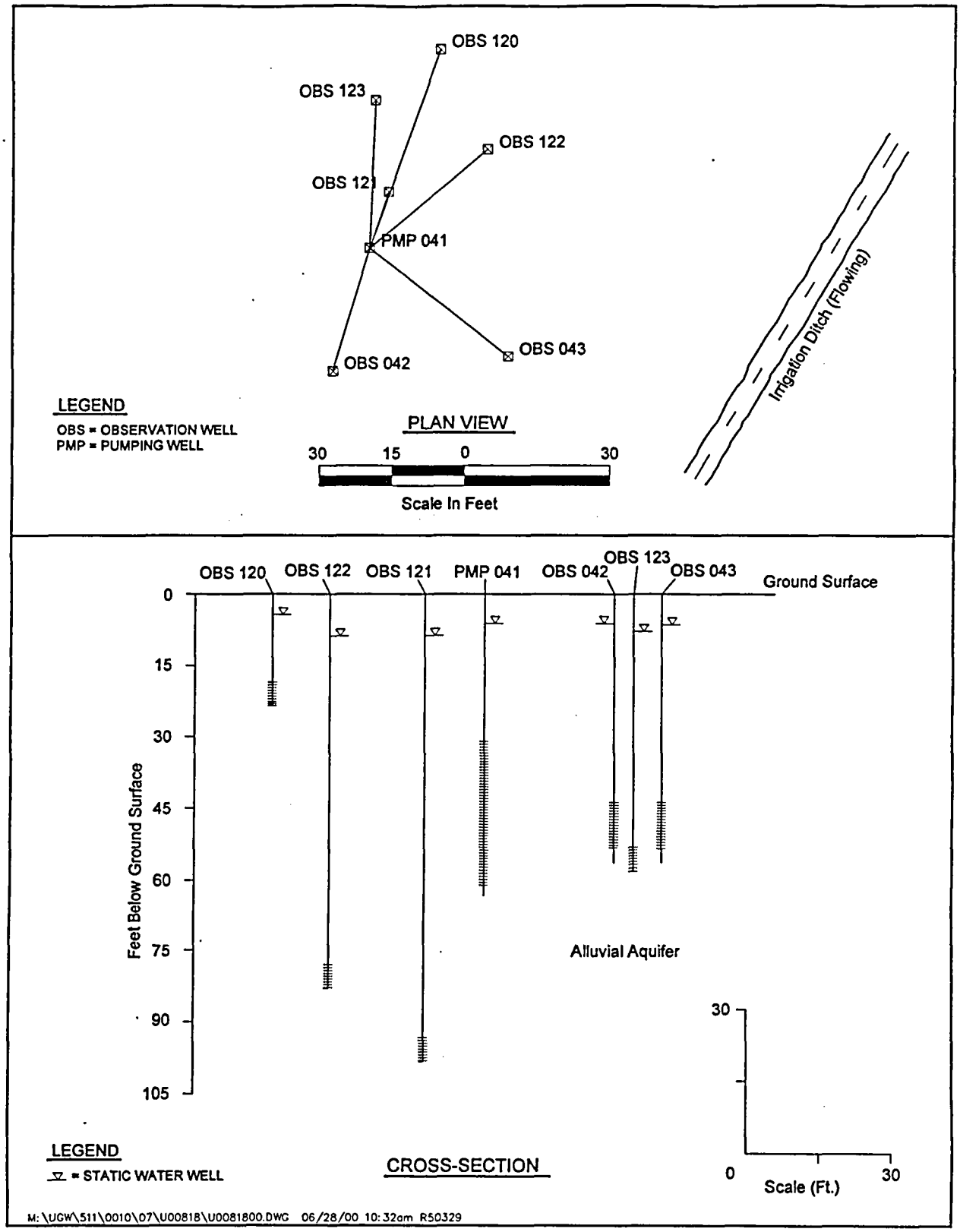

Figure 7. Well 041 Cluster Map and Cross Section

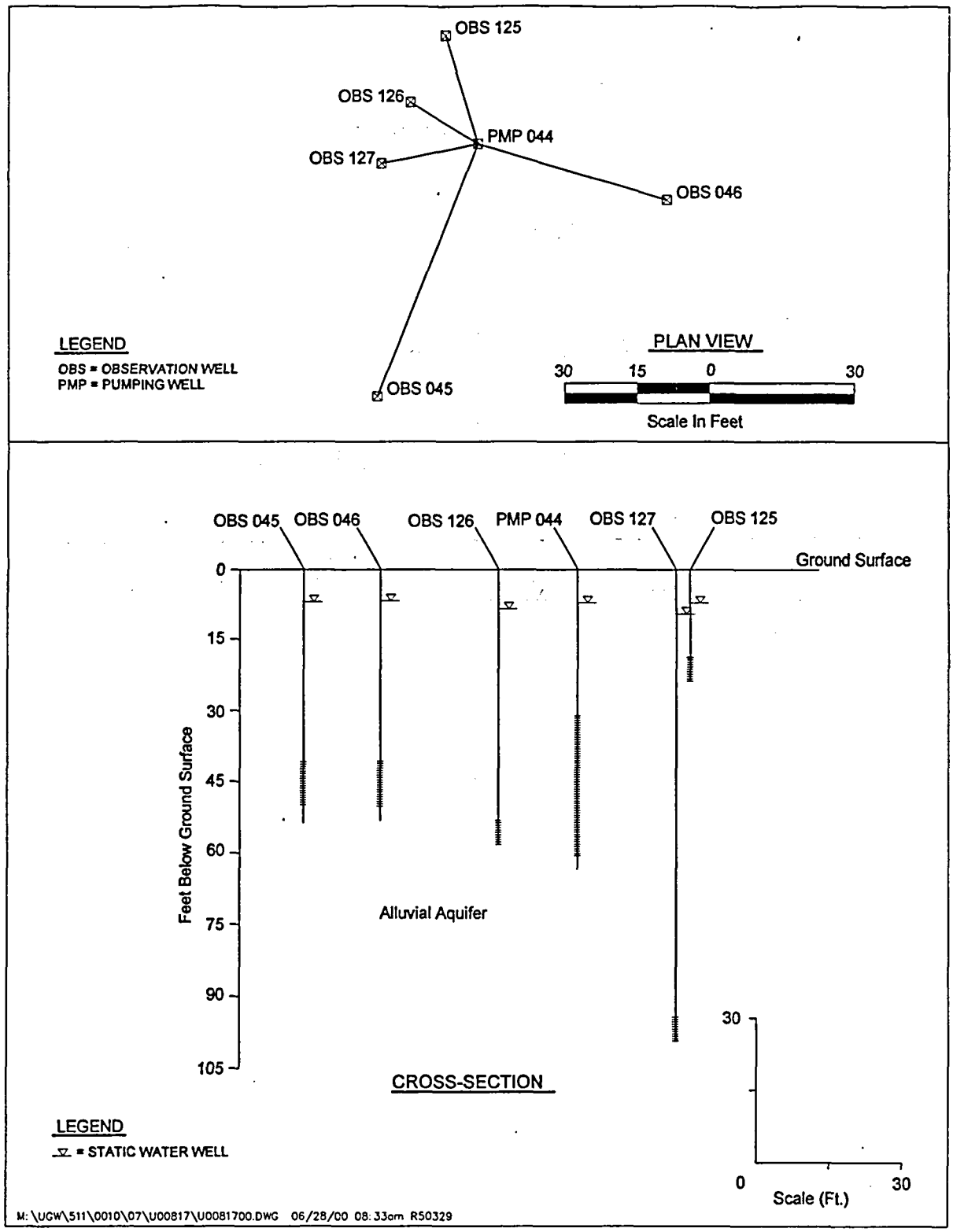

Figure 8. Well 044 Cluster Map and Cross Section

Table 4. Results of Discharge Sampling from Well 044 Aquifer Test 1, November, 1999.

Sample	Cum Vol.	pH	ORP	Cond	Temp	ALK	SO_4	NO_3	NO_2	NH_3	U
	(Gal.)			(ATC)	(°C)		(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)
GUN044 @ 1 min	50	6.68	60	616	8.4	230	50	3.4	19	40	15
GUN044 @ 2 min	100	6.29	57	689	8.4	210	80	3.2	37	40	16
GUN044 @ 3 min	150	6.62	53	708	8.6	240	120	2	60	120	18
GUN044 @ 4 min	200	6.68	51	729	8.6	230	150	3.5	26	70	18
GUN044 @ 5 min	250	6.73	47	742	8.5	220	140	3.6	21	60	20
GUN044 @ 15 min	750	6.84	32	776	8.6	210	165	3.9	17	110	19
GUN044 @ 30 min	1,500	6.84	21	790	8.5	220	180	3.5	15	40	19
GUN044 @ 60 min	3,000	7.03	101	796	8.8	230	175	5.6	22	40	19
GUN044 @ 90 min	4,500	6.97	64	802	8.8	230	175	4.9	10	40	19
GUN044 @ 120 min	6,000	6.93	45	805	8.8	230	190	3.6	13	70	20
GUN044 @ 240 min	12,000	6.96	38	815	8.9	243	190	8.2	18	40	18
GUN044 @ 360 min	18,000	7.01	26	735	8.8	256	160	4.6	12	40	15
GUN044 @ 480 min	24,000	6.88	12	837	8.6	233	200	6.8	12	40	17
GUN044 @ 24 hrs	72,000	6.64	116	839	8.7	245	150	7.5	22	40	19
GUN044 @ 28 hrs	84,000	6.7	108	846	8.7	250	180	8.1	31	40	18
GUN044 @ 32 hrs	96,000	6.96	90	860	8.6	232	160	7	17	40	19
NOTES: Water parameters (pH, ORP, Cond., Temp.) were measured (unfiltered) at the well with a calibrated YSI 3500 using a flow cell.											
All other analyses were performed on water filtered through a 0.45um flow-through filter.											
The pump test was halted 12/03/99 ~0200. The last sample taken was the 32 hour sample. The generator supplying power to the pump											
quit working sometime overnight and the rate meter froze.											
Spreadsheet has been checked for accuracy in transcription.											
Bold = values are less than detection											

Table 5 lists the drawdown measured in the pumping well and each observation well for the two tests completed at this location.

Table 5. Total Drawdown for the Well 044 Aquifer Tests

		Test No.	044 Test 1	044 Test 2
		Q (gpm)	50	60 / 58
Well	r (ft)	Scrn Inv (ft bgs)	s (ft)	s (ft)
PMP 044	NA	31.1 - 60.5	38.89	44.1
OBS 045	56.8	40.9 - 50.5	2.87	3.08
OBS 046	40.9	40.7 - 50.2	2.48	2.66
OBS 125	23.3	18.8 - 23.8	0.58	0.74
OBS 126	16.4	53.2 - 58.2	2.56	2.8
OBS 127	20.4	94.3 - 99.3	0.47	0.54

Q = Pumping Rate
r = Distance to Pumping Well
Scrn Inv = Screened Interval (ft below ground surface [ft BGS])
s = Drawdown
Pmp = Pumping Well
Obs = Observation Well

As shown in Table 5, there was greater drawdown measured in observation well 045 compared to well 046 during each test, despite the fact that well 046 is located 15.9 ft closer to the pumping well than well 046. This observation may indicate the aquifer in the vicinity of well 044 is not homogeneous. Data collected from the other two test locations did not indicate that ground water flow within the aquifer may be favorable in one direction compared to another.

Since wells 045, 046, and 126 are screened approximately within the same interval as the pumping, drawdown data from only these observation wells were analyzed. Table 6 contains the transmissivity results based on the data collected during the two tests from observation wells 045, 046, and 126. The plots used for the analyses and the drawdown data collected during the tests are contained within Appendix C.

Table 6. Well 044 Aquifer Test Transmissivitiy Results (ft^2/day)

Test No	Data Source	Test	Analytical Method				
			Theis T(ft^2/d)	C-J T(ft^2/d)	Neuman T(ft^2/d)	Theis Rec T(ft^2/d)	Neuman Sy
044 Test 1	Obs 045	AQ	1213.9	1018.1	1606.9	NA	0.221
	Obs 046	AQ	1081.4	1213.9	1681	NA	0.425
	Obs 126	AQ	1360.8	1728	3172.5	NA	0.26
044 Test 2	Obs 045	AQ	793.4	1041.1	1277.1	NA	0.500
	Obs 046	AQ	999.4	1163.5	1319.5	NA	0.500
	Obs 126	AQ	1771.2	1598.4	2635.5	NA	0.664
	Obs 045	REC	NA	NA	NA	727.2	NA
	Obs 046	REC	NA	NA	NA	819.4	NA
	Obs 126	REC	NA	NA	NA	976.3	NA
	Pmp 044	REC	NA	NA	NA	68	NA

OBS = Observation Well
PMP = Pumping Well
AQ = Aquifer Test
REC = Recovery Test
NA = Not applicable
Theis = Theis Method
C-J = Cooper Jacob Method
Neuman = Neuman Method for Partially Penetrating Wells in Unconfined Aquifers
Theis Rec = Theis Recovery Method
T = Transmissivity (ft^2/day)
Sy = Specific yield

3.2.3 Well 047 Aquifer Test

Two aquifer tests were conducted using well 047 as the pumping well. During these tests drawdown data were collected from the pumping well and observation wells 048, 049, 135, and 136. Figure 9 is a cross-section of the well cluster at this location.

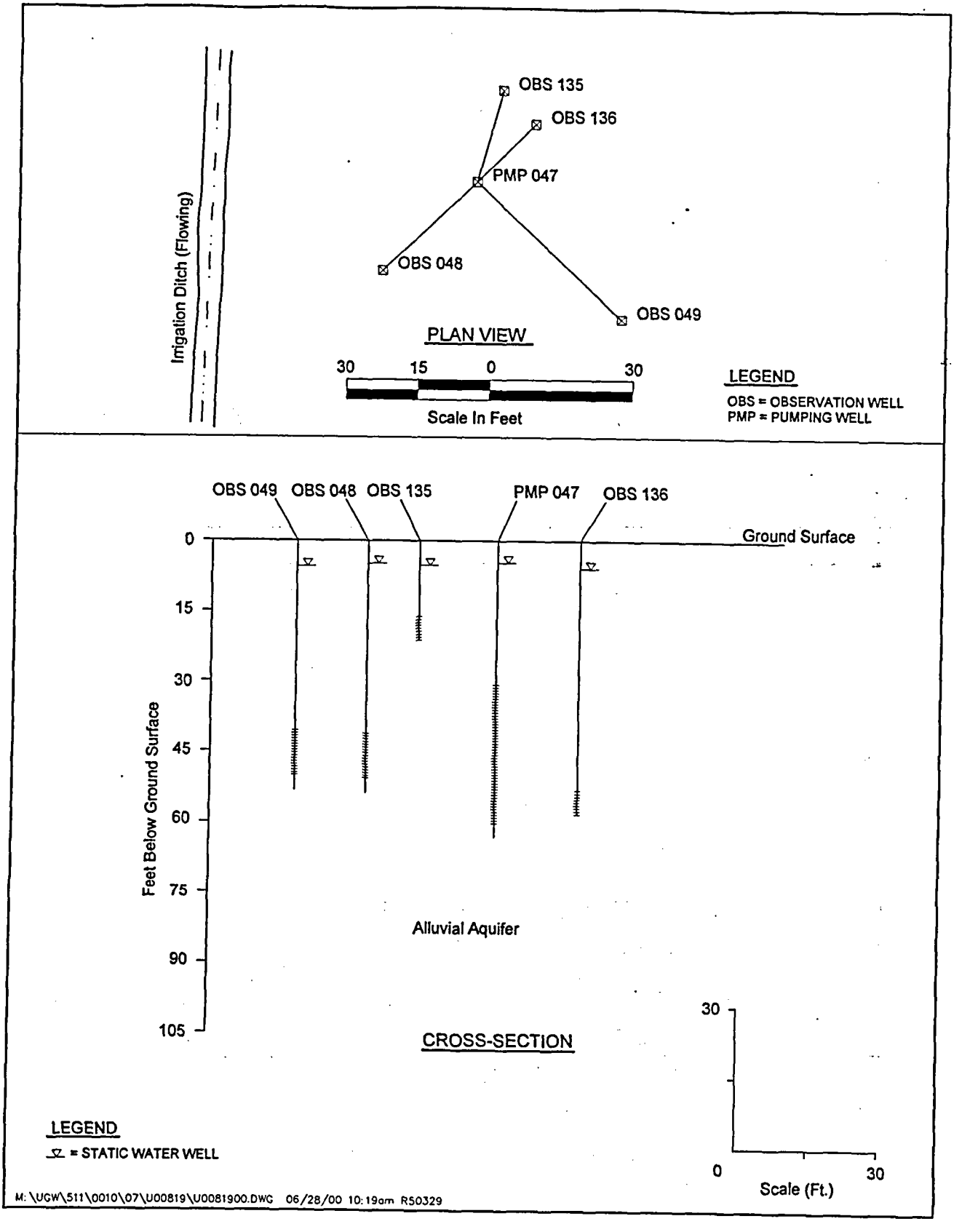

Figure 9. Well 047 Cluster Map and Cross Section

The initial test was started on November 11, 1999, with a flow rate of 60 gpm. The goal was to run the test for 72 hours, stop pumping, and collect recovery data. However, after 62 hours the generator supplying power for the pump shut off unexpectedly, and no recovery data were collected. A second attempt was made to run at least a 24 hour test at the same flow rate starting December 8, 1999, unfortunately the generator shut off again, and no recovery data were collected at this location.

Table 7 presents the results of the 047 Test 1 discharge water chemical analyses. These results indicate the constituents remained reasonably constant during the pumping phase time period at this location also. A more complete discussion is included in the ESL report *Expedited Site Characterization of the Ground Water Chemistry During Two Pumping Tests November 20 through December 2, 1999* (ESL-RPT-2000-2).

Table 7. Results of the 047 Test 1 Discharge Water Chemical Analysis

Sample	Cum Vol.	pH	Orp	Cond	Temp	Alk	SO_4	NO_3	NO_2	NH_3	U
	(Gal.)			(ATC)	(°C)		(mg/L)	(mg/L)	(ug/L)	(ug/L)	(ug/L)
GUN047 @ 1 min	60	6.88	-207	607	9.4	245	220	6.65	6.0	40	16
GUN047 @ 2 min	120	6.84	-218	771	8.9	275	290	2.45	**5.0**	40	20
GUN047 @ 3 min	180	6.83	-231	792	8.8	270	315	3.75	**5.0**	40	21
GUN047 @ 4 min	240	6.85	-238	812	8.8	240	340	3.1	**5.0**	40	21
GUN047 @ 5 min	300	6.86	-243	824	8.7	260	355	2.9	**5.0**	40	22
GUN047 @ 15 min	900	6.83	-215	843	8.8	255	375	3.4	7.0	40	25
GUN047 @ 30 min	1800	6.79	-202	849	8.7	250	360	3	8.0	40	26
GUN047 @ 60 min	3600	6.84	-200	861	8.6	230	375	2.9	6.0	40	26
GUN047 @ 90 min	5400	6.86	-184	862	8.5	255	355	6	6.0	40	26
GUN047 @ 17 hrs	61200	6.96	19	875	8.4	260	375	2.5	9.0	40	25
GUN047 @ 20 hrs	72000	6.94	-18	884	8.6	275	365	3.6	**5.0**	40	28
GUN047 @ 24 hrs	86400	7.11	-30	890	8.5	265	380	4	**5.0**	40	26
GUN047 @ 41 hrs	147600	6.92	85	891	8.4	225	385	4.2	**5.0**	40	25
GUN047 @ 44 hrs	158400	6.57	48	766	8.5	230	375	3.2	8.0	40	25
GUN047 @ 48 hrs	172800	6.62	1	902	8.2	170	370	8.6	20.0	40	20
NOTES: Water parameters (pH, ORP, Cond., Temp.) were measured (unfiltered) at the well with a calibrated YSI 3500 using a flow cell.											
All other analyses were performed on water filtered through a 0.45um flow-through filter.											
Constituent measurements are at least duplicates. If the results did not agree within 10% they were repeated.											
The pump test was halted 11/23/99 ~0700. The last sample taken was the 48 hour sample. The generator supplying power to the pump											
quit working sometime overnight and the rate meter froze.											
Spreadsheet has been checked for accuracy in transcription.											
Bold = Less than detection limit											

Table 8 lists the drawdown measured in the pumping well and each observation well for the two tests completed at this location.

Table 8. Total Drawdown for the Well 047 Aquifer Tests

		Test No.	047 Test 1	047 Test 2
		Q (gpm)	60	60
Well	r (ft)	Scrn Inv (ft bgs)	s (ft)	s (ft)
PMP 047	NA	30.8 - 60.2	39	27.52
OBS 048	27.2	41.2 - 50.7	4.13	3.64
OBS 049	42.1	40.6 - 50.1	3.1	2.81
OBS 135	16.4	16.3 - 21.3	0.84	0.77
OBS 136	17.3	53.2 - 58.2	3.74	3.63

Q = Pumping Rate
r = Distance to Pumping Well
Scrn Inv = Screened Interval (ft below ground surface)
s = Drawdown
Pmp = Pumping Well
Obs = Observation Well

Observation wells 048, 049, and 136 are screened approximately within the same interval as the pumping well. Observation well 136 did not respond quickly to an added slug of water during the response test; therefore, data collected from this well were not analyzed. Table 9 contains the transmissivity results based on the data collected during the two tests from observation wells 048 and 049. The plots used for the analyses and the drawdown data collected during the tests are contained within Appendix D.

Table 9. Well 047 Aquifer Test Transmissivitiy Results (ft^2/day)

Test No	Data Source	Test	Analytical Method				
			Theis	C-J T(ft^2/d)	Neuman T(ft^2/d)	Theis Rec T(ft^2/d)	Neuman Sy
047 Test 1	Obs 048	AQ	1031	1137.6	1674.1	NA	.152
	Obs 049	AQ	1156.3	1258.6	1813.8	NA	.184
047 Test 2	Obs 048	AQ	1297.4	1088.6	1883.1	NA	.079
	Obs 049	AQ	1454.4	1356.4	2036.9	NA	.065

OBS = Observation Well
PMP = Pumping Well
AQ = Aquifer Test
REC = Recovery Test
NA = Not applicable
Theis = Theis Unconfined Method
C-J = Cooper Jacob Method
Neuman = Neuman Method for Partially Penetrating Wells in Unconfined Aquifers
Theis Rec = Theis Recovery Method
T = Transmissivity (ft^2/day)
Sy = Specific yield

The potential for the irrigation ditch recharging the aquifer and influencing the drawdown at each of the three testing locations (041, 044, and 047) was ruled out after the tests at well 044 were conducted. This location did not include an irrigation ditch nearby, yet the wells responded in the same manner as that demonstrated by the well 041 and 047 tests (which did contain irrigation ditches filled with water). As a result, it was determined that the tests may be reaching steady-state a relatively short time after each test was started.

The semi-log plots of the residual drawdown data collected from the pumping well during the recovery test exhibit an S-shaped curve (Appendices B through D). This shaped recovery curve is also indicative of the aquifer not being adequately stressed, and reaching steady-state conditions.

3.2.4 City of Gunnison Production Well Aquifer Test

These tests were conducted by a consultant to the City of Gunnison. After the installation of Production Well #10, a series of short-term aquifer tests were completed to determine the optimal pumping rate for the well on October 28 and 29, 1999. The initial test was run at a pumping rate of 421 gpm. During this test, which lasted only 1 hour, drawdown data from the pumping well and an observation well (located 42 ft from the pumping well) were collected. According to the available information, recovery data were not recorded after this short-term test. Data for these tests were not analyzed using the Neuman Method for Partially Penetrating Wells since the production well nearly fully penetrates the entire saturated thickness of the alluvial aquifer. As a result, the drawdown data collected from the observation well were analyzed using the Theis and Cooper-Jacob Methods for Unconfined Aquifers.

The following day, a step test was completed at pumping rates of 135, 265, and 400 gpm. Prior to increasing the pumping rate after each step, the pumping well was allowed to fully recover to the static water level. Pumping phases of the first two steps lasted 1 hour, while the pumping phase of the 400 gpm step lasted 17 hours. Drawdown data were collected only from the pumping well during this step test, observation well data were not recorded. As a result, only the residual drawdown data were analyzed using the Theis Recovery Method. Table 10 contains the transmissivity results obtained from the analyses of the data from the tests associated with Production Well #10. Appendix E contains the computer-generated plots used for the analyses of the data.

Another aquifer test was completed on another City of Gunnison Production Well in 1975. Residual drawdown data were collected after Production Well #7 was pumped at a rate of 274 gpm for an unknown length of time. A copy of the data collected during this test was obtained from the City of Gunnison, and is included in Appendix E.

Table 10. City Of Gunnison Production Well Aquifer Test Transmissivitiy Results (ft^2/day)

Q (gpm)	Data Source	Test	Analytical Method		
			Theis $T(ft^2/d)$	C-J $T(ft^2/d)$	Theis Rec $T(ft^2/d)$
421	Obs Well	AQ	5600	5055	NA
135	Well 10	REC	NA	NA	6164
265	Well 10	REC	NA	NA	7300
400	Well 10	REC	NA	NA	10262
274	Well 7	REC	NA	NA	8440

OBS = Observation Well
PMP = Pumping Well
AQ = Aquifer Test
REC = Recovery Test
NA = Not applicable

Theis = Theis Method
C-J = Cooper Jacob Method
Theis Rec = Theis Recovery Method
T = Transmissivity (ft^2/day)

All the City of Gunnison Production Wells are located northeast of the site. Despite the difference in location between the City of Gunnison wells and wells 041, 044, and 047, results of these analyses may provide the most representative parameters for the alluvial aquifer underlying the site. The depositional environment is believed to be similar between the two areas, and the capability to generate a higher flow rate during the aquifer tests for the Production Wells sufficiently stresses the aquifer.

3.3 Hydraulic Conductivity Results

Determination of the hydraulic conductivity depends upon the thickness of the saturated zone. As previously mentioned, the thickness of the alluvial aquifer underlying the site is approximately 120 ft. The depths to water in the vicinity of the site average 5 ft, resulting in 115 ft of saturated thickness. However, pumping wells 041, 044, and 047 are screened over only 30 ft of the saturated thickness. As a result, all transmissivity results obtained from the 041, 044, and 047 tests were divided by 30 ft to obtain the hydraulic conductivity. Likewise, the City of Gunnison Production Wells are typically screened over a 60 ft length. Transmissivity results obtained from the data collected from these tests were divided by 60.

The hydraulic conductivity estimates based on the analyses of the data using the Neuman Method for Partially Penetrating Wells in Unconfined Aquifers (the most applicable method for these conditions) ranged from 13.5 to 105.7 ft/day. Using the Theis Recovery Method on the data collected from the recovery phase of the aquifer tests conducted on the City of Gunnison Production Wells, the hydraulic conductivity ranges from 103 to 171 ft/day.

3.4 Background Monitoring

A data logger was installed in well 186 (Figure 1) to monitor the alluvial aquifer water table surface fluctuations over the time period when the aquifer tests were conducted. This location was chosen because of the proximity to the test locations (close enough to provide representative background data without being influenced by the aquifer test activities) and because this well is screened over approximately the same interval as the pumping wells.

As shown in Figure 10, during the time period when the tests were conducted there was minimal fluctuation in the alluvial aquifer water table surface (0.4 ft) compared to the drawdown observed in the observation wells. As a result, it was not necessary to adjust drawdown or residual drawdown data collected from any of the tests completed at the 041, 044, or 047 locations.

4.0 Conclusions

The following conclusions can be made based on the data collected from the 1999 field investigation near the Gunnison site:

- Following the general rule, the specific capacity decreased with increased drawdown for each of the newly installed pumping wells. Data collected from the step tests indicated the specific capacity ranges from 0.17 to 0.36 ft^2/min for flow rates below 30 gpm, and from 0.09 to 0.12 ft^2/min for flow rates above 30 gpm.

- The aquifer tests conducted downgradient of the site at 041, 044, and 047 well cluster locations may not have stressed the aquifer adequately to provide representative hydraulic parameters. Tests completed at each of the three locations resulted in observation well drawdown data falling below the Theis curve after less than 20 minutes into the test. This response to pumping, combined with an S-shaped curve generated from data collected during the recovery phase of the test, suggest a steady-state condition was obtained early in the testing period.

- Analyses of the drawdown data (using the Neuman Method for Partial Penetration) collected from wells 041, 044, and 047 during the pumping phase suggest the alluvial aquifer transmissivity ranges from 406 to 3,172 ft^2/day. Analyses of residual drawdown data collected during the recovery phase of these tests suggest the transmissivity ranges from 68 to 976 ft^2/day.

- Specific yield estimates, calculated using the Neuman Method for Unconfined Aquifer with Partial Penetrating Wells, ranges from 0.016 to 0.664.

- Drawdown data collected during the recovery phase of the aquifer tests conducted using Production Wells #7 and #10 suggest the alluvial aquifer transmissivity ranges from 6,164 to 10,262 ft/day.

- Using the screened interval as the saturated thickness (30 ft for wells 041, 044, and 047 and 60 ft for the City of Gunnison Production Well tests) the conductivity for the onsite tests (pumping phase only) range from 13.5 to 105.7 ft/day, and from 103 to 171 ft/day for the Production Well tests.

- Aquifer tests conducted on the Production Wells for the City of Gunnison may provide more representative hydraulic parameter estimates due to the fact they were conducted at pumping rates of up to 421 gpm (and stressed the entire thickness of the alluvial aquifer), compared to the onsite tests that were conducted at much lower pumping rates and stressed only a small portion of the aquifer.

- Table 11 is a summary table which provides the transmissivity and hydraulic conductivity results for all tests included in this calculation set.

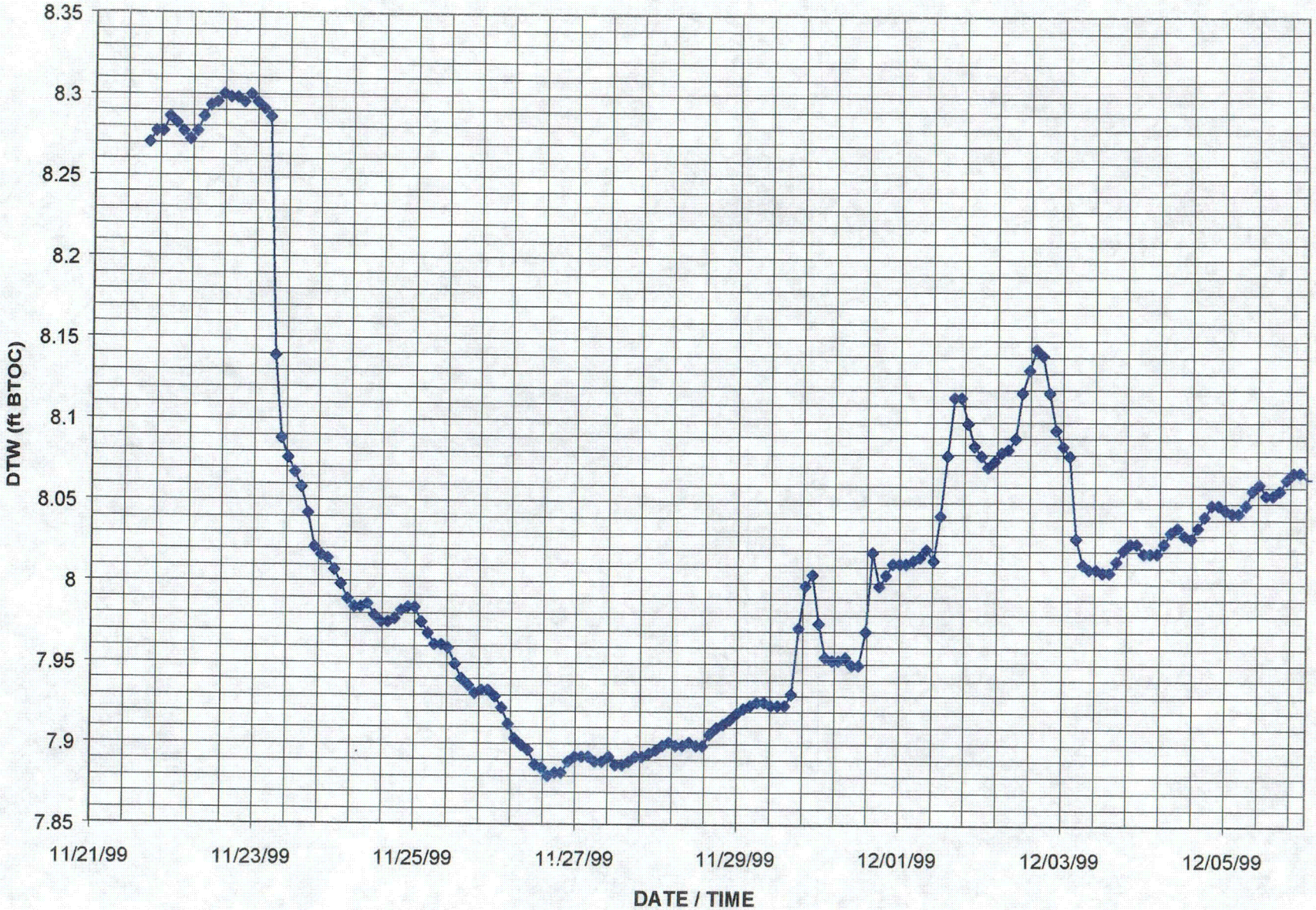

Figure 10. Water Table Fluctuations between November 21 and December 5, 1999, in Background Well 186.

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Table 11. Summary of Transmissivity and Hydraulic Conductivity Test Results.

041 LOCATION			WELL PMP 041		WELL OBS 042, r = 26.8'						WELL OBS 123, r = 30.8'						WELL OBS 043, r = 36.6'					
	Q	Time	Theis Rec		Theis		Cooper-Jacob		Neuman		Theis		Cooper-Jacob		Neuman		Theis		Cooper-Jacob		Neuman	
	(gpm)	(hrs)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)
AQ TEST 1	35	app 19	NA	NA	301	10.03	361.4	12.05	516.9	17.23	267.8	8.93	315.4	10.51	472.5	15.75	424.8	14.16	423.4	14.11	608.9	20.30
(NO REC TEST)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ TEST 2	38.1	72.25	NA	NA	292.3	9.74	352.8	11.76	551.5	18.38	231.8	7.73	325.4	10.85	488	16.27	260.6	8.69	414.7	13.82	608.7	20.29
REC TEST			302.4	10.08	325.4	10.85	NA	NA	NA	NA	319.7	10.66	NA	NA	NA	NA	394.6	13.15	NA	NA	NA	NA
AQ TEST 3	44.7	8	NA	NA	305.3	10.18	338.4	11.28	495.5	16.52	216	7.20	301	10.03	405.9	13.53	305.3	10.18	375.8	12.53	508.4	16.95
REC TEST			74.7	2.49	178.6	5.95	NA	NA	NA	NA	216	7.20	NA	NA	NA	NA	302.4	10.08	NA	NA	NA	NA

044 LOCATION			WELL PMP 044		WELL OBS 046, r = 40.9'						WELL OBS 045, r = 56.8'						WELL OBS 126, r = 16.4'					
	Q	Time	Theis Rec		Theis		Cooper-Jacob		Neuman		Theis		Cooper-Jacob		Neuman		Theis		Cooper-Jacob		Neuman	
	(gpm)	(hrs)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)
AQ TEST 1	50	app 41	NA	NA	1081.4	36.05	1213.9	40.46	1681	56.03	1213.9	40.46	1018.1	33.94	1606.9	53.56	1360.8	45.36	1728	57.60	3172.5	105.75
(NO REC TEST)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ TEST 2	60 / 58	15.5	NA	NA	999.4	33.31	1163.5	38.78	1319.5	43.98	793.4	26.45	1041.1	34.70	1277.1	42.57	1771.2	59.04	1598.4	53.28	2635.5	87.85
REC TEST			68	2.27	819.4	27.31	NA	NA	NA	NA	727.2	24.24	NA	NA	NA	NA	976.3	32.54	NA	NA	NA	NA

047 LOCATION			WELL PMP 047		WELL OBS 048, r = 27.2'						WELL OBS 049, r = 42.1'					
	Q	Time	Theis Rec		Theis		Cooper-Jacob		Neuman		Theis		Cooper-Jacob		Neuman	
	(gpm)	(hrs)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)
AQ TEST 1	60	app 62	NA	NA	1031	34.37	1137.6	37.92	1674.1	55.80	1156.3	38.54	1258.6	41.95	1813.8	60.46
(NO REC TEST)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ TEST 2	60	app 12	NA	NA	1297.4	43.25	1088.6	36.29	1883.1	62.77	1454.4	48.48	1356.4	45.21	2036.9	67.90
(NO REC TEST)			-	-	-	-	-	-	-	-	-	-	-	-	-	-

CITY OF GUNNISON			WELL #10		OBS WELL, r = 42.5'			
	Q	Time	Theis Rec		Theis		Cooper-Jacob	
	(gpm)	(hrs)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)	T (ft2/d)	K (ft/d)
TEST 1	420	1	NA	NA	5600	93.3	5055	84.3
(NO REC TEST)			-	-	-	-	-	-
TEST 2 (REC ONLY)	135	1	6164	102.7	NA	NA	NA	NA
TEST 3 (REC ONLY)	265	1	7300	121.7	NA	NA	NA	NA
TEST 4 (REC ONLY)	400	17	10262	171.0	NA	NA	NA	NA
1975 TEST (WELL #7)	?	?	8440	140.7	NA	NA	NA	NA

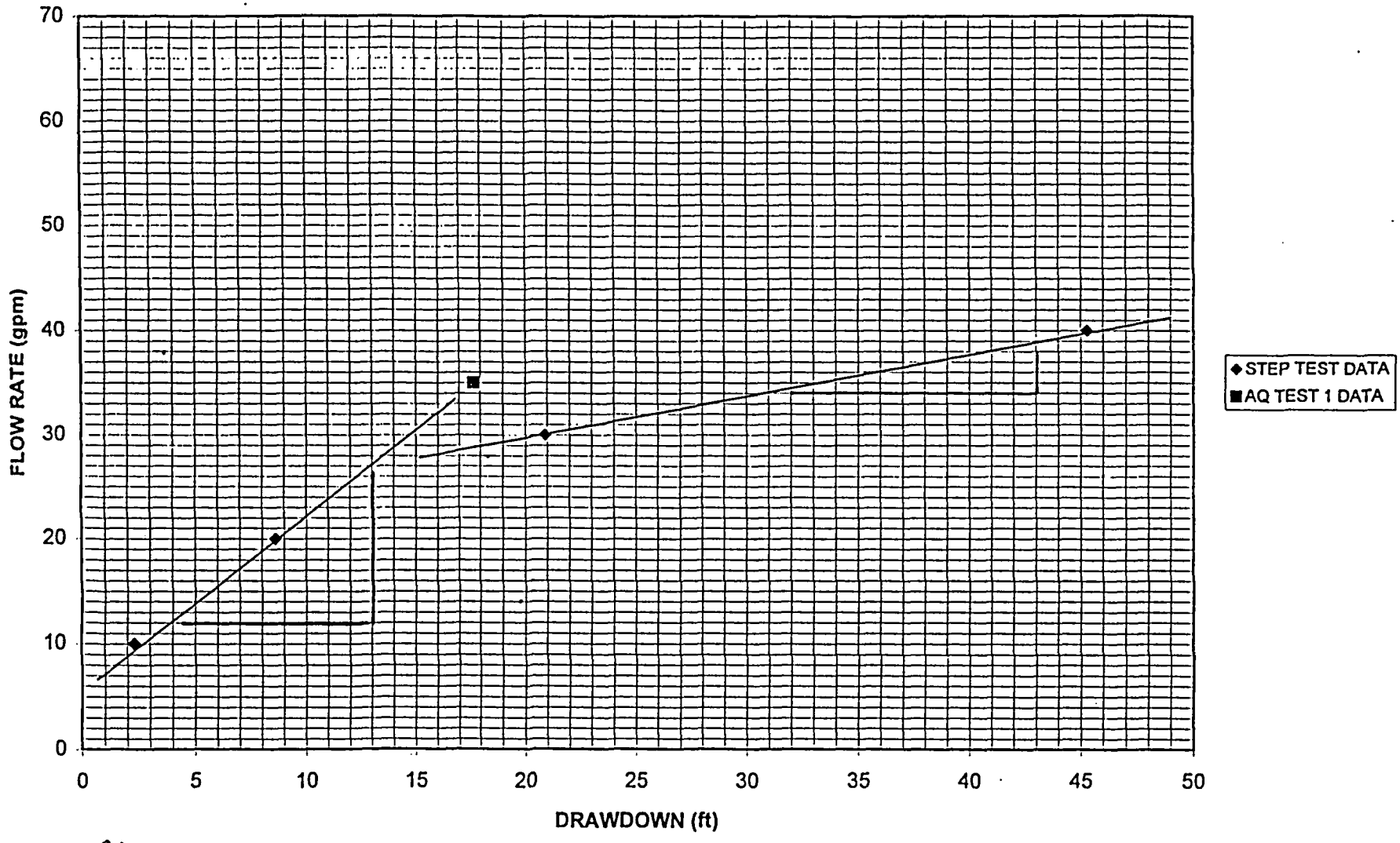
NOTES

T	=	Transmissivity (ft2/day)
K	=	Hydraulic Conductivity (ft/day)
Q	=	Pump Discharge Rate (gpm)
OBS	=	Observation Well
PMP	=	Pumping Well
r	=	Distance to Pumping Well
AQ	=	Aquifer Test
REC	=	Recovery Test
app	=	approximate
Theis Rec	=	Theis Recovery Method
Theis	=	Theis Unconfined Method
Cooper-Jacob	=	Cooper-Jacob Method
Neuman	=	Neuman Method for Partially Penetrating Wells in Unconfined Aquifers
NA	=	Not Applicable
-	=	No Data

APPENDIX A

STEP TEST DATA AND PLOTS FOR WELLS 041, 044, AND 047

WELL 041 STEP TEST 1 DATA - SPECIFIC CAPACITY DETERMINATION



LOWER Q:

$$\text{SLOPE} = \frac{15\ \text{GPM}}{9\ \text{FT}} = \underline{0.22\ \text{FT}^2/\text{MIN}}$$

HIGHER Q:

$$\text{SLOPE} = \frac{5\ \text{GPM}}{12\ \text{FT}} = \underline{0.06\ \text{FT}^2/\text{MIN}}$$

GUNNISON UMTRA SITE
WELL 041 STEP TEST 1 DATA
START DATE/TIME : 11/18/99, 0900

Q = 10 GPM

ELAPSED TIME (MIN)	WELL 041 DTW FT BTOC	WELL 042 DTW FT BTOC	WELL 043 DTW FT BTOC
0	8.226	8.039	8.393
0.0217	11.097	8.238	8.391
0.0434	9.523	8.277	8.389
0.065	10.842	8.481	8.389
0.0867	11.131	8.705	8.389
0.1084	11.753	8.93	8.387
0.13	12.363	9.112	8.393
0.1517	12.928	9.273	8.396
0.1734	11.74	9.399	8.4
0.195	13.386	9.522	8.405
0.2172	13.274	9.624	8.412
0.2407	13.045	9.691	8.42
0.2655	13.2	9.743	8.431
0.2919	13.105	9.785	8.442
0.3199	13.049	9.819	8.458
0.3495	12.859	9.839	8.474
0.3809	12.691	9.85	8.493
0.414	12.527	9.85	8.515
0.4492	12.35	9.843	8.538
0.4865	12.155	9.826	8.554
0.526	12.06	9.809	8.569
0.5679	11.792	9.77	8.601
0.6122	11.628	9.737	8.624
0.6592	11.442	9.702	8.649
0.709	11.261	9.663	8.667
0.7617	11.097	9.626	8.686
0.8175	10.989	9.585	8.707
0.8767	10.811	9.546	8.724
0.9394	10.677	9.503	8.74
1.0057	10.569	9.462	8.753
1.076	10.461	9.418	8.766
1.1505	10.327	9.379	8.775
1.2295	10.284	9.34	8.784
1.3132	10.115	9.303	8.789
1.4017	10.046	9.269	8.797
1.4955	9.994	9.238	8.802
1.5949	9.895	9.204	8.807
1.7002	9.839	9.182	8.808
1.8117	9.822	9.164	8.811
1.9299	9.873	9.16	8.813
2.055	9.947	9.186	8.816
2.1875	10.077	9.223	8.818
2.328	10.055	9.245	8.826
2.4769	9.973	9.227	8.833
2.6344	9.891	9.214	8.845
2.8012	9.882	9.204	8.85
2.978	9.994	9.23	8.855
3.1654	10.111	9.266	8.862
3.3637	10.038	9.271	8.874
3.5739	9.999	9.266	8.882
3.7965	9.96	9.258	8.89
4.0324	9.943	9.256	8.895
4.2822	9.943	9.258	8.901
4.5469	10.029	9.282	8.907
4.8272	10.172	9.329	8.917
5.124	10.215	9.366	8.93
5.4385	10.211	9.381	8.945
5.7717	10.193	9.392	8.958
6.1245	10.193	9.392	8.961
6.4984	10.176	9.405	8.977
6.8944	10.224	9.423	8.993
7.3137	10.237	9.433	9.004
7.758	10.254	9.444	9.014
8.2287	10.267	9.451	9.028

	8.7272	10.245	9.464	9.035
	9.2552	10.271	9.472	9.048
	9.8145	10.267	9.483	9.057
	10.407	10.275	9.49	9.062
	11.0345	10.28	9.503	9.075
	11.6994	10.297	9.511	9.081
	12.4035	10.288	9.52	9.091
	13.1494	10.301	9.529	9.099
	13.9394	10.319	9.531	9.104
	14.7762	10.336	9.55	9.116
	15.6627	10.332	9.561	9.126
	16.6017	10.388	9.568	9.134
	17.5964	10.349	9.572	9.141
	18.65	10.345	9.581	9.151
	19.766	10.332	9.583	9.154
	20.9482	10.392	9.594	9.163
	22.2004	10.388	9.609	9.173
	23.5269	10.375	9.611	9.179
	24.9319	10.414	9.622	9.189
	26.4202	10.409	9.624	9.196
	27.9967	10.396	9.631	9.203
	29.6665	10.401	9.644	9.209
	31.4354	10.401	9.646	9.212
	33.309	10.435	9.655	9.222
	35.2937	10.431	9.655	9.221
	37.396	10.435	9.659	9.226
	39.6229	10.427	9.659	9.232
	41.9817	10.396	9.67	9.238
	44.4804	10.396	9.665	9.238
	47.127	10.427	9.681	9.248
	49.9305	10.448	9.674	9.245
	52.9002	10.47	9.689	9.256
	56.0459	10.435	9.683	9.253
Q = 20 GPM				
	60	10.496	9.7	9.251
	60.0218	10.894	9.711	9.251
	60.0436	10.608	9.711	9.253
	60.0655	10.703	9.722	9.253
	60.0873	10.781	9.735	9.251
	60.1091	10.876	9.754	9.253
	60.131	10.984	9.774	9.253
	60.1528	10.993	9.795	9.253
	60.1746	11.166	9.819	9.254
	60.1965	11.287	9.845	9.253
	60.2186	11.408	9.873	9.254
	60.2421	11.468	9.899	9.257
	60.267	11.62	9.932	9.257
	60.2933	11.702	9.96	9.256
	60.3213	11.771	9.997	9.259
	60.351	11.896	10.03	9.26
	60.3823	11.969	10.069	9.265
	60.4155	12.142	10.105	9.269
	60.4506	12.207	10.147	9.27
	60.488	12.341	10.188	9.275
	60.5275	12.436	10.218	9.28
	60.5693	12.635	10.29	9.289
	60.6136	12.82	10.344	9.298
	60.6606	13.049	10.407	9.305
	60.7105	13.257	10.476	9.314
	60.7631	13.416	10.554	9.326
	60.819	13.667	10.632	9.337
	60.8781	13.883	10.712	9.352
	60.9408	14.068	10.797	9.366
	61.0071	14.172	10.879	9.385
	61.0775	14.284	10.957	9.405
	61.152	14.34	11.022	9.429
	61.231	14.358	11.074	9.449
	61.3146	14.405	11.124	9.475
	61.4031	14.427	11.165	9.5
	61.497	14.487	11.209	9.523
	61.5963	14.569	11.254	9.552

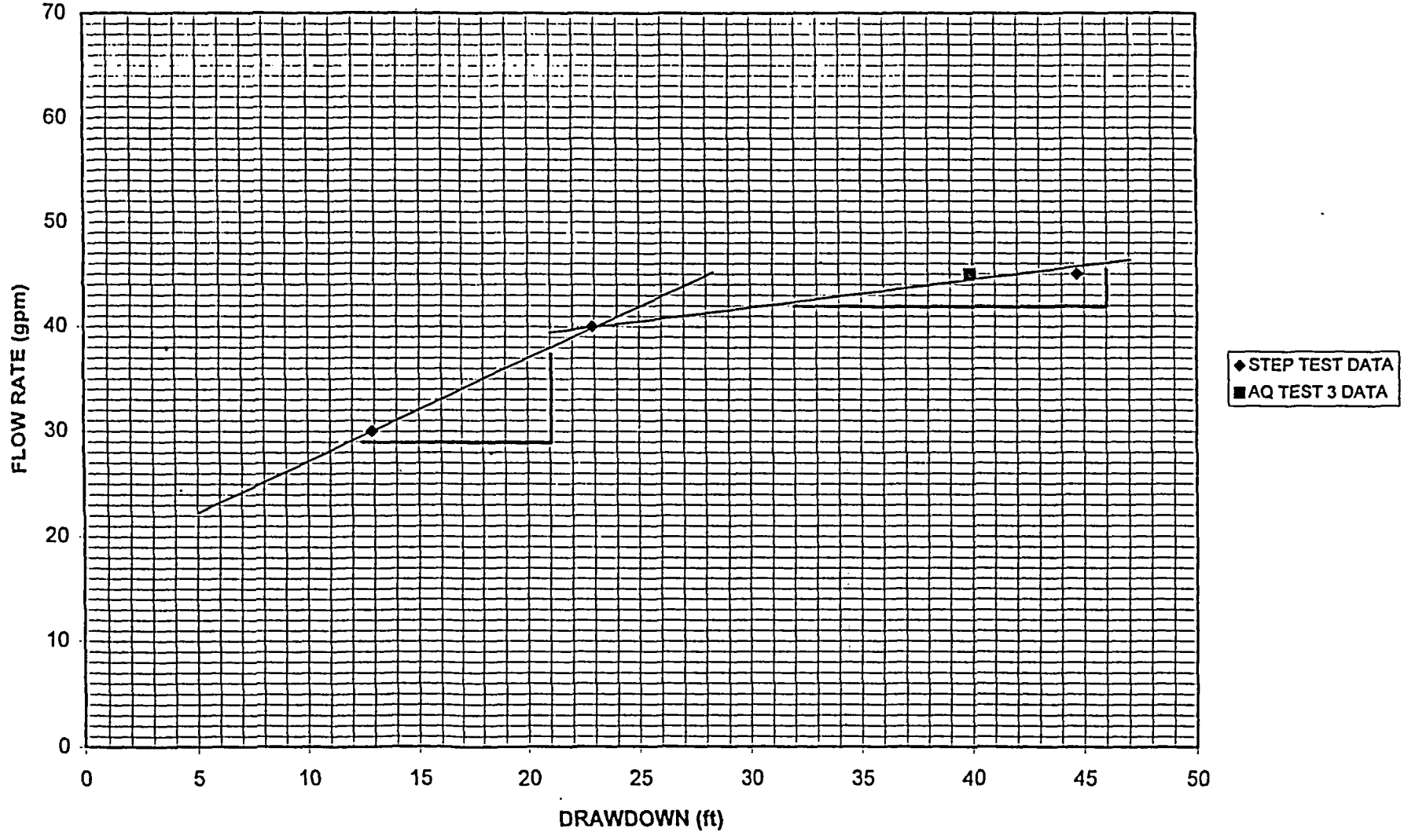
	61.7016	14.617	11.296	9.572
	61.8131	14.686	11.341	9.598
	61.9313	14.746	11.387	9.625
	62.0565	14.841	11.436	9.651
	62.189	14.945	11.493	9.678
	62.3295	15.057	11.543	9.704
	62.4783	15.156	11.588	9.732
	62.6358	15.269	11.647	9.76
	62.8026	15.372	11.705	9.79
	62.9795	15.446	11.761	9.823
	63.1668	15.493	11.816	9.853
	63.3651	15.575	11.868	9.884
	63.5753	15.635	11.915	9.915
	63.798	15.696	11.959	9.948
	64.0338	15.739	12.011	9.976
	64.2836	15.83	12.054	10.009
	64.5483	15.817	12.097	10.041
	64.8286	15.899	12.141	10.073
	65.1255	15.907	12.171	10.107
	65.44	15.955	12.21	10.134
	65.7731	15.989	12.247	10.163
	66.126	16.028	12.284	10.194
	66.4998	16.045	12.318	10.224
	66.8958	16.114	12.351	10.253
	67.3151	16.127	12.381	10.278
	67.7595	16.158	12.409	10.305
	68.2301	16.196	12.444	10.334
	68.7286	16.231	12.47	10.358
	69.2566	16.235	12.498	10.384
	69.816	16.253	12.524	10.409
	70.4085	16.3	12.552	10.433
	71.036	16.309	12.576	10.454
	71.7008	16.36	12.589	10.472
	72.405	16.365	12.626	10.5
	73.1508	16.408	12.639	10.519
	73.9408	16.412	12.671	10.543
	74.7776	16.421	12.691	10.565
	75.6641	16.429	12.732	10.583
	76.6031	16.442	12.745	10.607
	77.5978	16.477	12.762	10.628
	78.6515	16.52	12.778	10.639
	79.7675	16.524	12.797	10.66
	80.9496	16.52	12.812	10.677
	82.2018	16.572	12.819	10.696
	83.5283	16.589	12.832	10.709
	84.9333	16.567	12.869	10.725
	86.4216	16.585	12.886	10.739
	87.9981	16.589	12.886	10.754
	89.668	16.615	12.89	10.773
	91.4368	16.641	12.912	10.784
	93.3105	16.658	12.927	10.797
	95.2951	16.675	12.923	10.809
	97.3975	16.701	12.944	10.834
	99.6243	16.701	12.955	10.832
	101.9831	16.701	12.957	10.835
	104.4818	16.736	12.975	10.856
	107.1285	16.744	12.988	10.866
	109.932	16.744	12.994	10.877
	112.9016	16.77	13.012	10.889
	116.0473	16.796	13.022	10.899
Q = 30 GPM				
	120	16.845	13.069	10.91
	120.0217	17.073	13.073	10.911
	120.0434	17.306	13.084	10.91
	120.065	17.517	13.11	10.911
	120.0867	17.707	13.131	10.911
	120.1084	17.949	13.168	10.91
	120.13	18.126	13.203	10.91
	120.1517	18.307	13.242	10.913
	120.1734	18.427	13.283	10.911
	120.195	18.531	13.326	10.911

120.2167	18.643	13.363	10.911
120.2384	18.703	13.404	10.914
120.26	18.811	13.439	10.916
120.2822	18.889	13.478	10.917
120.3057	18.997	13.515	10.922
120.3305	19.096	13.552	10.922
120.3569	19.203	13.595	10.926
120.3849	19.316	13.643	10.927
120.4145	19.436	13.69	10.93
120.4459	19.57	13.738	10.939
120.479	19.695	13.794	10.949
120.5142	19.824	13.827	10.954
120.5515	19.962	13.879	10.956
120.591	20.044	13.913	10.961
120.6329	20.294	13.993	10.971
120.6772	20.402	14.045	10.978
120.7242	20.591	14.11	10.99
120.774	20.755	14.156	11.006
120.8267	20.949	14.195	11.017
120.8825	21.169	14.251	11.038
120.9417	21.401	14.318	11.049
121.0044	21.686	14.372	11.061
121.0707	21.936	14.448	11.074
121.141	22.104	14.524	11.094
121.2155	22.34	14.602	11.118
121.2945	22.547	14.671	11.138
121.3782	22.775	14.732	11.163
121.4667	22.999	14.797	11.193
121.5605	23.223	14.864	11.222
121.6599	23.421	14.942	11.244
121.7652	23.654	14.996	11.273
121.8767	23.83	15.054	11.302
121.9949	24.024	15.113	11.334
122.12	24.252	15.16	11.367
122.2525	24.429	15.238	11.401
122.393	24.614	15.279	11.434
122.5419	24.795	15.325	11.47
122.6994	24.975	15.37	11.509
122.8662	25.16	15.424	11.543
123.043	25.328	15.483	11.579
123.2304	25.492	15.522	11.617
123.4287	25.647	15.565	11.656
123.6389	25.771	15.626	11.694
123.8615	25.944	15.684	11.73
124.0974	26.055	15.734	11.768
124.3472	26.193	15.766	11.81
124.6119	26.271	15.799	11.843
124.8922	26.391	15.81	11.882
125.189	26.486	15.823	11.92
125.5035	26.585	15.827	11.958
125.8367	26.658	15.827	11.995
126.1895	26.757	15.829	12.032
126.5634	26.813	15.829	12.067
126.9594	26.924	15.831	12.116
127.3787	26.985	15.833	12.142
127.823	27.066	15.836	12.188
128.2937	27.131	15.836	12.216
128.7922	27.191	15.838	12.245
129.3202	27.264	15.838	12.28
129.8795	27.419	15.84	12.313
130.472	27.57	15.842	12.341
131.0995	27.66	15.985	12.381
131.7644	27.754	16.024	12.415
132.4685	27.815	16.061	12.457
133.2144	28.012	16.11	12.487
134.0044	28.167	16.16	12.523
134.8412	28.236	16.195	12.555
135.7277	28.331	16.219	12.596
136.6667	28.386	16.249	12.625
137.6614	28.46	16.253	12.653
138.715	28.451	16.355	12.69

	139.831	28.528	16.355	12.712
	141.0132	28.589	16.355	12.738
	142.2654	28.687	16.353	12.763
	143.5919	28.713	16.359	12.789
	144.9969	28.782	16.357	12.809
	146.4852	28.816	16.357	12.828
	148.0617	28.838	16.385	12.848
	149.7315	28.868	16.403	12.867
	151.5004	28.872	16.411	12.886
	153.374	28.885	16.429	12.912
	155.3587	28.937	16.444	12.924
	157.461	28.963	16.463	12.946
	159.6879	28.98	16.474	12.959
	162.0467	28.997	16.504	12.972
	164.5454	29.036	16.524	12.993
	167.192	29.049	16.548	13.031
	169.9955	29.083	16.55	13.027
	172.9652	29.104	16.563	13.033
Q = 40 GPM				
	180	29.137	17.074	13.063
	180.0218	29.167	17.074	13.071
	180.0437	29.283	17.074	13.069
	180.0655	29.434	17.072	13.064
	180.0873	29.558	17.074	13.066
	180.1092	29.7	17.092	13.073
	180.131	29.872	17.092	13.064
	180.1528	30.022	17.109	13.076
	180.1747	30.16	17.124	13.066
	180.1968	30.328	17.133	13.085
	180.2203	30.478	17.148	13.067
	180.2452	30.611	17.167	13.06
	180.2715	30.774	17.189	13.067
	180.2995	30.925	17.224	13.069
	180.3292	31.101	17.245	13.067
	180.3605	31.281	17.28	13.067
	180.3937	31.44	17.321	13.071
	180.4288	31.616	17.369	13.073
	180.4662	31.797	17.41	13.07
	180.5057	31.926	17.438	13.079
	180.5475	32.162	17.516	13.087
	180.5918	32.372	17.581	13.092
	180.6388	32.531	17.65	13.096
	180.6887	32.72	17.715	13.106
	180.7413	32.918	17.777	13.119
	180.7972	33.137	17.842	13.138
	180.8563	33.373	17.909	13.137
	180.919	33.562	17.972	13.157
	180.9853	33.78	18.039	13.169
	181.0557	34.025	18.102	13.189
	181.1302	34.235	18.18	13.205
	181.2092	34.437	18.232	13.228
	181.2928	34.635	18.264	13.241
	181.3813	34.785	18.292	13.259
	181.4752	34.918	18.299	13.275
	181.5745	35.154	18.312	13.304
	181.6798	35.381	18.346	13.337
	181.7913	35.6	18.394	13.34
	181.9095	35.87	18.441	13.375
	182.0347	36.196	18.489	13.401
	182.1672	36.565	18.56	13.412
	182.3077	36.934	18.645	13.443
	182.4565	37.298	18.735	13.464
	182.614	37.607	18.813	13.502
	182.7808	37.924	18.85	13.527
	182.9577	38.272	18.887	13.557
	183.145	38.67	18.958	13.589
	183.3433	39.03	19.023	13.625
	183.5535	39.42	19.101	13.662
	183.7762	39.84	19.177	13.702
	184.012	40.307	19.261	13.743
	184.2618	40.624	19.36	13.784

184.5265	41.001	19.425	13.821
184.8068	41.378	19.505	13.865
185.1037	41.716	19.609	13.911
185.4182	42.067	19.674	13.959
185.7513	42.444	19.767	14
186.1042	42.864	19.896	14.049
186.478	43.232	19.979	14.101
186.874	43.583	20.028	14.152
187.2933	43.891	20.097	14.2
187.7377	44.191	20.139	14.248
188.2083	44.477	20.193	14.297
188.7068	44.772	20.236	14.342
189.2348	45.068	20.301	14.391
189.7942	45.307	20.348	14.433
190.3867	45.555	20.35	14.48
191.0142	45.872	20.359	14.523
191.679	46.145	20.361	14.561
192.3832	46.364	20.361	14.609
193.129	46.74	20.363	14.649
193.919	47.227	20.363	14.696
194.7558	47.582	20.363	14.745
195.6423	47.864	20.368	14.79
196.5813	48.176	20.365	14.83
197.576	48.42	20.368	14.872
198.6297	48.809	20.368	14.914
199.7457	49.176	20.368	14.949
200.9278	49.514	20.37	14.99
202.18	49.757	20.368	15.025
203.5065	49.924	20.37	15.054
204.9115	50.172	20.372	15.083
206.3998	50.5	20.372	15.112
207.9763	50.808	20.374	15.133
209.6462	50.987	20.376	15.164
211.415	51.226	20.372	15.183
213.2887	51.517	20.376	15.203
215.2733	51.739	20.378	15.228
217.3757	52.311	20.381	15.252
219.6025	52.405	20.378	15.283
221.9613	52.627	20.381	15.3
224.46	52.789	20.391	15.322
227.1067	52.938	20.394	15.339
229.9102	53.122	20.394	15.354
232.8798	53.263	20.391	15.364
236.0255	53.327	20.396	15.375
239.3575	53.476	20.394	15.391
242.887	53.604	20.396	15.406
246.6255	53.775	20.4	15.419
250.5857	53.698	20.402	15.435
254.7805	53.813	20.402	15.441
259.2238	53.945	20.396	15.448
263.9305	54.146	20.402	15.465
268.916	54.355	20.4	15.462
274.1968	54.427	20.402	15.473

WELL 041 STEP TEST 2 DATA - SPECIFIC CAPACITY DETERMINATION



LOWER Q:

SLOPE = $\frac{9 \text{ GPM}}{9 \text{ FT}}$ = 0.13 FT^2/MIN

HIGHER Q:

SLOPE = $\frac{4 \text{ GPM}}{15 \text{ FT}}$ = 0.04 FT^2/MIN

GUNNISON UMTRA SITE
WELL 041 STEP TEST 2 DATA
START DATE/TIME : 12/1/99, 1105

Q = 30 GPM	ELAPSED TIME (MIN)	WELL 041 DWT FT BTOC	WELL 042 DTW FT BTOC	WELL 043 DTW FT BTOC	WELL 123 DTW FT BTOC
	0	8.479	8.403	8.61	9.76
	0.0084	9.632	8.55	8.61	9.763
	0.0167	10.256	8.669	8.61	9.763
	0.025	10.728	8.788	8.61	9.763
	0.0334	11.229	8.906	8.61	9.763
	0.0417	11.664	9.02	8.606	9.766
	0.05	12.032	9.139	8.61	9.766
	0.0584	12.448	9.263	8.606	9.769
	0.0667	12.873	9.377	8.606	9.772
	0.075	13.26	9.496	8.606	9.775
	0.0834	13.628	9.61	8.606	9.775
	0.0917	13.996	9.719	8.61	9.779
	0.1	14.317	9.828	8.61	9.779
	0.1084	14.704	9.933	8.61	9.785
	0.1167	15.015	10.037	8.613	9.788
	0.125	14.846	10.128	8.613	9.794
	0.1334	15.544	10.232	8.616	9.798
	0.1417	16.299	10.332	8.619	9.801
	0.15	16.204	10.427	8.622	9.804
	0.1584	16.402	10.512	8.625	9.81
	0.1667	16.383	10.598	8.629	9.813
	0.1834	17.694	10.769	8.638	9.826
	0.2	16.648	10.878	8.648	9.839
	0.2167	16.383	10.983	8.657	9.851
	0.2334	16.119	11.063	8.67	9.867
	0.25	15.799	11.12	8.686	9.88
	0.2667	15.591	11.154	8.698	9.893
	0.2834	15.355	11.173	8.714	9.909
	0.3	15.025	11.173	8.73	9.921
	0.3167	14.817	11.168	8.749	9.937
	0.3334	14.638	11.158	8.765	9.953
	0.35	14.374	11.139	8.784	9.966
	0.3667	14.166	11.116	8.8	9.981
	0.3834	14.015	11.092	8.819	9.997
	0.4	13.76	11.059	8.835	10.013
	0.4167	13.685	11.03	8.854	10.026
	0.4334	13.581	11.002	8.87	10.042
	0.45	13.43	10.973	8.886	10.058
	0.4667	13.345	10.94	8.902	10.07
	0.4834	13.25	10.916	8.917	10.086
	0.5	13.194	10.888	8.933	10.099
	0.5167	13.09	10.864	8.946	10.115
	0.5334	12.986	10.835	8.962	10.127
	0.55	12.929	10.816	8.975	10.14
	0.5667	12.74	10.793	8.987	10.153
	0.5834	12.854	10.778	9	10.165
	0.6	12.882	10.759	9.01	10.181
	0.6167	12.797	10.74	9.022	10.191
	0.6334	13.543	10.75	9.032	10.203
	0.65	12.939	10.731	9.044	10.216
	0.6667	12.986	10.731	9.054	10.222
	0.6834	13.118	10.736	9.063	10.238
	0.7	13.213	10.745	9.073	10.248
	0.7167	13.222	10.759	9.079	10.257
	0.7334	13.345	10.774	9.089	10.27
	0.75	13.467	10.797	9.098	10.283
	0.7667	13.477	10.816	9.105	10.292
	0.7834	13.675	10.84	9.114	10.302

	0.8	13.779	10.869	9.121	10.311
	0.8167	13.958	10.902	9.127	10.324
	0.8334	14.072	10.935	9.137	10.333
	1.0334	15.487	11.424	9.229	10.46
	1.2334	16.148	11.837	9.336	10.597
	1.4334	16.563	12.122	9.457	10.736
	1.6334	16.949	12.364	9.571	10.879
	1.8334	17.496	12.644	9.682	11.015
	2.0334	17.826	12.882	9.794	11.151
	2.2334	18.005	13.072	9.898	11.285
	2.4334	18.222	13.238	10	11.415
	2.6334	18.392	13.385	10.095	11.532
	2.8334	18.552	13.518	10.181	11.649
	3.0334	18.713	13.641	10.263	11.76
	3.2334	18.844	13.755	10.346	11.861
	3.4334	18.995	13.859	10.419	11.96
	3.6334	19.052	13.964	10.489	12.055
	3.8334	19.184	14.054	10.555	12.14
	4.0334	19.269	14.139	10.619	12.226
	4.2334	19.391	14.22	10.679	12.305
	4.4334	19.401	14.291	10.736	12.378
	4.6334	19.476	14.362	10.793	12.451
	4.8334	19.598	14.429	10.844	12.517
	5.0334	19.655	14.486	10.895	12.581
	5.2334	19.674	14.543	10.942	12.641
	5.4334	19.74	14.6	10.987	12.698
	5.6334	19.768	14.647	11.031	12.755
	5.8334	19.806	14.694	11.072	12.806
	6.0334	19.9	14.737	11.11	12.857
	6.2334	19.928	14.78	11.149	12.904
	6.4334	19.938	14.823	11.187	12.952
	6.6334	19.957	14.865	11.222	12.993
	6.8334	20.07	14.898	11.253	13.034
	7.0334	20.041	14.936	11.288	13.075
	7.2334	20.079	14.974	11.32	13.11
	7.4334	20.117	15.008	11.352	13.151
	7.6334	20.154	15.041	11.38	13.183
	7.8334	20.173	15.074	11.406	13.218
	8.0334	20.211	15.107	11.434	13.25
	8.2334	20.249	15.131	11.459	13.284
	8.4334	20.258	15.159	11.485	13.316
	8.6334	20.296	15.188	11.51	13.345
	8.8334	20.296	15.216	11.536	13.373
	9.0334	20.324	15.24	11.561	13.398
	9.2334	20.333	15.264	11.58	13.43
	9.4334	20.409	15.287	11.602	13.452
	9.6334	20.362	15.316	11.624	13.481
	9.8334	20.409	15.335	11.643	13.503
	11.8334	20.588	15.529	11.824	13.712
	13.8334	20.729	15.681	11.964	13.874
	15.8334	20.786	15.8	12.078	14.004
	17.8334	20.936	15.899	12.173	14.108
	19.8334	20.955	15.984	12.252	14.194
	21.8334	20.993	16.056	12.319	14.27
	23.8334	21.087	16.117	12.379	14.333
	25.8334	21.172	16.174	12.433	14.39
	27.8334	21.219	16.217	12.481	14.444
	29.8334	21.219	16.259	12.525	14.488
	31.8334	21.247	16.302	12.56	14.529
	33.8334	21.304	16.331	12.595	14.564
	35.8334	21.285	16.359	12.627	14.596
	37.8334	21.341	16.388	12.652	14.621
	39.8334	21.351	16.416	12.681	14.653
Q = 40 GPM					
	40	21.379	16.421	12.684	14.659
	40.0083	21.52	16.421	12.684	14.659

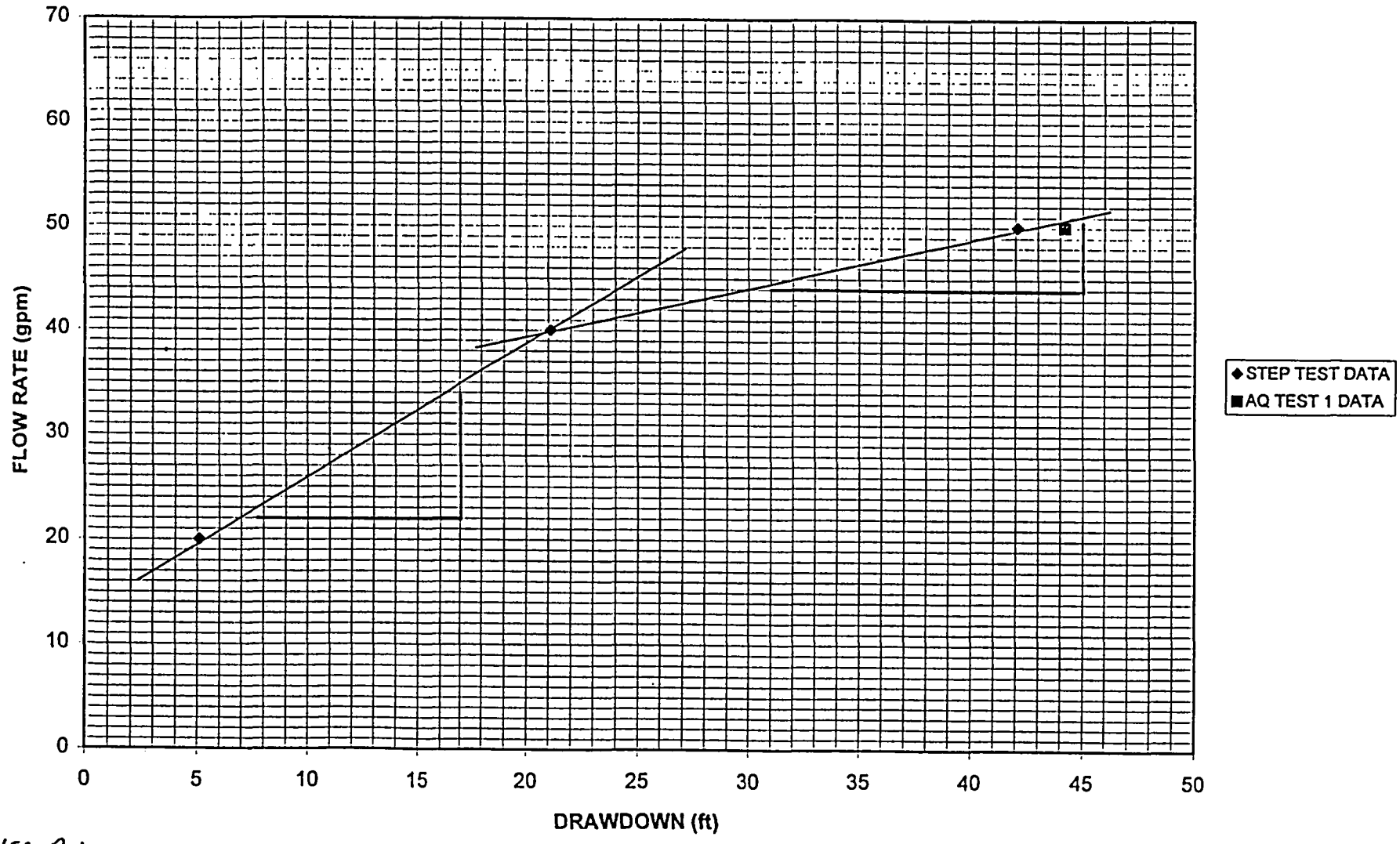
40.0167	21.643	16.425	12.684	14.659
40.025	21.492	16.425	12.684	14.659
40.0417	21.596	16.435	12.684	14.659
40.0583	21.859	16.449	12.684	14.659
40.075	21.982	16.463	12.684	14.659
40.0917	22.076	16.487	12.684	14.659
40.1083	22.321	16.511	12.684	14.659
40.125	22.547	16.544	12.684	14.659
40.1417	22.773	16.582	12.684	14.662
40.1583	22.961	16.62	12.684	14.662
40.175	23.14	16.667	12.687	14.662
40.1917	23.338	16.71	12.684	14.662
40.2083	23.498	16.757	12.684	14.666
40.225	23.667	16.805	12.687	14.666
40.2417	23.865	16.857	12.687	14.666
40.2583	23.997	16.909	12.687	14.669
40.275	24.109	16.966	12.69	14.672
40.2917	24.288	17.023	12.69	14.672
40.3083	24.345	17.08	12.693	14.675
40.325	24.476	17.127	12.693	14.678
40.3417	24.467	17.174	12.696	14.681
40.3583	24.636	17.217	12.7	14.685
40.375	24.712	17.26	12.703	14.688
40.3917	24.693	17.298	12.709	14.691
40.4083	24.731	17.331	12.709	14.694
40.425	24.778	17.359	12.716	14.7
40.4417	24.815	17.388	12.719	14.704
40.4583	24.834	17.416	12.722	14.707
40.475	24.834	17.44	12.728	14.713
40.4917	24.843	17.464	12.731	14.716
40.5083	24.881	17.483	12.738	14.719
40.525	24.909	17.506	12.741	14.729
40.5417	24.891	17.52	12.747	14.732
40.5583	24.928	17.539	12.754	14.735
40.575	24.947	17.558	12.757	14.742
40.5917	24.956	17.573	12.763	14.748
40.6083	25.003	17.592	12.769	14.751
40.625	24.985	17.601	12.773	14.754
40.6417	25.032	17.615	12.779	14.764
40.6583	25.069	17.629	12.785	14.77
40.675	25.107	17.644	12.788	14.773
40.6917	25.098	17.653	12.795	14.777
40.8917	25.606	17.786	12.855	14.843
41.0917	26.104	17.937	12.918	14.913
41.2917	26.405	18.07	12.976	14.979
41.4917	26.659	18.184	13.036	15.052
41.6917	26.913	18.279	13.09	15.115
41.8917	27.082	18.378	13.14	15.182
42.0917	27.289	18.459	13.191	15.245
42.2917	27.562	18.544	13.239	15.305
42.4917	27.778	18.634	13.283	15.366
42.6917	27.909	18.719	13.328	15.426
42.8917	28.088	18.79	13.372	15.48
43.0917	28.295	18.861	13.413	15.533
43.2917	28.426	18.913	13.454	15.587
43.4917	28.52	18.932	13.496	15.641
43.6917	28.614	18.956	13.53	15.685
43.8917	28.737	18.994	13.565	15.73
44.0917	28.887	19.032	13.597	15.774
44.2917	28.972	19.051	13.629	15.812
44.4917	29.037	19.075	13.66	15.853
44.6917	29.122	19.108	13.689	15.888
44.8917	29.178	19.131	13.714	15.923
45.0917	29.291	19.141	13.743	15.958
45.2917	29.31	19.169	13.768	15.989
45.4917	29.338	19.198	13.79	16.021

	45.6917	29.441	19.221	13.816	16.05
	45.8917	29.47	19.255	13.838	16.078
	46.0917	29.545	19.278	13.86	16.107
	46.2917	29.611	19.302	13.882	16.129
	46.4917	29.639	19.33	13.901	16.154
	46.6917	29.695	19.354	13.92	16.179
	46.8917	29.723	19.368	13.939	16.205
	47.0917	29.742	19.382	13.958	16.227
	47.2917	29.78	19.401	13.977	16.249
	47.4917	29.789	19.42	13.993	16.271
	47.6917	29.827	19.43	14.012	16.29
	47.8917	29.892	19.453	14.028	16.309
	48.0917	29.958	19.472	14.044	16.328
	48.2917	29.939	19.487	14.06	16.347
	48.4917	29.968	19.496	14.073	16.363
	48.6917	30.024	19.51	14.088	16.382
	48.8917	30.08	19.52	14.101	16.398
	49.0917	30.099	19.529	14.114	16.414
	49.2917	30.127	19.529	14.13	16.43
	49.4917	30.071	19.529	14.139	16.445
	49.6917	30.184	19.539	14.152	16.455
	51.6917	30.353	19.648	14.26	16.582
	53.6917	30.475	19.723	14.348	16.683
	55.6917	30.616	19.771	14.415	16.762
	57.6917	30.672	19.823	14.472	16.825
	59.6917	30.747	19.88	14.526	16.886
	61.6917	30.813	19.96	14.573	16.936
	63.6917	30.851	19.984	14.615	16.981
	65.6917	30.898	20.012	14.649	17.019
	67.6917	30.907	20.022	14.678	17.047
	69.6917	30.991	20.055	14.703	17.076
	71.6917	30.963	20.069	14.732	17.104
	73.6917	31.038	20.079	14.751	17.126
	75.6917	31.085	20.102	14.773	17.148
	77.6917	31.132	20.126	14.792	17.17
Q = 50 GPM					
	80	31.358	20.135	14.814	17.193
	80.0083	31.386	20.135	14.814	17.193
	80.0167	31.442	20.14	14.814	17.193
	80.025	31.48	20.14	14.814	17.193
	80.0333	31.564	20.145	14.814	17.193
	80.0417	31.602	20.15	14.814	17.196
	80.05	31.677	20.154	14.814	17.193
	80.0583	31.724	20.159	14.814	17.193
	80.0667	31.818	20.164	14.814	17.193
	80.075	31.977	20.173	14.814	17.193
	80.0833	31.987	20.178	14.814	17.193
	80.0917	32.1	20.188	14.814	17.193
	80.1	32.184	20.197	14.814	17.193
	80.1167	32.391	20.216	14.814	17.193
	80.1333	32.541	20.24	14.814	17.193
	80.15	32.766	20.263	14.814	17.193
	80.1667	32.954	20.292	14.814	17.193
	80.1833	33.179	20.325	14.814	17.193
	80.2	33.414	20.358	14.814	17.196
	80.2167	33.592	20.391	14.814	17.196
	80.2333	33.845	20.434	14.814	17.199
	80.25	33.967	20.472	14.814	17.199
	80.2667	34.249	20.514	14.817	17.202
	80.2833	34.399	20.557	14.817	17.202
	80.3	34.577	20.609	14.821	17.202
	80.3167	34.727	20.652	14.821	17.205
	80.3333	34.877	20.699	14.824	17.208
	80.35	34.953	20.741	14.827	17.212
	80.3667	35.084	20.794	14.827	17.215
	80.3833	35.196	20.831	14.83	17.218

80.4	35.271	20.874	14.833	17.218
80.4167	35.328	20.912	14.836	17.224
80.4333	35.384	20.945	14.84	17.227
80.45	35.506	20.973	14.843	17.227
80.4667	35.572	21.007	14.849	17.234
80.4833	35.6	21.035	14.852	17.237
80.5	35.665	21.059	14.855	17.24
80.5167	35.787	21.082	14.862	17.243
80.5333	35.853	21.106	14.865	17.25
80.55	35.947	21.125	14.871	17.256
80.5667	36.05	21.144	14.874	17.256
80.5833	36.125	21.163	14.881	17.262
80.6	36.312	21.182	14.884	17.269
80.6167	36.369	21.205	14.89	17.272
80.6333	36.472	21.224	14.893	17.278
80.65	36.584	21.243	14.9	17.281
80.6667	36.678	21.267	14.906	17.288
80.6833	36.8	21.291	14.909	17.294
80.7	36.941	21.329	14.916	17.297
80.7167	37.034	21.366	14.919	17.3
80.7333	37.138	21.409	14.925	17.307
80.75	37.213	21.442	14.932	17.313
80.7667	37.363	21.475	14.938	17.316
80.9667	38.665	21.688	15.004	17.383
81.1667	40.071	21.863	15.077	17.427
81.3667	41.222	22.024	15.15	17.528
81.5667	42.346	22.138	15.223	17.604
81.7667	43.478	22.308	15.293	17.721
81.9667	44.451	22.45	15.363	17.778
82.1667	45.359	22.559	15.432	17.883
82.3667	46.247	22.673	15.499	18.006
82.5667	47.135	22.9	15.562	18.123
82.7667	48.21	22.999	15.626	18.164
82.9667	49.19	23.089	15.689	18.301
83.1667	50.199	23.136	15.749	18.351
83.3667	51.17	23.079	15.806	18.452
83.5667	52.122	23.042	15.863	18.566
83.7667	53.167	23.065	15.911	18.589
83.9667	54.333	23.027	15.958	18.702
84.1667	55.378	23.008	16.003	18.718
84.3667	56.385	23.004	16.044	18.759
84.5667	57.335	22.999	16.085	18.835
84.7667	58.453	22.98	16.123	18.848
84.9667	58.649	22.956	16.161	18.94
85.1667	58.518	22.952	16.193	18.956
85.3667	58.705	22.966	16.221	18.965
85.5667	58.677	22.98	16.243	19
85.7667	58.816	22.985	16.266	19.066
85.9667	58.844	22.994	16.285	19.073
86.1667	58.723	22.999	16.3	19.079
86.3667	58.891	22.999	16.319	19.111
86.5667	59.031	23.004	16.335	19.174
86.7667	58.9	23.098	16.348	19.18
86.9667	59.096	23.16	16.364	19.187
87.1667	59.077	23.24	16.383	19.193
87.3667	59.012	23.382	16.399	19.221
87.5667	59.031	23.448	16.418	19.285
87.7667	59.077	23.515	16.437	19.294
87.9667	59.124	23.515	16.456	19.301
88.1667	59.124	23.467	16.475	19.307
88.3667	59.207	23.42	16.487	19.389
88.5667	59.17	23.392	16.5	19.389
88.7667	59.189	23.354	16.513	19.392
88.9667	59.133	23.335	16.522	19.395
89.1667	59.133	23.321	16.528	19.399
89.3667	58.993	23.292	16.538	19.402

89.5667	58.611	23.273	16.541	19.402
89.7667	57.801	23.297	16.547	19.405
91.7667	55.312	23.311	16.566	19.497
93.7667	54.305	23.264	16.563	19.494
95.7667	52.869	23.217	16.551	19.49
97.7667	52.412	23.146	16.538	19.481
99.7667	51.936	23.363	16.566	19.49
101.7667	52.104	23.306	16.576	19.487
103.7667	52.234	23.25	16.589	19.49
105.7667	52.402	23.226	16.598	19.49
107.7667	52.645	23.183	16.604	19.49
109.7667	52.645	23.207	16.617	19.494
111.7667	52.645	23.306	16.636	19.566
113.7667	52.757	23.231	16.649	19.57
115.7667	52.813	23.212	16.655	19.566
117.7667	52.925	23.179	16.661	19.566
119.7667	53.149	23.15	16.668	19.566
121.7667	53.158	23.15	16.677	19.566
123.7667	53.251	23.169	16.687	19.57
125.7667	53.251	23.169	16.693	19.57
127.7667	53.289	23.212	16.703	19.57
129.7667	53.345	23.212	16.712	19.642
131.7667	53.429	23.198	16.722	19.642
133.7667	53.634	23.113	16.722	19.642
135.7667	53.736	23.103	16.725	19.642
137.7667	53.951	23.103	16.731	19.642
139.7667	53.914	23.108	16.734	19.642
141.7667	53.895	23.094	16.738	19.642
143.7667	53.979	23.094	16.744	19.642
145.7667	54.221	23.089	16.747	19.642
147.7667	54.231	23.079	16.753	19.642
149.7667	54.315	23.075	16.753	19.642
151.7667	54.427	23.098	16.763	19.642
153.7667	54.483	23.103	16.769	19.645
155.7667	54.501	23.188	16.785	19.715
157.7667	54.455	23.169	16.791	19.718
159.7667	54.52	23.179	16.795	19.718
161.7667	54.548	23.193	16.801	19.718
163.7667	54.567	23.183	16.801	19.718
165.7667	54.511	23.165	16.807	19.718
167.7667	54.585	23.155	16.807	19.718
169.7667	54.688	23.16	16.807	19.718
171.7667	54.688	23.179	16.814	19.718
173.7667	54.697	23.174	16.817	19.715
175.7667	54.65	23.15	16.817	19.715
177.7667	54.688	23.136	16.817	19.715
179.7667	54.688	23.127	16.814	19.712
199.7667	56.273	23.202	16.883	19.791
219.7667	57.028	23.046	16.88	19.778
239.7667	56.934	23.16	16.912	19.848

WELL 044 STEP TEST 1 DATA - SPECIFIC CAPACITY DETERMINATION



LOWER Q:

SLOPE = $\frac{13 \text{ GPM}}{10 \text{ FT}}$ = 0.17 FT²/MIN

HIGHER Q:

SLOPE = $\frac{7 \text{ GPM}}{15 \text{ FT}}$ = 0.06 FT²/MIN

GUNNISON UMTRA SITE
WELL 044 STEP TEST 1 DATA
START DATE/TIME: 11/30/99, 1235

Q = 20 GPM

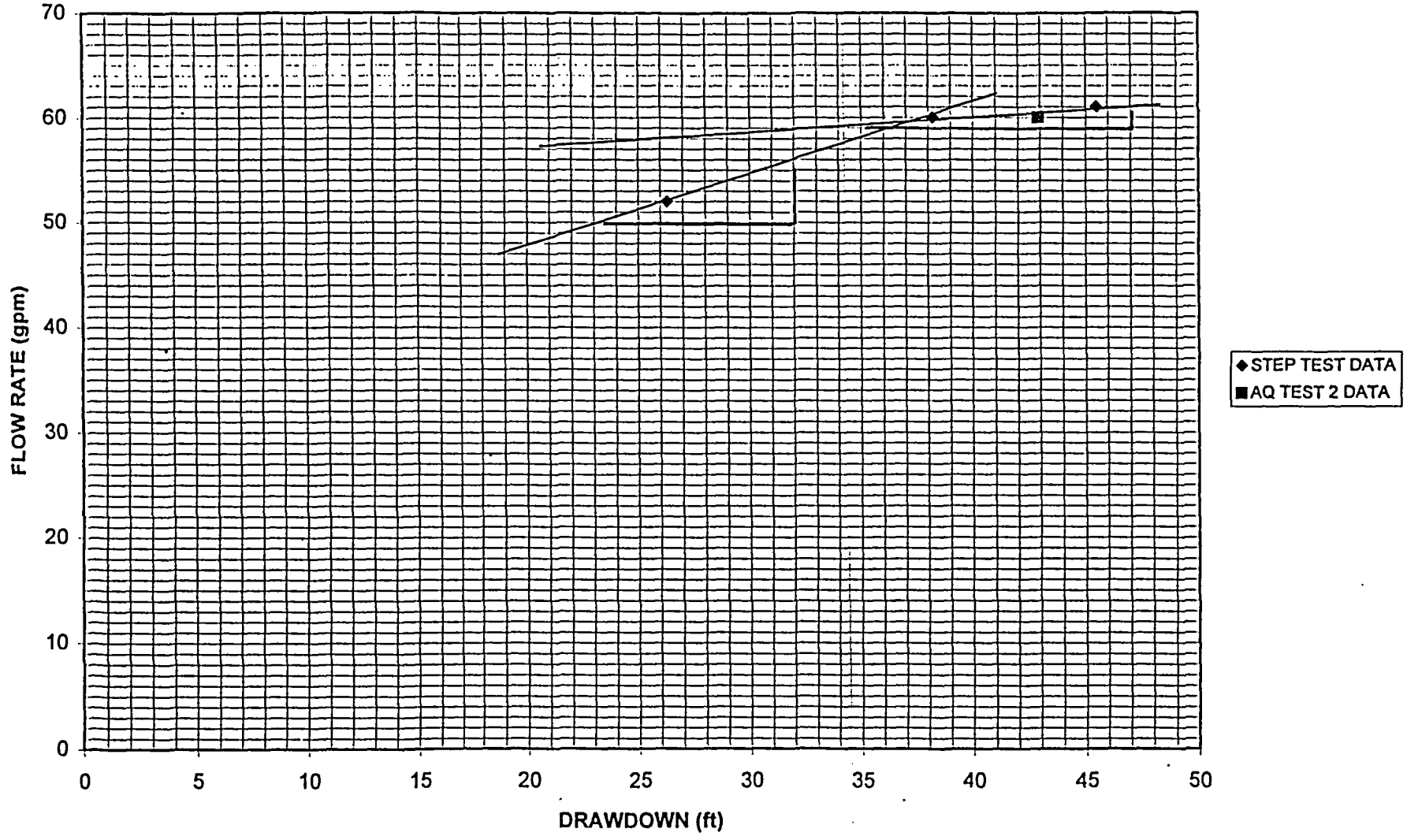
ELAPSED TIME (MIN)	WELL 044 DTW FT BTOC	WELL 045 DTW obs045	WELL 046 DTW obs046
0	9.446	9.392	8.828
0.0375	10.982	9.404	8.837
0.075	11.33	9.427	8.845
0.1125	11.626	9.45	8.856
0.15	11.952	9.47	8.869
0.1875	12.187	9.488	8.883
0.225	12.326	9.503	8.896
0.2625	12.478	9.521	8.907
0.3	12.53	9.534	8.92
0.3375	12.652	9.547	8.931
0.375	12.704	9.561	8.942
0.4125	12.765	9.571	8.95
0.45	12.835	9.581	8.959
0.4875	12.878	9.592	8.963
0.525	12.983	9.601	8.979
0.5645	12.996	9.617	8.988
0.6063	13.017	9.626	8.99
0.6507	13.083	9.62	9.001
0.6977	13.135	9.63	9.012
0.7475	13.213	9.64	9.02
0.8002	13.261	9.65	9.029
0.856	13.313	9.659	9.038
0.9152	13.387	9.673	9.047
0.9778	13.448	9.683	9.055
1.0442	13.509	9.694	9.068
1.1145	13.543	9.704	9.077
1.189	13.617	9.716	9.082
1.268	13.613	9.727	9.097
1.3517	13.626	9.745	9.103
1.4402	13.626	9.745	9.114
1.534	13.683	9.755	9.123
1.6333	13.735	9.765	9.132
1.7387	13.739	9.776	9.141
1.8502	13.852	9.788	9.149
1.9683	13.878	9.799	9.163
2.0935	13.848	9.808	9.171
2.226	13.917	9.819	9.182
2.3665	13.904	9.829	9.187
2.5153	13.97	9.841	9.202
2.6728	13.983	9.854	9.211
2.8397	13.978	9.864	9.222
3.0165	13.991	9.874	9.228
3.2038	13.97	9.884	9.237
3.4022	13.952	9.892	9.246
3.6123	14.065	9.905	9.259
3.835	14.061	9.918	9.27
4.0708	14.048	9.928	9.278
4.3207	14.035	9.937	9.281
4.5853	14.061	9.946	9.294
4.8657	14.096	9.959	9.303
5.1625	14.113	9.966	9.309
5.477	14.1	9.971	9.313
5.8102	14.148	9.981	9.329
6.163	14.226	9.989	9.333
6.5368	14.213	9.996	9.342
6.9328	14.265	10.007	9.353
7.3522	14.317	10.02	9.364
7.7965	14.261	10.027	9.37
8.2672	14.274	10.033	9.375
8.7657	14.296	10.04	9.381
9.2937	14.291	10.046	9.386
9.853	14.291	10.053	9.392
10.4455	14.282	10.059	9.399
11.073	14.33	10.072	9.408
11.7378	14.291	10.072	9.41

	12.442	14.339	10.079	9.41
	13.1878	14.391	10.088	9.421
	13.9778	14.435	10.093	9.427
	14.8147	14.391	10.099	9.432
	15.7012	14.4	10.105	9.438
	16.6402	14.43	10.114	9.445
	17.6348	14.439	10.119	9.451
	18.6885	14.435	10.125	9.456
	19.8045	14.461	10.126	9.458
	20.9867	14.439	10.132	9.458
	22.2388	14.469	10.135	9.462
	23.5653	14.474	10.139	9.469
	24.9703	14.439	10.145	9.471
	26.4587	14.482	10.144	9.473
	28.0352	14.491	10.152	9.48
	29.705	14.491	10.155	9.48
	31.4738	14.508	10.157	9.484
	33.3475	14.539	10.159	9.484
	35.3322	14.513	10.161	9.486
Q = 40 GPM				
	40	14.51	10.2	9.52
	40.0379	14.524	10.2	9.522
	40.0757	14.606	10.2	9.52
	40.1135	14.706	10.201	9.524
	40.1514	14.793	10.204	9.52
	40.1892	15.032	10.207	9.522
	40.227	15.219	10.212	9.527
	40.2649	15.436	10.218	9.531
	40.3027	15.658	10.224	9.531
	40.3405	15.901	10.233	9.537
	40.3784	16.083	10.24	9.54
	40.4162	16.327	10.247	9.542
	40.454	16.548	10.256	9.548
	40.4919	16.796	10.266	9.559
	40.5314	17.069	10.274	9.564
	40.5732	17.304	10.284	9.568
	40.6175	17.634	10.296	9.577
	40.6645	17.986	10.309	9.586
	40.7144	18.311	10.323	9.594
	40.767	18.689	10.339	9.605
	40.8229	18.967	10.353	9.618
	40.882	19.353	10.378	9.636
	40.9447	19.809	10.396	9.653
	41.011	20.169	10.416	9.671
	41.0814	20.542	10.439	9.691
	41.1559	20.941	10.459	9.706
	41.2349	21.366	10.485	9.726
	41.3185	21.765	10.508	9.747
	41.407	22.108	10.535	9.767
	41.5009	22.515	10.56	9.789
	41.6002	22.849	10.587	9.815
	41.7055	23.166	10.613	9.837
	41.817	23.478	10.64	9.863
	41.9352	23.811	10.666	9.885
	42.0604	24.123	10.693	9.907
	42.1929	24.431	10.718	9.931
	42.3334	24.713	10.745	9.957
	42.4822	25.042	10.768	9.984
	42.6397	25.328	10.795	10.006
	42.8065	25.605	10.824	10.032
	42.9834	25.87	10.848	10.054
	43.1707	26.086	10.874	10.078
	43.369	26.285	10.9	10.102
	43.5792	26.511	10.926	10.128
	43.8019	26.679	10.947	10.148
	44.0377	26.874	10.973	10.167
	44.2875	27.065	10.996	10.196
	44.5522	27.203	11.016	10.211
	44.8325	27.338	11.038	10.231
	45.1294	27.437	11.059	10.251
	45.4439	27.61	11.078	10.27
	45.777	27.719	11.098	10.292
	46.1299	27.857	11.115	10.31

	46.5037	27.978	11.135	10.323
	46.8997	28.156	11.154	10.345
	47.319	28.32	11.171	10.36
	47.7634	28.411	11.188	10.375
	48.234	28.472	11.204	10.388
	48.7325	28.589	11.22	10.401
	49.2605	28.684	11.233	10.412
	49.8199	28.77	11.246	10.428
	50.4124	28.762	11.26	10.441
	51.0399	28.961	11.272	10.452
	51.7047	29.091	11.286	10.463
	52.4089	29.177	11.3	10.476
	53.1547	29.238	11.312	10.482
	53.9447	29.329	11.323	10.489
	54.7815	29.359	11.333	10.5
	55.668	29.432	11.348	10.513
	56.607	29.493	11.358	10.522
	57.6017	29.567	11.368	10.531
	58.6554	29.666	11.378	10.539
	59.7714	29.709	11.382	10.548
	60.9535	29.804	11.391	10.552
	62.2057	29.8	11.396	10.559
	63.5322	29.843	11.401	10.561
	64.9372	29.882	11.405	10.568
	66.4255	30.129	11.416	10.576
	68.002	30.155	11.428	10.585
	69.6719	30.272	11.439	10.596
	71.4407	30.324	11.447	10.603
	73.3144	30.38	11.454	10.614
	75.299	30.384	11.46	10.616
	77.4014	30.44	11.465	10.625
	79.6282	30.436	11.468	10.627
	81.987	30.479	11.471	10.627
	84.4857	30.501	11.475	10.629
Q = 55 GPM				
	95	30.65	11.491	10.644
	95.0378	30.875	11.491	10.642
	95.0756	31.117	11.493	10.642
	95.1135	31.377	11.494	10.644
	95.1513	31.735	11.499	10.644
	95.1891	32.025	11.503	10.647
	95.227	32.341	11.507	10.649
	95.2648	32.678	11.516	10.651
	95.3026	33.037	11.523	10.657
	95.3405	33.339	11.532	10.66
	95.3783	33.577	11.54	10.671
	95.4161	33.776	11.55	10.673
	95.454	33.949	11.56	10.679
	95.4918	34.229	11.57	10.686
	95.5296	34.471	11.579	10.695
	95.5675	34.713	11.589	10.701
	95.607	35.007	11.599	10.71
	95.6488	35.219	11.609	10.717
	95.6931	35.4	11.622	10.725
	95.7401	35.612	11.633	10.734
	95.79	35.828	11.645	10.743
	95.8426	36.013	11.658	10.754
	95.8985	36.221	11.671	10.762
	95.9576	36.519	11.687	10.778
	96.0203	36.747	11.701	10.793
	96.0866	36.998	11.717	10.802
	96.157	37.158	11.731	10.813
	96.2315	37.309	11.745	10.826
	96.3105	37.563	11.76	10.841
	96.3941	37.749	11.774	10.857
	96.4826	38.021	11.787	10.865
	96.5765	38.228	11.803	10.878
	96.6758	38.513	11.819	10.889
	96.7811	38.616	11.834	10.907
	96.8926	38.802	11.85	10.924
	97.0108	39.026	11.866	10.937
	97.136	39.259	11.88	10.948
	97.2685	39.609	11.896	10.961

	97.409	39.919	11.915	10.977
	97.5578	40.23	11.932	10.992
	97.7153	40.575	11.951	11.01
	97.8821	41.019	11.974	11.027
	98.059	41.459	11.994	11.045
	98.2463	42.015	12.017	11.062
	98.4446	42.571	12.041	11.084
	98.6548	43.122	12.062	11.106
	98.8775	43.613	12.083	11.125
	99.1133	44.096	12.101	11.147
	99.3631	44.639	12.121	11.167
	99.6278	45.074	12.137	11.185
	99.9081	45.56	12.151	11.202
	100.205	46.146	12.167	11.222
	100.5195	46.628	12.182	11.239
	100.8526	47.041	12.197	11.255
	101.2055	47.51	12.212	11.27
	101.5793	47.975	12.225	11.283
	101.9753	48.315	12.239	11.3
	102.3946	48.668	12.249	11.311
	102.839	49.253	12.259	11.324
	103.3096	49.842	12.268	11.333
	103.8081	50.293	12.276	11.342
	104.3361	50.865	12.285	11.357
	104.8955	51.45	12.293	11.364
	105.488	52.116	12.303	11.375
	106.1155	53.061	12.311	11.381
	106.7803	54.152	12.319	11.39
	107.4845	54.981	12.339	11.399
	108.2303	56.088	12.348	11.403
	109.0203	56.93	12.352	11.408
	109.8571	57.796	12.357	11.416
Q = 50 GPM				
	110.7436	55.573	12.359	11.414
	111.6826	53.843	12.358	11.405
	112.6773	52.782	12.352	11.401
	113.731	52.228	12.348	11.399
	114.847	51.755	12.349	11.397
	116.0291	51.347	12.344	11.39
	117.2813	51.076	12.336	11.386
	118.6078	51.024	12.332	11.381
	120.0128	50.968	12.331	11.384
	121.5011	51.007	12.326	11.375
	123.0776	51.016	12.326	11.377
	124.7475	51.033	12.326	11.377
	126.5163	51.123	12.324	11.373
	128.39	51.14	12.325	11.377
	130.3746	51.402	12.305	11.37
	132.477	51.493	12.306	11.368
	134.7038	51.51	12.305	11.368
	137.0626	51.48	12.308	11.37
	139.5613	51.312	12.309	11.37
	142.208	51.385	12.308	11.368
	145.0115	51.415	12.311	11.373
	147.9811	51.402	12.311	11.37
	151.1268	51.381	12.314	11.375
	154.4588	51.42	12.312	11.375
	157.9883	51.467	12.311	11.375
	161.7268	51.458	12.315	11.377
	165.687	51.519	12.314	11.377
	169.8818	51.463	12.314	11.375
	174.3251	51.467	12.312	11.373
	179.0318	51.587	12.316	11.37

WELL 044 STEP TEST 2 DATA - SPECIFIC CAPACITY DETERMINATION



LOWER Q:

SLOPE = $\frac{6 GPM}{9 FT}$ = 0.09 FT^2/MIN

HIGHER Q:

SLOPE = $\frac{2 GPM}{14 FT}$ = 0.02 FT^2/MIN

GUNNISON UMTRA SITE
WELL 044 STEP TEST 2 DATA
START DATE/TIME : 12/7/99, 1115

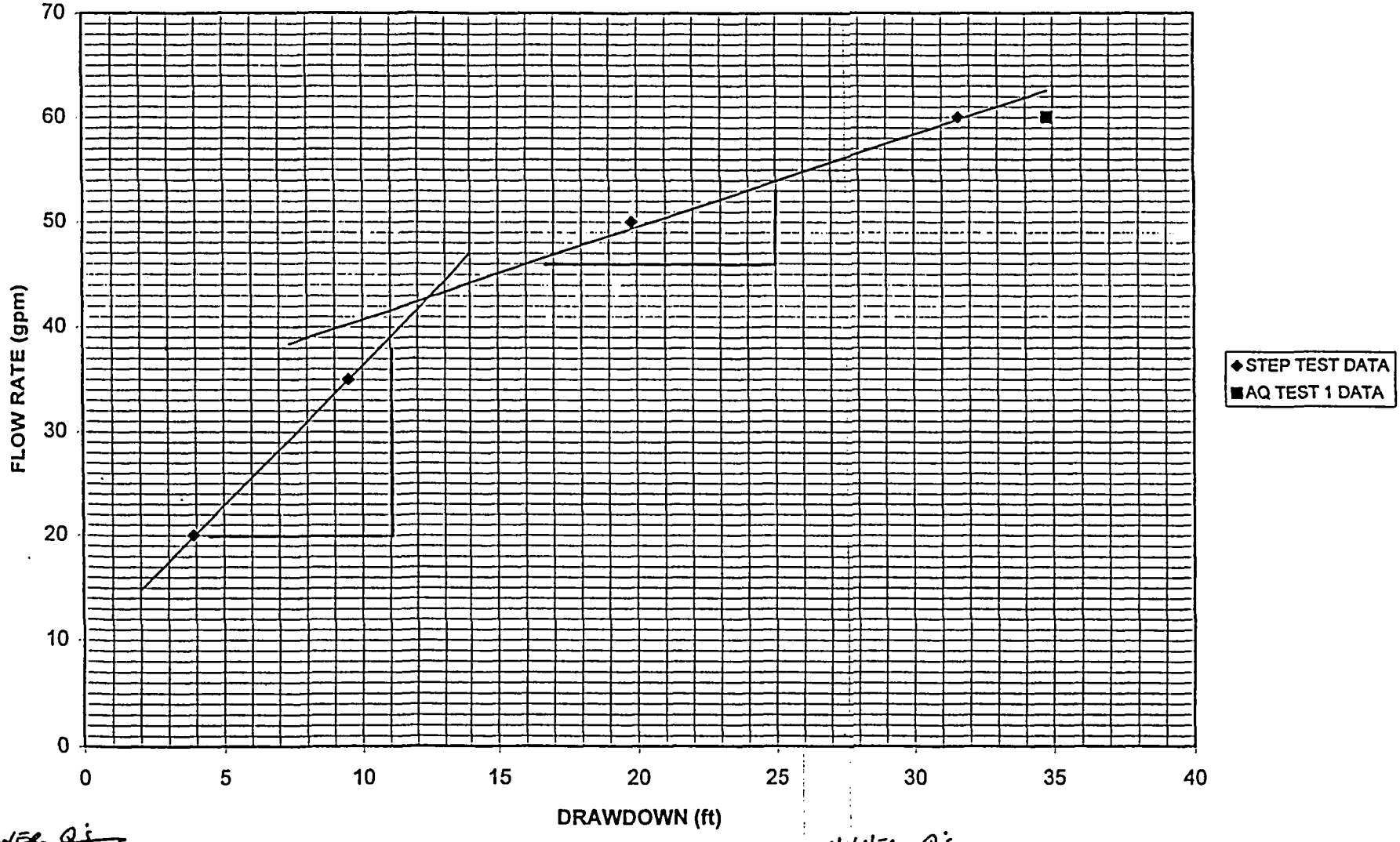
	ELPASED TIME (MIN)	WELL 044 DRAWDOWN
Q = 52 GPM		
	0	0
	0.0375	1.184
	0.075	2.593
	0.1125	3.797
	0.15	4.662
	0.1875	4.819
	0.225	4.814
	0.2625	4.945
	0.3	4.993
	0.3375	5.175
	0.375	5.358
	0.4125	5.875
	0.45	6.644
	0.4875	7.582
	0.525	8.428
	0.5645	9.114
	0.6063	9.526
	0.6507	9.874
	0.6977	10.047
	0.7475	10.386
	0.8002	10.776
	0.856	10.936
	0.9152	11.427
	0.9778	11.93
	1.0442	12.411
	1.1145	12.918
	1.189	13.443
	1.268	13.907
	1.3517	14.344
	1.4402	14.752
	1.534	15.155
	1.6333	15.467
	1.7387	15.887
	1.8502	16.298
	1.9683	16.653
	2.0935	17.039
	2.226	17.433
	2.3665	17.788
	2.5153	18.112
	2.6728	18.441
	2.8397	18.731
	3.0165	19.043
	3.2038	19.333
	3.4022	19.601
	3.6123	19.848
	3.835	20.181
	4.0708	20.505
	4.3207	20.799
	4.5853	21.085
	4.8657	21.288
	5.1625	21.591
	5.477	21.729
	5.8102	21.906
	6.163	22.14
	6.5368	22.33
	6.9328	22.512
	7.3522	22.667
	7.7965	22.827
	8.2672	23.017
	8.7657	23.212
	9.2937	23.372
	9.853	23.454

	10.4455	23.588
	11.073	23.683
	11.7378	23.795
	12.442	23.96
	13.1878	24.042
	13.9778	24.119
	14.8147	24.236
	15.7012	24.327
	16.6402	24.435
	17.6348	24.582
	18.6885	24.798
	19.8045	24.975
	20.9867	25.122
	22.2388	25.096
	23.5653	25.135
	24.9703	25.281
	26.4587	25.368
	28.0352	25.437
	29.705	25.394
	31.4738	25.536
	33.3475	25.644
	35.3322	25.675
	37.4345	25.683
	39.6613	25.774
	42.0202	25.873
	44.5188	25.903
	47.1655	25.813
	49.969	25.934
	52.9387	25.985
	56.0843	26.02
	59.4163	25.985
	62.9458	26.145
	66.6843	26.257
Q = 60 GPM		
	75	26.184
	75.0376	26.313
	75.0753	26.529
	75.113	26.749
	75.1506	26.987
	75.1883	27.168
	75.226	27.298
	75.2636	27.384
	75.3013	27.526
	75.339	27.613
	75.3766	27.703
	75.4143	27.79
	75.452	27.893
	75.4896	27.923
	75.5291	28.001
	75.571	28.062
	75.6153	28.113
	75.6623	28.148
	75.7121	28.251
	75.7648	28.359
	75.8206	28.428
	75.8798	28.571
	75.9425	28.631
	76.0088	28.756
	76.0791	28.83
	76.1536	28.929
	76.2326	28.933
	76.3163	28.985
	76.4048	29.097
	76.4986	29.196
	76.598	29.334
	76.7033	29.438
	76.8148	29.602
	76.933	29.761
	77.0581	29.912
	77.1906	30.089

	77.3311	30.18
	77.48	30.43
	77.6375	30.538
	77.8043	30.736
	77.9811	30.878
	78.1685	31.051
	78.3668	31.262
	78.577	31.417
	78.7996	31.637
	79.0355	31.814
	79.2853	32.038
	79.55	32.262
	79.8303	32.508
	80.1271	32.685
	80.4416	32.896
	80.7748	33.064
	81.1276	33.206
	81.5015	33.374
	81.8975	33.538
	82.3168	33.688
	82.7611	33.805
	83.2318	33.93
	83.7303	34.089
	84.2583	34.201
	84.8176	34.3
	85.4101	34.369
	86.0376	34.503
	86.7025	34.593
	87.4066	34.744
	88.1525	34.795
	88.9425	34.899
	89.7793	34.752
	90.6658	34.472
	91.6048	34.826
	92.5995	35.368
	93.6531	35.769
	94.7691	36.027
	95.9513	36.427
	97.2035	36.552
	98.53	36.948
	99.935	37.107
	101.4233	37.387
	102.9998	37.482
	104.6696	37.602
	106.4385	37.718
	108.3121	37.882
	110.2968	38.007
	112.3991	38.153
	114.626	38.127
	116.9848	38.11
	119.4835	38.024
	122.1301	38.144
	124.9336	38.243
Q = 65 GPM		
	135	38.551
	135.0217	38.65
	135.0434	38.659
	135.065	38.728
	135.0867	38.81
	135.1084	38.874
	135.13	38.913
	135.1522	38.96
	135.1757	39.072
	135.2005	39.214
	135.2269	39.287
	135.2549	39.3
	135.2845	39.468
	135.3159	39.498
	135.349	39.597
	135.3842	39.734

	135.4215	39.889
	135.461	39.945
	135.5029	40.246
	135.5472	40.435
	135.5942	40.603
	135.644	40.809
	135.6967	40.891
	135.7525	41.119
	135.8117	41.183
	135.8744	41.381
	135.9407	41.553
	136.011	41.815
	136.0855	41.97
	136.1645	42.348
	136.2482	42.558
	136.3367	42.756
	136.4305	42.984
	136.5299	43.267
	136.6352	43.521
	136.7467	43.774
	136.8649	44.083
	136.99	44.457
	137.1225	44.659
	137.263	44.873
	137.4119	45.105
	137.5694	45.191
	137.7362	45.676
	137.913	45.981
	138.1004	46.311
	138.2987	46.672
	138.5089	47.028
	138.7315	47.139
	138.9674	47.2
	139.2172	47.423
	139.4819	47.363
	139.7622	47.277
	140.059	47.2
	140.3735	46.234
	140.7067	46.38
	141.0595	46.74
	141.4334	46.822
	141.8294	46.715
	142.2487	47.045
	142.693	47.122
Q = 61 GPM		
	143.1637	41.798
	143.6622	42.734
	144.1902	43.748
	144.7495	44.706
	145.342	44.852
	145.9695	45.225
	146.6344	45.556
	147.3385	45.685
	148.0844	45.62
	148.8744	45.676
	149.7112	45.582
	150.5977	45.655
	151.5367	45.659
	152.5314	45.646
	153.585	45.637
	154.701	45.629
	155.8832	45.616
	157.1354	45.599
	158.4619	45.607
	159.8669	45.62
	161.3552	45.616
	162.9317	45.56
	164.6015	45.534
	166.3704	45.612
	168.244	45.517

WELL 047 STEP TEST DATA - SPECIFIC CAPACITY DTERMINATION



LOWER Q's

SLOPE = $\frac{19\ GPM}{7\ FT}$ = 0.36 FT^2/MIN

HIGHER Q's

SLOPE = $\frac{8\ GPM}{9\ FT}$ = 0.12 FT^2/MIN

GUNNISON UMTRA SITE
WELL 047 STEP TEST DATA
START DATE/ TIME: 11/20/99, 1020

	ELAPSED TIME (MIN)	WELL 047 DTW FT BTOC	WELL 048 DTW FT BTOC	WELL 049 DTW FT BTOC
Q = 20 GPM				
	0	0	0	0
	0.0084	0.266	0.012	0.004
	0.0167	0.19	0.025	0.009
	0.025	0.228	0.018	0.004
	0.0334	0.389	0.037	0.009
	0.0417	0.589	0.05	0.009
	0.05	0.712	0.069	0.019
	0.0584	0.769	0.081	0.023
	0.0667	0.912	0.1	0.028
	0.075	1.054	0.113	0.033
	0.0834	1.121	0.132	0.043
	0.0917	1.292	0.157	0.052
	0.1	1.244	0.17	0.057
	0.1084	1.444	0.195	0.062
	0.1167	1.482	0.214	0.071
	0.125	1.605	0.233	0.081
	0.1334	1.71	0.251	0.09
	0.1417	1.767	0.27	0.095
	0.15	1.776	0.283	0.105
	0.1584	1.909	0.296	0.114
	0.1667	1.871	0.314	0.119
	0.175	1.909	0.327	0.129
	0.1834	2.004	0.346	0.134
	0.1917	2.013	0.359	0.143
	0.2	2.099	0.371	0.148
	0.2084	2.184	0.384	0.157
	0.2167	2.241	0.396	0.167
	0.225	2.336	0.409	0.172
	0.2334	2.384	0.422	0.177
	0.2417	2.336	0.434	0.181
	0.25	2.384	0.447	0.191
	0.2584	2.526	0.453	0.196
	0.2667	2.517	0.466	0.201
	0.275	2.536	0.478	0.21
	0.2834	2.631	0.484	0.215
	0.2917	2.688	0.491	0.224
	0.3084	2.602	0.51	0.234
	0.325	2.688	0.529	0.248
	0.3417	2.697	0.547	0.263
	0.3584	2.792	0.56	0.272
	0.375	2.877	0.573	0.287
	0.3917	2.972	0.585	0.291
	0.4084	2.925	0.598	0.301
	0.425	3.058	0.617	0.315
	0.4417	3.058	0.629	0.325
	0.4584	3.191	0.636	0.335
	0.475	3.153	0.655	0.344
	0.4917	3.191	0.661	0.354
	0.5084	3.162	0.673	0.363
	0.525	3.21	0.68	0.373
	0.5417	3.181	0.692	0.378
	0.5584	3.286	0.699	0.387
	0.575	3.504	0.705	0.392
	0.5917	3.352	0.718	0.402
	0.6084	3.276	0.718	0.411
	0.625	3.314	0.73	0.416

0.6417	3.314	0.736	0.425
0.6584	3.38	0.736	0.43
0.675	3.38	0.743	0.435
0.6917	3.333	0.749	0.44
0.7084	3.342	0.749	0.445
0.725	3.371	0.755	0.454
0.7417	3.342	0.762	0.459
0.7584	3.418	0.768	0.459
0.775	3.342	0.768	0.469
0.7917	3.466	0.774	0.473
0.8084	3.39	0.774	0.478
0.825	3.418	0.78	0.478
0.8417	3.513	0.787	0.483
0.8584	3.504	0.787	0.492
0.875	3.665	0.799	0.497
0.8917	3.57	0.799	0.502
0.9084	3.589	0.806	0.507
0.925	3.618	0.812	0.512
0.9417	3.646	0.818	0.516
0.9584	3.675	0.825	0.516
1.1584	3.428	0.856	0.564
1.3584	3.513	0.856	0.583
1.5584	3.551	0.869	0.603
1.7584	3.656	0.9	0.626
1.9584	3.817	0.932	0.655
2.1584	3.789	0.957	0.679
2.3584	3.931	0.969	0.698
2.5584	3.845	0.982	0.717
2.7584	3.741	0.988	0.727
2.9584	3.741	0.988	0.732
3.1584	3.713	0.988	0.741
3.3584	3.713	0.995	0.746
3.5584	3.684	0.995	0.751
3.7584	3.713	1.001	0.756
3.9584	3.703	1.007	0.765
4.1584	3.722	1.007	0.77
4.3584	3.656	1.007	0.77
4.5584	3.703	1.014	0.775
4.7584	3.751	1.014	0.78
4.9584	3.855	1.02	0.784
5.1584	3.779	1.026	0.784
5.3584	3.798	1.026	0.789
5.5584	3.732	1.032	0.799
5.7584	3.713	1.039	0.804
5.9584	3.703	1.039	0.804
6.1584	3.76	1.045	0.813
6.3584	3.76	1.007	0.813
6.5584	3.789	1.058	0.818
6.7584	3.789	1.051	0.823
6.9584	3.741	1.058	0.827
7.1584	3.76	1.064	0.827
7.3584	3.751	1.064	0.837
7.5584	3.826	1.07	0.837
7.7584	3.779	1.07	0.842
7.9584	3.77	1.07	0.842
8.1584	3.77	1.076	0.842
8.3584	3.836	1.076	0.847
8.5584	3.845	1.083	0.847
8.7584	3.836	1.083	0.851
8.9584	3.931	1.089	0.851
9.1584	3.845	1.089	0.856
9.3584	3.789	1.089	0.856
9.5584	3.883	1.095	0.861
9.7584	3.893	1.095	0.866

	9.9584	3.779	1.095	0.866
	11.9584	3.874	1.108	0.88
	13.9584	3.826	1.121	0.89
	15.9584	3.912	1.127	0.904
	17.9584	3.902	1.139	0.909
	19.9584	3.845	1.152	0.918
	21.9584	3.864	1.146	0.914
	23.9584	3.893	1.146	0.918
	25.9584	3.836	1.152	0.923
	27.9584	3.883	1.152	0.923
	29.9584	3.95	1.158	0.928
	31.9584	3.931	1.158	0.933
	33.9584	3.912	1.165	0.938
	35.9584	3.931	1.165	0.942
	37.9584	3.883	1.171	0.942
Q = 35 GPM				
	40	0	0.008	-0.001
	40.0083	0.152	0.065	0.009
	40.0167	0.304	-0.048	0.009
	40.025	0.608	0.052	0.004
	40.0333	0.674	0.065	0.013
	40.0417	0.788	0.071	0.018
	40.05	0.665	0.078	0.023
	40.0583	0.845	0.084	0.028
	40.0667	0.703	0.103	0.033
	40.075	0.969	0.115	0.037
	40.0833	1.102	0.134	0.042
	40.0917	1.149	0.147	0.052
	40.1	1.168	0.166	0.061
	40.1167	1.073	0.191	0.071
	40.1333	1.358	0.216	0.085
	40.15	1.387	0.235	0.095
	40.1667	1.501	0.26	0.104
	40.1833	1.596	0.279	0.119
	40.2	1.71	0.298	0.128
	40.2167	1.795	0.317	0.143
	40.2333	1.9	0.342	0.152
	40.25	2.004	0.361	0.162
	40.2667	2.032	0.38	0.176
	40.2833	2.175	0.399	0.186
	40.3	2.308	0.418	0.195
	40.3167	2.384	0.437	0.21
	40.3333	2.479	0.462	0.219
	40.35	2.735	0.481	0.229
	40.3667	2.697	0.5	0.248
	40.3833	2.953	0.525	0.258
	40.4	2.982	0.544	0.272
	40.4167	3.181	0.563	0.281
	40.4333	3.361	0.582	0.296
	40.45	3.466	0.607	0.305
	40.4667	3.475	0.626	0.32
	40.4833	3.703	0.651	0.329
	40.5	3.94	0.67	0.344
	40.5167	3.883	0.689	0.358
	40.5333	4.016	0.714	0.372
	40.55	4.13	0.733	0.382
	40.5667	4.263	0.752	0.396
	40.5833	4.377	0.77	0.406
	40.6	4.51	0.789	0.425
	40.6167	4.652	0.808	0.435
	40.6333	4.538	0.821	0.449
	40.65	4.785	0.84	0.459
	40.6667	4.813	0.852	0.473
	40.6833	4.87	0.871	0.482

40.7	4.861	0.884	0.492
40.7167	4.993	0.896	0.506
40.7333	5.012	0.909	0.516
40.75	5.174	0.922	0.526
40.7667	5.174	0.934	0.535
40.9667	5.819	1.06	0.65
41.1667	6.113	1.161	0.741
41.3667	6.52	1.243	0.817
41.5667	6.833	1.306	0.884
41.7667	7.08	1.362	0.937
41.9667	7.184	1.407	0.985
42.1667	7.629	1.438	1.028
42.3667	7.601	1.476	1.066
42.5667	7.715	1.507	1.1
42.7667	7.772	1.526	1.129
42.9667	7.819	1.545	1.152
43.1667	8.113	1.57	1.176
43.3667	8.009	1.589	1.205
43.5667	8.151	1.608	1.219
43.7667	8.217	1.621	1.234
43.9667	8.198	1.64	1.258
44.1667	8.17	1.652	1.272
44.3667	8.35	1.665	1.291
44.5667	8.388	1.677	1.306
44.7667	8.331	1.69	1.315
44.9667	8.445	1.702	1.325
45.1667	8.558	1.709	1.339
45.3667	8.539	1.709	1.344
45.5667	8.482	1.728	1.353
45.7667	8.501	1.734	1.363
45.9667	8.596	1.74	1.373
46.1667	8.397	1.753	1.387
46.3667	8.606	1.759	1.382
46.5667	8.577	1.765	1.396
46.7667	8.681	1.772	1.406
46.9667	8.596	1.778	1.411
47.1667	8.719	1.784	1.42
47.3667	8.691	1.791	1.425
47.5667	8.909	1.797	1.435
47.7667	8.691	1.797	1.435
47.9667	8.719	1.81	1.444
48.1667	8.7	1.81	1.449
48.3667	8.786	1.816	1.454
48.5667	8.899	1.822	1.459
48.7667	8.748	1.828	1.463
48.9667	8.719	1.835	1.478
49.1667	8.805	1.841	1.478
49.3667	8.861	1.841	1.483
49.5667	8.824	1.847	1.492
49.7667	8.909	1.854	1.492
51.7667	8.871	1.866	1.507
53.7667	9.013	1.891	1.526
55.7667	8.994	1.917	1.554
57.7667	9.108	1.929	1.564
59.7667	9.202	1.942	1.578
61.7667	9.269	1.954	1.588
63.7667	9.174	1.967	1.602
65.7667	9.24	1.973	1.612
67.7667	9.392	1.98	1.617
69.7667	9.411	1.986	1.626
71.7667	9.477	1.992	1.626
73.7667	9.345	1.998	1.636
75.7667	9.345	1.998	1.641
77.7667	9.411	2.005	1.641

	79.7667	9.392	2.011	1.645
Q = 50 GPM				
	80	9.505	2.027	1.66
	80.0083	9.676	2.027	1.66
	80.025	9.552	2.027	1.66
	80.0416	9.761	2.034	1.66
	80.0583	9.837	2.04	1.66
	80.075	9.884	2.04	1.665
	80.0916	9.979	2.052	1.665
	80.1083	10.083	2.052	1.665
	80.125	10.206	2.059	1.67
	80.1416	10.31	2.065	1.67
	80.1583	10.433	2.078	1.67
	80.175	10.452	2.084	1.679
	80.1916	10.67	2.09	1.679
	80.2083	10.736	2.103	1.684
	80.225	10.85	2.115	1.689
	80.2416	10.888	2.122	1.694
	80.2583	11.03	2.134	1.694
	80.275	11.162	2.141	1.698
	80.2916	11.162	2.153	1.703
	80.3083	11.304	2.166	1.708
	80.325	11.465	2.172	1.713
	80.3416	11.57	2.185	1.718
	80.3583	11.683	2.204	1.722
	80.375	11.778	2.21	1.732
	80.3916	11.835	2.222	1.737
	80.4083	11.901	2.229	1.741
	80.425	11.948	2.241	1.746
	80.4416	12.005	2.254	1.751
	80.4583	12.071	2.26	1.756
	80.475	12.185	2.273	1.761
	80.4916	12.213	2.285	1.765
	80.5083	12.355	2.292	1.775
	80.525	12.384	2.304	1.78
	80.5416	12.45	2.311	1.784
	80.5583	12.488	2.317	1.789
	80.575	12.573	2.323	1.794
	80.5916	12.601	2.336	1.799
	80.6083	12.667	2.342	1.808
	80.625	12.686	2.348	1.808
	80.6416	12.743	2.355	1.818
	80.6583	12.79	2.367	1.823
	80.675	12.847	2.374	1.823
	80.875	13.424	2.443	1.88
	81.075	13.869	2.493	1.928
	81.275	14.266	2.531	1.962
	81.475	14.597	2.569	1.995
	81.675	14.891	2.594	2.019
	81.875	15.193	2.619	2.043
	82.075	15.534	2.644	2.057
	82.275	15.751	2.663	2.081
	82.475	15.997	2.688	2.096
	82.675	16.224	2.707	2.11
	82.875	16.356	2.726	2.124
	83.075	16.545	2.739	2.139
	83.275	16.696	2.758	2.148
	83.475	16.867	2.77	2.162
	83.675	16.961	2.783	2.167
	83.875	17.131	2.795	2.177
	84.075	17.301	2.808	2.186
	84.275	17.415	2.814	2.191
	84.475	17.5	2.833	2.206
	84.675	17.604	2.839	2.21

	84.875	17.755	2.846	2.22
	85.075	17.793	2.852	2.225
	85.275	17.897	2.858	2.229
	85.475	17.953	2.871	2.234
	85.675	18.086	2.877	2.229
	85.875	18.133	2.883	2.239
	86.075	18.218	2.89	2.249
	86.275	18.246	2.896	2.253
	86.475	18.293	2.896	2.258
	86.675	18.35	2.902	2.263
	86.875	18.416	2.909	2.263
	87.075	18.511	2.909	2.273
	87.275	18.567	2.915	2.273
	87.475	18.615	2.921	2.273
	87.675	18.633	2.921	2.282
	87.875	18.681	2.928	2.282
	88.075	18.766	2.934	2.287
	88.275	18.813	2.934	2.287
	88.475	18.851	2.94	2.292
	88.675	18.879	2.946	2.292
	88.875	18.945	2.946	2.296
	89.075	18.983	2.953	2.301
	89.275	19.021	2.953	2.301
	89.475	19.049	2.959	2.301
	89.675	19.087	2.959	2.306
	91.675	19.332	2.978	2.311
	93.675	19.531	2.997	2.335
	95.675	19.691	2.997	2.335
	97.675	19.757	2.997	2.344
	99.675	19.738	2.99	2.34
	101.675	19.757	2.99	2.335
	103.675	19.786	2.997	2.344
	105.675	19.795	2.997	2.344
	107.675	19.795	2.99	2.34
	109.675	19.805	2.997	2.344
	111.675	19.805	2.997	2.344
	113.675	19.805	2.997	2.344
	115.675	19.805	2.997	2.344
	117.675	19.805	2.997	2.344
	119.675	19.805	2.997	2.344
Q = 60 GPM				
	120	1.206	0.493	0.373
	120.0083	1.415	0.499	0.373
	120.0166	1.719	0.524	0.378
	120.025	2.108	0.556	0.382
	120.0333	2.307	0.581	0.397
	120.0416	3.162	0.625	0.406
	120.05	3.37	0.656	0.416
	120.0583	3.589	0.675	0.43
	120.0666	3.779	0.694	0.44
	120.075	3.959	0.719	0.454
	120.0833	4.206	0.745	0.464
	120.0916	4.538	0.77	0.478
	120.1	4.67	0.789	0.488
	120.1083	4.87	0.82	0.502
	120.1166	5.116	0.839	0.512
	120.125	5.344	0.864	0.521
	120.1333	5.505	0.883	0.536
	120.1416	5.685	0.908	0.545
	120.15	5.799	0.927	0.559
	120.1583	5.97	0.946	0.569
	120.1666	6.15	0.965	0.579
	120.175	6.34	0.99	0.588
	120.1833	6.567	1.009	0.603

120.1916	6.766	1.022	0.612
120.2	6.814	1.041	0.626
120.2083	7.051	1.059	0.636
120.225	7.42	1.097	0.655
120.2416	7.601	1.129	0.679
120.2583	8.018	1.166	0.698
120.275	8.254	1.198	0.722
120.2916	8.539	1.229	0.741
120.3083	8.889	1.261	0.756
120.325	9.098	1.299	0.78
120.3416	9.41	1.33	0.799
120.3583	9.714	1.362	0.818
120.375	9.969	1.387	0.837
120.3916	10.244	1.418	0.856
120.4083	10.376	1.444	0.875
120.425	10.642	1.475	0.89
120.4416	10.897	1.507	0.914
120.4583	11.162	1.532	0.933
120.475	11.399	1.557	0.952
120.4916	11.607	1.588	0.966
120.5083	11.835	1.614	0.985
120.525	11.995	1.639	1.005
120.5416	12.251	1.664	1.024
120.5583	12.469	1.689	1.038
120.575	12.724	1.714	1.057
120.5916	12.828	1.74	1.072
120.6083	13.046	1.758	1.086
120.625	13.273	1.784	1.105
120.6416	13.434	1.802	1.119
120.6583	13.585	1.828	1.139
120.675	13.831	1.847	1.153
120.6916	13.945	1.872	1.172
120.7083	14.172	1.891	1.186
120.725	14.295	1.91	1.201
120.7416	14.475	1.928	1.215
120.7583	14.626	1.947	1.229
120.775	14.806	1.966	1.244
120.7916	14.938	1.991	1.258
120.8083	15.118	2.01	1.273
120.825	15.259	2.023	1.287
120.8416	15.43	2.048	1.301
120.8583	15.543	2.067	1.311
120.875	15.694	2.08	1.325
121.075	17.178	2.275	1.469
121.275	18.416	2.426	1.598
121.475	19.446	2.558	1.708
121.675	20.305	2.671	1.799
121.875	21.051	2.772	1.885
122.075	21.589	2.854	1.962
122.275	22.164	2.929	2.024
122.475	22.589	2.992	2.081
122.675	23.042	3.049	2.134
122.875	23.419	3.099	2.177
123.075	23.768	3.143	2.22
123.275	24.051	3.187	2.258
123.475	24.353	3.219	2.287
123.675	24.598	3.257	2.32
123.875	24.834	3.282	2.349
124.075	25.06	3.313	2.378
124.275	25.267	3.332	2.402
124.475	25.437	3.357	2.426
124.675	25.616	3.376	2.45
124.875	25.795	3.395	2.469
125.075	25.908	3.414	2.483

125.275	26.021	3.433	2.502
125.475	26.182	3.446	2.517
125.675	26.332	3.464	2.531
125.875	26.427	3.477	2.545
126.075	26.54	3.49	2.555
126.275	26.672	3.502	2.569
126.475	26.794	3.521	2.584
126.675	26.869	3.534	2.588
126.875	26.954	3.534	2.598
127.075	27.067	3.546	2.603
127.275	27.18	3.553	2.603
127.475	27.256	3.559	2.612
127.675	27.359	3.571	2.617
127.875	27.435	3.584	2.631
128.075	27.548	3.59	2.646
128.275	27.623	3.603	2.65
128.475	27.717	3.609	2.66
128.675	27.783	3.622	2.665
128.875	27.887	3.628	2.67
129.075	27.981	3.634	2.67
129.275	28.037	3.641	2.679
129.475	28.085	3.647	2.684
129.675	28.132	3.653	2.689
129.875	28.207	3.653	2.689
131.875	28.706	3.71	2.741
133.875	29.139	3.741	2.77
135.875	29.497	3.773	2.794
137.875	30.052	3.767	2.775
139.875	30.372	3.798	2.789
141.875	30.532	3.817	2.804
143.875	30.683	3.836	2.818
145.875	30.852	3.848	2.827
147.875	30.956	3.855	2.842
149.875	31.106	3.861	2.842
151.875	31.219	3.861	2.847
153.875	31.417	3.867	2.842
155.875	31.473	3.88	2.847
157.875	31.558	3.88	2.851
159.875	31.662	3.88	2.856
161.875	31.709	3.886	2.856
163.875	31.699	3.892	2.871
165.875	31.765	3.892	2.875
167.875	31.793	3.899	2.875
169.875	31.859	3.892	2.871
171.875	31.981	3.899	2.871
173.875	32.038	3.911	2.88
175.875	32.066	3.911	2.88
177.875	32.433	3.936	2.894
179.875	32.499	3.943	2.899
181.875	32.565	3.949	2.904
183.875	32.565	3.949	2.909
185.875	32.612	3.955	2.914
187.875	32.612	3.955	2.918

APPENDIX B

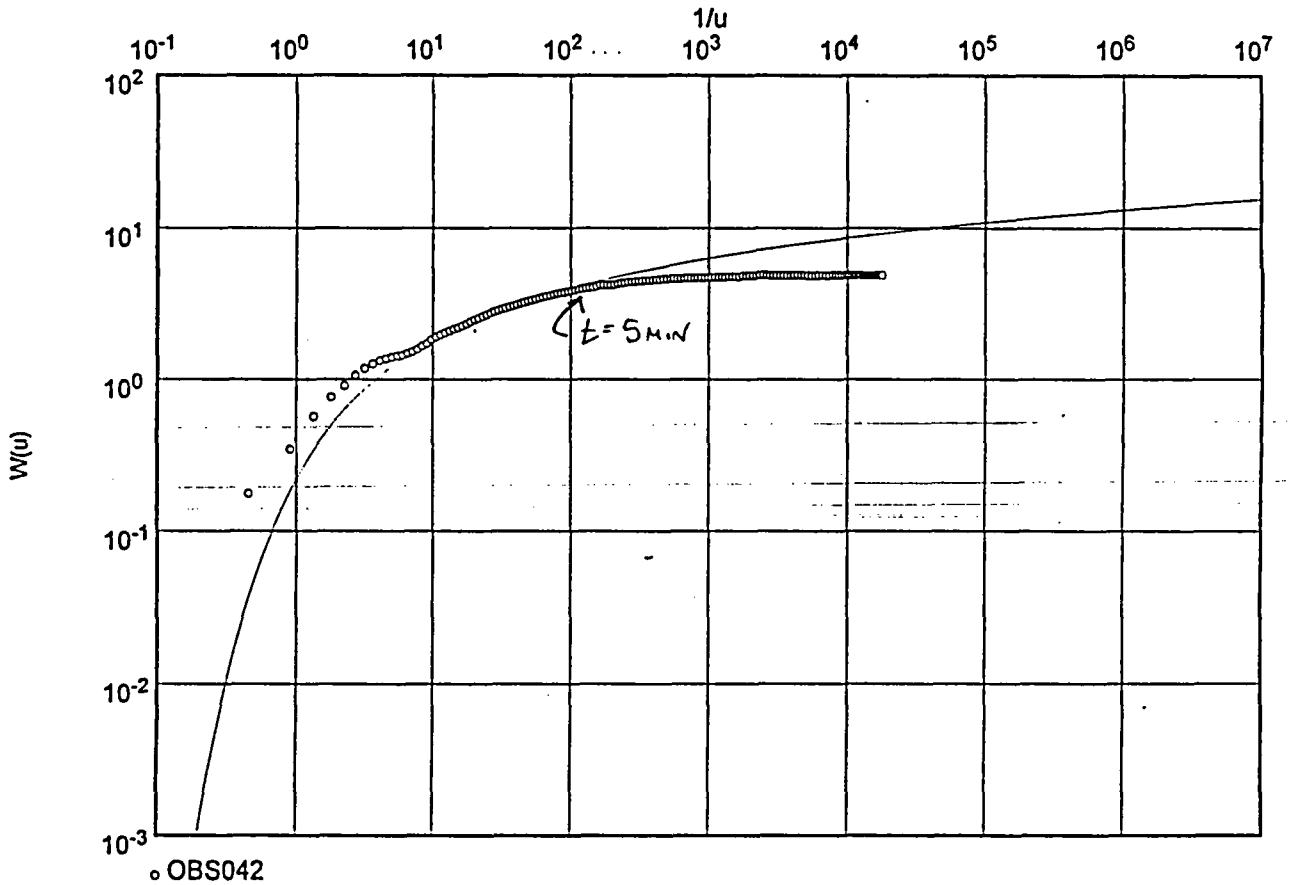
WELL 041 AQUIFER TEST DATA AND PLOTS

WELL 041 AQUIFER TEST 1

PLOTS FOR OBSERVATION WELLS 042, 123, AND 043

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 30.11.1999

Pumping Test No. 041 AQ TEST1, t = 19 hrs	Test conducted on: 11/19/99
OBS042, r = 26.8'	
Discharge 35.00 U.S.gal/min	



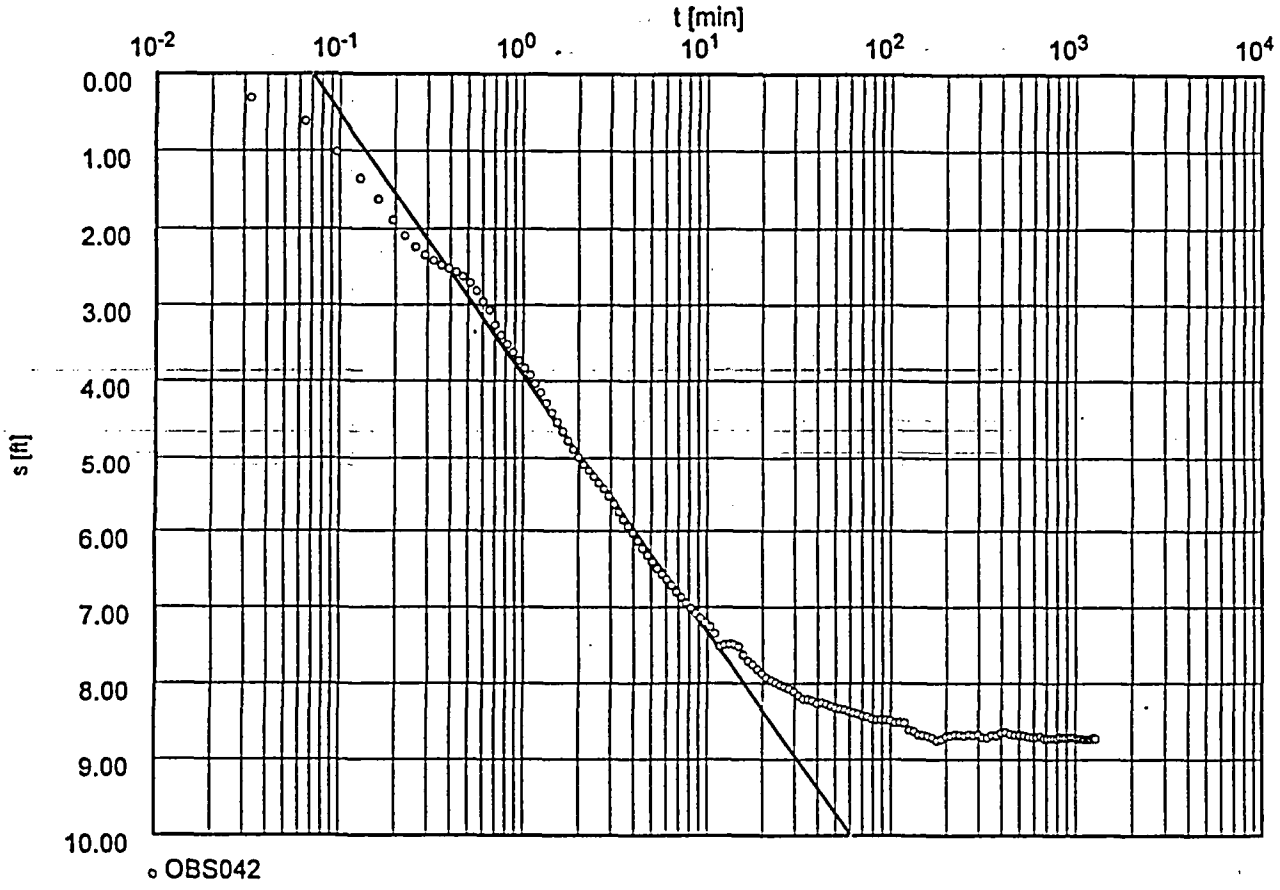
Transmissivity [ft²/min]: 2.09×10^{-1} = 301 ft²/D

Hydraulic conductivity [ft/min]: 6.97×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 30.11.1999

Pumping Test No. 041 AQ TEST1, t = 19 hrs	Test conducted on: 11/19/99
OBS042, r = 26.8'	
Discharge 35.00 U.S.gal/min	

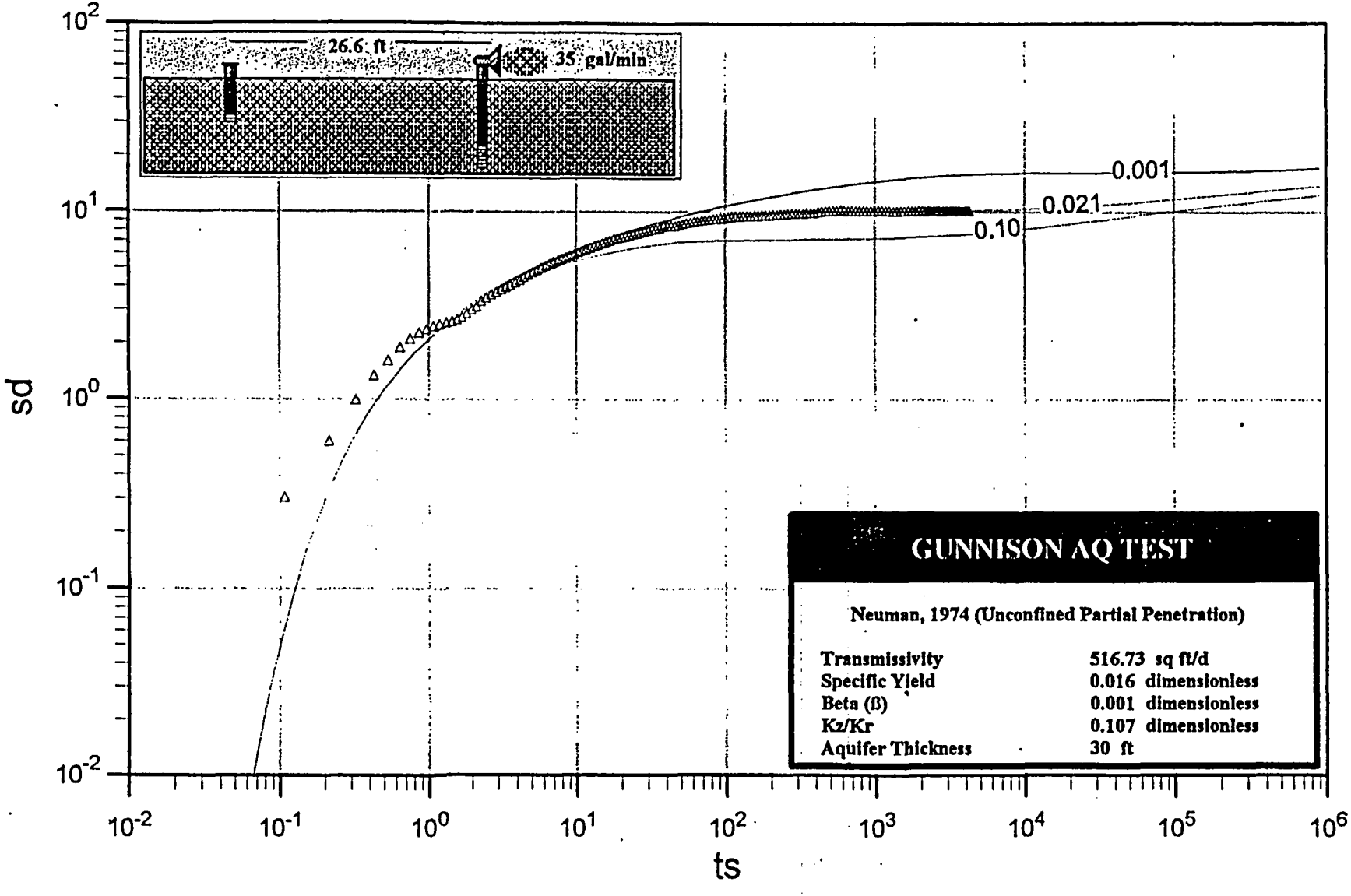


Transmissivity [ft²/min]: 2.51×10^{-1} = 361.4 ft²/D

Hydraulic conductivity [ft/min]: 8.38×10^{-3}

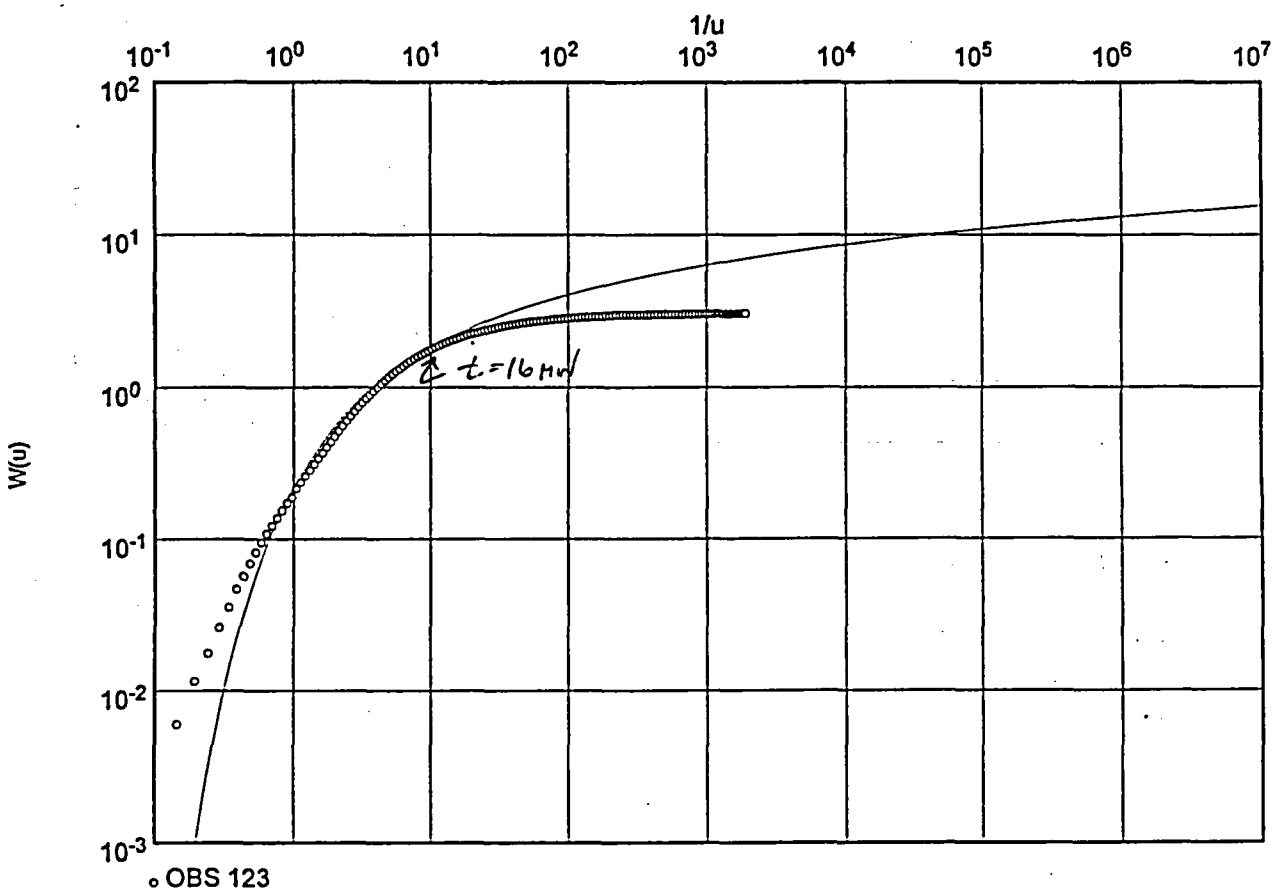
Aquifer thickness [ft]: 30.00

WELL OBS 042 / 041 AQ TEST 1



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 29.12.1999

Pumping Test No. 041 AQ TEST 1, t = 19 hrs	Test conducted on: 11/19/99
OBS 123, r = 30.8', SI = 53.2' - 58.2'	
Discharge 35.00 U.S.gal/min	



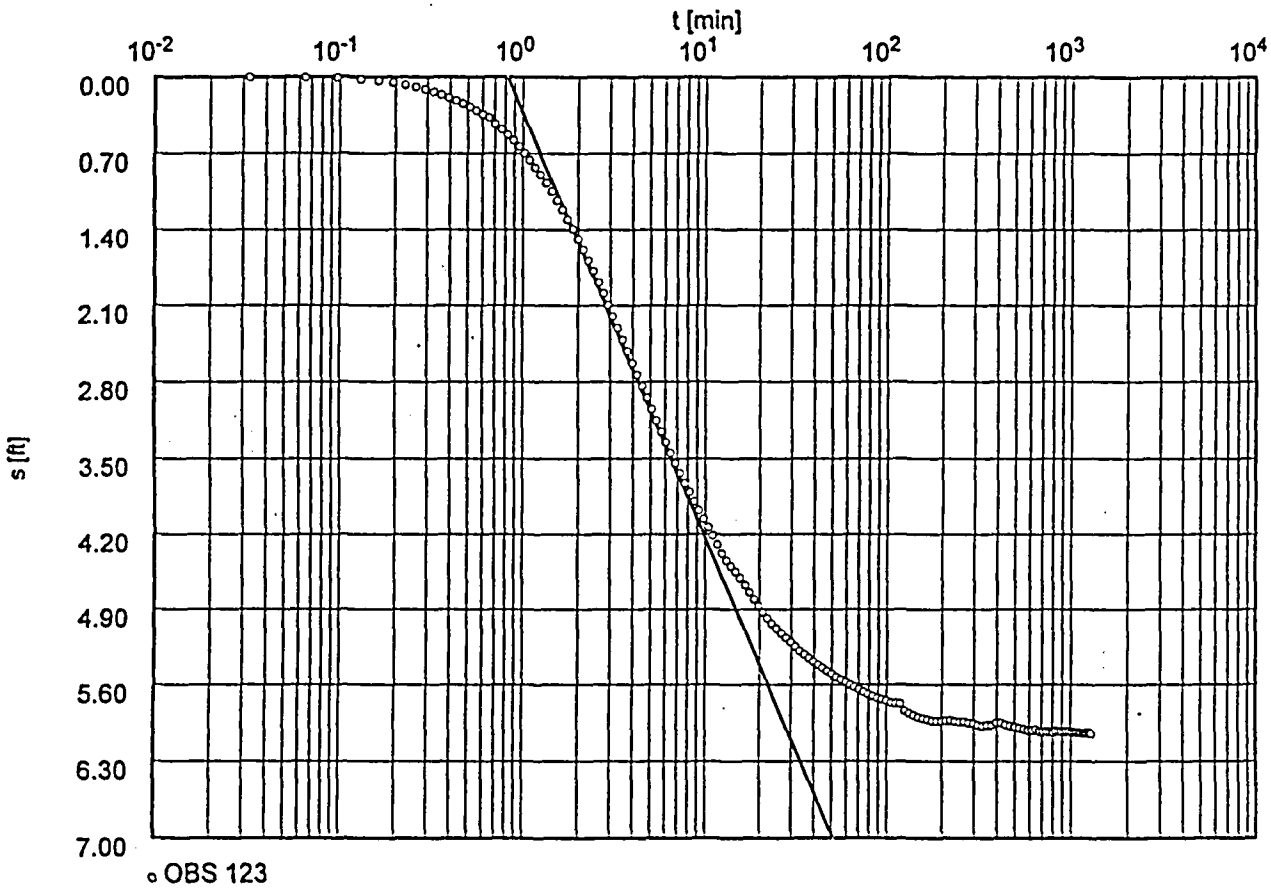
Transmissivity [ft²/min]: 1.86×10^{-1} = 267.8 ft²/d

Hydraulic conductivity [ft/min]: 6.22×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 29.12.1999

Pumping Test No. 041 AQ TEST 1, t = 19 hrs	Test conducted on: 11/19/99
OBS 123, r = 30.8', Sl = 53.2' - 58.2'	
Discharge 35.00 U.S.gal/min	

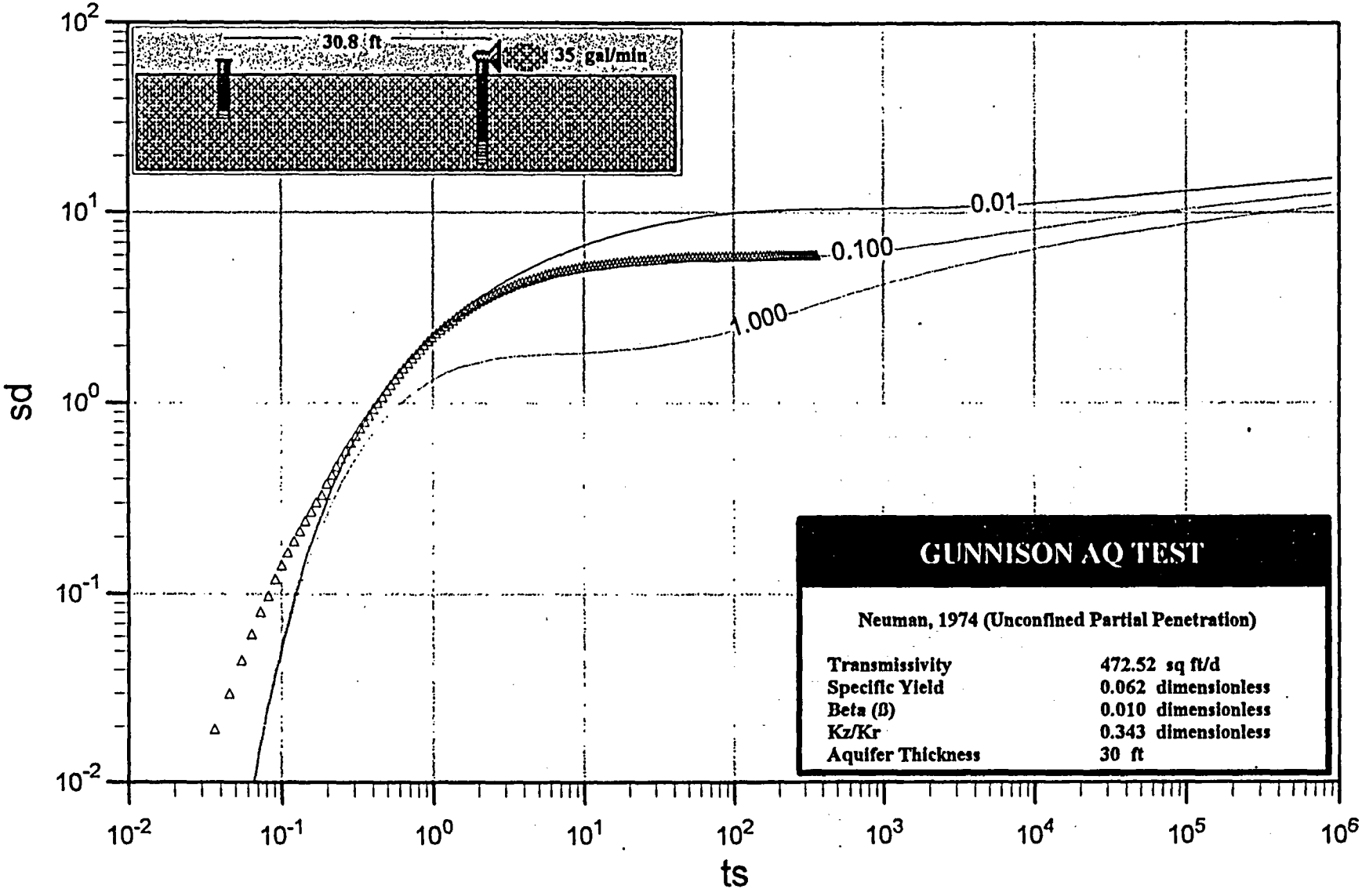


Transmissivity [ft²/min]: 2.19×10^{-1} = 315.4 ft²/D

Hydraulic conductivity [ft/min]: 7.30×10^{-3}

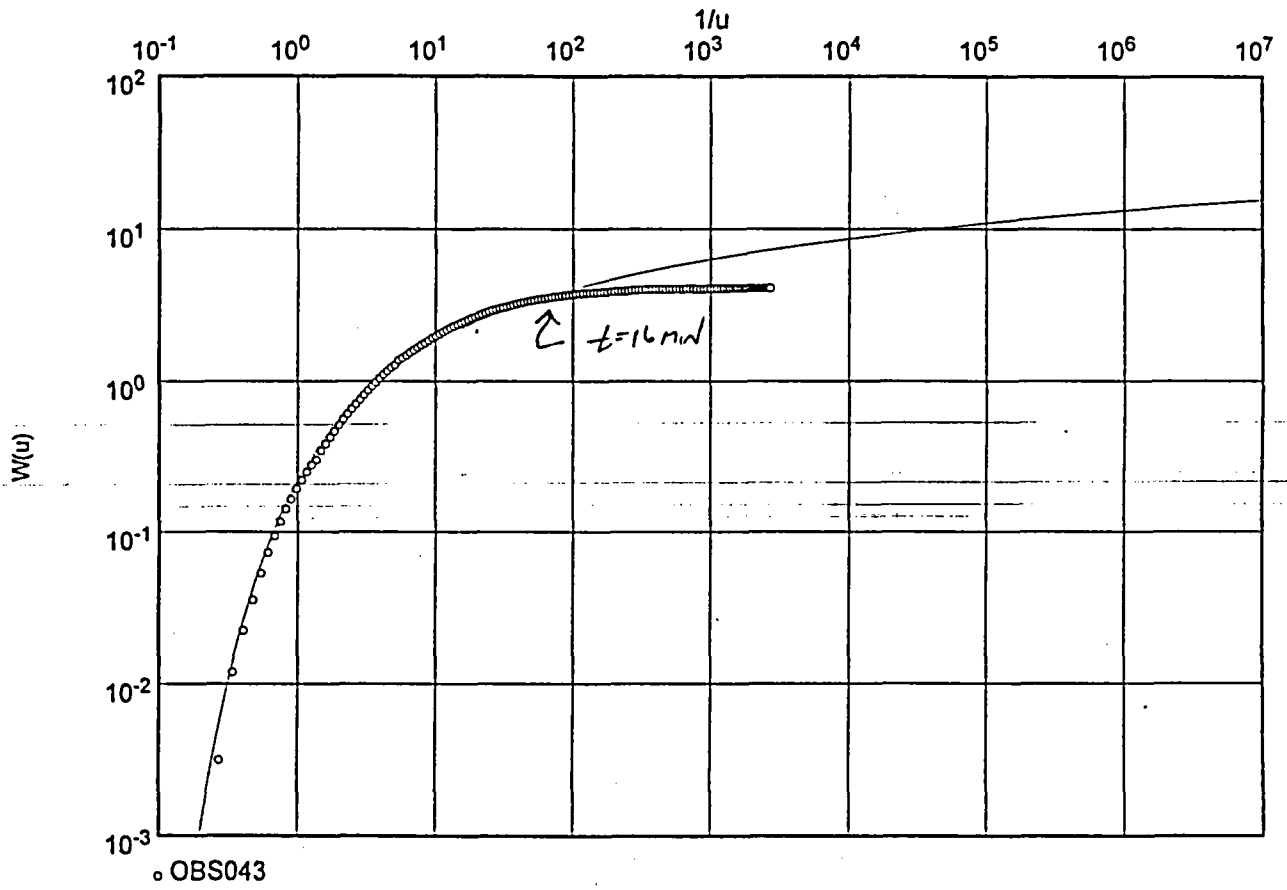
Aquifer thickness [ft]: 30.00

WELL OBS 123 / 041 AQ TEST 1



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 30.11.1999

Pumping Test No. 041 AQ TEST 1, t = 19 hrs	Test conducted on: 11/19/99
OBS043, r = 36.6'	
Discharge 35.00 U.S.gal/min	



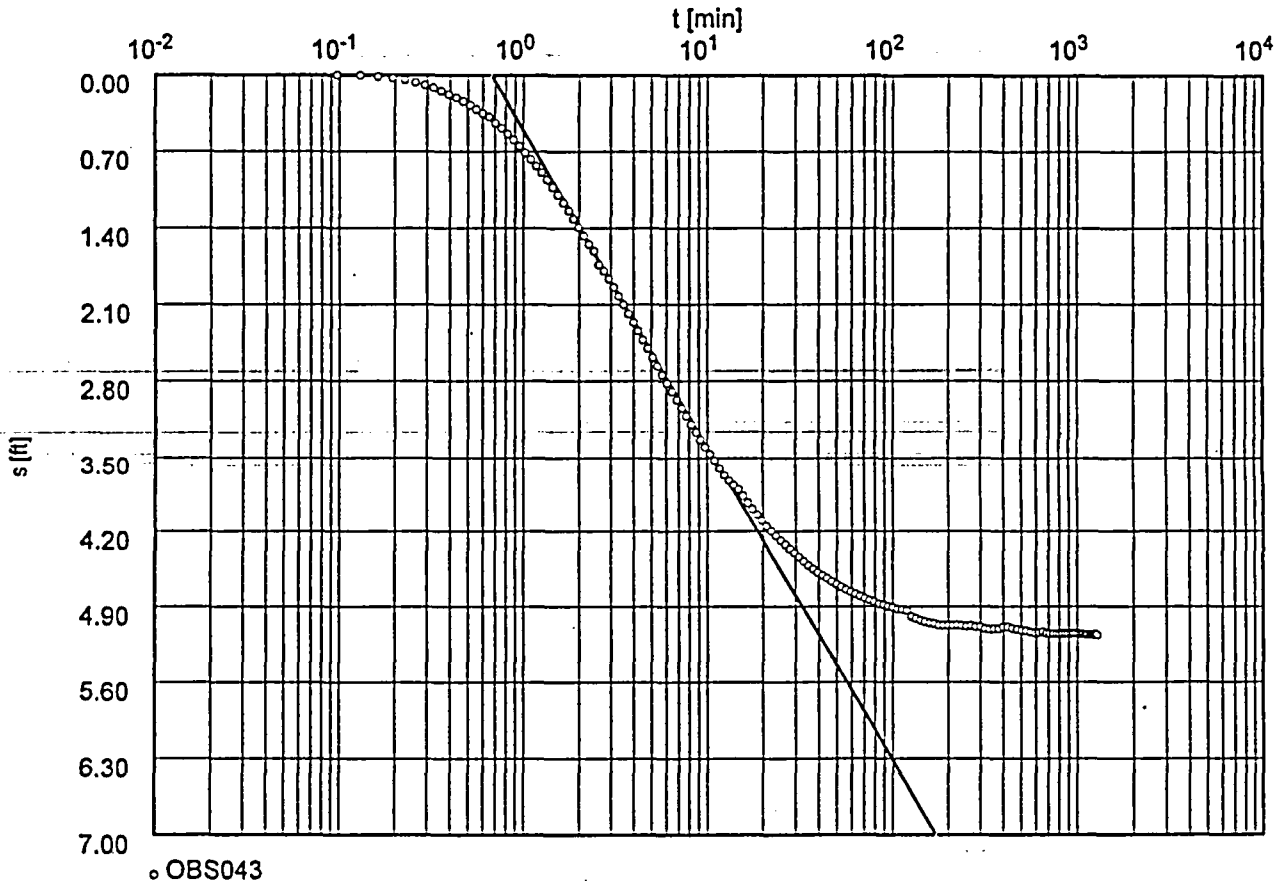
Transmissivity [ft²/min]: 2.95×10^{-1} = 424.8 ft²/d

Hydraulic conductivity [ft/min]: 9.85×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 30.11.1999

Pumping Test No. 041 AQ TEST 1, t = 19 hrs	Test conducted on: 11/19/99
OBS043, r = 36.6'	
Discharge 35.00 U.S.gal/min	

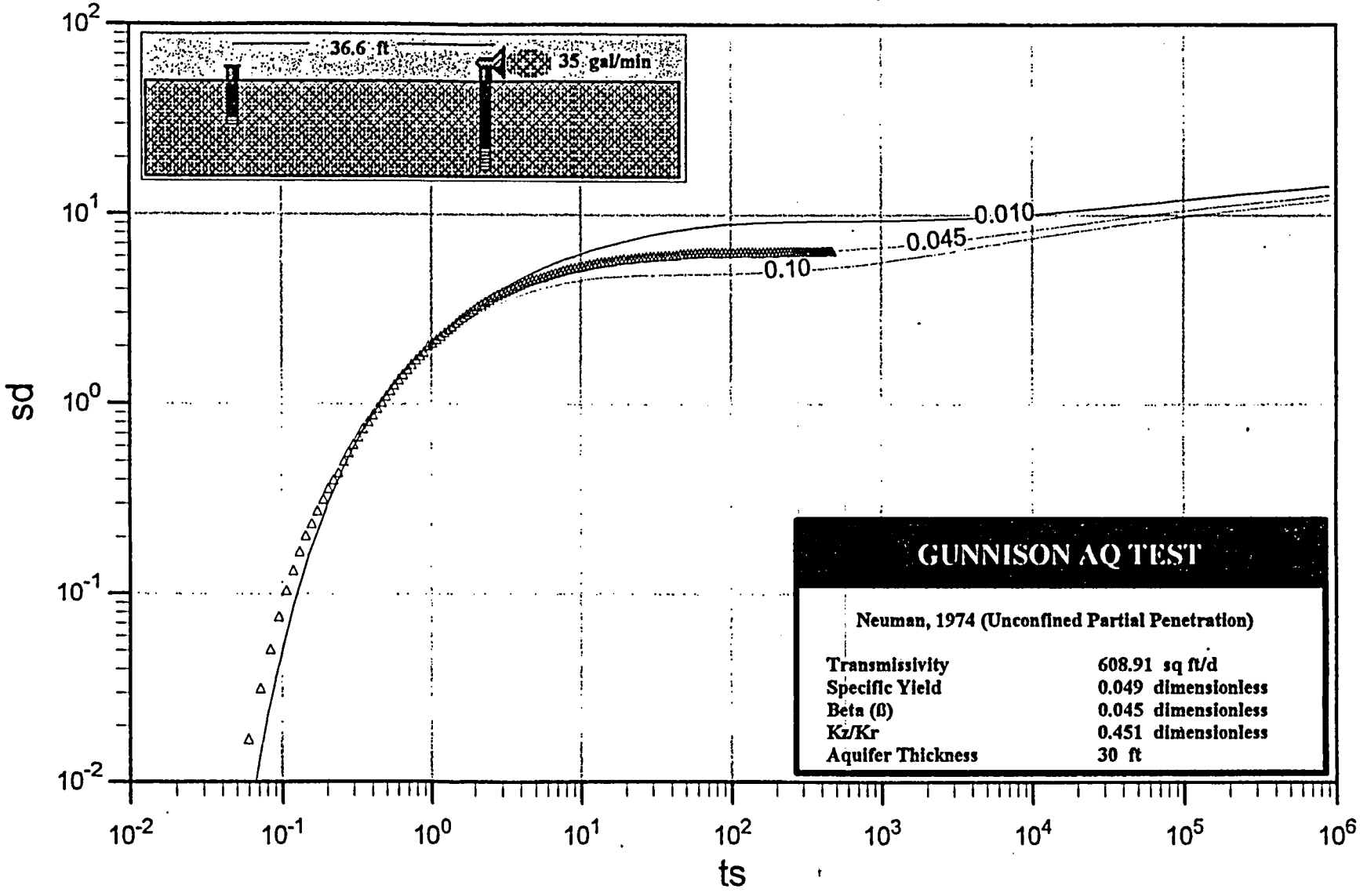


Transmissivity [ft²/min]: 2.94×10^{-1} = 423.4 ft²/D

Hydraulic conductivity [ft/min]: 9.82×10^{-3}

Aquifer thickness [ft]: 30.00

WELL OBS 043 / 041 AQ TEST 1



WELL 041 AQUIFER TEST 1

DRAWDOWN DATA

GUNNISON UMTRA SITE
WELL 041 AQUIFER TEST 1 DATA
START DATE/TIME: 11/19/99, 0900
PUMPING RATE : 35 GPM

ELAPSED TIME (MIN)	WELL 041 DTW (ft btoc)	WELL 042 DTW (ft btoc)	WELL 043 DTW (ft btoc)	WELL 120 DTW (ft btoc)	WELL 123 DTW (ft btoc)	INCHES Hg
0.00	8.07	8.018	8.39	5.79	9.531	22.889
0.03	9.735	8.335	8.389	5.791	9.533	22.891
0.06	9.947	8.642	8.389	5.79	9.536	22.889
0.10	10.665	9.053	8.39	5.79	9.542	22.891
0.13	11.296	9.407	8.394	5.79	9.553	22.891
0.16	11.862	9.692	8.405	5.79	9.565	22.889
0.19	12.233	9.972	8.418	5.79	9.582	22.891
0.23	12.458	10.19	8.435	5.79	9.601	22.891
0.26	12.518	10.353	8.457	5.79	9.623	22.891
0.29	12.497	10.468	8.482	5.789	9.643	22.891
0.32	12.454	10.548	8.508	5.789	9.668	22.891
0.36	12.436	10.611	8.538	5.789	9.693	22.891
0.39	12.501	10.659	8.57	5.79	9.719	22.891
0.43	12.51	10.711	8.599	5.79	9.746	22.893
0.47	12.769	10.774	8.634	5.79	9.774	22.891
0.51	13.054	10.865	8.67	5.79	9.806	22.891
0.55	13.244	10.985	8.708	5.791	9.839	22.891
0.60	13.581	11.135	8.744	5.79	9.874	22.893
0.65	13.836	11.259	8.775	5.791	9.905	22.893
0.70	14.129	11.485	8.834	5.791	9.961	22.887
0.76	14.311	11.637	8.882	5.791	10.008	22.887
0.82	14.449	11.771	8.935	5.793	10.06	22.887
0.88	14.626	11.893	8.988	5.793	10.114	22.885
0.95	14.798	12.015	9.046	5.794	10.172	22.885
1.02	14.984	12.132	9.107	5.796	10.234	22.883
1.09	15.165	12.238	9.168	5.796	10.298	22.883
1.17	15.368	12.373	9.231	5.797	10.368	22.883
1.26	15.666	12.512	9.296	5.799	10.439	22.883
1.34	15.938	12.668	9.364	5.8	10.515	22.883
1.44	16.201	12.818	9.433	5.803	10.595	22.881
1.54	16.469	12.964	9.504	5.806	10.679	22.881
1.64	16.71	13.105	9.578	5.807	10.767	22.881
1.75	17.021	13.244	9.653	5.809	10.86	22.881
1.87	17.263	13.381	9.733	5.812	10.955	22.881
2.00	17.539	13.511	9.813	5.815	11.053	22.879
2.13	17.771	13.637	9.894	5.819	11.155	22.879
2.27	18.048	13.745	9.977	5.822	11.263	22.876
2.42	18.233	13.862	10.04	5.825	11.369	22.876
2.58	18.483	13.975	10.176	5.828	11.479	22.876
2.74	18.733	14.084	10.236	5.832	11.589	22.874
2.92	18.97	14.201	10.315	5.835	11.703	22.874
3.11	19.225	14.331	10.397	5.839	11.817	22.874
3.31	19.492	14.453	10.485	5.842	11.933	22.872
3.52	19.746	14.583	10.568	5.847	12.05	22.874
3.74	19.992	14.702	10.656	5.851	12.164	22.872
3.97	20.225	14.817	10.744	5.854	12.283	22.872
4.22	20.445	14.954	10.832	5.858	12.401	22.872
4.49	20.673	15.078	10.921	5.862	12.518	22.872

4.77	20.876	15.193	11.006	5.867	12.636	22.87
5.07	21.065	15.306	11.095	5.871	12.754	22.868
5.38	21.281	15.425	11.182	5.876	12.868	22.87
5.71	21.462	15.525	11.272	5.878	12.981	22.87
6.07	21.655	15.616	11.356	5.883	13.093	22.868
6.44	21.823	15.72	11.442	5.887	13.204	22.868
6.84	22	15.831	11.524	5.89	13.311	22.868
7.26	22.151	15.928	11.607	5.896	13.417	22.868
7.70	22.327	16.032	11.69	5.899	13.52	22.866
8.17	22.482	16.13	11.771	5.903	13.62	22.866
8.67	22.62	16.221	11.849	5.907	13.722	22.866
9.20	22.745	16.303	11.925	5.91	13.817	22.866
9.76	22.87	16.388	12.003	5.915	13.91	22.864
10.35	22.978	16.46	12.077	5.919	14	22.864
10.98	23.383	16.592	12.151	5.92	14.089	22.864
11.64	23.632	16.828	12.24	5.923	14.189	22.862
12.35	23.693	16.802	12.321	5.928	14.288	22.862
13.09	23.52	16.794	12.386	5.933	14.367	22.864
13.88	23.55	16.796	12.436	5.936	14.43	22.862
14.72	23.697	16.837	12.485	5.938	14.486	22.862
15.61	23.985	16.991	12.552	5.941	14.557	22.862
16.54	24.145	17.106	12.623	5.942	14.639	22.86
17.54	24.334	17.171	12.691	5.947	14.72	22.86
18.59	24.523	17.264	12.753	5.949	14.798	22.858
19.71	24.618	17.338	12.816	5.952	14.875	22.856
20.89	24.713	17.414	12.877	5.954	14.946	22.856
22.14	24.773	17.468	12.933	5.957	15.014	22.856
23.47	24.82	17.511	12.985	5.96	15.075	22.856
24.87	24.872	17.559	13.035	5.964	15.132	22.856
26.36	24.945	17.594	13.081	5.967	15.183	22.854
27.94	25.023	17.635	13.126	5.967	15.231	22.852
29.61	25.096	17.691	13.172	5.971	15.284	22.85
31.38	25.204	17.769	13.22	5.974	15.337	22.85
33.25	25.272	17.83	13.27	5.974	15.389	22.852
35.24	25.238	17.837	13.315	5.978	15.431	22.85
37.34	25.337	17.863	13.354	5.981	15.471	22.848
39.57	25.376	17.923	13.391	5.983	15.512	22.848
41.92	25.483	17.904	13.423	5.986	15.548	22.85
44.42	25.574	17.93	13.455	5.987	15.585	22.848
47.07	25.638	17.969	13.49	5.991	15.622	22.846
49.87	25.711	18.008	13.522	5.991	15.657	22.846
52.84	25.724	18.025	13.552	5.994	15.692	22.846
55.99	25.754	18.042	13.58	5.997	15.721	22.846
59.32	25.815	18.077	13.606	5.999	15.751	22.844
62.85	25.832	18.105	13.632	6	15.782	22.844
66.59	25.888	18.129	13.655	6.002	15.809	22.84
70.55	25.948	18.168	13.679	6.003	15.836	22.84
74.74	25.995	18.181	13.702	6.004	15.865	22.84
79.19	26.056	18.225	13.719	6.004	15.889	22.838
83.89	26.086	18.246	13.741	6.006	15.914	22.836
88.88	26.129	18.238	13.754	6.007	15.934	22.838
94.16	26.124	18.246	13.77	6.009	15.949	22.834
99.75	26.189	18.257	13.783	6.009	15.965	22.83
105.68	26.215	18.3	13.802	6.01	15.988	22.83
111.96	26.111	18.296	13.806	6.01	15.994	22.836
118.60	26.189	18.296	13.818	6.01	16.002	22.83

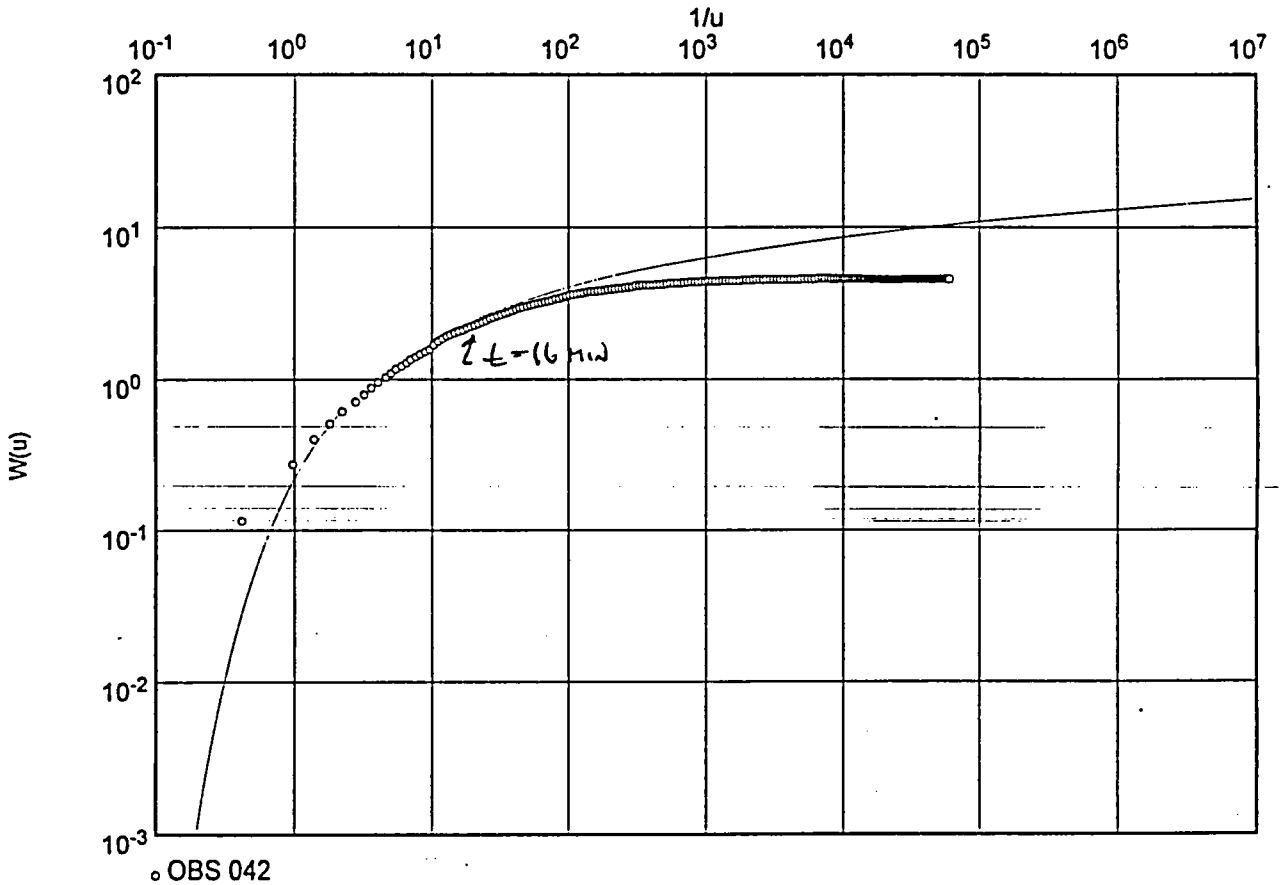
125.65	26.563	18.446	13.885	6.013	16.085	22.828
133.11	26.619	18.472	13.906	6.015	16.111	22.826
141.01	26.658	18.543	13.931	6.016	16.14	22.817
149.38	26.679	18.556	13.945	6.016	16.16	22.819
158.24	26.727	18.567	13.957	6.018	16.178	22.828
167.63	26.735	18.597	13.966	6.016	16.189	22.834
177.58	26.654	18.656	13.983	6.019	16.205	22.842
188.12	26.752	18.632	13.985	6.019	16.207	22.848
199.28	26.843	18.571	13.985	6.02	16.208	22.852
211.10	26.821	18.563	13.982	6.023	16.204	22.852
223.62	26.83	18.537	13.979	6.02	16.201	22.852
236.89	26.882	18.545	13.986	6.023	16.211	22.852
250.94	26.882	18.558	13.995	6.02	16.217	22.848
265.82	26.903	18.535	13.988	6.022	16.214	22.844
281.59	26.989	18.556	14.002	6.022	16.229	22.842
298.29	27.054	18.535	14.003	6.025	16.234	22.83
315.98	27.071	18.593	14.022	6.023	16.258	22.824
334.72	27.088	18.597	14.03	6.026	16.268	22.817
354.57	27.135	18.548	14.019	6.026	16.255	22.813
375.59	27.075	18.558	14.022	6.028	16.256	22.811
397.86	27.036	18.5	14.001	6.029	16.23	22.805
421.45	27.041	18.491	14.002	6.032	16.232	22.805
446.44	27.118	18.526	14.019	6.033	16.253	22.799
472.90	27.191	18.545	14.031	6.035	16.268	22.789
500.94	27.204	18.55	14.041	6.038	16.281	22.779
530.64	27.269	18.561	14.047	6.041	16.291	22.769
560.64	27.368	18.584	14.059	6.041	16.303	22.75
590.64	27.398	18.602	14.07	6.042	16.317	22.734
620.64	27.389	18.595	14.069	6.044	16.317	22.705
650.64	27.398	18.582	14.056	6.042	16.305	22.703
680.64	27.445	18.617	14.075	6.045	16.329	22.693
710.64	27.441	18.617	14.077	6.047	16.332	22.677
740.64	27.479	18.613	14.077	6.047	16.333	22.687
770.64	27.514	18.615	14.079	6.048	16.336	22.691
800.64	27.492	18.619	14.082	6.049	16.339	22.689
830.64	27.458	18.587	14.076	6.051	16.324	22.701
860.64	27.505	18.6	14.076	6.051	16.33	22.726
890.64	27.535	18.6	14.079	6.054	16.333	22.73
920.64	27.557	18.606	14.079	6.055	16.334	22.746
950.64	27.527	18.589	14.076	6.055	16.329	22.75
980.64	27.518	18.593	14.076	6.057	16.329	22.756
1010.64	27.565	18.617	14.079	6.057	16.339	22.769
1040.64	27.57	18.619	14.08	6.058	16.34	22.789
1070.64	27.561	18.619	14.082	6.06	16.342	22.773
1100.64	27.552	18.634	14.088	6.062	16.346	22.767
1130.64	27.57	18.63	14.088	6.064	16.348	22.783
1160.64	27.578	18.63	14.09	6.065	16.348	22.787
1190.64	27.621	18.634	14.092	6.068	16.35	22.781
1220.64	27.617	18.626	14.09	6.07	16.349	22.783
1250.64	27.604	18.597	14.085	6.07	16.343	22.783
1280.64	27.63	18.621	14.092	6.073	16.353	22.797

WELL 041 AQUIFER TEST 2

PLOTS FOR PUMPING WELL 041 AND OBSERVATION WELLS 042, 043, AND 123

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 28.11.1999

Pumping Test No. 041 AQ TEST 2, t = 72.25 hrs	Test conducted on: 11/20/99
OBS042, r = 26.8'	
Discharge 38.10 U.S.gal/min	



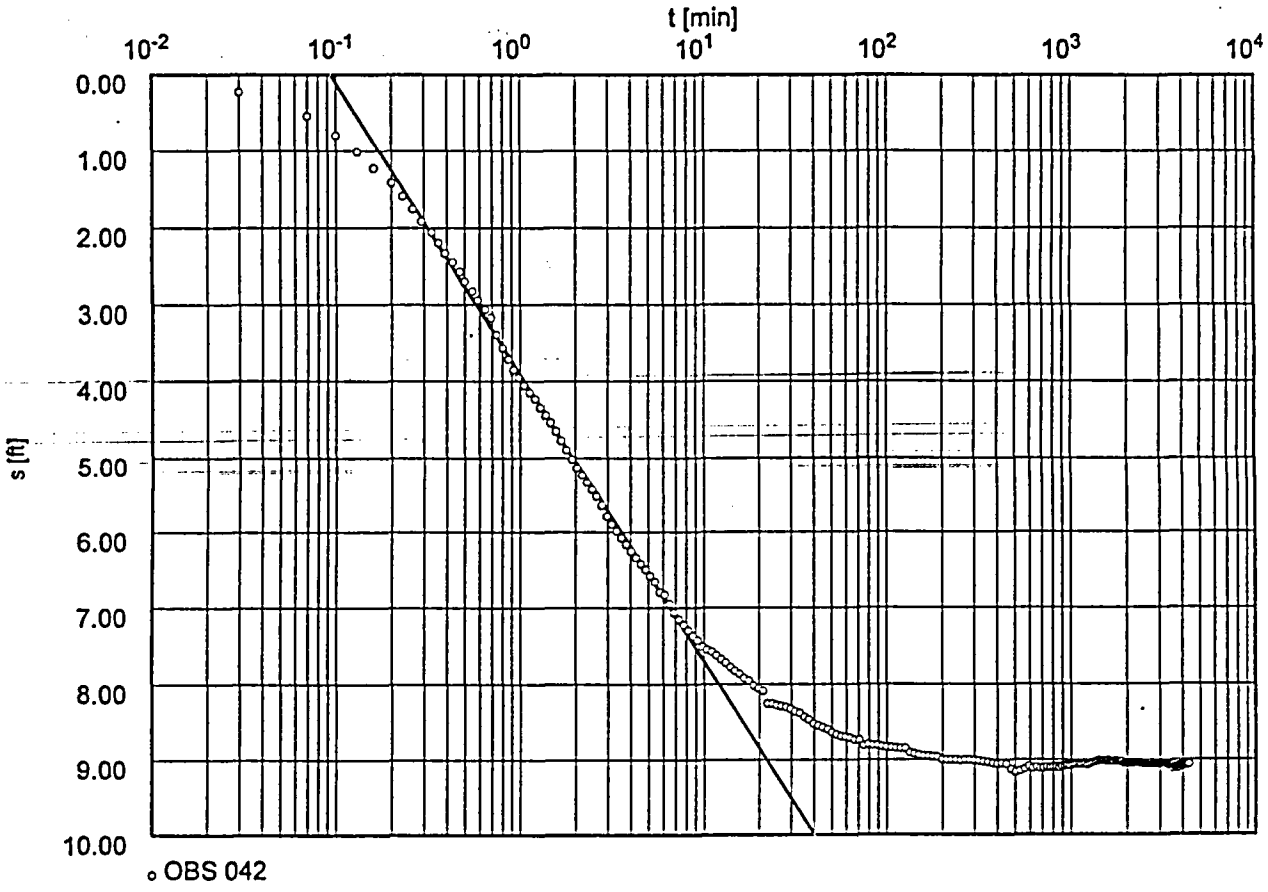
Transmissivity [ft²/min]: 2.03×10^{-1} = 292.3 ft²/D

Hydraulic conductivity [ft/min]: 6.77×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 28.11.1999

Pumping Test No. 041 AQ TEST 2, t = 72.25 hrs	Test conducted on: 11/20/99
OBS042, r = 26.8'	
Discharge 38.10 U.S.gal/min	

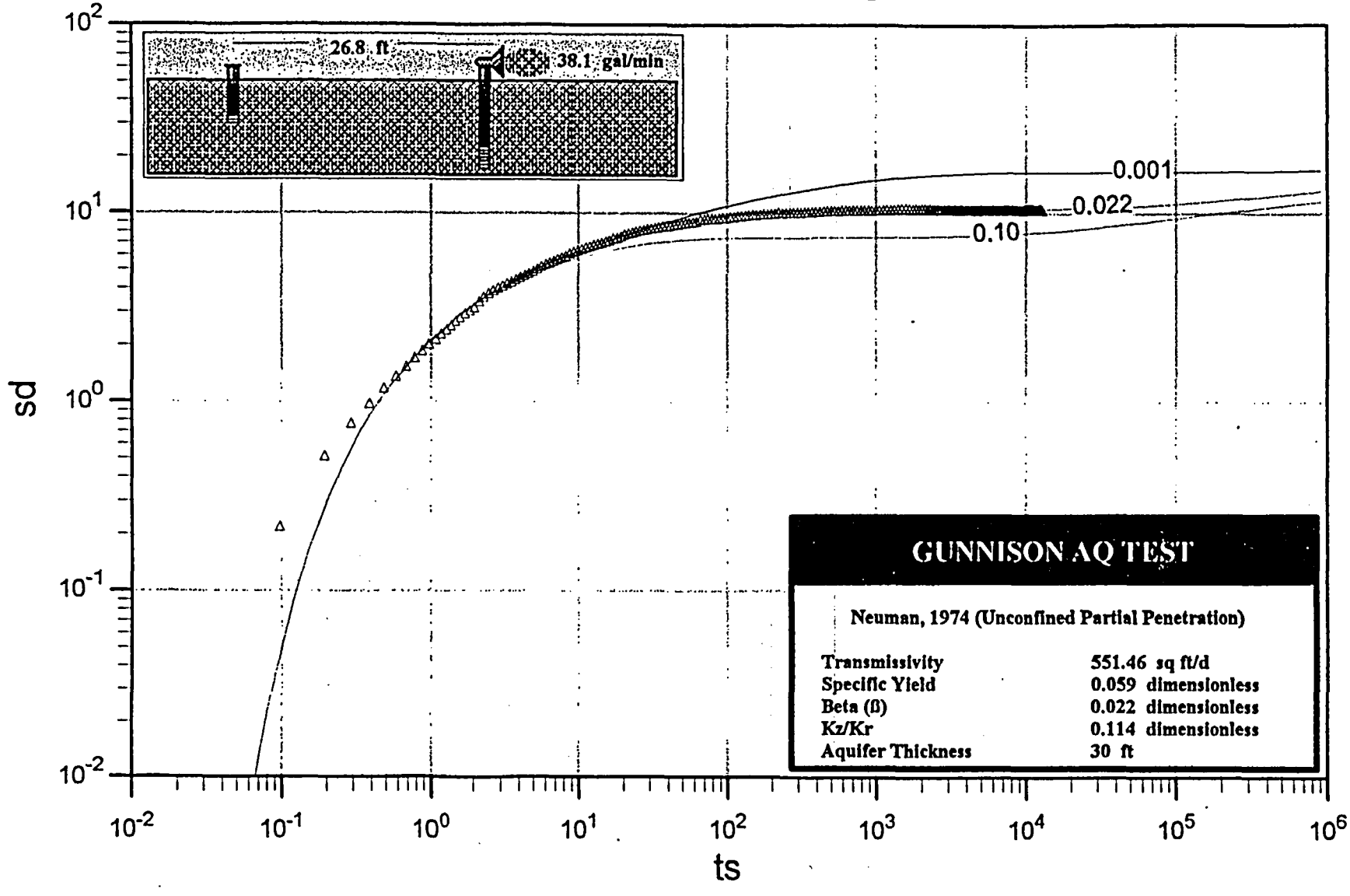


Transmissivity [ft²/min]: 2.45×10^{-1} = 352.8 ft²/D

Hydraulic conductivity [ft/min]: 8.18×10^{-3}

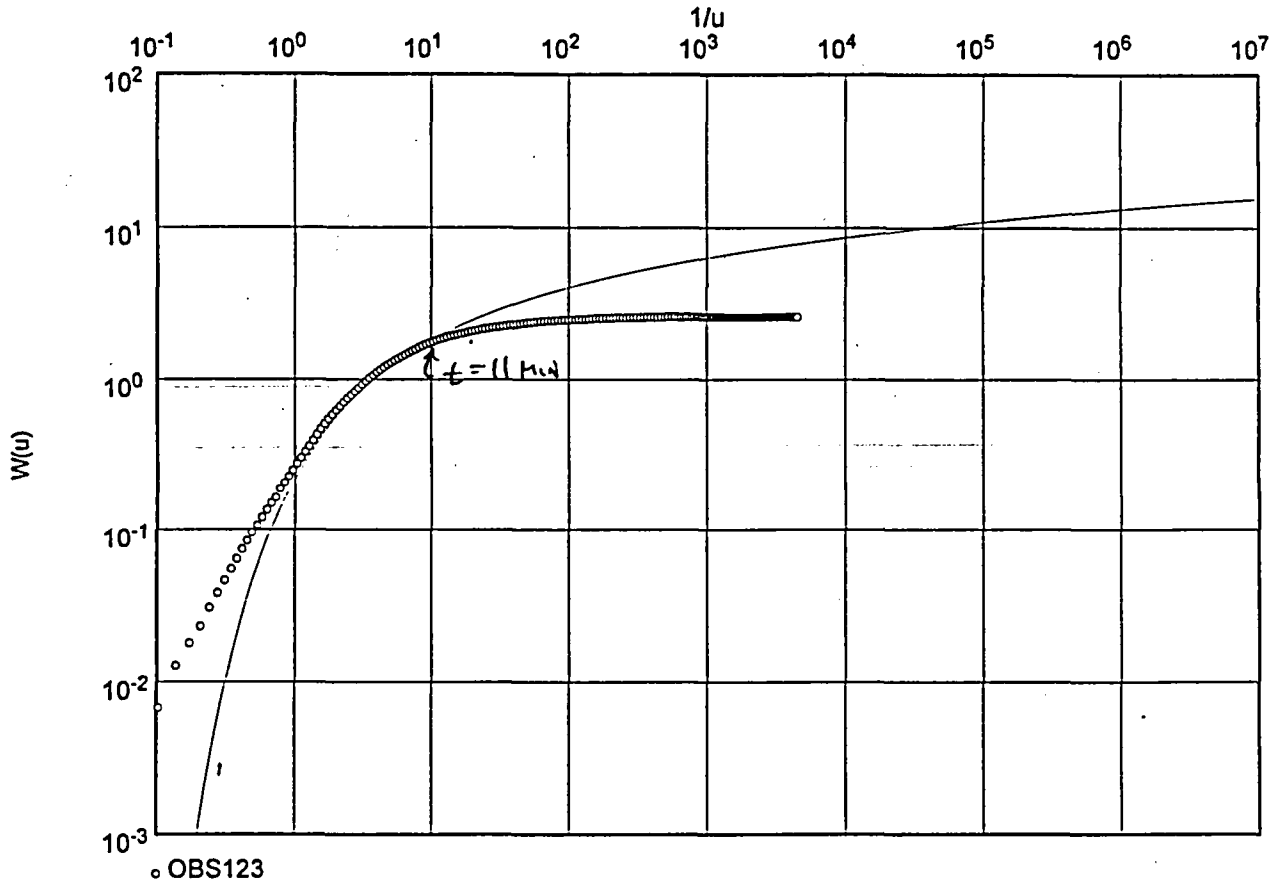
Aquifer thickness [ft]: 30.00

WELL OBS 042 / 041 AQ TEST 2



2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Theis analysis method Unconfined aquifer	Project: GUNNISON Evaluated by: Date: 28.11.1999

Pumping Test No. O41 AQ TEST 2, t = 72.25 HRS	Test conducted on: 11/20/99
OBS123, r = 30.8'	
Discharge 38.10 U.S.gal/min	



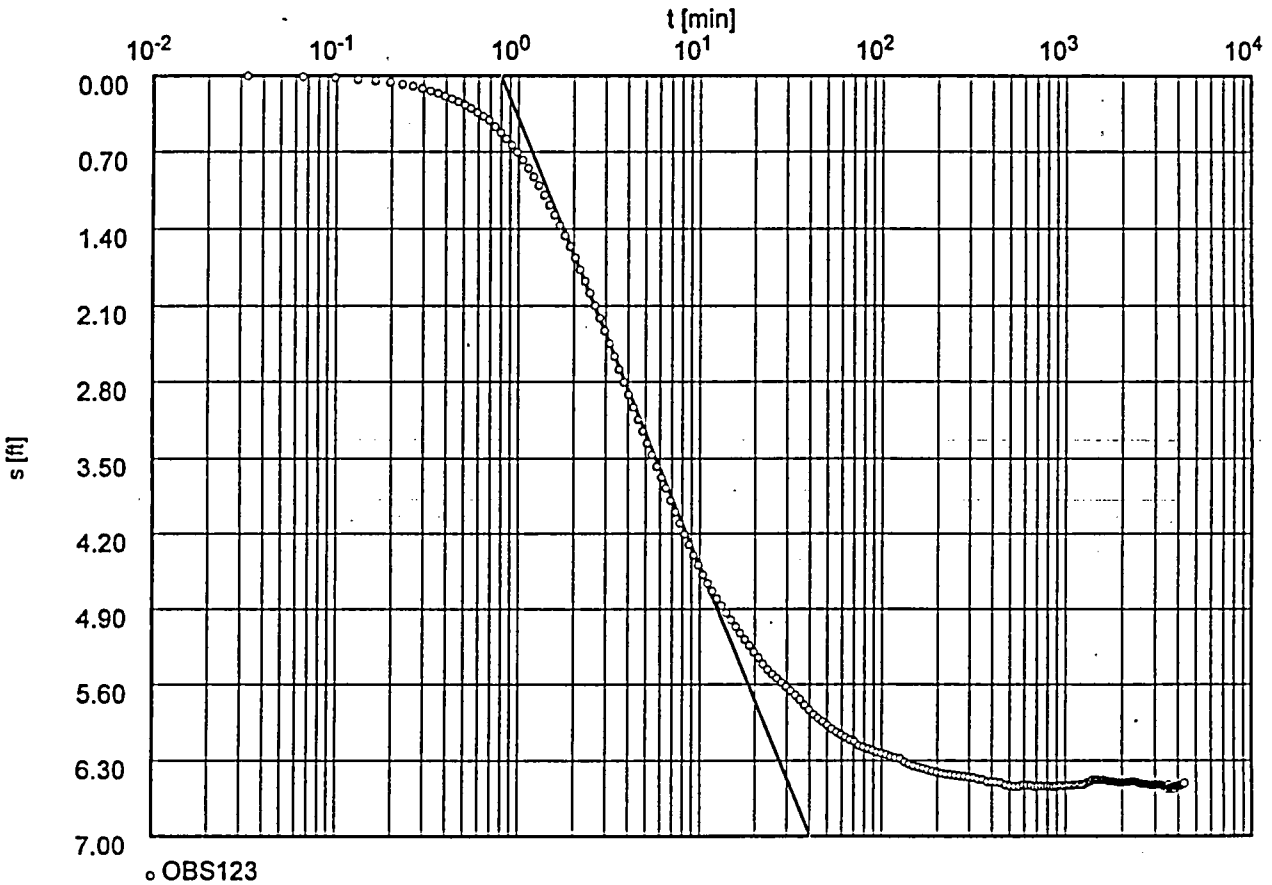
Transmissivity [ft²/min]: 1.61×10^{-1} = 231.8 ft²/d

Hydraulic conductivity [ft/min]: 5.37×10^{-3}

Aquifer thickness [ft]: 30.00

MASTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Project: GUNNISON Evaluated by: Date: 28.11.1999

Pumping Test No. O41 AQ TEST 2, t = 72.25 HRS	Test conducted on: 11/20/99
OBS123, r = 30.8'	
Discharge 38.10 U.S.gal/min	

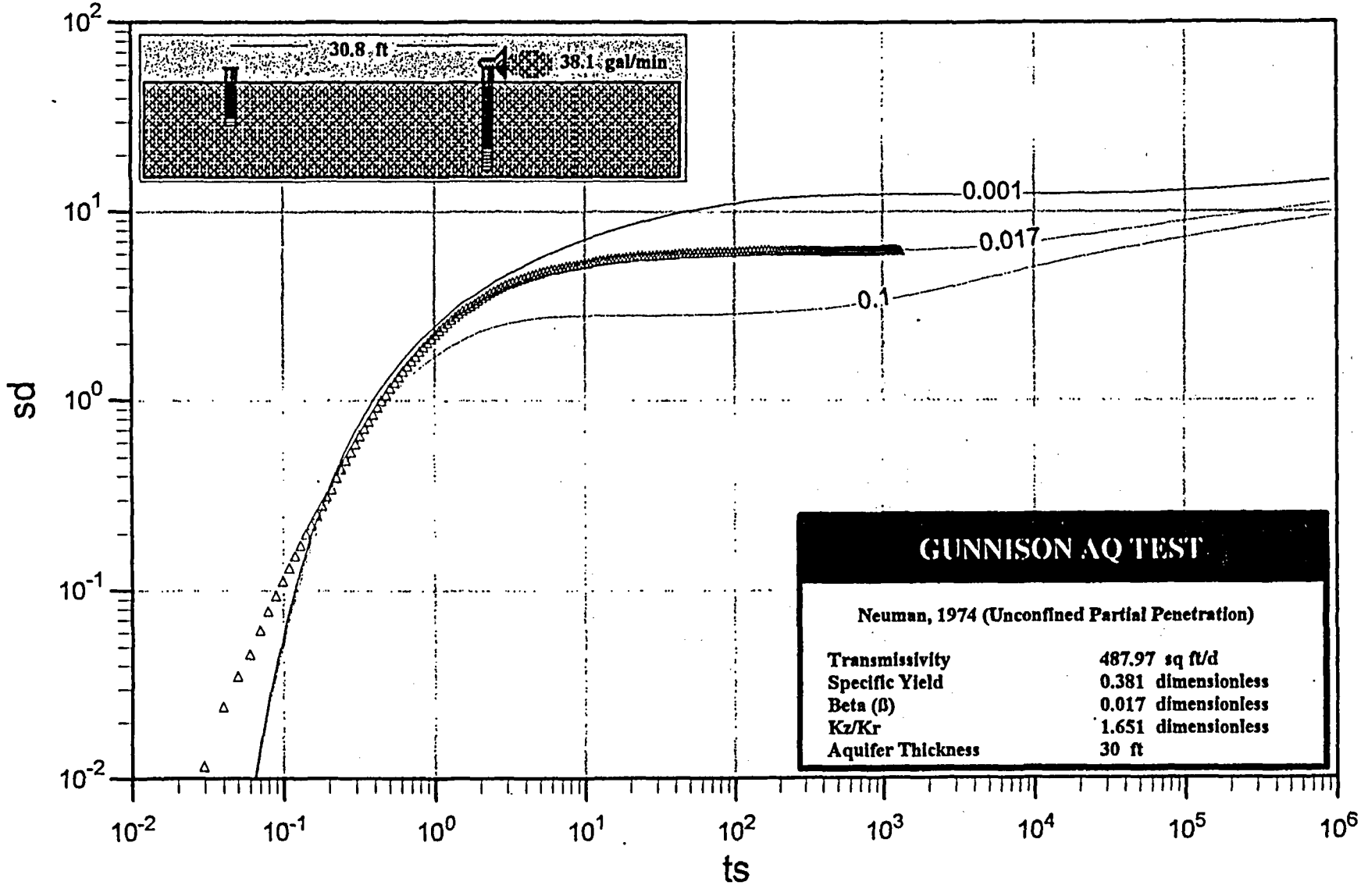


Transmissivity [ft²/min]: 2.26×10^{-1} = 325.4 ft²/D

Hydraulic conductivity [ft/min]: 7.55×10^{-3}

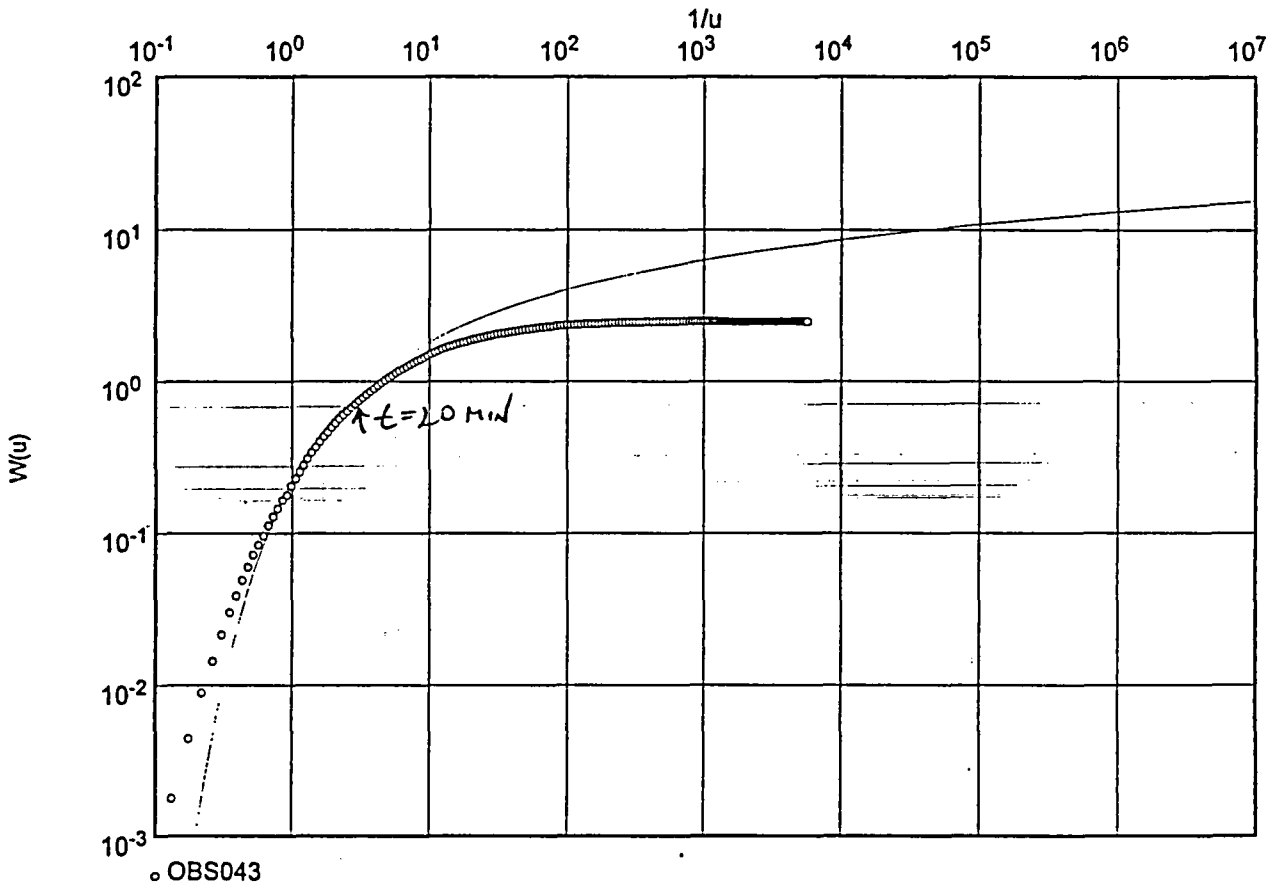
Aquifer thickness [ft]: 30.00

WELL OBS 123 / 041 AQ TEST 2



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 28.11.1999

Pumping Test No. 041 AQ TEST 2 , t = 72.25 hrs	Test conducted on: 11/20/99
OBS043, r = 36.6'	
Discharge 38.10 U.S.gal/min	



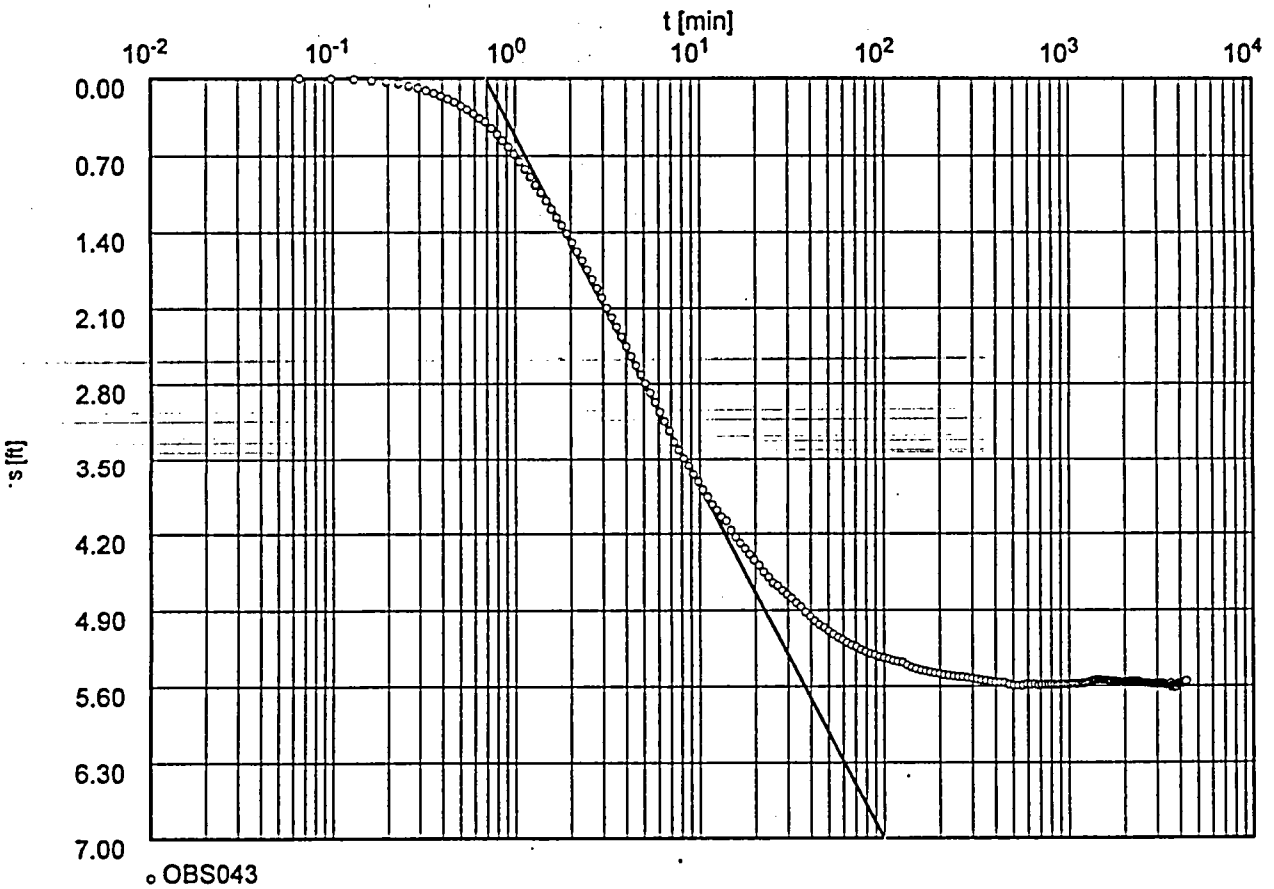
Transmissivity [ft²/min]: 1.81×10^{-1} = 260.6 ft²/d

Hydraulic conductivity [ft/min]: 6.03×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 28.11.1999

Pumping Test No. 041 AQ TEST 2 , t = 72.25 hrs	Test conducted on: 11/20/99
OBS043, r = 36.6'	
Discharge 38.10 U.S.gal/min	

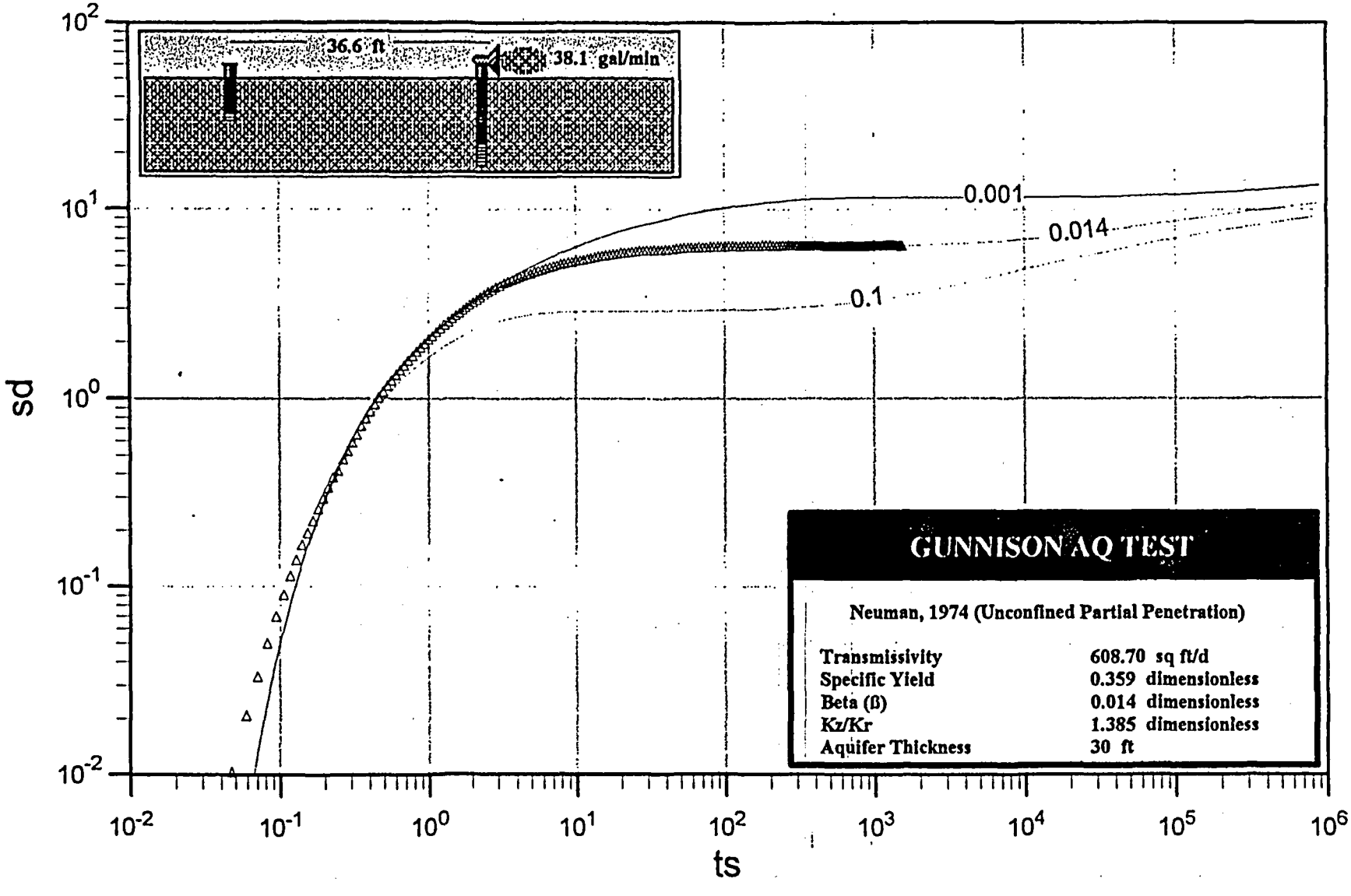


Transmissivity [ft²/min]: 2.88×10^{-1} = 414.7 ft²/D

Hydraulic conductivity [ft/min]: 9.60×10^{-3}

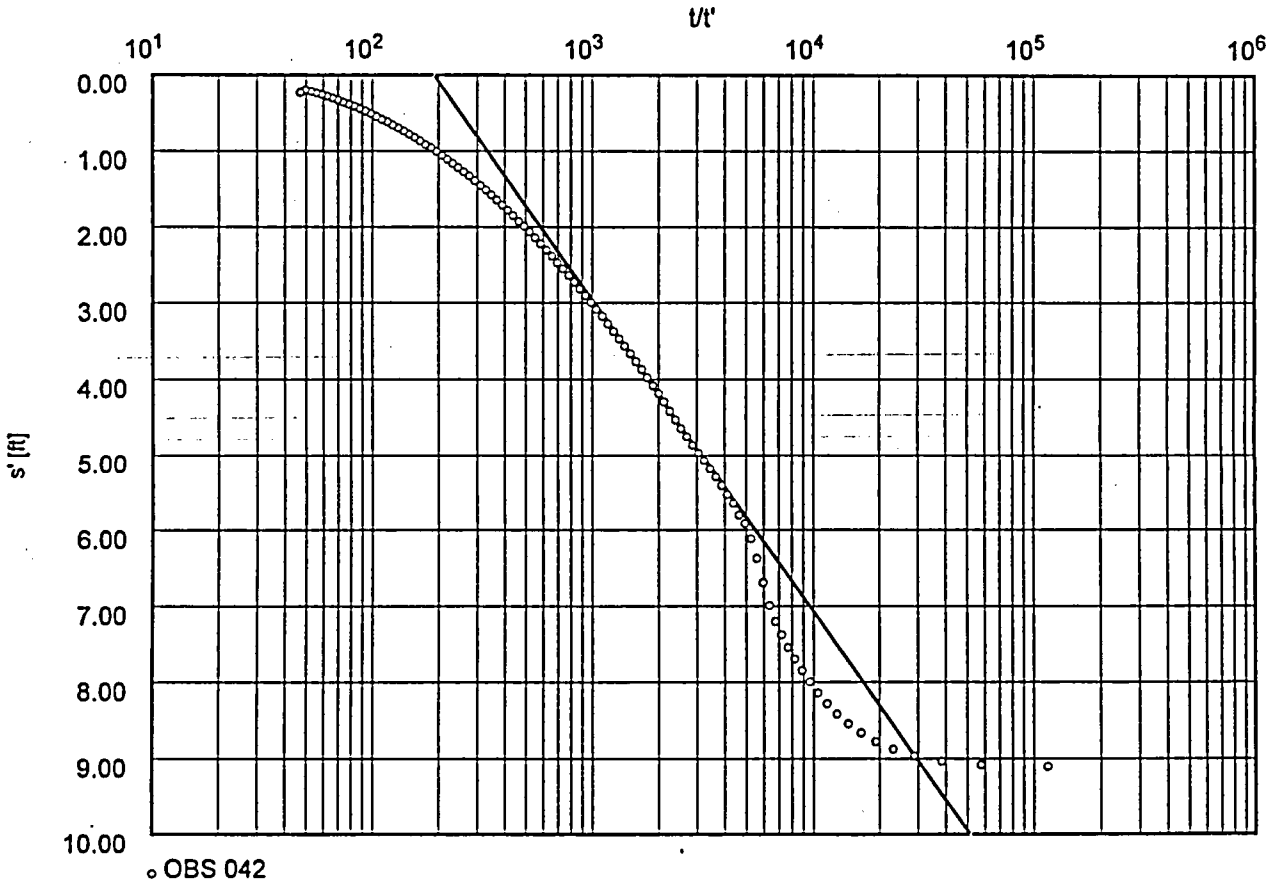
Aquifer thickness [ft]: 30.00

WELL OBS 043 / 041 AQ TEST 2



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 02.12.1999

Pumping Test No. 041 AQ TEST 2 REC	Test conducted on: 11/23/99
OBS 042, r = 26.8'	
Discharge 38.10 U.S.gal/min	
	Pumping test duration: 4335.00 min



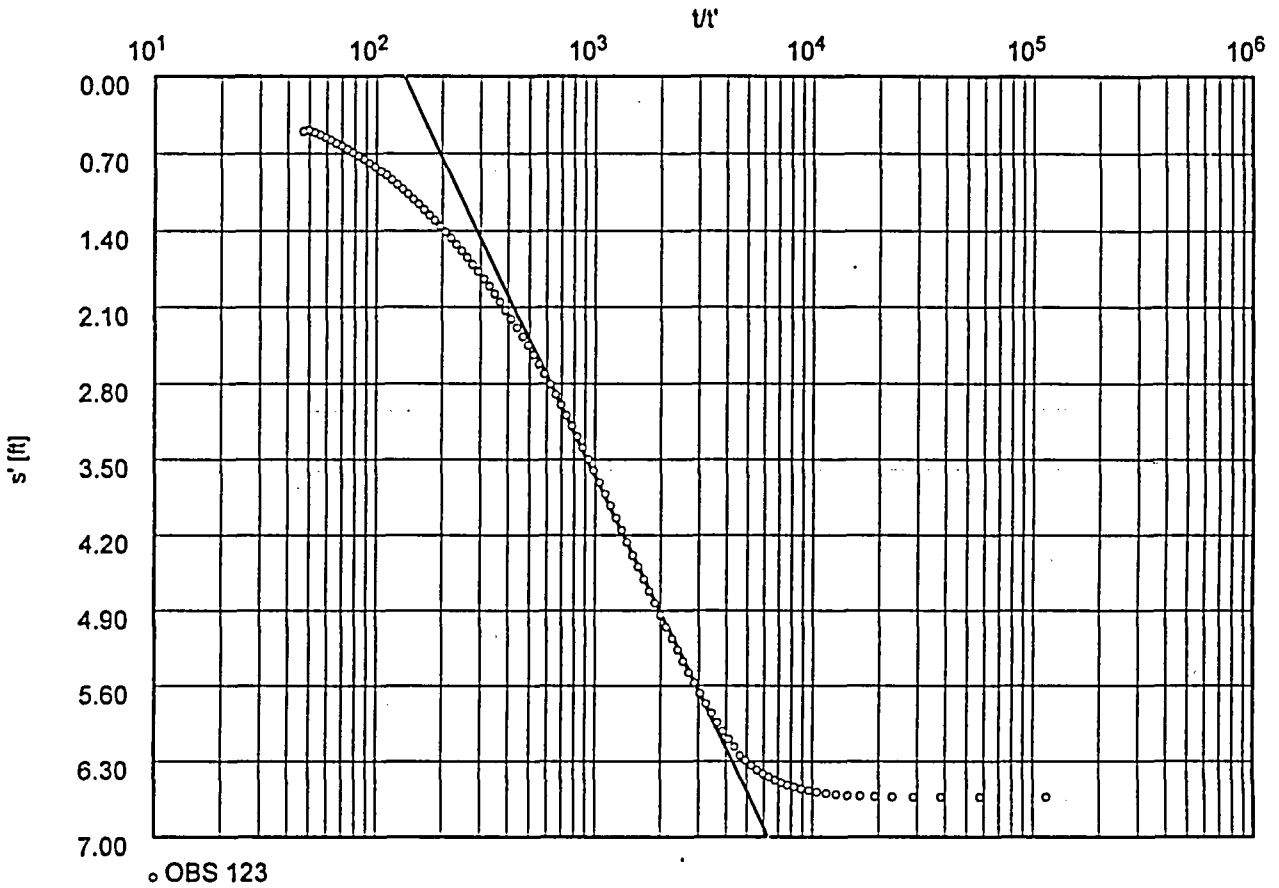
Transmissivity [ft²/min]: 2.26×10^{-1} = 325.4 ft²/d

Hydraulic conductivity [ft/min]: 7.56×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: / Date: 02.12.1999

Pumping Test No. 041 AQ REC TEST 2	Test conducted on: 11/23/99
OBS 123, r = 30.8'	
Discharge 38.10 U.S.gal/min	
	Pumping test duration: 4335.00 min



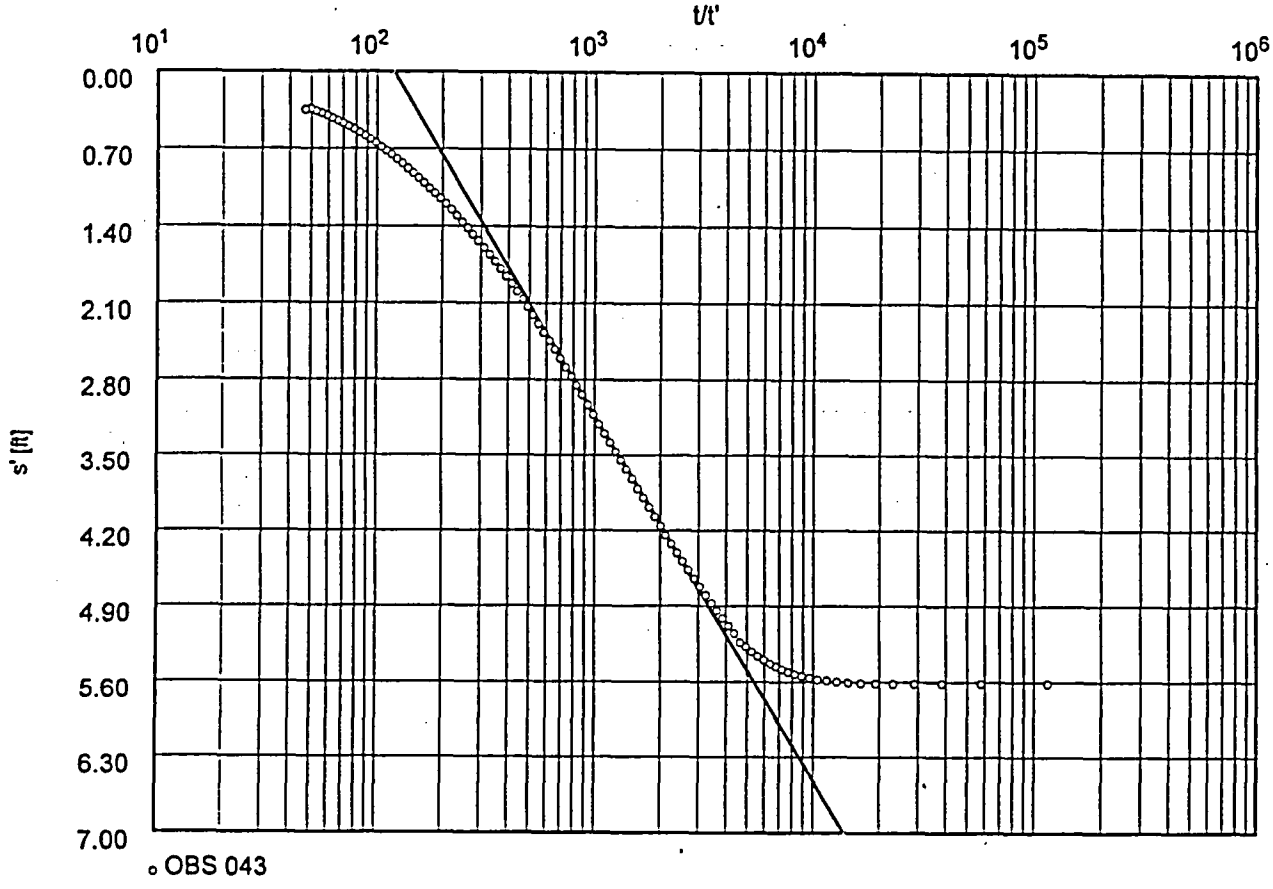
Transmissivity [ft²/min]: 2.22×10^{-1} = 319.7 ft²/d

Hydraulic conductivity [ft/min]: 7.42×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 02.12.1999

Pumping Test No. 041 AQ REC TEST 2	Test conducted on: 11/23/99
OBS 043, r = 36.6'	
Discharge 38.10 U.S.gal/min	
	Pumping test duration: 4335.00 min



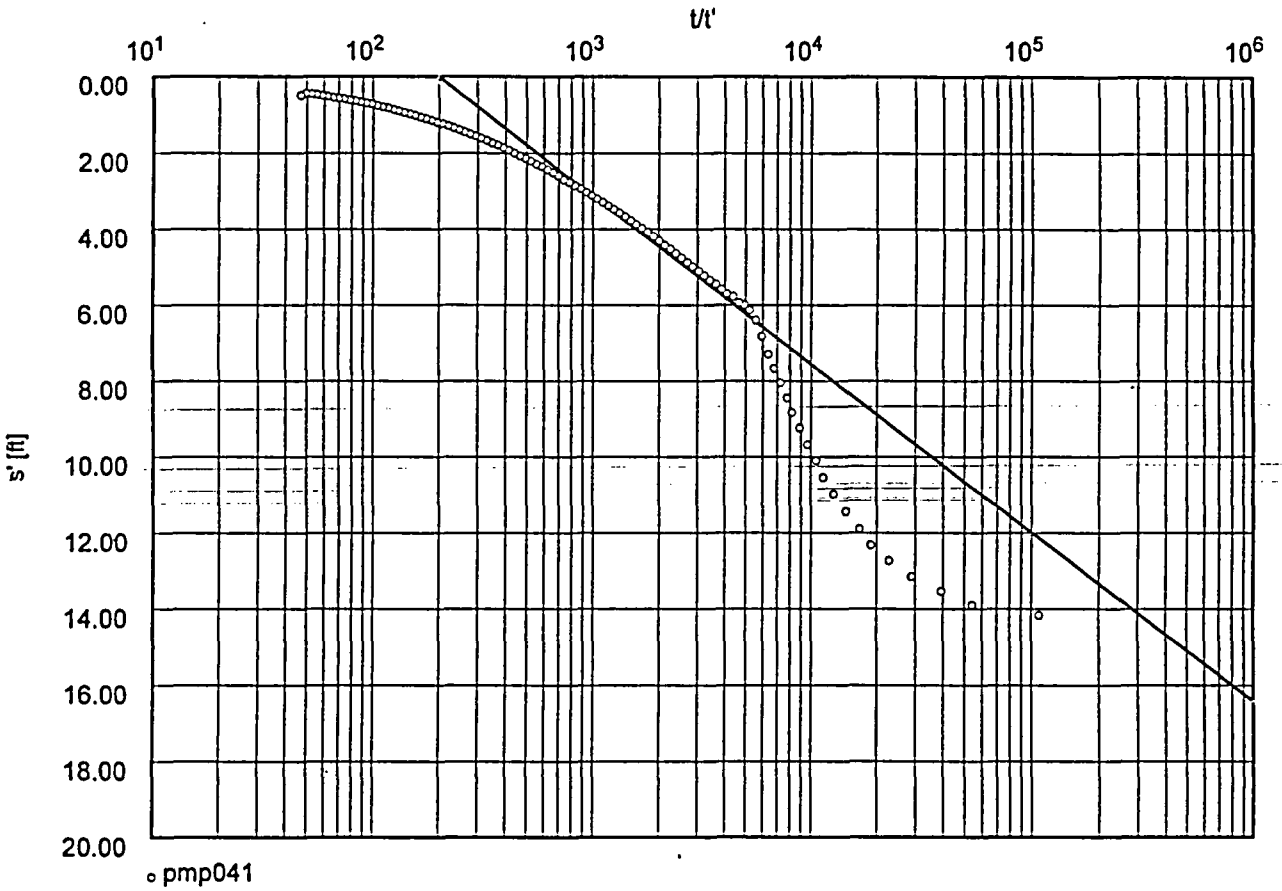
Transmissivity [ft²/min]: 2.74×10^{-1} = 394.6 ft²/D

Hydraulic conductivity [ft/min]: 9.16×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 02.12.1999

Pumping Test No. 041 AQ TEST 2 REC	Test conducted on: 11/23/99
PMP 041	
Discharge 38.10 U.S.gal/min	
	Pumping test duration: 4335.00 min



Transmissivity [ft²/min]: 2.10×10^{-1} = 302.4 ft²/D

Hydraulic conductivity [ft/min]: 7.00×10^{-3}

Aquifer thickness [ft]: 30.00

WELL 041 AQUIFER TEST 2

DRAWDOWN DATA

GUNNISON UMTRA SITE
WELL 041 AQUIFER TEST 2 DATA
START DATE/TIME : 11/20/99, 1350
PUMPING RATE : 38 GPM

ELAPSED TIME (min)	WELL 041 DTW (ft btoc)	WELL 042 DTW (ft btoc)	WELL 043 DTW (ft btoc)	WELL 123 DTW (ft btoc)	INCHES Hg
0.00	8.071	8.15	8.34	9.433	22.606
0.03	9.459	8.382	8.34	9.434	22.604
0.07	9.983	8.698	8.341	9.44	22.604
0.10	10.471	8.963	8.344	9.447	22.604
0.13	10.907	9.184	8.35	9.462	22.602
0.16	11.283	9.4	8.36	9.475	22.602
0.20	11.646	9.597	8.372	9.488	22.604
0.23	12.001	9.784	8.388	9.507	22.604
0.26	12.325	9.96	8.407	9.526	22.604
0.29	12.631	10.126	8.427	9.546	22.604
0.33	12.903	10.282	8.45	9.568	22.604
0.36	13.219	10.43	8.474	9.591	22.604
0.39	13.469	10.578	8.501	9.616	22.602
0.43	13.724	10.708	8.527	9.642	22.604
0.47	13.953	10.84	8.556	9.671	22.602
0.50	14.199	10.979	8.591	9.7	22.604
0.55	14.471	11.116	8.626	9.734	22.602
0.59	14.708	11.253	8.664	9.77	22.604
0.64	15.174	11.381	8.709	9.808	22.6
0.69	15.369	11.499	8.739	9.843	22.602
0.74	16.012	11.753	8.799	9.904	22.598
0.80	16.465	11.948	8.851	9.956	22.598
0.86	16.784	12.124	8.908	10.014	22.598
0.92	17.021	12.276	8.967	10.075	22.596
0.98	17.259	12.4	9.034	10.142	22.596
1.05	17.474	12.519	9.104	10.213	22.596
1.13	17.716	12.632	9.172	10.29	22.596
1.21	17.957	12.732	9.246	10.368	22.596
1.29	18.181	12.869	9.322	10.451	22.596
1.38	18.423	12.991	9.391	10.54	22.596
1.47	18.66	13.099	9.468	10.634	22.593
1.57	18.902	13.231	9.547	10.728	22.596
1.68	19.156	13.373	9.628	10.829	22.596
1.79	19.6	13.52	9.706	10.929	22.593
1.91	19.958	13.681	9.785	11.033	22.593
2.03	20.195	13.82	9.873	11.142	22.596
2.17	20.471	13.948	9.96	11.258	22.596
2.31	20.669	14.076	10.049	11.369	22.596
2.46	20.932	14.204	10.139	11.485	22.596
2.61	21.16	14.323	10.232	11.605	22.596
2.78	21.647	14.462	10.323	11.729	22.596
2.96	21.948	14.642	10.415	11.857	22.593
3.14	22.177	14.777	10.516	11.984	22.596
3.34	22.383	14.9	10.611	12.113	22.596
3.55	22.616	15.011	10.708	12.246	22.593
3.78	22.857	15.122	10.805	12.375	22.593
4.01	23.047	15.241	10.903	12.502	22.593
4.26	23.275	15.35	11.003	12.63	22.591
4.53	23.481	15.456	11.094	12.757	22.593
4.81	23.688	15.562	11.187	12.88	22.593
5.10	23.869	15.671	11.281	13.003	22.593
5.42	24.222	15.783	11.376	13.124	22.591
5.75	24.489	15.961	11.473	13.247	22.589
6.10	24.489	16.007	11.57	13.368	22.591

6.48	24.979	16.167	11.663	13.484	22.591
6.87	25.337	16.33	11.766	13.613	22.591
7.29	25.534	16.451	11.881	13.738	22.593
7.74	25.698	16.547	11.969	13.862	22.591
8.21	25.909	16.649	12.065	13.983	22.589
8.71	26.094	16.753	12.155	14.097	22.591
9.23	26.287	16.835	12.253	14.214	22.589
9.79	26.416	16.952	12.335	14.322	22.587
10.39	26.442	17	12.42	14.427	22.589
11.01	26.524	17.041	12.491	14.523	22.589
11.68	26.64	17.115	12.575	14.608	22.585
12.38	26.722	17.184	12.641	14.695	22.589
13.13	26.821	17.247	12.713	14.775	22.587
13.92	26.967	17.33	12.755	14.856	22.585
14.75	27.062	17.401	12.851	14.936	22.585
15.64	27.156	17.457	12.922	15.013	22.587
16.58	27.242	17.54	12.985	15.088	22.585
17.57	27.333	17.592	13.047	15.161	22.585
18.63	27.419	17.676	13.109	15.232	22.585
19.74	27.509	17.737	13.173	15.303	22.585
20.93	27.591	17.791	13.23	15.367	22.585
22.18	27.539	18.032	13.298	15.441	22.583
23.51	27.565	18.034	13.356	15.505	22.583
24.91	27.668	18.058	13.42	15.56	22.583
26.40	27.758	18.084	13.453	15.606	22.581
27.98	27.767	18.099	13.505	15.661	22.581
29.65	27.879	18.136	13.549	15.708	22.579
31.41	27.991	18.192	13.592	15.756	22.577
33.29	28.072	18.22	13.64	15.805	22.575
35.27	28.24	18.303	13.686	15.856	22.577
37.37	28.378	18.35	13.742	15.918	22.581
39.60	28.463	18.429	13.792	15.973	22.581
41.96	28.519	18.472	13.842	16.027	22.579
44.46	28.592	18.511	13.887	16.072	22.581
47.11	28.644	18.552	13.92	16.115	22.579
49.91	28.721	18.608	13.958	16.156	22.577
52.88	28.777	18.656	13.995	16.202	22.577
56.02	28.82	18.686	14.03	16.24	22.577
59.36	28.85	18.704	14.059	16.273	22.577
62.89	28.919	18.723	14.09	16.301	22.577
66.62	28.936	18.762	14.12	16.331	22.577
70.58	28.971	18.773	14.137	16.353	22.575
74.78	28.971	18.875	14.172	16.402	22.579
79.22	29.031	18.849	14.191	16.42	22.577
83.93	29.07	18.868	14.214	16.442	22.579
88.91	29.095	18.871	14.23	16.458	22.577
94.20	29.13	18.905	14.251	16.482	22.577
99.79	29.13	18.91	14.264	16.495	22.575
105.71	29.177	18.925	14.278	16.511	22.575
111.99	29.224	18.933	14.294	16.532	22.571
118.64	29.242	18.944	14.307	16.548	22.571
125.68	29.293	18.936	14.314	16.556	22.571
133.14	29.469	19.031	14.348	16.597	22.571
141.04	29.525	19.053	14.374	16.626	22.571
149.41	29.581	19.083	14.391	16.649	22.571
158.28	29.611	19.1	14.406	16.665	22.573
167.67	29.658	19.098	14.416	16.678	22.573
177.62	29.719	19.111	14.427	16.694	22.569
188.15	29.835	19.12	14.439	16.713	22.569
199.31	29.817	19.165	14.446	16.726	22.569
211.14	29.865	19.178	14.462	16.739	22.569
223.66	29.856	19.178	14.471	16.749	22.573

236.93	29.882	19.178	14.477	16.755	22.573
250.98	29.921	19.189	14.485	16.764	22.579
265.86	29.933	19.183	14.488	16.769	22.577
281.63	29.955	19.185	14.494	16.774	22.571
298.33	30.037	19.193	14.503	16.785	22.567
316.02	30.058	19.196	14.51	16.791	22.557
334.75	30.123	19.219	14.523	16.809	22.547
354.60	30.17	19.226	14.529	16.814	22.536
375.63	30.316	19.258	14.541	16.84	22.516
397.89	30.243	19.271	14.546	16.84	22.5
421.48	30.273	19.261	14.548	16.845	22.484
446.47	30.294	19.271	14.551	16.852	22.482
472.94	30.277	19.384	14.574	16.878	22.473
500.97	30.32	19.443	14.583	16.893	22.461
530.67	30.406	19.41	14.585	16.901	22.451
560.67	30.441	19.371	14.583	16.896	22.441
590.67	30.462	19.319	14.571	16.88	22.433
620.67	30.453	19.356	14.574	16.884	22.429
650.67	30.531	19.33	14.568	16.884	22.42
680.67	30.561	19.365	14.58	16.898	22.416
710.67	30.578	19.354	14.578	16.897	22.41
740.67	30.612	19.334	14.575	16.891	22.414
770.67	30.625	19.339	14.574	16.894	22.416
800.67	30.647	19.332	14.574	16.891	22.41
830.67	30.694	19.33	14.574	16.896	22.4
860.67	30.69	19.352	14.577	16.9	22.396
890.67	30.69	19.323	14.575	16.893	22.4
920.67	30.707	19.308	14.572	16.89	22.382
950.67	30.677	19.297	14.568	16.884	22.378
980.67	30.698	19.31	14.572	16.891	22.374
1010.67	30.69	19.291	14.57	16.882	22.376
1040.67	30.681	19.276	14.564	16.88	22.374
1070.67	30.703	19.274	14.565	16.882	22.39
1100.67	30.724	19.274	14.564	16.877	22.384
1130.67	30.746	19.28	14.565	16.884	22.394
1160.67	30.711	19.267	14.562	16.878	22.429
1190.67	30.685	19.267	14.559	16.871	22.453
1220.67	30.776	19.291	14.561	16.884	22.465
1250.67	30.737	19.269	14.556	16.874	22.455
1280.67	30.69	19.254	14.546	16.861	22.439
1310.67	30.69	19.241	14.539	16.849	22.427
1340.67	30.681	19.232	14.535	16.845	22.408
1370.67	30.66	19.215	14.526	16.833	22.398
1400.67	30.612	19.202	14.522	16.817	22.388
1430.67	30.638	19.204	14.522	16.822	22.38
1460.67	30.668	19.204	14.519	16.817	22.367
1490.67	30.668	19.202	14.52	16.817	22.353
1520.67	30.599	19.215	14.525	16.822	22.351
1550.67	30.642	19.222	14.526	16.823	22.343
1580.67	30.587	19.189	14.522	16.811	22.337
1610.67	30.621	19.206	14.526	16.817	22.331
1640.67	30.621	19.211	14.529	16.823	22.329
1670.67	30.664	19.213	14.532	16.829	22.327
1700.67	30.698	19.217	14.536	16.835	22.333
1730.67	30.72	19.202	14.532	16.832	22.333
1760.67	30.733	19.206	14.532	16.832	22.327
1790.67	30.737	19.209	14.535	16.833	22.329
1820.67	30.754	19.215	14.539	16.842	22.329
1850.67	30.746	19.217	14.542	16.843	22.331
1880.67	30.75	19.217	14.542	16.843	22.331
1910.67	30.707	19.258	14.549	16.851	22.329
1940.67	30.746	19.254	14.548	16.851	22.329

1970.67	30.728	19.252	14.548	16.849	22.329
2000.67	30.728	19.254	14.546	16.849	22.329
2030.67	30.758	19.254	14.543	16.849	22.323
2060.67	30.741	19.25	14.542	16.846	22.319
2090.67	30.737	19.243	14.539	16.843	22.313
2120.67	30.784	19.241	14.538	16.842	22.315
2150.67	30.728	19.261	14.539	16.845	22.317
2180.67	30.754	19.25	14.536	16.84	22.317
2210.67	30.703	19.241	14.533	16.836	22.313
2240.67	30.771	19.239	14.532	16.835	22.313
2270.67	30.758	19.245	14.532	16.836	22.315
2300.67	30.758	19.248	14.535	16.838	22.315
2330.67	30.746	19.241	14.535	16.838	22.313
2360.67	30.767	19.243	14.535	16.839	22.317
2390.67	30.793	19.252	14.536	16.842	22.315
2420.67	30.857	19.269	14.545	16.852	22.317
2450.67	30.874	19.265	14.551	16.856	22.321
2480.67	30.9	19.274	14.555	16.865	22.317
2510.67	30.87	19.276	14.559	16.869	22.321
2540.67	30.913	19.271	14.558	16.871	22.333
2570.67	30.866	19.261	14.554	16.865	22.351
2600.67	30.905	19.267	14.556	16.869	22.372
2630.67	30.892	19.263	14.556	16.869	22.402
2660.67	30.896	19.261	14.556	16.869	22.429
2690.67	30.857	19.245	14.555	16.864	22.451
2720.67	30.926	19.265	14.562	16.872	22.461
2750.67	30.9	19.271	14.564	16.877	22.457
2780.67	30.926	19.269	14.567	16.878	22.457
2810.67	30.935	19.271	14.571	16.881	22.471
2840.67	30.913	19.276	14.575	16.884	22.463
2870.67	30.943	19.274	14.575	16.885	22.457
2900.67	30.939	19.28	14.572	16.882	22.445
2930.67	30.982	19.276	14.565	16.877	22.443
2960.67	30.939	19.265	14.558	16.869	22.449
2990.67	30.917	19.248	14.555	16.867	22.453
3020.67	30.952	19.256	14.565	16.875	22.463
3050.67	30.947	19.263	14.57	16.88	22.465
3080.67	30.965	19.252	14.568	16.877	22.471
3110.67	30.947	19.25	14.562	16.875	22.477
3140.67	30.96	19.25	14.559	16.871	22.49
3170.67	30.947	19.252	14.556	16.869	22.49
3200.67	30.99	19.258	14.559	16.872	22.494
3230.67	30.986	19.267	14.564	16.878	22.492
3260.67	31.033	19.276	14.571	16.885	22.49
3290.67	31.051	19.278	14.571	16.887	22.498
3320.67	31.072	19.284	14.574	16.891	22.51
3350.67	31.119	19.297	14.58	16.898	22.532
3380.67	31.085	19.289	14.581	16.896	22.585
3410.67	31.132	19.306	14.583	16.904	22.689
3440.67	31.124	19.31	14.583	16.903	22.854
3470.67	31.141	19.334	14.59	16.909	23.08
3500.67	31.201	19.341	14.596	16.919	23.422
3530.67	31.214	19.367	14.604	16.929	23.793
3560.67	30.999	19.28	14.558	16.874	23.921
3590.67	31.179	19.33	14.587	16.91	23.941
3620.67	31.227	19.354	14.597	16.92	24.104
3650.67	31.252	19.345	14.597	16.919	24.395
3680.67	31.3	19.373	14.612	16.936	32.57
3710.67	31.201	19.336	14.59	16.913	34.551
3740.67	31.235	19.365	14.609	16.935	34.724
3770.67	31.261	19.356	14.603	16.93	34.681
3800.67	31.24	19.354	14.6	16.926	34.415

3830.67	31.128	19.306	14.575	16.9	24.353
3860.67	31.085	19.289	14.567	16.89	23.544
3890.67	31.089	19.287	14.562	16.887	23.102
3920.67	31.145	19.297	14.567	16.891	22.954
3950.67	31.141	19.297	14.565	16.891	22.899
3980.67	31.145	19.295	14.567	16.891	22.789
4010.67	31.167	19.3	14.564	16.891	22.716
4040.67	31.128	19.31	14.567	16.894	22.693
4070.67	31.136	19.304	14.565	16.893	22.689
4100.67	31.145	19.304	14.564	16.893	22.705
4130.67	31.115	19.291	14.555	16.882	22.738
4160.67	31.115	19.291	14.554	16.881	22.758
4190.67	31.124	19.282	14.552	16.877	22.769
4220.67	31.102	19.287	14.548	16.874	22.765
4250.67	31.055	19.28	14.545	16.867	22.765
4280.67	31.042	19.269	14.539	16.859	22.75
4310.67	31.016	19.267	14.536	16.855	22.746
RECOVERY DATA					
4335.00	31.154	19.342	14.609	17.023	22.75
4335.04	30.978	19.338	14.609	17.021	22.75
4335.08	29.947	19.305	14.609	17.021	22.75
4335.11	28.679	19.23	14.61	17.021	22.75
4335.15	27.501	19.117	14.613	17.02	22.75
4335.19	26.413	18.978	14.613	17.017	22.748
4335.23	25.389	18.824	14.609	17.014	22.75
4335.26	24.412	18.653	14.606	17.007	22.752
4335.30	23.452	18.469	14.6	17	22.75
4335.34	22.547	18.276	14.591	16.987	22.75
4335.38	21.72	18.074	14.578	16.975	22.75
4335.41	20.936	17.866	14.565	16.959	22.75
4335.45	20.191	17.654	14.545	16.94	22.752
4335.49	19.484	17.437	14.526	16.92	22.752
4335.53	18.833	17.218	14.501	16.897	22.752
4335.57	18.225	16.993	14.475	16.871	22.75
4335.60	17.63	16.765	14.446	16.843	22.752
4335.64	17.09	16.52	14.413	16.811	22.75
4335.68	16.573	16.232	14.379	16.775	22.75
4335.73	15.913	15.824	14.339	16.734	22.75
4335.78	15.326	15.403	14.295	16.688	22.752
4335.83	14.993	15.064	14.243	16.634	22.752
4335.88	14.816	14.808	14.185	16.57	22.752
4335.93	14.739	14.667	14.136	16.514	22.75
4335.99	14.536	14.459	14.034	16.405	22.746
4336.06	14.449	14.314	13.952	16.315	22.746
4336.12	14.303	14.17	13.865	16.217	22.746
4336.19	14.13	14.027	13.778	16.114	22.746
4336.27	13.987	13.89	13.691	16.005	22.744
4336.35	13.845	13.749	13.602	15.89	22.744
4336.43	13.702	13.613	13.509	15.771	22.744
4336.52	13.56	13.476	13.418	15.649	22.744
4336.61	13.413	13.339	13.325	15.525	22.744
4336.71	13.271	13.205	13.23	15.397	22.744
4336.82	13.128	13.07	13.134	15.265	22.742
4336.93	12.99	12.938	13.037	15.133	22.742
4337.05	12.856	12.805	12.938	15	22.74
4337.17	12.718	12.677	12.839	14.865	22.742
4337.30	12.588	12.551	12.739	14.728	22.74
4337.44	12.459	12.427	12.639	14.592	22.74
4337.59	12.338	12.306	12.538	14.457	22.74
4337.75	12.221	12.188	12.436	14.319	22.74
4337.92	12.1	12.069	12.335	14.197	22.738
4338.09	11.988	11.956	12.233	14.051	22.74

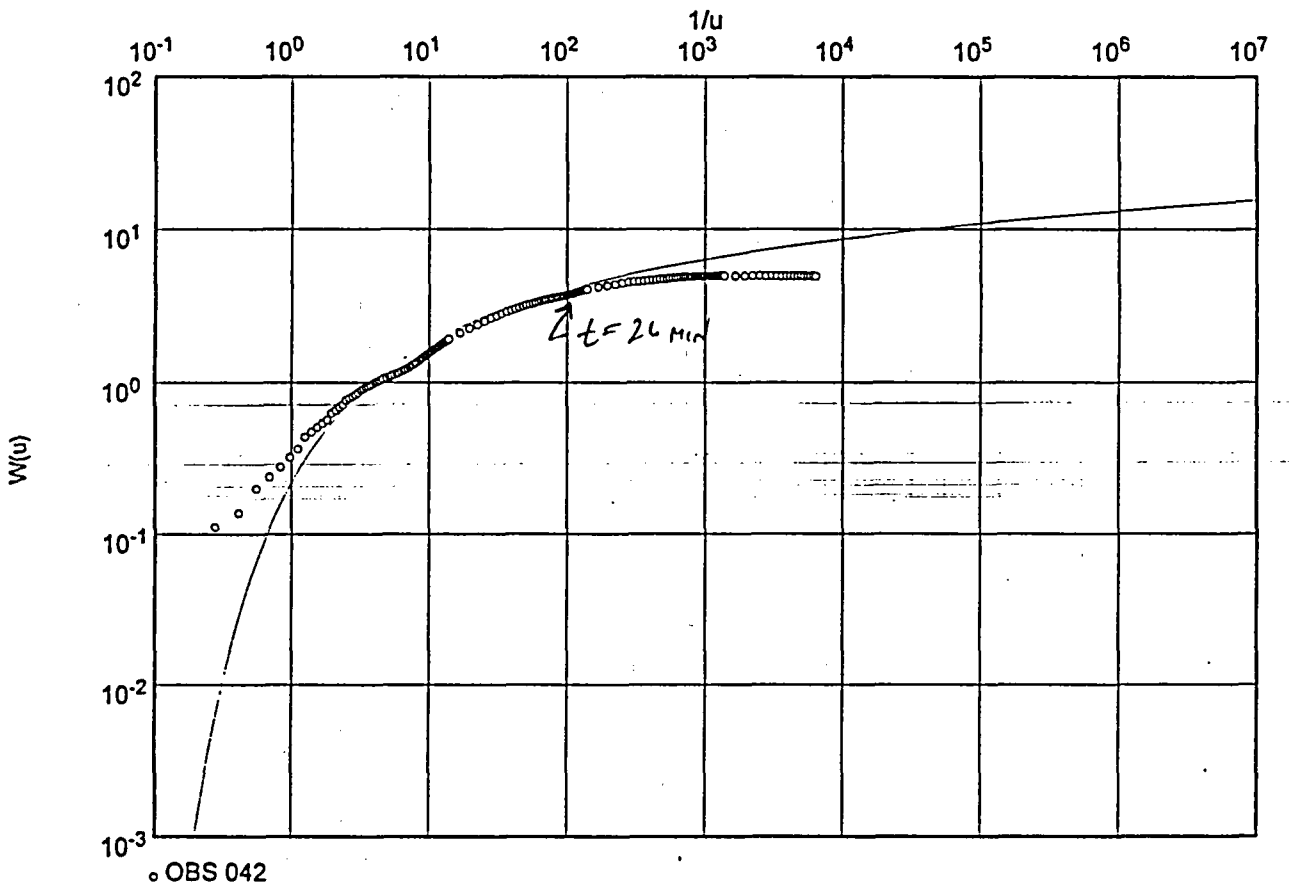
4338.28	11.871	11.843	12.131	13.919	22.74
4338.48	11.763	11.732	12.031	13.787	22.738
4338.69	11.659	11.624	11.93	13.659	22.738
4338.91	11.551	11.515	11.831	13.53	22.738
4339.15	11.448	11.413	11.731	13.403	22.736
4339.40	11.352	11.309	11.634	13.28	22.738
4339.66	11.253	11.207	11.535	13.16	22.736
4339.94	11.154	11.107	11.439	13.039	22.736
4340.24	11.059	11.009	11.343	12.923	22.738
4340.55	10.964	10.911	11.251	12.811	22.736
4340.89	10.877	10.818	11.159	12.701	22.738
4341.24	10.773	10.727	11.068	12.594	22.734
4341.61	10.683	10.633	10.978	12.485	22.736
4342.01	10.601	10.542	10.891	12.38	22.734
4342.43	10.514	10.455	10.805	12.276	22.736
4342.87	10.436	10.37	10.719	12.177	22.734
4343.34	10.354	10.288	10.638	12.083	22.736
4343.84	10.281	10.207	10.557	11.988	22.734
4344.37	10.212	10.14	10.48	11.898	22.734
4344.93	10.125	10.057	10.403	11.81	22.734
4345.52	10.052	9.981	10.328	11.724	22.732
4346.15	9.978	9.909	10.254	11.64	22.732
4346.82	9.913	9.838	10.182	11.557	22.732
4347.52	9.848	9.768	10.111	11.477	22.732
4348.27	9.779	9.701	10.044	11.403	22.732
4349.06	9.719	9.636	9.979	11.328	22.732
4349.89	9.658	9.57	9.912	11.255	22.73
4350.78	9.598	9.507	9.851	11.187	22.732
4351.72	9.546	9.449	9.79	11.12	22.732
4352.71	9.485	9.392	9.732	11.056	22.73
4353.77	9.433	9.334	9.674	10.994	22.728
4354.88	9.381	9.277	9.618	10.931	22.726
4356.06	9.33	9.225	9.564	10.873	22.728
4357.32	9.278	9.173	9.512	10.816	22.726
4358.64	9.23	9.12	9.461	10.763	22.728
4360.05	9.191	9.079	9.416	10.712	22.728
4361.54	9.144	9.029	9.365	10.66	22.726
4363.11	9.1	8.981	9.319	10.609	22.726
4364.78	9.062	8.936	9.272	10.561	22.726
4366.55	9.018	8.894	9.229	10.512	22.728
4368.43	8.975	8.851	9.185	10.466	22.724
4370.41	8.94	8.81	9.144	10.423	22.724
4372.51	8.902	8.77	9.104	10.381	22.724
4374.74	8.867	8.736	9.067	10.339	22.726
4377.10	8.837	8.699	9.031	10.302	22.724
4379.60	8.802	8.662	8.995	10.263	22.724
4382.24	8.772	8.627	8.961	10.225	22.724
4385.05	8.737	8.597	8.928	10.191	22.72
4388.02	8.711	8.564	8.897	10.159	22.724
4391.16	8.69	8.536	8.868	10.125	22.722
4394.49	8.659	8.51	8.841	10.096	22.722
4398.02	8.638	8.481	8.813	10.067	22.722
4401.76	8.62	8.455	8.789	10.04	22.72
4405.72	8.59	8.431	8.764	10.012	22.72
4409.92	8.573	8.41	8.742	9.987	22.72
4414.36	8.551	8.388	8.72	9.964	22.718
4419.07	8.534	8.364	8.701	9.942	22.718
4424.05	8.517	8.347	8.681	9.92	22.718
4429.05	8.569	8.381	8.691	9.933	22.714

WELL 041 AQUIFER TEST 3

PLOTS FOR PUMPING WELL 041 AND OBSERVATION WELLS 042, 043, AND 123

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 042, r = 26.8'	
Discharge 44.70 U.S.gal/min	



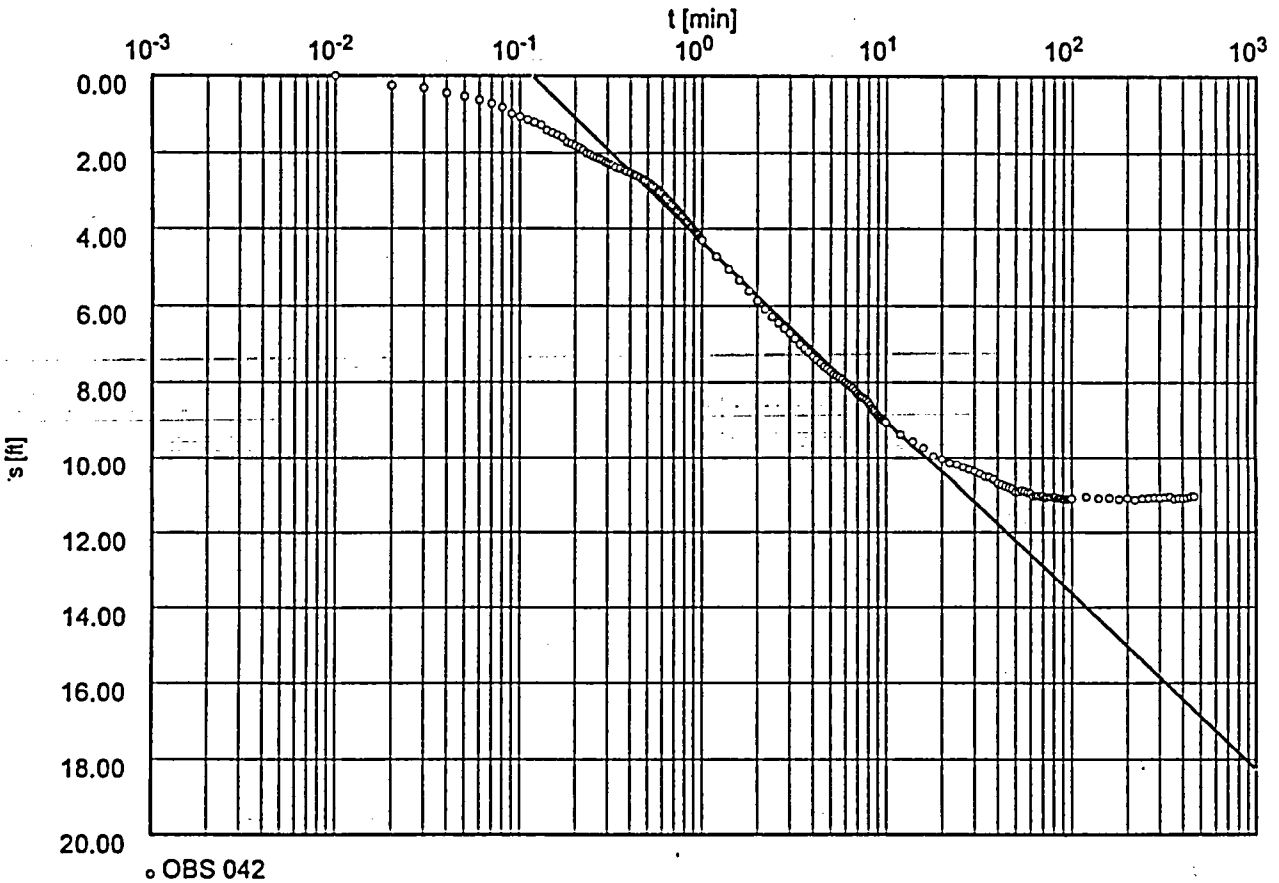
Transmissivity [ft²/min]: 2.12×10^{-1} = 305.3 ft²/d

Hydraulic conductivity [ft/min]: 7.08×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 042, r = 26.8'	
Discharge 44.70 U.S.gal/min	

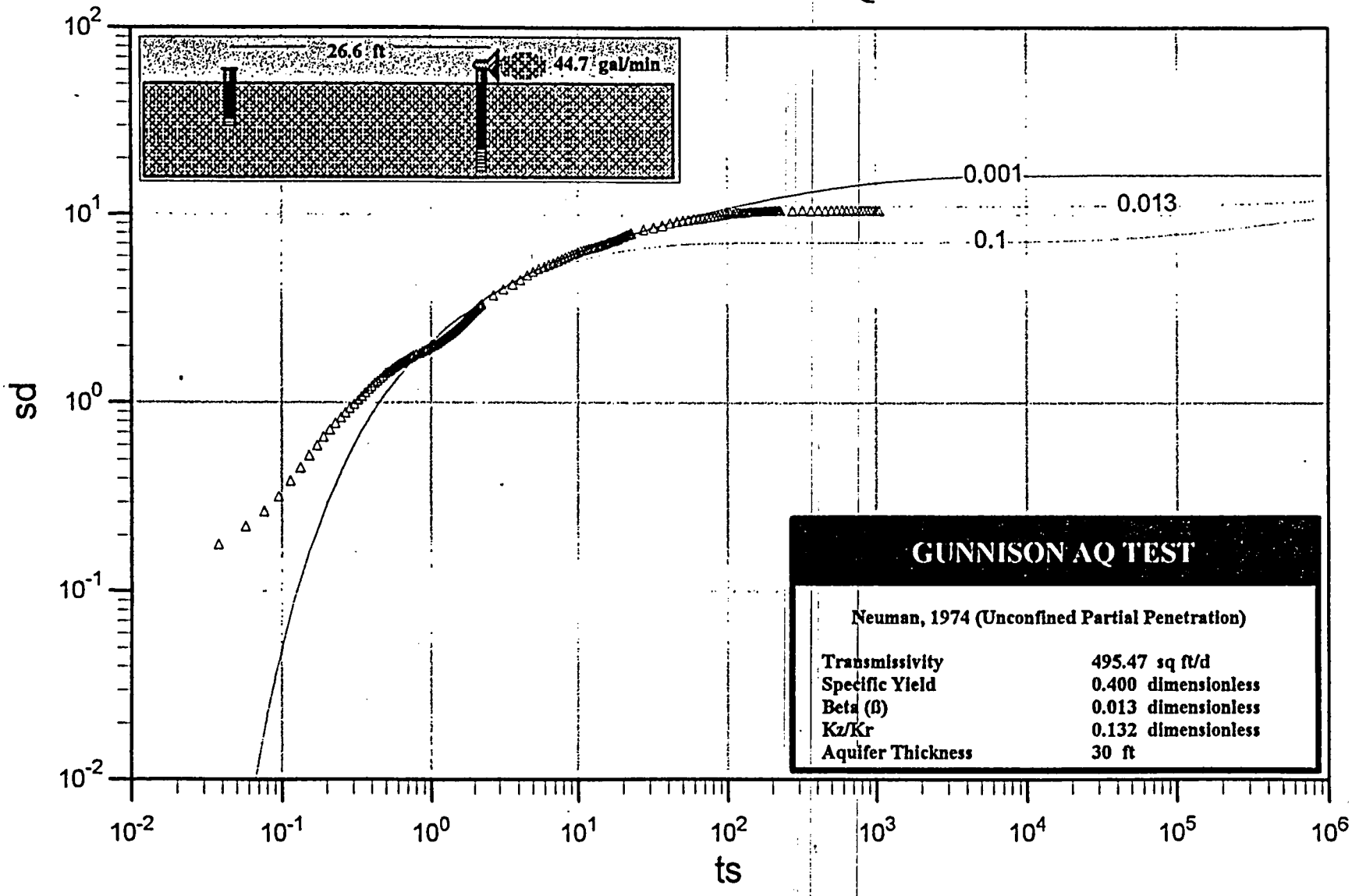


Transmissivity [ft²/min]: 2.35×10^{-1} = 338.4 ft²/D

Hydraulic conductivity [ft/min]: 7.83×10^{-3}

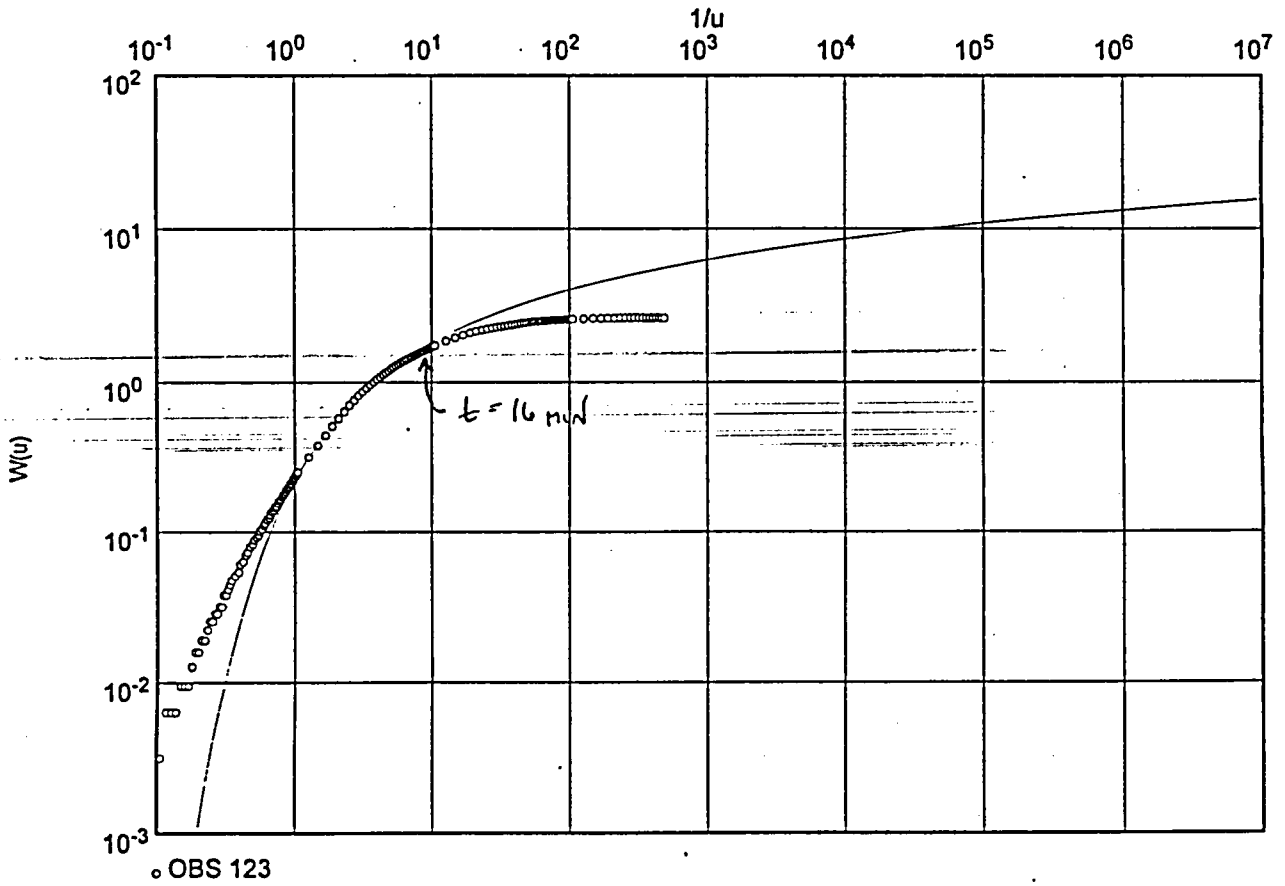
Aquifer thickness [ft]: 30.00

WELL OBS 042 / 041 AQ TEST 3



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 123, r = 30.8', SI = 53.2' - 58.2'	
Discharge 44.70 U.S.gal/min	



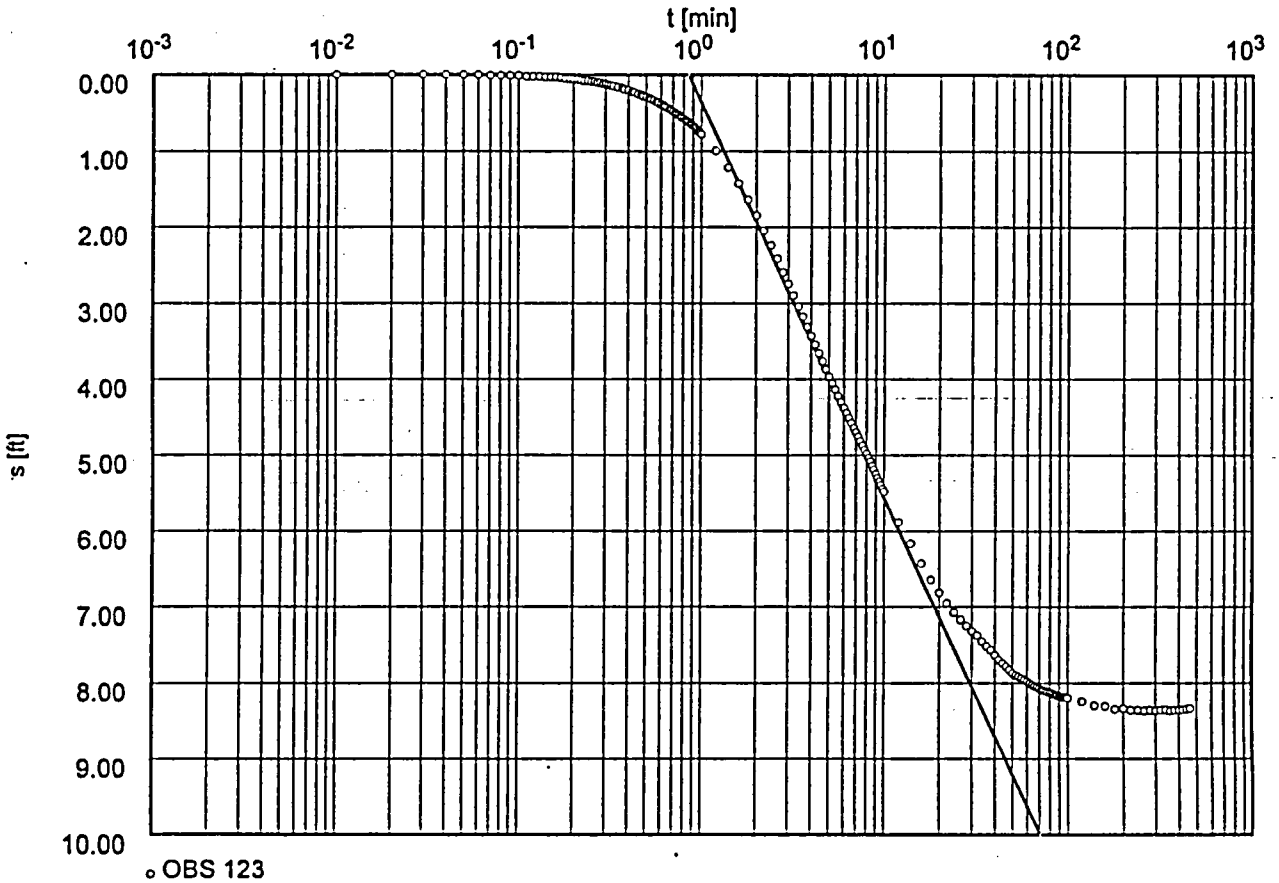
Transmissivity [ft²/min]: 1.50×10^{-1} = 216.0 ft²/d

Hydraulic conductivity [ft/min]: 5.01×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 123, r = 30.8', SI = 53.2' - 58.2'	
Discharge 44.70 U.S.gal/min	

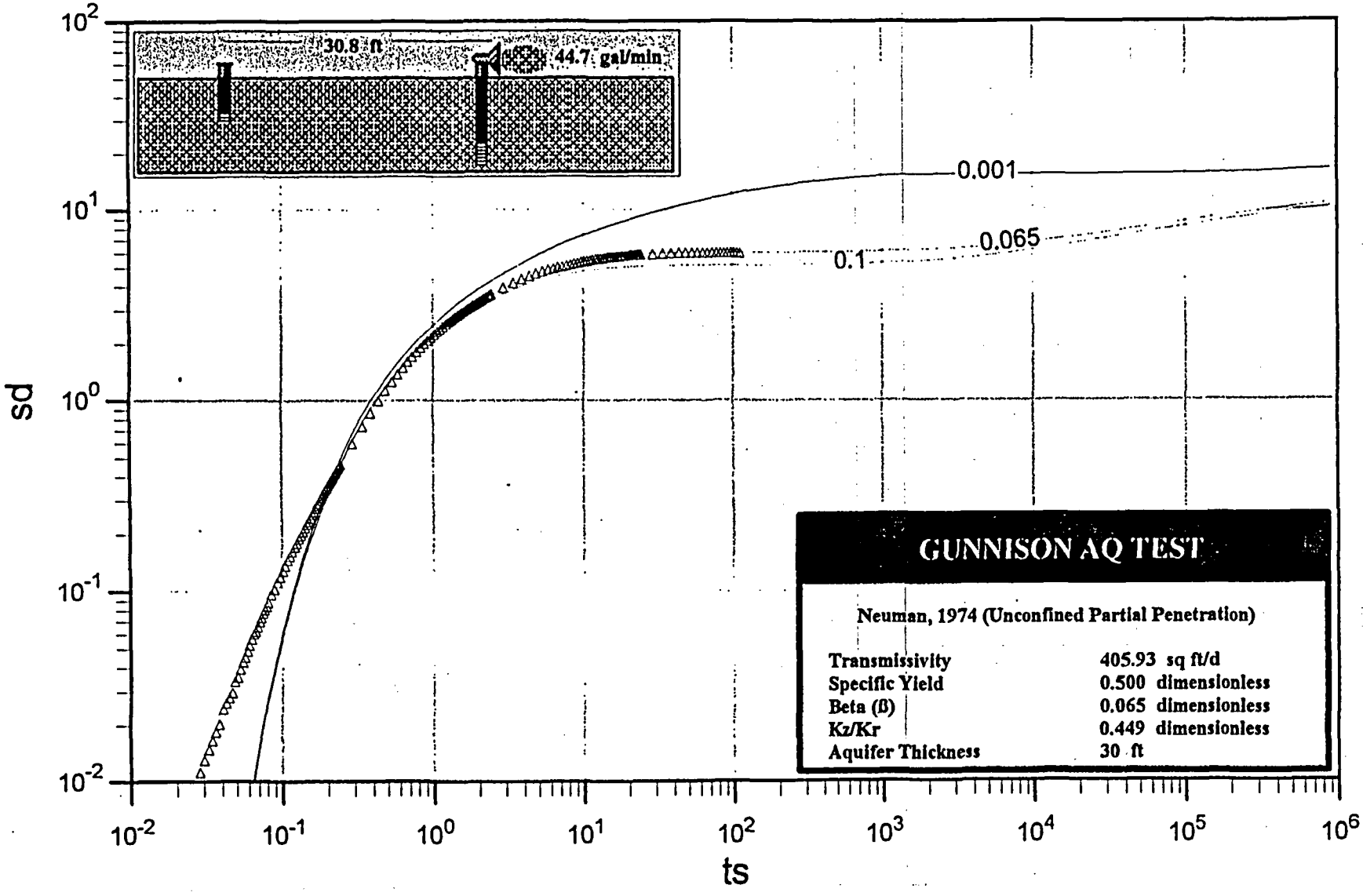


Transmissivity [ft²/min]: 2.09×10^{-1} = 301.0 FT²/D

Hydraulic conductivity [ft/min]: 6.99×10^{-3}

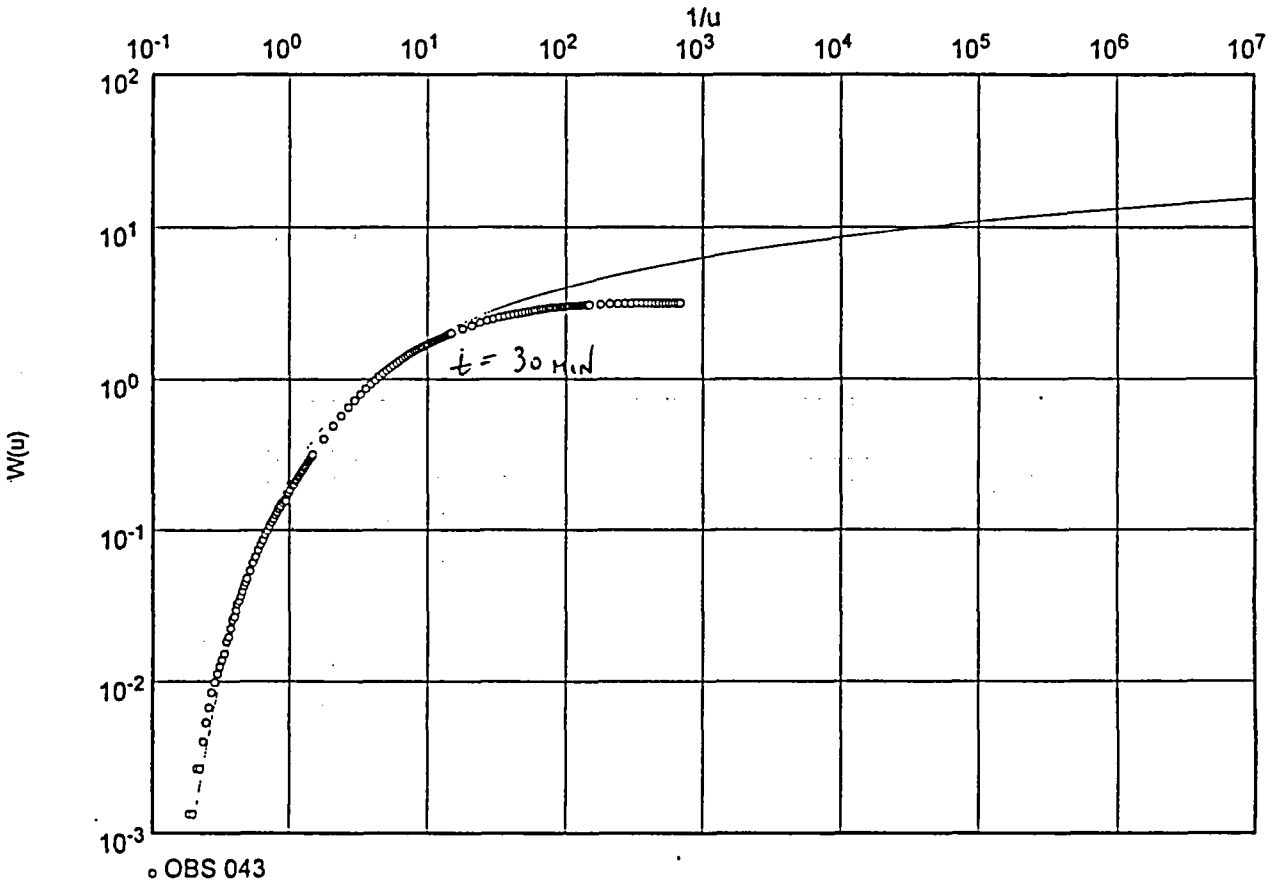
Aquifer thickness [ft]: 30.00

WELL OBS 123 / 041 AQ TEST 3



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 043, r = 36.6'	
Discharge 44.70 U.S.gal/min	



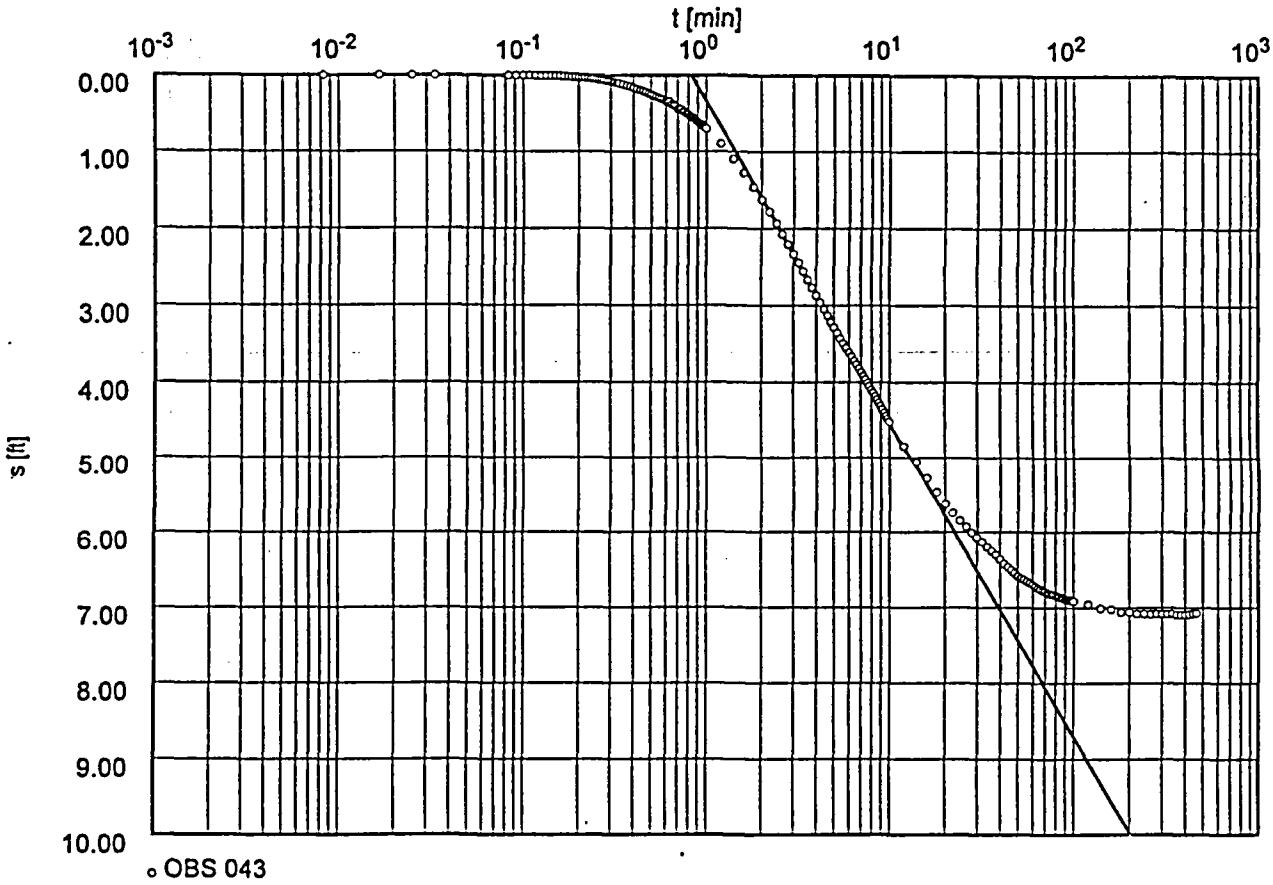
Transmissivity [ft²/min]: 2.12×10^{-1} = 305.3 FT²/D

Hydraulic conductivity [ft/min]: 7.08×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 02.12.1999

Pumping Test No. 041 AQ TEST 3, t = 8 hrs	Test conducted on: 12/2/99
OBS 043, r = 36.6'	
Discharge 44.70 U.S.gal/min	

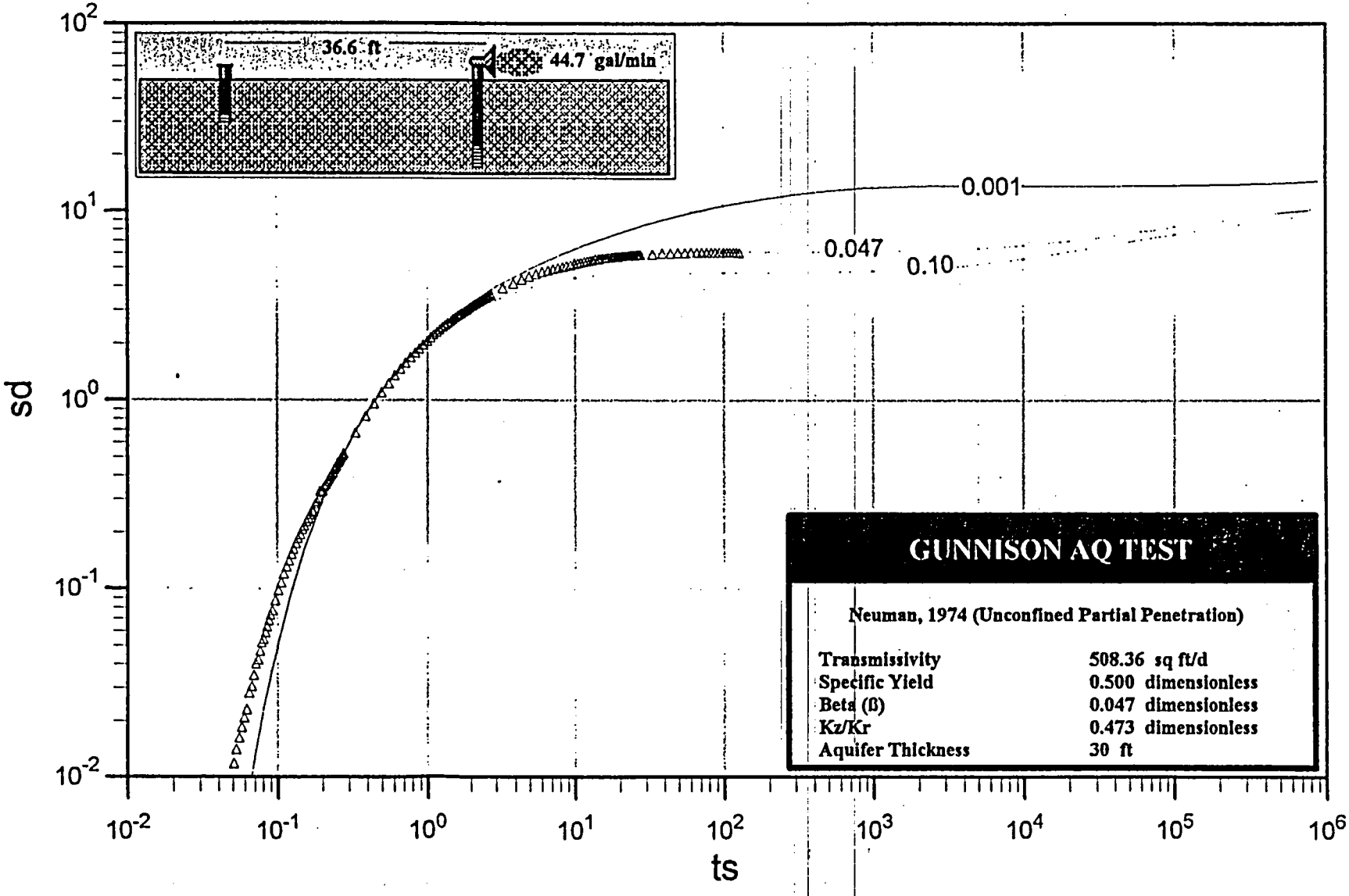


Transmissivity [ft²/min]: 2.61×10^{-1} = 375.3 ft²/d

Hydraulic conductivity [ft/min]: 8.71×10^{-3}

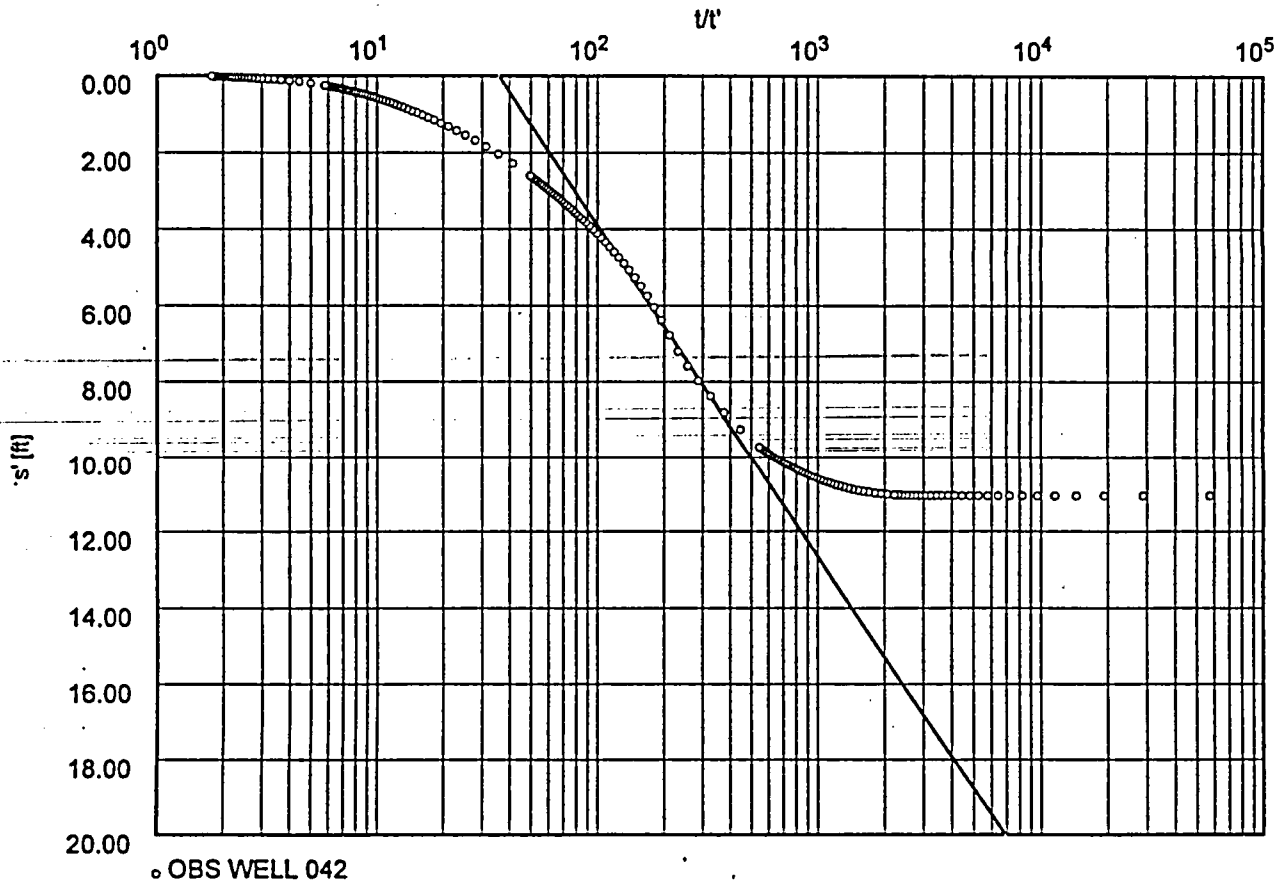
Aquifer thickness [ft]: 30.00

WELL OBS 043 / O41 AQ TEST 3



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 06.12.1999

Pumping Test No. 041 AQ TEST 3 REC	Test conducted on: 12/2/99
OBS 042, r = 26.6'	
Discharge 44.70 U.S.gal/min	
	Pumping test duration: 480.00 min



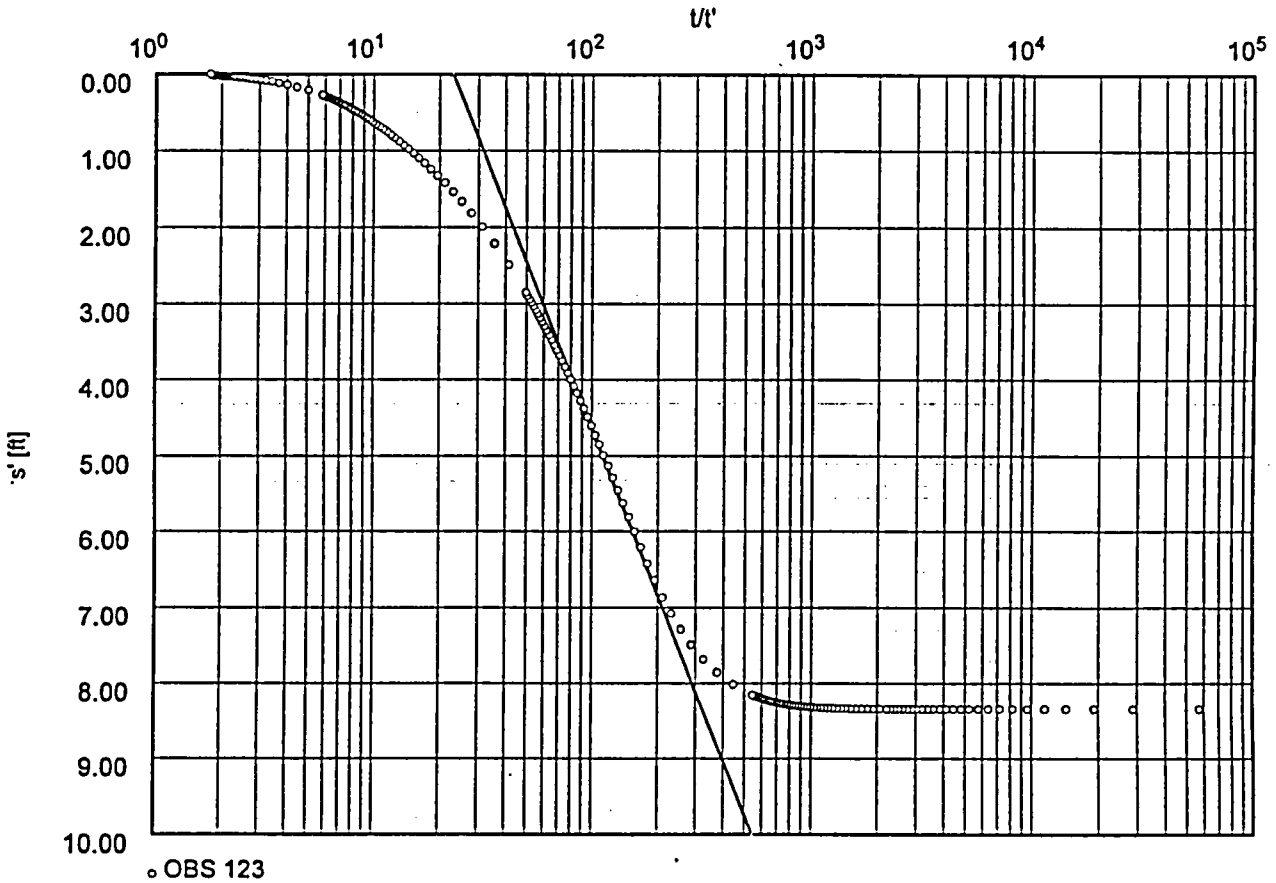
Transmissivity [ft²/min]: 1.24×10^{-1} = 178.6 ft²/d

Hydraulic conductivity [ft/min]: 4.16×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 06.12.1999

Pumping Test No. 041 AQ TEST 3 REC	Test conducted on: 12/2/99
OBS 123, r = 30.8'	
Discharge 44.70 U.S.gal/min	
	Pumping test duration: 480.00 min



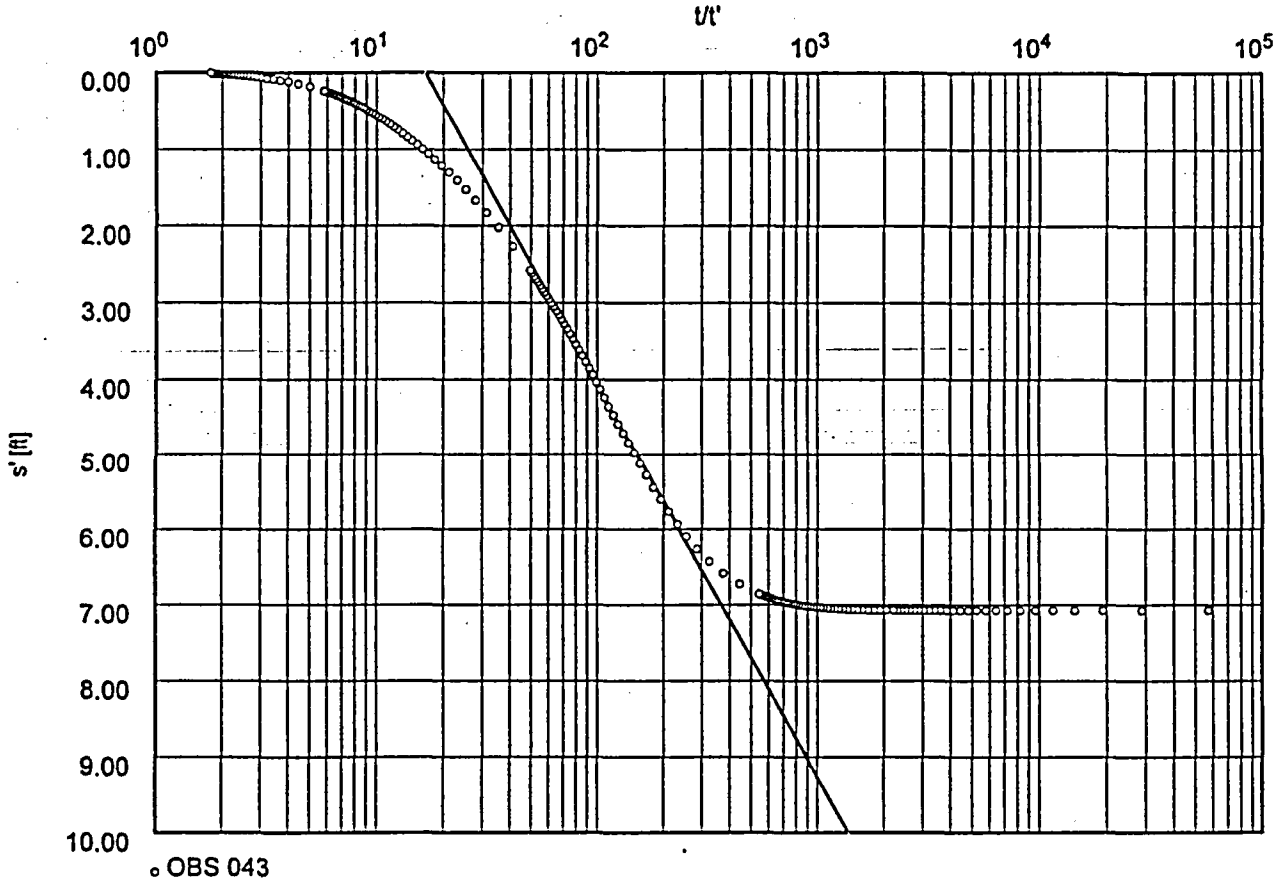
Transmissivity [ft²/min]: 1.50×10^{-1} = 216 ft²/D

Hydraulic conductivity [ft/min]: 5.00×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 06.12.1999

Pumping Test No. 043 AQ TEST 3 REC	Test conducted on: 12/2/99
OBS 043, r = 36.6'	
Discharge 44.70 U.S.gal/min	
	Pumping test duration: 480.00 min



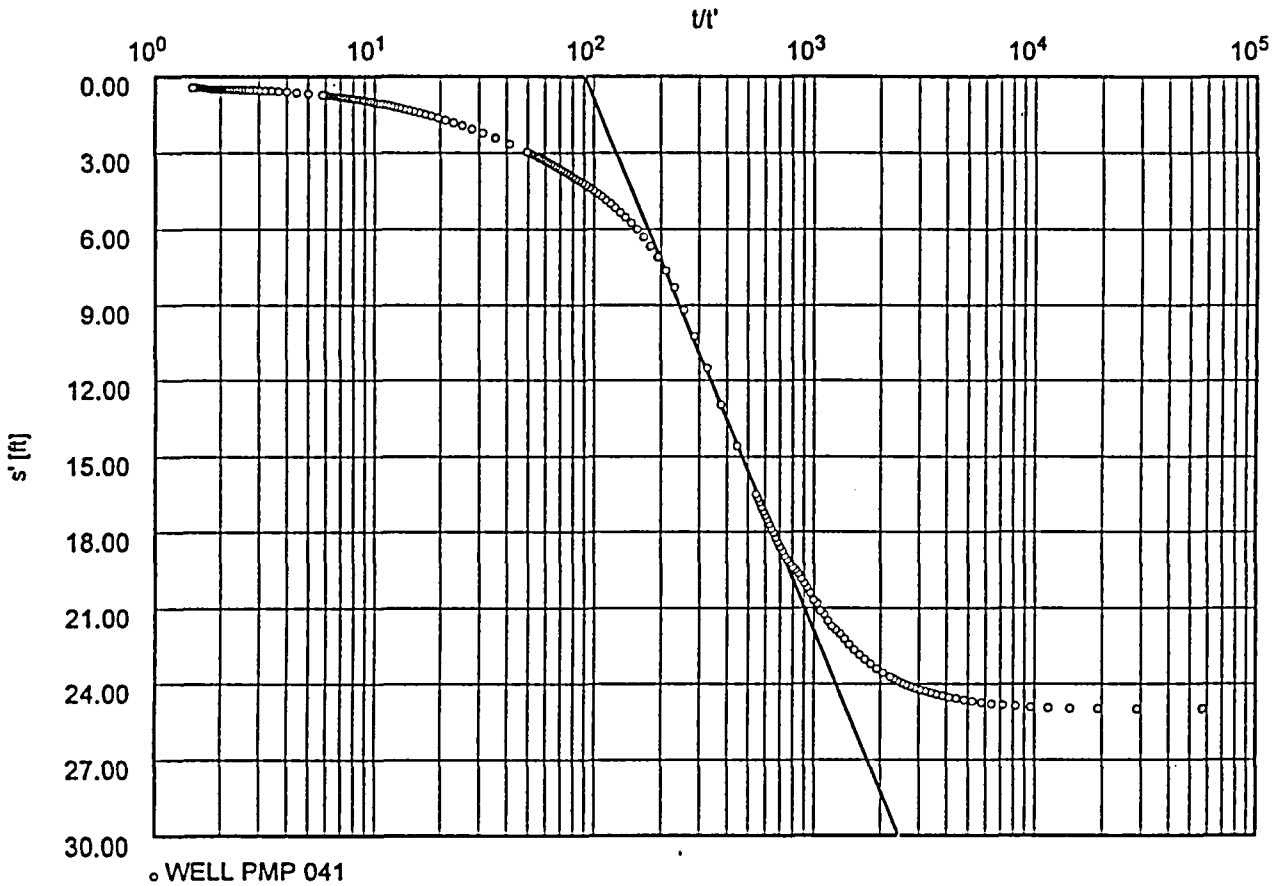
Transmissivity [ft²/min]: 2.10×10^{-1} = 302.4 ft²/D

Hydraulic conductivity [ft/min]: 7.00×10^{-3}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 06.12.1999

Pumping Test No. 041 AQ TEST 3 REC	Test conducted on: 12/2/99
PMP 041	
Discharge 44.70 U.S.gal/min	
	Pumping test duration: 480.00 min



Transmissivity [ft²/min]: 5.19×10^{-2} = 14.7 ft²/d

Hydraulic conductivity [ft/min]:

Aquifer thickness [ft]:

WELL 041 AQUIFER TEST 3

DRAWDOWN DATA

GUNNISON UMTRA SITE
WELL 041 AQUIFER TEST 3 DATA
START DATE/TIME : 12/2/99, 0830
PUMPING RATE : 45 GPM

ELAPSED TIME (min)	WELL 041 DTW (ft btoc)	WELL 042 DTW (ft btoc)	WELL 043 DTW (ft btoc)	WELL 120 DTW (ft btoc)	WELL 123 DTW (ft btoc)	WELL 122 DTW (ft btoc)
0.00	7.857	8.29	8.673	6.11	9.82	10.886
0.01	9.71	8.29	8.67	6.11	9.82	10.886
0.02	9.578	8.537	8.67	6.11	9.82	10.886
0.03	9.852	8.598	8.67	6.11	9.82	10.886
0.03	10.173	8.66	8.67	6.11	9.823	10.886
0.04	10.391	8.736	8.666	6.11	9.823	10.886
0.05	10.702	8.827	8.666	6.11	9.823	10.886
0.06	10.91	8.922	8.666	6.11	9.823	10.886
0.07	11.213	9.021	8.666	6.11	9.826	10.886
0.08	11.439	9.117	8.666	6.11	9.826	10.886
0.08	11.694	9.207	8.67	6.11	9.829	10.89
0.09	11.93	9.292	8.67	6.11	9.829	10.89
0.10	12.252	9.373	8.67	6.11	9.832	10.89
0.11	12.469	9.449	8.67	6.11	9.835	10.893
0.12	12.705	9.52	8.67	6.11	9.839	10.89
0.13	12.931	9.592	8.673	6.11	9.842	10.893
0.13	13.177	9.663	8.673	6.11	9.845	10.893
0.14	13.347	9.73	8.676	6.11	9.848	10.893
0.15	13.602	9.801	8.676	6.11	9.851	10.893
0.16	13.809	9.867	8.679	6.11	9.854	10.893
0.17	13.998	9.934	8.682	6.11	9.861	10.893
0.18	14.244	9.991	8.685	6.11	9.864	10.896
0.18	14.329	10.057	8.689	6.11	9.867	10.896
0.19	14.414	10.11	8.692	6.11	9.87	10.893
0.20	14.461	10.162	8.695	6.11	9.877	10.896
0.21	14.772	10.224	8.698	6.11	9.88	10.896
0.22	14.904	10.276	8.701	6.11	9.886	10.896
0.23	14.999	10.319	8.704	6.11	9.892	10.896
0.23	14.81	10.361	8.711	6.11	9.896	10.896
0.24	15.112	10.404	8.714	6.11	9.902	10.896
0.25	15.169	10.447	8.72	6.11	9.908	10.896
0.26	15.159	10.485	8.727	6.11	9.915	10.896
0.27	15.216	10.523	8.73	6.11	9.921	10.896
0.28	15.272	10.556	8.736	6.11	9.924	10.896
0.28	15.301	10.589	8.743	6.11	9.93	10.896
0.29	15.338	10.618	8.746	6.11	9.937	10.896
0.30	15.423	10.646	8.752	6.11	9.943	10.896
0.31	15.272	10.675	8.758	6.11	9.95	10.896
0.32	15.461	10.703	8.765	6.11	9.956	10.896
0.33	15.414	10.727	8.771	6.11	9.962	10.896
0.33	15.452	10.756	8.777	6.11	9.969	10.896
0.35	15.47	10.798	8.79	6.11	9.984	10.896
0.37	15.48	10.841	8.806	6.11	9.994	10.896
0.38	15.64	10.884	8.819	6.11	10.01	10.896
0.40	15.697	10.927	8.835	6.11	10.022	10.896
0.42	15.895	10.974	8.85	6.11	10.038	10.896
0.43	15.999	11.012	8.863	6.11	10.051	10.896
0.45	16.15	11.06	8.879	6.11	10.067	10.896
0.47	16.31	11.102	8.892	6.11	10.08	10.896
0.48	16.433	11.15	8.908	6.11	10.095	10.896
0.50	16.697	11.202	8.923	6.11	10.111	10.896
0.52	16.829	11.25	8.936	6.11	10.124	10.896
0.53	17.083	11.307	8.952	6.11	10.14	10.896
0.55	17.282	11.364	8.965	6.11	10.152	10.896
0.57	17.47	11.421	8.981	6.11	10.168	10.896
0.58	17.81	11.482	8.993	6.11	10.184	10.896
0.60	17.913	11.544	9.009	6.11	10.2	10.896
0.62	18.102	11.606	9.022	6.11	10.213	10.899
0.63	18.328	11.672	9.019	6.11	10.229	10.896
0.65	18.488	11.734	9.057	6.11	10.248	10.896
0.67	18.733	11.8	9.066	6.11	10.26	10.896

0.68	18.931	11.867	9.082	6.11	10.279	10.893
0.70	19.205	11.929	9.12	6.11	10.295	10.896
0.72	19.337	11.995	9.114	6.11	10.311	10.896
0.73	19.563	12.057	9.12	6.11	10.327	10.896
0.75	19.789	12.114	9.146	6.11	10.343	10.896
0.77	19.921	12.176	9.158	6.11	10.359	10.896
0.78	20.147	12.237	9.177	6.11	10.378	10.899
0.80	20.335	12.294	9.19	6.11	10.393	10.896
0.82	20.514	12.356	9.209	6.11	10.409	10.896
0.83	20.665	12.413	9.222	6.11	10.428	10.896
0.85	20.854	12.47	9.235	6.11	10.444	10.896
0.87	21.033	12.527	9.254	6.11	10.46	10.896
0.88	21.193	12.584	9.27	6.113	10.479	10.896
0.90	21.39	12.641	9.285	6.113	10.495	10.899
0.92	21.475	12.693	9.304	6.11	10.514	10.896
0.93	21.692	12.74	9.317	6.113	10.533	10.896
0.95	21.89	12.793	9.333	6.113	10.549	10.896
0.97	21.946	12.845	9.349	6.113	10.568	10.896
0.98	22.125	12.892	9.365	6.113	10.587	10.896
1.00	22.332	12.94	9.384	6.113	10.606	10.896
1.20	23.942	13.452	9.584	6.116	10.828	10.899
1.40	25.325	13.856	9.787	6.119	11.056	10.899
1.60	26.463	14.197	9.977	6.122	11.284	10.896
1.80	27.394	14.548	10.165	6.129	11.509	10.896
2.00	28.221	14.876	10.339	6.135	11.731	10.896
2.20	28.889	15.156	10.507	6.141	11.944	10.893
2.40	29.509	15.416	10.666	6.148	12.146	10.893
2.60	30.026	15.63	10.818	6.154	12.343	10.89
2.80	30.542	15.815	10.961	6.157	12.527	10.89
3.00	31.078	15.995	11.097	6.163	12.701	10.89
3.20	31.716	16.189	11.221	6.17	12.872	10.886
3.40	32.082	16.379	11.345	6.176	13.027	10.886
3.60	32.458	16.526	11.465	6.182	13.183	10.886
3.80	32.88	16.673	11.58	6.189	13.332	10.883
4.00	33.162	16.81	11.688	6.195	13.471	10.883
4.20	33.5	16.938	11.792	6.198	13.604	10.883
4.40	33.753	17.062	11.891	6.205	13.734	10.88
4.60	33.95	17.194	11.983	6.208	13.854	10.88
4.80	34.222	17.284	12.075	6.214	13.972	10.88
5.00	34.476	17.384	12.16	6.217	14.086	10.877
5.20	34.645	17.484	12.239	6.224	14.19	10.877
5.40	34.813	17.555	12.319	6.227	14.292	10.877
5.60	34.954	17.607	12.392	6.233	14.39	10.877
5.80	35.057	17.683	12.458	6.236	14.482	10.874
6.00	35.264	17.787	12.525	6.239	14.567	10.874
6.20	35.339	17.867	12.588	6.243	14.653	10.874
6.40	35.526	17.934	12.649	6.246	14.732	10.874
6.60	35.686	18.024	12.709	6.249	14.808	10.874
6.80	35.864	18.114	12.766	6.252	14.887	10.874
7.00	36.07	18.218	12.823	6.255	14.96	10.874
7.20	36.258	18.299	12.88	6.258	15.033	10.874
7.40	36.445	18.36	12.934	6.262	15.103	10.874
7.60	36.652	18.408	12.988	6.262	15.172	10.874
7.80	36.783	18.469	13.039	6.265	15.236	10.874
8.00	37.008	18.554	13.089	6.268	15.305	10.874
8.20	37.57	18.682	13.137	6.268	15.369	10.874
8.40	37.617	18.81	13.188	6.271	15.432	10.874
8.60	37.786	18.881	13.238	6.274	15.498	10.874
8.80	38.02	18.957	13.289	6.274	15.562	10.874
9.00	38.208	19.052	13.337	6.274	15.625	10.874
9.20	38.461	19.132	13.387	6.277	15.688	10.877
9.40	38.685	19.18	13.435	6.281	15.749	10.877
9.60	38.873	19.246	13.483	6.281	15.806	10.877
9.80	39.06	19.303	13.53	6.284	15.866	10.877
10.00	39.201	19.36	13.575	6.284	15.923	10.88
12.00	40.334	19.871	13.968	6.296	16.426	10.886
14.00	41.271	20.189	14.259	6.306	16.797	10.893
16.00	42.946	20.477	14.538	6.315	17.142	10.905
18.00	43.704	20.889	14.76	6.322	17.43	10.915

20.00	44.247	21.055	14.953	6.328	17.664	10.928
22.00	44.612	21.259	15.112	6.334	17.854	10.94
24.00	44.995	21.32	15.239	6.338	18.009	10.956
26.00	45.257	21.453	15.35	6.341	18.139	10.969
28.00	45.537	21.547	15.445	6.344	18.25	10.982
30.00	45.687	21.661	15.527	6.35	18.348	11.001
32.00	45.865	21.784	15.606	6.35	18.433	11.013
34.00	46.51	21.921	15.692	6.353	18.538	11.029
36.00	46.912	21.959	15.761	6.357	18.626	11.045
38.00	47.099	22.068	15.831	6.357	18.705	11.058
40.00	47.715	22.252	15.91	6.36	18.797	11.074
42.00	48.005	22.314	15.983	6.36	18.886	11.087
44.00	48.295	22.394	16.04	6.363	18.949	11.099
46.00	48.631	22.456	16.091	6.363	19.012	11.112
48.00	48.874	22.527	16.142	6.366	19.066	11.128
50.00	48.893	22.674	16.196	6.366	19.129	11.141
52.00	49.033	22.659	16.234	6.369	19.174	11.153
54.00	49.294	22.603	16.259	6.369	19.199	11.169
56.00	49.481	22.636	16.287	6.369	19.228	11.179
58.00	49.565	22.702	16.316	6.369	19.259	11.195
60.00	49.621	22.73	16.344	6.372	19.294	11.207
62.00	49.677	22.886	16.373	6.376	19.326	11.22
64.00	49.761	22.872	16.408	6.376	19.364	11.23
66.00	50.004	22.868	16.43	6.376	19.386	11.242
68.00	50.275	22.901	16.452	6.376	19.408	11.255
70.00	50.275	22.863	16.468	6.376	19.43	11.268
72.00	50.182	22.981	16.496	6.376	19.459	11.277
74.00	50.247	22.929	16.509	6.376	19.474	11.287
76.00	50.406	22.92	16.519	6.379	19.484	11.299
78.00	50.546	22.929	16.528	6.379	19.497	11.312
80.00	50.695	22.924	16.541	6.379	19.509	11.325
82.00	50.816	22.92	16.554	6.382	19.525	11.338
84.00	50.844	23.009	16.566	6.382	19.541	11.347
86.00	50.919	22.972	16.579	6.382	19.557	11.36
88.00	50.966	22.967	16.588	6.382	19.566	11.373
90.00	50.901	23.024	16.601	6.382	19.579	11.382
92.00	50.854	23.057	16.617	6.382	19.591	11.392
94.00	50.929	23.033	16.62	6.385	19.598	11.401
96.00	50.966	23.028	16.626	6.385	19.604	11.411
98.00	51.106	23.028	16.636	6.385	19.614	11.42
100.00	51.246	23.014	16.642	6.385	19.617	11.43
120.00	52.692	22.91	16.699	6.388	19.686	11.519
140.00	53.644	22.995	16.772	6.391	19.765	11.595
160.00	53.831	22.972	16.794	6.398	19.784	11.659
180.00	54.773	23.038	16.845	6.401	19.838	11.719
200.00	55.332	22.967	16.845	6.401	19.835	11.77
220.00	55.295	23.076	16.873	6.404	19.864	11.817
240.00	55.668	23.009	16.873	6.404	19.864	11.862
260.00	56.106	22.995	16.88	6.407	19.87	11.897
280.00	56.246	22.962	16.873	6.407	19.86	11.932
300.00	56.451	22.967	16.88	6.41	19.867	11.964
320.00	56.525	22.943	16.877	6.414	19.86	11.992
340.00	56.656	22.92	16.873	6.414	19.851	12.018
360.00	56.246	23.043	16.892	6.414	19.87	12.04
380.00	56.628	23	16.889	6.417	19.86	12.059
400.00	56.702	23.005	16.889	6.42	19.86	12.078
420.00	56.833	22.967	16.886	6.42	19.854	12.097
440.00	56.665	22.924	16.87	6.42	19.841	12.113
460.00	56.693	22.905	16.861	6.42	19.829	12.129
RECOVERY TEST DATA						
480.00	56.907	22.891	16.861	6.423	19.826	12.141
480.01	56.805	22.896	16.861	6.423	19.826	12.141
480.02	56.618	22.891	16.861	6.423	19.826	12.141
480.03	56.311	22.891	16.861	6.423	19.826	12.141
480.03	55.854	22.896	16.861	6.423	19.826	12.141
480.04	55.351	22.891	16.861	6.423	19.826	12.141
480.05	54.838	22.891	16.861	6.423	19.826	12.141
480.06	54.213	22.891	16.861	6.423	19.826	12.141
480.07	53.747	22.891	16.861	6.423	19.826	12.141

480.08	53.206	22.891	16.861	6.423	19.826	12.141
480.08	52.674	22.891	16.864	6.423	19.826	12.141
480.09	52.217	22.891	16.864	6.423	19.826	12.141
480.10	51.759	22.891	16.864	6.423	19.826	12.141
480.11	51.321	22.891	16.861	6.423	19.826	12.141
480.12	50.985	22.886	16.861	6.423	19.826	12.141
480.13	50.546	22.886	16.861	6.423	19.826	12.141
480.13	50.191	22.886	16.861	6.423	19.826	12.141
480.14	49.733	22.886	16.861	6.423	19.826	12.141
480.15	49.406	22.886	16.861	6.423	19.826	12.141
480.16	49.108	22.882	16.861	6.423	19.826	12.141
480.17	48.753	22.877	16.861	6.423	19.826	12.141
480.18	48.388	22.877	16.861	6.423	19.826	12.141
480.18	48.033	22.872	16.861	6.423	19.826	12.141
480.19	47.659	22.863	16.861	6.423	19.826	12.141
480.20	47.295	22.858	16.861	6.423	19.826	12.141
480.21	46.921	22.849	16.861	6.423	19.826	12.141
480.22	46.575	22.839	16.858	6.423	19.826	12.141
480.23	45.865	22.811	16.858	6.423	19.822	12.141
480.25	45.173	22.782	16.854	6.423	19.826	12.138
480.27	44.462	22.749	16.854	6.423	19.822	12.138
480.28	43.807	22.707	16.854	6.423	19.819	12.138
480.30	43.143	22.664	16.851	6.423	19.819	12.138
480.32	42.534	22.617	16.848	6.423	19.819	12.138
480.33	41.823	22.565	16.845	6.423	19.816	12.138
480.35	41.177	22.517	16.842	6.423	19.816	12.138
480.37	40.587	22.461	16.839	6.423	19.813	12.138
480.38	40.156	22.399	16.835	6.423	19.81	12.138
480.40	39.744	22.347	16.829	6.423	19.807	12.138
480.42	39.182	22.286	16.826	6.423	19.803	12.135
480.43	38.507	22.224	16.82	6.423	19.8	12.138
480.45	38.151	22.167	16.816	6.423	19.797	12.138
480.47	37.392	22.101	16.81	6.423	19.794	12.135
480.48	37.092	22.039	16.804	6.423	19.788	12.135
480.50	36.436	21.973	16.797	6.423	19.781	12.135
480.52	35.92	21.907	16.791	6.423	19.778	12.135
480.53	35.545	21.836	16.785	6.423	19.772	12.135
480.55	35.17	21.77	16.778	6.423	19.765	12.135
480.57	34.71	21.703	16.772	6.423	19.756	12.135
480.58	34.382	21.637	16.763	6.423	19.75	12.135
480.60	34.166	21.571	16.753	6.423	19.743	12.135
480.62	33.791	21.5	16.747	6.423	19.734	12.135
480.63	33.556	21.443	16.737	6.423	19.727	12.132
480.65	33.237	21.377	16.728	6.423	19.718	12.135
480.67	32.843	21.315	16.715	6.423	19.705	12.132
480.68	32.524	21.254	16.709	6.423	19.696	12.132
480.70	32.167	21.188	16.696	6.426	19.686	12.132
480.72	31.829	21.121	16.687	6.426	19.68	12.132
480.73	31.463	21.06	16.677	6.426	19.667	12.132
480.75	31.153	20.993	16.664	6.426	19.655	12.132
480.77	30.815	20.932	16.652	6.423	19.645	12.132
480.78	30.505	20.866	16.642	6.426	19.629	12.132
480.80	30.204	20.804	16.633	6.426	19.617	12.132
480.82	29.904	20.738	16.62	6.426	19.604	12.132
480.83	29.622	20.676	16.607	6.426	19.591	12.132
480.85	29.274	20.61	16.595	6.426	19.576	12.129
480.87	28.992	20.548	16.582	6.426	19.563	12.129
480.88	28.72	20.482	16.569	6.426	19.553	12.129
481.08	25.589	19.71	16.392	6.426	19.348	12.126
481.28	23.123	19.014	16.196	6.426	19.12	12.129
481.48	21.099	18.36	15.99	6.426	18.867	12.126
481.68	19.44	17.754	15.777	6.423	18.595	12.126
481.88	18.083	17.19	15.562	6.423	18.313	12.126
482.08	16.989	16.654	15.353	6.42	18.022	12.129
482.28	16.169	16.076	15.144	6.414	17.727	12.126
482.48	15.527	15.54	14.934	6.41	17.433	12.129
482.68	15.027	15.099	14.728	6.404	17.139	12.129
482.88	14.612	14.724	14.526	6.401	16.857	12.132
483.08	14.263	14.406	14.332	6.395	16.591	12.135

483.28	13.97	14.131	14.148	6.388	16.341	12.135
483.48	13.715	13.884	13.974	6.385	16.103	12.138
483.68	13.489	13.666	13.809	6.379	15.885	12.138
483.88	13.281	13.471	13.657	6.376	15.679	12.141
484.08	13.101	13.296	13.511	6.369	15.489	12.145
484.28	12.941	13.134	13.378	6.363	15.315	12.145
484.48	12.79	12.987	13.248	6.36	15.144	12.145
484.68	12.658	12.85	13.127	6.353	14.992	12.148
484.88	12.535	12.726	13.016	6.35	14.843	12.148
485.08	12.422	12.608	12.905	6.347	14.703	12.148
485.28	12.308	12.498	12.804	6.341	14.577	12.148
485.48	12.204	12.394	12.709	6.338	14.453	12.151
485.68	12.119	12.299	12.617	6.331	14.336	12.151
485.88	12.034	12.204	12.528	6.328	14.228	12.151
486.08	11.949	12.119	12.446	6.325	14.124	12.154
486.28	11.874	12.033	12.366	6.322	14.022	12.154
486.48	11.789	11.952	12.29	6.319	13.93	12.154
486.68	11.723	11.881	12.217	6.315	13.839	12.157
486.88	11.657	11.81	12.147	6.312	13.753	12.154
487.08	11.59	11.739	12.084	6.309	13.674	12.157
487.28	11.524	11.672	12.017	6.306	13.595	12.157
487.48	11.468	11.615	11.957	6.303	13.519	12.157
487.68	11.402	11.549	11.897	6.3	13.449	12.157
487.88	11.354	11.497	11.843	6.3	13.379	12.157
488.08	11.298	11.435	11.786	6.296	13.316	12.157
488.28	11.241	11.387	11.735	6.29	13.249	12.157
488.48	11.194	11.33	11.684	6.29	13.192	12.154
488.68	11.156	11.283	11.637	6.287	13.132	12.157
488.88	11.099	11.235	11.586	6.284	13.075	12.157
489.08	11.061	11.188	11.542	6.284	13.021	12.157
489.28	11.014	11.14	11.497	6.281	12.967	12.154
489.48	10.976	11.102	11.456	6.281	12.92	12.157
489.68	10.939	11.055	11.412	6.277	12.869	12.154
489.88	10.901	11.022	11.373	6.277	12.821	12.154
491.88	10.57	10.665	11.028	6.262	12.419	12.148
493.88	10.315	10.399	10.764	6.249	12.118	12.138
495.88	10.117	10.19	10.555	6.239	11.88	12.126
497.88	9.956	10.015	10.38	6.23	11.69	12.116
499.88	9.814	9.872	10.234	6.224	11.532	12.1
501.88	9.701	9.749	10.111	6.217	11.395	12.087
503.88	9.597	9.634	10	6.211	11.272	12.072
505.88	9.512	9.544	9.908	6.208	11.173	12.056
507.88	9.436	9.463	9.822	6.205	11.085	12.043
509.88	9.36	9.392	9.749	6.201	11.005	12.03
511.88	9.304	9.321	9.682	6.195	10.932	12.014
513.88	9.247	9.259	9.622	6.195	10.869	11.999
515.88	9.2	9.212	9.571	6.192	10.812	11.989
517.88	9.153	9.159	9.52	6.189	10.758	11.976
519.88	9.105	9.112	9.473	6.186	10.707	11.964
521.88	9.067	9.069	9.428	6.186	10.66	11.948
523.88	9.03	9.031	9.39	6.182	10.619	11.938
525.88	8.992	8.993	9.352	6.179	10.577	11.922
527.88	8.963	8.96	9.32	6.179	10.542	11.913
529.88	8.935	8.926	9.289	6.176	10.511	11.897
531.88	8.907	8.903	9.26	6.176	10.479	11.887
533.88	8.888	8.874	9.231	6.173	10.45	11.875
535.88	8.85	8.846	9.206	6.173	10.422	11.862
537.88	8.831	8.822	9.184	6.173	10.397	11.849
539.88	8.812	8.803	9.162	6.17	10.371	11.836
541.88	8.793	8.779	9.139	6.17	10.349	11.824
543.88	8.774	8.76	9.12	6.17	10.327	11.811
545.88	8.755	8.741	9.101	6.167	10.308	11.802
547.88	8.746	8.727	9.085	6.167	10.289	11.789
549.88	8.727	8.708	9.07	6.167	10.273	11.782
551.88	8.708	8.694	9.054	6.167	10.254	11.77
553.88	8.699	8.679	9.038	6.163	10.238	11.76
555.88	8.689	8.665	9.025	6.163	10.225	11.748
557.88	8.67	8.651	9.012	6.163	10.21	11.741
559.88	8.661	8.641	9	6.163	10.197	11.728

561.88	8.651	8.627	8.99	6.163	10.184	11.719
563.88	8.642	8.617	8.981	6.16	10.171	11.709
565.88	8.633	8.608	8.968	6.16	10.162	11.7
567.88	8.623	8.598	8.958	6.16	10.149	11.693
569.88	8.614	8.589	8.949	6.16	10.14	11.684
571.88	8.604	8.575	8.939	6.16	10.13	11.674
573.88	8.595	8.57	8.933	6.16	10.121	11.665
575.88	8.585	8.56	8.923	6.157	10.111	11.655
577.88	8.576	8.551	8.917	6.157	10.102	11.646
579.88	8.576	8.546	8.911	6.157	10.092	11.636
599.88	8.519	8.484	8.854	6.154	10.029	11.563
619.88	8.481	8.446	8.816	6.154	9.988	11.5
639.88	8.453	8.423	8.79	6.154	9.956	11.446
659.88	8.434	8.399	8.771	6.151	9.934	11.398
679.88	8.415	8.385	8.755	6.151	9.915	11.353
699.88	8.406	8.375	8.746	6.151	9.902	11.315
719.88	8.396	8.366	8.736	6.151	9.892	11.284
739.88	8.387	8.356	8.73	6.151	9.883	11.255
759.88	8.387	8.351	8.72	6.151	9.877	11.23
779.88	8.377	8.342	8.717	6.151	9.867	11.204
799.88	8.368	8.337	8.711	6.151	9.864	11.182
819.88	8.368	8.332	8.708	6.151	9.858	11.16
839.88	8.358	8.332	8.704	6.151	9.854	11.144
859.88	8.368	8.328	8.701	6.151	9.854	11.131
879.88	8.358	8.328	8.701	6.151	9.851	11.115
899.88	8.358	8.323	8.698	6.151	9.848	11.096
919.88	8.358	8.323	8.695	6.151	9.845	11.083
939.88	8.358	8.323	8.695	6.151	9.845	11.071
959.88	8.358	8.318	8.695	6.151	9.845	11.061
979.88	8.349	8.318	8.692	6.151	9.842	11.048
999.88	8.349	8.318	8.692	6.151	9.842	11.039
1019.88	8.349	8.313	8.689	6.151	9.839	11.029
1039.88	8.349	8.313	8.689	6.151	9.839	11.023
1059.88	8.349	8.313	8.689	6.154	9.835	11.013
1079.88	8.349	8.309	8.685	6.154	9.832	11.001
1099.88	8.34	8.299	8.676	6.154	9.82	10.988
1119.88	8.33	8.285	8.66	6.154	9.807	10.972
1139.88	8.311	8.275	8.65	6.154	9.794	10.956
1159.88	8.302	8.266	8.641	6.154	9.785	10.944
1179.88	8.302	8.256	8.631	6.154	9.775	10.931
1199.88	8.292	8.251	8.628	6.154	9.769	10.918
1219.88	8.292	8.251	8.625	6.154	9.766	10.909
1239.88	8.283	8.247	8.622	6.154	9.759	10.896
1259.88	8.283	8.242	8.619	6.154	9.759	10.89
1279.88	8.283	8.237	8.616	6.154	9.756	10.88
1299.88	8.283	8.237	8.616	6.154	9.753	10.874
1319.88	8.273	8.237	8.612	6.154	9.753	10.867
1339.88	8.273	8.237	8.616	6.154	9.753	10.861
1359.88	8.283	8.237	8.612	6.157	9.75	10.858
1379.88	8.273	8.237	8.612	6.154	9.753	10.851
1399.88	8.273	8.237	8.612	6.157	9.753	10.848
1419.88	8.273	8.237	8.616	6.157	9.753	10.845
1439.88	8.283	8.237	8.612	6.157	9.753	10.845
1459.88	8.273	8.237	8.616	6.157	9.753	10.842
1479.88	8.283	8.237	8.612	6.157	9.753	10.835

APPENDIX C

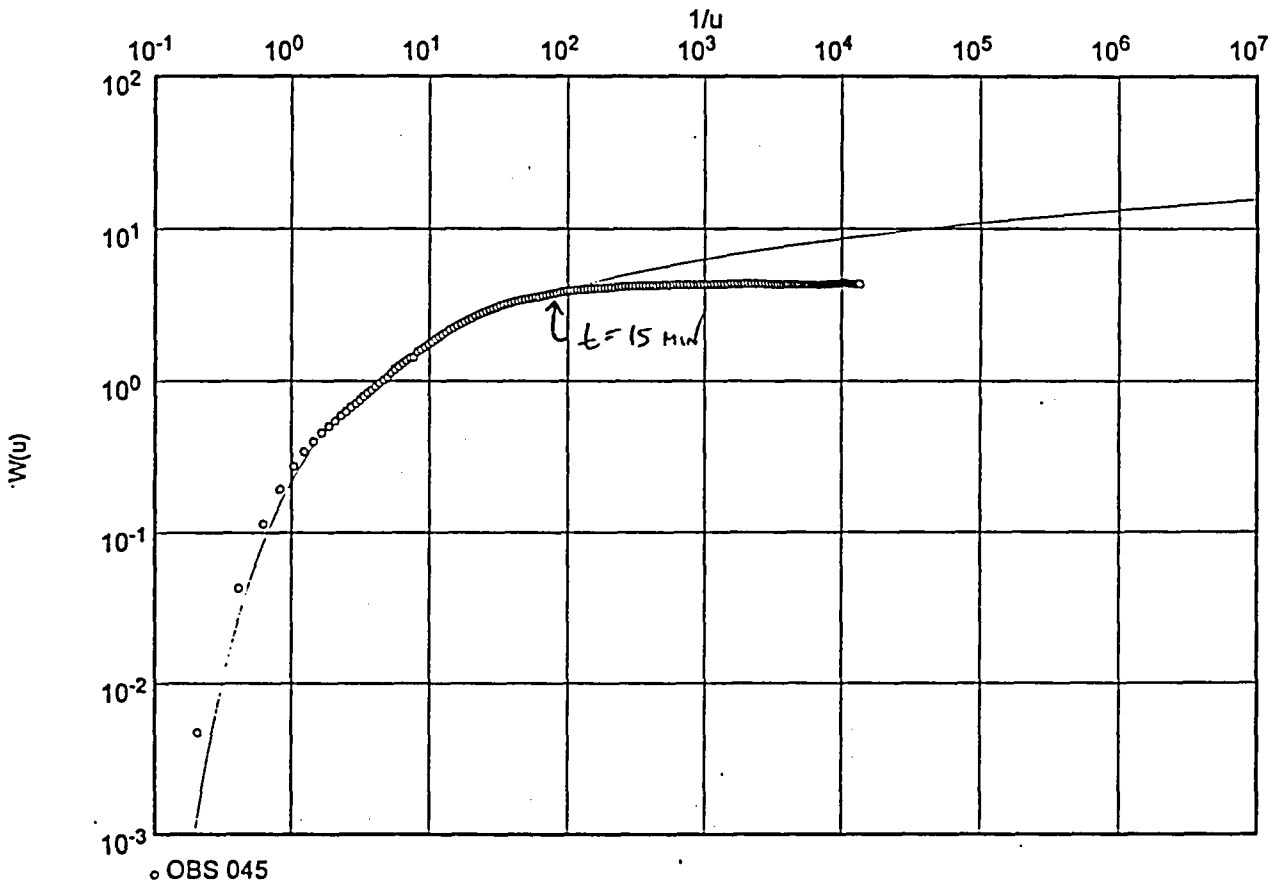
WELL 044 AQUIFER TEST DATA AND PLOTS

WELL 044 AQUIFER TEST 1

PLOTS FOR OBSERVATION WELLS 045, 046, AND 126

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 06.12.1999

Pumping Test No. 044 AQ TEST 1, t = 41 hrs	Test conducted on: 12/1/99
OBS 045, r = 56.8', SI = 40.9' - 50.5'	
Discharge 50.00 U.S.gal/min	



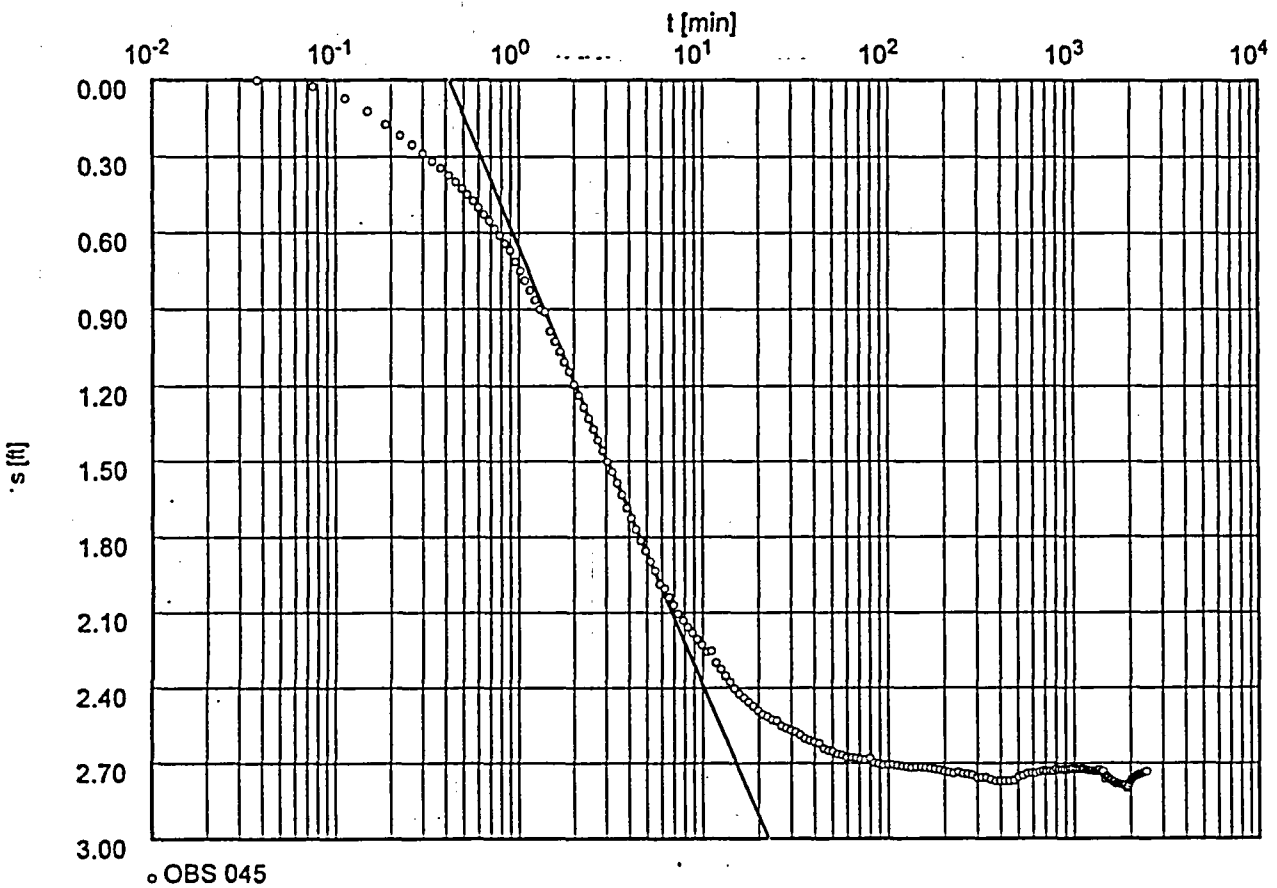
Transmissivity [ft²/min]: 8.43×10^{-1} = 1213.9 ft²/D

Hydraulic conductivity [ft/min]: 2.81×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 06.12.1999

Pumping Test No. 044 AQ TEST 1, t = 41 hrs	Test conducted on: 12/1/99
OBS 045, r = 56.8', SI = 40.9' - 50.5'	
Discharge 50.00 U.S.gal/min	

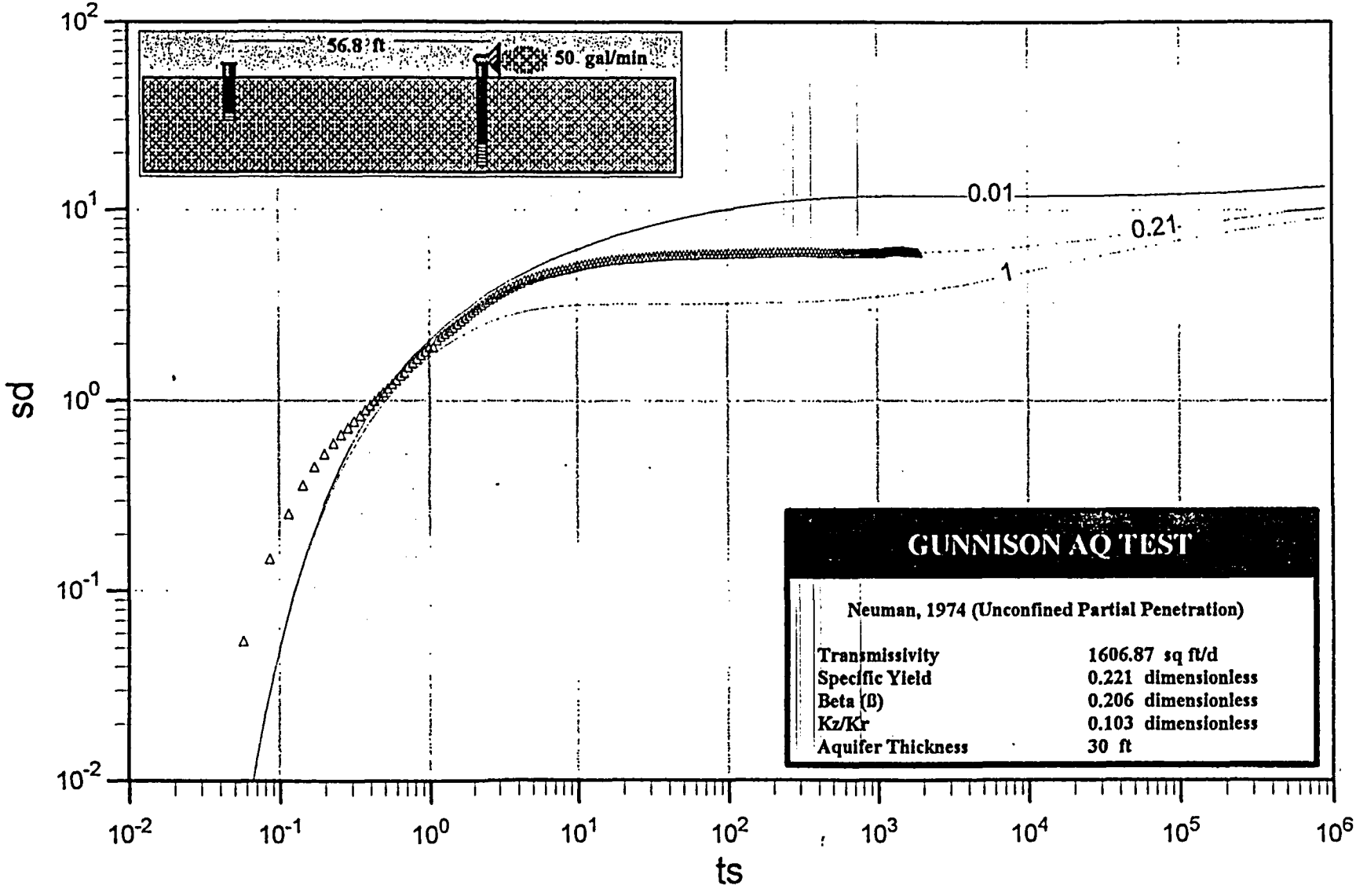


Transmissivity [ft²/min]: 7.07×10^{-1} = 1018.1 ft²/d

Hydraulic conductivity [ft/min]: 2.35×10^{-2}

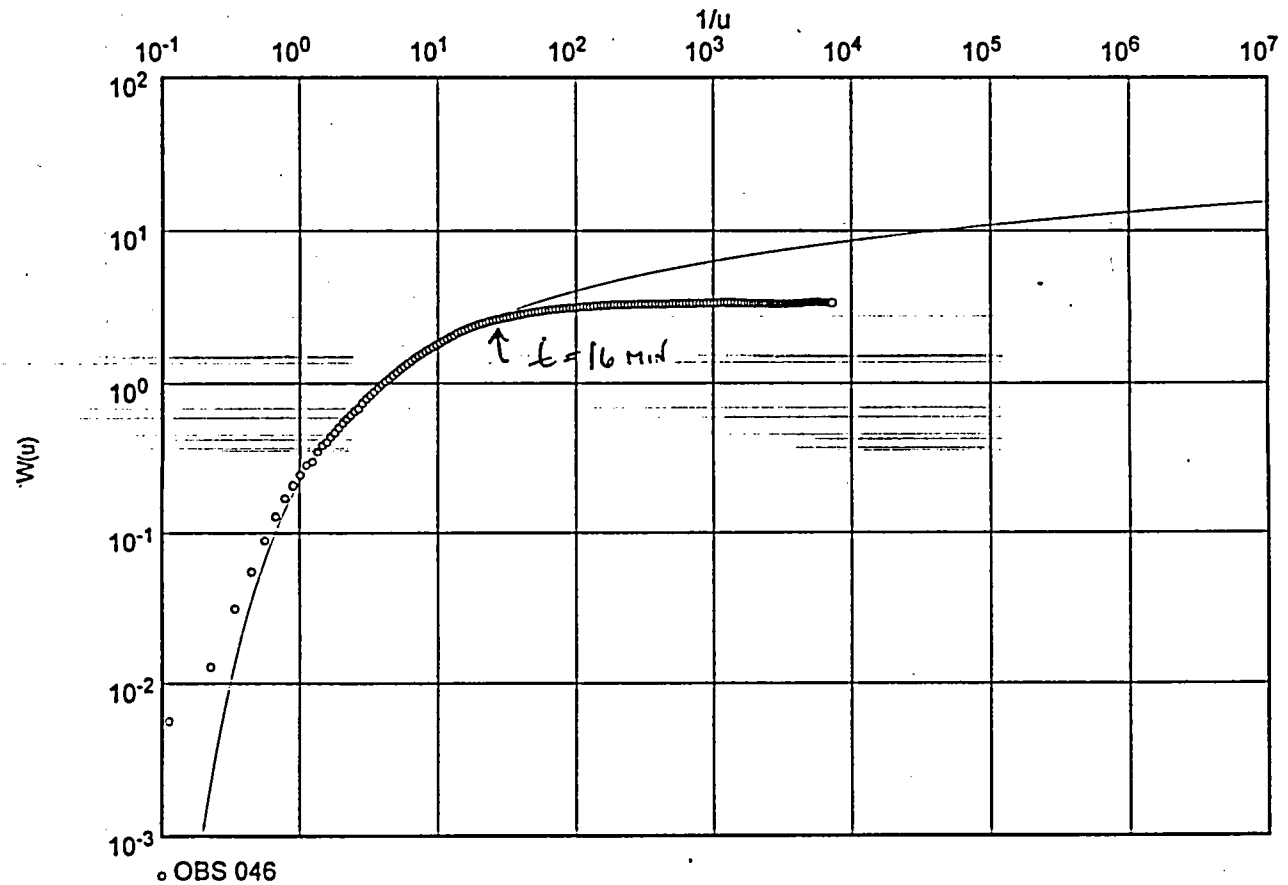
Aquifer thickness [ft]: 30.00

WELL OBS 045 / 044 AQ TEST 1



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 06.12.1999

Pumping Test No. 044 AQ TEST 1, t = 41 hrs	Test conducted on: 12/1/99
OBS 046, r = 40.9'	
Discharge 50.00 U.S.gal/min	



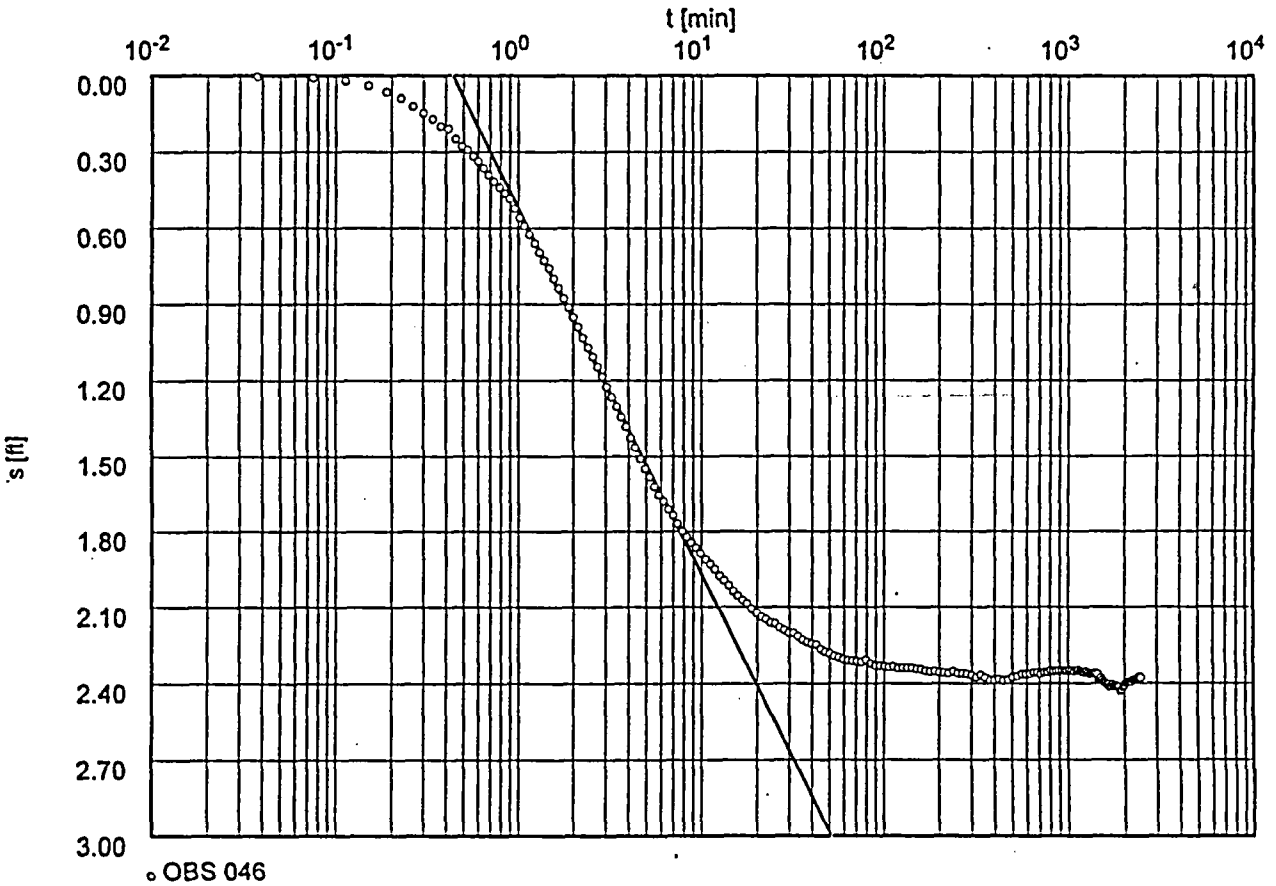
Transmissivity [ft²/min]: 7.51×10^{-1} = 1081.4 ft²/d

Hydraulic conductivity [ft/min]: 2.50×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 06.12.1999

Pumping Test No. 044 AQ TEST 1, t = 41 hrs	Test conducted on: 12/1/99
OBS 046, r = 40.9'	
Discharge 50.00 U.S.gal/min	

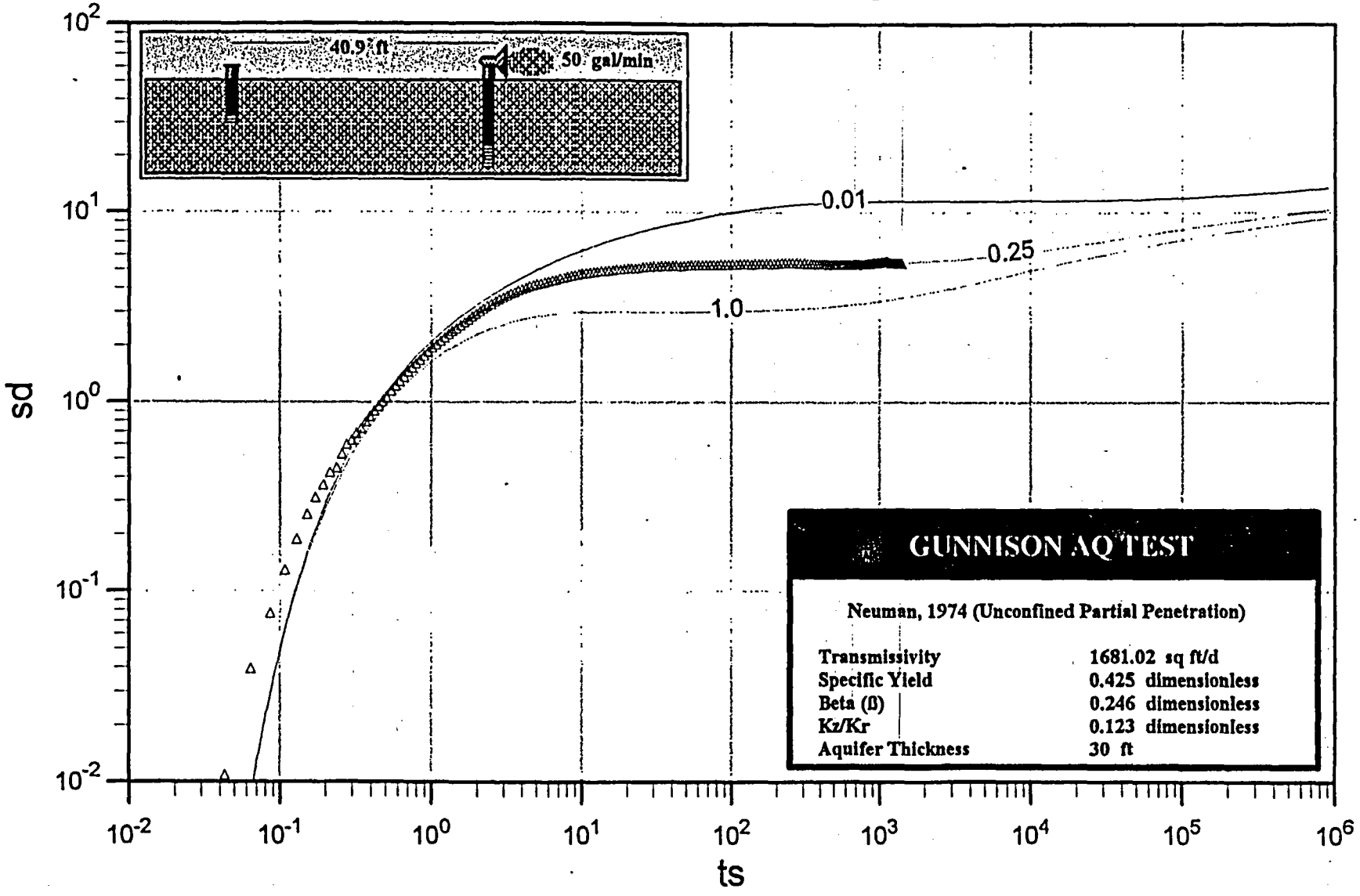


Transmissivity [ft²/min]: 8.43×10^{-1} = 1213.9 ft²/D

Hydraulic conductivity [ft/min]: 2.81×10^{-2}

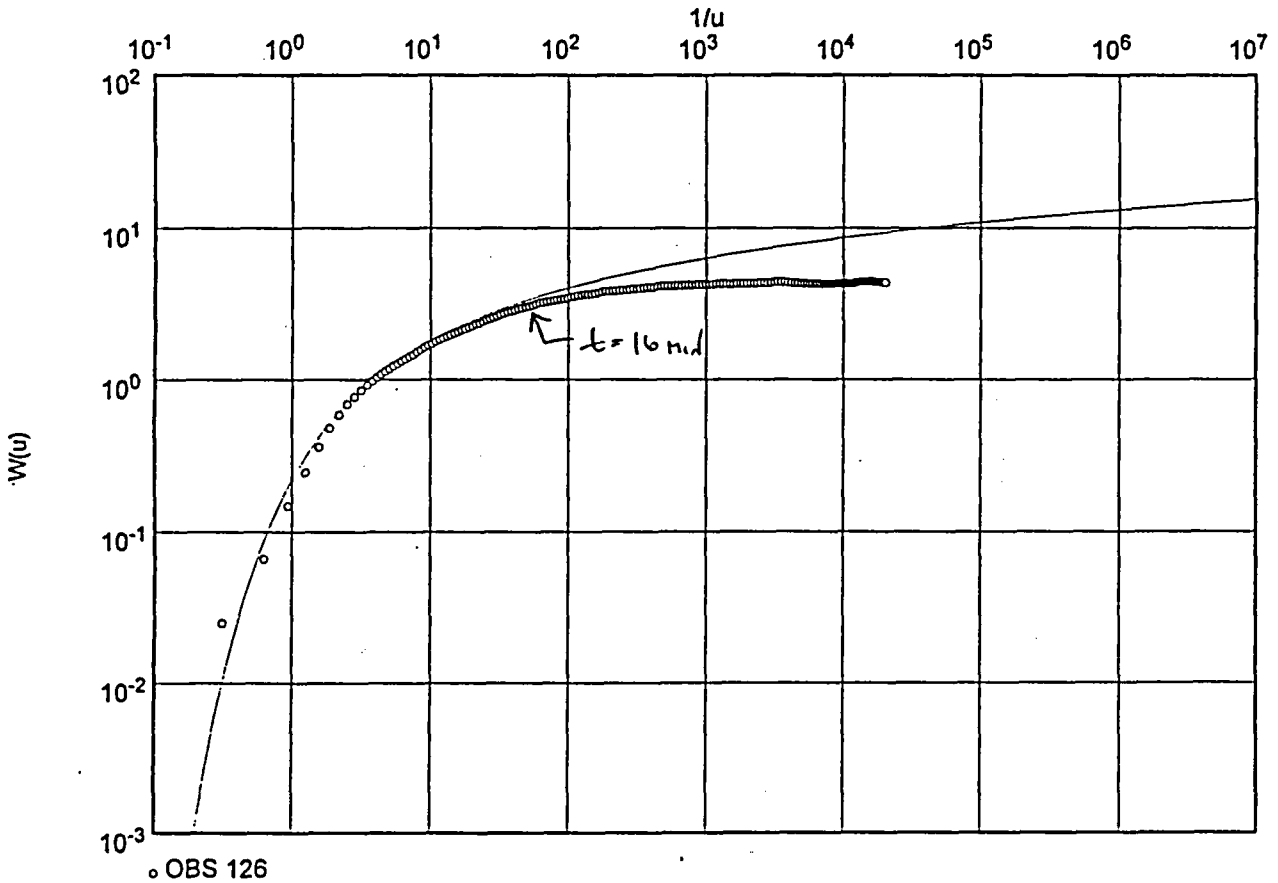
Aquifer thickness [ft]: 30.00

WELL OBS 046 / 044 AQ TEST 1



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 28.12.1999

Pumping Test No. 044 AQ TEST 1, t =41 hrs	Test conducted on: 12/1/99
OBS 126, r = 16.4, SI = 53.2' - 58.2'	
Discharge 50.00 U.S.gal/min	



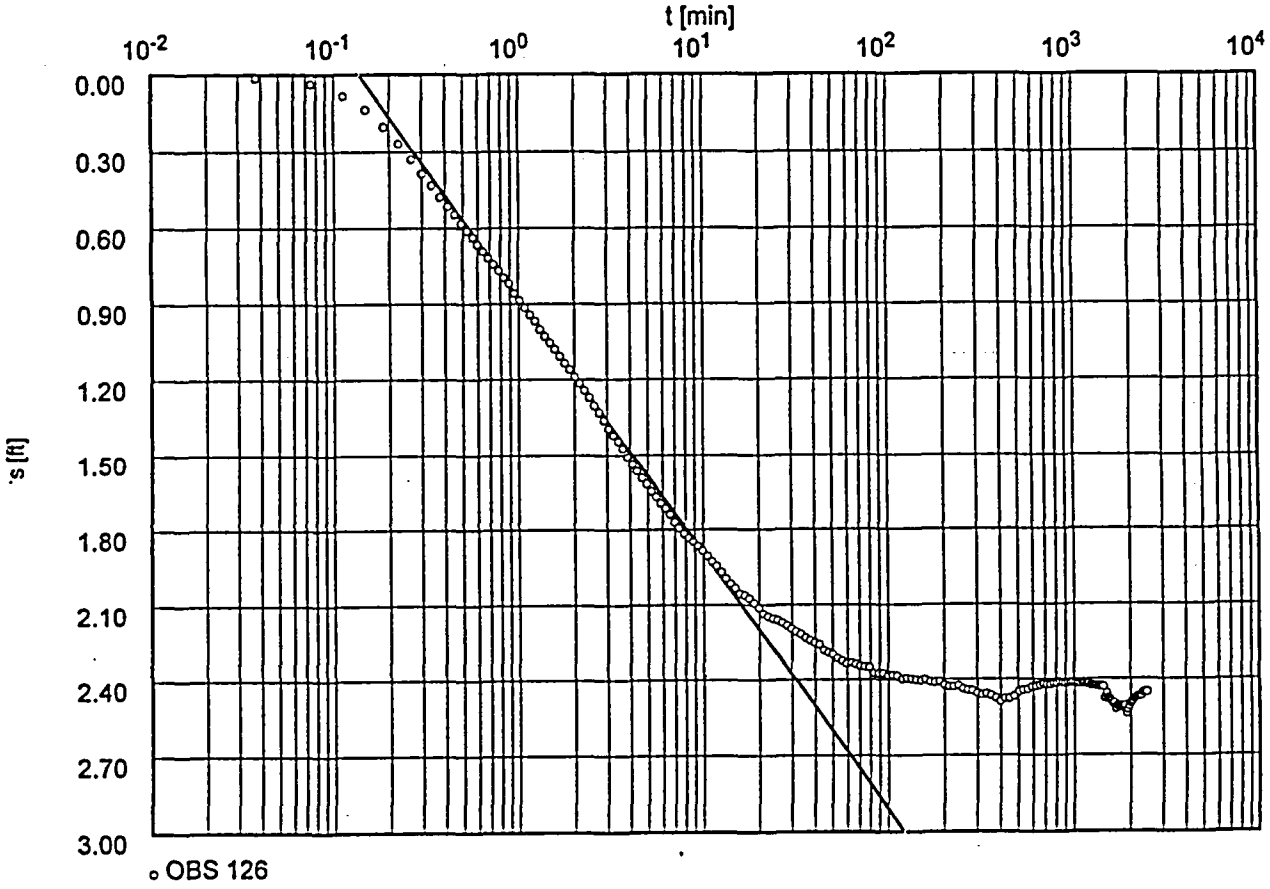
Transmissivity [ft²/min]: 9.45×10^{-1} = 1360.8 ft²/d

Hydraulic conductivity [ft/min]: 3.15×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 28.12.1999

Pumping Test No. 044 AQ TEST 1, t =41 hrs	Test conducted on: 12/1/99
OBS 126, r = 16.4, SI = 53.2' - 58.2'	
Discharge 50.00 U.S.gal/min	

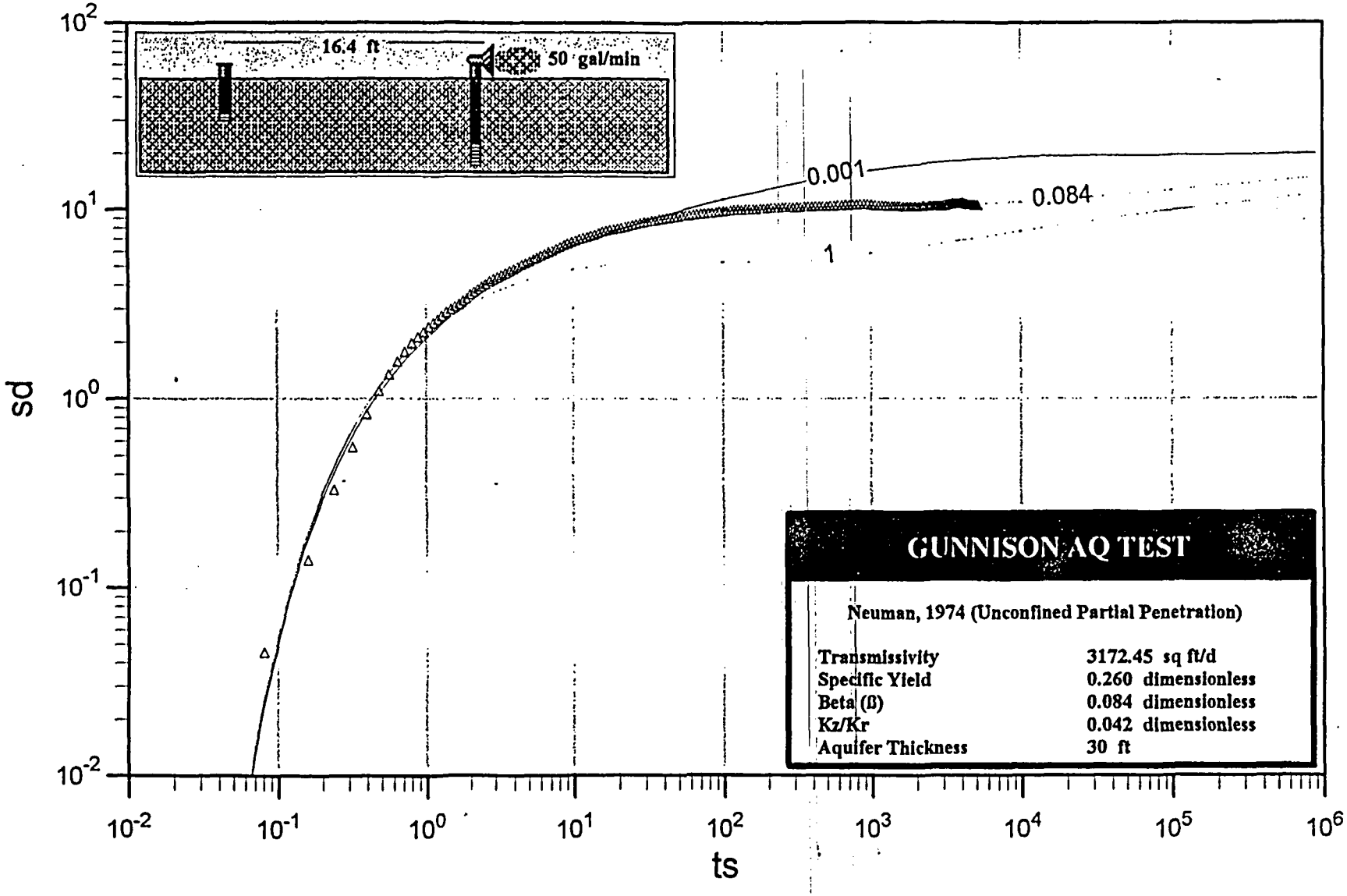


Transmissivity [ft²/min]: 1.20×10^{0} = 1728 ft²/D

Hydraulic conductivity [ft/min]: 4.01×10^{-2}

Aquifer thickness [ft]: 30.00

WELL OBS 126 / 044 AQ TEST 1



WELL 044 AQUIFER TEST 1

DRAWDOWN DATA

GUNNISON UMTRA SITE
WELL 044 AQUIFER TEST 1 DATA
START DATE/TIME : 12/1/99, 0900
PUMPING RATE : 50 GPM

ELAPSED TIME (min)	WELL 044 pmp 044	WELL 045 obs045	WELL 046 obs046	WELL 126 obs 126	WELL 125 obs 125	WELL 127 obs 127	INCHES Hg
0.00	9.51	9.451	8.924	10.603	9.199	11.793	22.624
0.04	12.065	9.453	8.924	10.614	9.199	11.794	22.626
0.08	11.586	9.477	8.929	10.637	9.2	11.796	22.626
0.11	13.665	9.522	8.942	10.683	9.209	11.799	22.626
0.15	15.412	9.573	8.959	10.738	9.222	11.797	22.628
0.19	16.88	9.624	8.983	10.804	9.239	11.796	22.63
0.23	17.758	9.668	9.01	10.87	9.26	11.794	22.63
0.26	18.148	9.704	9.04	10.931	9.282	11.793	22.63
0.30	18.543	9.739	9.067	10.988	9.304	11.791	22.632
0.34	18.991	9.769	9.091	11.034	9.322	11.791	22.634
0.38	19.481	9.796	9.119	11.081	9.342	11.79	22.634
0.41	19.98	9.826	9.13	11.118	9.358	11.79	22.632
0.45	20.423	9.852	9.169	11.152	9.374	11.789	22.632
0.49	20.826	9.879	9.198	11.187	9.39	11.789	22.634
0.53	21.238	9.904	9.213	11.216	9.404	11.789	22.636
0.56	21.646	9.929	9.239	11.242	9.419	11.787	22.636
0.60	22.075	9.955	9.259	11.27	9.43	11.787	22.636
0.64	22.457	9.983	9.285	11.299	9.445	11.787	22.638
0.69	22.938	10.008	9.312	11.325	9.457	11.787	22.64
0.74	23.363	10.039	9.338	11.351	9.469	11.787	22.638
0.79	23.844	10.067	9.362	11.377	9.482	11.787	22.638
0.84	24.286	10.1	9.388	11.406	9.495	11.787	22.64
0.89	24.646	10.127	9.408	11.429	9.505	11.79	22.64
0.95	25.192	10.172	9.449	11.469	9.521	11.79	22.636
1.02	25.686	10.209	9.484	11.498	9.535	11.789	22.636
1.08	26.162	10.247	9.517	11.529	9.547	11.79	22.634
1.15	26.673	10.287	9.55	11.558	9.555	11.79	22.634
1.23	27.102	10.326	9.587	11.584	9.567	11.791	22.634
1.31	27.556	10.363	9.624	11.619	9.577	11.791	22.634
1.39	27.942	10.374	9.657	11.647	9.587	11.793	22.634
1.48	28.396	10.453	9.688	11.673	9.594	11.794	22.634
1.57	28.812	10.493	9.729	11.699	9.603	11.794	22.632
1.67	29.218	10.535	9.769	11.728	9.611	11.796	22.632
1.78	29.69	10.577	9.81	11.757	9.621	11.797	22.632
1.89	30.105	10.615	9.847	11.783	9.629	11.799	22.634
2.01	30.529	10.667	9.887	11.814	9.636	11.802	22.632
2.13	30.871	10.713	9.926	11.84	9.643	11.803	22.632
2.26	31.252	10.759	9.97	11.869	9.649	11.806	22.632
2.40	31.602	10.803	10.009	11.898	9.653	11.809	22.63
2.55	31.965	10.848	10.047	11.932	9.656	11.81	22.63
2.71	32.419	10.894	10.088	11.958	9.66	11.813	22.63
2.88	32.912	10.941	10.127	11.99	9.667	11.816	22.63
3.05	33.366	10.991	10.169	12.024	9.675	11.819	22.628
3.24	33.552	11.037	10.215	12.053	9.683	11.824	22.628
3.44	33.966	11.082	10.254	12.079	9.685	11.826	22.628
3.65	34.511	11.129	10.296	12.11	9.683	11.832	22.628
3.87	34.973	11.187	10.337	12.148	9.679	11.837	22.628
4.11	35.37	11.231	10.383	12.182	9.675	11.84	22.628
4.36	35.785	11.277	10.423	12.211	9.675	11.844	22.628
4.62	36.217	11.324	10.471	12.24	9.676	11.848	22.626
4.90	36.593	11.369	10.512	12.266	9.678	11.854	22.628
5.20	36.804	11.412	10.547	12.295	9.678	11.86	22.624
5.51	37.067	11.451	10.587	12.318	9.68	11.866	22.624
5.85	37.305	11.508	10.622	12.346	9.682	11.87	22.624
6.20	37.508	11.528	10.65	12.369	9.682	11.876	22.624
6.57	37.767	11.564	10.685	12.395	9.685	11.883	22.622
6.97	37.991	11.597	10.711	12.427	9.686	11.889	22.622
7.39	38.142	11.633	10.746	12.453	9.689	11.895	22.62
7.83	38.393	11.664	10.777	12.476	9.692	11.901	22.62
8.30	38.436	11.693	10.801	12.493	9.693	11.908	22.62
8.80	38.513	11.717	10.825	12.51	9.695	11.917	22.62

9.33	38.703	11.745	10.847	12.528	9.695	11.923	22.62
9.89	38.859	11.768	10.873	12.548	9.696	11.933	22.618
10.48	39.035	11.798	10.897	12.571	9.699	11.94	22.62
11.11	39.221	11.794	10.917	12.594	9.702	11.946	22.622
11.78	39.406	11.845	10.937	12.614	9.699	11.953	22.624
12.48	39.808	11.874	10.965	12.64	9.698	11.962	22.626
13.23	40.045	11.904	10.985	12.666	9.701	11.971	22.628
14.02	40.248	11.93	11.007	12.689	9.702	11.981	22.626
14.85	40.424	11.957	11.031	12.709	9.702	11.992	22.624
15.74	40.567	11.979	11.05	12.732	9.705	12	22.622
16.68	40.769	11.997	11.07	12.738	9.705	12.007	22.622
17.67	40.989	12.016	11.085	12.752	9.705	12.014	22.626
18.73	41.166	12.033	11.107	12.772	9.706	12.026	22.628
19.84	41.317	12.053	11.123	12.792	9.709	12.039	22.622
21.02	41.395	12.069	11.138	12.818	9.709	12.048	22.616
22.28	41.494	12.08	11.147	12.83	9.711	12.054	22.616
23.60	41.576	12.093	11.162	12.838	9.712	12.062	22.624
25.01	41.856	12.098	11.168	12.847	9.714	12.073	22.622
26.50	42.02	12.119	11.184	12.858	9.714	12.08	22.618
28.07	42.102	12.129	11.195	12.87	9.714	12.087	22.616
29.74	42.218	12.139	11.208	12.884	9.715	12.097	22.618
31.51	42.248	12.146	11.208	12.896	9.715	12.106	22.624
33.39	42.567	12.158	11.223	12.907	9.703	12.116	22.622
35.37	42.826	12.175	11.238	12.922	9.706	12.124	22.62
37.47	42.899	12.184	11.247	12.933	9.708	12.129	22.622
39.70	42.946	12.188	11.254	12.942	9.709	12.138	22.62
42.06	43.175	12.195	11.258	12.95	9.709	12.142	22.614
44.56	43.425	12.218	11.278	12.976	9.715	12.163	22.618
47.20	43.597	12.227	11.289	12.985	9.721	12.17	22.616
50.01	43.709	12.231	11.295	12.993	9.721	12.175	22.612
52.98	43.92	12.243	11.308	13.011	9.719	12.182	22.618
56.12	44.067	12.247	11.313	13.022	9.719	12.189	22.618
59.45	44.243	12.257	11.322	13.034	9.721	12.193	22.614
62.98	44.217	12.258	11.326	13.031	9.722	12.201	22.616
66.72	44.248	12.26	11.328	13.037	9.719	12.204	22.616
70.68	44.269	12.266	11.33	13.045	9.721	12.212	22.62
74.88	44.411	12.268	11.333	13.048	9.719	12.217	22.624
79.32	44.204	12.261	11.324	13.051	9.714	12.211	22.626
84.03	44.76	12.283	11.339	13.077	9.718	12.224	22.626
89.01	44.67	12.287	11.348	13.077	9.724	12.231	22.628
94.29	44.721	12.293	11.348	13.077	9.719	12.233	22.63
99.89	44.773	12.291	11.352	13.088	9.722	12.24	22.636
105.81	44.851	12.291	11.354	13.086	9.721	12.242	22.638
112.09	44.95	12.293	11.352	13.088	9.715	12.244	22.642
118.74	45.092	12.297	11.359	13.103	9.712	12.246	22.642
125.78	45.079	12.3	11.357	13.1	9.714	12.249	22.644
133.24	45.169	12.303	11.357	13.103	9.716	12.255	22.646
141.14	45.242	12.301	11.357	13.106	9.718	12.255	22.642
149.51	45.303	12.301	11.361	13.109	9.718	12.256	22.638
158.38	45.298	12.303	11.363	13.106	9.724	12.26	22.636
167.77	45.415	12.307	11.37	13.114	9.724	12.265	22.63
177.71	45.518	12.31	11.372	13.117	9.724	12.268	22.624
188.25	45.703	12.314	11.372	13.114	9.719	12.271	22.616
199.41	45.708	12.32	11.376	13.129	9.728	12.279	22.608
211.23	45.725	12.323	11.378	13.137	9.725	12.285	22.598
223.76	45.768	12.329	11.381	13.137	9.724	12.293	22.583
237.02	45.544	12.323	11.372	13.132	9.726	12.295	22.577
251.07	45.604	12.33	11.381	13.146	9.725	12.301	22.563
265.96	45.565	12.333	11.381	13.152	9.724	12.309	22.557
281.72	45.69	12.337	11.383	13.155	9.721	12.314	22.549
298.42	45.751	12.349	11.389	13.166	9.721	12.322	22.539
316.11	45.824	12.347	11.398	13.172	9.721	12.329	22.524
334.85	45.901	12.347	11.387	13.169	9.709	12.323	22.522
354.70	46.026	12.356	11.398	13.175	9.715	12.332	22.512
375.72	46.039	12.363	11.411	13.186	9.716	12.336	22.5
397.99	45.936	12.362	11.411	13.201	9.718	12.342	22.486
421.58	46.177	12.362	11.407	13.189	9.722	12.343	22.469
446.57	46.22	12.363	11.413	13.189	9.719	12.345	22.459
473.04	46.241	12.359	11.409	13.18	9.721	12.332	22.447

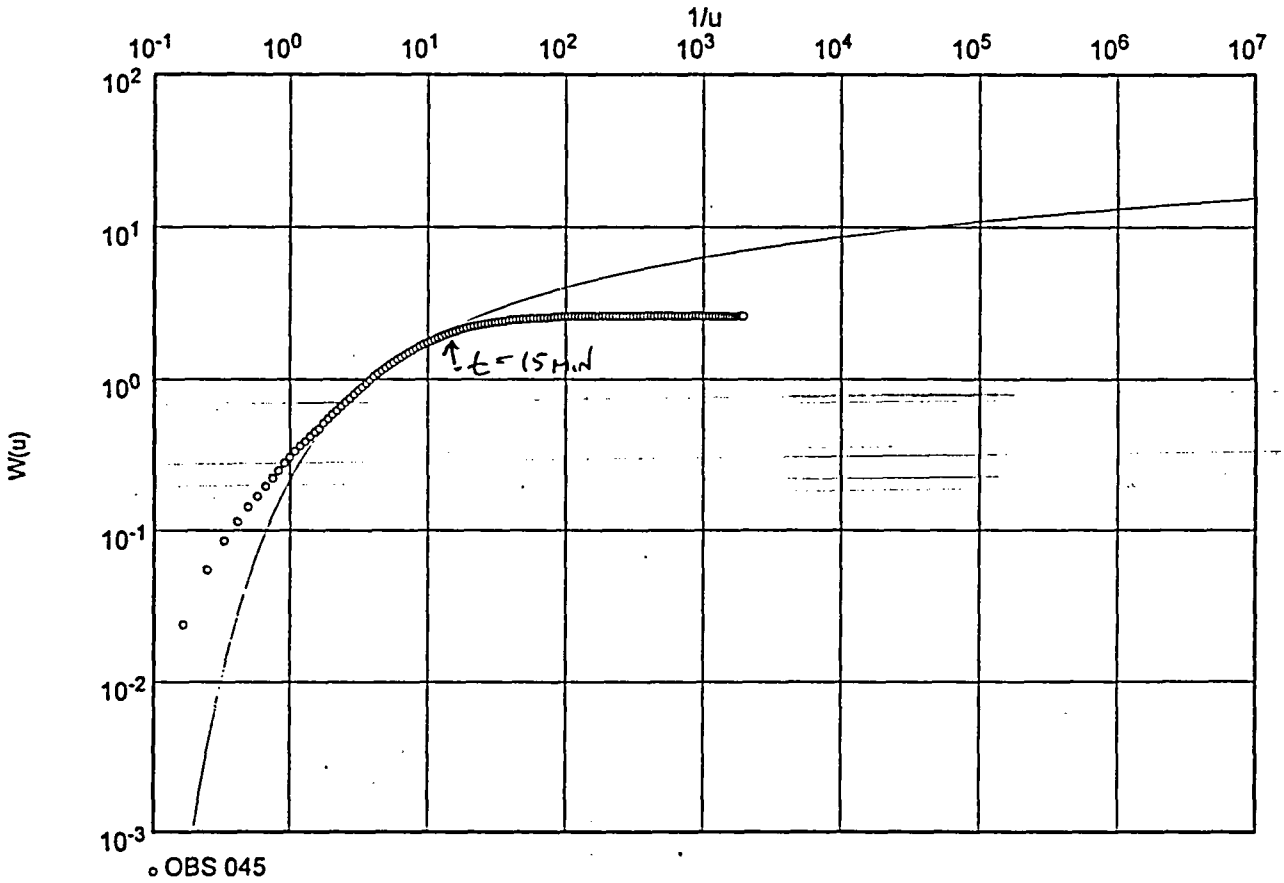
501.07	46.31	12.346	11.398	13.16	9.725	12.319	22.439
530.77	46.345	12.339	11.394	13.152	9.731	12.31	22.418
560.77	46.474	12.329	11.385	13.149	9.731	12.3	22.41
590.77	46.414	12.327	11.385	13.14	9.732	12.293	22.42
620.77	46.586	12.329	11.383	13.137	9.724	12.288	22.447
650.77	46.478	12.323	11.376	13.132	9.734	12.282	22.445
680.77	46.573	12.319	11.376	13.126	9.734	12.279	22.441
710.77	46.65	12.32	11.383	13.129	9.734	12.276	22.445
740.77	46.676	12.319	11.378	13.129	9.732	12.274	22.443
770.77	46.676	12.32	11.376	13.123	9.732	12.271	22.433
800.77	46.706	12.311	11.37	13.123	9.735	12.263	22.429
830.77	46.668	12.314	11.372	13.117	9.737	12.263	22.429
860.77	46.724	12.313	11.372	13.12	9.738	12.263	22.429
890.77	46.741	12.313	11.37	13.123	9.739	12.263	22.427
920.77	46.754	12.313	11.37	13.12	9.739	12.262	22.427
950.77	46.771	12.311	11.37	13.12	9.739	12.262	22.422
980.77	46.797	12.309	11.37	13.12	9.741	12.259	22.416
1010.77	46.844	12.309	11.367	13.123	9.741	12.26	22.416
1040.77	46.814	12.31	11.37	13.126	9.741	12.263	22.425
1070.77	46.853	12.31	11.374	13.126	9.742	12.263	22.425
1100.77	46.719	12.31	11.37	13.12	9.749	12.265	22.431
1130.77	46.801	12.311	11.367	13.123	9.749	12.265	22.427
1160.77	46.835	12.314	11.372	13.126	9.745	12.265	22.427
1190.77	46.861	12.316	11.376	13.126	9.748	12.265	22.418
1220.77	46.939	12.317	11.378	13.132	9.749	12.268	22.412
1250.77	46.982	12.316	11.372	13.132	9.751	12.269	22.418
1280.77	47.016	12.32	11.378	13.134	9.749	12.269	22.447
1310.77	47.038	12.319	11.383	13.134	9.749	12.269	22.457
1340.77	47.214	12.314	11.383	13.137	9.751	12.272	22.469
1370.77	47.145	12.314	11.381	13.14	9.754	12.272	22.482
1400.77	47.064	12.323	11.381	13.137	9.757	12.274	22.494
1430.77	47.145	12.321	11.385	13.14	9.758	12.275	22.52
1460.77	47.503	12.352	11.409	13.189	9.76	12.291	22.549
1490.77	47.072	12.342	11.4	13.169	9.767	12.307	22.563
1520.77	47.163	12.349	11.409	13.189	9.764	12.317	22.575
1550.77	47.292	12.356	11.418	13.195	9.757	12.323	22.579
1580.77	47.253	12.36	11.422	13.203	9.762	12.333	22.569
1610.77	47.262	12.366	11.429	13.212	9.765	12.342	22.555
1640.77	47.305	12.367	11.429	13.212	9.762	12.343	22.545
1670.77	47.791	12.376	11.44	13.235	9.765	12.348	22.526
1700.77	47.326	12.373	11.437	13.221	9.765	12.351	22.518
1730.77	47.292	12.373	11.429	13.224	9.765	12.352	22.506
1760.77	47.481	12.377	11.437	13.229	9.762	12.355	22.502
1790.77	47.451	12.379	11.437	13.229	9.764	12.352	22.494
1820.77	47.459	12.38	11.435	13.224	9.761	12.355	22.49
1850.77	47.49	12.382	11.437	13.221	9.762	12.354	22.473
1880.77	47.485	12.383	11.44	13.221	9.764	12.355	22.461
1910.77	48.281	12.395	11.457	13.255	9.764	12.357	22.429
1940.77	48.2	12.387	11.453	13.238	9.77	12.346	22.4
1970.77	48.281	12.375	11.44	13.224	9.77	12.327	22.363
2000.77	48.251	12.364	11.433	13.212	9.771	12.316	22.339
2030.77	48.268	12.357	11.424	13.206	9.771	12.306	22.337
2060.77	48.342	12.353	11.422	13.201	9.772	12.3	22.341
2090.77	48.479	12.349	11.42	13.192	9.768	12.288	22.329
2120.77	48.484	12.344	11.418	13.189	9.77	12.287	22.327
2150.77	48.432	12.343	11.416	13.183	9.772	12.284	22.304
2180.77	48.466	12.337	11.418	13.183	9.775	12.279	22.28
2210.77	48.484	12.334	11.409	13.18	9.775	12.276	22.274
2240.77	48.488	12.334	11.409	13.18	9.774	12.274	22.266
2270.77	48.552	12.332	11.411	13.18	9.774	12.272	22.266
2300.77	48.539	12.329	11.409	13.178	9.775	12.272	22.258
2330.77	48.311	12.327	11.405	13.166	9.781	12.268	22.249
2360.77	48.428	12.324	11.4	13.163	9.783	12.266	22.243
2390.77	48.423	12.323	11.4	13.163	9.781	12.266	22.243
2420.77	48.389	12.321	11.396	13.163	9.783	12.265	22.237
2450.77	48.402	12.321	11.4	13.163	9.783	12.263	22.235

WELL 044 AQUIFER TEST 2

PLOTS FOR PUMPING WELL 044 AND OBSERVATION WELLS 045, 046, AND 126

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 13.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 045, r = 56.8', SI = 40.9' - 50.5'	
Discharge 58.16 U.S.gal/min	



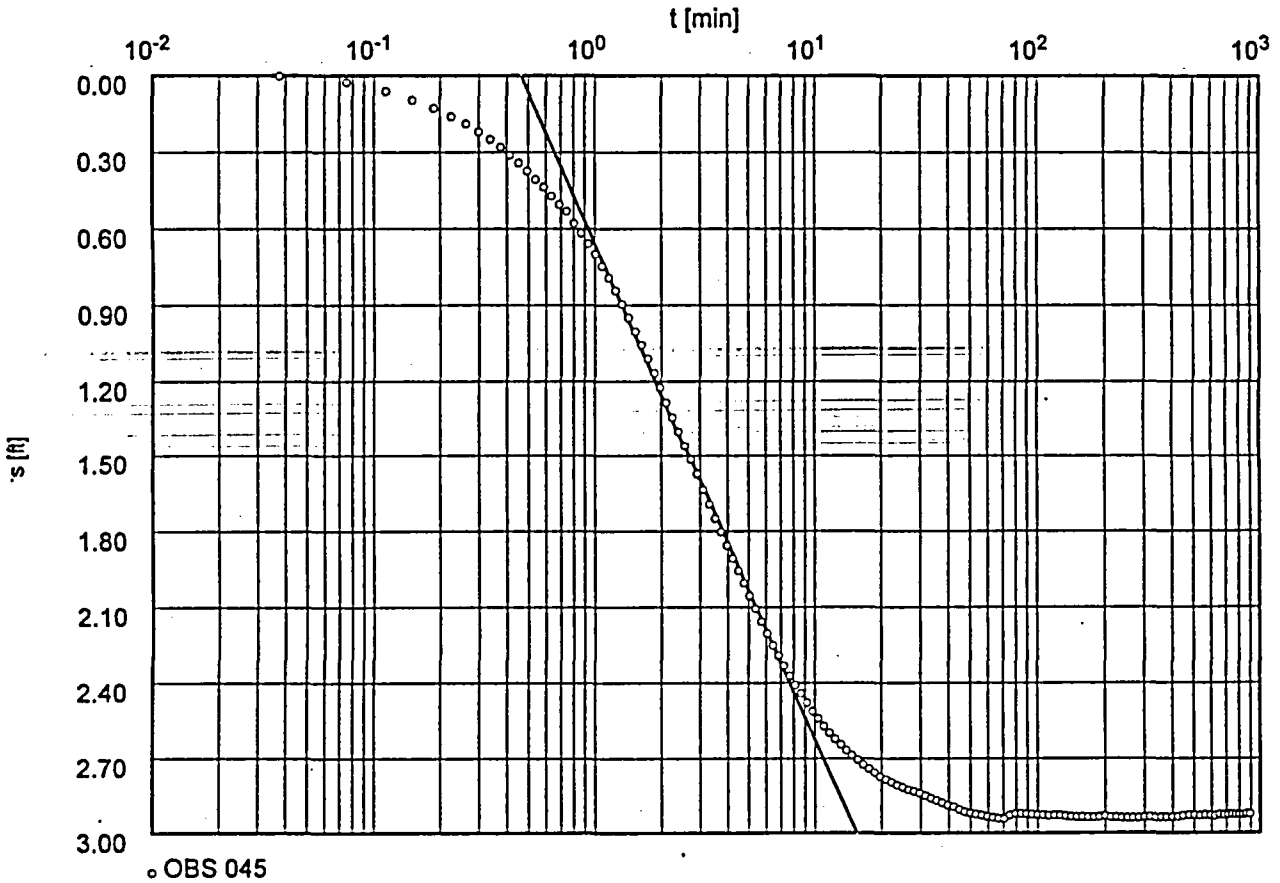
Transmissivity [ft²/min]: 5.51×10^{-1} = 793.4 ft²/D

Hydraulic conductivity [ft/min]: 1.83×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 13.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 045, r = 56.8', Sl = 40.9' - 50.5'	
Discharge 58.16 U.S.gal/min	

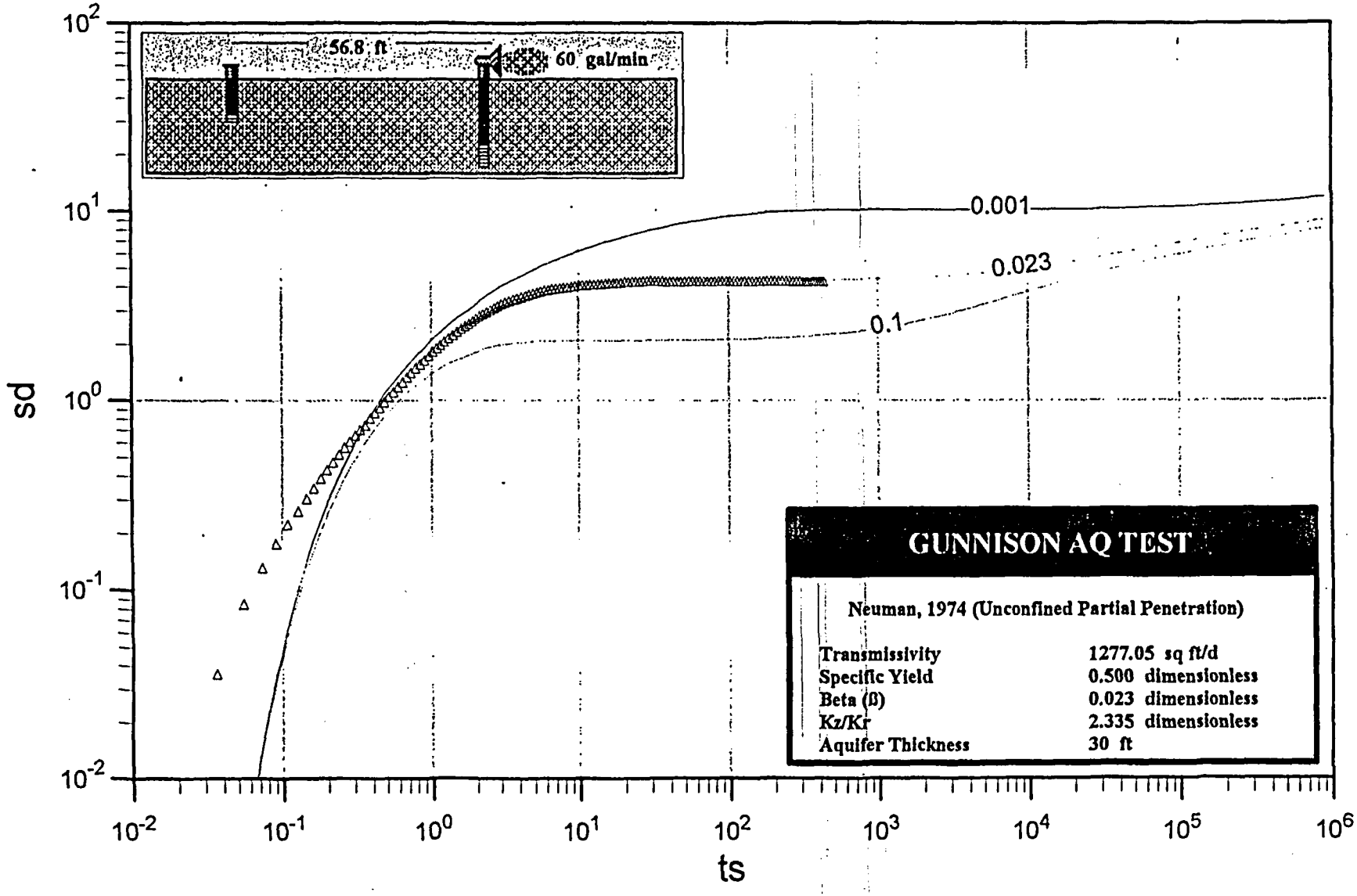


Transmissivity [ft²/min]: 7.23×10^{-1} = 1041.1 FT²/D

Hydraulic conductivity [ft/min]: 2.41×10^{-2}

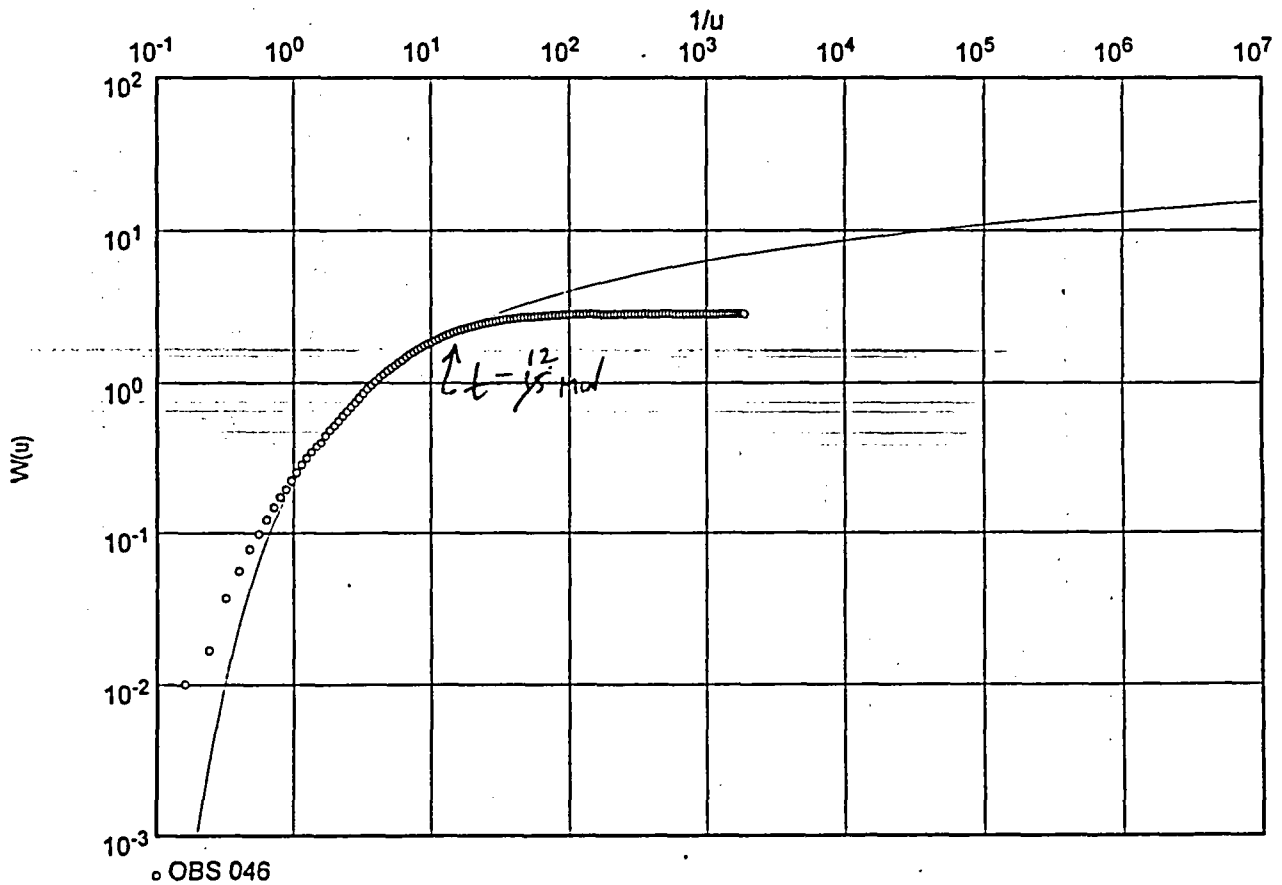
Aquifer thickness [ft]: 30.00

WELL OBS 045 / 044 AQ TEST 2



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 13.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 046, r = 40.9'	
Discharge 58.16 U.S.gal/min	



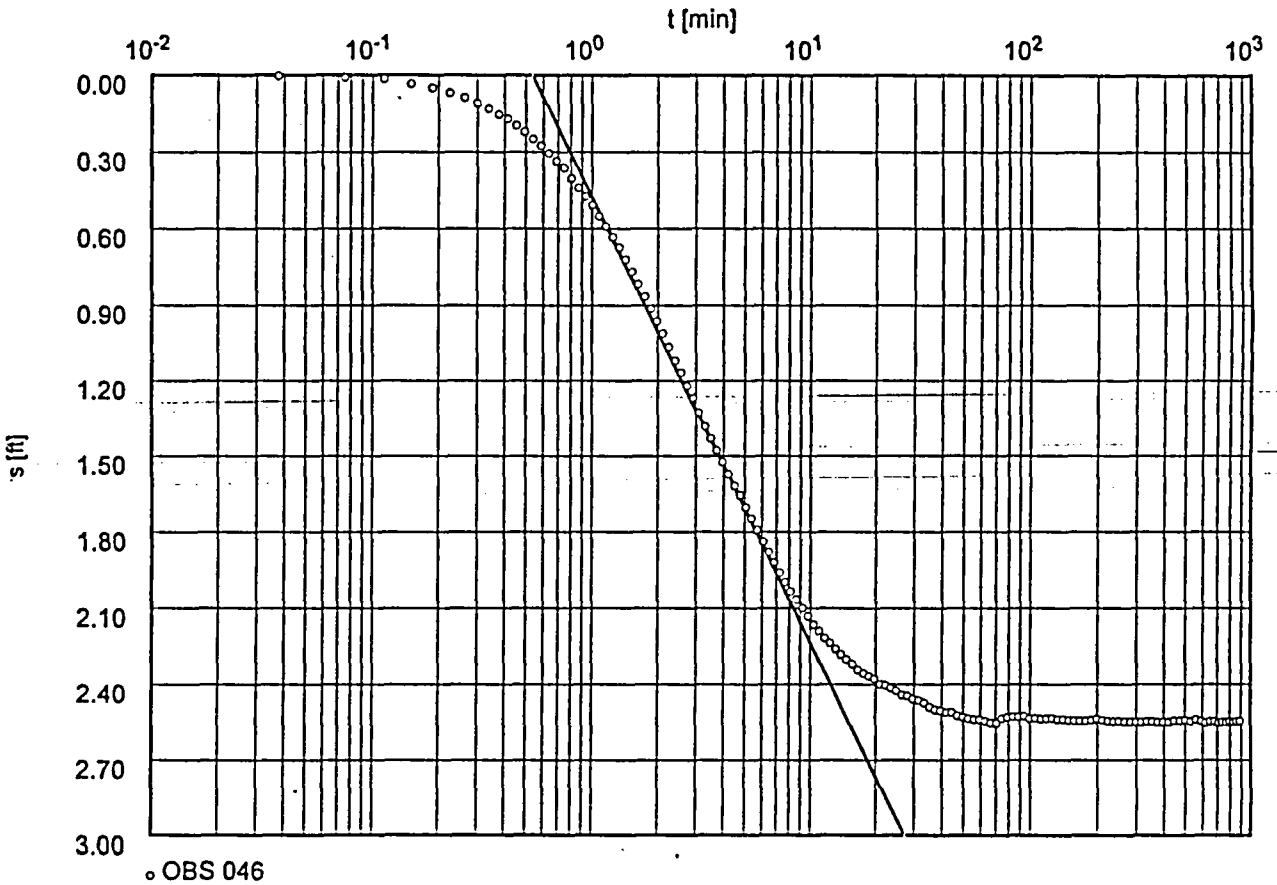
Transmissivity [ft²/min]: 6.94×10^{-1} = 999.4 ft²/D

Hydraulic conductivity [ft/min]: 2.31×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 13.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 046, r = 40.9'	
Discharge 58.16 U.S.gal/min	

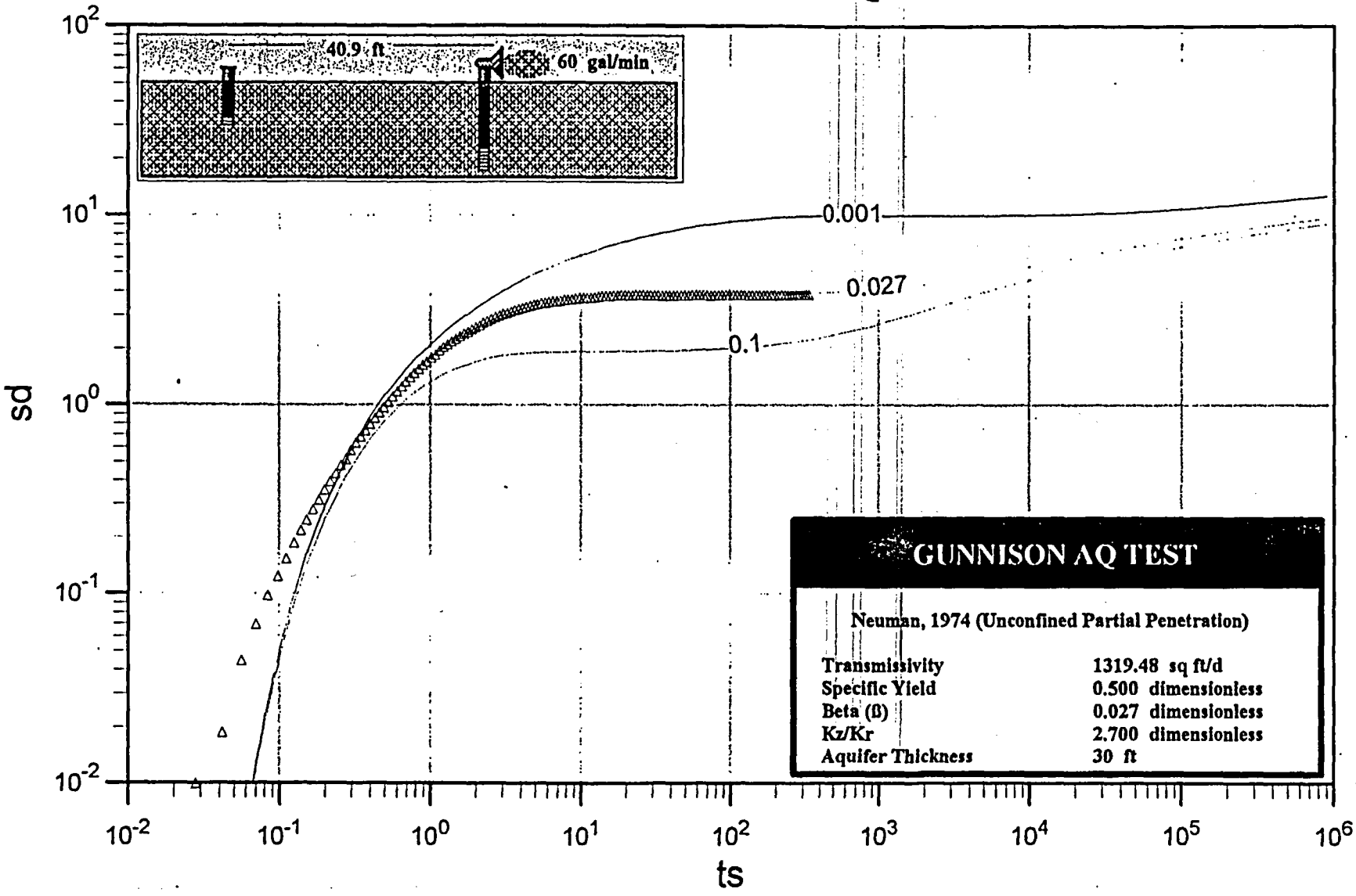


Transmissivity [ft²/min]: 8.08×10^{-1} = 1163.5 FT²/D

Hydraulic conductivity [ft/min]: 2.69×10^{-2}

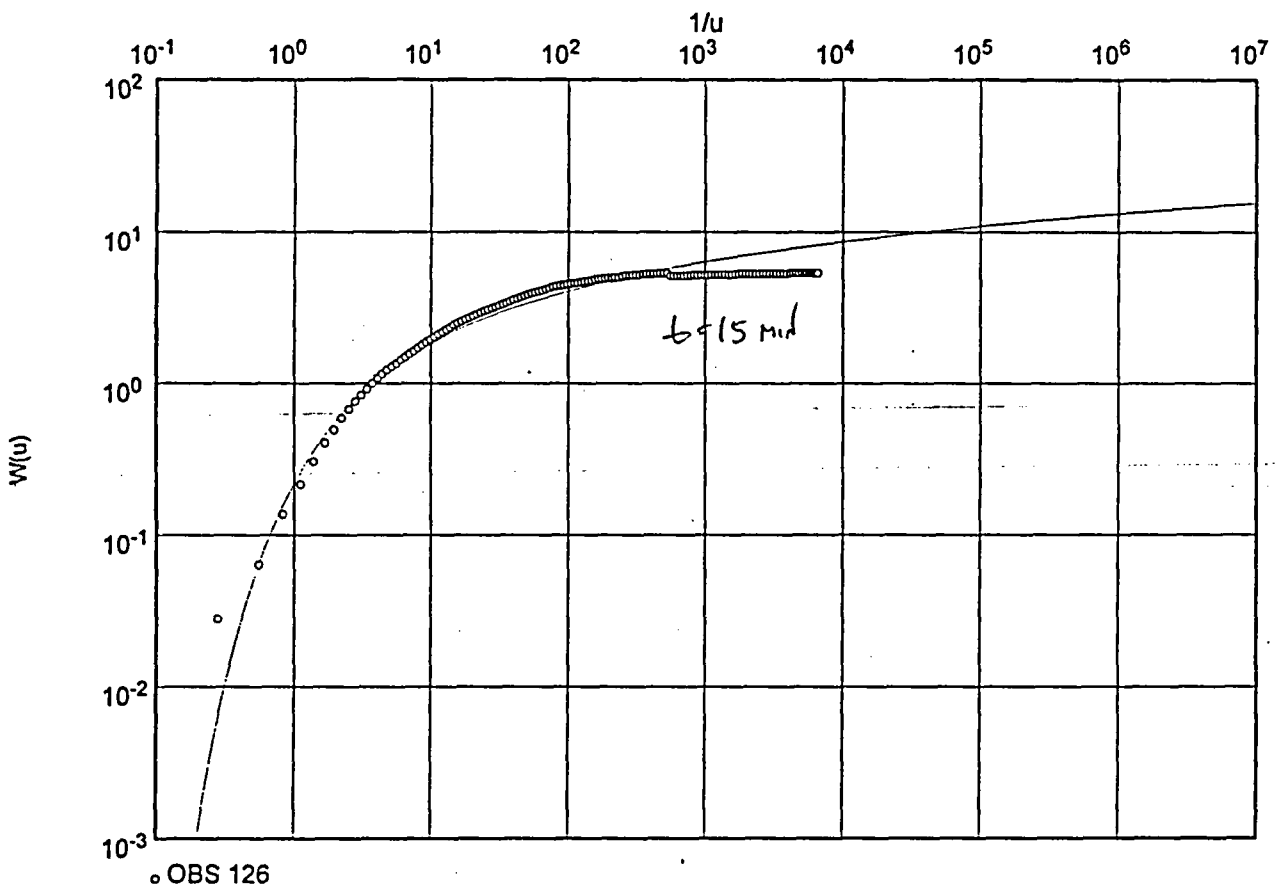
Aquifer thickness [ft]: 30.00

WELL OBS 046 / 044 AQ TEST 2



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Theis analysis method Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 29.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 126, r = 16.4', SI = 53.2' - 58.2'	
Discharge 58.15 U.S.gal/min	



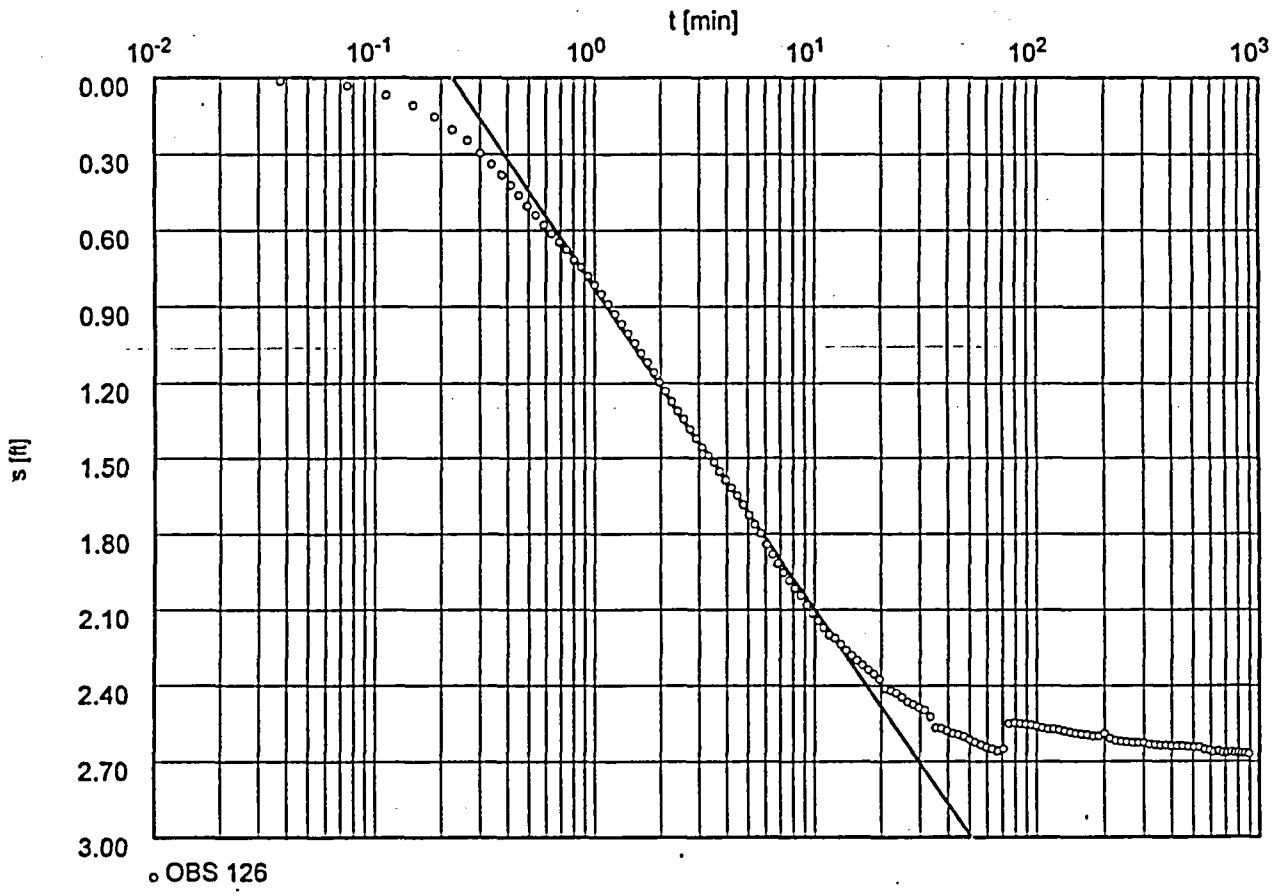
Transmissivity [ft²/min]: 1.23×10^{0} = 1771.2 ft²/d

Hydraulic conductivity [ft/min]: 4.11×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 29.12.1999

Pumping Test No. 044 AQ TEST 2, t = 15.5 hrs	Test conducted on: 12/7/99
OBS 126, r = 16.4', SI = 53.2' - 58.2'	
Discharge 58.15 U.S.gal/min	

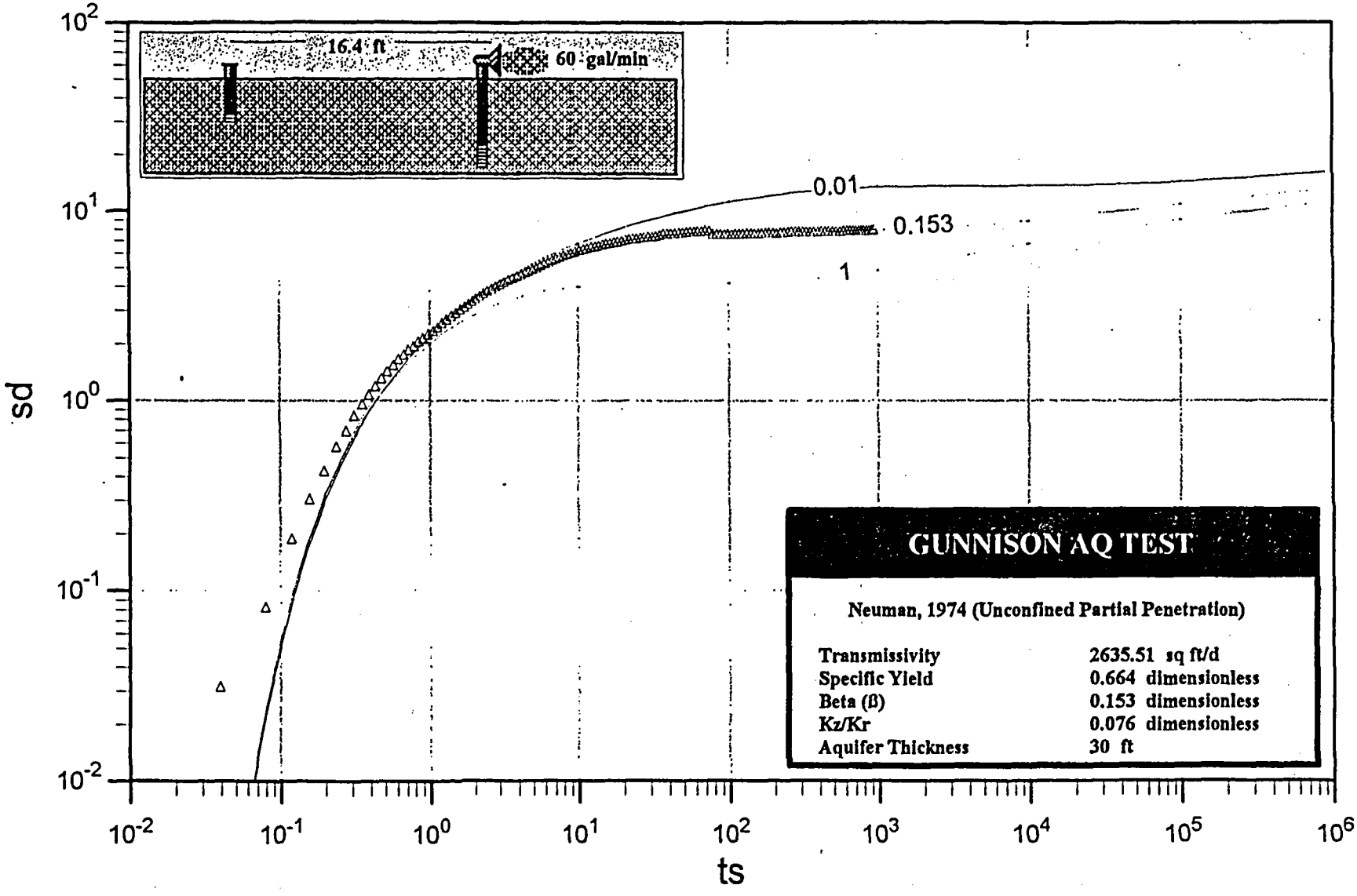


Transmissivity [ft²/min]: 1.11×10^{0} = 1593.4 ft²/D

Hydraulic conductivity [ft/min]: 3.72×10^{-2}

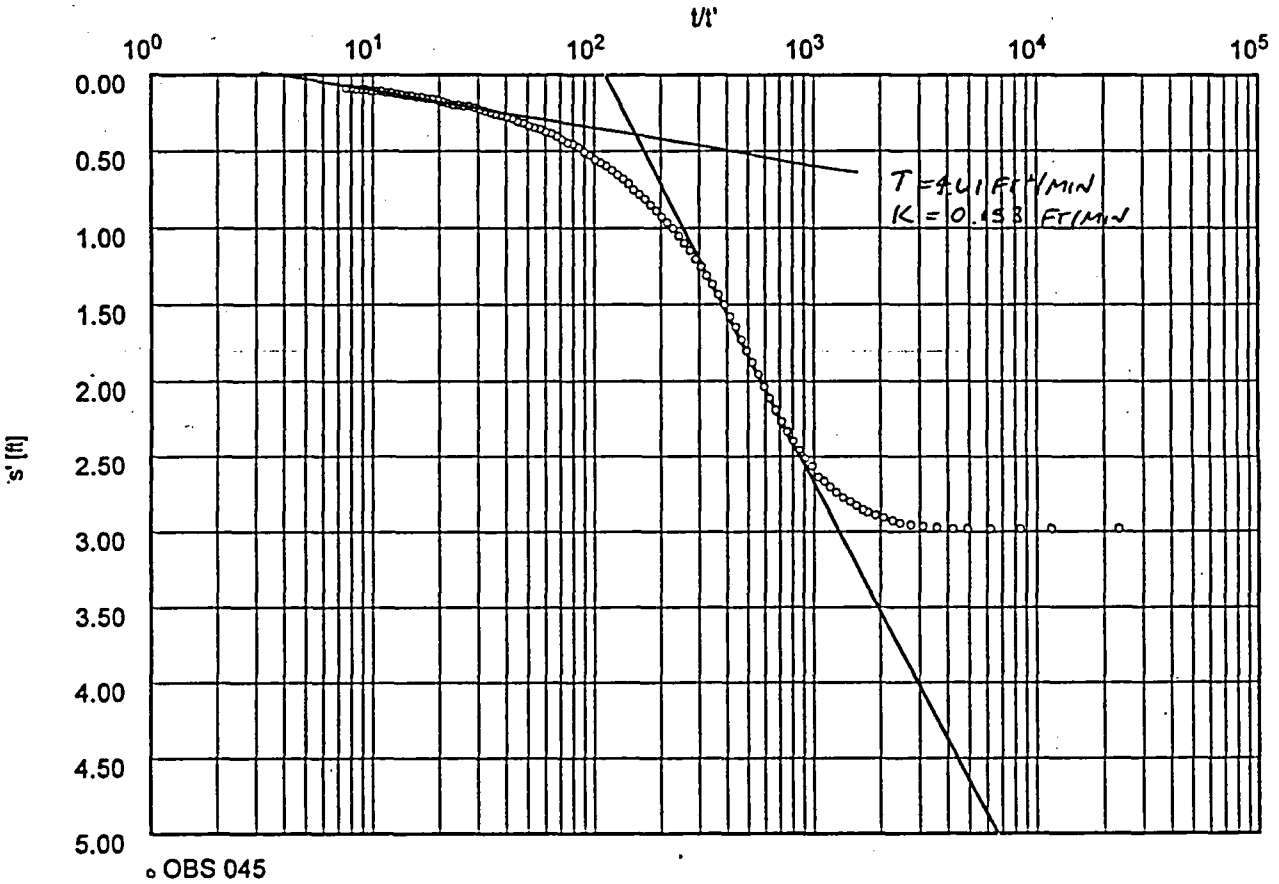
Aquifer thickness [ft]: 30.00

WELL OBS 126 / 044 AQ TEST 2



MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 13.12.1999

Pumping Test No. 044 AQ REC TEST 2	Test conducted on: 12/8/99
OBS 045, r = 56.8'	
Discharge 58.15 U.S.gal/min	
	Pumping test duration: 930.00 min



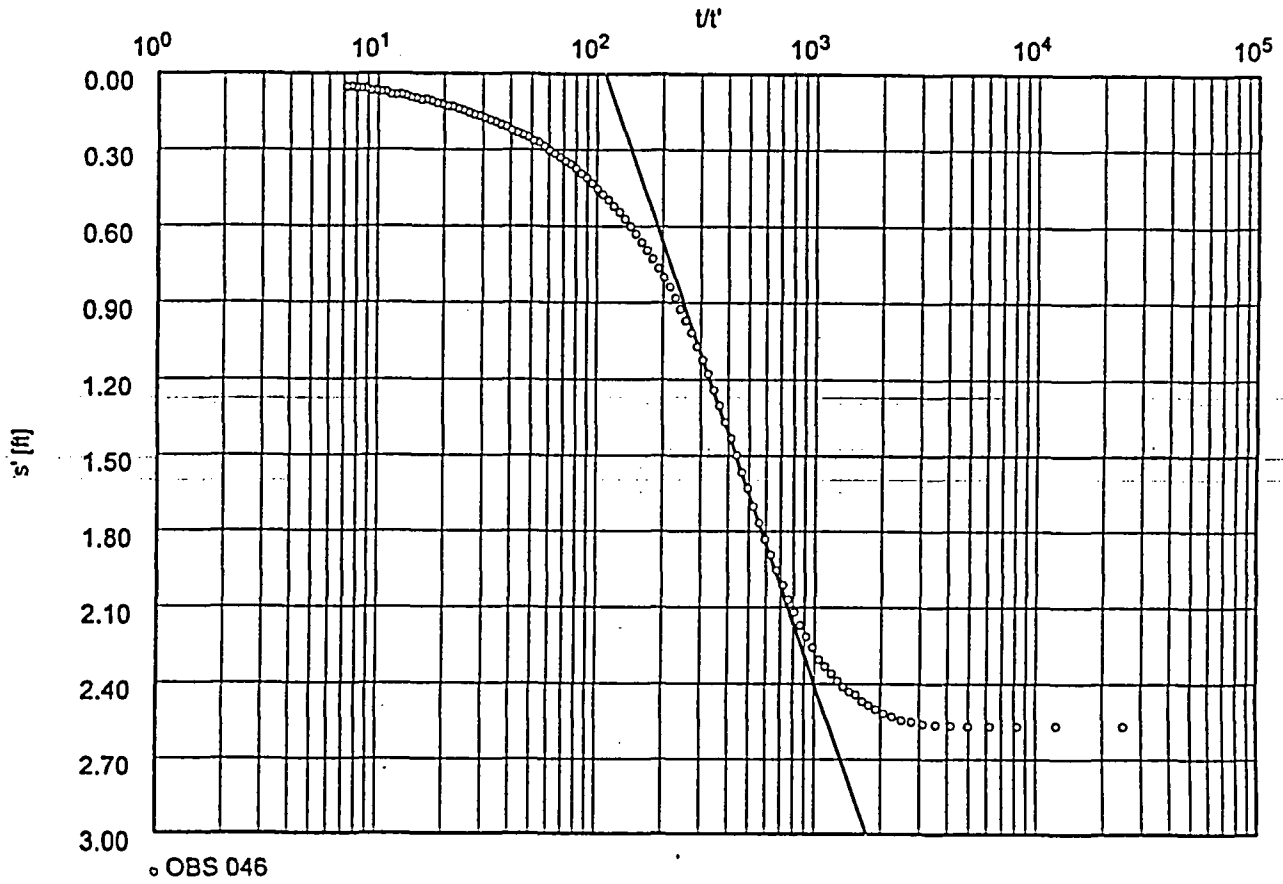
Transmissivity [ft²/min]: 5.05×10^{-1} = 727.2 ft²/d

Hydraulic conductivity [ft/min]: 1.68×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by: Date: 13.12.1999

Pumping Test No. 044 AQ REC TEST 2	Test conducted on: 12/8/99
OBS 046, r = 40.9'	
Discharge 58.15 U.S.gal/min	
	Pumping test duration: 930.00 min



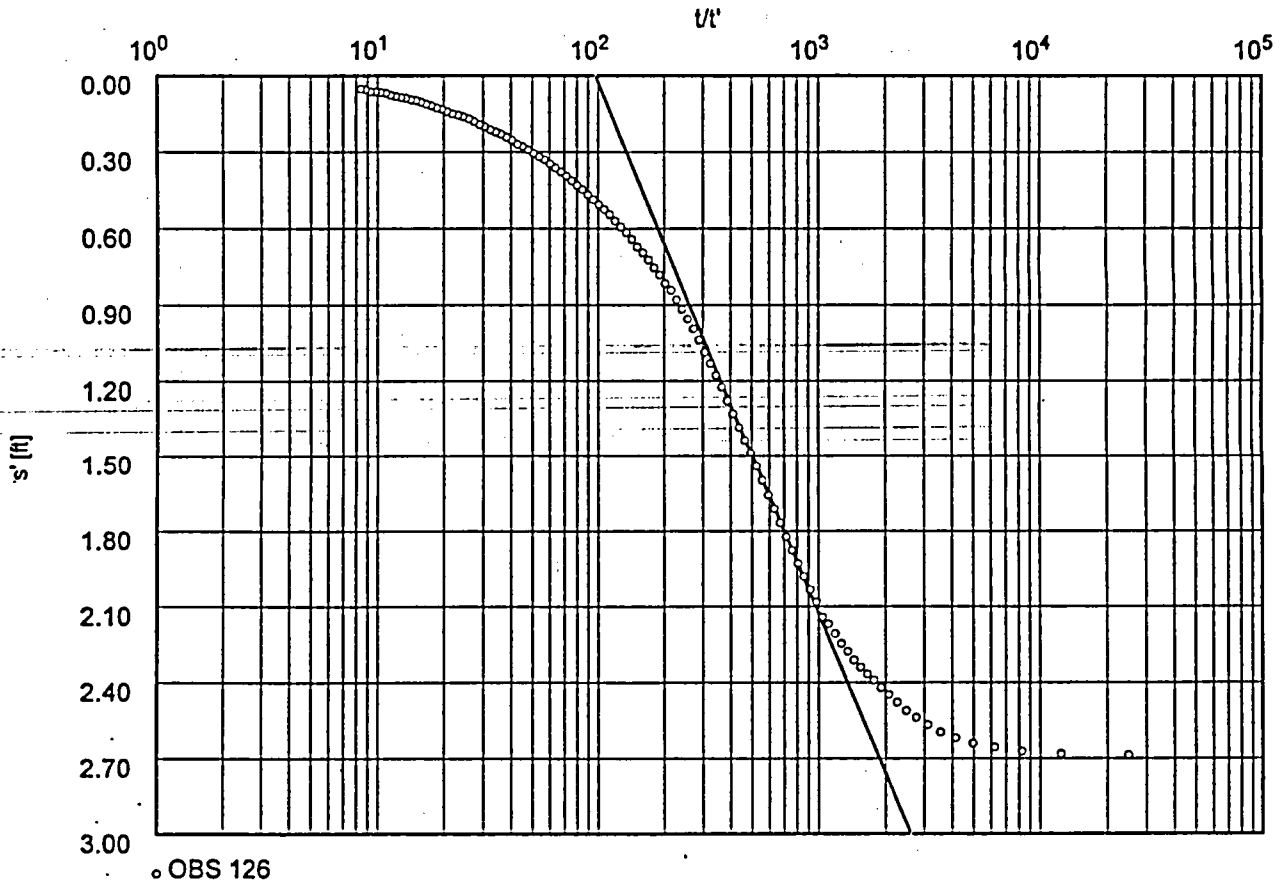
Transmissivity [ft²/min]: 5.69×10^{-1} . 819.4 ft²/D

Hydraulic conductivity [ft/min]: 1.89×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 13.12.1999

Pumping Test No. 044 AQ REC TEST 2	Test conducted on: 12/8/99
OBS 126, r = 14.6', SI = 53.2'-58.2'	
Discharge 58.15 U.S.gal/min	
	Pumping test duration: 930.00 min



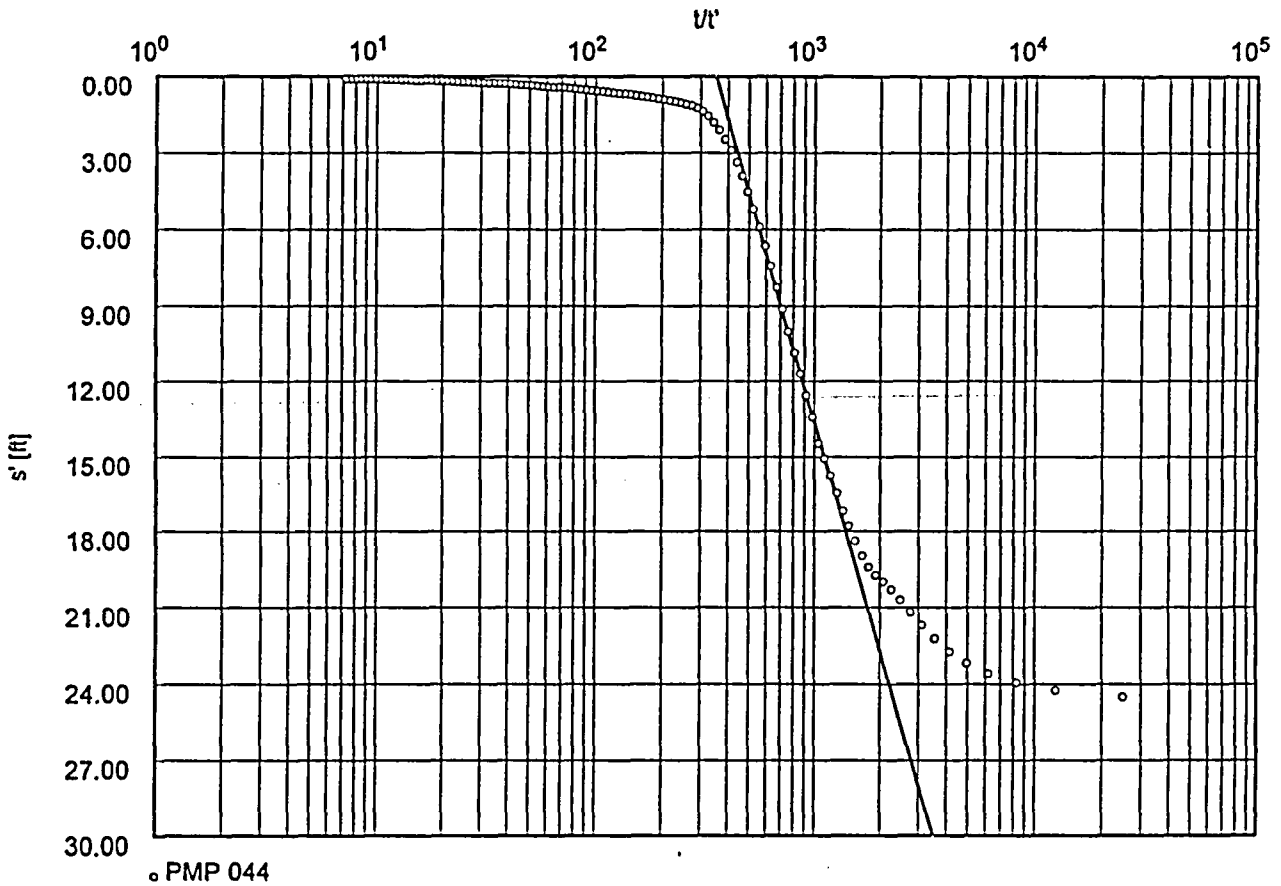
Transmissivity [ft²/min]: 6.78×10^{-1} = 976.3 ft²/D

Hydraulic conductivity [ft/min]: 2.26×10^{-2}

Aquifer thickness [ft]: 30.00

MACTEC-ERS 2597 B 3/4 RD GRAND JUNCTION, COLO ph.(970)248-6000	Pumping test analysis Recovery method after THEIS & JACOB Unconfined aquifer	Page 1 Project: GUNNISON Evaluated by:	Date: 13.12.1999

Pumping Test No. 044 AQ REC TEST 2	Test conducted on: 12/8/99
PMP 044	
Discharge 58.15 U.S.gal/min	
	Pumping test duration: 930.00 min



Transmissivity [ft²/min]: 4.72×10^{-2} = 68 ft²/D

Hydraulic conductivity [ft/min]:

Aquifer thickness [ft]:

WELL 044 AQUIFER TEST 2

DRAWDOWN DATA

GUNNISON UMTRA SITE
WELL 044 AQUIFER TEST 2 DATA
START DATE/TIME : 12/7/99, 1600
PUMPING RATE : 60/58 GPM

Q = 60 GPM	ELAPSED TIME (min)	WELL 044 DTW (ft btoc)	WELL 045 DTW (ft btoc)	WELL 046 DTW (ft btoc)	WELL 126 DTW (ft btoc)	WELL 125 DTW (ft btoc)	WELL 127 DTW (ft btoc)	INCHES Hg
	0.00	9.615	9.501	8.972	10.703	9.31	11.883	22.414
	0.04	9.684	9.503	8.972	10.714	9.31	11.883	22.414
	0.08	11.451	9.527	8.979	10.732	9.316	11.881	22.416
	0.11	12.49	9.562	8.985	10.769	9.327	11.881	22.414
	0.15	13.451	9.596	9.003	10.809	9.342	11.881	22.414
	0.19	14.355	9.628	9.02	10.853	9.359	11.881	22.414
	0.23	15.098	9.661	9.04	10.904	9.376	11.88	22.416
	0.26	15.802	9.689	9.058	10.947	9.398	11.88	22.416
	0.30	16.488	9.721	9.079	10.996	9.416	11.88	22.418
	0.34	17.205	9.75	9.101	11.04	9.438	11.88	22.416
	0.38	17.96	9.781	9.123	11.083	9.457	11.88	22.416
	0.41	18.755	9.813	9.143	11.123	9.477	11.879	22.416
	0.45	19.514	9.843	9.167	11.163	9.498	11.879	22.418
	0.49	20.161	9.876	9.191	11.206	9.52	11.879	22.418
	0.54	20.92	9.909	9.219	11.244	9.543	11.877	22.418
	0.59	21.505	9.939	9.246	11.284	9.566	11.877	22.418
	0.64	22.069	9.974	9.276	11.319	9.592	11.877	22.418
	0.69	22.52	10.008	9.307	11.353	9.616	11.877	22.418
	0.74	22.932	10.035	9.333	11.382	9.634	11.879	22.418
	0.80	23.538	10.084	9.375	11.425	9.664	11.879	22.414
	0.87	24.24	10.123	9.412	11.454	9.685	11.879	22.414
	0.93	24.786	10.165	9.447	11.491	9.707	11.879	22.412
	1.00	25.622	10.208	9.482	11.526	9.727	11.88	22.412
	1.08	26.367	10.256	9.526	11.563	9.749	11.88	22.412
	1.16	27.108	10.302	9.567	11.603	9.77	11.88	22.412
	1.24	27.774	10.354	9.609	11.644	9.793	11.881	22.412
	1.33	28.493	10.409	9.65	11.684	9.815	11.883	22.41
	1.42	29.22	10.463	9.698	11.724	9.834	11.883	22.41
	1.52	29.899	10.519	9.749	11.762	9.855	11.884	22.41
	1.63	30.556	10.574	9.799	11.802	9.872	11.886	22.41
	1.74	31.335	10.631	9.847	11.839	9.89	11.886	22.408
	1.86	31.944	10.69	9.897	11.88	9.903	11.889	22.408
	1.98	32.575	10.75	9.95	11.92	9.917	11.89	22.408
	2.11	33.263	10.81	10	11.957	9.933	11.892	22.408
	2.25	33.79	10.871	10.055	11.998	9.946	11.893	22.408
	2.40	34.403	10.931	10.11	12.035	9.962	11.897	22.406
	2.56	34.969	10.993	10.16	12.069	9.972	11.9	22.406
	2.73	35.651	11.056	10.215	12.11	9.977	11.902	22.404
	2.90	36.273	11.119	10.267	12.15	9.979	11.905	22.404
	3.09	36.843	11.183	10.328	12.19	9.979	11.908	22.404
	3.29	37.322	11.245	10.385	12.228	9.979	11.912	22.402
	3.50	37.585	11.305	10.436	12.259	9.977	11.915	22.402
	3.72	38.026	11.361	10.486	12.297	9.975	11.919	22.402
	3.96	38.496	11.419	10.536	12.331	9.973	11.924	22.404
	4.21	38.763	11.473	10.586	12.363	9.972	11.928	22.402
	4.47	39.052	11.525	10.635	12.397	9.969	11.932	22.402
	4.75	39.57	11.577	10.674	12.435	9.969	11.938	22.402
	5.05	40.036	11.631	10.724	12.478	9.967	11.944	22.402
	5.36	40.536	11.687	10.772	12.518	9.967	11.95	22.402
	5.70	41.032	11.742	10.82	12.556	9.969	11.956	22.402
	6.05	41.614	11.793	10.869	12.602	9.97	11.963	22.402
	6.42	42.165	11.843	10.912	12.645	9.972	11.969	22.406
	6.82	42.644	11.887	10.956	12.682	9.975	11.975	22.404
	7.24	43.101	11.931	11	12.72	9.976	11.983	22.402
	7.68	43.454	11.975	11.039	12.754	9.977	11.992	22.402
	8.15	43.85	12.014	11.079	12.789	9.979	11.999	22.402
	8.65	44.307	12.051	11.113	12.82	9.98	12.008	22.4

	9.18	44.815	12.09	11.148	12.86	9.982	12.015	22.4
	9.74	45.289	12.128	11.183	12.895	9.985	12.026	22.398
	10.33	45.603	12.158	11.216	12.927	9.986	12.036	22.4
	10.96	45.93	12.192	11.245	12.958	9.989	12.043	22.398
	11.63	46.223	12.221	11.275	12.987	9.99	12.053	22.4
	12.33	46.558	12.247	11.297	13.001	9.99	12.064	22.398
	13.08	46.855	12.272	11.323	13.027	9.992	12.074	22.396
	13.87	47.118	12.297	11.347	13.053	9.995	12.085	22.398
	14.70	47.294	12.32	11.367	13.076	9.996	12.096	22.398
	15.59	47.548	12.34	11.387	13.096	9.999	12.107	22.396
	16.53	47.75	12.36	11.411	13.116	9.999	12.117	22.394
	17.52	47.923	12.379	11.426	13.137	10.002	12.129	22.394
	18.58	48.224	12.396	11.439	13.154	10.005	12.138	22.392
	19.69	48.576	12.414	11.45	13.177	10.005	12.148	22.392
	20.87	48.555	12.426	11.474	13.217	10.006	12.158	22.392
	22.13	48.727	12.439	11.479	13.226	10.006	12.17	22.39
	23.45	49.041	12.452	11.49	13.237	10.009	12.182	22.39
	24.86	49.252	12.462	11.503	13.254	10.01	12.192	22.39
	26.35	49.282	12.472	11.52	13.275	10.01	12.202	22.388
	27.92	49.557	12.48	11.525	13.286	10.012	12.212	22.386
	29.59	49.66	12.488	11.538	13.3	10.013	12.221	22.386
	31.36	49.867	12.499	11.544	13.312	10.015	12.232	22.384
	33.24	50.477	12.511	11.555	13.341	10.015	12.241	22.384
	35.22	51.689	12.521	11.573	13.387	10.016	12.25	22.384
	37.32	51.504	12.531	11.584	13.39	10.016	12.262	22.382
	39.55	51.612	12.542	11.588	13.401	10.018	12.272	22.382
	41.91	51.766	12.548	11.595	13.413	10.018	12.279	22.38
	44.41	51.831	12.561	11.597	13.418	10.018	12.286	22.38
	47.05	51.99	12.571	11.61	13.427	10.019	12.297	22.382
	49.86	52.14	12.577	11.616	13.439	10.019	12.305	22.382
	52.83	52.269	12.582	11.623	13.45	10.021	12.313	22.38
	55.97	52.497	12.587	11.627	13.462	10.021	12.321	22.382
	59.30	52.536	12.592	11.627	13.473	10.019	12.329	22.384
	62.83	52.707	12.597	11.634	13.479	10.022	12.336	22.38
	66.57	52.707	12.601	11.641	13.49	10.023	12.343	22.386
	70.53	52.295	12.602	11.643	13.479	10.022	12.348	22.384
Q = 58 GPM								
	74.73	50.361	12.587	11.623	13.37	10.023	12.352	22.384
	79.17	50.597	12.579	11.616	13.367	10.023	12.352	22.382
	83.88	50.679	12.579	11.614	13.37	10.023	12.356	22.38
	88.86	50.761	12.581	11.614	13.372	10.023	12.359	22.378
	94.14	50.903	12.582	11.612	13.375	10.023	12.361	22.374
	99.74	50.907	12.585	11.623	13.381	10.021	12.365	22.37
	105.66	51.023	12.585	11.621	13.387	10.022	12.368	22.361
	111.94	51.075	12.588	11.625	13.393	10.023	12.371	22.353
	118.59	51.126	12.587	11.623	13.393	10.022	12.372	22.343
	125.63	51.208	12.587	11.621	13.398	10.023	12.375	22.337
	133.09	51.234	12.589	11.627	13.401	10.025	12.378	22.329
	140.99	51.165	12.592	11.627	13.407	10.025	12.38	22.331
	149.36	51.281	12.594	11.63	13.413	10.025	12.385	22.321
	158.23	51.307	12.594	11.632	13.416	10.025	12.385	22.319
	167.62	51.38	12.595	11.632	13.418	10.023	12.39	22.313
	177.56	51.603	12.595	11.632	13.424	10.025	12.391	22.31
	188.10	51.397	12.594	11.63	13.424	10.023	12.393	22.308
	199.26	51.083	12.589	11.625	13.413	10.022	12.393	22.302
	211.08	51.693	12.595	11.63	13.433	10.025	12.397	22.308
	223.61	51.818	12.595	11.634	13.444	10.025	12.399	22.308
	236.87	51.805	12.598	11.636	13.447	10.025	12.401	22.306
	250.92	51.87	12.598	11.634	13.45	10.026	12.401	22.304
	265.81	51.964	12.598	11.636	13.453	10.026	12.406	22.31
	281.57	51.999	12.598	11.636	13.453	10.026	12.406	22.317
	298.27	52.11	12.595	11.638	13.453	10.028	12.407	22.317
	315.96	52.097	12.594	11.638	13.462	10.029	12.41	22.315
	334.70	52.145	12.597	11.636	13.462	10.032	12.409	22.317
	354.55	52.175	12.595	11.636	13.464	10.031	12.409	22.313
	375.57	52.222	12.595	11.638	13.464	10.033	12.409	22.3

397.84	52.312	12.595	11.638	13.467	10.035	12.409	22.296
421.43	52.265	12.594	11.638	13.467	10.036	12.41	22.298
446.42	52.471	12.589	11.632	13.467	10.036	12.41	22.288
472.89	52.626	12.587	11.632	13.47	10.032	12.407	22.278
500.92	52.798	12.587	11.63	13.473	10.035	12.409	22.278
530.62	52.948	12.588	11.634	13.473	10.033	12.407	22.296
560.62	53.219	12.585	11.627	13.482	10.035	12.407	22.359
590.62	53.313	12.587	11.634	13.487	10.036	12.406	22.526
620.62	53.425	12.589	11.641	13.493	10.039	12.409	22.864
650.62	53.455	12.584	11.636	13.49	10.041	12.407	23.276
680.62	53.549	12.585	11.636	13.496	10.044	12.409	23.693
710.62	53.592	12.584	11.641	13.496	10.045	12.406	24.1
740.62	53.614	12.582	11.638	13.493	10.048	12.407	33.27
770.62	53.618	12.584	11.638	13.496	10.048	12.409	34.561
800.62	53.687	12.584	11.636	13.496	10.049	12.409	34.738
830.62	53.828	12.584	11.638	13.499	10.054	12.413	34.675
860.62	53.751	12.581	11.636	13.499	10.055	12.415	26.195
890.62	53.721	12.581	11.634	13.502	10.054	12.415	23.459
RECOVERY TEST DATA							
930.00	53.896	12.651	11.66	13.52	10.06	12.421	
930.04	52.598	12.65	11.66	13.52	10.059	12.421	
930.08	50.91	12.65	11.658	13.514	10.059	12.421	
930.11	49.336	12.65	11.66	13.503	10.061	12.42	
930.15	47.723	12.65	11.66	13.485	10.061	12.42	
930.19	46.122	12.649	11.66	13.468	10.063	12.42	
930.23	44.529	12.646	11.658	13.445	10.064	12.42	
930.26	42.922	12.641	11.653	13.419	10.066	12.42	
930.30	41.396	12.633	11.649	13.388	10.066	12.42	
930.34	40.055	12.623	11.64	13.356	10.067	12.42	
930.38	38.904	12.607	11.632	13.327	10.069	12.42	
930.41	37.954	12.588	11.618	13.29	10.069	12.421	
930.45	37.251	12.57	11.603	13.258	10.069	12.42	
930.49	36.659	12.547	11.586	13.227	10.069	12.421	
930.53	35.986	12.527	11.568	13.195	10.07	12.421	
930.56	35.057	12.505	11.551	13.169	10.07	12.421	
930.60	33.895	12.479	11.522	13.138	10.072	12.421	
930.64	32.759	12.452	11.509	13.109	10.073	12.421	
930.69	31.648	12.42	11.487	13.071	10.073	12.423	
930.74	30.433	12.385	11.463	13.037	10.07	12.423	
930.79	29.256	12.344	11.43	12.994	10.066	12.423	
930.84	28.075	12.301	11.4	12.953	10.056	12.421	
930.89	27.161	12.267	11.371	12.925	10.05	12.426	
930.95	25.55	12.187	11.319	12.859	10.031	12.426	
931.02	24.329	12.126	11.273	12.807	10.014	12.426	
931.08	23.133	12.063	11.225	12.752	9.995	12.426	
931.15	21.979	11.994	11.17	12.697	9.972	12.426	
931.23	20.891	11.924	11.115	12.64	9.949	12.426	
931.31	19.741	11.849	11.054	12.582	9.922	12.427	
931.39	18.695	11.772	10.993	12.525	9.899	12.426	
931.48	17.697	11.692	10.927	12.465	9.87	12.426	
931.57	16.759	11.608	10.862	12.407	9.843	12.426	
931.67	15.89	11.525	10.792	12.344	9.814	12.424	
931.78	15.082	11.442	10.722	12.286	9.785	12.424	
931.89	14.343	11.359	10.647	12.226	9.758	12.424	
932.01	13.678	11.276	10.58	12.168	9.731	12.421	
932.13	13.091	11.194	10.508	12.114	9.705	12.423	
932.26	12.578	11.115	10.438	12.056	9.68	12.42	
932.40	12.135	11.04	10.37	12.004	9.656	12.419	
932.55	11.756	10.971	10.302	11.95	9.634	12.416	
932.71	11.448	10.904	10.238	11.901	9.617	12.413	
932.88	11.195	10.842	10.171	11.852	9.598	12.411	
933.05	11	10.782	10.116	11.806	9.583	12.408	
933.24	10.86	10.725	10.061	11.757	9.568	12.404	
933.44	10.765	10.67	10.004	11.711	9.557	12.401	
933.65	10.699	10.618	9.956	11.671	9.547	12.397	
933.87	10.639	10.571	9.91	11.63	9.538	12.391	

934.11	10.595	10.524	9.864	11.593	9.529	12.387
934.36	10.551	10.481	9.819	11.555	9.521	12.381
934.62	10.512	10.438	9.781	11.527	9.513	12.375
934.90	10.473	10.397	9.744	11.492	9.509	12.369
935.20	10.443	10.36	9.707	11.463	9.503	12.362
935.51	10.412	10.323	9.672	11.432	9.498	12.354
935.85	10.382	10.287	9.639	11.403	9.492	12.346
936.20	10.364	10.255	9.606	11.38	9.489	12.34
936.57	10.321	10.221	9.576	11.348	9.482	12.331
936.97	10.295	10.188	9.547	11.322	9.478	12.324
937.39	10.269	10.159	9.521	11.299	9.473	12.315
937.83	10.243	10.13	9.497	11.276	9.469	12.306
938.30	10.216	10.105	9.471	11.251	9.466	12.298
938.80	10.195	10.077	9.449	11.23	9.463	12.287
939.33	10.177	10.056	9.427	11.21	9.462	12.28
939.89	10.156	10.03	9.405	11.19	9.457	12.271
940.48	10.134	10.007	9.383	11.17	9.454	12.263
941.11	10.116	9.984	9.366	11.15	9.452	12.251
941.78	10.099	9.965	9.346	11.133	9.449	12.241
942.48	10.082	9.947	9.329	11.115	9.446	12.231
943.23	10.06	9.927	9.318	11.098	9.443	12.222
944.02	10.047	9.909	9.302	11.081	9.44	12.212
944.85	10.029	9.894	9.287	11.066	9.44	12.202
945.74	10.016	9.875	9.274	11.049	9.434	12.188
946.68	10.003	9.859	9.256	11.032	9.433	12.177
947.67	9.973	9.853	9.241	11.02	9.429	12.165
948.73	9.96	9.838	9.234	11.006	9.429	12.158
949.84	9.951	9.819	9.219	10.992	9.426	12.146
951.02	9.934	9.806	9.21	10.98	9.424	12.137
952.28	9.921	9.793	9.202	10.971	9.423	12.127
953.60	9.912	9.782	9.193	10.954	9.421	12.116
955.01	9.899	9.774	9.18	10.943	9.42	12.105
956.50	9.899	9.76	9.171	10.931	9.419	12.097
958.07	9.886	9.749	9.16	10.923	9.417	12.088
959.74	9.881	9.739	9.154	10.914	9.416	12.076
961.51	9.868	9.728	9.145	10.902	9.414	12.066
963.39	9.86	9.72	9.138	10.894	9.413	12.06
965.37	9.851	9.711	9.132	10.882	9.41	12.05
967.47	9.842	9.708	9.125	10.871	9.41	12.04
969.70	9.838	9.703	9.114	10.862	9.407	12.03
972.06	9.829	9.695	9.11	10.856	9.406	12.022
974.56	9.816	9.69	9.101	10.851	9.403	12.017
977.20	9.807	9.68	9.099	10.842	9.403	12.008
980.01	9.799	9.673	9.092	10.833	9.4	11.999
982.98	9.794	9.664	9.088	10.828	9.398	11.993
986.12	9.786	9.657	9.079	10.819	9.397	11.985
989.45	9.781	9.652	9.073	10.813	9.394	11.979
992.98	9.777	9.648	9.075	10.805	9.393	11.973
996.72	9.773	9.642	9.068	10.799	9.391	11.964
1000.68	9.764	9.637	9.066	10.796	9.391	11.96
1004.88	9.755	9.631	9.059	10.79	9.39	11.955
1009.32	9.751	9.628	9.053	10.787	9.39	11.952
1014.03	9.746	9.622	9.055	10.784	9.388	11.947
1019.01	9.742	9.618	9.053	10.779	9.384	11.939
1024.29	9.738	9.612	9.042	10.77	9.38	11.934
1029.89	9.738	9.611	9.042	10.767	9.381	11.932
1035.81	9.729	9.606	9.038	10.764	9.378	11.926
1042.09	9.725	9.602	9.038	10.764	9.378	11.926
1048.74	9.725	9.598	9.029	10.756	9.377	11.919