APPENDIX C

PUMPING AND OBSERVATION
OREGON WATER WELL DRILLERS LOGS

LANE 50600

T-1

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

(START CARD) # W91804

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number 3

Name Breeden Bros.

Address 366 East 40th

City Eugene State Or Zip 97405

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger

[ ] Other

(4) PROPOSED USE:

[X] Domestic [ ] Community [ ] Industrial [ ] Irrigation

[ ] Thermal [ ] Injection [ ] Livestock [ ] Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval [ ] Yes [X] No Depth of Completed Well 220 ft.

Explosives used [ ] Yes [X] No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0	58'	Cement	0	58	18 sacks
6"	58'	220'				

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E

[ ] Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+2'	58'	.250	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
Liner:	4½"	0	220'		[ ]	[X]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]

Final location of shoe(s) 58'

(7) PERFORATIONS/SCREENS:

[X] Perforations Method SAW

[ ] Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
140	220'	1/8x2	600	4½"		[ ]	[X]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
21	145'	220'	1 hr.
Could flucuate			

Temperature of water 56 Depth Artesian Flow Found

Was a water analysis done? [ ] Yes By whom

Did any strata contain water not suitable for intended use? [ ] Too little

[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Lane Latitude Longitude

Township 18S N or S Range 4W E or W. WM.

Section 11 SW 1/4 NW 1/4

Tax Lot 304 Lot Block Subdivision

Street Address of Well (or nearest address) Off end of Timberlir Dr., Eugene, OR

(10) STATIC WATER LEVEL:

75 ft. below land surface. Date 3-19-96

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 113'

From	To	Estimated Flow Rate	SWL
113'	114'	4 gpm	75'
171'	172'	3 gpm	75'
202'	204'	14 gpm	75'

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Topsoil	0	½'	
Blue,brown,red sandstone	½'	9'	
Red claystone	9'	12'	
Gray,tan,brown sandstone	12'	51'	
Blue,green sandstone	51'	71'	
Green,red,white sandstone	71'	73'	
Blue,green sandstone	73'	165'	75'
Green,red sandstone	165'	168'	
Blue, green sandstone	168'	220'	75'

RECEIVED
APR 08 1996
WATER RESOURCES DEPT
SALEM, OREGON

Date started 3-18-96 Completed 3-19-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1617

Signed Date 3-19-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1541

Signed Date 3-19-96

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

LANE 50594 APR 0 8 1996 O-1

STATE OF OREGON WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

WATER RESOURCES DEPT. SALEM, OREGON

(START CARD) # W91798

Instructions for completing this report are on the last page of this form.

(1) OWNER: Well Number #1

Name Breeden Bros.

Address 366 East 40th

City Eugene State OR Zip 97405

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Alteration (repair/recondition) [ ] Abandonment

(3) DRILL METHOD:

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger

[ ] Other

(4) PROPOSED USE:

[X] Domestic [ ] Community [ ] Industrial [ ] Irrigation

[ ] Thermal [ ] Injection [ ] Livestock [ ] Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval [ ] Yes [X] No Depth of Completed Well 380 ft.

Explosives used [ ] Yes [X] No Type ____ Amount ____

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0	18'	Cement	0	18'	8 sacks
6"	18'	380'				

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E

[ ] Other

Backfill placed from ____ ft. to ____ ft. Material ____

Gravel placed from ____ ft. to ____ ft. Size of gravel ____

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+2'	18'	250	[X]	[ ]	[X]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]
Liner:					[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]

Final location of shoe(s) 18'

(7) PERFORATIONS/SCREENS:

[ ] Perforations Method ____

[ ] Screens Type ____ Material ____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]
						[ ]	[ ]

(8) WELL TESTS: Minimum testing time is 1 hour

[ ] Pump [ ] Bailer [X] Air [ ] Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
2½	375'	380'	1 hr.

Temperature of water 56 Depth Artesian Flow Found ____

Was a water analysis done? [ ] Yes By whom ____

Did any strata contain water not suitable for intended use? [ ] Too little

[ ] Salty [ ] Muddy [ ] Odor [ ] Colored [ ] Other ____

Depth of strata: ____

(9) LOCATION OF WELL by legal description:

County Lane Latitude ____ Longitude ____

Township 18S N or S Range 4W E or W. WM

Section 11 SW 1/4 NW 1/4

Tax Lot 304 Lot ____ Block ____ Subdivision ____

Street Address of Well (or nearest address) End of Timberline Dr., Eugene, OR

(10) STATIC WATER LEVEL:

58 ft. below land surface. Date ____

Artesian pressure ____ lb. per square inch. Date ____

(11) WATER BEARING ZONES:

Depth at which water was first found 58'

From	To	Estimated Flow Rate	SWL
58'	59'	2½ gpm	

(12) WELL LOG:

Ground Elevation ____

Material	From	To	SWL
Brown clay	0	3'	
Brown broken up sandstone	3'	12'	
Blue sandstone	12'	63'	5'
Red claystone	63'	67'	
Brown,green,blue sandstone	67'	123'	
Gray,brown,white sandstone	123'	131'	
Blue sandstone	131'	167'	
Blue, green sandsfone	167'	173'	
Gray, tan sandstone	173'	193'	
Red, green claystone	193'	221'	
Green blue claystone	221'	263'	
Red, blue,green claystone	263'	292'	
Green blue claystone	292'	380'	

Date started 3-7-96 Completed 3-8-96

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number 1617

Signed [signature] Date 3-8-96

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1541

Signed [signature] Date 3-8-9

APPENDIX D
TRANSDUCER DATA

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	9:33 AM	5/6/02 9:33 AM	108.2832	0	0
05/06/02	9:34 AM	5/6/02 9:34 AM	108.3193	1	0.036106
05/06/02	9:35 AM	5/6/02 9:35 AM	102.7228	2	5.560392
05/06/02	9:36 AM	5/6/02 9:36 AM	95.321	3	12.96221
05/06/02	9:37 AM	5/6/02 9:37 AM	90.04946	4	18.23375
05/06/02	9:38 AM	5/6/02 9:38 AM	86.14996	5	22.13325
05/06/02	9:39 AM	5/6/02 9:39 AM	83.26145	6	25.02176
05/06/02	9:40 AM	5/6/02 9:40 AM	87.81086	7	20.47235
05/06/02	9:41 AM	5/6/02 9:41 AM	94.38223	8	13.90098
05/06/02	9:42 AM	5/6/02 9:42 AM	98.75111	9	9.5321
05/06/02	9:43 AM	5/6/02 9:43 AM	101.6035	10	6.679691
05/06/02	9:44 AM	5/6/02 9:44 AM	103.5894	11	4.693837
05/06/02	9:45 AM	5/6/02 9:45 AM	104.9253	12	3.357899
05/06/02	9:46 AM	5/6/02 9:46 AM	105.828	13	2.455238
05/06/02	9:47 AM	5/6/02 9:47 AM	106.4057	14	1.877535
05/06/02	9:48 AM	5/6/02 9:48 AM	106.0446	15	2.238599
05/06/02	9:49 AM	5/6/02 9:49 AM	104.131	16	4.15224
05/06/02	9:50 AM	5/6/02 9:50 AM	103.0117	17	5.27154
05/06/02	9:51 AM	5/6/02 9:51 AM	102.3256	18	5.957562
05/06/02	9:52 AM	5/6/02 9:52 AM	101.6396	19	6.643585
05/06/02	9:53 AM	5/6/02 9:53 AM	101.423	20	6.860223
05/06/02	9:54 AM	5/6/02 9:54 AM	101.1702	21	7.112968
05/06/02	9:55 AM	5/6/02 9:55 AM	101.0619	22	7.221288
05/06/02	9:56 AM	5/6/02 9:56 AM	100.9897	23	7.293501
05/06/02	9:57 AM	5/6/02 9:57 AM	100.8814	24	7.40182
05/06/02	9:58 AM	5/6/02 9:58 AM	100.8814	25	7.40182
05/06/02	9:59 AM	5/6/02 9:59 AM	100.737	26	7.546246
05/06/02	10:00 AM	5/6/02 10:00 AM	100.737	27	7.546246
05/06/02	10:01 AM	5/6/02 10:01 AM	100.6286	28	7.654565
05/06/02	10:02 AM	5/6/02 10:02 AM	100.6648	29	7.618459
05/06/02	10:03 AM	5/6/02 10:03 AM	100.5203	30	7.762884
05/06/02	10:04 AM	5/6/02 10:04 AM	100.5564	31	7.726778
05/06/02	10:05 AM	5/6/02 10:05 AM	100.5564	32	7.726778
05/06/02	10:06 AM	5/6/02 10:06 AM	100.4842	33	7.798991
05/06/02	10:07 AM	5/6/02 10:07 AM	100.4481	34	7.835097
05/06/02	10:08 AM	5/6/02 10:08 AM	100.4842	35	7.798991
05/06/02	10:09 AM	5/6/02 10:09 AM	100.412	36	7.871204
05/06/02	10:10 AM	5/6/02 10:10 AM	100.3759	37	7.90731
05/06/02	10:11 AM	5/6/02 10:11 AM	100.3398	38	7.943417
05/06/02	10:12 AM	5/6/02 10:12 AM	100.2315	39	8.051736
05/06/02	10:13 AM	5/6/02 10:13 AM	100.0509	40	8.232268
05/06/02	10:14 AM	5/6/02 10:14 AM	100.087	41	8.196162
05/06/02	10:15 AM	5/6/02 10:15 AM	100.087	42	8.196162
05/06/02	10:16 AM	5/6/02 10:16 AM	100.1232	43	8.160055
05/06/02	10:17 AM	5/6/02 10:17 AM	100.1593	44	8.123949
05/06/02	10:18 AM	5/6/02 10:18 AM	100.1232	45	8.160055
05/06/02	10:19 AM	5/6/02 10:19 AM	100.1954	46	8.087842
05/06/02	10:20 AM	5/6/02 10:20 AM	100.1593	47	8.123949

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	10:21 AM	5/6/02 10:21 AM	100.1593	48	8.123949
05/06/02	10:22 AM	5/6/02 10:22 AM	100.1232	49	8.160055
05/06/02	10:23 AM	5/6/02 10:23 AM	100.0509	50	8.232268
05/06/02	10:24 AM	5/6/02 10:24 AM	100.0509	51	8.232268
05/06/02	10:25 AM	5/6/02 10:25 AM	99.97873	52	8.304481
05/06/02	10:26 AM	5/6/02 10:26 AM	100.087	53	8.196162
05/06/02	10:27 AM	5/6/02 10:27 AM	100.0148	54	8.268374
05/06/02	10:28 AM	5/6/02 10:28 AM	99.97873	55	8.304481
05/06/02	10:29 AM	5/6/02 10:29 AM	99.94262	56	8.340587
05/06/02	10:30 AM	5/6/02 10:30 AM	100.0148	57	8.268374
05/06/02	10:31 AM	5/6/02 10:31 AM	99.94262	58	8.340587
05/06/02	10:32 AM	5/6/02 10:32 AM	99.94262	59	8.340587
05/06/02	10:33 AM	5/6/02 10:33 AM	99.94262	60	8.340587
05/06/02	10:34 AM	5/6/02 10:34 AM	99.8343	61	8.448907
05/06/02	10:35 AM	5/6/02 10:35 AM	99.87041	62	8.4128
05/06/02	10:36 AM	5/6/02 10:36 AM	99.87041	63	8.4128
05/06/02	10:37 AM	5/6/02 10:37 AM	99.90652	64	8.376694
05/06/02	10:38 AM	5/6/02 10:38 AM	99.72598	65	8.557226
05/06/02	10:39 AM	5/6/02 10:39 AM	99.68988	66	8.593332
05/06/02	10:40 AM	5/6/02 10:40 AM	99.72598	67	8.557226
05/06/02	10:41 AM	5/6/02 10:41 AM	99.76209	68	8.52112
05/06/02	10:42 AM	5/6/02 10:42 AM	99.76209	69	8.52112
05/06/02	10:43 AM	5/6/02 10:43 AM	99.68988	70	8.593332
05/06/02	10:44 AM	5/6/02 10:44 AM	99.76209	71	8.52112
05/06/02	10:45 AM	5/6/02 10:45 AM	99.72598	72	8.557226
05/06/02	10:46 AM	5/6/02 10:46 AM	99.68988	73	8.593332
05/06/02	10:47 AM	5/6/02 10:47 AM	99.65377	74	8.629439
05/06/02	10:48 AM	5/6/02 10:48 AM	99.65377	75	8.629439
05/06/02	10:49 AM	5/6/02 10:49 AM	99.68988	76	8.593332
05/06/02	10:50 AM	5/6/02 10:50 AM	99.68988	77	8.593332
05/06/02	10:51 AM	5/6/02 10:51 AM	99.65377	78	8.629439
05/06/02	10:52 AM	5/6/02 10:52 AM	99.65377	79	8.629439
05/06/02	10:53 AM	5/6/02 10:53 AM	99.61766	80	8.665545
05/06/02	10:54 AM	5/6/02 10:54 AM	99.61766	81	8.665545
05/06/02	10:55 AM	5/6/02 10:55 AM	99.58156	82	8.701652
05/06/02	10:56 AM	5/6/02 10:56 AM	99.54545	83	8.737758
05/06/02	10:57 AM	5/6/02 10:57 AM	99.54545	84	8.737758
05/06/02	10:58 AM	5/6/02 10:58 AM	99.61766	85	8.665545
05/06/02	10:59 AM	5/6/02 10:59 AM	99.58156	86	8.701652
05/06/02	11:00 AM	5/6/02 11:00 AM	99.54545	87	8.737758
05/06/02	11:01 AM	5/6/02 11:01 AM	99.47324	88	8.809971
05/06/02	11:02 AM	5/6/02 11:02 AM	99.50934	89	8.773865
05/06/02	11:03 AM	5/6/02 11:03 AM	99.58156	90	8.701652
05/06/02	11:04 AM	5/6/02 11:04 AM	99.50934	91	8.773865
05/06/02	11:05 AM	5/6/02 11:05 AM	99.50934	92	8.773865
05/06/02	11:06 AM	5/6/02 11:06 AM	99.43713	93	8.846077
05/06/02	11:07 AM	5/6/02 11:07 AM	99.47324	94	8.809971
05/06/02	11:08 AM	5/6/02 11:08 AM	99.47324	95	8.809971
05/06/02	11:09 AM	5/6/02 11:09 AM	99.47324	96	8.809971

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	11:10 AM	5/6/02 11:10 AM	99.47324	97	8.809971
05/06/02	11:11 AM	5/6/02 11:11 AM	99.43713	98	8.846077
05/06/02	11:12 AM	5/6/02 11:12 AM	99.47324	99	8.809971
05/06/02	11:13 AM	5/6/02 11:13 AM	99.40103	100	8.882184
05/06/02	11:14 AM	5/6/02 11:14 AM	99.43713	101	8.846077
05/06/02	11:15 AM	5/6/02 11:15 AM	99.36492	102	8.91829
05/06/02	11:16 AM	5/6/02 11:16 AM	99.32881	103	8.954397
05/06/02	11:17 AM	5/6/02 11:17 AM	99.36492	104	8.91829
05/06/02	11:18 AM	5/6/02 11:18 AM	99.36492	105	8.91829
05/06/02	11:19 AM	5/6/02 11:19 AM	99.32881	106	8.954397
05/06/02	11:20 AM	5/6/02 11:20 AM	99.29271	107	8.990503
05/06/02	11:21 AM	5/6/02 11:21 AM	99.29271	108	8.990503
05/06/02	11:22 AM	5/6/02 11:22 AM	99.29271	109	8.990503
05/06/02	11:23 AM	5/6/02 11:23 AM	99.2566	110	9.02661
05/06/02	11:24 AM	5/6/02 11:24 AM	99.29271	111	8.990503
05/06/02	11:25 AM	5/6/02 11:25 AM	99.29271	112	8.990503
05/06/02	11:26 AM	5/6/02 11:26 AM	99.2566	113	9.02661
05/06/02	11:27 AM	5/6/02 11:27 AM	99.2566	114	9.02661
05/06/02	11:28 AM	5/6/02 11:28 AM	99.2566	115	9.02661
05/06/02	11:29 AM	5/6/02 11:29 AM	99.2566	116	9.02661
05/06/02	11:30 AM	5/6/02 11:30 AM	99.2566	117	9.02661
05/06/02	11:31 AM	5/6/02 11:31 AM	99.2566	118	9.02661
05/06/02	11:32 AM	5/6/02 11:32 AM	99.18439	119	9.098823
05/06/02	11:33 AM	5/6/02 11:33 AM	99.29271	120	8.990503
05/06/02	11:34 AM	5/6/02 11:34 AM	99.14828	121	9.134929
05/06/02	11:35 AM	5/6/02 11:35 AM	99.2566	122	9.02661
05/06/02	11:36 AM	5/6/02 11:36 AM	99.22049	123	9.062716
05/06/02	11:37 AM	5/6/02 11:37 AM	99.22049	124	9.062716
05/06/02	11:38 AM	5/6/02 11:38 AM	99.18439	125	9.098823
05/06/02	11:39 AM	5/6/02 11:39 AM	99.18439	126	9.098823
05/06/02	11:40 AM	5/6/02 11:40 AM	99.11217	127	9.171035
05/06/02	11:41 AM	5/6/02 11:41 AM	99.14828	128	9.134929
05/06/02	11:42 AM	5/6/02 11:42 AM	99.11217	129	9.171035
05/06/02	11:43 AM	5/6/02 11:43 AM	99.07607	130	9.207142
05/06/02	11:44 AM	5/6/02 11:44 AM	99.14828	131	9.134929
05/06/02	11:45 AM	5/6/02 11:45 AM	99.07607	132	9.207142
05/06/02	11:46 AM	5/6/02 11:46 AM	99.07607	133	9.207142
05/06/02	11:47 AM	5/6/02 11:47 AM	99.07607	134	9.207142
05/06/02	11:48 AM	5/6/02 11:48 AM	99.14828	135	9.134929
05/06/02	11:49 AM	5/6/02 11:49 AM	99.07607	136	9.207142
05/06/02	11:50 AM	5/6/02 11:50 AM	99.07607	137	9.207142
05/06/02	11:51 AM	5/6/02 11:51 AM	99.14828	138	9.134929
05/06/02	11:52 AM	5/6/02 11:52 AM	99.03996	139	9.243248
05/06/02	11:53 AM	5/6/02 11:53 AM	99.11217	140	9.171035
05/06/02	11:54 AM	5/6/02 11:54 AM	99.00385	141	9.279355
05/06/02	11:55 AM	5/6/02 11:55 AM	99.03996	142	9.243248
05/06/02	11:56 AM	5/6/02 11:56 AM	99.03996	143	9.243248
05/06/02	11:57 AM	5/6/02 11:57 AM	99.03996	144	9.243248
05/06/02	11:58 AM	5/6/02 11:58 AM	99.03996	145	9.243248

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	11:59 AM	5/6/02 11:59 AM	99.00385	146	9.279355
05/06/02	12:00 PM	5/6/02 12:00 PM	99.03996	147	9.243248
05/06/02	12:01 PM	5/6/02 12:01 PM	98.96775	148	9.315461
05/06/02	12:02 PM	5/6/02 12:02 PM	99.00385	149	9.279355
05/06/02	12:03 PM	5/6/02 12:03 PM	98.96775	150	9.315461
05/06/02	12:04 PM	5/6/02 12:04 PM	99.03996	151	9.243248
05/06/02	12:05 PM	5/6/02 12:05 PM	99.03996	152	9.243248
05/06/02	12:06 PM	5/6/02 12:06 PM	98.96775	153	9.315461
05/06/02	12:07 PM	5/6/02 12:07 PM	98.93164	154	9.351568
05/06/02	12:08 PM	5/6/02 12:08 PM	98.89554	155	9.387674
05/06/02	12:09 PM	5/6/02 12:09 PM	99.00385	156	9.279355
05/06/02	12:10 PM	5/6/02 12:10 PM	98.96775	157	9.315461
05/06/02	12:11 PM	5/6/02 12:11 PM	98.89554	158	9.387674
05/06/02	12:12 PM	5/6/02 12:12 PM	99.00385	159	9.279355
05/06/02	12:13 PM	5/6/02 12:13 PM	98.96775	160	9.315461
05/06/02	12:14 PM	5/6/02 12:14 PM	98.93164	161	9.351568
05/06/02	12:15 PM	5/6/02 12:15 PM	98.85943	162	9.42378
05/06/02	12:16 PM	5/6/02 12:16 PM	98.93164	163	9.351568
05/06/02	12:17 PM	5/6/02 12:17 PM	98.89554	164	9.387674
05/06/02	12:18 PM	5/6/02 12:18 PM	98.93164	165	9.351568
05/06/02	12:19 PM	5/6/02 12:19 PM	98.89554	166	9.387674
05/06/02	12:20 PM	5/6/02 12:20 PM	98.82332	167	9.459887
05/06/02	12:21 PM	5/6/02 12:21 PM	98.89554	168	9.387674
05/06/02	12:22 PM	5/6/02 12:22 PM	98.85943	169	9.42378
05/06/02	12:23 PM	5/6/02 12:23 PM	98.82332	170	9.459887
05/06/02	12:24 PM	5/6/02 12:24 PM	98.85943	171	9.42378
05/06/02	12:25 PM	5/6/02 12:25 PM	98.85943	172	9.42378
05/06/02	12:26 PM	5/6/02 12:26 PM	98.85943	173	9.42378
05/06/02	12:27 PM	5/6/02 12:27 PM	98.89554	174	9.387674
05/06/02	12:28 PM	5/6/02 12:28 PM	98.89554	175	9.387674
05/06/02	12:29 PM	5/6/02 12:29 PM	98.82332	176	9.459887
05/06/02	12:30 PM	5/6/02 12:30 PM	98.85943	177	9.42378
05/06/02	12:31 PM	5/6/02 12:31 PM	98.85943	178	9.42378
05/06/02	12:32 PM	5/6/02 12:32 PM	98.85943	179	9.42378
05/06/02	12:33 PM	5/6/02 12:33 PM	98.78722	180	9.495993
05/06/02	12:34 PM	5/6/02 12:34 PM	98.75111	181	9.5321
05/06/02	12:35 PM	5/6/02 12:35 PM	98.78722	182	9.495993
05/06/02	12:36 PM	5/6/02 12:36 PM	98.75111	183	9.5321
05/06/02	12:37 PM	5/6/02 12:37 PM	98.715	184	9.568206
05/06/02	12:38 PM	5/6/02 12:38 PM	98.78722	185	9.495993
05/06/02	12:39 PM	5/6/02 12:39 PM	98.78722	186	9.495993
05/06/02	12:40 PM	5/6/02 12:40 PM	98.82332	187	9.459887
05/06/02	12:41 PM	5/6/02 12:41 PM	98.715	188	9.568206
05/06/02	12:42 PM	5/6/02 12:42 PM	98.78722	189	9.495993
05/06/02	12:43 PM	5/6/02 12:43 PM	98.78722	190	9.495993
05/06/02	12:44 PM	5/6/02 12:44 PM	98.78722	191	9.495993
05/06/02	12:45 PM	5/6/02 12:45 PM	98.75111	192	9.5321
05/06/02	12:46 PM	5/6/02 12:46 PM	98.64279	193	9.640419
05/06/02	12:47 PM	5/6/02 12:47 PM	98.75111	194	9.5321

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	12:48 PM	5/6/02 12:48 PM	98.715	195	9.568206
05/06/02	12:49 PM	5/6/02 12:49 PM	98.78722	196	9.495993
05/06/02	12:50 PM	5/6/02 12:50 PM	98.6789	197	9.604313
05/06/02	12:51 PM	5/6/02 12:51 PM	98.6789	198	9.604313
05/06/02	12:52 PM	5/6/02 12:52 PM	98.75111	199	9.5321
05/06/02	12:53 PM	5/6/02 12:53 PM	98.715	200	9.568206
05/06/02	12:54 PM	5/6/02 12:54 PM	98.6789	201	9.604313
05/06/02	12:55 PM	5/6/02 12:55 PM	98.75111	202	9.5321
05/06/02	12:56 PM	5/6/02 12:56 PM	98.60668	203	9.676526
05/06/02	12:57 PM	5/6/02 12:57 PM	98.75111	204	9.5321
05/06/02	12:58 PM	5/6/02 12:58 PM	98.64279	205	9.640419
05/06/02	12:59 PM	5/6/02 12:59 PM	98.6789	206	9.604313
05/06/02	1:00 PM	5/6/02 1:00 PM	98.60668	207	9.676526
05/06/02	1:01 PM	5/6/02 1:01 PM	98.6789	208	9.604313
05/06/02	1:02 PM	5/6/02 1:02 PM	98.60668	209	9.676526
05/06/02	1:03 PM	5/6/02 1:03 PM	98.715	210	9.568206
05/06/02	1:04 PM	5/6/02 1:04 PM	98.64279	211	9.640419
05/06/02	1:05 PM	5/6/02 1:05 PM	98.60668	212	9.676526
05/06/02	1:06 PM	5/6/02 1:06 PM	98.57058	213	9.712632
05/06/02	1:07 PM	5/6/02 1:07 PM	98.64279	214	9.640419
05/06/02	1:08 PM	5/6/02 1:08 PM	98.60668	215	9.676526
05/06/02	1:09 PM	5/6/02 1:09 PM	98.64279	216	9.640419
05/06/02	1:10 PM	5/6/02 1:10 PM	98.57058	217	9.712632
05/06/02	1:11 PM	5/6/02 1:11 PM	98.60668	218	9.676526
05/06/02	1:12 PM	5/6/02 1:12 PM	98.53447	219	9.748738
05/06/02	1:13 PM	5/6/02 1:13 PM	98.57058	220	9.712632
05/06/02	1:14 PM	5/6/02 1:14 PM	98.53447	221	9.748738
05/06/02	1:15 PM	5/6/02 1:15 PM	98.57058	222	9.712632
05/06/02	1:16 PM	5/6/02 1:16 PM	98.53447	223	9.748738
05/06/02	1:17 PM	5/6/02 1:17 PM	98.60668	224	9.676526
05/06/02	1:18 PM	5/6/02 1:18 PM	98.64279	225	9.640419
05/06/02	1:19 PM	5/6/02 1:19 PM	98.57058	226	9.712632
05/06/02	1:20 PM	5/6/02 1:20 PM	98.49836	227	9.784845
05/06/02	1:21 PM	5/6/02 1:21 PM	98.60668	228	9.676526
05/06/02	1:22 PM	5/6/02 1:22 PM	98.49836	229	9.784845
05/06/02	1:23 PM	5/6/02 1:23 PM	98.53447	230	9.748738
05/06/02	1:24 PM	5/6/02 1:24 PM	98.49836	231	9.784845
05/06/02	1:25 PM	5/6/02 1:25 PM	98.57058	232	9.712632
05/06/02	1:26 PM	5/6/02 1:26 PM	98.46226	233	9.820951
05/06/02	1:27 PM	5/6/02 1:27 PM	98.57058	234	9.712632
05/06/02	1:28 PM	5/6/02 1:28 PM	98.46226	235	9.820951
05/06/02	1:29 PM	5/6/02 1:29 PM	98.57058	236	9.712632
05/06/02	1:30 PM	5/6/02 1:30 PM	98.46226	237	9.820951
05/06/02	1:31 PM	5/6/02 1:31 PM	98.46226	238	9.820951
05/06/02	1:32 PM	5/6/02 1:32 PM	98.53447	239	9.748738
05/06/02	1:33 PM	5/6/02 1:33 PM	98.53447	240	9.748738
05/06/02	1:34 PM	5/6/02 1:34 PM	98.42615	241	9.857058
05/06/02	1:35 PM	5/6/02 1:35 PM	98.49836	242	9.784845
05/06/02	1:36 PM	5/6/02 1:36 PM	98.49836	243	9.784845

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	1:37 PM	5/6/02 1:37 PM	98.46226	244	9.820951
05/06/02	1:38 PM	5/6/02 1:38 PM	98.42615	245	9.857058
05/06/02	1:39 PM	5/6/02 1:39 PM	98.42615	246	9.857058
05/06/02	1:40 PM	5/6/02 1:40 PM	98.39005	247	9.893164
05/06/02	1:41 PM	5/6/02 1:41 PM	98.49836	248	9.784845
05/06/02	1:42 PM	5/6/02 1:42 PM	98.39005	249	9.893164
05/06/02	1:43 PM	5/6/02 1:43 PM	98.39005	250	9.893164
05/06/02	1:44 PM	5/6/02 1:44 PM	98.46226	251	9.820951
05/06/02	1:45 PM	5/6/02 1:45 PM	98.49836	252	9.784845
05/06/02	1:46 PM	5/6/02 1:46 PM	98.42615	253	9.857058
05/06/02	1:47 PM	5/6/02 1:47 PM	98.42615	254	9.857058
05/06/02	1:48 PM	5/6/02 1:48 PM	98.46226	255	9.820951
05/06/02	1:49 PM	5/6/02 1:49 PM	98.39005	256	9.893164
05/06/02	1:50 PM	5/6/02 1:50 PM	98.42615	257	9.857058
05/06/02	1:51 PM	5/6/02 1:51 PM	98.31783	258	9.965377
05/06/02	1:52 PM	5/6/02 1:52 PM	98.28173	259	10.00148
05/06/02	1:53 PM	5/6/02 1:53 PM	98.31783	260	9.965377
05/06/02	1:54 PM	5/6/02 1:54 PM	98.39005	261	9.893164
05/06/02	1:55 PM	5/6/02 1:55 PM	98.42615	262	9.857058
05/06/02	1:56 PM	5/6/02 1:56 PM	98.31783	263	9.965377
05/06/02	1:57 PM	5/6/02 1:57 PM	98.28173	264	10.00148
05/06/02	1:58 PM	5/6/02 1:58 PM	98.42615	265	9.857058
05/06/02	1:59 PM	5/6/02 1:59 PM	98.35394	266	9.929271
05/06/02	2:00 PM	5/6/02 2:00 PM	98.35394	267	9.929271
05/06/02	2:01 PM	5/6/02 2:01 PM	98.39005	268	9.893164
05/06/02	2:02 PM	5/6/02 2:02 PM	98.35394	269	9.929271
05/06/02	2:03 PM	5/6/02 2:03 PM	98.39005	270	9.893164
05/06/02	2:04 PM	5/6/02 2:04 PM	98.28173	271	10.00148
05/06/02	2:05 PM	5/6/02 2:05 PM	98.31783	272	9.965377
05/06/02	2:06 PM	5/6/02 2:06 PM	98.35394	273	9.929271
05/06/02	2:07 PM	5/6/02 2:07 PM	98.39005	274	9.893164
05/06/02	2:08 PM	5/6/02 2:08 PM	98.39005	275	9.893164
05/06/02	2:09 PM	5/6/02 2:09 PM	98.35394	276	9.929271
05/06/02	2:10 PM	5/6/02 2:10 PM	98.35394	277	9.929271
05/06/02	2:11 PM	5/6/02 2:11 PM	98.31783	278	9.965377
05/06/02	2:12 PM	5/6/02 2:12 PM	98.28173	279	10.00148
05/06/02	2:13 PM	5/6/02 2:13 PM	98.35394	280	9.929271
05/06/02	2:14 PM	5/6/02 2:14 PM	98.24562	281	10.03759
05/06/02	2:15 PM	5/6/02 2:15 PM	98.28173	282	10.00148
05/06/02	2:16 PM	5/6/02 2:16 PM	98.28173	283	10.00148
05/06/02	2:17 PM	5/6/02 2:17 PM	98.31783	284	9.965377
05/06/02	2:18 PM	5/6/02 2:18 PM	98.28173	285	10.00148
05/06/02	2:19 PM	5/6/02 2:19 PM	98.31783	286	9.965377
05/06/02	2:20 PM	5/6/02 2:20 PM	98.28173	287	10.00148
05/06/02	2:21 PM	5/6/02 2:21 PM	98.20951	288	10.0737
05/06/02	2:22 PM	5/6/02 2:22 PM	98.31783	289	9.965377
05/06/02	2:23 PM	5/6/02 2:23 PM	98.28173	290	10.00148
05/06/02	2:24 PM	5/6/02 2:24 PM	98.24562	291	10.03759
05/06/02	2:25 PM	5/6/02 2:25 PM	98.24562	292	10.03759

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	2:26 PM	5/6/02 2:26 PM	98.31783	293	9.965377
05/06/02	2:27 PM	5/6/02 2:27 PM	98.24562	294	10.03759
05/06/02	2:28 PM	5/6/02 2:28 PM	98.28173	295	10.00148
05/06/02	2:29 PM	5/6/02 2:29 PM	98.28173	296	10.00148
05/06/02	2:30 PM	5/6/02 2:30 PM	98.20951	297	10.0737
05/06/02	2:31 PM	5/6/02 2:31 PM	98.20951	298	10.0737
05/06/02	2:32 PM	5/6/02 2:32 PM	98.20951	299	10.0737
05/06/02	2:33 PM	5/6/02 2:33 PM	98.17341	300	10.1098
05/06/02	2:34 PM	5/6/02 2:34 PM	98.24562	301	10.03759
05/06/02	2:35 PM	5/6/02 2:35 PM	98.17341	302	10.1098
05/06/02	2:36 PM	5/6/02 2:36 PM	98.20951	303	10.0737
05/06/02	2:37 PM	5/6/02 2:37 PM	98.24562	304	10.03759
05/06/02	2:38 PM	5/6/02 2:38 PM	98.24562	305	10.03759
05/06/02	2:39 PM	5/6/02 2:39 PM	98.24562	306	10.03759
05/06/02	2:40 PM	5/6/02 2:40 PM	98.24562	307	10.03759
05/06/02	2:41 PM	5/6/02 2:41 PM	98.1373	308	10.14591
05/06/02	2:42 PM	5/6/02 2:42 PM	98.17341	309	10.1098
05/06/02	2:43 PM	5/6/02 2:43 PM	98.1373	310	10.14591
05/06/02	2:44 PM	5/6/02 2:44 PM	98.1373	311	10.14591
05/06/02	2:45 PM	5/6/02 2:45 PM	97.99287	312	10.29034
05/06/02	2:46 PM	5/6/02 2:46 PM	96.94579	313	11.33742
05/06/02	2:47 PM	5/6/02 2:47 PM	97.30685	314	10.97636
05/06/02	2:48 PM	5/6/02 2:48 PM	97.5596	315	10.72361
05/06/02	2:49 PM	5/6/02 2:49 PM	97.74013	316	10.54308
05/06/02	2:50 PM	5/6/02 2:50 PM	97.81234	317	10.47087
05/06/02	2:51 PM	5/6/02 2:51 PM	97.88456	318	10.39865
05/06/02	2:52 PM	5/6/02 2:52 PM	97.99287	319	10.29034
05/06/02	2:53 PM	5/6/02 2:53 PM	97.99287	320	10.29034
05/06/02	2:54 PM	5/6/02 2:54 PM	98.1373	321	10.14591
05/06/02	2:55 PM	5/6/02 2:55 PM	98.10119	322	10.18202
05/06/02	2:56 PM	5/6/02 2:56 PM	98.10119	323	10.18202
05/06/02	2:57 PM	5/6/02 2:57 PM	98.06509	324	10.21812
05/06/02	2:58 PM	5/6/02 2:58 PM	98.02898	325	10.25423
05/06/02	2:59 PM	5/6/02 2:59 PM	98.10119	326	10.18202
05/06/02	3:00 PM	5/6/02 3:00 PM	98.1373	327	10.14591
05/06/02	3:01 PM	5/6/02 3:01 PM	98.02898	328	10.25423
05/06/02	3:02 PM	5/6/02 3:02 PM	97.12632	329	11.15689
05/06/02	3:03 PM	5/6/02 3:03 PM	96.69304	330	11.59017
05/06/02	3:04 PM	5/6/02 3:04 PM	97.09021	331	11.193
05/06/02	3:05 PM	5/6/02 3:05 PM	97.37907	332	10.90414
05/06/02	3:06 PM	5/6/02 3:06 PM	97.63181	333	10.6514
05/06/02	3:07 PM	5/6/02 3:07 PM	97.70402	334	10.57919
05/06/02	3:08 PM	5/6/02 3:08 PM	97.88456	335	10.39865
05/06/02	3:09 PM	5/6/02 3:09 PM	97.84845	336	10.43476
05/06/02	3:10 PM	5/6/02 3:10 PM	97.95677	337	10.32644
05/06/02	3:11 PM	5/6/02 3:11 PM	97.99287	338	10.29034
05/06/02	3:12 PM	5/6/02 3:12 PM	97.99287	339	10.29034
05/06/02	3:13 PM	5/6/02 3:13 PM	97.99287	340	10.29034
05/06/02	3:14 PM	5/6/02 3:14 PM	97.95677	341	10.32644

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	3:15 PM	5/6/02 3:15 PM	97.99287	342	10.29034
05/06/02	3:16 PM	5/6/02 3:16 PM	97.99287	343	10.29034
05/06/02	3:17 PM	5/6/02 3:17 PM	97.95677	344	10.32644
05/06/02	3:18 PM	5/6/02 3:18 PM	97.92066	345	10.36255
05/06/02	3:19 PM	5/6/02 3:19 PM	97.95677	346	10.32644
05/06/02	3:20 PM	5/6/02 3:20 PM	98.02898	347	10.25423
05/06/02	3:21 PM	5/6/02 3:21 PM	97.95677	348	10.32644
05/06/02	3:22 PM	5/6/02 3:22 PM	97.99287	349	10.29034
05/06/02	3:23 PM	5/6/02 3:23 PM	97.99287	350	10.29034
05/06/02	3:24 PM	5/6/02 3:24 PM	97.99287	351	10.29034
05/06/02	3:25 PM	5/6/02 3:25 PM	98.02898	352	10.25423
05/06/02	3:26 PM	5/6/02 3:26 PM	97.95677	353	10.32644
05/06/02	3:27 PM	5/6/02 3:27 PM	97.92066	354	10.36255
05/06/02	3:28 PM	5/6/02 3:28 PM	97.88456	355	10.39865
05/06/02	3:29 PM	5/6/02 3:29 PM	98.02898	356	10.25423
05/06/02	3:30 PM	5/6/02 3:30 PM	98.02898	357	10.25423
05/06/02	3:31 PM	5/6/02 3:31 PM	97.95677	358	10.32644
05/06/02	3:32 PM	5/6/02 3:32 PM	97.99287	359	10.29034
05/06/02	3:33 PM	5/6/02 3:33 PM	97.95677	360	10.32644
05/06/02	3:34 PM	5/6/02 3:34 PM	97.95677	361	10.32644
05/06/02	3:35 PM	5/6/02 3:35 PM	97.95677	362	10.32644
05/06/02	3:36 PM	5/6/02 3:36 PM	97.92066	363	10.36255
05/06/02	3:37 PM	5/6/02 3:37 PM	97.99287	364	10.29034
05/06/02	3:38 PM	5/6/02 3:38 PM	97.92066	365	10.36255
05/06/02	3:39 PM	5/6/02 3:39 PM	97.99287	366	10.29034
05/06/02	3:40 PM	5/6/02 3:40 PM	97.92066	367	10.36255
05/06/02	3:41 PM	5/6/02 3:41 PM	97.95677	368	10.32644
05/06/02	3:42 PM	5/6/02 3:42 PM	97.92066	369	10.36255
05/06/02	3:43 PM	5/6/02 3:43 PM	97.92066	370	10.36255
05/06/02	3:44 PM	5/6/02 3:44 PM	97.88456	371	10.39865
05/06/02	3:45 PM	5/6/02 3:45 PM	97.95677	372	10.32644
05/06/02	3:46 PM	5/6/02 3:46 PM	97.88456	373	10.39865
05/06/02	3:47 PM	5/6/02 3:47 PM	97.92066	374	10.36255
05/06/02	3:48 PM	5/6/02 3:48 PM	97.95677	375	10.32644
05/06/02	3:49 PM	5/6/02 3:49 PM	97.88456	376	10.39865
05/06/02	3:50 PM	5/6/02 3:50 PM	97.95677	377	10.32644
05/06/02	3:51 PM	5/6/02 3:51 PM	97.92066	378	10.36255
05/06/02	3:52 PM	5/6/02 3:52 PM	97.88456	379	10.39865
05/06/02	3:53 PM	5/6/02 3:53 PM	97.92066	380	10.36255
05/06/02	3:54 PM	5/6/02 3:54 PM	97.92066	381	10.36255
05/06/02	3:55 PM	5/6/02 3:55 PM	97.88456	382	10.39865
05/06/02	3:56 PM	5/6/02 3:56 PM	97.95677	383	10.32644
05/06/02	3:57 PM	5/6/02 3:57 PM	97.88456	384	10.39865
05/06/02	3:58 PM	5/6/02 3:58 PM	97.88456	385	10.39865
05/06/02	3:59 PM	5/6/02 3:59 PM	97.95677	386	10.32644
05/06/02	4:00 PM	5/6/02 4:00 PM	97.95677	387	10.32644
05/06/02	4:01 PM	5/6/02 4:01 PM	97.84845	388	10.43476
05/06/02	4:02 PM	5/6/02 4:02 PM	97.92066	389	10.36255
05/06/02	4:03 PM	5/6/02 4:03 PM	97.84845	390	10.43476

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	4:04 PM	5/6/02 4:04 PM	97.95677	391	10.32644
05/06/02	4:05 PM	5/6/02 4:05 PM	97.84845	392	10.43476
05/06/02	4:06 PM	5/6/02 4:06 PM	97.92066	393	10.36255
05/06/02	4:07 PM	5/6/02 4:07 PM	97.88456	394	10.39865
05/06/02	4:08 PM	5/6/02 4:08 PM	97.92066	395	10.36255
05/06/02	4:09 PM	5/6/02 4:09 PM	97.88456	396	10.39865
05/06/02	4:10 PM	5/6/02 4:10 PM	97.88456	397	10.39865
05/06/02	4:11 PM	5/6/02 4:11 PM	97.84845	398	10.43476
05/06/02	4:12 PM	5/6/02 4:12 PM	97.84845	399	10.43476
05/06/02	4:13 PM	5/6/02 4:13 PM	97.92066	400	10.36255
05/06/02	4:14 PM	5/6/02 4:14 PM	97.84845	401	10.43476
05/06/02	4:15 PM	5/6/02 4:15 PM	97.77624	402	10.50697
05/06/02	4:16 PM	5/6/02 4:16 PM	97.88456	403	10.39865
05/06/02	4:17 PM	5/6/02 4:17 PM	97.88456	404	10.39865
05/06/02	4:18 PM	5/6/02 4:18 PM	97.81234	405	10.47087
05/06/02	4:19 PM	5/6/02 4:19 PM	97.81234	406	10.47087
05/06/02	4:20 PM	5/6/02 4:20 PM	97.88456	407	10.39865
05/06/02	4:21 PM	5/6/02 4:21 PM	97.84845	408	10.43476
05/06/02	4:22 PM	5/6/02 4:22 PM	97.84845	409	10.43476
05/06/02	4:23 PM	5/6/02 4:23 PM	97.84845	410	10.43476
05/06/02	4:24 PM	5/6/02 4:24 PM	97.74013	411	10.54308
05/06/02	4:25 PM	5/6/02 4:25 PM	97.77624	412	10.50697
05/06/02	4:26 PM	5/6/02 4:26 PM	97.74013	413	10.54308
05/06/02	4:27 PM	5/6/02 4:27 PM	97.77624	414	10.50697
05/06/02	4:28 PM	5/6/02 4:28 PM	97.81234	415	10.47087
05/06/02	4:29 PM	5/6/02 4:29 PM	97.77624	416	10.50697
05/06/02	4:30 PM	5/6/02 4:30 PM	97.74013	417	10.54308
05/06/02	4:31 PM	5/6/02 4:31 PM	97.81234	418	10.47087
05/06/02	4:32 PM	5/6/02 4:32 PM	97.77624	419	10.50697
05/06/02	4:33 PM	5/6/02 4:33 PM	97.77624	420	10.50697
05/06/02	4:34 PM	5/6/02 4:34 PM	96.29587	421	11.98734
05/06/02	4:35 PM	5/6/02 4:35 PM	96.65694	422	11.62627
05/06/02	4:36 PM	5/6/02 4:36 PM	96.98189	423	11.30132
05/06/02	4:37 PM	5/6/02 4:37 PM	97.19853	424	11.08468
05/06/02	4:38 PM	5/6/02 4:38 PM	97.37907	425	10.90414
05/06/02	4:39 PM	5/6/02 4:39 PM	96.87357	426	11.40963
05/06/02	4:40 PM	5/6/02 4:40 PM	96.80136	427	11.48185
05/06/02	4:41 PM	5/6/02 4:41 PM	96.62083	428	11.66238
05/06/02	4:42 PM	5/6/02 4:42 PM	96.94579	429	11.33742
05/06/02	4:43 PM	5/6/02 4:43 PM	97.16243	430	11.12078
05/06/02	4:44 PM	5/6/02 4:44 PM	97.30685	431	10.97636
05/06/02	4:45 PM	5/6/02 4:45 PM	97.41517	432	10.86804
05/06/02	4:46 PM	5/6/02 4:46 PM	97.52349	433	10.75972
05/06/02	4:47 PM	5/6/02 4:47 PM	97.48738	434	10.79583
05/06/02	4:48 PM	5/6/02 4:48 PM	97.5596	435	10.72361
05/06/02	4:49 PM	5/6/02 4:49 PM	96.90968	436	11.37353
05/06/02	4:50 PM	5/6/02 4:50 PM	97.09021	437	11.193
05/06/02	4:51 PM	5/6/02 4:51 PM	97.27075	438	11.01246
05/06/02	4:52 PM	5/6/02 4:52 PM	97.37907	439	10.90414

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	4:53 PM	5/6/02 4:53 PM	96.69304	440	11.59017
05/06/02	4:54 PM	5/6/02 4:54 PM	95.53764	441	12.74557
05/06/02	4:55 PM	5/6/02 4:55 PM	95.64596	442	12.63725
05/06/02	4:56 PM	5/6/02 4:56 PM	96.22366	443	12.05955
05/06/02	4:57 PM	5/6/02 4:57 PM	96.72915	444	11.55406
05/06/02	4:58 PM	5/6/02 4:58 PM	96.98189	445	11.30132
05/06/02	4:59 PM	5/6/02 4:59 PM	97.16243	446	11.12078
05/06/02	5:00 PM	5/6/02 5:00 PM	96.58472	447	11.69849
05/06/02	5:01 PM	5/6/02 5:01 PM	95.57374	448	12.70947
05/06/02	5:02 PM	5/6/02 5:02 PM	95.28489	449	12.99832
05/06/02	5:03 PM	5/6/02 5:03 PM	96.04313	450	12.24008
05/06/02	5:04 PM	5/6/02 5:04 PM	96.4764	451	11.80681
05/06/02	5:05 PM	5/6/02 5:05 PM	96.76526	452	11.51795
05/06/02	5:06 PM	5/6/02 5:06 PM	97.05411	453	11.2291
05/06/02	5:07 PM	5/6/02 5:07 PM	97.05411	454	11.2291
05/06/02	5:08 PM	5/6/02 5:08 PM	96.07923	455	12.20398
05/06/02	5:09 PM	5/6/02 5:09 PM	94.27391	456	14.0093
05/06/02	5:10 PM	5/6/02 5:10 PM	92.10752	457	16.17568
05/06/02	5:11 PM	5/6/02 5:11 PM	90.87991	458	17.4033
05/06/02	5:12 PM	5/6/02 5:12 PM	89.97725	459	18.30596
05/06/02	5:13 PM	5/6/02 5:13 PM	89.11069	460	19.17252
05/06/02	5:14 PM	5/6/02 5:14 PM	89.1829	461	19.10031
05/06/02	5:15 PM	5/6/02 5:15 PM	89.03848	462	19.24473
05/06/02	5:16 PM	5/6/02 5:16 PM	90.22999	463	18.05322
05/06/02	5:17 PM	5/6/02 5:17 PM	92.28806	464	15.99515
05/06/02	5:18 PM	5/6/02 5:18 PM	93.76842	465	14.51479
05/06/02	5:19 PM	5/6/02 5:19 PM	94.70719	466	13.57602
05/06/02	5:20 PM	5/6/02 5:20 PM	95.321	467	12.96221
05/06/02	5:21 PM	5/6/02 5:21 PM	95.82649	468	12.45672
05/06/02	5:22 PM	5/6/02 5:22 PM	96.15145	469	12.13176
05/06/02	5:23 PM	5/6/02 5:23 PM	96.4764	470	11.80681
05/06/02	5:24 PM	5/6/02 5:24 PM	96.18755	471	12.09566
05/06/02	5:25 PM	5/6/02 5:25 PM	94.88772	472	13.39549
05/06/02	5:26 PM	5/6/02 5:26 PM	94.56276	473	13.72045
05/06/02	5:27 PM	5/6/02 5:27 PM	95.39321	474	12.89
05/06/02	5:28 PM	5/6/02 5:28 PM	95.60985	475	12.67336
05/06/02	5:29 PM	5/6/02 5:29 PM	96.04313	476	12.24008
05/06/02	5:30 PM	5/6/02 5:30 PM	96.4403	477	11.84291
05/06/02	5:31 PM	5/6/02 5:31 PM	96.18755	478	12.09566
05/06/02	5:32 PM	5/6/02 5:32 PM	96.40419	479	11.87902
05/06/02	5:33 PM	5/6/02 5:33 PM	96.65694	480	11.62627
05/06/02	5:34 PM	5/6/02 5:34 PM	96.80136	481	11.48185
05/06/02	5:35 PM	5/6/02 5:35 PM	96.98189	482	11.30132
05/06/02	5:36 PM	5/6/02 5:36 PM	97.05411	483	11.2291
05/06/02	5:37 PM	5/6/02 5:37 PM	97.018	484	11.26521
05/06/02	5:38 PM	5/6/02 5:38 PM	97.09021	485	11.193
05/06/02	5:39 PM	5/6/02 5:39 PM	97.05411	486	11.2291
05/06/02	5:40 PM	5/6/02 5:40 PM	97.09021	487	11.193
05/06/02	5:41 PM	5/6/02 5:41 PM	96.33198	488	11.95123

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	5:42 PM	5/6/02 5:42 PM	95.57374	489	12.70947
05/06/02	5:43 PM	5/6/02 5:43 PM	96.04313	490	12.24008
05/06/02	5:44 PM	5/6/02 5:44 PM	96.33198	491	11.95123
05/06/02	5:45 PM	5/6/02 5:45 PM	95.21268	492	13.07053
05/06/02	5:46 PM	5/6/02 5:46 PM	94.7794	493	13.50381
05/06/02	5:47 PM	5/6/02 5:47 PM	95.60985	494	12.67336
05/06/02	5:48 PM	5/6/02 5:48 PM	96.00702	495	12.27619
05/06/02	5:49 PM	5/6/02 5:49 PM	96.40419	496	11.87902
05/06/02	5:50 PM	5/6/02 5:50 PM	96.58472	497	11.69849
05/06/02	5:51 PM	5/6/02 5:51 PM	96.54862	498	11.73459
05/06/02	5:52 PM	5/6/02 5:52 PM	95.21268	499	13.07053
05/06/02	5:53 PM	5/6/02 5:53 PM	94.67108	500	13.61213
05/06/02	5:54 PM	5/6/02 5:54 PM	95.53764	501	12.74557
05/06/02	5:55 PM	5/6/02 5:55 PM	96.07923	502	12.20398
05/06/02	5:56 PM	5/6/02 5:56 PM	95.79038	503	12.49283
05/06/02	5:57 PM	5/6/02 5:57 PM	94.7794	504	13.50381
05/06/02	5:58 PM	5/6/02 5:58 PM	95.17657	505	13.10664
05/06/02	5:59 PM	5/6/02 5:59 PM	95.3571	506	12.92611
05/06/02	6:00 PM	5/6/02 6:00 PM	94.41834	507	13.86487
05/06/02	6:01 PM	5/6/02 6:01 PM	93.84063	508	14.44258
05/06/02	6:02 PM	5/6/02 6:02 PM	94.59887	509	13.68434
05/06/02	6:03 PM	5/6/02 6:03 PM	95.321	510	12.96221
05/06/02	6:04 PM	5/6/02 6:04 PM	95.10436	511	13.17885
05/06/02	6:05 PM	5/6/02 6:05 PM	95.60985	512	12.67336
05/06/02	6:06 PM	5/6/02 6:06 PM	96.00702	513	12.27619
05/06/02	6:07 PM	5/6/02 6:07 PM	96.29587	514	11.98734
05/06/02	6:08 PM	5/6/02 6:08 PM	96.51251	515	11.7707
05/06/02	6:09 PM	5/6/02 6:09 PM	96.65694	516	11.62627
05/06/02	6:10 PM	5/6/02 6:10 PM	96.65694	517	11.62627
05/06/02	6:11 PM	5/6/02 6:11 PM	96.76526	518	11.51795
05/06/02	6:12 PM	5/6/02 6:12 PM	96.80136	519	11.48185
05/06/02	6:13 PM	5/6/02 6:13 PM	96.90968	520	11.37353
05/06/02	6:14 PM	5/6/02 6:14 PM	96.90968	521	11.37353
05/06/02	6:15 PM	5/6/02 6:15 PM	96.87357	522	11.40963
05/06/02	6:16 PM	5/6/02 6:16 PM	96.83747	523	11.44574
05/06/02	6:17 PM	5/6/02 6:17 PM	96.90968	524	11.37353
05/06/02	6:18 PM	5/6/02 6:18 PM	96.90968	525	11.37353
05/06/02	6:19 PM	5/6/02 6:19 PM	96.98189	526	11.30132
05/06/02	6:20 PM	5/6/02 6:20 PM	96.4764	527	11.80681
05/06/02	6:21 PM	5/6/02 6:21 PM	96.4403	528	11.84291
05/06/02	6:22 PM	5/6/02 6:22 PM	95.53764	529	12.74557
05/06/02	6:23 PM	5/6/02 6:23 PM	94.45444	530	13.82877
05/06/02	6:24 PM	5/6/02 6:24 PM	93.73231	531	14.55089
05/06/02	6:25 PM	5/6/02 6:25 PM	92.97408	532	15.30913
05/06/02	6:26 PM	5/6/02 6:26 PM	91.63814	533	16.64507
05/06/02	6:27 PM	5/6/02 6:27 PM	91.67425	534	16.60896
05/06/02	6:28 PM	5/6/02 6:28 PM	91.89089	535	16.39232
05/06/02	6:29 PM	5/6/02 6:29 PM	93.51568	536	14.76753
05/06/02	6:30 PM	5/6/02 6:30 PM	94.45444	537	13.82877

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	6:31 PM	5/6/02 6:31 PM	95.06825	538	13.21496
05/06/02	6:32 PM	5/6/02 6:32 PM	95.68206	539	12.60115
05/06/02	6:33 PM	5/6/02 6:33 PM	95.93481	540	12.3484
05/06/02	6:34 PM	5/6/02 6:34 PM	96.22366	541	12.05955
05/06/02	6:35 PM	5/6/02 6:35 PM	96.4403	542	11.84291
05/06/02	6:36 PM	5/6/02 6:36 PM	96.54862	543	11.73459
05/06/02	6:37 PM	5/6/02 6:37 PM	96.69304	544	11.59017
05/06/02	6:38 PM	5/6/02 6:38 PM	96.69304	545	11.59017
05/06/02	6:39 PM	5/6/02 6:39 PM	96.76526	546	11.51795
05/06/02	6:40 PM	5/6/02 6:40 PM	96.80136	547	11.48185
05/06/02	6:41 PM	5/6/02 6:41 PM	96.90968	548	11.37353
05/06/02	6:42 PM	5/6/02 6:42 PM	96.94579	549	11.33742
05/06/02	6:43 PM	5/6/02 6:43 PM	96.87357	550	11.40963
05/06/02	6:44 PM	5/6/02 6:44 PM	96.90968	551	11.37353
05/06/02	6:45 PM	5/6/02 6:45 PM	97.018	552	11.26521
05/06/02	6:46 PM	5/6/02 6:46 PM	96.90968	553	11.37353
05/06/02	6:47 PM	5/6/02 6:47 PM	96.98189	554	11.30132
05/06/02	6:48 PM	5/6/02 6:48 PM	96.98189	555	11.30132
05/06/02	6:49 PM	5/6/02 6:49 PM	97.05411	556	11.2291
05/06/02	6:50 PM	5/6/02 6:50 PM	95.82649	557	12.45672
05/06/02	6:51 PM	5/6/02 6:51 PM	95.82649	558	12.45672
05/06/02	6:52 PM	5/6/02 6:52 PM	96.22366	559	12.05955
05/06/02	6:53 PM	5/6/02 6:53 PM	95.97091	560	12.3123
05/06/02	6:54 PM	5/6/02 6:54 PM	95.79038	561	12.49283
05/06/02	6:55 PM	5/6/02 6:55 PM	96.07923	562	12.20398
05/06/02	6:56 PM	5/6/02 6:56 PM	96.36808	563	11.91512
05/06/02	6:57 PM	5/6/02 6:57 PM	96.51251	564	11.7707
05/06/02	6:58 PM	5/6/02 6:58 PM	96.69304	565	11.59017
05/06/02	6:59 PM	5/6/02 6:59 PM	96.72915	566	11.55406
05/06/02	7:00 PM	5/6/02 7:00 PM	96.87357	567	11.40963
05/06/02	7:01 PM	5/6/02 7:01 PM	96.62083	568	11.66238
05/06/02	7:02 PM	5/6/02 7:02 PM	96.83747	569	11.44574
05/06/02	7:03 PM	5/6/02 7:03 PM	96.83747	570	11.44574
05/06/02	7:04 PM	5/6/02 7:04 PM	96.83747	571	11.44574
05/06/02	7:05 PM	5/6/02 7:05 PM	96.04313	572	12.24008
05/06/02	7:06 PM	5/6/02 7:06 PM	96.15145	573	12.13176
05/06/02	7:07 PM	5/6/02 7:07 PM	96.40419	574	11.87902
05/06/02	7:08 PM	5/6/02 7:08 PM	96.58472	575	11.69849
05/06/02	7:09 PM	5/6/02 7:09 PM	95.93481	576	12.3484
05/06/02	7:10 PM	5/6/02 7:10 PM	94.92383	577	13.35938
05/06/02	7:11 PM	5/6/02 7:11 PM	95.17657	578	13.10664
05/06/02	7:12 PM	5/6/02 7:12 PM	95.75428	579	12.52893
05/06/02	7:13 PM	5/6/02 7:13 PM	96.18755	580	12.09566
05/06/02	7:14 PM	5/6/02 7:14 PM	96.40419	581	11.87902
05/06/02	7:15 PM	5/6/02 7:15 PM	96.40419	582	11.87902
05/06/02	7:16 PM	5/6/02 7:16 PM	95.64596	583	12.63725
05/06/02	7:17 PM	5/6/02 7:17 PM	94.7794	584	13.50381
05/06/02	7:18 PM	5/6/02 7:18 PM	94.92383	585	13.35938
05/06/02	7:19 PM	5/6/02 7:19 PM	95.57374	586	12.70947

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	7:20 PM	5/6/02 7:20 PM	96.07923	587	12.20398
05/06/02	7:21 PM	5/6/02 7:21 PM	96.25977	588	12.02344
05/06/02	7:22 PM	5/6/02 7:22 PM	96.4764	589	11.80681
05/06/02	7:23 PM	5/6/02 7:23 PM	96.54862	590	11.73459
05/06/02	7:24 PM	5/6/02 7:24 PM	95.42932	591	12.85389
05/06/02	7:25 PM	5/6/02 7:25 PM	94.59887	592	13.68434
05/06/02	7:26 PM	5/6/02 7:26 PM	93.98506	593	14.29815
05/06/02	7:27 PM	5/6/02 7:27 PM	94.88772	594	13.39549
05/06/02	7:28 PM	5/6/02 7:28 PM	95.53764	595	12.74557
05/06/02	7:29 PM	5/6/02 7:29 PM	95.60985	596	12.67336
05/06/02	7:30 PM	5/6/02 7:30 PM	95.10436	597	13.17885
05/06/02	7:31 PM	5/6/02 7:31 PM	94.63498	598	13.64823
05/06/02	7:32 PM	5/6/02 7:32 PM	94.38223	599	13.90098
05/06/02	7:33 PM	5/6/02 7:33 PM	94.38223	600	13.90098
05/06/02	7:34 PM	5/6/02 7:34 PM	94.81551	601	13.4677
05/06/02	7:35 PM	5/6/02 7:35 PM	95.46542	602	12.81779
05/06/02	7:36 PM	5/6/02 7:36 PM	95.79038	603	12.49283
05/06/02	7:37 PM	5/6/02 7:37 PM	95.24879	604	13.03442
05/06/02	7:38 PM	5/6/02 7:38 PM	95.82649	605	12.45672
05/06/02	7:39 PM	5/6/02 7:39 PM	94.88772	606	13.39549
05/06/02	7:40 PM	5/6/02 7:40 PM	94.12949	607	14.15372
05/06/02	7:41 PM	5/6/02 7:41 PM	94.41834	608	13.86487
05/06/02	7:42 PM	5/6/02 7:42 PM	94.59887	609	13.68434
05/06/02	7:43 PM	5/6/02 7:43 PM	94.74329	610	13.53991
05/06/02	7:44 PM	5/6/02 7:44 PM	95.06825	611	13.21496
05/06/02	7:45 PM	5/6/02 7:45 PM	95.64596	612	12.63725
05/06/02	7:46 PM	5/6/02 7:46 PM	95.97091	613	12.3123
05/06/02	7:47 PM	5/6/02 7:47 PM	96.15145	614	12.13176
05/06/02	7:48 PM	5/6/02 7:48 PM	96.15145	615	12.13176
05/06/02	7:49 PM	5/6/02 7:49 PM	96.4403	616	11.84291
05/06/02	7:50 PM	5/6/02 7:50 PM	95.97091	617	12.3123
05/06/02	7:51 PM	5/6/02 7:51 PM	95.42932	618	12.85389
05/06/02	7:52 PM	5/6/02 7:52 PM	95.82649	619	12.45672
05/06/02	7:53 PM	5/6/02 7:53 PM	96.11534	620	12.16787
05/06/02	7:54 PM	5/6/02 7:54 PM	96.33198	621	11.95123
05/06/02	7:55 PM	5/6/02 7:55 PM	95.71817	622	12.56504
05/06/02	7:56 PM	5/6/02 7:56 PM	95.93481	623	12.3484
05/06/02	7:57 PM	5/6/02 7:57 PM	96.15145	624	12.13176
05/06/02	7:58 PM	5/6/02 7:58 PM	96.33198	625	11.95123
05/06/02	7:59 PM	5/6/02 7:59 PM	95.60985	626	12.67336
05/06/02	8:00 PM	5/6/02 8:00 PM	94.59887	627	13.68434
05/06/02	8:01 PM	5/6/02 8:01 PM	94.70719	628	13.57602
05/06/02	8:02 PM	5/6/02 8:02 PM	95.321	629	12.96221
05/06/02	8:03 PM	5/6/02 8:03 PM	95.79038	630	12.49283
05/06/02	8:04 PM	5/6/02 8:04 PM	96.07923	631	12.20398
05/06/02	8:05 PM	5/6/02 8:05 PM	96.29587	632	11.98734
05/06/02	8:06 PM	5/6/02 8:06 PM	95.71817	633	12.56504
05/06/02	8:07 PM	5/6/02 8:07 PM	94.74329	634	13.53991
05/06/02	8:08 PM	5/6/02 8:08 PM	94.52666	635	13.75655

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	8:09 PM	5/6/02 8:09 PM	95.28489	636	12.99832
05/06/02	8:10 PM	5/6/02 8:10 PM	95.71817	637	12.56504
05/06/02	8:11 PM	5/6/02 8:11 PM	96.04313	638	12.24008
05/06/02	8:12 PM	5/6/02 8:12 PM	96.25977	639	12.02344
05/06/02	8:13 PM	5/6/02 8:13 PM	96.40419	640	11.87902
05/06/02	8:14 PM	5/6/02 8:14 PM	96.36808	641	11.91512
05/06/02	8:15 PM	5/6/02 8:15 PM	95.39321	642	12.89
05/06/02	8:16 PM	5/6/02 8:16 PM	94.38223	643	13.90098
05/06/02	8:17 PM	5/6/02 8:17 PM	94.49055	644	13.79266
05/06/02	8:18 PM	5/6/02 8:18 PM	95.10436	645	13.17885
05/06/02	8:19 PM	5/6/02 8:19 PM	95.60985	646	12.67336
05/06/02	8:20 PM	5/6/02 8:20 PM	95.86259	647	12.42061
05/06/02	8:21 PM	5/6/02 8:21 PM	96.18755	648	12.09566
05/06/02	8:22 PM	5/6/02 8:22 PM	96.33198	649	11.95123
05/06/02	8:23 PM	5/6/02 8:23 PM	96.40419	650	11.87902
05/06/02	8:24 PM	5/6/02 8:24 PM	96.4403	651	11.84291
05/06/02	8:25 PM	5/6/02 8:25 PM	96.51251	652	11.7707
05/06/02	8:26 PM	5/6/02 8:26 PM	96.58472	653	11.69849
05/06/02	8:27 PM	5/6/02 8:27 PM	96.58472	654	11.69849
05/06/02	8:28 PM	5/6/02 8:28 PM	96.65694	655	11.62627
05/06/02	8:29 PM	5/6/02 8:29 PM	96.58472	656	11.69849
05/06/02	8:30 PM	5/6/02 8:30 PM	96.62083	657	11.66238
05/06/02	8:31 PM	5/6/02 8:31 PM	96.69304	658	11.59017
05/06/02	8:32 PM	5/6/02 8:32 PM	96.76526	659	11.51795
05/06/02	8:33 PM	5/6/02 8:33 PM	96.62083	660	11.66238
05/06/02	8:34 PM	5/6/02 8:34 PM	96.62083	661	11.66238
05/06/02	8:35 PM	5/6/02 8:35 PM	96.69304	662	11.59017
05/06/02	8:36 PM	5/6/02 8:36 PM	96.62083	663	11.66238
05/06/02	8:37 PM	5/6/02 8:37 PM	96.65694	664	11.62627
05/06/02	8:38 PM	5/6/02 8:38 PM	96.76526	665	11.51795
05/06/02	8:39 PM	5/6/02 8:39 PM	96.65694	666	11.62627
05/06/02	8:40 PM	5/6/02 8:40 PM	96.72915	667	11.55406
05/06/02	8:41 PM	5/6/02 8:41 PM	96.69304	668	11.59017
05/06/02	8:42 PM	5/6/02 8:42 PM	96.69304	669	11.59017
05/06/02	8:43 PM	5/6/02 8:43 PM	95.93481	670	12.3484
05/06/02	8:44 PM	5/6/02 8:44 PM	95.03215	671	13.25106
05/06/02	8:45 PM	5/6/02 8:45 PM	94.34612	672	13.93709
05/06/02	8:46 PM	5/6/02 8:46 PM	94.45444	673	13.82877
05/06/02	8:47 PM	5/6/02 8:47 PM	95.17657	674	13.10664
05/06/02	8:48 PM	5/6/02 8:48 PM	95.57374	675	12.70947
05/06/02	8:49 PM	5/6/02 8:49 PM	95.97091	676	12.3123
05/06/02	8:50 PM	5/6/02 8:50 PM	96.07923	677	12.20398
05/06/02	8:51 PM	5/6/02 8:51 PM	96.25977	678	12.02344
05/06/02	8:52 PM	5/6/02 8:52 PM	96.40419	679	11.87902
05/06/02	8:53 PM	5/6/02 8:53 PM	96.40419	680	11.87902
05/06/02	8:54 PM	5/6/02 8:54 PM	96.54862	681	11.73459
05/06/02	8:55 PM	5/6/02 8:55 PM	96.62083	682	11.66238
05/06/02	8:56 PM	5/6/02 8:56 PM	96.65694	683	11.62627
05/06/02	8:57 PM	5/6/02 8:57 PM	96.62083	684	11.66238

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	8:58 PM	5/6/02 8:58 PM	95.57374	685	12.70947
05/06/02	8:59 PM	5/6/02 8:59 PM	95.71817	686	12.56504
05/06/02	9:00 PM	5/6/02 9:00 PM	95.53764	687	12.74557
05/06/02	9:01 PM	5/6/02 9:01 PM	95.10436	688	13.17885
05/06/02	9:02 PM	5/6/02 9:02 PM	94.63498	689	13.64823
05/06/02	9:03 PM	5/6/02 9:03 PM	95.3571	690	12.92611
05/06/02	9:04 PM	5/6/02 9:04 PM	95.28489	691	12.99832
05/06/02	9:05 PM	5/6/02 9:05 PM	94.2378	692	14.0454
05/06/02	9:06 PM	5/6/02 9:06 PM	94.02117	693	14.26204
05/06/02	9:07 PM	5/6/02 9:07 PM	94.95993	694	13.32328
05/06/02	9:08 PM	5/6/02 9:08 PM	95.46542	695	12.81779
05/06/02	9:09 PM	5/6/02 9:09 PM	95.75428	696	12.52893
05/06/02	9:10 PM	5/6/02 9:10 PM	96.07923	697	12.20398
05/06/02	9:11 PM	5/6/02 9:11 PM	95.82649	698	12.45672
05/06/02	9:12 PM	5/6/02 9:12 PM	94.7794	699	13.50381
05/06/02	9:13 PM	5/6/02 9:13 PM	93.98506	700	14.29815
05/06/02	9:14 PM	5/6/02 9:14 PM	94.56276	701	13.72045
05/06/02	9:15 PM	5/6/02 9:15 PM	95.21268	702	13.07053
05/06/02	9:16 PM	5/6/02 9:16 PM	95.53764	703	12.74557
05/06/02	9:17 PM	5/6/02 9:17 PM	95.82649	704	12.45672
05/06/02	9:18 PM	5/6/02 9:18 PM	96.04313	705	12.24008
05/06/02	9:19 PM	5/6/02 9:19 PM	96.00702	706	12.27619
05/06/02	9:20 PM	5/6/02 9:20 PM	94.92383	707	13.35938
05/06/02	9:21 PM	5/6/02 9:21 PM	94.05727	708	14.22594
05/06/02	9:22 PM	5/6/02 9:22 PM	93.98506	709	14.29815
05/06/02	9:23 PM	5/6/02 9:23 PM	94.85161	710	13.4316
05/06/02	9:24 PM	5/6/02 9:24 PM	95.28489	711	12.99832
05/06/02	9:25 PM	5/6/02 9:25 PM	95.68206	712	12.60115
05/06/02	9:26 PM	5/6/02 9:26 PM	95.86259	713	12.42061
05/06/02	9:27 PM	5/6/02 9:27 PM	96.11534	714	12.16787
05/06/02	9:28 PM	5/6/02 9:28 PM	96.25977	715	12.02344
05/06/02	9:29 PM	5/6/02 9:29 PM	96.25977	716	12.02344
05/06/02	9:30 PM	5/6/02 9:30 PM	96.33198	717	11.95123
05/06/02	9:31 PM	5/6/02 9:31 PM	96.4403	718	11.84291
05/06/02	9:32 PM	5/6/02 9:32 PM	96.4764	719	11.80681
05/06/02	9:33 PM	5/6/02 9:33 PM	96.40419	720	11.87902
05/06/02	9:34 PM	5/6/02 9:34 PM	96.4764	721	11.80681
05/06/02	9:35 PM	5/6/02 9:35 PM	96.54862	722	11.73459
05/06/02	9:36 PM	5/6/02 9:36 PM	96.58472	723	11.69849
05/06/02	9:37 PM	5/6/02 9:37 PM	96.4403	724	11.84291
05/06/02	9:38 PM	5/6/02 9:38 PM	96.54862	725	11.73459
05/06/02	9:39 PM	5/6/02 9:39 PM	96.4764	726	11.80681
05/06/02	9:40 PM	5/6/02 9:40 PM	96.07923	727	12.20398
05/06/02	9:41 PM	5/6/02 9:41 PM	95.46542	728	12.81779
05/06/02	9:42 PM	5/6/02 9:42 PM	95.82649	729	12.45672
05/06/02	9:43 PM	5/6/02 9:43 PM	96.04313	730	12.24008
05/06/02	9:44 PM	5/6/02 9:44 PM	96.11534	731	12.16787
05/06/02	9:45 PM	5/6/02 9:45 PM	96.29587	732	11.98734
05/06/02	9:46 PM	5/6/02 9:46 PM	96.40419	733	11.87902

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	9:47 PM	5/6/02 9:47 PM	96.36808	734	11.91512
05/06/02	9:48 PM	5/6/02 9:48 PM	96.4764	735	11.80681
05/06/02	9:49 PM	5/6/02 9:49 PM	96.4403	736	11.84291
05/06/02	9:50 PM	5/6/02 9:50 PM	96.54862	737	11.73459
05/06/02	9:51 PM	5/6/02 9:51 PM	96.4403	738	11.84291
05/06/02	9:52 PM	5/6/02 9:52 PM	96.58472	739	11.69849
05/06/02	9:53 PM	5/6/02 9:53 PM	96.51251	740	11.7707
05/06/02	9:54 PM	5/6/02 9:54 PM	96.51251	741	11.7707
05/06/02	9:55 PM	5/6/02 9:55 PM	96.51251	742	11.7707
05/06/02	9:56 PM	5/6/02 9:56 PM	96.58472	743	11.69849
05/06/02	9:57 PM	5/6/02 9:57 PM	96.54862	744	11.73459
05/06/02	9:58 PM	5/6/02 9:58 PM	96.51251	745	11.7707
05/06/02	9:59 PM	5/6/02 9:59 PM	96.51251	746	11.7707
05/06/02	10:00 PM	5/6/02 10:00 PM	96.51251	747	11.7707
05/06/02	10:01 PM	5/6/02 10:01 PM	96.51251	748	11.7707
05/06/02	10:02 PM	5/6/02 10:02 PM	96.51251	749	11.7707
05/06/02	10:03 PM	5/6/02 10:03 PM	96.54862	750	11.73459
05/06/02	10:04 PM	5/6/02 10:04 PM	96.62083	751	11.66238
05/06/02	10:05 PM	5/6/02 10:05 PM	96.4764	752	11.80681
05/06/02	10:06 PM	5/6/02 10:06 PM	96.62083	753	11.66238
05/06/02	10:07 PM	5/6/02 10:07 PM	96.54862	754	11.73459
05/06/02	10:08 PM	5/6/02 10:08 PM	96.58472	755	11.69849
05/06/02	10:09 PM	5/6/02 10:09 PM	96.51251	756	11.7707
05/06/02	10:10 PM	5/6/02 10:10 PM	96.54862	757	11.73459
05/06/02	10:11 PM	5/6/02 10:11 PM	96.58472	758	11.69849
05/06/02	10:12 PM	5/6/02 10:12 PM	96.62083	759	11.66238
05/06/02	10:13 PM	5/6/02 10:13 PM	96.54862	760	11.73459
05/06/02	10:14 PM	5/6/02 10:14 PM	96.58472	761	11.69849
05/06/02	10:15 PM	5/6/02 10:15 PM	96.58472	762	11.69849
05/06/02	10:16 PM	5/6/02 10:16 PM	96.58472	763	11.69849
05/06/02	10:17 PM	5/6/02 10:17 PM	96.62083	764	11.66238
05/06/02	10:18 PM	5/6/02 10:18 PM	96.51251	765	11.7707
05/06/02	10:19 PM	5/6/02 10:19 PM	96.54862	766	11.73459
05/06/02	10:20 PM	5/6/02 10:20 PM	96.54862	767	11.73459
05/06/02	10:21 PM	5/6/02 10:21 PM	96.58472	768	11.69849
05/06/02	10:22 PM	5/6/02 10:22 PM	96.54862	769	11.73459
05/06/02	10:23 PM	5/6/02 10:23 PM	96.62083	770	11.66238
05/06/02	10:24 PM	5/6/02 10:24 PM	96.51251	771	11.7707
05/06/02	10:25 PM	5/6/02 10:25 PM	96.58472	772	11.69849
05/06/02	10:26 PM	5/6/02 10:26 PM	96.54862	773	11.73459
05/06/02	10:27 PM	5/6/02 10:27 PM	96.51251	774	11.7707
05/06/02	10:28 PM	5/6/02 10:28 PM	96.54862	775	11.73459
05/06/02	10:29 PM	5/6/02 10:29 PM	96.54862	776	11.73459
05/06/02	10:30 PM	5/6/02 10:30 PM	96.58472	777	11.69849
05/06/02	10:31 PM	5/6/02 10:31 PM	96.54862	778	11.73459
05/06/02	10:32 PM	5/6/02 10:32 PM	96.54862	779	11.73459
05/06/02	10:33 PM	5/6/02 10:33 PM	96.54862	780	11.73459
05/06/02	10:34 PM	5/6/02 10:34 PM	96.51251	781	11.7707
05/06/02	10:35 PM	5/6/02 10:35 PM	96.51251	782	11.7707

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	10:36 PM	5/6/02 10:36 PM	96.4764	783	11.80681
05/06/02	10:37 PM	5/6/02 10:37 PM	96.51251	784	11.7707
05/06/02	10:38 PM	5/6/02 10:38 PM	96.51251	785	11.7707
05/06/02	10:39 PM	5/6/02 10:39 PM	96.4764	786	11.80681
05/06/02	10:40 PM	5/6/02 10:40 PM	96.51251	787	11.7707
05/06/02	10:41 PM	5/6/02 10:41 PM	96.51251	788	11.7707
05/06/02	10:42 PM	5/6/02 10:42 PM	96.54862	789	11.73459
05/06/02	10:43 PM	5/6/02 10:43 PM	96.58472	790	11.69849
05/06/02	10:44 PM	5/6/02 10:44 PM	96.54862	791	11.73459
05/06/02	10:45 PM	5/6/02 10:45 PM	96.54862	792	11.73459
05/06/02	10:46 PM	5/6/02 10:46 PM	96.58472	793	11.69849
05/06/02	10:47 PM	5/6/02 10:47 PM	96.54862	794	11.73459
05/06/02	10:48 PM	5/6/02 10:48 PM	96.54862	795	11.73459
05/06/02	10:49 PM	5/6/02 10:49 PM	96.54862	796	11.73459
05/06/02	10:50 PM	5/6/02 10:50 PM	96.4764	797	11.80681
05/06/02	10:51 PM	5/6/02 10:51 PM	96.62083	798	11.66238
05/06/02	10:52 PM	5/6/02 10:52 PM	96.4764	799	11.80681
05/06/02	10:53 PM	5/6/02 10:53 PM	96.4764	800	11.80681
05/06/02	10:54 PM	5/6/02 10:54 PM	96.51251	801	11.7707
05/06/02	10:55 PM	5/6/02 10:55 PM	96.58472	802	11.69849
05/06/02	10:56 PM	5/6/02 10:56 PM	96.54862	803	11.73459
05/06/02	10:57 PM	5/6/02 10:57 PM	96.54862	804	11.73459
05/06/02	10:58 PM	5/6/02 10:58 PM	96.58472	805	11.69849
05/06/02	10:59 PM	5/6/02 10:59 PM	96.58472	806	11.69849
05/06/02	11:00 PM	5/6/02 11:00 PM	96.4764	807	11.80681
05/06/02	11:01 PM	5/6/02 11:01 PM	96.4764	808	11.80681
05/06/02	11:02 PM	5/6/02 11:02 PM	96.54862	809	11.73459
05/06/02	11:03 PM	5/6/02 11:03 PM	96.54862	810	11.73459
05/06/02	11:04 PM	5/6/02 11:04 PM	96.58472	811	11.69849
05/06/02	11:05 PM	5/6/02 11:05 PM	96.4764	812	11.80681
05/06/02	11:06 PM	5/6/02 11:06 PM	96.51251	813	11.7707
05/06/02	11:07 PM	5/6/02 11:07 PM	96.54862	814	11.73459
05/06/02	11:08 PM	5/6/02 11:08 PM	96.4764	815	11.80681
05/06/02	11:09 PM	5/6/02 11:09 PM	96.51251	816	11.7707
05/06/02	11:10 PM	5/6/02 11:10 PM	96.51251	817	11.7707
05/06/02	11:11 PM	5/6/02 11:11 PM	96.54862	818	11.73459
05/06/02	11:12 PM	5/6/02 11:12 PM	96.4764	819	11.80681
05/06/02	11:13 PM	5/6/02 11:13 PM	96.4403	820	11.84291
05/06/02	11:14 PM	5/6/02 11:14 PM	96.54862	821	11.73459
05/06/02	11:15 PM	5/6/02 11:15 PM	96.4403	822	11.84291
05/06/02	11:16 PM	5/6/02 11:16 PM	96.54862	823	11.73459
05/06/02	11:17 PM	5/6/02 11:17 PM	96.4764	824	11.80681
05/06/02	11:18 PM	5/6/02 11:18 PM	96.54862	825	11.73459
05/06/02	11:19 PM	5/6/02 11:19 PM	96.58472	826	11.69849
05/06/02	11:20 PM	5/6/02 11:20 PM	96.54862	827	11.73459
05/06/02	11:21 PM	5/6/02 11:21 PM	96.4764	828	11.80681
05/06/02	11:22 PM	5/6/02 11:22 PM	96.54862	829	11.73459
05/06/02	11:23 PM	5/6/02 11:23 PM	96.51251	830	11.7707
05/06/02	11:24 PM	5/6/02 11:24 PM	96.51251	831	11.7707

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/06/02	11:25 PM	5/6/02 11:25 PM	96.4764	832	11.80681
05/06/02	11:26 PM	5/6/02 11:26 PM	96.51251	833	11.7707
05/06/02	11:27 PM	5/6/02 11:27 PM	96.4764	834	11.80681
05/06/02	11:28 PM	5/6/02 11:28 PM	96.51251	835	11.7707
05/06/02	11:29 PM	5/6/02 11:29 PM	96.54862	836	11.73459
05/06/02	11:30 PM	5/6/02 11:30 PM	96.4764	837	11.80681
05/06/02	11:31 PM	5/6/02 11:31 PM	96.40419	838	11.87902
05/06/02	11:32 PM	5/6/02 11:32 PM	96.54862	839	11.73459
05/06/02	11:33 PM	5/6/02 11:33 PM	96.4764	840	11.80681
05/06/02	11:34 PM	5/6/02 11:34 PM	96.51251	841	11.7707
05/06/02	11:35 PM	5/6/02 11:35 PM	96.4764	842	11.80681
05/06/02	11:36 PM	5/6/02 11:36 PM	96.54862	843	11.73459
05/06/02	11:37 PM	5/6/02 11:37 PM	96.4764	844	11.80681
05/06/02	11:38 PM	5/6/02 11:38 PM	96.4764	845	11.80681
05/06/02	11:39 PM	5/6/02 11:39 PM	96.40419	846	11.87902
05/06/02	11:40 PM	5/6/02 11:40 PM	96.51251	847	11.7707
05/06/02	11:41 PM	5/6/02 11:41 PM	96.54862	848	11.73459
05/06/02	11:42 PM	5/6/02 11:42 PM	96.4764	849	11.80681
05/06/02	11:43 PM	5/6/02 11:43 PM	96.4403	850	11.84291
05/06/02	11:44 PM	5/6/02 11:44 PM	96.4764	851	11.80681
05/06/02	11:45 PM	5/6/02 11:45 PM	96.40419	852	11.87902
05/06/02	11:46 PM	5/6/02 11:46 PM	96.51251	853	11.7707
05/06/02	11:47 PM	5/6/02 11:47 PM	96.4764	854	11.80681
05/06/02	11:48 PM	5/6/02 11:48 PM	96.51251	855	11.7707
05/06/02	11:49 PM	5/6/02 11:49 PM	96.4764	856	11.80681
05/06/02	11:50 PM	5/6/02 11:50 PM	96.51251	857	11.7707
05/06/02	11:51 PM	5/6/02 11:51 PM	96.4403	858	11.84291
05/06/02	11:52 PM	5/6/02 11:52 PM	96.4764	859	11.80681
05/06/02	11:53 PM	5/6/02 11:53 PM	96.4403	860	11.84291
05/06/02	11:54 PM	5/6/02 11:54 PM	96.51251	861	11.7707
05/06/02	11:55 PM	5/6/02 11:55 PM	96.51251	862	11.7707
05/06/02	11:56 PM	5/6/02 11:56 PM	96.51251	863	11.7707
05/06/02	11:57 PM	5/6/02 11:57 PM	96.40419	864	11.87902
05/06/02	11:58 PM	5/6/02 11:58 PM	96.36808	865	11.91512
05/06/02	11:59 PM	5/6/02 11:59 PM	96.36808	866	11.91512
05/07/02	12:00 AM	5/7/02 12:00 AM	96.36808	867	11.91512
05/07/02	12:01 AM	5/7/02 12:01 AM	96.4403	868	11.84291
05/07/02	12:02 AM	5/7/02 12:02 AM	96.40419	869	11.87902
05/07/02	12:03 AM	5/7/02 12:03 AM	96.4403	870	11.84291
05/07/02	12:04 AM	5/7/02 12:04 AM	96.40419	871	11.87902
05/07/02	12:05 AM	5/7/02 12:05 AM	96.4764	872	11.80681
05/07/02	12:06 AM	5/7/02 12:06 AM	96.4403	873	11.84291
05/07/02	12:07 AM	5/7/02 12:07 AM	96.4403	874	11.84291
05/07/02	12:08 AM	5/7/02 12:08 AM	96.40419	875	11.87902
05/07/02	12:09 AM	5/7/02 12:09 AM	96.36808	876	11.91512
05/07/02	12:10 AM	5/7/02 12:10 AM	96.4764	877	11.80681
05/07/02	12:11 AM	5/7/02 12:11 AM	96.4403	878	11.84291
05/07/02	12:12 AM	5/7/02 12:12 AM	96.4403	879	11.84291
05/07/02	12:13 AM	5/7/02 12:13 AM	96.4403	880	11.84291

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	12:14 AM	5/7/02 12:14 AM	96.36808	881	11.91512
05/07/02	12:15 AM	5/7/02 12:15 AM	96.36808	882	11.91512
05/07/02	12:16 AM	5/7/02 12:16 AM	96.36808	883	11.91512
05/07/02	12:17 AM	5/7/02 12:17 AM	96.36808	884	11.91512
05/07/02	12:18 AM	5/7/02 12:18 AM	96.36808	885	11.91512
05/07/02	12:19 AM	5/7/02 12:19 AM	96.40419	886	11.87902
05/07/02	12:20 AM	5/7/02 12:20 AM	96.4764	887	11.80681
05/07/02	12:21 AM	5/7/02 12:21 AM	96.36808	888	11.91512
05/07/02	12:22 AM	5/7/02 12:22 AM	96.4403	889	11.84291
05/07/02	12:23 AM	5/7/02 12:23 AM	96.36808	890	11.91512
05/07/02	12:24 AM	5/7/02 12:24 AM	96.40419	891	11.87902
05/07/02	12:25 AM	5/7/02 12:25 AM	96.4403	892	11.84291
05/07/02	12:26 AM	5/7/02 12:26 AM	96.36808	893	11.91512
05/07/02	12:27 AM	5/7/02 12:27 AM	96.40419	894	11.87902
05/07/02	12:28 AM	5/7/02 12:28 AM	96.36808	895	11.91512
05/07/02	12:29 AM	5/7/02 12:29 AM	96.40419	896	11.87902
05/07/02	12:30 AM	5/7/02 12:30 AM	96.4403	897	11.84291
05/07/02	12:31 AM	5/7/02 12:31 AM	96.40419	898	11.87902
05/07/02	12:32 AM	5/7/02 12:32 AM	96.36808	899	11.91512
05/07/02	12:33 AM	5/7/02 12:33 AM	96.33198	900	11.95123
05/07/02	12:34 AM	5/7/02 12:34 AM	96.40419	901	11.87902
05/07/02	12:35 AM	5/7/02 12:35 AM	96.4403	902	11.84291
05/07/02	12:36 AM	5/7/02 12:36 AM	96.29587	903	11.98734
05/07/02	12:37 AM	5/7/02 12:37 AM	96.40419	904	11.87902
05/07/02	12:38 AM	5/7/02 12:38 AM	96.33198	905	11.95123
05/07/02	12:39 AM	5/7/02 12:39 AM	96.33198	906	11.95123
05/07/02	12:40 AM	5/7/02 12:40 AM	96.40419	907	11.87902
05/07/02	12:41 AM	5/7/02 12:41 AM	96.40419	908	11.87902
05/07/02	12:42 AM	5/7/02 12:42 AM	96.33198	909	11.95123
05/07/02	12:43 AM	5/7/02 12:43 AM	96.40419	910	11.87902
05/07/02	12:44 AM	5/7/02 12:44 AM	96.36808	911	11.91512
05/07/02	12:45 AM	5/7/02 12:45 AM	96.40419	912	11.87902
05/07/02	12:46 AM	5/7/02 12:46 AM	96.40419	913	11.87902
05/07/02	12:47 AM	5/7/02 12:47 AM	96.36808	914	11.91512
05/07/02	12:48 AM	5/7/02 12:48 AM	96.29587	915	11.98734
05/07/02	12:49 AM	5/7/02 12:49 AM	96.29587	916	11.98734
05/07/02	12:50 AM	5/7/02 12:50 AM	96.36808	917	11.91512
05/07/02	12:51 AM	5/7/02 12:51 AM	96.29587	918	11.98734
05/07/02	12:52 AM	5/7/02 12:52 AM	96.40419	919	11.87902
05/07/02	12:53 AM	5/7/02 12:53 AM	96.40419	920	11.87902
05/07/02	12:54 AM	5/7/02 12:54 AM	96.33198	921	11.95123
05/07/02	12:55 AM	5/7/02 12:55 AM	96.33198	922	11.95123
05/07/02	12:56 AM	5/7/02 12:56 AM	96.36808	923	11.91512
05/07/02	12:57 AM	5/7/02 12:57 AM	96.40419	924	11.87902
05/07/02	12:58 AM	5/7/02 12:58 AM	96.29587	925	11.98734
05/07/02	12:59 AM	5/7/02 12:59 AM	96.36808	926	11.91512
05/07/02	1:00 AM	5/7/02 1:00 AM	96.33198	927	11.95123
05/07/02	1:01 AM	5/7/02 1:01 AM	96.36808	928	11.91512
05/07/02	1:02 AM	5/7/02 1:02 AM	96.29587	929	11.98734

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	1:03 AM	5/7/02 1:03 AM	96.33198	930	11.95123
05/07/02	1:04 AM	5/7/02 1:04 AM	96.29587	931	11.98734
05/07/02	1:05 AM	5/7/02 1:05 AM	96.33198	932	11.95123
05/07/02	1:06 AM	5/7/02 1:06 AM	96.29587	933	11.98734
05/07/02	1:07 AM	5/7/02 1:07 AM	96.25977	934	12.02344
05/07/02	1:08 AM	5/7/02 1:08 AM	96.40419	935	11.87902
05/07/02	1:09 AM	5/7/02 1:09 AM	96.33198	936	11.95123
05/07/02	1:10 AM	5/7/02 1:10 AM	96.36808	937	11.91512
05/07/02	1:11 AM	5/7/02 1:11 AM	96.29587	938	11.98734
05/07/02	1:12 AM	5/7/02 1:12 AM	96.36808	939	11.91512
05/07/02	1:13 AM	5/7/02 1:13 AM	96.29587	940	11.98734
05/07/02	1:14 AM	5/7/02 1:14 AM	96.40419	941	11.87902
05/07/02	1:15 AM	5/7/02 1:15 AM	96.40419	942	11.87902
05/07/02	1:16 AM	5/7/02 1:16 AM	96.29587	943	11.98734
05/07/02	1:17 AM	5/7/02 1:17 AM	96.36808	944	11.91512
05/07/02	1:18 AM	5/7/02 1:18 AM	96.29587	945	11.98734
05/07/02	1:19 AM	5/7/02 1:19 AM	96.25977	946	12.02344
05/07/02	1:20 AM	5/7/02 1:20 AM	96.33198	947	11.95123
05/07/02	1:21 AM	5/7/02 1:21 AM	96.36808	948	11.91512
05/07/02	1:22 AM	5/7/02 1:22 AM	96.25977	949	12.02344
05/07/02	1:23 AM	5/7/02 1:23 AM	96.25977	950	12.02344
05/07/02	1:24 AM	5/7/02 1:24 AM	96.33198	951	11.95123
05/07/02	1:25 AM	5/7/02 1:25 AM	96.25977	952	12.02344
05/07/02	1:26 AM	5/7/02 1:26 AM	96.29587	953	11.98734
05/07/02	1:27 AM	5/7/02 1:27 AM	96.25977	954	12.02344
05/07/02	1:28 AM	5/7/02 1:28 AM	96.33198	955	11.95123
05/07/02	1:29 AM	5/7/02 1:29 AM	96.25977	956	12.02344
05/07/02	1:30 AM	5/7/02 1:30 AM	96.25977	957	12.02344
05/07/02	1:31 AM	5/7/02 1:31 AM	96.29587	958	11.98734
05/07/02	1:32 AM	5/7/02 1:32 AM	96.29587	959	11.98734
05/07/02	1:33 AM	5/7/02 1:33 AM	96.25977	960	12.02344
05/07/02	1:34 AM	5/7/02 1:34 AM	96.22366	961	12.05955
05/07/02	1:35 AM	5/7/02 1:35 AM	96.29587	962	11.98734
05/07/02	1:36 AM	5/7/02 1:36 AM	96.25977	963	12.02344
05/07/02	1:37 AM	5/7/02 1:37 AM	96.25977	964	12.02344
05/07/02	1:38 AM	5/7/02 1:38 AM	96.33198	965	11.95123
05/07/02	1:39 AM	5/7/02 1:39 AM	96.29587	966	11.98734
05/07/02	1:40 AM	5/7/02 1:40 AM	96.18755	967	12.09566
05/07/02	1:41 AM	5/7/02 1:41 AM	96.33198	968	11.95123
05/07/02	1:42 AM	5/7/02 1:42 AM	96.33198	969	11.95123
05/07/02	1:43 AM	5/7/02 1:43 AM	96.25977	970	12.02344
05/07/02	1:44 AM	5/7/02 1:44 AM	96.25977	971	12.02344
05/07/02	1:45 AM	5/7/02 1:45 AM	96.25977	972	12.02344
05/07/02	1:46 AM	5/7/02 1:46 AM	96.29587	973	11.98734
05/07/02	1:47 AM	5/7/02 1:47 AM	96.22366	974	12.05955
05/07/02	1:48 AM	5/7/02 1:48 AM	96.25977	975	12.02344
05/07/02	1:49 AM	5/7/02 1:49 AM	96.22366	976	12.05955
05/07/02	1:50 AM	5/7/02 1:50 AM	96.22366	977	12.05955
05/07/02	1:51 AM	5/7/02 1:51 AM	96.33198	978	11.95123

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	1:52 AM	5/7/02 1:52 AM	96.29587	979	11.98734
05/07/02	1:53 AM	5/7/02 1:53 AM	96.22366	980	12.05955
05/07/02	1:54 AM	5/7/02 1:54 AM	96.29587	981	11.98734
05/07/02	1:55 AM	5/7/02 1:55 AM	96.29587	982	11.98734
05/07/02	1:56 AM	5/7/02 1:56 AM	96.22366	983	12.05955
05/07/02	1:57 AM	5/7/02 1:57 AM	96.29587	984	11.98734
05/07/02	1:58 AM	5/7/02 1:58 AM	96.18755	985	12.09566
05/07/02	1:59 AM	5/7/02 1:59 AM	96.25977	986	12.02344
05/07/02	2:00 AM	5/7/02 2:00 AM	96.22366	987	12.05955
05/07/02	2:01 AM	5/7/02 2:01 AM	96.18755	988	12.09566
05/07/02	2:02 AM	5/7/02 2:02 AM	96.25977	989	12.02344
05/07/02	2:03 AM	5/7/02 2:03 AM	96.18755	990	12.09566
05/07/02	2:04 AM	5/7/02 2:04 AM	96.29587	991	11.98734
05/07/02	2:05 AM	5/7/02 2:05 AM	95.93481	992	12.3484
05/07/02	2:06 AM	5/7/02 2:06 AM	95.53764	993	12.74557
05/07/02	2:07 AM	5/7/02 2:07 AM	95.321	994	12.96221
05/07/02	2:08 AM	5/7/02 2:08 AM	95.71817	995	12.56504
05/07/02	2:09 AM	5/7/02 2:09 AM	95.79038	996	12.49283
05/07/02	2:10 AM	5/7/02 2:10 AM	96.00702	997	12.27619
05/07/02	2:11 AM	5/7/02 2:11 AM	96.00702	998	12.27619
05/07/02	2:12 AM	5/7/02 2:12 AM	96.11534	999	12.16787
05/07/02	2:13 AM	5/7/02 2:13 AM	96.04313	1000	12.24008
05/07/02	2:14 AM	5/7/02 2:14 AM	96.07923	1001	12.20398
05/07/02	2:15 AM	5/7/02 2:15 AM	96.07923	1002	12.20398
05/07/02	2:16 AM	5/7/02 2:16 AM	96.15145	1003	12.13176
05/07/02	2:17 AM	5/7/02 2:17 AM	96.11534	1004	12.16787
05/07/02	2:18 AM	5/7/02 2:18 AM	96.11534	1005	12.16787
05/07/02	2:19 AM	5/7/02 2:19 AM	96.11534	1006	12.16787
05/07/02	2:20 AM	5/7/02 2:20 AM	96.22366	1007	12.05955
05/07/02	2:21 AM	5/7/02 2:21 AM	96.15145	1008	12.13176
05/07/02	2:22 AM	5/7/02 2:22 AM	96.18755	1009	12.09566
05/07/02	2:23 AM	5/7/02 2:23 AM	96.15145	1010	12.13176
05/07/02	2:24 AM	5/7/02 2:24 AM	96.15145	1011	12.13176
05/07/02	2:25 AM	5/7/02 2:25 AM	96.22366	1012	12.05955
05/07/02	2:26 AM	5/7/02 2:26 AM	96.18755	1013	12.09566
05/07/02	2:27 AM	5/7/02 2:27 AM	96.22366	1014	12.05955
05/07/02	2:28 AM	5/7/02 2:28 AM	96.22366	1015	12.05955
05/07/02	2:29 AM	5/7/02 2:29 AM	96.22366	1016	12.05955
05/07/02	2:30 AM	5/7/02 2:30 AM	96.15145	1017	12.13176
05/07/02	2:31 AM	5/7/02 2:31 AM	96.22366	1018	12.05955
05/07/02	2:32 AM	5/7/02 2:32 AM	96.15145	1019	12.13176
05/07/02	2:33 AM	5/7/02 2:33 AM	96.18755	1020	12.09566
05/07/02	2:34 AM	5/7/02 2:34 AM	96.22366	1021	12.05955
05/07/02	2:35 AM	5/7/02 2:35 AM	96.18755	1022	12.09566
05/07/02	2:36 AM	5/7/02 2:36 AM	96.22366	1023	12.05955
05/07/02	2:37 AM	5/7/02 2:37 AM	96.18755	1024	12.09566
05/07/02	2:38 AM	5/7/02 2:38 AM	96.18755	1025	12.09566
05/07/02	2:39 AM	5/7/02 2:39 AM	96.18755	1026	12.09566
05/07/02	2:40 AM	5/7/02 2:40 AM	96.04313	1027	12.24008

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	2:41 AM	5/7/02 2:41 AM	95.53764	1028	12.74557
05/07/02	2:42 AM	5/7/02 2:42 AM	95.321	1029	12.96221
05/07/02	2:43 AM	5/7/02 2:43 AM	95.57374	1030	12.70947
05/07/02	2:44 AM	5/7/02 2:44 AM	95.75428	1031	12.52893
05/07/02	2:45 AM	5/7/02 2:45 AM	95.82649	1032	12.45672
05/07/02	2:46 AM	5/7/02 2:46 AM	96.00702	1033	12.27619
05/07/02	2:47 AM	5/7/02 2:47 AM	96.04313	1034	12.24008
05/07/02	2:48 AM	5/7/02 2:48 AM	96.07923	1035	12.20398
05/07/02	2:49 AM	5/7/02 2:49 AM	96.04313	1036	12.24008
05/07/02	2:50 AM	5/7/02 2:50 AM	96.11534	1037	12.16787
05/07/02	2:51 AM	5/7/02 2:51 AM	96.15145	1038	12.13176
05/07/02	2:52 AM	5/7/02 2:52 AM	95.28489	1039	12.99832
05/07/02	2:53 AM	5/7/02 2:53 AM	95.14047	1040	13.14274
05/07/02	2:54 AM	5/7/02 2:54 AM	95.46542	1041	12.81779
05/07/02	2:55 AM	5/7/02 2:55 AM	95.71817	1042	12.56504
05/07/02	2:56 AM	5/7/02 2:56 AM	95.82649	1043	12.45672
05/07/02	2:57 AM	5/7/02 2:57 AM	95.86259	1044	12.42061
05/07/02	2:58 AM	5/7/02 2:58 AM	95.8987	1045	12.38451
05/07/02	2:59 AM	5/7/02 2:59 AM	95.53764	1046	12.74557
05/07/02	3:00 AM	5/7/02 3:00 AM	95.14047	1047	13.14274
05/07/02	3:01 AM	5/7/02 3:01 AM	95.24879	1048	13.03442
05/07/02	3:02 AM	5/7/02 3:02 AM	95.50153	1049	12.78168
05/07/02	3:03 AM	5/7/02 3:03 AM	95.71817	1050	12.56504
05/07/02	3:04 AM	5/7/02 3:04 AM	95.82649	1051	12.45672
05/07/02	3:05 AM	5/7/02 3:05 AM	95.97091	1052	12.3123
05/07/02	3:06 AM	5/7/02 3:06 AM	96.00702	1053	12.27619
05/07/02	3:07 AM	5/7/02 3:07 AM	96.00702	1054	12.27619
05/07/02	3:08 AM	5/7/02 3:08 AM	96.00702	1055	12.27619
05/07/02	3:09 AM	5/7/02 3:09 AM	96.04313	1056	12.24008
05/07/02	3:10 AM	5/7/02 3:10 AM	96.04313	1057	12.24008
05/07/02	3:11 AM	5/7/02 3:11 AM	96.07923	1058	12.20398
05/07/02	3:12 AM	5/7/02 3:12 AM	96.07923	1059	12.20398
05/07/02	3:13 AM	5/7/02 3:13 AM	96.11534	1060	12.16787
05/07/02	3:14 AM	5/7/02 3:14 AM	96.04313	1061	12.24008
05/07/02	3:15 AM	5/7/02 3:15 AM	95.75428	1062	12.52893
05/07/02	3:16 AM	5/7/02 3:16 AM	95.28489	1063	12.99832
05/07/02	3:17 AM	5/7/02 3:17 AM	95.321	1064	12.96221
05/07/02	3:18 AM	5/7/02 3:18 AM	95.46542	1065	12.81779
05/07/02	3:19 AM	5/7/02 3:19 AM	95.75428	1066	12.52893
05/07/02	3:20 AM	5/7/02 3:20 AM	95.82649	1067	12.45672
05/07/02	3:21 AM	5/7/02 3:21 AM	95.86259	1068	12.42061
05/07/02	3:22 AM	5/7/02 3:22 AM	95.97091	1069	12.3123
05/07/02	3:23 AM	5/7/02 3:23 AM	96.00702	1070	12.27619
05/07/02	3:24 AM	5/7/02 3:24 AM	95.93481	1071	12.3484
05/07/02	3:25 AM	5/7/02 3:25 AM	96.04313	1072	12.24008
05/07/02	3:26 AM	5/7/02 3:26 AM	96.04313	1073	12.24008
05/07/02	3:27 AM	5/7/02 3:27 AM	96.04313	1074	12.24008
05/07/02	3:28 AM	5/7/02 3:28 AM	96.00702	1075	12.27619
05/07/02	3:29 AM	5/7/02 3:29 AM	96.00702	1076	12.27619

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	3:30 AM	5/7/02 3:30 AM	96.04313	1077	12.24008
05/07/02	3:31 AM	5/7/02 3:31 AM	95.97091	1078	12.3123
05/07/02	3:32 AM	5/7/02 3:32 AM	96.07923	1079	12.20398
05/07/02	3:33 AM	5/7/02 3:33 AM	96.07923	1080	12.20398
05/07/02	3:34 AM	5/7/02 3:34 AM	96.00702	1081	12.27619
05/07/02	3:35 AM	5/7/02 3:35 AM	96.07923	1082	12.20398
05/07/02	3:36 AM	5/7/02 3:36 AM	96.04313	1083	12.24008
05/07/02	3:37 AM	5/7/02 3:37 AM	95.97091	1084	12.3123
05/07/02	3:38 AM	5/7/02 3:38 AM	96.07923	1085	12.20398
05/07/02	3:39 AM	5/7/02 3:39 AM	96.07923	1086	12.20398
05/07/02	3:40 AM	5/7/02 3:40 AM	96.04313	1087	12.24008
05/07/02	3:41 AM	5/7/02 3:41 AM	96.00702	1088	12.27619
05/07/02	3:42 AM	5/7/02 3:42 AM	96.04313	1089	12.24008
05/07/02	3:43 AM	5/7/02 3:43 AM	96.07923	1090	12.20398
05/07/02	3:44 AM	5/7/02 3:44 AM	96.07923	1091	12.20398
05/07/02	3:45 AM	5/7/02 3:45 AM	95.97091	1092	12.3123
05/07/02	3:46 AM	5/7/02 3:46 AM	96.07923	1093	12.20398
05/07/02	3:47 AM	5/7/02 3:47 AM	96.00702	1094	12.27619
05/07/02	3:48 AM	5/7/02 3:48 AM	96.04313	1095	12.24008
05/07/02	3:49 AM	5/7/02 3:49 AM	96.00702	1096	12.27619
05/07/02	3:50 AM	5/7/02 3:50 AM	96.00702	1097	12.27619
05/07/02	3:51 AM	5/7/02 3:51 AM	96.04313	1098	12.24008
05/07/02	3:52 AM	5/7/02 3:52 AM	96.04313	1099	12.24008
05/07/02	3:53 AM	5/7/02 3:53 AM	96.00702	1100	12.27619
05/07/02	3:54 AM	5/7/02 3:54 AM	96.04313	1101	12.24008
05/07/02	3:55 AM	5/7/02 3:55 AM	96.07923	1102	12.20398
05/07/02	3:56 AM	5/7/02 3:56 AM	95.97091	1103	12.3123
05/07/02	3:57 AM	5/7/02 3:57 AM	96.04313	1104	12.24008
05/07/02	3:58 AM	5/7/02 3:58 AM	96.00702	1105	12.27619
05/07/02	3:59 AM	5/7/02 3:59 AM	95.97091	1106	12.3123
05/07/02	4:00 AM	5/7/02 4:00 AM	96.04313	1107	12.24008
05/07/02	4:01 AM	5/7/02 4:01 AM	96.04313	1108	12.24008
05/07/02	4:02 AM	5/7/02 4:02 AM	96.00702	1109	12.27619
05/07/02	4:03 AM	5/7/02 4:03 AM	95.97091	1110	12.3123
05/07/02	4:04 AM	5/7/02 4:04 AM	96.07923	1111	12.20398
05/07/02	4:05 AM	5/7/02 4:05 AM	96.00702	1112	12.27619
05/07/02	4:06 AM	5/7/02 4:06 AM	96.04313	1113	12.24008
05/07/02	4:07 AM	5/7/02 4:07 AM	96.04313	1114	12.24008
05/07/02	4:08 AM	5/7/02 4:08 AM	96.00702	1115	12.27619
05/07/02	4:09 AM	5/7/02 4:09 AM	95.97091	1116	12.3123
05/07/02	4:10 AM	5/7/02 4:10 AM	96.00702	1117	12.27619
05/07/02	4:11 AM	5/7/02 4:11 AM	95.97091	1118	12.3123
05/07/02	4:12 AM	5/7/02 4:12 AM	95.93481	1119	12.3484
05/07/02	4:13 AM	5/7/02 4:13 AM	96.04313	1120	12.24008
05/07/02	4:14 AM	5/7/02 4:14 AM	95.97091	1121	12.3123
05/07/02	4:15 AM	5/7/02 4:15 AM	95.93481	1122	12.3484
05/07/02	4:16 AM	5/7/02 4:16 AM	96.04313	1123	12.24008
05/07/02	4:17 AM	5/7/02 4:17 AM	95.97091	1124	12.3123
05/07/02	4:18 AM	5/7/02 4:18 AM	96.00702	1125	12.27619

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	4:19 AM	5/7/02 4:19 AM	96.00702	1126	12.27619
05/07/02	4:20 AM	5/7/02 4:20 AM	96.00702	1127	12.27619
05/07/02	4:21 AM	5/7/02 4:21 AM	95.93481	1128	12.3484
05/07/02	4:22 AM	5/7/02 4:22 AM	95.93481	1129	12.3484
05/07/02	4:23 AM	5/7/02 4:23 AM	96.00702	1130	12.27619
05/07/02	4:24 AM	5/7/02 4:24 AM	96.00702	1131	12.27619
05/07/02	4:25 AM	5/7/02 4:25 AM	95.8987	1132	12.38451
05/07/02	4:26 AM	5/7/02 4:26 AM	95.97091	1133	12.3123
05/07/02	4:27 AM	5/7/02 4:27 AM	95.97091	1134	12.3123
05/07/02	4:28 AM	5/7/02 4:28 AM	96.00702	1135	12.27619
05/07/02	4:29 AM	5/7/02 4:29 AM	95.97091	1136	12.3123
05/07/02	4:30 AM	5/7/02 4:30 AM	96.04313	1137	12.24008
05/07/02	4:31 AM	5/7/02 4:31 AM	95.8987	1138	12.38451
05/07/02	4:32 AM	5/7/02 4:32 AM	95.93481	1139	12.3484
05/07/02	4:33 AM	5/7/02 4:33 AM	96.04313	1140	12.24008
05/07/02	4:34 AM	5/7/02 4:34 AM	95.97091	1141	12.3123
05/07/02	4:35 AM	5/7/02 4:35 AM	95.8987	1142	12.38451
05/07/02	4:36 AM	5/7/02 4:36 AM	95.93481	1143	12.3484
05/07/02	4:37 AM	5/7/02 4:37 AM	95.93481	1144	12.3484
05/07/02	4:38 AM	5/7/02 4:38 AM	95.8987	1145	12.38451
05/07/02	4:39 AM	5/7/02 4:39 AM	96.00702	1146	12.27619
05/07/02	4:40 AM	5/7/02 4:40 AM	95.86259	1147	12.42061
05/07/02	4:41 AM	5/7/02 4:41 AM	95.97091	1148	12.3123
05/07/02	4:42 AM	5/7/02 4:42 AM	95.93481	1149	12.3484
05/07/02	4:43 AM	5/7/02 4:43 AM	95.93481	1150	12.3484
05/07/02	4:44 AM	5/7/02 4:44 AM	95.97091	1151	12.3123
05/07/02	4:45 AM	5/7/02 4:45 AM	95.97091	1152	12.3123
05/07/02	4:46 AM	5/7/02 4:46 AM	95.86259	1153	12.42061
05/07/02	4:47 AM	5/7/02 4:47 AM	95.8987	1154	12.38451
05/07/02	4:48 AM	5/7/02 4:48 AM	95.93481	1155	12.3484
05/07/02	4:49 AM	5/7/02 4:49 AM	96.00702	1156	12.27619
05/07/02	4:50 AM	5/7/02 4:50 AM	95.93481	1157	12.3484
05/07/02	4:51 AM	5/7/02 4:51 AM	95.93481	1158	12.3484
05/07/02	4:52 AM	5/7/02 4:52 AM	96.00702	1159	12.27619
05/07/02	4:53 AM	5/7/02 4:53 AM	95.97091	1160	12.3123
05/07/02	4:54 AM	5/7/02 4:54 AM	95.97091	1161	12.3123
05/07/02	4:55 AM	5/7/02 4:55 AM	95.86259	1162	12.42061
05/07/02	4:56 AM	5/7/02 4:56 AM	95.93481	1163	12.3484
05/07/02	4:57 AM	5/7/02 4:57 AM	95.93481	1164	12.3484
05/07/02	4:58 AM	5/7/02 4:58 AM	96.00702	1165	12.27619
05/07/02	4:59 AM	5/7/02 4:59 AM	96.00702	1166	12.27619
05/07/02	5:00 AM	5/7/02 5:00 AM	95.8987	1167	12.38451
05/07/02	5:01 AM	5/7/02 5:01 AM	95.8987	1168	12.38451
05/07/02	5:02 AM	5/7/02 5:02 AM	95.97091	1169	12.3123
05/07/02	5:03 AM	5/7/02 5:03 AM	95.97091	1170	12.3123
05/07/02	5:04 AM	5/7/02 5:04 AM	95.86259	1171	12.42061
05/07/02	5:05 AM	5/7/02 5:05 AM	95.93481	1172	12.3484
05/07/02	5:06 AM	5/7/02 5:06 AM	95.93481	1173	12.3484
05/07/02	5:07 AM	5/7/02 5:07 AM	95.86259	1174	12.42061

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	5:08 AM	5/7/02 5:08 AM	95.93481	1175	12.3484
05/07/02	5:09 AM	5/7/02 5:09 AM	95.8987	1176	12.38451
05/07/02	5:10 AM	5/7/02 5:10 AM	95.93481	1177	12.3484
05/07/02	5:11 AM	5/7/02 5:11 AM	95.8987	1178	12.38451
05/07/02	5:12 AM	5/7/02 5:12 AM	95.93481	1179	12.3484
05/07/02	5:13 AM	5/7/02 5:13 AM	95.86259	1180	12.42061
05/07/02	5:14 AM	5/7/02 5:14 AM	95.93481	1181	12.3484
05/07/02	5:15 AM	5/7/02 5:15 AM	95.86259	1182	12.42061
05/07/02	5:16 AM	5/7/02 5:16 AM	95.93481	1183	12.3484
05/07/02	5:17 AM	5/7/02 5:17 AM	95.93481	1184	12.3484
05/07/02	5:18 AM	5/7/02 5:18 AM	95.93481	1185	12.3484
05/07/02	5:19 AM	5/7/02 5:19 AM	95.8987	1186	12.38451
05/07/02	5:20 AM	5/7/02 5:20 AM	95.82649	1187	12.45672
05/07/02	5:21 AM	5/7/02 5:21 AM	95.93481	1188	12.3484
05/07/02	5:22 AM	5/7/02 5:22 AM	95.8987	1189	12.38451
05/07/02	5:23 AM	5/7/02 5:23 AM	95.86259	1190	12.42061
05/07/02	5:24 AM	5/7/02 5:24 AM	95.86259	1191	12.42061
05/07/02	5:25 AM	5/7/02 5:25 AM	95.86259	1192	12.42061
05/07/02	5:26 AM	5/7/02 5:26 AM	95.82649	1193	12.45672
05/07/02	5:27 AM	5/7/02 5:27 AM	95.86259	1194	12.42061
05/07/02	5:28 AM	5/7/02 5:28 AM	95.8987	1195	12.38451
05/07/02	5:29 AM	5/7/02 5:29 AM	95.8987	1196	12.38451
05/07/02	5:30 AM	5/7/02 5:30 AM	95.93481	1197	12.3484
05/07/02	5:31 AM	5/7/02 5:31 AM	95.8987	1198	12.38451
05/07/02	5:32 AM	5/7/02 5:32 AM	95.8987	1199	12.38451
05/07/02	5:33 AM	5/7/02 5:33 AM	95.8987	1200	12.38451
05/07/02	5:34 AM	5/7/02 5:34 AM	95.86259	1201	12.42061
05/07/02	5:35 AM	5/7/02 5:35 AM	95.8987	1202	12.38451
05/07/02	5:36 AM	5/7/02 5:36 AM	95.82649	1203	12.45672
05/07/02	5:37 AM	5/7/02 5:37 AM	95.79038	1204	12.49283
05/07/02	5:38 AM	5/7/02 5:38 AM	95.86259	1205	12.42061
05/07/02	5:39 AM	5/7/02 5:39 AM	95.8987	1206	12.38451
05/07/02	5:40 AM	5/7/02 5:40 AM	95.8987	1207	12.38451
05/07/02	5:41 AM	5/7/02 5:41 AM	95.8987	1208	12.38451
05/07/02	5:42 AM	5/7/02 5:42 AM	95.8987	1209	12.38451
05/07/02	5:43 AM	5/7/02 5:43 AM	95.93481	1210	12.3484
05/07/02	5:44 AM	5/7/02 5:44 AM	95.86259	1211	12.42061
05/07/02	5:45 AM	5/7/02 5:45 AM	95.8987	1212	12.38451
05/07/02	5:46 AM	5/7/02 5:46 AM	95.82649	1213	12.45672
05/07/02	5:47 AM	5/7/02 5:47 AM	95.86259	1214	12.42061
05/07/02	5:48 AM	5/7/02 5:48 AM	95.86259	1215	12.42061
05/07/02	5:49 AM	5/7/02 5:49 AM	95.86259	1216	12.42061
05/07/02	5:50 AM	5/7/02 5:50 AM	95.79038	1217	12.49283
05/07/02	5:51 AM	5/7/02 5:51 AM	95.75428	1218	12.52893
05/07/02	5:52 AM	5/7/02 5:52 AM	95.82649	1219	12.45672
05/07/02	5:53 AM	5/7/02 5:53 AM	95.79038	1220	12.49283
05/07/02	5:54 AM	5/7/02 5:54 AM	95.86259	1221	12.42061
05/07/02	5:55 AM	5/7/02 5:55 AM	95.82649	1222	12.45672
05/07/02	5:56 AM	5/7/02 5:56 AM	95.8987	1223	12.38451

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	5:57 AM	5/7/02 5:57 AM	95.75428	1224	12.52893
05/07/02	5:58 AM	5/7/02 5:58 AM	95.82649	1225	12.45672
05/07/02	5:59 AM	5/7/02 5:59 AM	95.79038	1226	12.49283
05/07/02	6:00 AM	5/7/02 6:00 AM	95.86259	1227	12.42061
05/07/02	6:01 AM	5/7/02 6:01 AM	95.68206	1228	12.60115
05/07/02	6:02 AM	5/7/02 6:02 AM	93.15461	1229	15.1286
05/07/02	6:03 AM	5/7/02 6:03 AM	92.36027	1230	15.92294
05/07/02	6:04 AM	5/7/02 6:04 AM	91.81867	1231	16.46454
05/07/02	6:05 AM	5/7/02 6:05 AM	91.49372	1232	16.78949
05/07/02	6:06 AM	5/7/02 6:06 AM	91.24097	1233	17.04224
05/07/02	6:07 AM	5/7/02 6:07 AM	90.98823	1234	17.29498
05/07/02	6:08 AM	5/7/02 6:08 AM	90.91601	1235	17.3672
05/07/02	6:09 AM	5/7/02 6:09 AM	91.45761	1236	16.8256
05/07/02	6:10 AM	5/7/02 6:10 AM	92.72133	1237	15.56188
05/07/02	6:11 AM	5/7/02 6:11 AM	93.58789	1238	14.69532
05/07/02	6:12 AM	5/7/02 6:12 AM	94.09338	1239	14.18983
05/07/02	6:13 AM	5/7/02 6:13 AM	94.52666	1240	13.75655
05/07/02	6:14 AM	5/7/02 6:14 AM	94.88772	1241	13.39549
05/07/02	6:15 AM	5/7/02 6:15 AM	94.99604	1242	13.28717
05/07/02	6:16 AM	5/7/02 6:16 AM	95.10436	1243	13.17885
05/07/02	6:17 AM	5/7/02 6:17 AM	95.24879	1244	13.03442
05/07/02	6:18 AM	5/7/02 6:18 AM	95.28489	1245	12.99832
05/07/02	6:19 AM	5/7/02 6:19 AM	95.39321	1246	12.89
05/07/02	6:20 AM	5/7/02 6:20 AM	95.39321	1247	12.89
05/07/02	6:21 AM	5/7/02 6:21 AM	95.50153	1248	12.78168
05/07/02	6:22 AM	5/7/02 6:22 AM	95.46542	1249	12.81779
05/07/02	6:23 AM	5/7/02 6:23 AM	95.53764	1250	12.74557
05/07/02	6:24 AM	5/7/02 6:24 AM	95.50153	1251	12.78168
05/07/02	6:25 AM	5/7/02 6:25 AM	95.50153	1252	12.78168
05/07/02	6:26 AM	5/7/02 6:26 AM	95.60985	1253	12.67336
05/07/02	6:27 AM	5/7/02 6:27 AM	95.64596	1254	12.63725
05/07/02	6:28 AM	5/7/02 6:28 AM	95.53764	1255	12.74557
05/07/02	6:29 AM	5/7/02 6:29 AM	95.64596	1256	12.63725
05/07/02	6:30 AM	5/7/02 6:30 AM	95.57374	1257	12.70947
05/07/02	6:31 AM	5/7/02 6:31 AM	95.57374	1258	12.70947
05/07/02	6:32 AM	5/7/02 6:32 AM	95.68206	1259	12.60115
05/07/02	6:33 AM	5/7/02 6:33 AM	95.57374	1260	12.70947
05/07/02	6:34 AM	5/7/02 6:34 AM	95.64596	1261	12.63725
05/07/02	6:35 AM	5/7/02 6:35 AM	95.64596	1262	12.63725
05/07/02	6:36 AM	5/7/02 6:36 AM	95.60985	1263	12.67336
05/07/02	6:37 AM	5/7/02 6:37 AM	95.64596	1264	12.63725
05/07/02	6:38 AM	5/7/02 6:38 AM	95.68206	1265	12.60115
05/07/02	6:39 AM	5/7/02 6:39 AM	95.68206	1266	12.60115
05/07/02	6:40 AM	5/7/02 6:40 AM	95.64596	1267	12.63725
05/07/02	6:41 AM	5/7/02 6:41 AM	95.64596	1268	12.63725
05/07/02	6:42 AM	5/7/02 6:42 AM	95.64596	1269	12.63725
05/07/02	6:43 AM	5/7/02 6:43 AM	95.64596	1270	12.63725
05/07/02	6:44 AM	5/7/02 6:44 AM	95.64596	1271	12.63725
05/07/02	6:45 AM	5/7/02 6:45 AM	95.64596	1272	12.63725

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	6:46 AM	5/7/02 6:46 AM	95.64596	1273	12.63725
05/07/02	6:47 AM	5/7/02 6:47 AM	95.60985	1274	12.67336
05/07/02	6:48 AM	5/7/02 6:48 AM	95.57374	1275	12.70947
05/07/02	6:49 AM	5/7/02 6:49 AM	95.64596	1276	12.63725
05/07/02	6:50 AM	5/7/02 6:50 AM	95.57374	1277	12.70947
05/07/02	6:51 AM	5/7/02 6:51 AM	95.68206	1278	12.60115
05/07/02	6:52 AM	5/7/02 6:52 AM	95.64596	1279	12.63725
05/07/02	6:53 AM	5/7/02 6:53 AM	95.64596	1280	12.63725
05/07/02	6:54 AM	5/7/02 6:54 AM	95.68206	1281	12.60115
05/07/02	6:55 AM	5/7/02 6:55 AM	95.60985	1282	12.67336
05/07/02	6:56 AM	5/7/02 6:56 AM	95.68206	1283	12.60115
05/07/02	6:57 AM	5/7/02 6:57 AM	95.57374	1284	12.70947
05/07/02	6:58 AM	5/7/02 6:58 AM	95.60985	1285	12.67336
05/07/02	6:59 AM	5/7/02 6:59 AM	95.64596	1286	12.63725
05/07/02	7:00 AM	5/7/02 7:00 AM	95.60985	1287	12.67336
05/07/02	7:01 AM	5/7/02 7:01 AM	95.64596	1288	12.63725
05/07/02	7:02 AM	5/7/02 7:02 AM	95.60985	1289	12.67336
05/07/02	7:03 AM	5/7/02 7:03 AM	95.64596	1290	12.63725
05/07/02	7:04 AM	5/7/02 7:04 AM	95.57374	1291	12.70947
05/07/02	7:05 AM	5/7/02 7:05 AM	95.57374	1292	12.70947
05/07/02	7:06 AM	5/7/02 7:06 AM	95.60985	1293	12.67336
05/07/02	7:07 AM	5/7/02 7:07 AM	95.68206	1294	12.60115
05/07/02	7:08 AM	5/7/02 7:08 AM	95.68206	1295	12.60115
05/07/02	7:09 AM	5/7/02 7:09 AM	95.57374	1296	12.70947
05/07/02	7:10 AM	5/7/02 7:10 AM	95.60985	1297	12.67336
05/07/02	7:11 AM	5/7/02 7:11 AM	95.24879	1298	13.03442
05/07/02	7:12 AM	5/7/02 7:12 AM	94.63498	1299	13.64823
05/07/02	7:13 AM	5/7/02 7:13 AM	95.03215	1300	13.25106
05/07/02	7:14 AM	5/7/02 7:14 AM	95.10436	1301	13.17885
05/07/02	7:15 AM	5/7/02 7:15 AM	95.24879	1302	13.03442
05/07/02	7:16 AM	5/7/02 7:16 AM	95.3571	1303	12.92611
05/07/02	7:17 AM	5/7/02 7:17 AM	95.50153	1304	12.78168
05/07/02	7:18 AM	5/7/02 7:18 AM	94.41834	1305	13.86487
05/07/02	7:19 AM	5/7/02 7:19 AM	94.49055	1306	13.79266
05/07/02	7:20 AM	5/7/02 7:20 AM	94.85161	1307	13.4316
05/07/02	7:21 AM	5/7/02 7:21 AM	95.14047	1308	13.14274
05/07/02	7:22 AM	5/7/02 7:22 AM	95.10436	1309	13.17885
05/07/02	7:23 AM	5/7/02 7:23 AM	94.09338	1310	14.18983
05/07/02	7:24 AM	5/7/02 7:24 AM	92.10752	1311	16.17568
05/07/02	7:25 AM	5/7/02 7:25 AM	91.74646	1312	16.53675
05/07/02	7:26 AM	5/7/02 7:26 AM	91.56593	1313	16.71728
05/07/02	7:27 AM	5/7/02 7:27 AM	91.31318	1314	16.97003
05/07/02	7:28 AM	5/7/02 7:28 AM	91.06044	1315	17.22277
05/07/02	7:29 AM	5/7/02 7:29 AM	91.02433	1316	17.25888
05/07/02	7:30 AM	5/7/02 7:30 AM	90.91601	1317	17.3672
05/07/02	7:31 AM	5/7/02 7:31 AM	90.87991	1318	17.4033
05/07/02	7:32 AM	5/7/02 7:32 AM	90.87991	1319	17.4033
05/07/02	7:33 AM	5/7/02 7:33 AM	90.73548	1320	17.54773
05/07/02	7:34 AM	5/7/02 7:34 AM	90.69937	1321	17.58384

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	7:35 AM	5/7/02 7:35 AM	90.55495	1322	17.72826
05/07/02	7:36 AM	5/7/02 7:36 AM	90.55495	1323	17.72826
05/07/02	7:37 AM	5/7/02 7:37 AM	90.48274	1324	17.80047
05/07/02	7:38 AM	5/7/02 7:38 AM	90.51884	1325	17.76437
05/07/02	7:39 AM	5/7/02 7:39 AM	90.41052	1326	17.87269
05/07/02	7:40 AM	5/7/02 7:40 AM	90.41052	1327	17.87269
05/07/02	7:41 AM	5/7/02 7:41 AM	91.85478	1328	16.42843
05/07/02	7:42 AM	5/7/02 7:42 AM	92.86576	1329	15.41745
05/07/02	7:43 AM	5/7/02 7:43 AM	93.44346	1330	14.83975
05/07/02	7:44 AM	5/7/02 7:44 AM	93.91285	1331	14.37036
05/07/02	7:45 AM	5/7/02 7:45 AM	94.34612	1332	13.93709
05/07/02	7:46 AM	5/7/02 7:46 AM	94.56276	1333	13.72045
05/07/02	7:47 AM	5/7/02 7:47 AM	94.70719	1334	13.57602
05/07/02	7:48 AM	5/7/02 7:48 AM	94.81551	1335	13.4677
05/07/02	7:49 AM	5/7/02 7:49 AM	94.92383	1336	13.35938
05/07/02	7:50 AM	5/7/02 7:50 AM	94.95993	1337	13.32328
05/07/02	7:51 AM	5/7/02 7:51 AM	94.95993	1338	13.32328
05/07/02	7:52 AM	5/7/02 7:52 AM	95.10436	1339	13.17885
05/07/02	7:53 AM	5/7/02 7:53 AM	95.14047	1340	13.14274
05/07/02	7:54 AM	5/7/02 7:54 AM	95.14047	1341	13.14274
05/07/02	7:55 AM	5/7/02 7:55 AM	95.17657	1342	13.10664
05/07/02	7:56 AM	5/7/02 7:56 AM	95.24879	1343	13.03442
05/07/02	7:57 AM	5/7/02 7:57 AM	95.17657	1344	13.10664
05/07/02	7:58 AM	5/7/02 7:58 AM	95.24879	1345	13.03442
05/07/02	7:59 AM	5/7/02 7:59 AM	95.14047	1346	13.14274
05/07/02	8:00 AM	5/7/02 8:00 AM	95.24879	1347	13.03442
05/07/02	8:01 AM	5/7/02 8:01 AM	95.28489	1348	12.99832
05/07/02	8:02 AM	5/7/02 8:02 AM	95.21268	1349	13.07053
05/07/02	8:03 AM	5/7/02 8:03 AM	95.24879	1350	13.03442
05/07/02	8:04 AM	5/7/02 8:04 AM	95.28489	1351	12.99832
05/07/02	8:05 AM	5/7/02 8:05 AM	95.21268	1352	13.07053
05/07/02	8:06 AM	5/7/02 8:06 AM	95.28489	1353	12.99832
05/07/02	8:07 AM	5/7/02 8:07 AM	95.24879	1354	13.03442
05/07/02	8:08 AM	5/7/02 8:08 AM	95.28489	1355	12.99832
05/07/02	8:09 AM	5/7/02 8:09 AM	95.321	1356	12.96221
05/07/02	8:10 AM	5/7/02 8:10 AM	94.52666	1357	13.75655
05/07/02	8:11 AM	5/7/02 8:11 AM	94.16559	1358	14.11762
05/07/02	8:12 AM	5/7/02 8:12 AM	94.52666	1359	13.75655
05/07/02	8:13 AM	5/7/02 8:13 AM	94.7794	1360	13.50381
05/07/02	8:14 AM	5/7/02 8:14 AM	94.92383	1361	13.35938
05/07/02	8:15 AM	5/7/02 8:15 AM	94.95993	1362	13.32328
05/07/02	8:16 AM	5/7/02 8:16 AM	94.99604	1363	13.28717
05/07/02	8:17 AM	5/7/02 8:17 AM	95.10436	1364	13.17885
05/07/02	8:18 AM	5/7/02 8:18 AM	95.21268	1365	13.07053
05/07/02	8:19 AM	5/7/02 8:19 AM	95.28489	1366	12.99832
05/07/02	8:20 AM	5/7/02 8:20 AM	95.21268	1367	13.07053
05/07/02	8:21 AM	5/7/02 8:21 AM	95.28489	1368	12.99832
05/07/02	8:22 AM	5/7/02 8:22 AM	95.24879	1369	13.03442
05/07/02	8:23 AM	5/7/02 8:23 AM	95.21268	1370	13.07053

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	8:24 AM	5/7/02 8:24 AM	95.321	1371	12.96221
05/07/02	8:25 AM	5/7/02 8:25 AM	95.3571	1372	12.92611
05/07/02	8:26 AM	5/7/02 8:26 AM	95.24879	1373	13.03442
05/07/02	8:27 AM	5/7/02 8:27 AM	95.28489	1374	12.99832
05/07/02	8:28 AM	5/7/02 8:28 AM	95.28489	1375	12.99832
05/07/02	8:29 AM	5/7/02 8:29 AM	95.321	1376	12.96221
05/07/02	8:30 AM	5/7/02 8:30 AM	95.28489	1377	12.99832
05/07/02	8:31 AM	5/7/02 8:31 AM	95.24879	1378	13.03442
05/07/02	8:32 AM	5/7/02 8:32 AM	95.39321	1379	12.89
05/07/02	8:33 AM	5/7/02 8:33 AM	95.3571	1380	12.92611
05/07/02	8:34 AM	5/7/02 8:34 AM	95.3571	1381	12.92611
05/07/02	8:35 AM	5/7/02 8:35 AM	95.321	1382	12.96221
05/07/02	8:36 AM	5/7/02 8:36 AM	95.321	1383	12.96221
05/07/02	8:37 AM	5/7/02 8:37 AM	95.24879	1384	13.03442
05/07/02	8:38 AM	5/7/02 8:38 AM	95.3571	1385	12.92611
05/07/02	8:39 AM	5/7/02 8:39 AM	95.3571	1386	12.92611
05/07/02	8:40 AM	5/7/02 8:40 AM	95.39321	1387	12.89
05/07/02	8:41 AM	5/7/02 8:41 AM	95.321	1388	12.96221
05/07/02	8:42 AM	5/7/02 8:42 AM	95.28489	1389	12.99832
05/07/02	8:43 AM	5/7/02 8:43 AM	95.3571	1390	12.92611
05/07/02	8:44 AM	5/7/02 8:44 AM	95.39321	1391	12.89
05/07/02	8:45 AM	5/7/02 8:45 AM	95.39321	1392	12.89
05/07/02	8:46 AM	5/7/02 8:46 AM	95.28489	1393	12.99832
05/07/02	8:47 AM	5/7/02 8:47 AM	95.39321	1394	12.89
05/07/02	8:48 AM	5/7/02 8:48 AM	95.28489	1395	12.99832
05/07/02	8:49 AM	5/7/02 8:49 AM	95.39321	1396	12.89
05/07/02	8:50 AM	5/7/02 8:50 AM	95.39321	1397	12.89
05/07/02	8:51 AM	5/7/02 8:51 AM	95.39321	1398	12.89
05/07/02	8:52 AM	5/7/02 8:52 AM	95.39321	1399	12.89
05/07/02	8:53 AM	5/7/02 8:53 AM	95.321	1400	12.96221
05/07/02	8:54 AM	5/7/02 8:54 AM	95.39321	1401	12.89
05/07/02	8:55 AM	5/7/02 8:55 AM	95.24879	1402	13.03442
05/07/02	8:56 AM	5/7/02 8:56 AM	95.3571	1403	12.92611
05/07/02	8:57 AM	5/7/02 8:57 AM	95.321	1404	12.96221
05/07/02	8:58 AM	5/7/02 8:58 AM	95.39321	1405	12.89
05/07/02	8:59 AM	5/7/02 8:59 AM	95.3571	1406	12.92611
05/07/02	9:00 AM	5/7/02 9:00 AM	95.28489	1407	12.99832
05/07/02	9:01 AM	5/7/02 9:01 AM	95.321	1408	12.96221
05/07/02	9:02 AM	5/7/02 9:02 AM	95.3571	1409	12.92611
05/07/02	9:03 AM	5/7/02 9:03 AM	94.95993	1410	13.32328
05/07/02	9:04 AM	5/7/02 9:04 AM	94.2017	1411	14.08151
05/07/02	9:05 AM	5/7/02 9:05 AM	94.27391	1412	14.0093
05/07/02	9:06 AM	5/7/02 9:06 AM	94.56276	1413	13.72045
05/07/02	9:07 AM	5/7/02 9:07 AM	94.85161	1414	13.4316
05/07/02	9:08 AM	5/7/02 9:08 AM	94.95993	1415	13.32328
05/07/02	9:09 AM	5/7/02 9:09 AM	94.2017	1416	14.08151
05/07/02	9:10 AM	5/7/02 9:10 AM	94.31002	1417	13.97319
05/07/02	9:11 AM	5/7/02 9:11 AM	94.67108	1418	13.61213
05/07/02	9:12 AM	5/7/02 9:12 AM	94.7794	1419	13.50381

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	9:13 AM	5/7/02 9:13 AM	93.94895	1420	14.33426
05/07/02	9:14 AM	5/7/02 9:14 AM	93.19072	1421	15.09249
05/07/02	9:15 AM	5/7/02 9:15 AM	93.91285	1422	14.37036
05/07/02	9:16 AM	5/7/02 9:16 AM	94.31002	1423	13.97319
05/07/02	9:17 AM	5/7/02 9:17 AM	94.67108	1424	13.61213
05/07/02	9:18 AM	5/7/02 9:18 AM	94.2017	1425	14.08151
05/07/02	9:19 AM	5/7/02 9:19 AM	94.16559	1426	14.11762
05/07/02	9:20 AM	5/7/02 9:20 AM	94.41834	1427	13.86487
05/07/02	9:21 AM	5/7/02 9:21 AM	94.41834	1428	13.86487
05/07/02	9:22 AM	5/7/02 9:22 AM	94.63498	1429	13.64823
05/07/02	9:23 AM	5/7/02 9:23 AM	94.88772	1430	13.39549
05/07/02	9:24 AM	5/7/02 9:24 AM	94.92383	1431	13.35938
05/07/02	9:25 AM	5/7/02 9:25 AM	95.03215	1432	13.25106
05/07/02	9:26 AM	5/7/02 9:26 AM	95.03215	1433	13.25106
05/07/02	9:27 AM	5/7/02 9:27 AM	95.14047	1434	13.14274
05/07/02	9:28 AM	5/7/02 9:28 AM	95.06825	1435	13.21496
05/07/02	9:29 AM	5/7/02 9:29 AM	95.17657	1436	13.10664
05/07/02	9:30 AM	5/7/02 9:30 AM	95.28489	1437	12.99832
05/07/02	9:31 AM	5/7/02 9:31 AM	95.14047	1438	13.14274
05/07/02	9:32 AM	5/7/02 9:32 AM	95.17657	1439	13.10664
05/07/02	9:33 AM	5/7/02 9:33 AM	95.28489	1440	12.99832
05/07/02	9:34 AM	5/7/02 9:34 AM	95.21268	1441	13.07053
05/07/02	9:35 AM	5/7/02 9:35 AM	95.24879	1442	13.03442
05/07/02	9:36 AM	5/7/02 9:36 AM	95.28489	1443	12.99832
05/07/02	9:37 AM	5/7/02 9:37 AM	95.24879	1444	13.03442
05/07/02	9:38 AM	5/7/02 9:38 AM	95.21268	1445	13.07053
05/07/02	9:39 AM	5/7/02 9:39 AM	95.24879	1446	13.03442
05/07/02	9:40 AM	5/7/02 9:40 AM	95.21268	1447	13.07053
05/07/02	9:41 AM	5/7/02 9:41 AM	95.28489	1448	12.99832
05/07/02	9:42 AM	5/7/02 9:42 AM	94.34612	1449	13.93709
05/07/02	9:43 AM	5/7/02 9:43 AM	94.74329	1450	13.53991
05/07/02	9:44 AM	5/7/02 9:44 AM	94.81551	1451	13.4677
05/07/02	9:45 AM	5/7/02 9:45 AM	94.92383	1452	13.35938
05/07/02	9:46 AM	5/7/02 9:46 AM	93.87674	1453	14.40647
05/07/02	9:47 AM	5/7/02 9:47 AM	92.86576	1454	15.41745
05/07/02	9:48 AM	5/7/02 9:48 AM	92.90187	1455	15.38134
05/07/02	9:49 AM	5/7/02 9:49 AM	93.6601	1456	14.62311
05/07/02	9:50 AM	5/7/02 9:50 AM	94.2017	1457	14.08151
05/07/02	9:51 AM	5/7/02 9:51 AM	94.49055	1458	13.79266
05/07/02	9:52 AM	5/7/02 9:52 AM	94.59887	1459	13.68434
05/07/02	9:53 AM	5/7/02 9:53 AM	94.81551	1460	13.4677
05/07/02	9:54 AM	5/7/02 9:54 AM	94.92383	1461	13.35938
05/07/02	9:55 AM	5/7/02 9:55 AM	93.76842	1462	14.51479
05/07/02	9:56 AM	5/7/02 9:56 AM	93.04629	1463	15.23692
05/07/02	9:57 AM	5/7/02 9:57 AM	92.82965	1464	15.45356
05/07/02	9:58 AM	5/7/02 9:58 AM	93.58789	1465	14.69532
05/07/02	9:59 AM	5/7/02 9:59 AM	94.09338	1466	14.18983
05/07/02	10:00 AM	5/7/02 10:00 AM	94.45444	1467	13.82877
05/07/02	10:01 AM	5/7/02 10:01 AM	94.63498	1468	13.64823

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	10:02 AM	5/7/02 10:02 AM	94.70719	1469	13.57602
05/07/02	10:03 AM	5/7/02 10:03 AM	94.95993	1470	13.32328
05/07/02	10:04 AM	5/7/02 10:04 AM	94.85161	1471	13.4316
05/07/02	10:05 AM	5/7/02 10:05 AM	94.2017	1472	14.08151
05/07/02	10:06 AM	5/7/02 10:06 AM	93.0824	1473	15.20081
05/07/02	10:07 AM	5/7/02 10:07 AM	92.32416	1474	15.95905
05/07/02	10:08 AM	5/7/02 10:08 AM	92.86576	1475	15.41745
05/07/02	10:09 AM	5/7/02 10:09 AM	93.6601	1476	14.62311
05/07/02	10:10 AM	5/7/02 10:10 AM	94.09338	1477	14.18983
05/07/02	10:11 AM	5/7/02 10:11 AM	94.45444	1478	13.82877
05/07/02	10:12 AM	5/7/02 10:12 AM	94.52666	1479	13.75655
05/07/02	10:13 AM	5/7/02 10:13 AM	94.74329	1480	13.53991
05/07/02	10:14 AM	5/7/02 10:14 AM	94.85161	1481	13.4316
05/07/02	10:15 AM	5/7/02 10:15 AM	94.85161	1482	13.4316
05/07/02	10:16 AM	5/7/02 10:16 AM	94.95993	1483	13.32328
05/07/02	10:17 AM	5/7/02 10:17 AM	94.95993	1484	13.32328
05/07/02	10:18 AM	5/7/02 10:18 AM	95.06825	1485	13.21496
05/07/02	10:19 AM	5/7/02 10:19 AM	95.10436	1486	13.17885
05/07/02	10:20 AM	5/7/02 10:20 AM	95.10436	1487	13.17885
05/07/02	10:21 AM	5/7/02 10:21 AM	95.03215	1488	13.25106
05/07/02	10:22 AM	5/7/02 10:22 AM	95.14047	1489	13.14274
05/07/02	10:23 AM	5/7/02 10:23 AM	95.10436	1490	13.17885
05/07/02	10:24 AM	5/7/02 10:24 AM	95.14047	1491	13.14274
05/07/02	10:25 AM	5/7/02 10:25 AM	95.06825	1492	13.21496
05/07/02	10:26 AM	5/7/02 10:26 AM	95.17657	1493	13.10664
05/07/02	10:27 AM	5/7/02 10:27 AM	95.06825	1494	13.21496
05/07/02	10:28 AM	5/7/02 10:28 AM	95.10436	1495	13.17885
05/07/02	10:29 AM	5/7/02 10:29 AM	95.14047	1496	13.14274
05/07/02	10:30 AM	5/7/02 10:30 AM	95.10436	1497	13.17885
05/07/02	10:31 AM	5/7/02 10:31 AM	95.10436	1498	13.17885
05/07/02	10:32 AM	5/7/02 10:32 AM	94.41834	1499	13.86487
05/07/02	10:33 AM	5/7/02 10:33 AM	92.61302	1500	15.67019
05/07/02	10:34 AM	5/7/02 10:34 AM	92.17974	1501	16.10347
05/07/02	10:35 AM	5/7/02 10:35 AM	92.07142	1502	16.21179
05/07/02	10:36 AM	5/7/02 10:36 AM	91.92699	1503	16.35622
05/07/02	10:37 AM	5/7/02 10:37 AM	91.81867	1504	16.46454
05/07/02	10:38 AM	5/7/02 10:38 AM	91.78257	1505	16.50064
05/07/02	10:39 AM	5/7/02 10:39 AM	91.74646	1506	16.53675
05/07/02	10:40 AM	5/7/02 10:40 AM	91.67425	1507	16.60896
05/07/02	10:41 AM	5/7/02 10:41 AM	91.60203	1508	16.68117
05/07/02	10:42 AM	5/7/02 10:42 AM	91.63814	1509	16.64507
05/07/02	10:43 AM	5/7/02 10:43 AM	91.52982	1510	16.75339
05/07/02	10:44 AM	5/7/02 10:44 AM	92.39638	1511	15.88683
05/07/02	10:45 AM	5/7/02 10:45 AM	93.15461	1512	15.1286
05/07/02	10:46 AM	5/7/02 10:46 AM	93.73231	1513	14.55089
05/07/02	10:47 AM	5/7/02 10:47 AM	94.09338	1514	14.18983
05/07/02	10:48 AM	5/7/02 10:48 AM	94.34612	1515	13.93709
05/07/02	10:49 AM	5/7/02 10:49 AM	94.45444	1516	13.82877
05/07/02	10:50 AM	5/7/02 10:50 AM	94.56276	1517	13.72045

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	10:51 AM	5/7/02 10:51 AM	94.74329	1518	13.53991
05/07/02	10:52 AM	5/7/02 10:52 AM	94.70719	1519	13.57602
05/07/02	10:53 AM	5/7/02 10:53 AM	94.74329	1520	13.53991
05/07/02	10:54 AM	5/7/02 10:54 AM	94.7794	1521	13.50381
05/07/02	10:55 AM	5/7/02 10:55 AM	94.92383	1522	13.35938
05/07/02	10:56 AM	5/7/02 10:56 AM	94.92383	1523	13.35938
05/07/02	10:57 AM	5/7/02 10:57 AM	94.88772	1524	13.39549
05/07/02	10:58 AM	5/7/02 10:58 AM	94.99604	1525	13.28717
05/07/02	10:59 AM	5/7/02 10:59 AM	94.92383	1526	13.35938
05/07/02	11:00 AM	5/7/02 11:00 AM	94.99604	1527	13.28717
05/07/02	11:01 AM	5/7/02 11:01 AM	94.95993	1528	13.32328
05/07/02	11:02 AM	5/7/02 11:02 AM	94.95993	1529	13.32328
05/07/02	11:03 AM	5/7/02 11:03 AM	95.06825	1530	13.21496
05/07/02	11:04 AM	5/7/02 11:04 AM	94.92383	1531	13.35938
05/07/02	11:05 AM	5/7/02 11:05 AM	94.95993	1532	13.32328
05/07/02	11:06 AM	5/7/02 11:06 AM	95.06825	1533	13.21496
05/07/02	11:07 AM	5/7/02 11:07 AM	94.95993	1534	13.32328
05/07/02	11:08 AM	5/7/02 11:08 AM	95.03215	1535	13.25106
05/07/02	11:09 AM	5/7/02 11:09 AM	95.03215	1536	13.25106
05/07/02	11:10 AM	5/7/02 11:10 AM	95.10436	1537	13.17885
05/07/02	11:11 AM	5/7/02 11:11 AM	95.06825	1538	13.21496
05/07/02	11:12 AM	5/7/02 11:12 AM	94.99604	1539	13.28717
05/07/02	11:13 AM	5/7/02 11:13 AM	95.06825	1540	13.21496
05/07/02	11:14 AM	5/7/02 11:14 AM	94.12949	1541	14.15372
05/07/02	11:15 AM	5/7/02 11:15 AM	94.34612	1542	13.93709
05/07/02	11:17 AM	5/7/02 11:17 AM	94.63498	1543	13.64823
05/07/02	11:18 AM	5/7/02 11:18 AM	94.7794	1544	13.50381
05/07/02	11:19 AM	5/7/02 11:19 AM	94.81551	1545	13.4677
05/07/02	11:20 AM	5/7/02 11:20 AM	96.25977	1546	12.02344
05/07/02	11:21 AM	5/7/02 11:21 AM	98.31783	1547	9.965377
05/07/02	11:22 AM	5/7/02 11:22 AM	99.50934	1548	8.773865
05/07/02	11:23 AM	5/7/02 11:23 AM	100.3398	1549	7.943417
05/07/02	11:24 AM	5/7/02 11:24 AM	100.8814	1550	7.40182
05/07/02	11:25 AM	5/7/02 11:25 AM	101.2425	1551	7.040756
05/07/02	11:26 AM	5/7/02 11:26 AM	101.4952	1552	6.78801
05/07/02	11:27 AM	5/7/02 11:27 AM	101.6396	1553	6.643585
05/07/02	11:28 AM	5/7/02 11:28 AM	101.7841	1554	6.499159
05/07/02	11:29 AM	5/7/02 11:29 AM	101.8924	1555	6.39084
05/07/02	11:30 AM	5/7/02 11:30 AM	102.0007	1556	6.28252
05/07/02	11:31 AM	5/7/02 11:31 AM	102.0729	1557	6.210307
05/07/02	11:32 AM	5/7/02 11:32 AM	102.1451	1558	6.138095
05/07/02	11:33 AM	5/7/02 11:33 AM	102.2173	1559	6.065882
05/07/02	11:34 AM	5/7/02 11:34 AM	102.2895	1560	5.993669
05/07/02	11:34 AM	5/7/02 11:34 AM	102.3618	1561	5.921456
05/07/02	11:35 AM	5/7/02 11:35 AM	102.3979	1562	5.885349
05/07/02	11:36 AM	5/7/02 11:36 AM	102.434	1563	5.849243
05/07/02	11:37 AM	5/7/02 11:37 AM	102.5062	1564	5.77703
05/07/02	11:38 AM	5/7/02 11:38 AM	102.5423	1565	5.740924
05/07/02	11:39 AM	5/7/02 11:39 AM	102.5784	1566	5.704817

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	11:40 AM	5/7/02 11:40 AM	102.6506	1567	5.632604
05/07/02	11:41 AM	5/7/02 11:41 AM	102.6506	1568	5.632604
05/07/02	11:42 AM	5/7/02 11:42 AM	102.6867	1569	5.596498
05/07/02	11:43 AM	5/7/02 11:43 AM	102.7228	1570	5.560392
05/07/02	11:44 AM	5/7/02 11:44 AM	102.7589	1571	5.524285
05/07/02	11:45 AM	5/7/02 11:45 AM	102.795	1572	5.488179
05/07/02	11:46 AM	5/7/02 11:46 AM	102.8311	1573	5.452072
05/07/02	11:47 AM	5/7/02 11:47 AM	102.8311	1574	5.452072
05/07/02	11:48 AM	5/7/02 11:48 AM	102.8672	1575	5.415966
05/07/02	11:49 AM	5/7/02 11:49 AM	102.9034	1576	5.379859
05/07/02	11:50 AM	5/7/02 11:50 AM	102.9395	1577	5.343753
05/07/02	11:51 AM	5/7/02 11:51 AM	102.9395	1578	5.343753
05/07/02	11:52 AM	5/7/02 11:52 AM	102.9756	1579	5.307646
05/07/02	11:53 AM	5/7/02 11:53 AM	103.0117	1580	5.27154
05/07/02	11:54 AM	5/7/02 11:54 AM	103.0117	1581	5.27154
05/07/02	11:55 AM	5/7/02 11:55 AM	103.0478	1582	5.235434
05/07/02	11:56 AM	5/7/02 11:56 AM	103.0478	1583	5.235434
05/07/02	11:57 AM	5/7/02 11:57 AM	103.0839	1584	5.199327
05/07/02	11:58 AM	5/7/02 11:58 AM	103.0839	1585	5.199327
05/07/02	11:59 AM	5/7/02 11:59 AM	103.12	1586	5.163221
05/07/02	12:00 PM	5/7/02 12:00 PM	103.1561	1587	5.127114
05/07/02	12:01 PM	5/7/02 12:01 PM	103.1561	1588	5.127114
05/07/02	12:02 PM	5/7/02 12:02 PM	103.1922	1589	5.091008
05/07/02	12:03 PM	5/7/02 12:03 PM	103.2283	1590	5.054901
05/07/02	12:04 PM	5/7/02 12:04 PM	103.2283	1591	5.054901
05/07/02	12:05 PM	5/7/02 12:05 PM	103.2283	1592	5.054901
05/07/02	12:06 PM	5/7/02 12:06 PM	103.2644	1593	5.018795
05/07/02	12:07 PM	5/7/02 12:07 PM	103.3005	1594	4.982689
05/07/02	12:08 PM	5/7/02 12:08 PM	103.3005	1595	4.982689
05/07/02	12:09 PM	5/7/02 12:09 PM	103.3005	1596	4.982689
05/07/02	12:10 PM	5/7/02 12:10 PM	103.3366	1597	4.946582
05/07/02	12:11 PM	5/7/02 12:11 PM	103.3727	1598	4.910476
05/07/02	12:12 PM	5/7/02 12:12 PM	103.3366	1599	4.946582
05/07/02	12:13 PM	5/7/02 12:13 PM	103.3727	1600	4.910476
05/07/02	12:14 PM	5/7/02 12:14 PM	103.4449	1601	4.838263
05/07/02	12:15 PM	5/7/02 12:15 PM	103.4088	1602	4.874369
05/07/02	12:16 PM	5/7/02 12:16 PM	103.4449	1603	4.838263
05/07/02	12:17 PM	5/7/02 12:17 PM	103.4449	1604	4.838263
05/07/02	12:18 PM	5/7/02 12:18 PM	103.4449	1605	4.838263
05/07/02	12:19 PM	5/7/02 12:19 PM	103.4811	1606	4.802156
05/07/02	12:20 PM	5/7/02 12:20 PM	103.5172	1607	4.76605
05/07/02	12:21 PM	5/7/02 12:21 PM	103.5172	1608	4.76605
05/07/02	12:22 PM	5/7/02 12:22 PM	103.5172	1609	4.76605
05/07/02	12:23 PM	5/7/02 12:23 PM	103.5172	1610	4.76605
05/07/02	12:24 PM	5/7/02 12:24 PM	103.5533	1611	4.729943
05/07/02	12:25 PM	5/7/02 12:25 PM	103.5533	1612	4.729943
05/07/02	12:26 PM	5/7/02 12:26 PM	103.5894	1613	4.693837
05/07/02	12:27 PM	5/7/02 12:27 PM	103.5894	1614	4.693837
05/07/02	12:28 PM	5/7/02 12:28 PM	103.5894	1615	4.693837

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	12:29 PM	5/7/02 12:29 PM	103.5894	1616	4.693837
05/07/02	12:30 PM	5/7/02 12:30 PM	103.6255	1617	4.657731
05/07/02	12:31 PM	5/7/02 12:31 PM	103.6616	1618	4.621624
05/07/02	12:32 PM	5/7/02 12:32 PM	103.6616	1619	4.621624
05/07/02	12:33 PM	5/7/02 12:33 PM	103.6977	1620	4.585518
05/07/02	12:34 PM	5/7/02 12:34 PM	103.6977	1621	4.585518
05/07/02	12:35 PM	5/7/02 12:35 PM	103.6977	1622	4.585518
05/07/02	12:36 PM	5/7/02 12:36 PM	103.6977	1623	4.585518
05/07/02	12:37 PM	5/7/02 12:37 PM	103.6977	1624	4.585518
05/07/02	12:38 PM	5/7/02 12:38 PM	103.7338	1625	4.549411
05/07/02	12:39 PM	5/7/02 12:39 PM	103.7338	1626	4.549411
05/07/02	12:40 PM	5/7/02 12:40 PM	103.7699	1627	4.513305
05/07/02	12:41 PM	5/7/02 12:41 PM	103.7699	1628	4.513305
05/07/02	12:42 PM	5/7/02 12:42 PM	103.806	1629	4.477198
05/07/02	12:43 PM	5/7/02 12:43 PM	103.806	1630	4.477198
05/07/02	12:44 PM	5/7/02 12:44 PM	103.806	1631	4.477198
05/07/02	12:45 PM	5/7/02 12:45 PM	103.806	1632	4.477198
05/07/02	12:46 PM	5/7/02 12:46 PM	103.806	1633	4.477198
05/07/02	12:47 PM	5/7/02 12:47 PM	103.8421	1634	4.441092
05/07/02	12:48 PM	5/7/02 12:48 PM	103.8421	1635	4.441092
05/07/02	12:49 PM	5/7/02 12:49 PM	103.8782	1636	4.404986
05/07/02	12:50 PM	5/7/02 12:50 PM	103.8782	1637	4.404986
05/07/02	12:51 PM	5/7/02 12:51 PM	103.8782	1638	4.404986
05/07/02	12:52 PM	5/7/02 12:52 PM	103.9143	1639	4.368879
05/07/02	12:53 PM	5/7/02 12:53 PM	103.9143	1640	4.368879
05/07/02	12:54 PM	5/7/02 12:54 PM	103.9143	1641	4.368879
05/07/02	12:55 PM	5/7/02 12:55 PM	103.9143	1642	4.368879
05/07/02	12:56 PM	5/7/02 12:56 PM	103.9504	1643	4.332773
05/07/02	12:57 PM	5/7/02 12:57 PM	103.9504	1644	4.332773
05/07/02	12:58 PM	5/7/02 12:58 PM	103.9504	1645	4.332773
05/07/02	12:59 PM	5/7/02 12:59 PM	103.9865	1646	4.296666
05/07/02	1:00 PM	5/7/02 1:00 PM	103.9865	1647	4.296666
05/07/02	1:01 PM	5/7/02 1:01 PM	103.9865	1648	4.296666
05/07/02	1:02 PM	5/7/02 1:02 PM	103.9865	1649	4.296666
05/07/02	1:03 PM	5/7/02 1:03 PM	104.0226	1650	4.26056
05/07/02	1:04 PM	5/7/02 1:04 PM	104.0226	1651	4.26056
05/07/02	1:05 PM	5/7/02 1:05 PM	104.0226	1652	4.26056
05/07/02	1:06 PM	5/7/02 1:06 PM	104.0226	1653	4.26056
05/07/02	1:07 PM	5/7/02 1:07 PM	104.0588	1654	4.224453
05/07/02	1:08 PM	5/7/02 1:08 PM	104.0588	1655	4.224453
05/07/02	1:09 PM	5/7/02 1:09 PM	104.0949	1656	4.188347
05/07/02	1:10 PM	5/7/02 1:10 PM	104.0949	1657	4.188347
05/07/02	1:11 PM	5/7/02 1:11 PM	104.0949	1658	4.188347
05/07/02	1:12 PM	5/7/02 1:12 PM	104.0949	1659	4.188347
05/07/02	1:13 PM	5/7/02 1:13 PM	104.0949	1660	4.188347
05/07/02	1:14 PM	5/7/02 1:14 PM	104.131	1661	4.15224
05/07/02	1:15 PM	5/7/02 1:15 PM	104.131	1662	4.15224
05/07/02	1:16 PM	5/7/02 1:16 PM	104.131	1663	4.15224
05/07/02	1:17 PM	5/7/02 1:17 PM	104.131	1664	4.15224

Ogle Aquifer Test-Pumping Well Data

Date	Time	Date & Time	Channel 1	Minutes	Depth
05/07/02	1:18 PM	5/7/02 1:18 PM	104.1671	1665	4.116134
05/07/02	1:19 PM	5/7/02 1:19 PM	104.1671	1666	4.116134
05/07/02	1:20 PM	5/7/02 1:20 PM	104.1671	1667	4.116134
05/07/02	1:21 PM	5/7/02 1:21 PM	104.1671	1668	4.116134
05/07/02	1:22 PM	5/7/02 1:22 PM	104.1671	1669	4.116134
05/07/02	1:23 PM	5/7/02 1:23 PM	104.1671	1670	4.116134
05/07/02	1:24 PM	5/7/02 1:24 PM	104.2393	1671	4.043921
05/07/02	1:25 PM	5/7/02 1:25 PM	104.2032	1672	4.080028

APPENDIX E
INTERPRETIVE PLOTS

to predict drawdown:
enter parameters in blue cells
adjust u in green cells for automatic lookup
read drawdown in red cell

Ogle: Aquifer Test
Theis* calibration solution for confined aquifer

Match observed drawdown to Theis-predicted drawdown in the Pumping Well
Assumptions

T	transmissivity (from observation well Jacobs-Cooper)	484	gpd/ft
Q	pumping rate during initial drawdown	5.5	gpm
S	storage	1.0E-04	
r	distance from well	1.5	feet
t	time since pumping started	1.00	days

drawdown=114.6 Q W(u)/T = [redacted] feet
W(u) function of u=1.87*(r² S)/(4 T t)= 2.2E-07
W(u)= 14.85

**Theis C.V. 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage. Trans. Amer. Geophys. Union, 2 pp. 519-524. adapted from Freeze and Cherry. 1979. Groundwater. Prentice-Hall. Toronto. p318 and Driscoll. 1995. Groundwater and Wells. U.S. Filter/Johnson Screens. St. Paul MN. p218*

u function split out	2.1733E-07	2	whole
	-7	1.E-07	exp
		2	whole
		1.E-07	exp

to predict drawdown:
enter parameters in blue cells
adjust u in green cells for automatic lookup
read drawdown in red cell

Ogle: Aquifer Test
Theis* predictive solution for confined aquifer

Match observed drawdown to that predicted by the Theis Recovery Data in Aqtesolve
Assumptions

T	transmissivity (from equilibrium)	283	gpd/ft
Q	pumping rate during initial drawdown	5.5	gpm
S	storage	1.0E-04	
r	distance from well	1.5	feet
t	time since pumping started	1.00	days

drawdown=114.6 Q W(u)/T = [redacted] feet
W(u) function of u=1.87*(r² S)/(4 T t)= 3.7E-07
W(u)= 14.15

u function split out	3.7169E-07	4	whole
	-7	1.E-07	exp
		4	whole
		1.E-07	exp

to predict drawdown:
enter parameters in blue cells
adjust u in green cells for automatic lookup
read drawdown in red cell

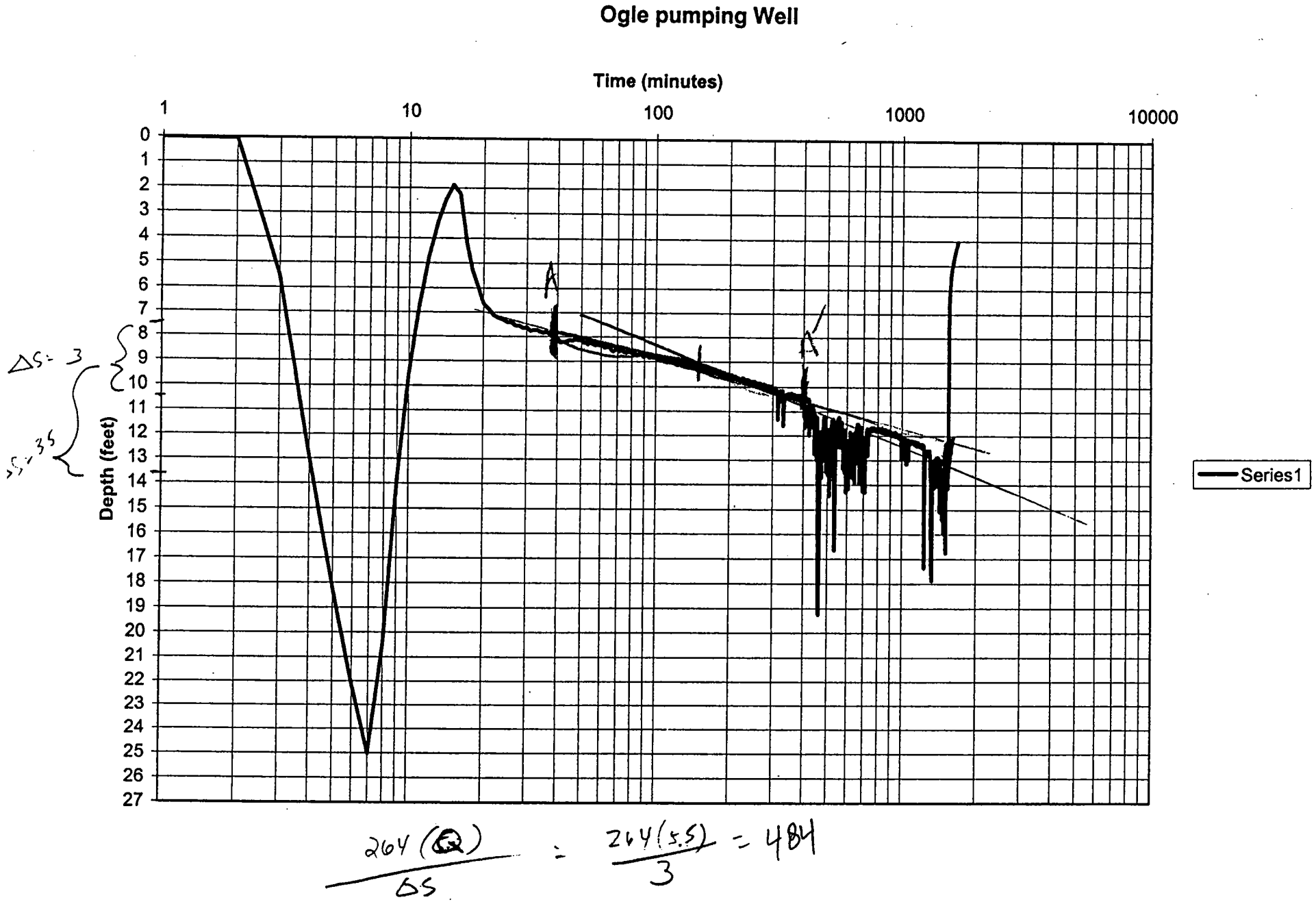
Ogle: Aquifer Test
Theis* predictive solution for confined aquifer

Predicted Drawdown in pumping well after 180 days of pumping at peak use rates of 1 gpm.
Assumptions

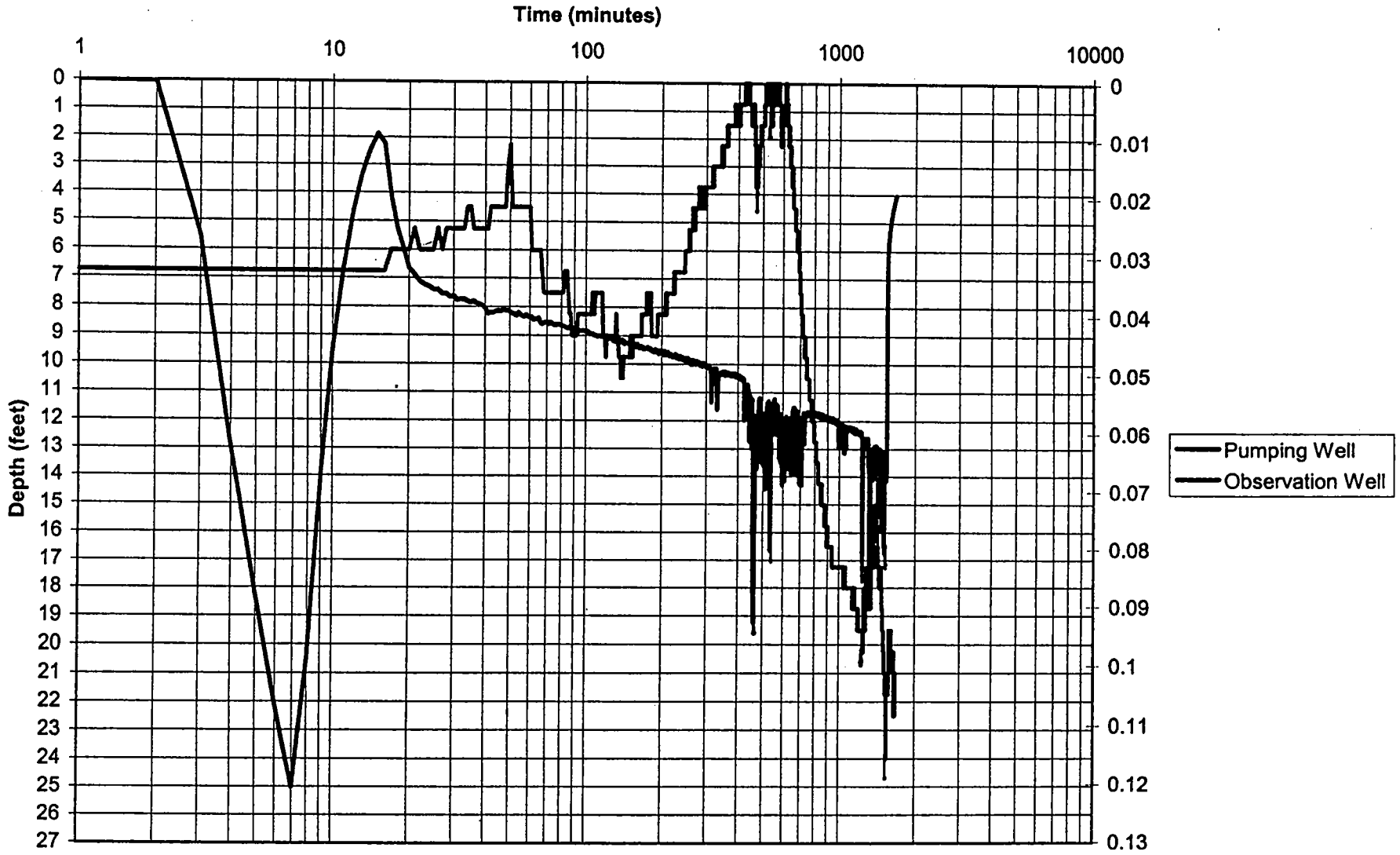
T	transmissivity (from equilibrium)	283	gpd/ft
Q	pumping rate during initial drawdown	9.0	gpm
S	storage	1.0E-04	
r	distance from well	250.0	feet
t	time since pumping started	180.00	days

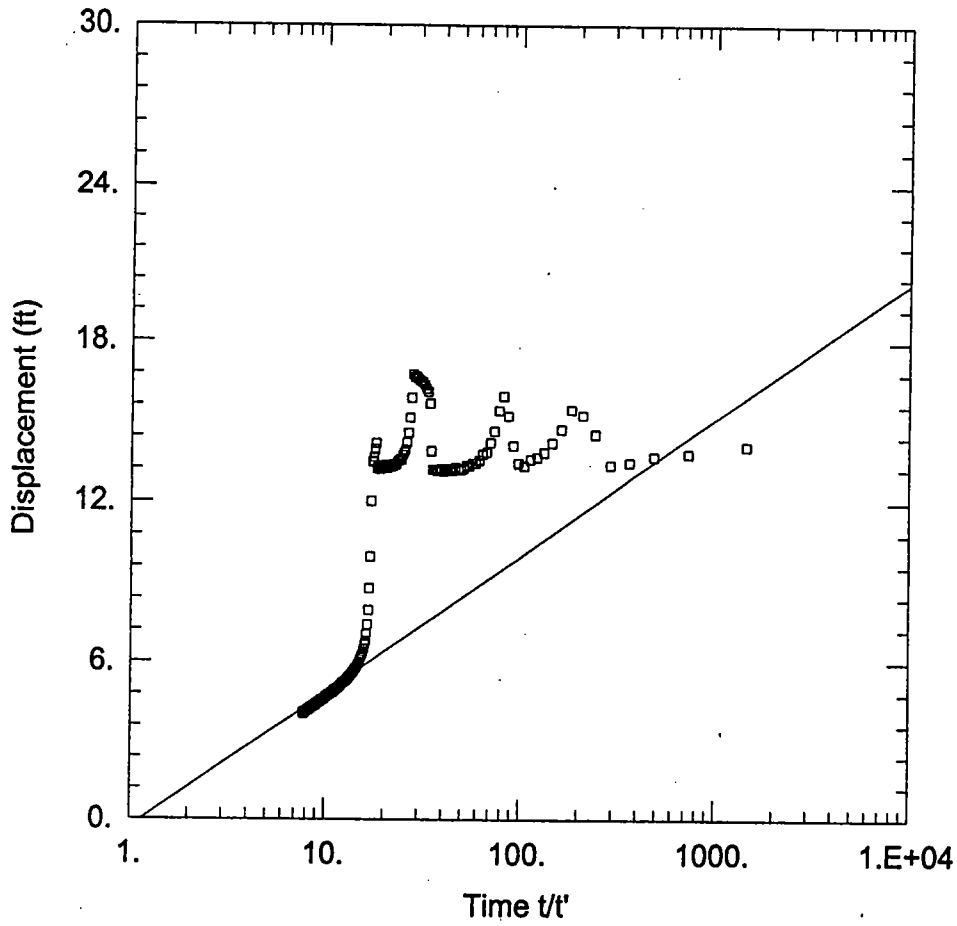
drawdown=114.6 Q W(u)/T = [redacted] feet
W(u) function of u=1.87*(r² S)/(4 T t)= 5.7E-05
W(u)= 9.14

u function split out	5.7359E-05	6	whole
	-5	1.E-05	exp
		6	whole
		1.E-05	exp


Ogle pumping Well
Time (minutes)
1
10
100
1000
10000
Depth (feet)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
Series1
ΔS = 3
ΔS = 3.5
A
A'
264 (Q) / ΔS = 264(5.5) / 3 = 484

Ogle pumping Well





WELL TEST ANALYSIS

Data Set: E:\...\Ogle Aquifer Test.aqt
Date: 05/20/02 Time: 13:24:56

PROJECT INFORMATION

Company: EGR and Associates
Client: Brad Ogle
Test Well: P-1

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

T = 282.5 gal/day/ft
S' = 1.155

AQUIFER DATA

Saturated Thickness: 140. ft

Anisotropy Ratio (Kz/Kr): 3.136

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
P-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
P-1	0	0

SUPPLEMENTAL MEMO

LAND MANAGEMENT DIVISION
http://www.LaneCounty.org/PW_LMD

Date of Memo: February 11, 2004
To: Lane County Planning Commission
From: Jerry Kendall/Associate Planner (682-4057) JK
Re: PA 02-5838: Plan Amendment & Zone change to Marginal Lands for Ogle/Childs.

I. Background

The initial evidentiary hearing by the Planning Commission for this item was held on January 20. Because of the volume of materials received the date of the hearing, and testimony provided that evening, both staff and Jim Just of the *Goal 1 Coalition* requested a continuance. The Commission closed the public hearing and granted the continuance request in the following manner, leaving the record open for submittal of written materials:

- Until January 27 for any party to comment on any aspect of the proposal;
- Until February 3 for any party to comment on materials that came in during the period above;
- And, until February 10 for the applicant's final rebuttal.

The record closed as of February 10. **The Planning Commission will deliberate on February 17.**

All of these materials, which include those provided to the Commission at the hearing, are attached as exhibits to this report, 19 in all. The exhibits are in chronological order of receipt, the earliest (#1) on top.

Note: both Mr. Just's and Mr. Setchko's comments have been revised multiple times; all revisions are included. Staff's analysis focused on the comments found in the later revisions. In addition, staff had multiple phone conversations with both Mr. Just and Mr. Setchko, and concluded that there were three primary unresolved items in the application. They are discussed below.

II. Three "Unresolved" Items

After having read all of the exhibits, staff concluded that three items within the proposal were unresolved. This is not to say that any of the other assignments of error raised by those in opposition may not be sustained upon an appeal to LUBA, but rather that, based on staff's understanding of Marginal Land law and the Board's 1997 guidelines, the proposal meets the test for a ML designation.

Item #1: ORS 197.247(1)(b)(C); the "productivity test".
The applicable portion of this provision reads as follows:

(b)(C) The <u>proposed Marginal Land</u> is composed predominantly of soils in capability classes V through VIII in the Agricultural Capability Classification system used by the U.S. Department of Agriculture Soil Conservation Service, and is not capable of producing 85 cubic feet of merchantable timber per acre per year.

Refer to the map on the following page. Staff considers the "proposed Marginal Land" to be the hashed area. Recall that the "tract" is 113+ acres composed of two independently owned parcels, tax lots 303 and 304. The hashed area is approximately 73 acres in size (after subtracting out the 40 acres already zoned ML). The "proposed Marginal Land" is therefore two separate portions of the two parcels. This equates to 34.16 acres of tax lot 303, and 39.58 acres of tax lot 304.

While the agent, Mr. Jaros (see pp. 2-3 of the applicant's submittal in your earlier packet), calculated the forest productivity for the two separate portions of each parcel, he did so using a zero productivity rating for the soils which are not given a rating in the August 1997 *Lane County Soil Ratings for Forestry and Agriculture* booklet. Mr. Just raised the issue that having no rating is not tantamount to not be able to grow <u>any</u> amount of timber (see Exhibit #13, p.4 of main text), a contention to which staff agrees. Mr. Setchko also missed the mark in that while he provided valid ratings for the soils previously unrated, he calculated productivity for the entire 113+ acre tract, not the "proposed" ML.

Through simple math, staff can resolve this issue by inserting Mr. Setchko's productivity ratings (of 45 cu.ft./ac./yr.) in place of Mr. Jaros's ratings (of zero). Since all of these facts are already in the record, no procedural error is committed. Substituting these numbers (i.e., 45 for 0), and following the same process as Mr. Jaros did on pages 2 and 3 of the applicant's submittal, we arrive at the following (inserted values are in *italics*)

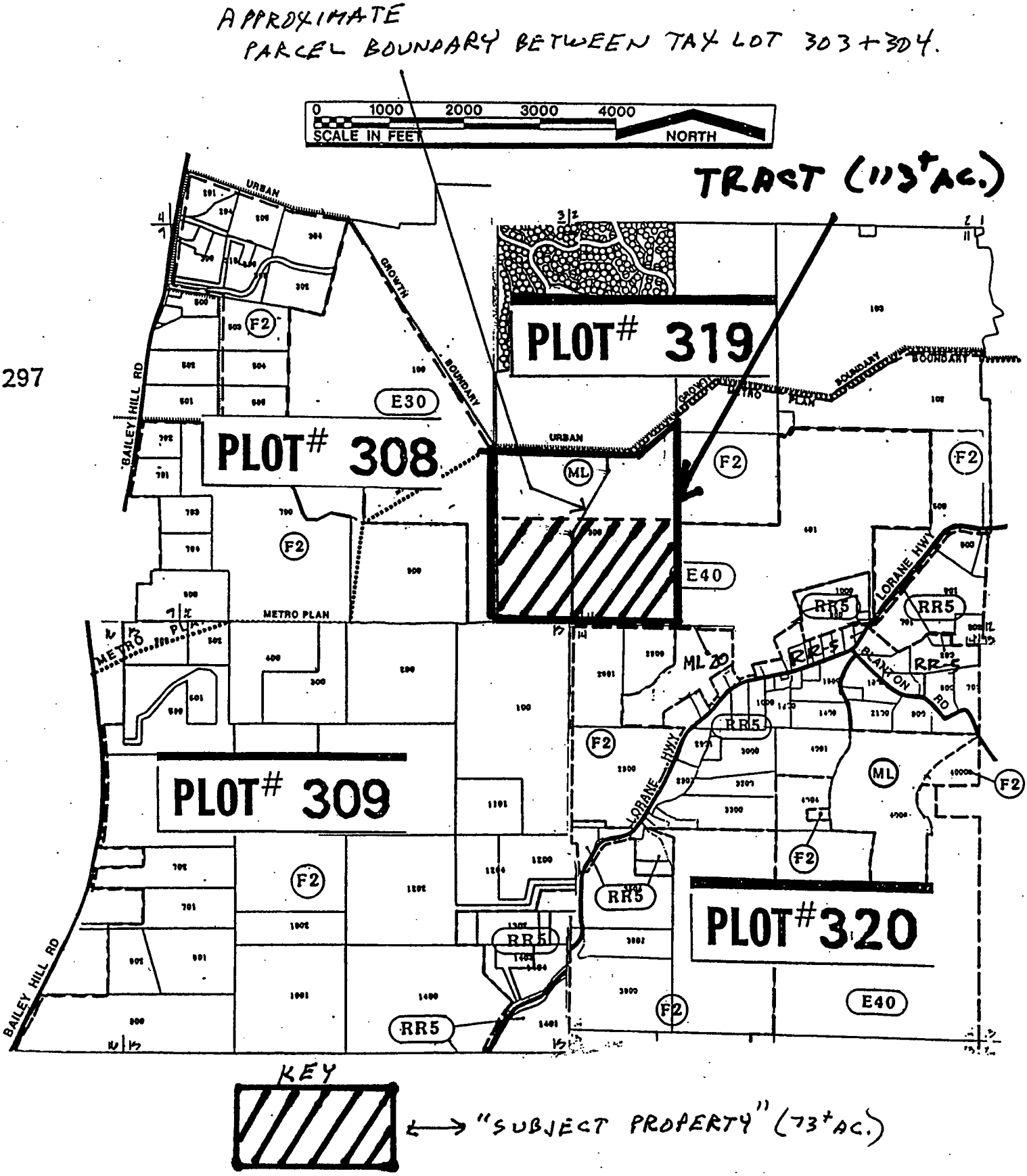
<u>LOT 18 04 11 303</u>

SOIL TYPE	AGRICULTURAL SITE CLASS *2	FORESTRY SITE CLASS *1	CUBIC FT. PER AC./YR.* 1	ACRES *2
102C PANTHER SILTY CLAY	6	0	*45*	12.936
107C PHILOMATH SILTY CLAY	6	0	*45*	12.853
108F PHIL. COBBLY SILTY CLAY	6	0	*45*	5.628
113G RITNER COB.SILTY CL. LOAM	7	107	149	2.741
				34.158 ac.

***<u>53.35</u>* <u>CU. FT. Per AC. Per Yr. forestry capability</u>**

<u>LOT 18 04 11 304</u>

SOIL TYPE	AGRICULTURAL SITE CLASS *2	FORESTRY SITE CLASS *1	CUBIC FT. PER AC./YR.* 1	ACRES *2
81D MC DUFF CLAY LOAM	6	112	158	5.600
102C PANTHER SILTY CLAY	6	0	*45*	1.747


APPROXIMATE
PARCEL BOUNDARY BETWEEN TAX LOT 303+304.
0 1000 2000 3000 4000
SCALE IN FEET
NORTH
TRACT (113+AC.)
PLOT# 319
PLOT# 308
PLOT# 309
PLOT# 320
297
333
URBAN
GROWTH BOUNDARY
BAILEY HILL RD
METRO PLAN
LORANE HWY
RANKIN RD
E30
E40
F2
ML
ML 20
RR5
KEY
"SUBJECT PROPERTY" (73+AC.)

107C PHILOMATH SILTY CLAY	**6**	**0**	***45***	**18.276**
108F PHIL. COBBLY SILTY CLAY	**6**	**0**	***45***	**7.042**
113E RITNER COB.SILTY CL. LOAM	**6**	**107**	**149**	**6.914**
				39.579 ac.

80.67 CU. FT. Per AC. Per Yr. forestry capability *1

Conclusion for Item #1: the proposed Marginal Land produces below 85 cu.ft./ac./yr of merchantable timber, and satisfies this standard.

Item #2: Error in Site Index ratings for two soil types.

Mr. Setchko erred in the Site Index (SI) ratings he used for the *McDuff* and the *Ritner* soils. He erroneously assumed that the SI ratings in the *Lane County Soil Ratings for Forestry and Agriculture* booklet were 100 year rather than 50 year cycle ratings. By further adjusting the ratings for the two soils downward, he erred in his final conclusion that the 113 acre tract could only gross $5,099 annual. Fortunately for the applicant, the correct values are already in the file record, and when they are utilized, and the same process followed, a conclusion of $5,597 annual gross is reached. This value is still far below the $10,000 gross annual income limit of ORS 197.247(1)(a).

While the process of arriving at the above conclusion requires some interpolation, the process is identical to that used by Mr. Setchko in Exhibit #7 (starting on page 3).

The correct SI for the *McDuff* soil is 112, while for the *Ritner*, 107. That information is straight out of the *Lane County Soil Ratings for Forestry and Agriculture,* which is part of the attached Exhibit #7.

Using the same format approach as Mr. Setchko:

McDuff clay loam-5.6 acres @ 25,470 bd.ft./ac.* =	142,632 bd.ft.
Ritner cobbly silty clay loam- 13.38 acres @ 23,005 bd.ft./ac.*=	307,807 bd.ft.
Remaining soil types – 94.76 acres @ 8,115 bd.ft./ac.* =	768,977 bd.ft.
Total	1,219,416 bd.ft.

Again using the same SAW percentages as found on page 4 of Exhibit #7:

Total Volume- 1,219.42 MBF (thousand board feet)

487.77 MBF of 2 SAW @ $255/MBF**	$124,381
609.71 MBF of 3 SAW @ $215/MBF**	$131,088
121.94 MBF of 4 SAW @ $200/MBF**	$ 24,388
Total Projected Gross Revenue:	$279, 857

$279, 857 / 50 years = $5,597/year.

* These board foot values were achieved using the "Douglas Fir Empirical Yield Table", found in Exhibit #7. Some interpolation was required, using the same methodology that Mr. Setchko used for the other soils. The table is reproduced on the following page. For example, the *McDuff* soils have a SI of 112. Tables 6 & 7 are therefore used to arrive at the board feet value (important note: the "SVG (32')" = Board foot volume). Subtracting the two values found in each table (30,132-24,305=5827 bd.ft./ac.) and dividing by 10 (as 10 is the SI difference in the two tables), we arrive at 582.7, which is the value of each increment between the two initial values. Multiplying 582.7 x 2 (as the SI of 112 is 2 increments higher that a SI of 110), we arrive at 1165.4, the bd.ft. volume (or SV6(32')) for a SI of 112. Adding to that value 24305 (the bd.ft. /ac. for a SI of 110), we arrive at 25,470 bd.ft./ac. as the productivity for a soil with a SI of 112. Multiplying that by the number of acres of *McDuff* (5.6 ac.), we arrive at 142,632 bd.ft. of volume being produced on the *McDuff* soils.

Following the same routine for the *Ritner* soils, having a SI of 107. Tables 5 & 6 are therefore used to arrive at the board feet value. Subtracting the two values found in each table (24,305-19,972=4333 bd.ft./ac.) and dividing by 10 (as 10 is the SI difference in the two tables), we arrive at 433.3, which is the value of each increment between the two initial values. Multiplying 433.3 x 7 (as the SI of 107 is 7 increments higher that a SI of 100), we arrive at 3033.1, the bd.ft. volume (or SV6(32')) for a SI of 107. Adding to that value 19,972 (the bd.ft. /ac. for a SI of 100), we arrive at 23,005.1 bd.ft./ac. as the productivity for a soil with a SI of 107. Multiplying that by the number of acres of *Ritner* (13.38 ac.), we arrive at 307,807 bd.ft. of volume being produced on the *Ritner* soils.

** These prices are from Exhibit #7, last page, "Log Prices- 3rd quarter 1983".

Conclusion for item #2; the subject tract still produces far below the $10,000 gross income limit (namely, only $5,597/year), using the correct SI for the two soils in question.

Item #3: That Mr. Setchko did not use alternative ratings for species other than Doug fir that were approved by the Department of Forestry, as required by OAR 660-006-005(2).

OAR 660-006-005(2) reads as follows:

> *(2) "Cubic Foot Per Acre" means the average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resource Conservation Service (NRCS). Where NRCS data are not available or are shown to be inaccurate, an alternative method for determining productivity may be used. An alternative method must provide equivalent data and be approved by the Department of Forestry.* (emphasis added)

Mr. Just maintains (see Exhibit #13, page 2 of main text) that Mr. Setchko's analysis of the (85 cu.ft./ac.yr.) productivity standard of ORS 197.247(1)(b)(C) is inadequate because ratings for species other than Doug fir (i.e., other "merchantable timber") were not provided from an alternative method approved by the DOF.

DOUGLAS FIR EMPIRICAL YIELD TABLE

SITE CLASS 95 | 17,59

SITE CLASS 98 | 19,01

TABLE 5

SITE 100

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	17	8.53	85	85	335	.254
26	70	9.33	1,324	1,236	2,561	.483
30	97	9.85	2,130	1,913	4,601	.416
40	146	11.14	4,071	3,703	11,450	.323
41	150	11.27	4,259	3,886	12,248	.317
50	181	12.39	5,909	5,541	19,972	.277
60	209	13.59	7,643	7,325	29,247	.250
70	232	14.71	9,273	8,982	38,528	.233
80	252	15.75	10,799	10,468	47,294	.221
90	269	16.69	12,222	11,750	55,131	.213
100	284	17.53	13,541	12,805	61,760	.207
110	297	18.24	14,756	13,624	66,922	.204
120	310	18.81	15,867	14,190	70,448	.201
130	321	19.24	16,875	14,502	72,234	.201

TABLE 6

SITE 110

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	30	8.74	327	327	666	.491
26	83	9.63	1,688	1,494	3,299	.453
30	109	10.23	2,574	2,253	5,812	.388
40	158	11.69	4,717	4,275	14,125	.303
41	162	11.83	4,926	4,482	15,074	.297
50	194	13.11	6,757	6,345	24,305	.261
60	222	14.47	8,693	8,344	35,244	.237
70	245	15.76	10,525	10,200	46,141	.221
80	264	16.97	12,253	11,863	56,425	.210
90	281	18.09	13,878	13,304	65,675	.203
100	296	19.09	15,398	14,503	73,549	.197
110	310	19.97	16,815	15,448	79,836	.193
120	322	20.72	18,129	16,126	84,358	.191
130	333	21.31	19,338	16,528	86,957	.190

TABLE 7

SITE 120

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	51	9.11	819	770	1,355	.568
26	101	10.10	2,294	1,961	4,810	.408
30	126	10.77	3,257	2,821	7,992	.353
40	173	12.39	5,592	5,093	18,116	.281
41	177	12.55	5,820	5,324	19,255	.277
50	208	13.98	7,823	7,389	30,132	.245
60	235	15.50	9,951	9,588	42,783	.224
70	258	16.96	11,974	11,611	55,265	.210
80	277	18.33	13,894	13,424	66,954	.200
90	294	19.60	15,710	14,992	77,437	.194
100	309	20.76	17,423	16,297	86,410	.189
110	322	21.80	19,031	17,334	93,643	.185
120	334	22.70	20,536	18,091	98,946	.183
130	345	23.45	21,937	18,561	102,187	.182

SITE INDEX OF 112 = 25,470 BD. FT./AC

EXHIBIT 9

While Mr. Setchko has addressed other species for the $10,000 gross income test, he has not directly done so for this productivity test. However, Mr. Setchko is on record attesting to the "merchantability" of the other tree species. For example, he states (Exhibit 18, p.1), that of the hardwoods, which include Black Cottonwood, Oregon ash, Oregon white oak, Red alder, Bigleaf maple, and Hybrid poplar, that all but the white oak and bigleaf maple need more water than is available on the subject property. Whereas Mr. Setchko's experience as a professional forester is on record, and that no opposing party has voiced any comparable experience, staff accepts Mr. Setcko's assertion as substantive evidence.

Regarding conifers, Mr. Setchko (again, Exhibit #7) states that Western red cedar and Western hemlock will not grow on the subject property because of moisture limitations. Regarding Ponderosa pine/KMX (basically the same tree) and Grand fir, Mr. Setchko notes that these species are "...worth considerably less money than Douglas-fir" (Exhibit #18, p.1). While that statement was in response to the income test, Mr. Setchko also states (p. 3) that "...it would take considerably more growth to make up for the large price difference between Douglas-fir and another merchantable species". This infers that there are no other "merchantable species" appropriate for this property, such term being found within the standard in question. The term "merchantable" means of a commercial quality and acceptable to buyers. The fact that no data is readily available for other species may reflect its lack of "merchantability" in this geographic area.

Conclusion for item #3: While not responding to this assignment of error directly, the applicant's forester testifies that the growing of most other tree species is problematic at best. Regarding Ponderosa pine and Grand fir, the lack of available productivity data (as witnessed by only one source for Ponderosa pine found by Mr. Just, such study called insignificant by the professional forester) could infer a lack of merchantability of these species for this property, as compared to Doug fir. While the applicant has not built a strong response to this assignment, it appears reasonable to conclude from the record that Doug fir is the only merchantable species for this property, other species being either incapable of growth because of physical conditions such as lack of water, or that other species are of such lower dollar value in comparison to Doug fir as to not be of a quality acceptable to buyers or a fair investment for the owner in lieu of Doug fir, i.e., are not "merchantable timber".

Miscellaneous items

Other objections to the applicant's analysis do not appear to have much validity. For example, the aquifer study, while deemed to contain methodological deficiencies, is supported in its conclusion of adequate water by the State Watermaster's Office (Exhibit #8).

Another comment was the use of a harvest cycle of other than 50 years. Mr. Setchko revised his figures for a 50 year cycle as required by the Board in its ML guidelines. Also, a review of the *Ericsson* case (LUBA No. 91-204) does not reveal a ruling that

"current" timber values are to be used, as suggested by Mr. Just, and contrary to the direction given by the Board to use 1983 prices, as Mr. Setchko did.

Other objections by opposing parties appear to have been adequately addressed in the file record. Staff is prepared to respond to any of those other items as so requested by the Planning Commission.

III. Conclusion

The proposed plan amendment and zone change is adequately supported by the current file record to support a recommendation for approval of the request.

IV. Attached Exhibits:

1. Jan. 16 email from Or. Dept. of Revenue, N. Miller, Re: timber valuation—1p.
2. Jan. 20 Staff email Re: "merchantable species", --1p.
3. Jan. 20 Jim Just submittal—19pp.
4. Jan. 20 letter in objection: J. Chappell & M. Bartusiak—2pp.
5. Copy error; same as #4 above.
6. Jan. 20 letter in objection: L. Hildreth & M. Herring—2pp
7. Jan. 23 Marc Setchko submittal—32pp.
8. Jan. 23 email from State Watermaster—1p.
9. Jan. 26 email from Jim Just, Re: Dept. of Revenue valuation figures—2pp.
10. Jan. 27 email from Jim Just, Re: revised submittal—13pp.
11. Jan. 27 email from staff; JK to K. Howe; Re: four questions—1p.
12. Jan. 27 letter from Michael Farthing, applicant's attorney—1p.
13. Jan. 28 email from Jim Just, Re: revised submittal—15pp.
14. Jan. 29 email from Jim Just, Re: response to Setchko submittal during 1st comment period—14pp.
15. Jan. 20 letter from L. Hildreth—1p.
16. Feb. 4 email; K. Howe to JK Re: Setchko responses—1p.
17. Feb. 2 Jim Just submittal—5pp.
18. Feb. 3 Marc Setchko response to Jim Just—5pp.
19. Feb. 10 Michael Farthing, applicant's attorney: final rebuttal—10pp.

KENDALL Jerry

From: MILLER Norman A [Norman.A.Miller@state.or.us]
Sent: Friday, January 16, 2004 4:27 PM
To: 'KENDALL Jerry'
Subject: RE: got the fax?

Jerry,

	1983 value			1992		
value		2003 value				
DF	MBF	$/MBF	$	$/MBF		
$	$/MBF	$				
2S	678.36	$151	$102,432.36	451	$305,940.36	432
$293,051.52						
3S	847.95	$120	$101,754.00	368	$312,045.60	388
$329,004.60						
4S	169.59	$104	$17,637.36	300	$50,877.00	336
$56,982.24						
Total	1695.9		$221,823.72		$668,862.96	
$679,038.36						

These values represent the value of standing timber, stumpage. I see that the forester used gross log prices which are different. They do not reflect the fact that you will have to log the standing timber to obtain the log prices. Is this what you were looking for?

Norm Miller, Manager, Timber Tax & Deferral Programs
Property Tax Division
Oregon Department of Revenue

55 Center St NE
Salem, OR 97301-2555

Work - (503) 945-8327

-----Original Message-----
From: KENDALL Jerry [mailto:Jerry.KENDALL@co.lane.or.us]
Sent: Tuesday, January 06, 2004 2:13 PM
To: MILLER Norm (OR)
Subject: RE: got the fax?

Norm: FYI, this item has been postponed until the 20th.

-----Original Message-----
From: KENDALL Jerry
Sent: Tuesday, January 06, 2004 11:29 AM
To: MILLER Norm (OR)
Subject: RE: got the fax?

OK. I'll send it right over.

-----Original Message-----
From: MILLER Norman A [mailto:Norman.A.Miller@state.or.us]
Sent: Tuesday, January 06, 2004 11:18 AM
To: 'KENDALL Jerry'
Subject: RE: got the fax?

Jerry,

#1 - 10.

Exhibit Divider

KENDALL Jerry

From: KENDALL Jerry
Sent: Tuesday, January 20, 2004 3:10 PM
To: HOWE Kent
Subject: ML/"merchantable timber"

A few weeks ago at staff meeting, I asked you if the term "merchantable species" as it is used in (1991) ORS 197(1)(b)(C) was to include more species than just Doug fir.

Your response was that this county is "Doug fir country" and that the productivity tables are generated in regards to Doug fir, so we were to assume the above term to apply to Doug fir only.

For PA 02-5838, the Ogle ML proposal before the PC tonight, I have received (today) a lengthly letter in opposition from the "Goal 1 Coalation". It objects to the proposal on multiple fronts. Re: "merchantable timber", it presents a well reasoned legal argument that species other than DF are to be utilized. Copy is in your mailbox. See p.2.

Do you wish to modify the LMD position that "merchantable species" is to apply to DF only?

Please respond before 5.

Jerry Kendall/Associate Planner
Dept. of Public Works
Land Management Division
125 E. 8th Ave.
Eugene, Or. 97401

Phone: 541-682-4057
FAX: 541-682-3947

#2 - 1p.

Exhibit Divider

Goal One Coalition

39625 Almen Drive
Lebanon, Oregon 97355
Phone: 541-258-6074
Fax: 541-258-6810
goal1@pacifier.com

January 20, 2004

REC'D JAN 20 2004

Lane County Planning Commission
125 East 8th Avenue
Eugene, Oregon 97401

RE: PA 02-5838, Ogle

Dear Members of the Commission:

The Goal One Coalition (Coalition) is a nonprofit organization whose mission is to provide assistance and support to Oregonians in matters affecting their communities. The Coalition is appearing in these proceedings at the request of and on behalf of its membership residing in Lane County. Mr. Just is representing the Coalition, LandWatch Lane County, and himself.

This proposal would redesignate 73.74 acres of land on two parcels, identified as Tax Lot 304 and Tax Lot 303 (parcels #1 and #2 of Plat No. 94-PO510, respectively) totaling 113.74 acres, from "Agricultural Land" to "Marginal Land," and change the zoning from E-40/ Exclusive Farm Use to ML/Marginal Land. The northern portions of both Tax Lot 304 (TL 304) and Tax Lot 303 (TL 303), totaling 40 acres, were redesignated and rezoned Marginal Land in 1992. The subject lands are adjacent to F2-zoned land to the west and south, and to E40-zoned lands to the east. ORS 215.237 and LC 16.214 require a minimum parcel size of 20 acres if the parcel is adjacent to land zoned for farm or forest use that would not qualify as marginal land, and otherwise require that parcels be at least 10 acres in size.

The criteria for the designation of marginal land are set out in ORS 197.247 (1991 edition). The Staff Report refers also to Lane County guidelines for interpreting and administering marginal lands provisions, issued by the Board of Commissioners in March 1997. Because the provisions being applied are provisions of state statute, no deference is due or will be given to local interpretations of ORS 197.247.

ORS 197.247 establishes a two-part test for the designation of marginal land. Any proposal for a marginal land designation must first comply with the "income test" requirement of ORS 197.247(1)(a), which requires that the applicant prove that the subject land was not managed, during three of the five calendar years preceding January 1, 1983, as part of a farm operation producing $20,000 in annual gross income or as part of a forest operation capable of producing an average of $10,000 in annual gross income over the growth cycle.

The second part of the marginal land test contains three options. ORS 197.247(1)(b)(A) and (B) are "parcelization" tests, which look at parcel sizes of adjacent and nearby lands. ORS 197.247(1)(b)(C) is the "productivity" test, which requires the applicant to demonstrate that the land is predominantly comprised of soils in capability classes V through VIII and is not

#3 - 19pp.

capable of producing 85 cf/ac/yr of merchantable timber. The applicant has submitted a Forest Productivity Analysis prepared by Marc. E. Setchko, Consulting Forester (Setchko Report). The Setchko Report indicates that the applicant has chosen to address the "productivity" option of the second prong of the marginal lands test.

ANALYSIS

Because calculation of average income over the growth cycle depends upon assumptions and evidence related to productivity of the proposed marginal lands, this analysis will first address issues concerning the "productivity" test of ORS 197.247(1)(b)(C) and then address "income" test issues relating to ORS 197.247(1)(a).

1. The "productivity" test

a. The applicants' information and the Setchko Report inadequately address the requirements of ORS 197.247(1)(b)(C) because they fail to consider productivity for timber species other than Douglas-fir.

ORS 197.247(1)(b)(C) establishes that lands can qualify as marginal lands only if they are not capable of producing "eighty-five cubic feet of merchantable timber per acre per year[.]" "Merchantable stand of timber" means "any stand on forestlands containing living or dead timber which is being or can be harvested." ORS 321.005(8). Thus "timber" means "trees collectively." *Webster's New Universal Unabridged Dictionary.* A forest product is "merchantable" if it is salable, regardless of whether sold for profit or loss. *Ellingson Lumber Co. v. Department of Revenue,* 8 OTR 273 (1980). "Forestland" means "land that is used for the growing and harvesting of forest tree species, regardless of how the land is zoned or taxed or how any state or local statutes, ordinances, rules or regulations are applied." ORS 527.620(7). "Forest tree species" means "any tree species capable of producing logs, fiber or other wood materials suitable for the production of lumber, sheeting, pulp, firewood or other commercial forest products[.]" ORS 527.620(6).

An evaluation of a property's capacity for forest production must consider productivity for *all* merchantable forest tree species, not just Douglas-fir. Merchantable hardwoods include black cottonwood, Oregon ash, Oregon white oak, red alder, bigleaf maple and hybrid poplar. Merchantable conifers include ponderosa pine, grand fir, western red cedar, western hemlock, and KMX. The Woodland Workbook, R. E. Duddles and C. G. Landgren, Oregon State University Extension Service, EC 1196, November 1999.[1]

b. The applicants' information and the Setchko Report are inadequate because they fail establish that information provided pertaining to Douglas-fir productivity for soils not rated by the NRCS provides data equivalent to NRCS data using methodology approved by the Department of Forestry.

OAR 660-006-0005(2) provides:

[1] See Appendix. 2.

> "'Cubic Foot Per Acre' means the average annual increase in cubic foot volume of wood fiber per acre for fully stocked stands at the culmination of mean annual increment as reported by the USDA Natural Resources Conservation Service (NRCS). Where NRCS data *are not available or are shown to be inaccurate*, an alternative method for determining productivity may be used. *An alternative method must provide equivalent data and be approved by the Department of Forestry.*" (Emphasis added.)

It is well established that lack of a soil productivity rating does not mean that a soil has no capability for forest production. James Hecker, NRCS Resource Conservationist, has stated:

> "There is a misunderstanding when soils are not rated for forest production. It does not mean these soils are 'nonproductive,' but rather are 'typically' used for agriculture and have been rated for that use with predicted yields and given a Capability Class Rating for crop production." [2]

Thor Thorson, NRCS Soil Data Quality Specialist, in response to the question "Does the lack of [NRCS] data on site productivity indicate a soil is unsuitable for timber production?" has stated:

> "No; only that suitable timber sites were not measured at the time the survey was conducted, or since the survey was completed. The soils therefore may or may not be capable of timber production at some level."[3]

James Johnson, Farm/Forest Coordinator with the Department of Land Conservation and Development, has stated that for purposes of OAR 660-06-005(2):

> "The applicants cannot simply depend on a 'nonrating' to make a case that soils located on a site are not productive. OAR 660-06-005(2) * * * requires the applicants to provide other methods, with equivalent data, to show the productivity of the subject soils. A statement that the soils are unrated does not provide a method with data equivalent to NRCS data used to determine productivity."[4]

Forestry expert Marc Barnes has stated:

> "[T]he lack of wood fiber productivity data in the Soil Survey of Benton County for certain soil types does not mean that the soil type is unsuitable for wood-fiber production, only that at the time the survey was conducted, wood fiber productivity data was not collected for these soil types, since they were being used predominately for other purposes -- mainly agriculture."[5]

Steve Campbell of the U.S. Department of Agriculture has stated:

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[2] *Carlson v. Benton County*, 34 Or LUBA 140, 149 (1998).
[3] *Carlson v. Benton County*, 34 Or LUBA 140, 149 (1998).
[4] *Carlson v. Benton County*, 34 Or LUBA 140, 149 (1998).
[5] *Carlson v. Benton County*, 34 Or LUBA 140, 149 (1998).

"Absence of data does not mean that a soil map unit is not suitable for commercial forest use." [6]

The *Lane County Soil Ratings for Forestry and Agriculture*, explaining Douglas-fir Site Index notations at p. 6, states:

"'none' Indicates soil map units that lack site index information on Douglas fir. The soil map unit may have the capacity to produce Douglas fir, but this productivity may be very low to very high. No site index has been collected by the NRCS due to lack of suitable sites or lack of time and or funds."

LUBA rulings have established as law that the lack of a NRCS rating provides no information, quantitative or otherwise, pertinent to the statutory test of whether a soil is capable of producing defined levels of wood fiber. *Carlson v. Benton County*, 34 Or LUBA 140, 149 (1998).

There are no NRCS Douglas-fir site indexes or cf/ac/yr ratings for the Panther, Philomath and Steiwer soils. Instead, the Setchko Report relies on soil ratings from an Office of the State Forester Memorandum dated February 8, 1990 (1990 Memo). No cover letter or text of the 1990 Memo is provided. The Coalition contacted Kevin Birch, Planning Coordinator, Forest Resources Planning, Department of Forestry to obtain a copy of the 1990 Memo. Mr. Birch informed the Coalition that no "Office of State Forester Memorandum, February 8, 1990, General File 7-1-1" was to be found in ODF records.

Assuming the 1990 Memo exists as a valid document, there is no discussion of the methodology used to generate the data found in Setchko Report Exhibit 5. Footnotes state that soils ratings are *estimated* for *unmanaged* stands. It has not been established that the methodology produces data equivalent to NRCS data, nor has any evidence been presented that the methodology or results have been accepted by the Department of Forestry as accurate or reliable. Consequently, the consultant's calculations of productivity and income based on this data cannot be relied upon to find compliance with the requirements of ORS 197.247.

c. The Setchko Report is inadequate to address the requirements of ORS 197.247(1)(b)(C) because it fails to address productivity of the proposed marginal land.

The Setchko Report addresses TL 303 and TL 304 together, failing to separately identify soils and address the applicable approval criteria that each parcel must satisfy if it is to be redesignated ML. The Setchko Report also fails to distinguish between the portions of TL 303 and TL 304 already designated ML and the portions proposed to be designated ML. Considering the parcels, existing marginal lands and proposed marginal lands together as one unit is appropriate for considering forest income potential over the growth cycle. However, that approach not adequate to address the third prong of the second part of the marginal lands

[6] See Appendix 1.

test, the "productivity" test. Each distinct segment of land proposed for redesignation to marginal lands must satisfy the "productivity" test if the application is to be approved.

The applicants are required to establish that the proposed marginal lands are not capable of producing 85 cf/ac/yr of merchantable timber. Applicant Ogle is required to establish this for the non-marginal lands portion of TL 303. Applicant Childs is required to establish this for the non-marginal lands portion of TL 304. The Setchko Report fails to separately address the soils and timber productivity of the E-40 portion of either TL 303 or TL 404 and fails to address whether the E-40 portions of either tax lot is capable of producing 85 cf/ac/yr of merchantable timber. Therefore the Setchko Report fails to establish that the requirements of ORS 197.247(1)(b)(C) are satisfied.

d. The applicants' information and the Setchko Report do not to adequately address the productivity of TL 303 and TL 304 for "forest tree species."

ORS 197.247(1)(b)(C) establishes that lands can qualify as marginal lands only if they are not capable of producing "eighty-five cubic feet of merchantable timber per acre per year[.]" As previously discussed, the inquiry into productivity must consider "any tree species capable of producing logs, fiber or other wood materials suitable for the production of lumber, sheeting, pulp, firewood or other commercial forest products[.]" ORS 527.620(6).

TL 303

The applicant's submission states that the portion of TL 303 being proposed for the ML designation is entirely composed of soils with an agricultural site class capability of VI and VIII. The applicant has asserted that it is capable of producing, on average, only 11.96 cf/ac/yr. of merchantable timber. The forest productivity assertion is not supported by and is inconsistent with the Setchko Report, which was submitted by the applicant.

Exhibit 3 in the Setchko Report indicates that TL 303 is comprised of soil types McDuff clay loam, 81D; Panther silty clay loam, 102C; Philomath silty clay, 107C; Philomath cobbly silty clay, 108F; and Ritner cobbly silty clay loam, 113E. The Setchko Report does not give the acreage of individual soil types within the proposed marginal land area.

The Soil Survey indicates that McDuff clay loam has a site index for Douglas fir of 112 and a cf/ac/yr rating of 158.

The Soil Survey indicates that the Panther soils support hardwoods. Hardwoods that qualify as "merchantable timber" include black cottonwood, Oregon ash, white oak, and red alder. In addition, hybrid poplar can be grown in soils such as Panther.

The Soil Survey describes Philomath silty clay as "shallow and well-drained," and indicates that it supports Oregon white oak and ponderosa pine. Researchers at Oregon State University have assigned Philomath silty clay loam a 50-yr site index of 104 for ponderosa pine.[7]

[7] Fletcher, *Establishing and Managing Ponderosa Pine in the Willamette Valley,* EM 8805, Appendix 4.

The Soil Survey describes Philomath cobbly silty clay as "shallow and well-drained," and states that "vegetation in areas not cultivated is mainly conifers, hardwoods, shrubs, and grasses." It continues: "Much of this unit supports Oregon white oak, scattered Douglas-fir, [and] ponderosa pine[.]" This soil unit therefore could support merchantable hardwoods and conifers.

Rittner cobbly silty clay has a site index for Douglas-fir of 107 and a cf/ac/yr rating of 149.

Because the Setchko Report has not established that it adequately addresses the timber productivity of soils not rated for the production of Douglas-fir, and because it fails to consider productivity for merchantable timber species other than Douglas-fir, it has not been established that the portion of TL 304 proposed as marginal land qualifies as marginal land under the "productivity" test of ORS 197.247(1)(b)(C).

TL 304

The applicant shows the relevant portion of Tax Lot 304 to consist entirely of soils with an agricultural site class capability of VI, with an average forest capability of 48.38 cf/ac/yr. The forest productivity assertion is not supported by the Setchko Report, which was submitted by the applicant.

Exhibit 2 in the Setchko Report indicates that TL 304 is comprised of soil types Panther silty clay loam, 102C; Philomath silty clay, 107C; Philomath cobbly silty clay, 108F; and Ritner cobbly silty clay loam, 113G. The Setchko Report does not indicate acreage of individual soil types within the proposed marginal land area.

As discussed above regarding TL 303, the soils on TL 304 could support merchantable hardwoods and conifers.

Because the Setchko Report has not established that it adequately addresses the timber productivity of soils not rated for the production of Douglas-fir, and because it fails to consider productivity for merchantable timber species other than Douglas-fir, it has not been established that the portion of TL 304 proposed as marginal land qualifies as marginal land under the "productivity" test of ORS 197.247(1)(b)(C).

2. The income test

TL 303 and 304 were under one ownership in 1983. Therefore income or potential income of the entire 113.74-acre tract must be considered for purposes of addressing the income test of ORS 197.247(1)(a).

The applicant has submitted an affidavit from the owner of the subject properties during the 5-year period preceding January 1, 1983 attesting that the proposed marginal lands were not managed as part of a farm operation producing $20,000 or more in annual income or a forest operation capable of producing an average, over the growth cycle, of $10,000 in gross income.

a. Farm income

The farm income part of the test is based on actual income, and addressing that test is straightforward: did or did not a farm operation produce $20,000 or more in gross income during three of five calendar years preceding 1983? An affidavit attesting that the subject property was not part of a farm operation that grossed $20,000 in income during the relevant period can constitute substantial evidence.

b. Forest income

Addressing the forest income part of the test is more difficult. "Managing" a forest operation can include doing nothing for extended periods of time, while a stand of timber grows and matures. Information provided by the applicants indicates that the property was in fact logged "within the last ten years." Department of Forestry records indicate that the 113-acre tract was logged of approximately 400,000 board feet by Brieden Bros. in 1992, and of approximately 175,000 board feet by Derek Jaros in 1997. The subject property was perforce managed for timber production within the period 1978-1982 if it was subsequently harvested within the 50-year cycle. The applicants' information further indicates that the property is currently forested with "scattered" Douglas-fir, ponderosa pine and incense cedar. Property tax records indicate that all of the acres on the original, parent TL 300 were forest deferred. On the two new parcels, all of TL 303 is forest deferred, and all but 1.00 acre for the homesite is forest deferred on TL304. For all of these reasons, it cannot be disputed that the proposed marginal land was managed as a forest operation during the 1978-82 period.

i. The Setchko Report has failed to use current prices to determine average income over the growth cycle.

Forest income is prospective over the growth cycle. The applicants' submitted affidavit, which merely asserts that the proposed marginal lands were not, during the 1978-82 period, part of a forest operation capable of grossing $10,000 in income over the growth cycle, is not substantial evidence. What is required is an evaluation of the ability of the forest operation of which the proposed marginal lands were a part to generate average income of $10,000 from forest operations *over the growth cycle,* based on the potential capability of the lands comprising the forest operation assuming reasonable management practices.

In DLCD v. Lane County (Ericcson), __ Or LUBA __ (LUBA No. 91-204, March 12, 1992), LUBA explained:

> "ORS 197.247(1)(a) requires a two part inquiry to determine whether a forest parcel may be designated as "marginal" land. First, the county must determine whether the land was managed as part of a forest operation during three of the five years from 1978 through 1982. * * * Second, ORS 197.247(1)(a) requires the county to determine whether the forest operation in question *is* capable of producing an average of $10,000 in annual gross income over the growth cycle. What occurred on the subject parcel during the 1978-1982 time period is not the sole determinant of the

"capability" of the subject parcel to produce trees, because the growth cycle of trees may greatly exceed the specified five year period." (Emphasis added.)

Thus LUBA has held that, for purposes of calculating income, it did not make sense to limit the inquiry to the 1978-1982 period. In *Ericcson,* that's exactly what Lane County did, and what LUBA affirmed: the applicant's expert used, and Lane County accepted, (then) current 1988-89 timber values.

The applicants' analysis must use current timber values to calculate potential gross income over the growth cycle. More recent prices are considerably higher than those used in the Setchko Report. A table showing 2001 prices is provided in Appendix 3-4.

Because the applicants have failed to use reasonable prices in computing average income over the growth cycle, the information provided is not adequate to establish that ORS 197.247(1)(a) is satisfied.

ii. The Setchko Report fails to establish that it has adequately considered timber productivity for soils not rated for Douglas-fir production.

As previously discussed, the Setchko Report used cf/ac/yr ratings from the 1990 Memo to arrive at timber volumes for Douglas-fir on non-rated soils. It has not been established that the productivity data is equivalent to NRCS data, nor has it been established that the methodology or the data have been accepted by the Department of Forestry. Therefore it his not established that the data meets the requirements of OAR 660-006-0005(2). The calculation of average income from soils not rated by the NRCS for Douglas-fir production is not adequate for the purpose of establishing that the "income" test of ORS 197.247(1)(a) is satisfied.

iii. The Setchko Report has failed to consider productivity for timber species other than Douglas-fir.

As previously discussed in relation to the "productivity" test, neither the applicants' narrative nor the Setchko Report consider productivity for any timber species other than Douglas-fir. Potential productivity for other hardwood and conifer species for non-rated soils found on the E-40 zoned portions of TL 303 and TL 304 was discussed in that context, and that discussion is incorporated here by reference. These soils are or may be suitable for the production of merchantable hardwoods and conifers.

One additional non-rated soil, Steiwer silt loam, which was not addressed under the "productivity" discussion because it is not found on the proposed marginal lands, is found within the 113-acre parent tract. The Soil Survey describes Steiwer silt loam as "moderately deep [and] well-drained," and indicates that vegetation in areas not cultivated includes "mainly hardwoods [and] scattered conifers." This soil is or may be suitable for the production of merchantable hardwoods and conifers.

iv. The Setchko Report improperly uses a 60-year growth cycle to calculate average income.

The Setchko Report uses a 60-year rotation to calculate average income over the growth cycle rather than the standard 50-year cycle. As a result, income at harvest is averaged over 60 years rather than 50 years, resulting in lower annual average income.

The March 1997 Supplement to Marginal Lands Information Sheet states:

> "The consensus of the Board was that a 50-year growth cycle should be adopted as the usual standard, with the option that another standard could be used if substantiated by compelling scientific evidence presented by the applicant. The Board's choice was based on evidence that the USDA Natural Resources Conservation Service has adopted the 50-year cycle for rating soil productivity, plus the administrative ease of having a standard figure."

As this policy recognizes, NRCS is based on a 50-year growth cycle. If the applicants wish to provide data other than NRCS data, i.e. data based on a 60-year growth cycle, the applicant must establish that the methodology produces data equivalent to NRCS data and that the methodology or data has been accepted by the Department of Forestry.

The Setchko Report states at p. 2:

> "A sixty year rotation (growth cycle to final harvest) was used, this time span being a reasonable rotation age on this site class, which is very poor."

This is the only explanation provided for using a 60-year rotation to calculate average income rather than the required 50-year rotation. This single, conclusory statement is far from "compelling scientific evidence."

The consulting forester has conflated "site class" with the entire 113-acre tract under consideration. The 113-acre tract includes many "site classes" which are excellent for the production of Douglas-fir. The conclusion that the entire 113-acre site is "very poor" is inaccurate and completely unfounded, even for Douglas-fir. In addition, other potential merchantable species must be considered. At least two merchantable species are grown on much shorter rotations. Hybrid poplar is commonly grown on a 7-8 year cycle for pulp and a 15-year cycle for timber. KMX is commonly grown on a 20-year cycle.

The Setchko Report makes no attempt to establish that using a 60-year site index instead of a 50-year site index is a methodology providing data equivalent to NRCS data or that it has been accepted by the State Forester.

The statutory requirement that the land be "capable" of producing the specified annual income "over the growth cycle" requires an evaluation of the income potential of the property assuming the utilization of reasonable forest management practices over the growth cycle. *DLCD v. Lane County,* __ Or LUBA __ (LUBA No. 91-204, 03/12/92). Reasonable management would require that different soils on the 113-acre tract be planted with

merchantable trees suited for the specific soils, site and exposure, with rotations suited to the specific forest tree species and growing conditions. It is not reasonable to assume that the entire 113-site, comprised of eight soil types with varying slopes, and exposures, would be planted with a single species receiving the same management practices and rotations.

Because assuming a 60-year rotation for the entire 113-acre tract does not comply with Lane County policy, has not been shown to be consistent with OAR 660-006-0005(2), and is not reasonable, the income calculations of the Setchko Report are not adequate to comply with the requirements of ORS 197.247(1)(a).

v. The Setchko Report income calculations are not correct and do not use reasonable yield assumptions.

The Setchko Report contains errors in its calculation of potential income from rated soils. At p. 3 the Setchko Report states that the 100 Year Site Index for McDuff clay loam is 112, and for Ritner cobbly silty clay loam 107. The Setchko Report then "adjusts" to arrive at 50-Year Site Indexes of 98 and 95, respectively.

The source of these site indexes is the *Lane County Soil Ratings for Forestry and Agriculture.* Doulgas-fir site indexes and cf/ac/yr ratings found therein are calculated using 50-year Douglas-fir data unless otherwise noted. See *Lane County Soil Ratings,* p. 6. The Setchko Report has erred in further reducing indexes which are already 50-year indexes.

In calculating income from lumber, the Setchko Report assumes yields of 40% 2SAW, 50% 3 SAW and 10% 4 SAW. These grade assumptions are not reasonable, as they are dramatically below industry standard. Lumber grade yield should be 92% No. 2 and better, and 73% No. 1 and better. See Appendix 3-1 to 3-3. "Reasonable management for forest practices" includes reasonable marketing, yield and grading. Reasonable and realistic grade assumptions would result in dramatically higher average income over the growth cycle.

As a result of error, potential income from forest operations on the McDuff clay loam and Ritner cobbly silty clay loam soil units are substantially understated. As a result of unreasonable and unrealistic lumber yield and grading assumptions, average income from timber sales is greatly understated. Therefore the income calculations of the Setchko Report are inadequate to establish compliance with ORS 197.247(1)(a).

CONCLUSION

The applicants' information fails to address the fact that there are two parcels proposed as marginal land. For purposes of the "productivity" test, each parcel as an individual unit must satisfy the ORS 197.247 requirements to qualify as marginal land. Information provided does not address the relevant portion of either TL 303 or TL 304 as a separate unit of proposed marginal land; soils on the parcels are not identified or quantified, nor is timber productivity calculated for either parcel. Thus it cannot be determined from evidence in the record whether either TL 303 or TL 304 satisfies the "productivity" test.

Further, soils and productivity of the proposed marginal lands is not distinguished from the existing marginal lands which comprise portions of both TL 303 and TL 304. Unless and until soils of the two units of proposed marginal lands are specifically identified and their productivity addressed, it cannot be established that either the "productivity" or the "income" test of ORS 197.247(1) are satisfied.

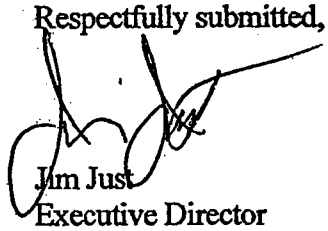
In evaluating the capability of the parent 113-acre tract for forest productivity, the applicant relies upon the Setchko Report. The Setchko Report, in addressing the "income" test and the "productivity" test, has failed to establish that productivity data provided for non-rated soils is equivalent to NRCS data and that the methodology and the data have been accepted by the Department of Forestry.

The Setchko Report has improperly limited its consideration of "merchantable species" to Douglas-fir, and has not considered productivity for all merchantable timber species as required by ORS 197.247(1)(b). The Setchko Report assumes the same 60-year rotation for all species, and assumes unrealistically poor yields in terms of lumber grade. The Setchko Report thus has not assumed "reasonable management practices."

For purposes of calculating potential average income, the Setchko Report has improperly assumed a 60-year rotation rather than the standard 50-year rotation. The Setchko Report uses 1983 prices rather than current prices. Income from merchantable species other than Douglas-fir is not considered. The Setchko Report fails to establish that Douglas-fir productivity data for soils not rated by the NRCS for Douglas-fir production is equivalent to NRCS data or that it has been accepted by the Department of Forestry. The Setchko Report uses incorrect site indexes to calculate yield from rated soils, and uses unrealistic and unreasonable assumptions about yield at harvest in respect to lumber grade. As a result, average income calculations are not reasonable or reliable and cannot establish compliance with ORS 197.247(1)(a).

For these reasons this application must be denied.

Respectfully submitted,



Jim Just
Executive Director

Jim Just

From: "Mike Walker, Hugo Neighborhood Association & Historical Society" <hugo@jeffnet.org>
To: <goal1@pacifier.com>
Sent: Friday, January 02, 2004 12:21 PM
Subject: Steve Campbell's Email, NRCS

From: "Steve Campbell" <Steve.campbell@or.usda.gov>
To: <hugo@jeffnet.org>
Subject: Josephine County Soil Survey Forest Productivity Data
Date: Mon, 24 Nov 2003 15:52:38 -0800
X-Mailer: Microsoft Outlook, Build 10.0.4510 Importance: Normal

Hello Mike:

Attached is a PDF file with the current forest productivity data for Josephine County in our soil survey database. As we discussed on the phone, absence of data does not mean that a soil map unit is not suitable for commercial forest use.

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E-mail: steve.campbell@or.usda.gov <<...>>

OR033_Josephine_forest_prod.pdf

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APP 1

***Table 1.*—Relative performance ratings for various tree species in climatic regions of western Oregon.**

Coast	Tree performance: Level of use[1]	Growth[2]	Shade tolerance[3]	Big game damage[4]	Frost[5]	Drainage[6]	Comments
Douglas-fir	5	5	2	3	2	1	Good on most forest sites with good soil and drainage. Control brush before it overtops seedlings.
Western hemlock	3	5	5	3	3	2	Will tolerate more brush competition than Douglas-fir.
Western redcedar	2	4	4	2	1	4	Good in areas with high water table. Can be browsed heavily.
Grand fir	2	5	3	3	4	4	Good on moist sites.
Sitka spruce	1	5	4	2	5	3	Good only near coast. Spruce tip weevil is a serious pest.
Shore pine	1	1	1	5	5	5	Grows on droughty sand or hardpan sites. Good early growth but slower long-term growth.
Noble fir	1	3	3	4	4	1	For timber planting above 2,000 feet in the Coast Range.
Red alder	1	3	1	3	3	3	Used in riparian and root-rot areas.

Willamette Valley Cascades—west slopes	Level of use[1]	Growth[2]	Shade tolerance[3]	Big game damage[4]	Frost[5]	Drainage[6]	Comments
Douglas-fir	4	5	2	3	2	2	Brush and grass control is important.
Noble fir	2	3	3	4	4	2	Used above 1,500 feet elevation; avoid clay soils.
Grand fir	1	4	3	3	4	3	Good for valley uplands where game damage can be a problem.
Western redcedar	1	3	4	2	1	4	Do not plant on poorly drained clay soils.
Ponderosa pine	1	3	1	5	4	1	Good on sandy soils or clay soils that become droughty in summer.
Western hemlock	1	3	5	3	3	2	Used on north-facing sites.
Cottonwood	1	4	1	3	1	5	Used on river bench alluvial soils.

[1]Level of reforestation use — 5 = planted on more than 90% of the sites; 1 = infrequently planted

[2]Height and volume growth — 5 = superior; 1 = slow/poor

[3]Shade tolerance — 5 = able to grow well with overstory shade; 1 = requires full sunlight

[4]Big game damage — 5 = infrequently browsed by deer or elk; 1 = frequently browsed

[5]Frost resistance — 5 = high resistance to low temperatures; 1 = easily damaged by frost

[6]Drainage — 5 = tolerates poor drainage or some standing water for short periods; 1 = requires well-drained soils

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Table 1 divides western Oregon into coastal and Willamette Valley regions.

Table 2 covers southwest Oregon and eastern Oregon. These tables present considerations in selecting species for reforestation in each region. For example, on a coastal site with moist soils and shade from standing trees, you can consider a shade-tolerant species such as western hemlock.

Growing exotic trees

Exotic species are trees that are not native to the local area. It would be ideal to find one that would grow faster and taller than the native species. Most tree species from around the world have been tested in the Northwest, but few have proved successful. One exception is "KMX" pine. It's a hybrid cross between knobcone pine and

***Table 2.*—Relative performance ratings for various native tree species in southwestern and eastern Oregon.**

	Tree performance						
Southwest Oregon	Level of use[1]	Growth[2]	Shade tolerance[3]	Frost[4]	Heat[5]	Drought[6]	Comments
Douglas-fir	4	5	3	3	3	4	Shade cards may be needed on hot, dry sites.
Ponderosa pine	2	5	2	5	4	5	Gopher control is needed in many areas. Porcupines also can cause damage.
White fir (mid to upper Cascades)	2	4	5	4	2	3	Plant above 3,000 feet on moist, well-drained soil.
Grand fir (mid to lower coast)	2	4	5	3	2	2	Avoid poorly drained soils.
Incense-cedar	1	2	3	4	5	5	Somewhat tolerant of serpentine soils. Pocket rot can be a problem.
Eastern Oregon	Level of use[1]	Growth[2]	Shade tolerance[3]	Frost[4]	Heat[5]	Drought[6]	Comments
Ponderosa pine	5	4	1	4	5	5	Most widely planted eastside species. Good survival and early growth.
Lodgepole pine	3	4	2	5	5	4	Adaptable to a variety of harsh sites.
Douglas-fir	3	3	3	2	3	4	Risky on south slopes with less than 20 inches annual rainfall.
Grand and white fir	2	3	5	1	2	3	Tolerates some shade in partial-cut situations. Slow growth first 2 years.
Western larch	1	5	1	4	3	3	Excellent juvenile growth.
Engelmann spruce	1	3	4	5	2	2	Planted above 3,500 feet. Good on moist sites.

[1]Level of reforestation use — 5 = planted on more than 90% of the sites; 1 = infrequently planted

[2]Height and volume growth — 5 = superior; 1 = slow/poor

[3]Shade tolerance — 5 = able to grow well with overstory shade; 1 = requires full sunlight

[4]Frost resistance — 5 = high resistance to low temperatures; 1 = easily damaged by frost

[5]Heat resistance — 5 = can stand high temperatures; 1 = sensitive to heat

[6]Drought — 5 = can withstand drought; 1 = dies when drought stressed

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United States Department of Agriculture
Forest Service
Pacific Northwest Research Station
Research Note PNW-RN-543 September 2003

AUTOSAW Simulations of Lumber Recovery for Small-Diameter Douglas-Fir and Ponderosa Pine From Southwestern Oregon

R. James Barbour, Dean L. Parry, John Punches, John Forsman, and Robert Ross[1]

Abstract

Small-diameter (5- to 10-inch diameter at breast height) Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) and ponderosa pine (*Pinus ponderosa* Dougl. ex Laws) trees were assessed for product potential by diagramming the location, size, and type of knots visible on the wood surface (inside bark) and using the AUTOSAW sawing simulator to evaluate the resulting log descriptions. The logs were then sawn to dimension lumber, dried, and graded. More than 85 percent of the resulting Douglas-fir lumber was assigned to the "No. 2 and better" group, whereas about 50 percent of the pine was assigned to the "Standard and better" group. AUTOSAW consistently underestimated (by 10 to 15 percent) the volume recovered from the logs. A correction factor could be applied to compensate for this variance. The simulator predicted higher yields of higher grade lumber than were obtained empirically. This was anticipated given the program's inability to account for knots hidden beneath the wood surface. Alternative sawing scenarios examined by using AUTOSAW suggest that greater value could have been recovered from the small-diameter Douglas-fir if it had been cut to 1- or 5/4-inch thickness and graded as "Factory" lumber. The ponderosa pine would have been more valuable cut to 1-inch thickness and graded as "Common" rather than dimension lumber.

Keywords: Small-diameter timber, volume recovery, AUTOSAW, sawing simulation, value recovery, wood product value.

Introduction

The accumulation of small trees in forests over much of the Western United States has created conditions where uncharacteristically large and severe fires are increasingly likely. Removing these small trees from densely stocked stands can reduce the intensity of the fires that do occur. It might also lower the probability or extent of insect or disease outbreaks. In certain situations, sale of the harvested trees will offset the costs of silvicultural treatments, and the conversion of these trees into wood products also can provide jobs in rural communities where few economic opportunities exist.

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Table 2—Volume in board feet and percentage of yield by grade for empirical sawing results (Wood Mizer® outturn) of dimension lumber from all logs in six Douglas-fir and six ponderosa pine trees

Grade	Douglas-fir		Grade	Ponderosa pine	
	Board feet	*Percent*		*Board feet*	*Percent*
Select Structural	148	39.6			
No. 1	0	0.0	Construction	30	9.2
No. 2	174	46.5	Standard	140	42.9
No. 3	45	12.0	Utility	76	23.3
Economy	7	1.9	Economy	80	24.5
Total	374	100	Total	326	100

Table 3—Percentage of lumber tally (volume) degraded at least one grade for warp

Grade	Douglas-fir	Ponderosa pine
	Percent	
No. 1 or Construction	0	0
No. 2 or Standard	44.5	35.0
No. 3 or Utility	25.0	22.3
Economy	0	87.5

Note: Entries in the table indicate the percentage of volume in that grade that could have been graded at least one grade higher if warp were not a factor.

Comparison of empirical and simulated lumber grade yields—The AUTOSAW sawing simulator accounts for wane, knot size, knot location, and knot condition (live or dead), and pith where appropriate, but it does not currently account for warp or other defects such as rot or stain. We therefore adjusted the empirical lumber grade results to remove the in uence of warp in order to compare them with simulated results from AUTOSAW. We increased the grade of the lumber recovered in the empirical sawing study according to the results for warp given in table 3 to re ect what would be expected without warp (table 4). This was done under the assumption that most of the grade-reducing warp in this lumber was of a type that could be controlled by improved drying techniques (Koch 1974). Even with this adjustment the grade-for-grade correspondence between the empirical results and the simulated results is rather poor. For both species, AUTOSAW produced more lumber in the higher grades than was recovered by actually sawing logs. This is not particularly surprising even when warp is eliminated because AUTOSAW does not account for the full range of potential defects.

When the results were further summarized into grade groups (table 5), the comparisons were much better. The comparison of empirical results to the simulated results for No. 2 and better for Douglas-fir is quite good. Even though AUTOSAW projects about 5 percent more volume in the higher grade group than was actually recovered, this result is adequate for many purposes. The result for ponderosa pine is better when grades are grouped, but the correspondence is still not as good as for Douglas-fir. Even with aggregated data, AUTOSAW overestimates the higher quality component

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Table 4—Comparison of empirical lumber grade yield (corrected to remove warp) and lumber grade yields simulated with AUTOSAW

Species and grade	Volume, empirical no warp		Volume, AUTOSAW		Difference
	Board feet	*Percent*	*Board feet*	*- - - Percent - - - -*	
Douglas-fir:					
Select Structural	148	39.6	257	80.8	41.2
No. 1	123	32.9	33	10.4	-22.5
No. 2	72	19.3	18	5.7	-13.6
No. 3	24	6.4	10	3.1	-3.3
Economy	7	1.9	0	0.0	-1.9
Total	374	100.0	318	100.0	
Ponderosa pine:					
Construction	79	24.2	135	79.9	55.6
Standard	108	33.1	14	8.3	-24.8
Utility	129	39.6	10	5.9	-33.7
Economy	10	3.1	10	5.9	2.8
Total	326	100.0	169	100.0	0.0

Note: Difference is the simulated grade yield percentage minus the empirical grade yield percentage.

Table 5—Results grouped to compare lumber grade groups that are typically marketed for each species

Grade	Douglas-fir		Ponderosa pine	
	Empirical	AUTOSAW	Empirical	AUTOSAW
	Percentage of yield			
No. 2 and better	92	97		
Standard and better			57	88
No. 3 and Economy	8	3	43	12
Total	100	100	100	100

for ponderosa pine by about 30 percent. The results, however, are useful for comparing the relative quality of the two species and also for understanding the quality concerns generally associated with small-diameter ponderosa pine.

Simulation of different products—Sawing simulation makes it possible to use log characteristics such as stem size and shape, and knot size and location that were collected for each log during the empirical study to consider different sawing patterns or different sets of products. We simulated two additional sets of products by using the same logs that were sawn in the empirical recovery study. Results for simulated sawing of Common lumber (nominal 1-inch thick lumber) are presented in table 6, and results for Select and Factory lumber (Clear and Shop lumber) are presented in table 7. The results presented in table 7 are estimates of the American Lumber Standards grades that are roughly equivalent to the New Zealand clear grades used by AUTOSAW. Composite prices for 2001 for the various lumber grades reported in

App 3-3

Table 8—Western Wood Products Association yearly composite prices per thousand board feet of surfaced dry lumber for 2001

Grade	Douglas-fir	Ponderosa pine
	Dollars per thousand board feet (2001 average)	
Dimension lumber:		
Select Structural	389.72	*
No. 1	386.35	*
No. 2	329.91	*
Standard and better	356.63	264.46
No. 2 and better	329.91	259.10
No. 3 or Utility	203.03	213.65
Economy	115.49	143.98
Common lumber:		
No. 2 and better Common	*	414.66
No. 3 and better Common	366.85	*
No. 3 Common	*	244.40
No. 4 Common	298.17	157.02
No. 5 Common	110.57	96.51
Selects and Factory lumber:		
4/4 by 4-inch D Select and better	872.12	755.59
4/4 No. 1 Shop	569.02	445.32
4/4 No. 2 Shop	480.40	303.00
4/4 Shop Outs	*	171.62

* = Price not available or grade not produced in this species.
Source: WWPA 2002.

Using methods such as those used by Funck and Zeng (1999), where logs were actually dissected and the internal knots and other defects mapped, will eliminate this problem. The disadvantage is that the dissection method does not provide an empirical lumber sample with which to validate simulation results. X-raying the logs would provide an alternative that would allow both validation through empirical sawing of lumber and mapping of internal defects, but CAT scanning equipment was not available for this study.

Our analysis does suggest, however, that small-diameter Douglas-fir can yield dimension lumber that is about as valuable as might be expected from the traditional resource. It also suggests that some improvement in value might be expected if Factory-grade lumber were sawn. In other words, there might be some advantage to sawing either 1- or 5/4-inch lumber over sawing 2-inch dimension from logs of this type.

The results for ponderosa pine are somewhat different. The gross product value for dimension lumber from this sample was fairly low (fig. 3), about $200 per thousand board feet when warp was included and about $250 per thousand board feet when it was not. This compares to about $290 for the framing lumber composite price[3] for late

[3]The Random Lengths framing lumber composite price is a benchmark for framing lumber prices for the Western United States.

App-3-4

Growth of Willamette Valley Natural Stands (Bennett, unpublished, 1997)

Soil Type	Height	Age	Site Index (50)
Bashaw silty clay loam	98	59	92
Dayton silt loam	84	42	98
Dixonville/Hazelair/Philomath	96	98	63
Dupee silt loam	110	56	101
Hazelair silty clay* loam	93	52	92
McBee silty clay loam	104	59	92
Philomath cobbly, silty clay*	87	42	104
Ritner cobbly silty clay loam	101	54	95
Salem gravelly loam	111	63	93
Waldo silty clay loam	83	41	96
Witzel very cobbly loam	92	98	59

* Indicates an average of more than one site.

Managing Natural Stands of Willamette Valley Ponderosa Pine.

If you are one of the lucky Willamette Valley landowners to have a natural stand of ponderosas on your property, then your trees might benefit from thinning or another technique.

Thinning- First on your list might be a thinning to space out existing trees, and improve the health and vigor of the overall stand. As with any thinning, the key feature becomes not what you cut, but the stand left behind after harvest. It is these trees, generally referred to as "crop trees", by foresters, that will determine future growth and overall stand health. In designating which trees will be crop trees and which ones you want to remove, consider the following factors:

1. Overall stand age and stocking. Stands that respond best to thinning are young, moderately stocked ones. Older stands (50 years plus), will have likely passed the time when thinning will greatly benefit growth rates, unless the stand had been previously thinned. Thinning an older stand may still make sense, if you want to reduce longer term competition for crop trees, or remove unhealthy trees. Very dense stands may need several light thinnings, spaced by recovery periods, to gradually move the stand to a healthy density. Possibly the most important thinning is a very early one, while the trees are not yet of merchantable size. This thinning, dubbed a pre-commerical thin, sets the growth curve for the future stand, and can have a dramatic positive impact on growth if done at the right time.
2. Type of future stand desired. If you want an even-aged stand, then spacing crop trees evenly, for maximum growth makes sense. If you want to develop and uneven-aged stand, your selection may be more in groups, to provide open areas for young trees to become established.

APP. 4

Exhibit Divider

JAN 2 0 2004

Jay H. Chappell, M.D.
Marilyn F. Bartusiak
86270 Lorane Highway
Eugene, OR 97405

Jerry Kendall, Associate Planner
Land Management Division
Public Works Department
128 East 8th Avenue
Eugene, OR 97401

Re: PA 02-5838

Dear Mr. Kendall:

Thank you for notifying us of the hearing regarding proposed changes of land use of properties adjacent to ours. Unfortunately we will be otherwise detained on the new hearing night of January 20th, and will not be able to attend. Our absence, however, should not be interpreted as disinterest. We would appreciate the opportunity to file this letter of opposition to the changes proposed by Ogle and Childs, and we will be most grateful for your sharing this with the members of the Lane County Planning Commission.

Our concerns regarding the proposal are numerous, however we would like in this forum to focus on three:

1. water supply to support further rural residential development

2. watershed management and further contamination of tributaries of Spencer Creek

3. precedent of revisiting zoning decisions if they are inconvenient for landowners

First, the issue of water supply in this area. We understand the documents supporting the changes refer to numerous wells drilled in this area, suggesting no shortage of ground water. I suspect much of that data is far from current. We have owned and resided on the property immediately south of the land in question since 1990. Our main well is 210 feet deep and supplies in spring 6-7 gallons per minute of heavily arsenic-laden water, with the volume being much less by early fall. To try to supplement this, we drilled a second well in 1996, going 400 feet down and reaching 3 gallons per minute, again with heavy arsenic burden to the water. The arsenic content is pertinent, in that treatment of the water is necessary before residential usage, requiring 3 gallons of groundwater for every 1 gallon of domestic usage. Clearly we have a marginal ground water reservoir currently, and we fear problems with current neighbors placing additional wells, much less the threat to our supply by new development immediately north and uphill from us.

Secondly, Spencer Creek is a surprisingly important factor in the local wildlife ecology, and we fear placing numerous additional residences in the watershed above "our" section of the creek will be harmful. As an example, a major tributary of Spencer Creek drains the lands in question and flows through our property. On several years in the late Spring or early summer we've found young wild and native cutthroat trout in our pasture streams. Agents of the Oregon State Fish and Wildlife Department have informed us that the young fish over winter up these larger tributaries to escape the rougher flows of the main stream during heavy rains. Additional "rural" homes with septic systems, lawns, fertilizer run-off, etc. cannot help but negatively affect the health of these streams.

Lastly, we find it disturbing and not a little disappointing that Ogle and Childs should propose these changes to the county, as we are quite certain that all are aware that virtually the identical proposal was made by Breeden Brothers before selling the land to these individuals. Very similar arguments were presented in 1991, and the planning commission made the decision that rezoning these lands was not consistent with the land use guidelines. Clearly these land are not useless for agricultural or forestry purposes. Our land, which abuts the lands of Ogle and Childs (and has virtually identical soil types), has been reforested in douglas fir and ponderosa pine which are doing very well. We find it doubtful that Ogle or Childs have explored in any meaningful way productive uses for the land consistent with the current land use zoning. Ogle and Childs were aware of the land zoning when they decided to purchase their lands, and they should be comfortable being custodians of those lands in a manner consistent with the zoning.

The decision reached in 1992 should not be reversed. Should the county land use planners be inconsistent in their judgments it would set a problematic precedent: if you don't like a land use decision, wait a couple years and try again!

Jay H. Chappell, M.D.

Marilyn F. Bartusiak

Exhibit Divider

JAN 2 0 2004

Jay H. Chappell, M.D.
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Jerry Kendall, Associate Planner
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Re: PA 02-5838

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#5 – 2pp.

Lastly, we find it disturbing and not a little disappointing that Ogle and Childs should propose these changes to the county, as we are quite certain that all are aware that virtually the identical proposal was made by Breeden Brothers before selling the land to these individuals. Very similar arguments were presented in 1991, and the planning commission made the decision that rezoning these lands was not consistent with the land use guidelines. Clearly these land are not useless for agricultural or forestry purposes. Our land, which abuts the lands of Ogle and Childs (and has virtually identical soil types), has been reforested in douglas fir and ponderosa pine which are doing very well. We find it doubtful that Ogle or Childs have explored in any meaningful way productive uses for the land consistent with the current land use zoning. Ogle and Childs were aware of the land zoning when they decided to purchase their lands, and they should be comfortable being custodians of those lands in a manner consistent with the zoning.

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Jay H. Chappell, M.D.

Marilyn F. Bartusiak

Exhibit Divider

mailed
1-20-04

Jerry Kendall
Lane County Planning Commission
Land Management Division
125 E. 8th Ave.
Eugene, OR 97401

January 16, 2004

Re: File PA 02-5838

We live directly south of the subject property, on approximately 25 acres of F-2 zoned land .We are in opposition to this proposed rezoning.

Our concerns and comments are listed below:

Soils

I operate a small farm on our property and raise wool sheep, and am a member of the Willamette Valley Grazing and Nutrition group. The application lists the soils classification for the subject property (classes 5-8) as being unsuitable for farming. I would like to point out that many members of the WVGANG -including myself- successfully raise livestock on nearby parcels with similar soil classifications. I understand that the applicants have provided documentation from the former parcel owner that the land was not part of a farm operation (producing $20,000 or more in annual gross income) prior to 1983. This does not prove the land cannot be used for future livestock production in keeping with its current E-30 zoning designation.

Water

This subject property lies with the Spencer Creek watershed, a "limited area" for water quality and quantity. Residents throughout this area know this is true. The EGR aquifer pumping and recovery testing for this proposal took place in early May of 2002, near the end of the annual rainy season-a time when the aquifer is typically recharged. The summers and autumns of 2002 and 2003 have been much drier than usual, with less accompanying "recharge" during the winters.

The EGR report included nearly 100 well logs from the general area, dating back to the 1950's. This report quotes an average production rate of 20 gallons per minute for those wells. I read over all the well logs, and noted that over the last 10 years -including one unrecorded well we had drilled in 1993- the average production was 8.7 gallons per minute.

Based on consulting testing data and information, the report concludes the affected aquifer "will yield an adequate residential water supply for the additional proposed dwellings...without adversely affecting wells on adjacent properties or the underlying aquifer."

I strongly disagree.

The applicants' report refers to aquifer yields for "domestic use wells" and "residential water supplies" to be considered for proposed 10-20 acre rural properties. Water demands and needs for country parcels of this size are potentially MUCH greater than "residential or domestic" needs. Outdoor irrigation for landscaping and gardening on this scale can require hundreds, even thousands of additional gallons per day, for months. Irrigation needs for city property cannot be applied to rural parcels.

A Marginal Lands designation for this property would allow for a variety of uses on each new parcel created by the applicants' development plan: tree farms, livestock operations, commercial gardens, nurseries, etc. These are just some of the land uses permitted under Marginal Lands, and all require large amounts of water- considerably more than the nine "domestic use wells" referred to in the applicants' report. The potential demands on the underlying aquifer and adjacent wells would be staggering.

[illegible] HEARING

PA. NO. _____

DATE: 1-20-04 EXHIBIT NO. _____

#1

Arsenic is present in nearly all wells in the region, in many cases to the point of dangerous levels. Common treatment options for arsenic include reverse-osmosis systems, which use up to 3 gallons of raw water to produce 1 gallon of safe water. If all household water (including for drinking, bathing, and cooking) is treated by a RO system, the water demands for that residence can be tripled. I have to treat the water for my sheep, as high levels of arsenic have been shown to adversely affect the quality of their wool.

Zoning

All the parcels surrounding the subject property are zoned F-2, E-30 or E-40, with the exception of one Marginal Lands-20 parcel, adjacent to the southeast corner. The parcel immediately to the west has been purchased by the city of Eugene, and will stay undisturbed as part of the Ridgeline Park system. The applicants' plan to subdivide this property, with rezoning approval, would represent a huge intrusion of growth and development into surrounding non-impacted lands.

The Zoning Change application (by Ogle and Childs) states: "the proposed zone change and subsequent residences would not interfere with...or cause change in the nature of the surrounding area." On the contrary, a hillside of 10 acre parcels would most certainly cause a drastic change in the nature and resources of the surrounding area.

Again, a quote from the application: the proposed zone change would provide for "an orderly transition and buffer from the urban uses to the north and the mixed rural/residential uses to the south, east and west." This suggests that the surrounding property owners should be grateful for such an buffer between us and the Urban Growth boundary! In our opinion, the existing "transition" of the subject parcels' E-30 zoning designation is a much better and more preferable 'buffer" than the one they offer us.

In 1992 Breeden Brothers applied for a similar zoning change and proposed future development for this land. Adjacent property owners formed the Lorane Valley Neighborhood Association and hired an attorney to fight the project. John Breeden and Jim Saul eventually amended their original plan, and instead requested that only the northern 40 acres be rezoned to Marginal Lands. The applicants Ogle and Childs reside on this acreage, as a result of the rezoning approval and subsequent property division.

In a letter to planner Harvey Hoglund, dated March 9th, 1992, Jim Saul wrote that "limiting the area to be designated marginal land to the northern 40 acres of the property...and retaining the E-30 zoning on the southern portion of the property...will assure the owners of the ability to create two legal building sites (on the northern section)...while not increasing the potential for development of the southern portion of the property beyond what currently exists."

What existed in 1992 was the potential for no development, given the E-30 zoning. Given the limited water resources in the area, and unproven ability of the aquifer to support potentially huge water demands for these planned parcels; and given the surrounding resource parcels zoned F-2 and E-30/E-40, we request the county to deny this application for rezoning. The potential adverse impacts to the area would be too costly.

Leslie Hildreth

Leslie Hildreth, dba FishWhistle Farm
Mark Herring
86460 Lorane Hwy
Eugene, OR 97405

Exhibit Divider

Marc E. Setchko
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rec'd on 1-23-04 from Brad Ogle - per Mr. Ogle - revised Boglett 50yr cycle. - 2pp.

FOREST PRODUCTIVITY ANALYSIS

for

Brad Ogle and Mark Childs

SUBJECT PARCEL: ASSESSORS MAP NO. 18-04-11
Tax Lots 303 & 304, totalling ±113.76 acres.

I. INTRODUCTION

An evaluation of the site, as described above, from a timber productivity and income producing standpoint is reviewed in this analysis. The analysis will determine if:

1) The subject property produces less than 85 cu. ft./ac./yr. of conifer timber volume. This has been determined by Lane County to be the measuring parameter for marginal soils.
2) The income generated averages less than $10,000/year, based on 1978 through 1983 log prices. If this is the case, the property meets the following statutory test for Marginal Lands: ORS 197.247 (1)(a) "The proposed marginal land was not managed during three of the five calendar years preceding January 1, 1983, as part of a ... forest operation capable of producing an average, over the growth cycle, of $10,000 in annual gross income."

The above figures can be calculated by:

1. Using actual cutout data from when any logging was done on the parcel.
2. Using a combination of the 1) Lane County Soil Ratings for Forestry & Agriculture (August, 1997), 2) U.S. Dept. of Agriculture SCS Data, as presented in the Soil Survey of Lane County Area, 3) Lane County Soil Ratings taken from the Office of the State Forester Memorandum (Feb. 8, 1990 General File 7-1-1) and 4) estimates of growth from the CMAI (Culmination of Mean Annual Increment) FOR DOUGLAS-FIR Table and the Empirical Yield Tables for the Douglas-fir Zone, Washington Department of Natural Resources by Charles Chambers and Franklin Wilson.

II. SITE INFORMATION

The subject parcel is 113.74 acres in size, with 11.8 acres in B.P.A. easement corridors (see Exhibit 1). The site aspect is south to southwest with slopes of 10-45%. Grasses, blackberry, poison oak and scrub white oak cover most of the property, with exposed bedrock, broken rock and cobbly soils prevalent throughout the parcel. There are also scattered Douglas-fir, ponderosa pine and incense cedar, left from previous logging activities. An LCOG soil survey confirms SCS map data, which shows the parcel is composed of seven different soil types (see Exhibits 2 and 3). Over half of the property (≈69.8 acres) is underlaid with Philomath silty clay (Soil Type 107C) and Philomath cobbly silty clay (Soil Type 108F). These soil types are extremely poor for growing conifers. The remaining portions of the parcel are underlaid with Dixonville-Philomath-Hazelair complex (Soil Types 43C and E), McDuff clay loam (Soil Type 81D), Panther silty clay loam (Soil Type 102C), Ritner cobbly silty clay loam (Soil Types 113C, E and G) and Steiwer loam (Soil Type 125C). Of these soil types, only the McDuff clay loam and Ritner cobbly silty clay loam are good soils for growing conifer, and these particular soil types only cover approximately 19 acres of the entire parcel.

#7-32pp.

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The Lane County Soil Ratings for Forestry and Agriculture (see Exhibit 4) show a 100 year site class rating for only two of these soil types, the McDuff clay loam and the Ritner cobbly silty clay loam. A cu.ft./ac./yr. figure is also shown for these two soil types; only a cu.ft./ac./yr. figure is shown for the Dixonville-Philomath-Hazelair complex, it doea not have a site class rating. The remaining soil types are very poor conifer growing soils and are not assigned any forestland site class rating, in the Lane County Soil Ratings. The cu.ft./ac./yr. growth, for these soil types, was obtained from the soil ratings shown in the Office of the State Forester Memorandum (see Exhibit 5). All of these soils are incapable of producing 85 cu.ft./ac./yr., the parameter used by Lane County for determining marginal soils.

III. RESULTS OF PRODUCTIVITY AND INCOME CALCULATIONS

CUBIC FEET PER YEAR PER ACRE GROWTH

The parcel was logged over the last ten years, before the current owners purchased the property. They have no records of the amount of timber removed. Therefore, the calculations of growth were taken from the tables cited above and the potential income calculated from theses figures. In order to obtain a yearly growth figure, in cu.ft./ac. for the entire parcel, the production potential of the different soil types was first calculated for the acres within each soil type. This will give a weighted figure for each soil type and can then be divided by the total acres for an overall average. These calculations are shown below.

Soil Type	Acres	Cu.Ft./Ac./Yr.	∑Cu.Ft.
43C Dixonville-Philomath-Hazelair complex	6.64	54 Cu.Ft./Ac.	358.56 Cu.Ft.
43E Dixonville-Philomath-Hazelair complex	.44	63 Cu.Ft./Ac.	27.72 Cu.Ft.
81D McDuff clay loam	5.60	158 Cu.Ft./Ac.	884.80 Cu.Ft.
102C Panther silty clay loam	14.68	45 Cu.Ft./Ac.	660.60 Cu.Ft.
107C Philomath silty clay	39.61	45 Cu.Ft./Ac.	1,782.45 Cu.Ft.
108F Philomath cobbly silty clay	30.20	45 Cu.Ft./Ac.	1,359.00 Cu.Ft.
113C, E & G Ritner cobbly silty clay loam	13.38	149 Cu.Ft./Ac.	1,993.62 Cu.Ft.
125C Steiwer loam	3.19	30 Cu.Ft./Ac.	95.7 Cu.Ft.
Totals	113.74		7,162.45 Cu.Ft.

Average Growth Potential -- 113.74 Acres ÷ 7,162.45 Cu.Ft. = 62.97 Cu.Ft./Ac./Yr.

AVERAGE GROSS ANNUAL INCOME GENERATED PER YEAR THROUGH A COMPLETE ROTATION

Since no cutout records are available, the Empirical Yield Tables were used to obtain total volume per acre in scribner board feet volume, the measurement needed in order to calculate income potential. These yield tables are calculated using King's 50 year site class index. Since the Lane County Soil Ratings for Forestry and Agriculture are based on McArdle's 100 year site index rating, these ratings must be converted first. Using the 50 year Site Index ratings, for each different soil type, the volume per acre for each soil type can be calculated. Adding all the soil types together will give a total for the entire parcel. A fifty year rotation (growth cycle to final harvest) was used. This time span was adopted as the standard, by a consensus of the Board of Commissioners in March 1997, and is included in the Supplement to the Marginal Lands Information Sheet.

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Once a total volume at harvest age has been calculated, the average gross annual income can be found by dividing the total revenue at the time of harvest by the number of years in the rotation. Since the Empirical Yield Tables are based on Douglas-fir volumes, Douglas-fir log prices were used. This should also give the highest figure because Ponderosa pine has never been worth as much as Douglas-fir and incense cedar has only recently approached Douglas-fir prices.

Using industry-recognized price information from the Oregon State Department of Forestry Quarterly Report of Douglas-fir log prices for 1983, the gross worth of a fully stocked stand on this parcel can be calculated, for the time period required by the Marginal Lands Statute ORS 197.247 (1)(a). By calculating a gross worth based on a fully stocked stand of Douglas-fir, a maximum gross worth scenario for the applicant can be shown.

CALCULATIONS:

Site Index Ratings from Tables (see Exhibits 6, 7 and 8)

	100 Year Site Index	50 Year Site Index
McDuff clay loam	112	98
Ritner cobbly silty clay loam	107	95

Dixonville-Philomath-Hazelair complex - no Site Index given due to multiple soil types

Panther silty clay loam - poorly suited for conifer growth, no Site Index given
Philomath silty clay - poorly suited for conifer growth, no Site Index given
Philomath cobbly silty clay - poorly suited for conifer growth, no Site Index given
Ritner cobbly silty clay loam - poorly suited for conifer growth, no Site Index given
Steiwer loam - poorly suited for conifer growth, no Site Index given

The soil types above which have no Site Index given were assigned a Site Index in order to obtain a growth figure from the Empirical Yield Tables. This was accomplished by comparing the Cu.Ft./Ac./Yr. figures shown in the Lane County Soil Ratings for Forestry and Agriculture or the Lane County Soil Ratings taken from the Office of the State Forester Memorandum (see calculations shown in previous section) with the Cu.Ft./Ac./Yr. figures shown in the CMAI (Culmination of Mean Annual Increment) FOR DOUGLAS-FIR Tables. From these comparisons it can be seen that the Cu.Ft./Ac./Yr. figures, for the five soil types not assigned a Site Index, do not even equal the figures shown for the lowest site class shown on the tables. Therefore, for the purposes of this analysis, the volume figures from the lowest site class shown on the tables, Site Class 70, will be used for these five soil types. This will actually show a higher volume projection than could be expected on the site, but will serve the purpose needed for this analysis. These calculations are shown below.

McDuff clay loam - 5.6 acres @ 19,019 bd.ft./ac.* =	106,506 bd.ft.
Ritner cobbly silty clay loam - 13.38 acres @ 17,591 bd.ft./ac.* =	235,368 bd.ft.
Remaining soil types - 94.76 acres @ 8,115 bd.ft./ac.* =	768,977 bd.ft.
Total	1,110,851 bd.ft.

*See Exhibit 9.

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CONSULTING FORESTER

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A 50 year old stand on this site should have approximately 40% 2 SAW, 50% 3 SAW and 10% 4 SAW. If anything, these grade estimates err on the high side. In all probability there would be less 2 SAW and more 4 SAW. However, these figures are used to represent the highest possible log price scenario for the applicant.

Total Volume - 1,110.85 MBF (thousand board feet)

444.34 MBF of 2 SAW @ $255/MBF**	$113,307
555.43 MBF of 3 SAW @ $215/MBF**	119,417
111.08 MBF of 4 SAW @ $200/MBF**	22,216
Total Projected Gross Revenue	$254,940

**See Exhibit 10.

AVERAGE GROSS INCOME -- $254,940 ÷ 50 YEARS = $5,099/YEAR

IV. CONCLUSION

The analysis presented shows conclusively that this property will not support a merchantable stand of timber, of sufficient production capability, to meet or exceed the Marginal Lands Income test:

1) The subject property produces less than 85 cu. ft./ac./yr. of conifer timber volume; only 62.97 cubic feet. The above mentioned figure has been determined by Lane County to be measuring parameter for marginal soils.

2) The estimated gross income based on a 50 year rotation for the 113.74 acre site would have been $254,940 in 1983. The average annual gross income would have been $5,099/year. Because $5,099 is less than $10,000/year, the property meets the following statutory test for Marginal Lands: ORS 197.247 (1)(a) "The proposed marginal land was not managed during three of the five calendar years preceding January 1, 1983, as part of a ... forest operation capable of producing an average, over the growth cycle, of $10,000 in annual gross income."

In summary, I find from the specific site conditions present, empirical yield tables, SCS data, Lane County Data and experience with similar lands, that this property is ill suited to the production of timber and use as land for forestry purposes. It is my opinion that this parcel should be classified as marginal land.

Sincerely,

Marc E Setchko

Marc E. Setchko
CONSULTING FORESTER

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AMENDMENT TO FOREST PRODUCTIVITY ANALYSIS for Brad Ogle and Mark Childs

SUBJECT PARCEL: ASSESSORS MAP NO. 18-04-11
Tax Lots 303 & 304, totalling ±113.76 acres.

Re: Productivity of parcel after removal of 11.8 acres in powerline easements, as trees cannot be grown in these areas.

III. RESULTS OF PRODUCTIVITY AND INCOME CALCULATIONS

CUBIC FEET PER YEAR PER ACRE GROWTH

Soil Type	Acres	Cu.Ft./Ac./Yr.	ΣCu.Ft.
43C Dixonville-Philomath-Hazelair complex	6.32	54 Cu.Ft./Ac.	341.28 Cu.Ft.
43E Dixonville-Philomath-Hazelair complex	.40	63 Cu.Ft./Ac.	25.20 Cu.Ft.
81D McDuff clay loam	5.60	158 Cu.Ft./Ac.	884.80 Cu.Ft.
102C Panther silty clay loam	12.90	45 Cu.Ft./Ac.	580.50 Cu.Ft.
107C Philomath silty clay	34.67	45 Cu.Ft./Ac.	1,560.15 Cu.Ft.
108F Philomath cobbly silty clay	26.61	45 Cu.Ft./Ac.	1,197.45 Cu.Ft.
113C, E & G Ritner cobbly silty clay loam	12.92	149 Cu.Ft./Ac.	1,925.08 Cu.Ft.
125C Steiwer loam	2.52	30 Cu.Ft./Ac.	75.60 Cu.Ft.
Totals	101.94		6,590.06 Cu.Ft.

Average Growth Potential -- 113.74 Acres ÷ 6,590.06 Cu.Ft. = 57.94 Cu.Ft./Ac./Yr.

AVERAGE GROSS ANNUAL INCOME GENERATED PER YEAR THROUGH A COMPLETE ROTATION

McDuff clay loam - 5.6 acres @ 19,019 bd.ft./ac.* =	106,506 bd.ft.
Ritner cobbly silty clay loam - 12.92 acres @ 17,591 bd.ft./ac.* =	227,276 bd.ft.
Remaining soil types - 83.42 acres @ 8,115 bd.ft./ac.* =	676,953 bd.ft.
Total (*See Exhibit 9)	1,010,735 bd.ft.

A 50 year old stand on this site should have approximately 40% 2 SAW, 50% 3 SAW and 10% 4 SAW. If anything, these grade estimates err on the high side. In all probability there would be less 2 SAW and more 4 SAW. However, these figures are used to represent the highest possible log price scenario for the applicant.

Total Volume - 1,010.74 MBF (thousand board feet)

404.30 MBF of 2 SAW @ $255/MBF**	$103,097
505.37 MBF of 3 SAW @ $215/MBF**	108,655
101.07 MBF of 4 SAW @ $200/MBF**	20,214
Total Projected Gross Revenue (**See Exhibit 10)	$231,966

AVERAGE GROSS INCOME -- $231,966 ÷ 50 YEARS = $4,639/YEAR

Marc E. Setchko
CONSULTING FORESTER

870 Fox Glenn Avenue
Eugene, Oregon 97405
Phone: (541) 344-0473
FAX: (541) 344-7791

IV. CONCLUSION

The analysis presented shows conclusively that this property will not support a merchantable stand of timber, of sufficient production capability, to meet or exceed the Marginal Lands Income test:

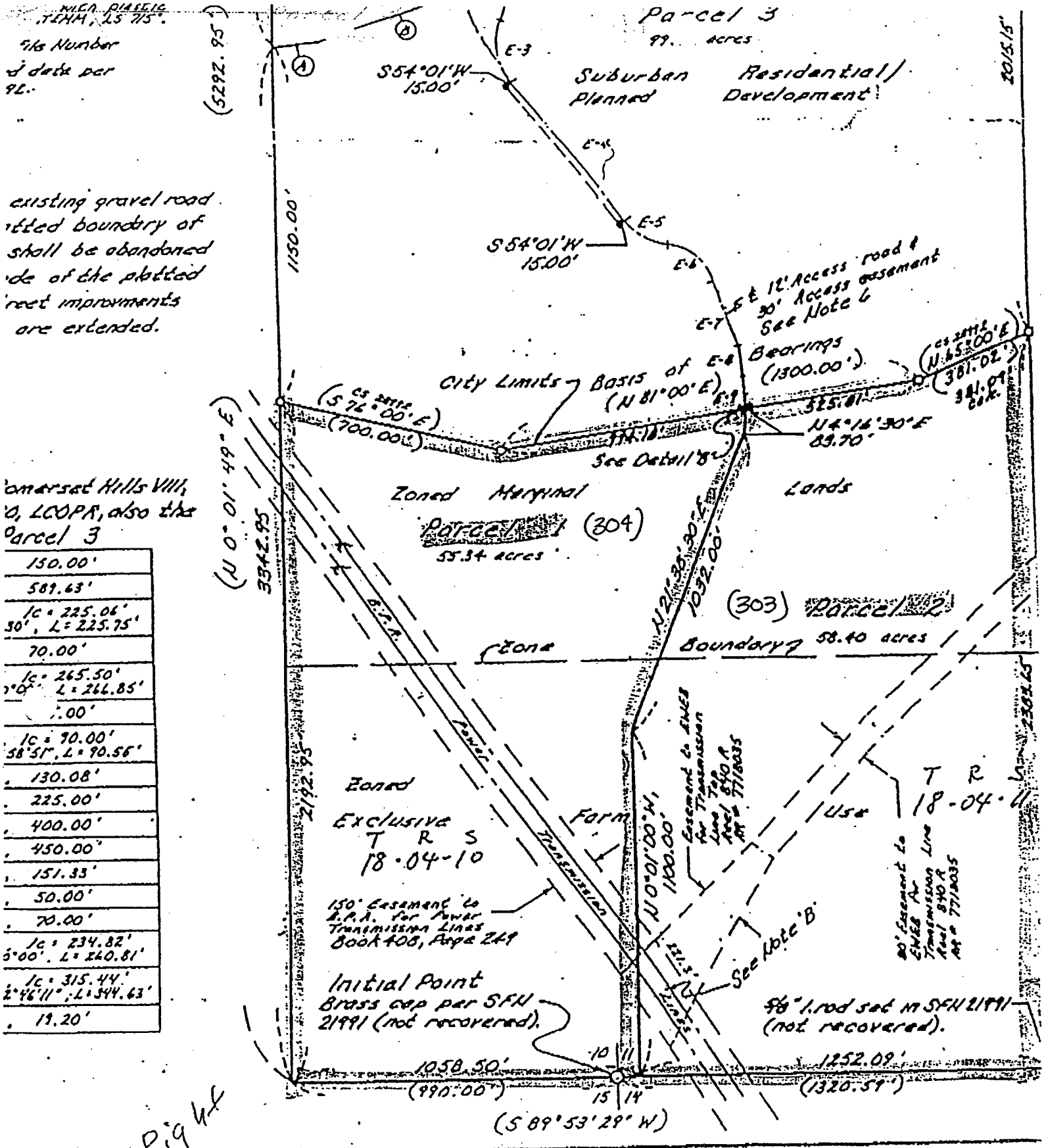
1) The subject property produces less than 85 cu. ft./ac./yr. of conifer timber volume; only 57.94 cubic feet. The above mentioned figure has been determined by Lane County to be measuring parameter for marginal soils.

2) The estimated gross income based on a 50 year rotation for the 113.74 acre site would have been $231,966 in 1983. The average annual gross income would have been $4,639/year. Because $4,639 is less than $10,000/year, the property meets the following statutory test for Marginal Lands: ORS 197.247 (1)(a) "The proposed marginal land was not managed during three of the five calendar years preceding January 1, 1983, as part of a ... forest operation capable of producing an average, over the growth cycle, of $10,000 in annual gross income."

In summary, I find from the specific site conditions present, empirical yield tables, SCS data, Lane County Data and experience with similar lands, that this property is ill suited to the production of timber and use as land for forestry purposes. It is my opinion that this parcel should be classified as marginal land.

Sincerely,

Marc E Setchko



omerset Hills VIII,
O, LCOPA, also the
Parcel 3

150.00'
589.63'
lc = 225.06', 30", L = 225.75'
70.00'
lc = 265.50' °0", L = 266.85'
.00'
lc = 90.00' 58'51", L = 90.56'
130.08'
225.00'
400.00'
450.00'
151.33'
50.00'
70.00'
lc = 234.82' 5°00', L = 240.81'
lc = 315.44' 2°46'11", L = 344.63'
19.20'

Roll Right

1379

607

EXHIBIT 1

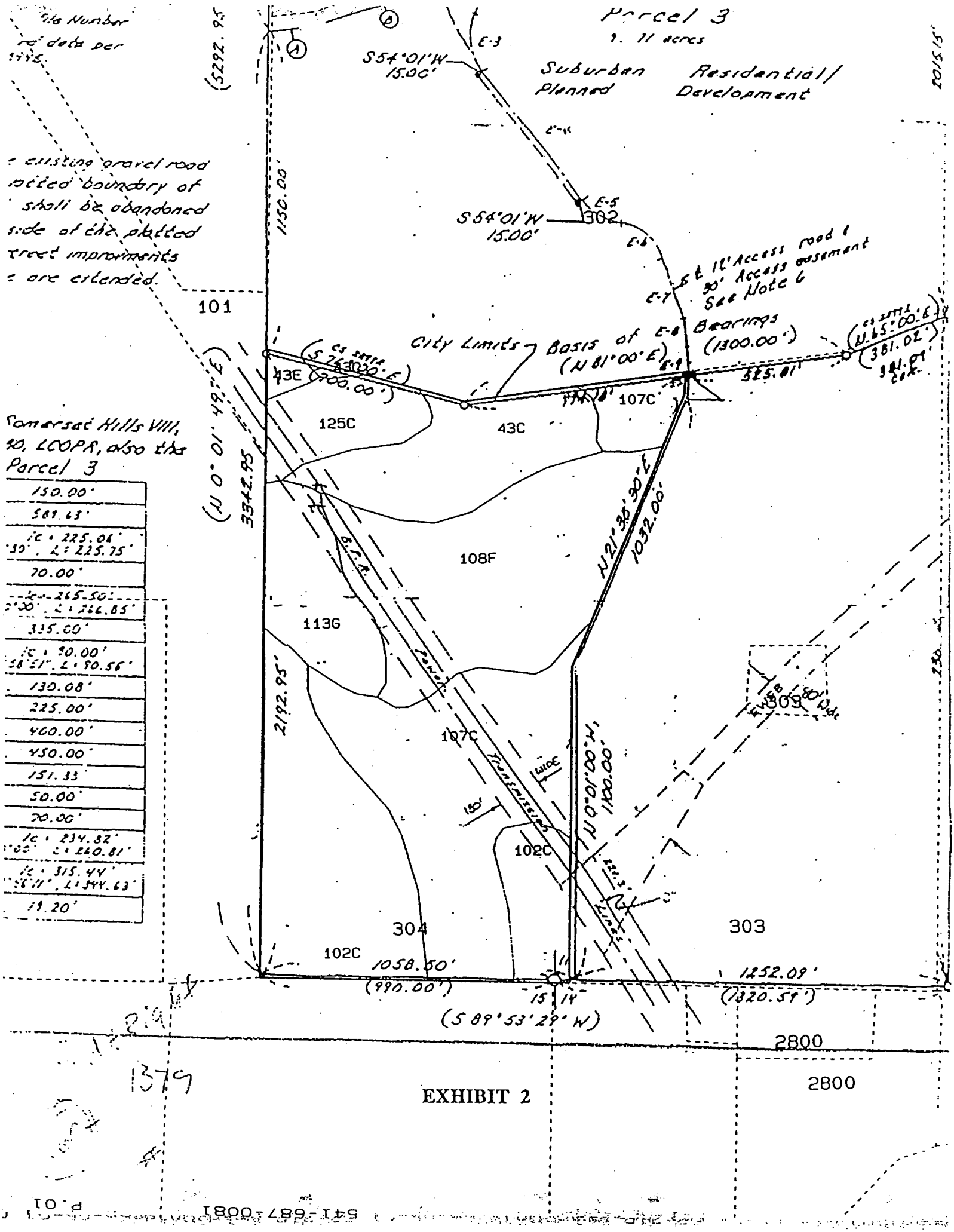
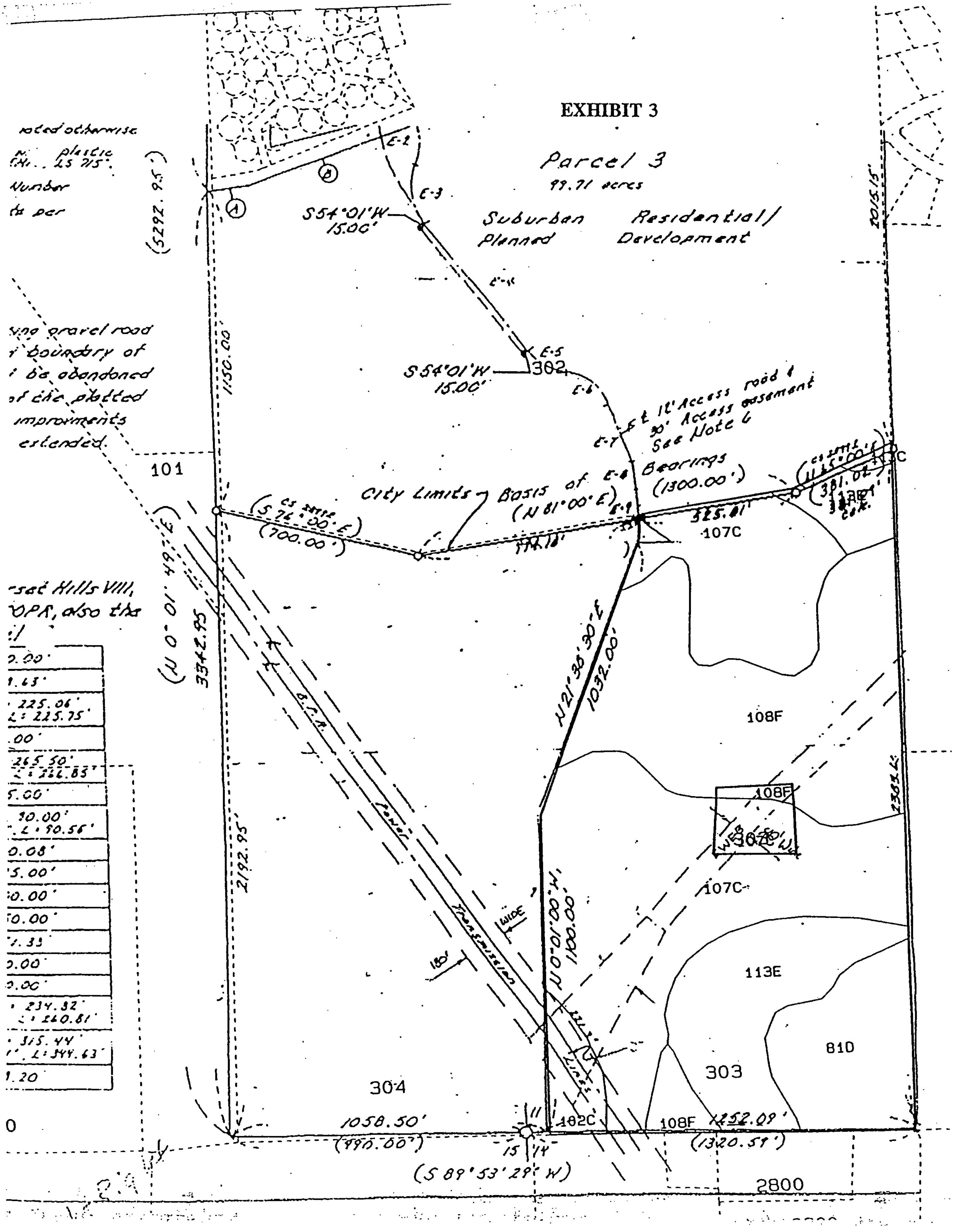

Parcel 3
9.11 acres
Suburban Residential/
Planned Development
S54°01'W
15.00'
E-3
E-5
E-6
E-7
E-8
E-9
302
S54°01'W
15.00'
1150.00'
(5292.95'
101
existing gravel road
platted boundary of
shall be abandoned
side of the platted
street improvements
are extended.
City Limits
Basis of Bearings
(N 81°00' E)
(1300.00')
S 74°30' E
(300.00')
43E
125C
43C
107C
325.81'
(N 65°00' E
381.02'
(N 0° 01' 49" E)
3342.95'
Somerset Hills VIII,
30, LCOPA, also the
Parcel 3
150.00'
581.63'
R = 225.06'
39°, L = 225.75'
70.00'
R = 265.50'
30°, L = 266.85'
335.00'
R = 90.00'
58°51', L = 90.56'
130.08'
225.00'
400.00'
450.00'
151.33'
50.00'
70.00'
R = 234.82'
L = 240.81'
R = 315.44'
L = 344.63'
19.20'
108F
N21°36'30"E
1032.00'
113G
2192.95'
Power
107C
Transmission
150' WIDE
N0°01'00"W
1100.00'
102C
309
80' Wide
Power
304
102C
1058.50'
(990.00')
303
1252.09'
(1320.57')
15
14
(S 89°53'29" W)
2800
2800
137
EXHIBIT 2

EXHIBIT 3



Parcel 3
99.71 acres
Suburban Residential/ Planned Development
S54°01'W 15.00'
S54°01'W 15.00'
City Limits
Basis of Bearings (N 81°00' E)
(1300.00')
(S 76°00' E) (700.00')
℄ 11' Access road & 30' Access easement See Note 6
1150.00
3342.95
(N 0°01'49" E)
2192.95
N21°36'30"E 1032.00'
N0°01'00"W 1100.00'
B.P.A. Power Transmission Lines
180'
WIDE
1058.50'
(990.00')
1252.09'
(1320.51')
(S 89°53'29" W)
101
302
304
303
107C
108F
113E
81D
2800

EXHIBIT 4

Lane County
Soil Ratings for Forestry and Agriculture

Lane County
Land Management Division

August 1997

Prepared by
Lane Council of Governments

Lane Council of Governments

125 East Eighth Avenue Eugene, Oregon 97401 (541) 682-4283 Fax: (541) 682-4099 TDD: (541) 682-4567

January 9, 1998

TO: File, Lane County Soil Ratings For Forestry And Agriculture (August 1997)

FROM: Kathi Wiederhold

SUBJECT: Agricultural Capability Class

This memo documents the background discussion about the agricultural capability class for soil complexes reported in the document entitled Lane County Soil Ratings for Forestry and Agriculture (August 1997). The document reports the agricultural capability class for only the most predominant component of a soil complex (which is the soil series named first in the name of the complex), as stated on page 8 in the section about source and description of the data.

The Natural Resources Conservation Service (NRCS) has changed how they report agricultural capability classes for soil complexes. Previously, the SCS soil survey (1987 publication date, 1981 date of data) reported a single capability class for each complex, which was the most limiting rating of the individual components of the complex. The information was aimed for use in agricultural management, not for planning.

The NRCS now maintains a state soils data base as its most current source of soils information. The data base replaced the soil survey and the green sheets (called Soil Interpretations Records by the NRCS), which also are now out of date, and is the source for the data in the soil ratings document. The data base reports an agricultural capability class for each component of the complex and does not give a single composite rating for the complex.

I consulted with Kent Howe, Lane County Planning Director, and Thor Thorson, Soil Data Quality Specialist, NRCS, to decide how to report agricultural capability class for soil complexes in the soil rating document. We considered the options of listing the capability class for each component of the complex, listing it for only the most predominant component, and not listing a capability class for complexes. We decided to list the agricultural capability class for only the most predominant component because most users of the document will consult it for the forestry ratings, and it would add a lot of detail and clutter to the document to report the capability class for each component. We further reasoned that most applicants would first test whether they qualify for a resource dwelling by using the capability class for the predominant component of the complex.

NRCS recommends using the agricultural capability class for the predominant component (this is the way the agricultural and forest soil ratings document reports it) for marginal lands calculations on parcels greater than 10 acres in size. The methodology for marginal lands zone change applications also uses the capability class for the predominant component. As always, applicants may choose to submit more detailed information.

For parcels 10 acres or less in size that are mapped as a soil complex, NRCS recommends requiring an on-site investigation to determine the composition of the complex on that specific site. For example, the soil survey describes map unit 43C Dixonville-Philomath-Hazelair as having 30% Dixonville, 30% Philomath, and 25% Hazelair. Due to the less detailed nature of mapping a complex, the soils actually present on a small parcel may be dramatically different than the percentages given in the map unit description, with perhaps some components missing or the components occurring in a different order of abundance.

Lane County Soil Ratings for Forestry and Agriculture

he Lane County Land Management Division, with technical assistance from Lane Council of Governments, compiled this ata to assist the public in preparing land use applications. The Natural Resources Conservation Service (NRCS) reviewed ie data and methodology.

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmland
01A	Abiqua silty clay loam, 0 - 3% slopes	135	203	1	X
01B	Abiqua silty clay loam, 3 - 5% slopes	135	203	2	X
02E	Astoria silt loam, 5 - 30% slopes	130	193	6	
03E	Astoria Variant silt loam, 3 - 30% slopes	none		6	
03G	Astoria Variant silt loam, 30 - 60% slopes	none		6	
04G	Atring-Rock outcrop complex, 30 - 60% slopes	***	81	6	
05	Awbrig silty clay loam	none		4	X
06	Awbrig-Urban land complex	none		4	
07B	Bandon sandy loam, 0 - 7% slopes	105	145	3	
07C	Bandon sandy loam, 7 - 12% slopes	105	145	3	
07F	Bandon sandy loam, 12 - 50% slopes	105	145	6	
08	Bashaw clay	none		4	X
09	Bashaw-Urban land complex	none		4	
10	Beaches	none		8	
11C	Bellpine silty clay loam, 3 - 12% slopes	115	163	3	X
11D	Bellpine silty clay loam, 12 - 20% slopes	115	163	3	X
11E	Bellpine silty clay loam, 20 - 30% slopes	115	163	4	X
11F	Bellpine silty clay loam, 30 - 50% slopes	115	163	6	
12E	Bellpine cobbly silty clay loam, 2 - 30% slopes	115	163	4	
13F	Blachly clay loam, 30 - 50% slopes	119	173	6	
13G	Blachly clay loam, 50 - 70% slopes	119	173	7	
14E	Blachly silty clay loam, 3 - 30% slopes	125	184	6	
14F	Blachly silty clay loam, 30 - 50% slopes	125	184	6	
15E	Blachly-McCully clay loam, 3 - 30% slopes	***	172	6	
16D	Bohannon gravelly loam, 3 - 25% slopes	118	171	6	
16F	Bohannon gravelly loam, 25 - 50% slopes	118	171	6	
16H	Bohannon gravelly loam, 50 - 90% slopes	118	171	7	
17	Brallier muck, drained	none		4	
18	Brallier Variant muck	none		5	
19	Brenner silty clay loam	none		3	X
20B	Briedwell cobbly loam, 0 - 7% slopes	103	141	3	X
21B	Bullards-Ferrelo loams, 0 - 7% slopes	***	84	3	
21C	Bullards-Ferrelo loams, 7 - 12% slopes	***	84	3	
21E	Bullards-Ferrelo loams, 12 - 30% slopes	***	76	4	
21G	Bullards-Ferrelo loams, 30 - 60% slopes	***	76	6	

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmland
22	Camas gravelly sandy loam, occasionally flooded	none		4	
23	Camas-Urban land complex	none		4	
24	Chapman loam	none		1	X
25	Chapman-Urban land complex	none		1	X
26	Chehalis silty clay loam, occasionally flooded	none		2	X
27	Chehalis-Urban land complex	none		2	X
28C	Chehulpum silt loam, 3 - 12% slopes	none		6 *	
28E	Chehulpum silt loam, 12 - 40% slopes	none		6	
29	Cloquato silt loam	none		2	X
30	Cloquato-Urban land complex	none		2	X
31	Coburg silty clay loam	none		2	X
32	Coburg-Urban land complex	none		2	X
33	Conser silty clay loam	none		3	X
34	Courtney gravelly silty clay loam	none		4	X
35D	Cruiser gravelly clay loam, 3 - 25% slopes	140**	145	6	
35F	Cruiser gravelly clay loam, 25 - 50% slopes	140**	145	6	
35G	Cruiser gravelly clay loam, 35 - 70% slopes	140**	145	7	
36D	Cumley silty clay loam, 2 - 20% slopes	114	162	6	
37C	Cupola cobbly loam, 3 - 12% slopes	100	136	6	
37E	Cupola cobbly loam, 12 - 30% slopes	100	136	6	
38	Dayton silt loam, clay substratum	none		4	X
39E	Digger gravelly loam, 10 - 30% slopes	102	140	6	
39F	Digger gravelly loam, 30 - 50% slopes	102	140	6	
40H	Digger-Rock outcrop complex, 50 - 85% slopes	***	114	7	
41C	Dixonville silty clay loam, 3 - 12% slopes	109	152	3	
41E	Dixonville silty clay loam, 12 - 30% slopes	109	152	4	
41F	Dixonville silty clay loam, 30 - 50% slopes	109	152	6	
42E	Dixonville-Hazelair-Urban land complex, 12 - 35% slopes	***	89	4	
43C	Dixonville-Philomath-Hazelair complex, 3 - 12% slopes	***	54	3	
43E	Dixonville-Philomath-Hazelair complex, 12 - 35% slopes	***	63	4	
44	Dune land	none		8	
45C	Dupee silt loam, 3 - 20% slopes	none		3	
46	Eilertsen silt loam	133	199	2	X
47E	Fendall silt loam, 3 - 30% slopes	125	184	6	
48	Fluvents, nearly level	none		--	
49E	Formader loam, 3 - 30% slopes	121	176	6	
49G	Formader loam, 30 - 60% slopes	121	176	6	
70G	Formader-Hembre-Klickitat complex, 50 - 80% slopes	***	176	7	

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	Hig Valu nl
51B	Haflinger-Jimbo complex, 0 - 5% slopes	***	165	6	X
52B	Hazelair silty clay loam, 2 - 7% slopes	none		3	
52D	Hazelair silty clay loam, 7 - 20% slopes	none		4	
53	Heceta fine sand	none		4	
54D	Hembre silt loam, 5 - 25% slopes	127	188	6	
54G	Hembre silt loam, 25-60% slopes	127	188	6	
55E	Hembre-Klickitat complex, 3 - 30% slopes	***	177	6	
55G	Hembre-Klickitat complex, 30 - 60% slopes	***	176	6	
56	Holcomb silty clay loam	none		3	X[1]
57D	Holderman extremely cobbly loam, 5 - 25% slopes	119**	113	6	
57F	Holderman extremely cobbly loam, 25 - 50% slopes	119**	113	6	
57G	Holderman extremely cobbly loam, 50 - 75% slopes	119**	113	7	
58D	Honeygrove silty clay loam, 3 - 25% slopes	122	178	6	
58F	Honeygrove silty clay loam, 25 - 50% slopes	122	178	6	
59E	Hullt loam, 2 - 30% slopes	121	176	3	X
59G	Hullt loam, 30 - 60% slopes	121	176	6	
60D	Hummington gravelly loam, 5 - 25% slopes	131**	131	6	
60F	Hummington gravelly loam, 25 - 50% slopes	131**	131	6	
60G	Hummington gravelly loam, 50 - 75% slopes	131**	131	7	
61	Jimbo silt loam	121	176	1	X
62B	Jimbo-Haflinger complex, 0 - 5% slopes	***	171	1	X
63C	Jory silty clay loam, 2 - 12% slopes	122	178	2	X
63D	Jory silty clay loam, 12 - 20% slopes	122	178	3	X
63E	Jory silty clay loam, 20 - 30% slopes	122	178	4	X
64D	Keel cobbly clay loam, 3 - 25% slopes	132**	133	6	
64F	Keel cobbly clay loam, 25 - 45% slopes	132**	133	6	
64G	Keel cobbly clay loam, 45 - 75% slopes	132**	133	7	
65G	Kilchis stony loam, 30 - 60% slopes	90	116	6	
65H	Kilchis stony loam, 60 - 90% slopes	90	116	7	
66D	Kinney cobbly loam, 3 - 20% slopes	122	178	6	
67F	Kinney cobbly loam, 20 - 50% north slopes	122	178	6	
67G	Kinney cobbly loam, 50 - 70% north slopes	122	178	7	
68F	Kinney cobbly loam, 20 - 50% south slopes	122	178	6	
68G	Kinney cobbly loam, 50 - 70% south slopes	122	178	7	
69E	Kinney cobbly loam, slump, 3 - 30% slopes	122	178	6	
70E	Klickitat stony loam, 3 - 30% slopes	112	158	6	
71F	Klickitat stony loam, 30 - 50% north slopes	112	158	6	
71G	Klickitat stony loam, 50 - 75% north slopes	112	158	7	

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmland
72F	Klickitat stony loam, 30 - 50% south slopes	112	158	6	
72G	Klickitat stony loam, 50 - 75% south slopes	112	158	7	
73	Linslaw loam	none		3	X[1]
74B	Lint silt loam, 0 - 7% slopes	117	169	3	
74C	Lint silt loam, 7 - 12% slopes	117	169	3	
74D	Lint silt loam, 12 - 20% slopes	117	169	3	
74E	Lint silt loam, 20 - 40% slopes	117	169	4	
75	Malabon silty clay loam	none		1	X
76	Malabon-Urban land complex	none		1	X
77B	Marcola cobbly silty clay loam, 2 - 7% slopes	none		4	
78	McAlpin silty clay loam	none		2	X
79	McBee silty clay loam	none		3	X[2]
80F	McCully clay loam, 30 - 35% slopes	118	171	6	
80G	McCully clay loam, 50 - 70% slopes	118	171	7	
81D	McDuff clay loam, 3 - 25% slopes	112	158	6	
81F	McDuff clay loam, 25 - 50% slopes	112	158	6	
81G	McDuff clay loam, 50 - 70% slopes	112	158	7	
82C	Meda loam, 2 - 12% slopes	none		3	X
83B	Minniece silty clay loam, 0 - 8% slopes	none		6	
84D	Mulkey loam, 5 - 25% slopes	none		6	
85	Natroy silty clay loam	none		4	X
86	Natroy silty clay	none		4	X
87	Natroy-Urban land complex	none		4	X
88	Nehalem silt loam	none		2	X
89C	Nekia silty clay loam, 2 - 12% slopes	113	160	3	X
89D	Nekia silty clay loam, 12 - 20% slopes	113	160	3	X
89E	Nekia silty clay loam, 20 - 30% slopes	113	160	4	
89F	Nekia silty clay loam, 30 - 50% slopes	113	160	6	
90	Nekoma silt loam	none		3	
91D	Neskowin silt loam, 12 - 20% slopes	none		6	
91E	Neskowin silt loam, 20 - 40% slopes	none		6	
92G	Neskowin-Salander silt loams, 40 - 60% slopes	none		6	
93	Nestucca silt loam	none		3	
94C	Netarts fine sand, 3 - 12% slopes	none		6	
94E	Netarts fine sand, 12 - 30% slopes	none		6	
95	Newberg fine sandy loam	none		2	X
96	Newberg loam	none		2	X

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmland
97	Newberg-Urban land complex	none		2	X
98	Noti loam	none		4	X
99H	Ochrepts & Umbrepts, very steep	none		--	
100	Oxley gravelly silt loam	none		3	
101	Oxley-Urban land complex	none		3	
102C	Panther silty clay loam, 2 - 12% slopes	none		6	
103C	Panther-Urban land complex, 2 - 12% slopes	none		6	
104E	Peavine silty clay loam, 3 - 30% slopes	125	184	6	
104G	Peavine silty clay loam, 30 - 60% slopes	125	184	6	
105A	Pengra silt loam, 1 - 4% slopes	none		3	X[1]
106A	Pengra-Urban land complex, 1 - 4% slopes	none		3	
107C	Philomath silty clay, 3 - 12% slopes	none		6	
108C	Philomath cobbly silty clay, 3 - 12% slopes	none		6	
108F	Philomath cobbly silty clay, 12 - 45% slopes	none		6	
109F	Philomath-Urban land complex, 12 - 45% slopes	none		6	
110	Pits	none		8	
111D	Preacher loam, 0 - 25% slopes	128	190	6	
111F	Preacher loam, 25 - 50% slopes	128	190	6	
112G	Preacher-Bohannon-Slickrock complex, 50 - 75% slopes	***	188	7	
112C	Ritner cobbly silty clay loam, 2 - 12% slopes	107	149	4	
113E	Ritner cobbly silty clay loam, 12 - 30% slopes	107	149	6	
113G	Ritner cobbly silty clay loam, 30 - 60% slopes	107	149	7	
114	Riverwash	none		8	
115H	Rock outcrop-Kilchis complex, 30 - 90% slopes	***	27	8	
116G	Rock outcrop-Witzel complex, 10 - 70% slopes	***	none	8	
117E	Salander silt loam, 12 - 30% slopes	125	184	6	
118	Salem gravelly silt loam	none		2	X
119	Salem-Urban land complex	none		2	X
120B	Salkum silt loam, 2 - 6% slopes	116	167	2	X
121B	Salkum silty clay loam, 2 - 8% slopes	116	167	2	X
121C	Salkum silty clay loam, 8 - 16% slopes	116	167	3	X
122	Saturn clay loam	123	180	3	
123	Sifton gravelly loam	124	182	3	X
124D	Slickrock gravelly loam, 3 - 25% slopes	137	209	6	
124F	Slickrock gravelly loam, 25 - 50% slopes	137	209	6	
125C	Steiwer loam, 3 - 12% slopes	none		3	
125D	Steiwer loam, 12 - 20% slopes	none		4*	

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmla
125F	Steiwer loam, 20 - 50% slopes	none		6	
126F	Tahkenitch loam, 20 - 45% slopes	124	182	6	
126G	Tahkenitch loam, 45 - 75% slopes	124	182	7	
127C	Urban land-Hazelair-Dixonville complex, 3 - 12% slopes	***	68	8	
128B	Veneta loam, 0 - 7% slopes	108	150	2	X
129B	Veneta Variant silt loam, 0 - 7% slopes	124	182	2	X
130	Waldo silty clay loam	none		3	
131C	Waldport fine sand, 0 - 12% slopes	none		6	
131E	Waldport fine sand, 12 - 30% slopes	none		7	
131G	Waldport fine sand, 30 - 70% slopes	none		7	
132E	Waldport fine sand, thin surface, 0 - 30% slopes	none		7	
133C	Waldport-Urban land complex, 0 - 12% slopes	none		6	
134	Wapato silty clay loam	none		3	X[3]
135C	Willakenzie clay loam, 2 - 12% slopes	110	154	3	X
135D	Willakenzie clay loam, 12 - 20% slopes	110	154	3	X
135E	Willakenzie clay loam, 20 - 30% slopes	110	154	4	X
135F	Willakenzie clay loam, 30 - 50% slopes	110	154	6	
136	Willanch fine sandy loam	none		3	
137F	Winberry very gravelly loam, 10 - 45% slopes	none		7	
138E	Witzel very cobbly loam, 3 - 30% slopes	none		6	
138G	Witzel very cobbly loam, 30 - 75% slopes	none		6	
139	Woodburn silt loam	none		2	X
140	Yaquina loamy fine sand	none		4	
141	Yaquina-Urban land complex	none		4	
142G	Yellowstone-Rock outcrop, 10 - 60% slopes	none		7	

*	Indicates soils which have an irrigated capability class which is different from the non-irrigated capability class.
**	Indicates productivity calculated using 100-year Douglas fir data.
***	Indicates soil complexes with multiple site indices, refer to the CuFt/Acre/Year column for a composite volume rating for the complex.
"none"	Indicates soil map units that lack site index information on Douglas fir. The soil map unit may have the capability to produce Douglas fir, but this productivity may be very low to very high. No site index has been collected by the NRCS due to lack of suitable sites or lack of time and or funds.
X[1]	Only drained areas are high value farmland.
X[2]	Only areas protected from flooding or not frequently flooded during the growing season are high value farmland.
X[3]	Only drained areas that are either protected from flooding or not frequently flooded during the growing season are high value farmland.

SOURCE AND DESCRIPTION OF THE DATA

Map Symbol

Data Source

USDA-Soil Conservation Service, September 1987. *Soil Survey of Lane County Area, Oregon.*

Soil Map Unit

Data Source

USDA-Soil Conservation Service, September 1987. *Soil Survey of Lane County Area, Oregon.*

Site Index

Data Source

USDA-Natural Resources Conservation Service, August 1997 printout from the National Soils Information System (NASIS). *Soils Database for Lane County, Woodland Management and Productivity* table.

Description

These site indices indicate the average height, in feet, that dominant and codominant Douglas fir trees attain in 50 years. The site index applies to fully stocked, even-aged, unmanaged stands. This table lists only site indices for Douglas fir and does not list site indices for soil complexes. The Description under Cubic Feet/Acre/Year explains the composite volume rating in this table for soil complexes.

Cubic feet/acre/year

Data Source

USDA-Soil Conservation Service, June 1986. *Technical Note No. 2 Revised, Culmination of Mean Annual Increment for Commercial Forest Trees of Oregon.*

Description

Converting site index to cubic feet/acre/year expresses productivity as a volume of wood fiber produced. For map units that are predominantly one soil type, it is straightforward to use the tables in Technical Note No. 2 to look up the cubic feet/acre/year that a soil could potentially produce based on the site index in the State Soils Database. Calculating a volume rating for a complex is more problematic. The NRCS reports site index data for each component of a soil complex but does not calculate a composite volume for the entire complex. A complex is a soil map unit which has two or more kinds of soil in such an intricate pattern or so small in area that the soils cannot be delineated separately at the scale of mapping.

The methodology used in this table to calculate forest productivity volume ratings for soil complexes involves applying a weighted average to each component of the complex and then normalizing to base it on 100% excluding the inclusions. The following example illustrates this calculation for a soil complex which has a site index for only one of the two components.

43 C	*Dixonville-Philomath-Hazelair complex 3-12%*				
Component	*Actual %*	*Normalized %**	*Site Index*	*CuFt/ Ac/Yr*	*Normalized % x Cu.F.t/Ac./Year*
Dixonville	30%	35%	97	130	46
Philomath	30%	35%	-	-	-
Hazelair	25%	29%			
Total	85%	100%			46

* $\text{Normalized \%} = \dfrac{\%\ of\ Individual\ Component}{100 - (\%\ Inclusions + \%\ Urban\ Land)}$

Agricultural Capability Class

Data Source

USDA-Natural Resources Conservation Service, August 1997 printout from the National Soils Information System (NASIS). *Soils Database for Lane County, Land Capability and Yields Per Acre of Crops and Pasture* table.

Description

Land capability class, often called agricultural capability class, generally shows the suitability of soils for most kinds of field crops. The Soil Survey describes capability class: "The soils are grouped according to their limitations for field crops, the risk of damage if they are used for field crops, and the way they respond to management." There are eight capability classes, I through VIII (sometimes written as 1 through 8), indicating progressively greater limitations for use as cropland. The land capability classification is discussed in USDA Agriculture Handbook No. 210, issued September 1961 and reprinted January 1973.

The NRCS reports both irrigated and non-irrigated capability classes. In Lane County, because of adequate rainfall, the ratings are the same for irrigated and non-irrigated except for all but two map units (28C, Chehulpum silt loam, 3-12%, and 125D, Steiwer loam, 3-12%). This table lists the non-irrigated capability class. For soil complexes, this table lists only the capability class of the most predominant soil in the complex (which is the first soil in the name of the map unit).

High Value Soils

Data Source

Land Conservation and Development Commission, adopted February 18, 1994. *Oregon Administrative Rules, Chapter 660, Division 33* (OAR 660-33).

Description

The Agricultural Land Rule (OAR 660-33) defines "high value farmland" as land in a tract composed predominantly of soils that are prime, unique, Class I or II, and other soils as specified in the rule. These other soils include the wet clay soils on valley terraces that are generally used for grass seed production, and moderately sloping soils on low foothills.

NRCS is the agency responsible for classifying soils as prime, unique, or land capability class I through VIII (1 through 8). The names 'prime' and 'unique' are what they imply. Prime soils are the best soils from a national perspective—easy to farm, suitable for a wide variety of crops, producing the highest yields. NRCS designates unique soils in conjunction with the state and county so as to recognize soils suited for growing a specialty crop of state or local importance, e.g., the soils on the southern Oregon coast used for growing cranberries and the organic soils in the Willamette Valley used for growing onions. Lane County has not requested the designation of any unique soils. Class I and II are land capability classes—the soils in them have the fewest limitations for crop growth. Refer to the description of Agricultural Capability Class (immediately above) for more information.

Note: The Soil Conservation Service and Natural Resources Conservation Service are the same USDA agency. A name change to Natural Resources Conservation Service was approved in 1994.

LANE COUNTY FOREST SOIL RATINGS

EXHIBIT 5

Map Symbol	Soil Name	Site Index [1]	Cubic Foot /Acre/Year [2]
001A	Abiqua sicl, 0-3%	135	203
001B	Abiqua sicl, 3-5%	135	203
002E	Astoria sicl, 5-30%	130	193
003E	Astoria Variant sil, 3-30%	115	163
003G	Astoria Variant sil, 30-60%	115	163
004G	Atring-Rock outcrop complex, 30-60%	***	86**
005	Awbrig sicl	none	40**
006	Awbrig-Urban land complex	***	20**
007B	Bandon sl, 0-7%	105	145
007C	Bandon sl, 7-12%	105	145
007F	Bandon sl, 12-50%	105	145
008	Bashaw c	none	30**
009	Bashaw-Urban land complex	***	20**
010	Beaches	none	none
011C	Bellpine sicl, 3-12%	118	171
011D	Bellpine sicl, 12-20%	118	171
011E	Bellpine sicl, 20-30%	118	171
011F	Bellpine sicl, 30-50%	118	171
012E	Bellpine cob sicl, 2-30%	118	171
013F	Blachly cl, 30-50%	119	173
013G	Blachly cl, 50-70%	119	173
014E	Blachly sicl, 3-30%	127	188
014F	Blachly sicl, 30-50%	127	188
015E	Blachly-McCully cls, 3-30%	***	155
016D	Bohannon gr l, 3-25%	118*	171
016F	Bohannon gr l, 25-50%	118*	171
016H	Bohannon gr l, 50-90%	118*	171
017	Brallier muck, drained	none	none
018	Brallier muck, tidal	none	none
019	Brenner sicl	none	none
020B	Briedwell cob l, 0-7%	108	150
021B	Bullards-Ferrelo loams, 0-7%	***	80
021C	Bullards-Ferrelo loams, 7-12%	***	80
021E	Bullards-Ferrelo loams, 12-30%	***	80
021G	Bullards-Ferrelo loams, 30-60%	***	80
022	Camas gr sl, occ flooded	none	40**
023	Camas-Urban land complex	---	20**
024	Chapman l	120	175
025	Chapman-Urban land complex	***	100**
026	Chehalis sicl, occ flooded	130	193

All ratings are taken from the "Single Phase Interpretation Sheets" (green sheets) published by the Soil Conservation Service (SCS) for the Lane County Area, Oregon except those marked **

All ratings are for Douglar Fir unmanaged, fully stocked stands.

* ratings for additional tree species are listed on SCS green sheets

** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1

*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex

[1] 50 year base

[2] volume produced at age of culmination

LANE COUNTY FOREST SOIL RATINGS

Map Symbol	Soil Name	[1] Site Index	[2] Cubic Foot /Acre/Year
027	Chehalis-Urban land complex	***	90**
028C	Chehulpum sil, 3-12%	none	40**
028E	Chehulpum sil, 12-40%	none	40**
029	Cloquato sil	130	193
030	Cloquato-Urban land complex	***	100**
031	Coburg sicl	none	100**
032	Coburg-Urban land complex	***	90**
033	Conser sicl	none	45**
034	Courtney gr sicl	none	40**
035D	Cruiser gr cl, 3-25%	140*	214
035F	Cruiser gr cl, 25-50%	140*	214
035G	Cruiser gr cl, 35-70%	140*	214
036D	Cumley sicl, 2-20%	114	162
037C	Cupola cob l, 3-12%	120	175
037E	Cupola Cob l, 12-30%	120	175
038	Dayton sil, clay sub	none	40**
039E	Digger gr l, 10-30%	116	167
039F	Digger gr l, 30-50%	116	167
040H	Digger-Rock outcrop complex, 50-85%	***	114**
041C	Dixonville sicl, 3-12%	97	130
041E	Dixonville sicl, 12-30%	97	130
041F	Dixonville sicl, 30-50%	97	130
042E	Dixonville-Hazelair-Urban land, 12-35%	***	35**
043C	Dixonville-Philomath-Hazelair, 3-12%	***	45**
043E	Dixonville-Philomath-Hazelair, 12-35%	***	45**
044	Dune land	none	none
045C	Dupee sil, 3-20%	none	70**
046	Eilertsen sil	124	182
047E	Fendall sil, 3-30%	127	188
048	Fluvents, nearly level	none	none
049E	Formader l, 3-30%	124	182
049G	Formader l, 30-60%	124	182
050G	Formader-Hembre-Klickitat, 50-80%	***	170**
051B	Haflinger-Jimbo complex, 0-5%	***	161**
052B	Hazelair sicl, 2-7%	none	40**
052D	Hazelair sicl, 7-20%	none	40**
053	Heceta fs	none	40**
054D	Hembre sil, 5-25%	127*	188
054G	Hembre sil, 25-60%	127*	188
055E	Hembre-Klickitat complex, 3-30%	***	170**

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* ratings for additional tree species are listed on SCS green sheets

** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1

*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex

[1] 50 year base

[2] volume produced at age of culmination

LANE COUNTY FOREST SOIL RATINGS

Map Symbol	Soil Name	Site Index [1]	Cubic Foot /Acre/Year [2]
055G	Hembre-Klickitat complex, 30-60%	***	168**
056	Holcomb sicl	none	100**
057D	Holderman ext cob l, 5-25%	121	176
057F	Holderman ext cob l, 25-50%	121	176
057G	Holderman ext cob l, 50-75%	121	176
058D	Honeygrove sicl, 3-25%	129	191
058F	Honeygrove sicl, 25-50%	129	191
059E	Hullt l, 2-30%	118	171
059G	Hullt l, 30-60%	118	171
060D	Hummington gr l, 5-25%	145	224
060F	Hummington gr l, 25-50%	145	224
060G	Hummington gr l, 50-75%	145	224
061	Jimbo soil	124	182
062B	Jimbo-Haflinger complex, 0-5%	***	167**
063C	Jory sicl, 2-12%	122	178
063D	Jory sicl, 12-20%	122	178
063E	Jory sicl, 20-30%	122	178
064D	Keel cob cl, 3-25%	118*	171
064F	Keel cob co, 25-45%	118*	171
064G	Keel cob cl, 45-75%	118	171
065G	Kilchis st l, 30-60%	92	120
065H	Kilchis st l, 60-90%	92	120
066D	Kinney cob l, 3-20%	124*	182
067F	Kinney cob l, 20-50%, N	124*	182
067G	Kinney cob l, 50-70%, N	124*	182
068F	Kinney cob l, 20-50%, S	124*	182
068G	Kinney cob l, 50-70%, S	124*	182
069E	Kinney cob l, slump, 3-30%	124*	182
070E	Klickitat st l, 3-30%	120	175
071F	Klickitat st l, 30-50%, N	120	175
071G	Klickitat st l, 50-75%, N	120	175
072F	Klickitat st l, 30-50%, S	110	154
072G	Klickitat st l, 50-75%, S	110	154
073	Linslaw l	none	80**
074B	Lint sil, 0-7%	114*	162
074C	Lint sil, 7-12%	114*	162
074D	Lint sil, 12-20%	114*	162
074E	Lint sil, 20-40%	114*	162
075	Malabon sicl	123	180
076	Malabon-Urban land complex	***	50**

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** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1

*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex

[1] 50 year base

[2] volume produced at age of culmination

LANE COUNTY FOREST SOIL RATINGS

Map Symbol	Soil Name	Site Index [1]	Cubic Foot /Acre/Year [2]
077B	Marcola cob sicl, 2-7%	97	130
078	McAlpin sicl	125	184
079	McBee sicl	119	173
080F	McCully cl, 30-35%	125	184
080G	McCully cl, 50-70%	125	184
081D	McDuff cl, 3-25%	115	163
081F	McDuff cl, 25-50%	115	163
081G	McDuff cl, 50-70%	120	175
082C	Meda l, 2-12%	128	190
083B	Minniece sicl, 0-8%	112	158
084D	Mulkey l, 5-25%	90*	116
085	Natroy sicl	none	60**
086	Natroy sic	none	60**
087	Natroy-Urban land complex	***	40**
088	Nehalem sil	124	182
089C	Nekia sicl, 2-12%	115	163
089D	Nekia sicl, 12-20%	115	163
089E	Nekia sicl, 20-30%	115	163
089F	Nekia sicl, 30-50%	112	158
090	Nekoma sil	140	214
091D	Neskowin sil, 12-20%	109*	152
091E	Neskowin sil, 20-40%	109*	152
092G	Neskowin-Salander sil, 40-60%	***	205**
093	Nestucca sil	99	134
094C	Netarts fs, 3-12%	95	125
094E	Netarts fs, 12-30%	95	125
095	Newberg fsl	110	154
096	Newberg l	110	154
097	Newberg-Urban land complex	***	100**
098	Noti l	none	30**
099H	Ochrepts & Umbrepts, v. steep	***	130**
100	Oxley gr sil	none	80**
101	Oxley-Urban land complex	***	60**
102C	Panther sicl, 2-12%	none	45**
103C	Panther-Urban land complex, 2-12%	***	40**
104E	Peavine sicl, 3-30%	124	182
104G	Peavine sicl, 30-60%	124	182
105A	Pengra sil, 1-4%	none	45**
106A	Pengra-Urban land complex, 1-4%	***	30**
107C	Philomath sic, 3-12%	none	45**

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* ratings for additional tree species are listed on SCS green sheets

** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1

*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex

[1] 50 year base

[2] volume produced at age of culmination

LANE COUNTY FOREST SOIL RATINGS

Map Symbol	Soil Name	[1] Site Index	[2] Cubic Foot /Acre/Year
108C	Philomath cob sic, 3-12%	none	45**
108F	Philomath cob sic, 12-45%	none	45**
109F	Philomath-Urban land complex, 12-45%	***	20**
110	Pits	none	none
111D	Preacher l, 0-25%	128*	190
111F	Preacher l, 25-50%	128*	190
112G	Preacher-Bohannon-Slickrock, 50-75%	***	185**
113C	Ritner cob sicl, 2-12%	102*	140
113E	Ritner cob sicl, 12-30%	102*	140
113G	Ritner cob sicl, 30-60%	102*	140
114	Riverwash	none	none
115H	Rock outcrop-Kilchis complex, 30-90%	***	34**
116G	Rock outcrop-Witzel complex, 10-70%	***	21**
117E	Salander sil, 12-30%	125*	184
118	Salem gr sil	114	162
119	Salem-Urban land complex	***	100**
120B	Salkum sil, 2-6%	119	173
121B	Salkum sil, 2-6%	126	186
121C	Salkum sicl, 8-16%	126	186
122	Saturn cl	104	143
123	Sifton gr l	110	154
124D	Slickrock gr l, 3-25%	137*	209
124F	Slickrock gr l, 25-50%	137*	209
125C	Steiwer l, 3-12%	none	30**
125D	Steiwer l, 12-20%	none	30**
125F	Steiwer l, 20-50%	none	30**
126F	Tahkenitch l, 20-45%	120	175
126G	Tahkenitch l, 45-75%	112	158
127C	Urban land-Hazelair-Dixonville, 3-12%	***	45**
128B	Veneta l, 0-7%	108	150
129B	Veneta variant sil, 0-7%	128	190
130	Waldo sicl	none	45**
131C	Waldport fs, 0-12%	90	116
131E	Waldport fs, 12-30%	90	116
131G	Waldport fs, 30-70%	90	116
132E	Waldport fs, thin surf., 0-30%	none	29**
133C	Waldport-Urban land complex, 0-12%	***	20**
134	Wapato sicl	none	none
135C	Willakenzie cl, 2-12%	110	154
135D	Willakenzie cl, 12-20%	110	154

All ratings are taken from the "Single Phase Interpretation Sheets" (green sheets) published by the Soil Conservation Service (SCS) for the Lane County Area, Oregon except those marked **

All ratings are for Douglar Fir unmanaged, fully stocked stands.

* ratings for additional tree species are listed on SCS green sheets

** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1

*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex

[1] 50 year base

[2] volume produced at age of culmination

LANE COUNTY FOREST SOIL RATINGS

Map Symbol	Soil Name	[1] Site Index	[2] Cubic Foot /Acre/Year
135E	Willakenzie cl, 20-30%	110	154
135F	Willakenzie cl, 30-50%	110	154
136	Willanch fsl	none	40**
137F	Winberry v gr l, 10-45%	80	98
138E	Witzel v cob l, 3-30%	none	70**
138G	Witzel v cob l, 30-75%	none	70**
139	Woodburn sil	133	199
140	Yaquina lfs	none*	none
141	Yaquina-Urban land complex	***	45**
142G	Yellowstone-Rock outcrop, 10-60%	***	38**

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All ratings are for Douglar Fir unmanaged, fully stocked stands.
* ratings for additional tree species are listed on SCS green sheets
** These estimated soils ratings are taken from an Office of State Forester Memorandum, February 8, 1990, General File 7-1-1
*** multiple site indices; refer to the cu.ft./acre/yr column for a composite rating for this complex
1] 50 year base
[2] volume produced at age of culmination

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farml
72F	Klickitat stony loam, 30 - 50% south slopes	112	158	6	
72G	Klickitat stony loam, 50 - 75% south slopes	112	158	7	
73	Linslaw loam	none		3	X[1]
74B	Lint silt loam, 0 - 7% slopes	117	169	3	
74C	Lint silt loam, 7 - 12% slopes	117	169	3	
74D	Lint silt loam, 12 - 20% slopes	117	169	3	
74E	Lint silt loam, 20 - 40% slopes	117	169	4	
75	Malabon silty clay loam	none		1	X
76	Malabon-Urban land complex	none		1	X
77B	Marcola cobbly silty clay loam, 2 - 7% slopes	none		4	
78	McAlpin silty clay loam	none		2	X
79	McBee silty clay loam	none		3	X[2]
80F	McCully clay loam, 30 - 35% slopes	118	171	6	
80G	McCully clay loam, 50 - 70% slopes	118	171	7	
81D	McDuff clay loam, 3 - 25% slopes	112	158	6	
81F	McDuff clay loam, 25 - 50% slopes	112	158	6	
81G	McDuff clay loam, 50 - 70% slopes	112	158	7	
82C	Meda loam, 2 - 12% slopes	none		3	X
83B	Minniece silty clay loam, 0 - 8% slopes	none		6	
84D	Mulkey loam, 5 - 25% slopes	none		6	
85	Natroy silty clay loam	none		4	X
86	Natroy silty clay	none		4	X
87	Natroy-Urban land complex	none		4	X
88	Nehalem silt loam	none		2	X
89C	Nekia silty clay loam, 2 - 12% slopes	113	160	3	X
89D	Nekia silty clay loam, 12 - 20% slopes	113	160	3	X
89E	Nekia silty clay loam, 20 - 30% slopes	113	160	4	
89F	Nekia silty clay loam, 30 - 50% slopes	113	160	6	
90	Nekoma silt loam	none		3	
91D	Neskowin silt loam, 12 - 20% slopes	none		6	
91E	Neskowin silt loam, 20 - 40% slopes	none		6	
92G	Neskowin-Salander silt loams, 40 - 60% slopes	none		6	
93	Nestucca silt loam	none		3	
94C	Netarts fine sand, 3 - 12% slopes	none		6	
94E	Netarts fine sand, 12 - 30% slopes	none		6	
95	Newberg fine sandy loam	none		2	X
96	Newberg loam	none		2	X

Lane County Soil Ratings for Forestry and Agriculture

Map Symbol	Lane County Soil Map Unit	Douglas Fir Site Index	Cu. Ft./ Acre/ Year	Agricultural Capability Class	High Value Farmland
[illegible]	Newberg-Urban land complex	none		2	X
98	Noti loam	none		4	X
99H	Ochrepts & Umbrepts, very steep	none		--	
100	Oxley gravelly silt loam	none		3	
101	Oxley-Urban land complex	none		3	
102C	Panther silty clay loam, 2 - 12% slopes	none		6	
103C	Panther-Urban land complex, 2 - 12% slopes	none		6	
104E	Peavine silty clay loam, 3 - 30% slopes	125	184	6	
104G	Peavine silty clay loam, 30 - 60% slopes	125	184	6	
105A	Pengra silt loam, 1 - 4% slopes	none		3	X[1]
106A	Pengra-Urban land complex, 1 - 4% slopes	none		3	
107C	Philomath silty clay, 3 - 12% slopes	none		6	
108C	Philomath cobbly silty clay, 3 - 12% slopes	none		6	
108F	Philomath cobbly silty clay, 12 - 45% slopes	none		6	
109F	Philomath-Urban land complex, 12 - 45% slopes	none		6	
110	Pits	none		8	
111D	Preacher loam, 0 - 25% slopes	128	190	6	
111F	Preacher loam, 25 - 50% slopes	128	190	6	
[illegible]	Preacher-Bohannon-Slickrock complex, 50 - 75% slopes	***	188	7	
[illegible]C	Ritner cobbly silty clay loam, 2 - 12% slopes	107	149	4	
113E	Ritner cobbly silty clay loam, 12 - 30% slopes	107	149	6	
113G	Ritner cobbly silty clay loam, 30 - 60% slopes	107	149	7	
114	Riverwash	none		8	
115H	Rock outcrop-Kilchis complex, 30 - 90% slopes	***	27	8	
116G	Rock outcrop-Witzel complex, 10 - 70% slopes	***	none	8	
117E	Salander silt loam, 12 - 30% slopes	125	184	6	
118	Salem gravelly silt loam	none		2	X
119	Salem-Urban land complex	none		2	X
120B	Salkum silt loam, 2 - 6% slopes	116	167	2	X
121B	Salkum silty clay loam, 2 - 8% slopes	116	167	2	X
121C	Salkum silty clay loam, 8 - 16% slopes	116	167	3	X
122	Saturn clay loam	123	180	3	
123	Sifton gravelly loam	124	182	3	X
124D	Slickrock gravelly loam, 3 - 25% slopes	137	209	6	
124F	Slickrock gravelly loam, 25 - 50% slopes	137	209	6	
125C	Steiwer loam, 3 - 12% slopes	none		3	
125D	Steiwer loam, 12 - 20% slopes	none		4*	

EXHIBIT 8

Comparative values of site index from old and new site index curves.

Site index by McArdle (USDA Tech. Bul. 201)

Total age	Class V		Class IV			Class III			Class II			Class I		
	80	90	100	110	120	130	140	150	160	170	180	190	200	210
years	site index at 50 years bh age [1]													
20	76	83	90	97	104	112	119	126	133	140	148	155	162	169
30	74	81	88	95	103	110	117	124	131	139	146	153	160	168
40	72	79	86	94	101	108	115	122	130	137	144	151	158	166
50	70	77	85	92	99	106	113	121	128	135	142	149	157	164
60	68	76	83	90	97	104	112	119	126	133	140	148	155	162
70	66	74	81	88	95	103	110	117	124	131	139	146	153	160
80	65	72	79	86	94	101	108	115	122	130	137	144	151	158
90	63	70	77	84	92	99	106	113	121	128	135	142	149	157
100	61	68	76	83	90	97	104	112	119	126	133	140	148	155
110	59	66	74	81	88	95	102	110	117	124	131	139	146	153
120	57	65	72	79	86	94	101	108	115	122	130	137	144	151

[1] Site indexes greater than 160 at 50 years bh age are extrapolations beyond the range of the new curves. Lines through the table separate site classes I through V, right to left, respectively.

DOUGLAS FIR EMPIRICAL YIELD TABLE

SITE CLASS 95 | 17,591 ✱

SITE CLASS 98 | 19,019 ✱

TABLE 5

SITE 100

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	17	8.53	85	85	335	.254
26	70	9.33	1,324	1,236	2,561	.483
30	97	9.85	2,130	1,913	4,601	.416
40	146	11.14	4,071	3,703	11,450	.323
41	150	11.27	4,259	3,886	12,248	.317
50	181	12.39	5,909	5,541	19,972	.277
60	209	13.59	7,643	7,325	29,247	.250
70	232	14.71	9,273	8,982	38,528	.233
80	252	15.75	10,799	10,468	47,294	.221
90	269	16.69	12,222	11,750	55,131	.213
100	284	17.53	13,541	12,805	61,760	.207
110	297	18.24	14,756	13,624	66,922	.204
120	310	18.81	15,867	14,190	70,448	.201
130	321	19.24	16,875	14,502	72,234	.201

TABLE 6

SITE 110

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	30	8.74	327	327	666	.491
26	83	9.63	1,688	1,494	3,299	.453
30	109	10.23	2,574	2,253	5,812	.388
40	158	11.69	4,717	4,275	14,125	.303
41	162	11.83	4,926	4,482	15,074	.297
50	194	13.11	6,757	6,345	24,305	.261
60	222	14.47	8,693	8,344	35,244	.237
70	245	15.76	10,525	10,200	46,141	.221
80	264	16.97	12,253	11,863	56,425	.210
90	281	18.09	13,878	13,304	65,675	.203
100	296	19.09	15,398	14,503	73,549	.197
110	310	19.97	16,815	15,448	79,836	.193
120	322	20.72	18,129	16,126	84,358	.191
130	333	21.31	19,338	16,528	86,957	.190

TABLE 7

SITE 120

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	51	9.11	819	770	1,355	.568
26	101	10.10	2,294	1,961	4,810	.408
30	126	10.77	3,257	2,821	7,992	.353
40	173	12.39	5,592	5,093	18,116	.281
41	177	12.55	5,820	5,324	19,255	.277
50	208	13.98	7,823	7,389	30,132	.245
60	235	15.50	9,951	9,588	42,783	.224
70	258	16.96	11,974	11,611	55,265	.210
80	277	18.33	13,894	13,424	66,954	.200
90	294	19.60	15,710	14,992	77,437	.194
100	309	20.76	17,423	16,297	86,410	.189
110	322	21.80	19,031	17,334	93,643	.185
120	334	22.70	20,536	18,091	98,946	.183
130	345	23.45	21,937	18,561	102,187	.182

EXHIBIT 9

TABLE 2

D O U G L A S F I R E M P I R I C A L Y I E L D T A B L E

SOURCE: For Douglas fir tables 2 through 10, D.N.R. Report No. 20 - May 1971, "Empirical Yield Tables for the Douglas fir Zone" by Charles Chambers, and Franklin Wilson. "Comprehensive Tree Volume Tarif Tables" by Dr. K. J. Turnbull, Gene Little, and Gerald Hoyer, June 1972. Stepwise multiple regression conversion made by Tom Wheatley, Publishers Paper Co., June 1978.

SITE 70

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	---	---	---	---	---	---
26	9	8.25	---	---	---	---
30	38	8.57	517	517	1,185	.436
40	91	9.36	1,874	1,847	4,196	.440
41	96	9.44	2,004	1,963	4,554	.431
50	128	10.11	3,126	3,008	8,115	.371
60	158	10.80	4,275	4,138	12,572	.329
70	182	11.43	5,320	5,196	17,176	.302
80	202	11.98	6,261	6,141	21,544	.285
90	220	12.43	7,099	6,941	25,350	.274
100	235	12.78	7,833	7,574	28,374	.267
110	249	13.01	8,463	8,021	30,405	.264
120	261	13.10	8,989	8,266	31,279	.264
130	273	13.04	9,412	8,297	30,900	.269

TABLE 3

SITE 80

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	---	---	---	---	---	---
26	26	8.52	269	269	633	.425
30	55	8.91	921	921	1,614	.570
40	108	9.87	2,479	2,330	5,870	.397
41	113	9.96	2,630	2,467	6,342	.389
50	146	10.79	3,934	3,707	11,118	.333
60	175	11.65	5,285	5,060	17,062	.297
70	199	12.45	6,532	6,330	23,187	.273
80	219	13.17	7,675	7,473	29,038	.257
90	237	13.79	8,715	8,454	34,240	.247
100	252	14.31	9,651	9,251	38,541	.240
110	266	14.71	10,482	9,842	41,709	.236
120	279	14.97	11,211	10,216	43,565	.235
130	290	15.08	11,835	10,365	44,000	.236

TABLE 4

SITE 90

Total Age	Normal Basal Area	Mean Diameter	CVTS	CV4	SV6(32')	C/SCR Ratio
20	---	---	---	---	---	---
26	49	8.91	777	777	1,351	.575
30	77	9.36	1,506	1,426	2,708	.526
40	128	10.49	3,256	2,985	8,393	.356
41	132	10.60	3,425	3,145	9,019	.349
50	165	11.57	4,902	4,591	15,209	.302
60	193	12.60	6,444	6,160	22,777	.270
70	217	13.56	7,883	7,630	30,483	.250
80	236	14.44	9,217	8,949	37,795	.237
90	254	15.23	10,448	10,087	44,347	.227
100	269	15.90	11,576	11,016	49,807	.221
110	283	16.45	12,599	11,726	53,977	.217
120	295	16.87	13,519	12,204	56,690	.215
130	306	17.14	14,335	12,432	57,813	.215

LOG PRICES - 3rd Quarter 1983

WEST OREGON, SANTIAM, LANE, FOREST GROVE, TILLAMOOK AND ASTORIA UNITS

Douglas-Fir

#1P	$505
#2P	425
#3P	340
SM	285
#2S	255
#3S	215
#4S	200
SC	140
Utility	75
CR	240

Hemlock

P	$375
SM	260
#2S	220
#3S	190
#4S	175
Utility	65
CR	190

Spruce

SM	$255
#2S	230
#3S	180
#4S	160
Utility	45

W. R. Cedar

#1S	$390
#2S	380
#3S	310
#4S	230
CR	330
Wormy	135

Alder

Sawlogs CR	$190
Pulp	125

EXHIBIT 10

Exhibit Divider

KENDALL Jerry

From: Michael Mattick [Michael.J.MATTICK@wrd.state.or.us]
Sent: Friday, January 23, 2004 3:32 PM
To: KENDALL Jerry
Subject: EGR Aquifer Study

Hi Jerry,

Due to Marc's comments accidentally being shipped to Tillamook before coming to me, I just got them.

He thinks the report is pretty bad (poorly written, inaccurate), but, none-the-less, he agrees that with 10 acre lots, the development should not over tax the ground water system.

Thanks for passing this on to us.

MM

+===+
| Michael J. Mattick email to:
Michael.J.Mattick@wrd.state.or.us |
| Watermaster District
2
|
| Voice: (541)-682-3620 FAX:
(541)-746-1861 |
| Oregon Water Resources Department Web page: http://www.wrd.state.or.us |
|
|
| Office located
at:
|
| Central Lane Justice
Court
|
| 220 N 5th
St.
|
| Springfield, Oregon 97477
|
+===+

#8-1p.

Exhibit Divider

KENDALL Jerry

From: Jim Just [goal1@pacifier.com]
Sent: Monday, January 26, 2004 2:23 PM
To: KENDALL Jerry
Subject: Re: got the fax?

Ogle DOR report.doc

Jerry,
I think I got the format figured out. How does this look to you?
-Jim

----- Original Message -----
From: "KENDALL Jerry" <Jerry.KENDALL@co.lane.or.us>
To: <goal1@pacifier.com>
Sent: Monday, January 26, 2004 11:34 AM
Subject: FW: got the fax?

>
>
> -----Original Message-----
> From: MILLER Norman A [mailto:Norman.A.Miller@state.or.us]
> Sent: Friday, January 16, 2004 4:27 PM
> To: 'KENDALL Jerry'
> Subject: RE: got the fax?
>
>
> Jerry,
>
> 1983 value 1992
> value 2003 value
> DF MBF $/MBF $ $/MBF
> $ $/MBF $
> 2S 678.36 $151 $102,432.36 451 $305,940.36 432
> $293,051.52
> 3S 847.95 $120 $101,754.00 368 $312,045.60 388
> $329,004.60
> 4S 169.59 $104 $17,637.36 300 $50,877.00 336
> $56,982.24
> Total 1695.9 $221,823.72 $668,862.96
> $679,038.36
>
> These values represent the value of standing timber, stumpage. I see that
> the forester used gross log prices which are different. They do not
reflect
> the fact that you will have to log the standing timber to obtain the log
> prices. Is this what you were looking for?
>
> Norm Miller, Manager, Timber Tax & Deferral Programs
> Property Tax Division
> Oregon Department of Revenue
>
> 955 Center St NE
> Salem, OR 97301-2555
>
> Work - (503) 945-8327
>
>
>

#9-28.

OREGON DEPARTMENT OF REVENUE REPORT

DF	MBF	1983 value $/MBF		1992value $/MBF		2003 value $/MBF
2S	678.36	$151	$102,432.36	451 $305,940.36	432	$293,051.52
3S	847.95	$120	$101,754.00	368 $312,045.60	388	$329,004.60
4S	169.59	$104	$17,637.36	300 $50,877.00	336	$56,982.24
Total	1695.9		$221,823.72	$668,862.96		$679,038.36

These values represent the value of standing timber, stumpage. I see that the forester used gross log prices which are different. They do not reflect the fact that you will have to log the standing timber to obtain the log prices.

Norm Miller, Manager, Timber Tax & Deferral Programs
Property Tax Division
Oregon Department of Revenue

955 Center St NE
Salem, OR 97301-2555

Work - (503) 945-8327