Field Services
Preliminary Data
Plymouth Fire Tower

Aquifer System Monitor Well:

Floridan OR-0794

SJRWMD Program No. 5111-03001

Division of Ground Water Programs,
Department of Resource Management
St. Johns River Water Management District
Palatka, Florida

November 3, 2003

This report was generated for the Division of Ground Water Program's use.
All data, figures, tables and information are provisional.

General Information

Site: Plymouth Fire Tower, Orange County

Access: Division of Forestry agreement

Service Request: Brian McGurk Division of Ground Water Programs

Purpose: Ground water model data for Division of Water Supply Management

Data Collection: Robert Brooks, Laura Nelms, Nolan Col

Report: Robert Brooks

Work:

Floridan Monitor Well
Southern Well Services Inc.

Geophysical Logs
Jeff Hausinger And Associates
Southern Resources
SJRWMD

Video Survey
Florida Department of Transportation (FDOT)
Jeff Hausinger And Associates
Deep Venture

Notes:

Floridan OR-0794

11/05/02 Drilling operations start. Auger 36-inch dia. borehole and set 36-ft of 30-inch dia. steel casing.
11/19/02 Drill 12-inch dia. test hole to 95-ft.
11/21/02 Set 82-feet of 24-inch dia. steel casing.
11/26/02 Begin running 167-ft of 18-inch dia. casing. Casing hangs/sticks at 148-ft; grout in place at 148-ft.
12/16/02 Video survey borehole. Large boulders prevent advancement of camera past 154-ft.
12/17/02 Clear obstruction (boulders) with drill rods.
12/23/02 Aquifer performance test, stepped drawdown. Borehole depth 613-ft.
12/26/02 Geophysical and video survey borehole.
01/03/03 Begin setting 613-ft of 12-inch dia. casing.
01/17/03 Casing grouted to surface.
01/27/03 Core from 677-ft to 682-ft.
01/31/03 Specific capacity completed. Borehole depth 841-ft.
02/18/03 Aquifer performance test, constant rate. Borehole depth 1,315-ft.
03/10/03 Rods plug up with cuttings at 1,930-ft. Drum brake problems, kelly block sticks in derrick.
03/13/03 Dredge zone 1,930 to 1,942-ft.
03/20/03 Stop drilling at 2,138-ft.
03/24/03 Video survey borehole. Boulders block borehole at 1,936-ft.
03/25/03 Clear boulders with drill rods.
03/27/03 Geophysical survey.
03/28/03 Video survey.
04/01/03 Core from 2,138-ft to 2,143-ft.
04/02/03 Set 6-inch dia. PVC casing at 1,050-ft and begin grouting.
04/15/03 PVC casing grouted to 20-ft bls.
04/22/03 Begin back plugging bore.
04/29/03 Back plugging completed at 1,407-ft.
05/07/03 Well development completed.
05/08/03 Down hole sample at 1,407-ft produced water quality (pH 13.3 and Conductivity 12,000 us/cm) representative of well construction activities. Redevelopment scheduled.
05/16/03 Finish grouting 6-inch dia. casing to surface.
06/05/03 Well completed with steel protective casing, 3-ft by 3-ft concrete pad and 4-bollards.
07/02/03 Redevelop well with reverse air at a reported depth of 1,400-ft. Water Quality quickly exhibits pH and conductivity within ambient range.
07/07/03 Down hole sample at 1,407-ft produced water quality (pH 13 and Conductivity 7,600 us/cm) related to well construction. Depth to water and casing diameter restricts gpm required to turn over entire water column. Second stage of back plugging scheduled.
08/21/03 Second stage of back plugging complete. Final tag in bore at 1,140.
08/22/03 Develop well with 10-Hp submersible pump. Water Quality**,** pH and conductivity, within ambient range. Pumping water levels inconclusive.

08/26/03 Down hole sample (pH 12.4 and Conductivity7,600 us/cm).
09/04/03 Develop with air. Water Quality**,** pH and conductivity, within ambient range. Three hundred feet of 1-inch PVC pipe lost in well. Contractor schedules video survey.
09/20/03 Contractor fabricates retrieval tool and removes PVC pipe from well.

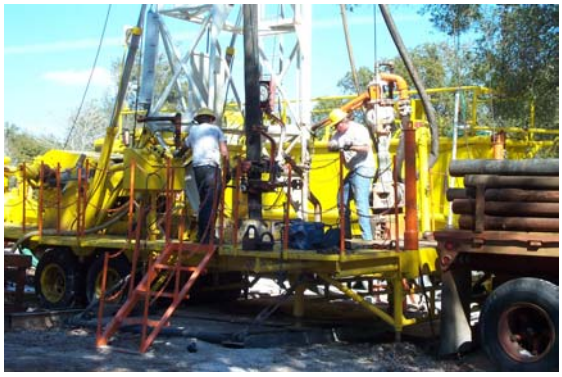
PHOTO SHEET

Gardner Denver 3500 drill rig, mud system and site as viewed from atop Forestry Fire Tower.

Borehole with steel casing stepped down from 30 to 24 and 18-inch diameter.

Contractor sets pump for Aquifer Performance Test.

Contractor preps camera for video survey.



Contractor works to remove crossover-sub from drill collar.

Site restoration after construction, well head and protective bollards in background.

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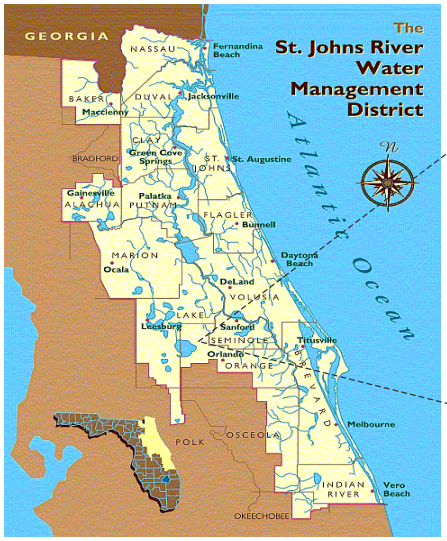
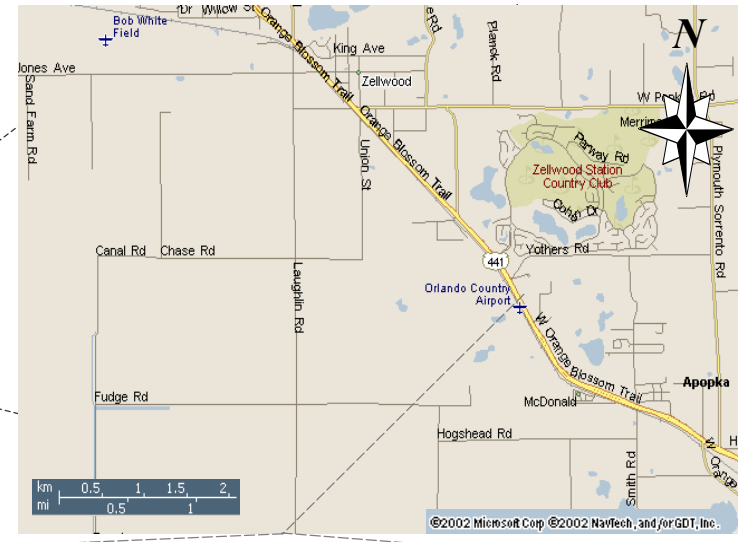
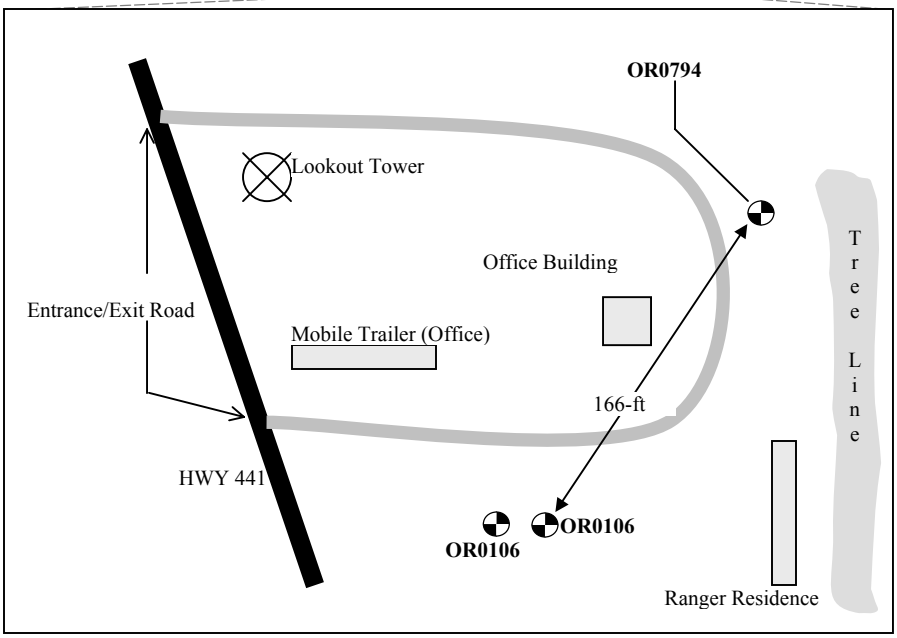
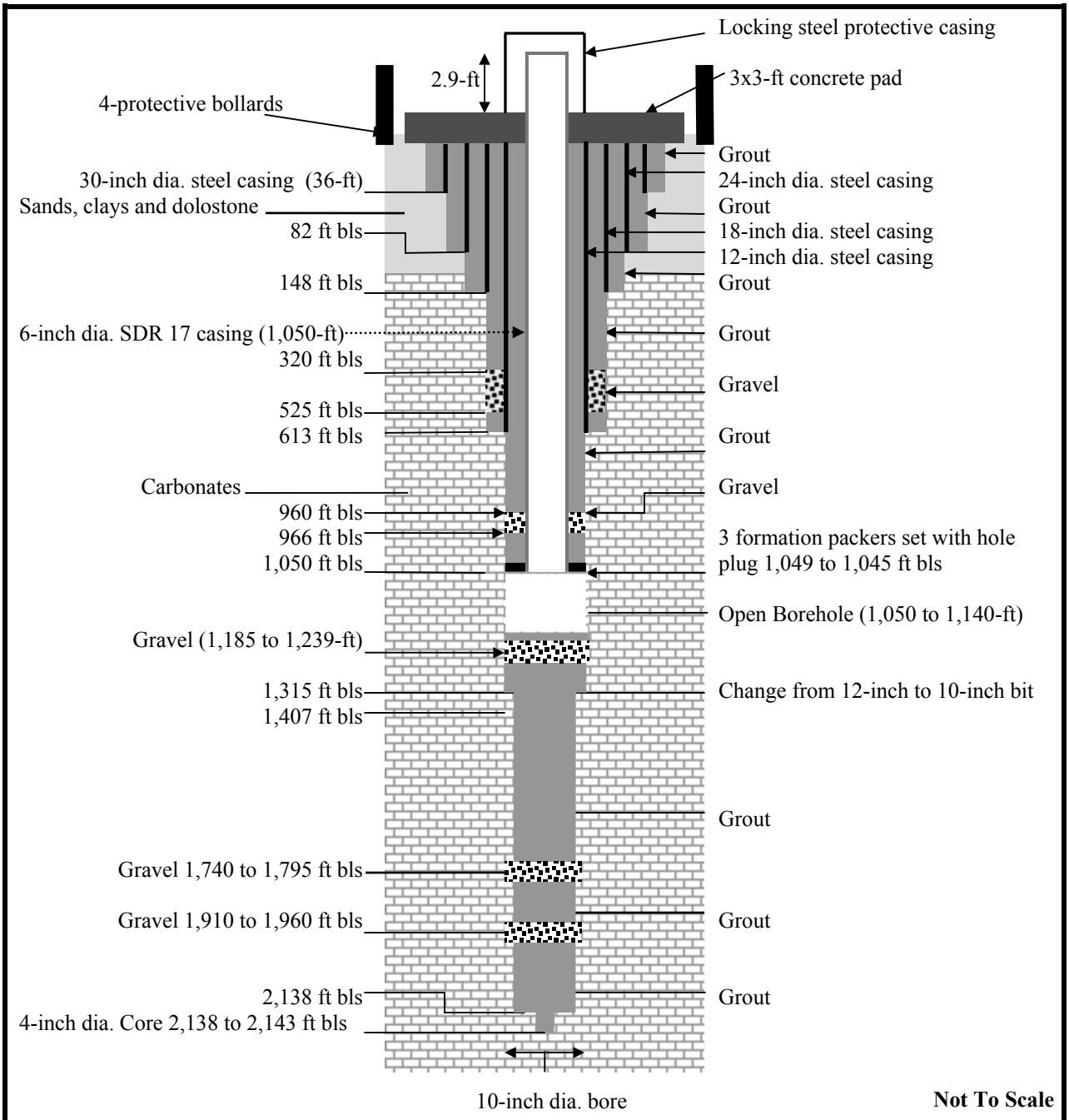






Not To Scale

Site: **Lat/Long:** **TRS** **Topo:** **Site Elevation:**	Plymouth Fire Tower 284231/813451 T20s R27e sec35 Apopka ~145-ft NGVD	**SJRWMD**
Project No:	5111-03001	**Figure 1. Site Map**



Site:	Plymouth Fire Tower	**SJRWMD**
Driller:	Southern Well Services Inc.	**Figure 2. Floridan Monitor Well OR-0794**
Well Completed:	August 21, 2003	

Table 1. **Groundwater Levels**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Water Levels				Borehole	
Static ✓	**Date/Time (yymmdd/hhmm)**	**Casing (ft, bls)**	**Rod (ft, bls)**	**Total Depth (ft, bls)**	**Open Hole (ft)**
✓	021211/0700	93.50	-	322	174
	021211/1420	93.55	93.81	353	205
✓	021212/0700	93.25	-	375	227
	021212/1020	93.76	94.26	385	237
	021212/1530	94.51	94.81	416	268
✓	021216/1000	93.55	93.55	420	272
	021216/1414	93.84	94.24	447	299
✓	021217/0815	93.71	94.36	470	322
	021217/0935	93.81	93.80	477	329
	021217/1223	94.11	93.61	508	360
	021217/1525	93.76	93.36	538	390
	021217/1710	93.51	93.46	570	422
✓	021218/------	92.91	92.91	570	422
	021218/1015	93.34	93.29	600	452
✓	021218/1030	92.90	-	613	465
	030122/1355	96.19	96.21	658	45
✓	030127/1210	95.40	-	678	65
✓	030128/1150	95.90	-	683	70
	030128/1545	96.01	96.51	688	75
	030128/1740	96.64	96.39	720	107
✓	030129/0700	96.64	96.64	720	107
	030129/1035	96.46	96.66	751	138
	030129/1335	96.71	96.18	782	169
	030129/1545	96.61	96.56	814	201
✓	030131/0920	95.60	-	842	229
✓	030203/1115	95.70	-	842	229
	030204/1408	95.96	95.86	876	263
✓	030205/0700	95.86	96.06	908	295
	030205/0955	96.36	96.36	940	327
	030205/1410	96.26	96.56	971	358
	030206/0912	96.50	96.70	1,002	389
	030206/1445	96.40	96.70	1,033	420
✓	030207/0840	96.60	-	1,055	442
	030207/1110	96.60	96.80	1,065	452
✓	030210/0930	96.51	-	1,065	452

Table 1. **Groundwater Levels**

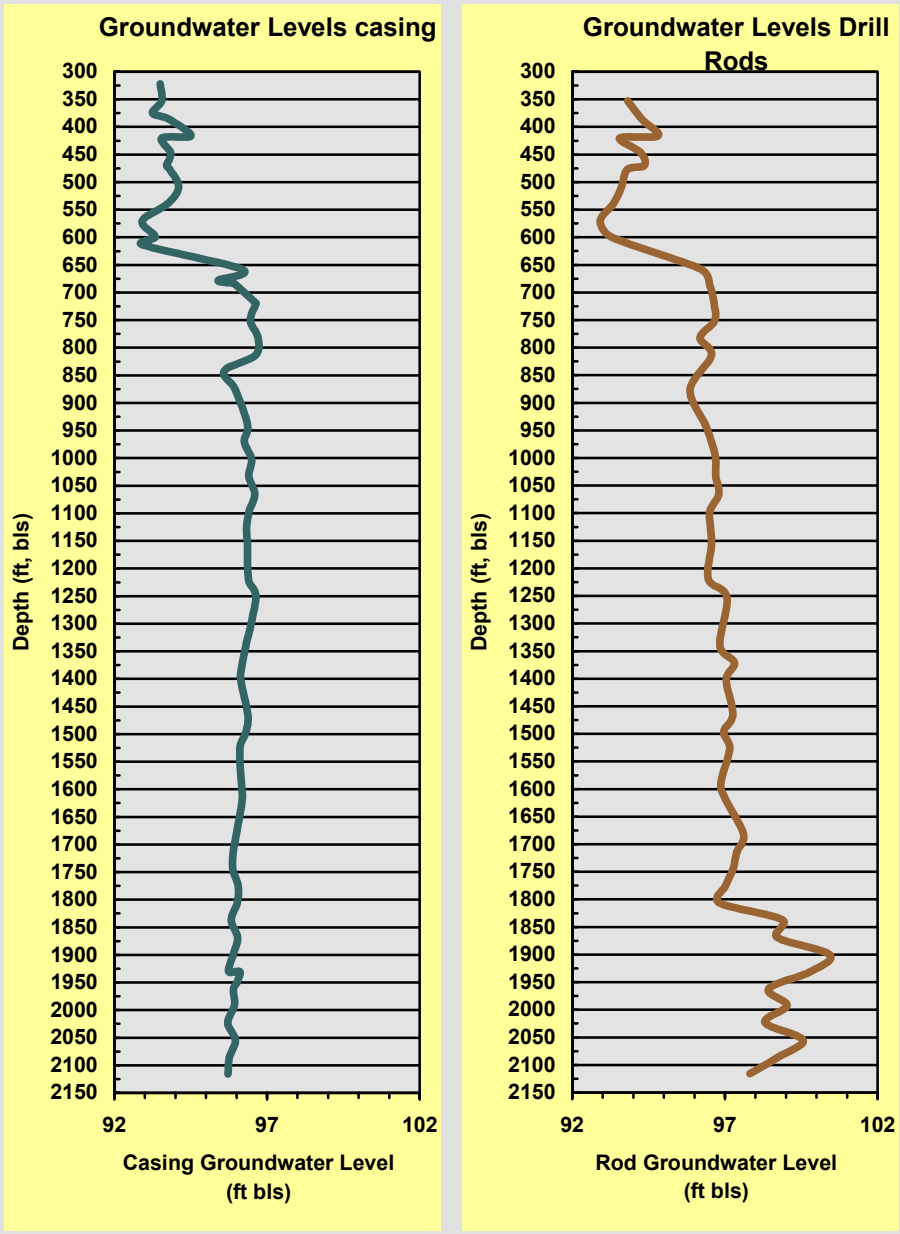
Site: Plymouth Fire Tower **Well ID:** OR-0794

Water Levels				Borehole	
Static ✓	**Date/Time** (yymmdd/hhmm)	**Casing** (ft, bls)	**Rod** (ft, bls)	**Total Depth** (ft, bls)	**Open Hole** (ft)
✓	030211/0755	96.56	-	1,095	482
	030211/0825	96.41	96.51	1,096	483
	030211/1220	96.33	96.53	1,127	514
	030211/1535	96.36	96.56	1,158	545
✓	030212/0715	96.36	97.11	1,160	547
	030212/1010	96. 51	96. 51	1,189	576
	030212/1235	96.39	96.46	1,220	607
✓	030213/0730	96.36	97.26	1,240	627
	030213/0940	96.63	97.06	1,252	639
	030213/1320	96. 54	96. 82	1,283	670
✓	030225/0820	96.31	96.11	1,315	702
	030225/1050	96.31	96.83	1,340	727
	030225/1320	96.19	97.31	1,371	758
	030225/1525	96.14	97.04	1,402	789
✓	030226/0725	96.31	97.41	1,434	821
	030226/1015	96.37	97.26	1,465	852
✓	030228/1015	96.26	96.11	1,465	852
	030228/1335	96.31	96.96	1,496	883
	030228/1535	96.11	97.16	1,527	914
✓	030303/0725	96.01	97.31	1,559	946
	030303/0940	96.16	96.86	1,589	976
	030303/1205	96.18	97.03	1,620	1,007
✓	030304/0815	95.91	97.51	1,651	1,038
	030304/1115	95.99	97.61	1,682	1,069
	030304/1340	95.89	97.39	1,714	1,101
	030304/1555	95.88	97.26	1,745	1,132
✓	030305/0720	95.81	95.71	1,755	1,142
	030305/0925	96.06	97.01	1,776	1,163
	030305/1220	96.02	96.81	1,806	1,193
	030305/1510	95.83	98.88	1,837	1,224
✓	030306/0725	96.16	98.66	1,865	1,252
	030306/1100	96.04	98.71	1,869	1,256
	030306/1335	95.89	100.43	1,900	1,287
	030306/1600	95.74	99.83	1,930	1,317
✓	030310/0830	95.71	-	1,930	1,317
	030317/1330	95.90	98.43	1,962	1,349

Table 1. **Groundwater Levels**

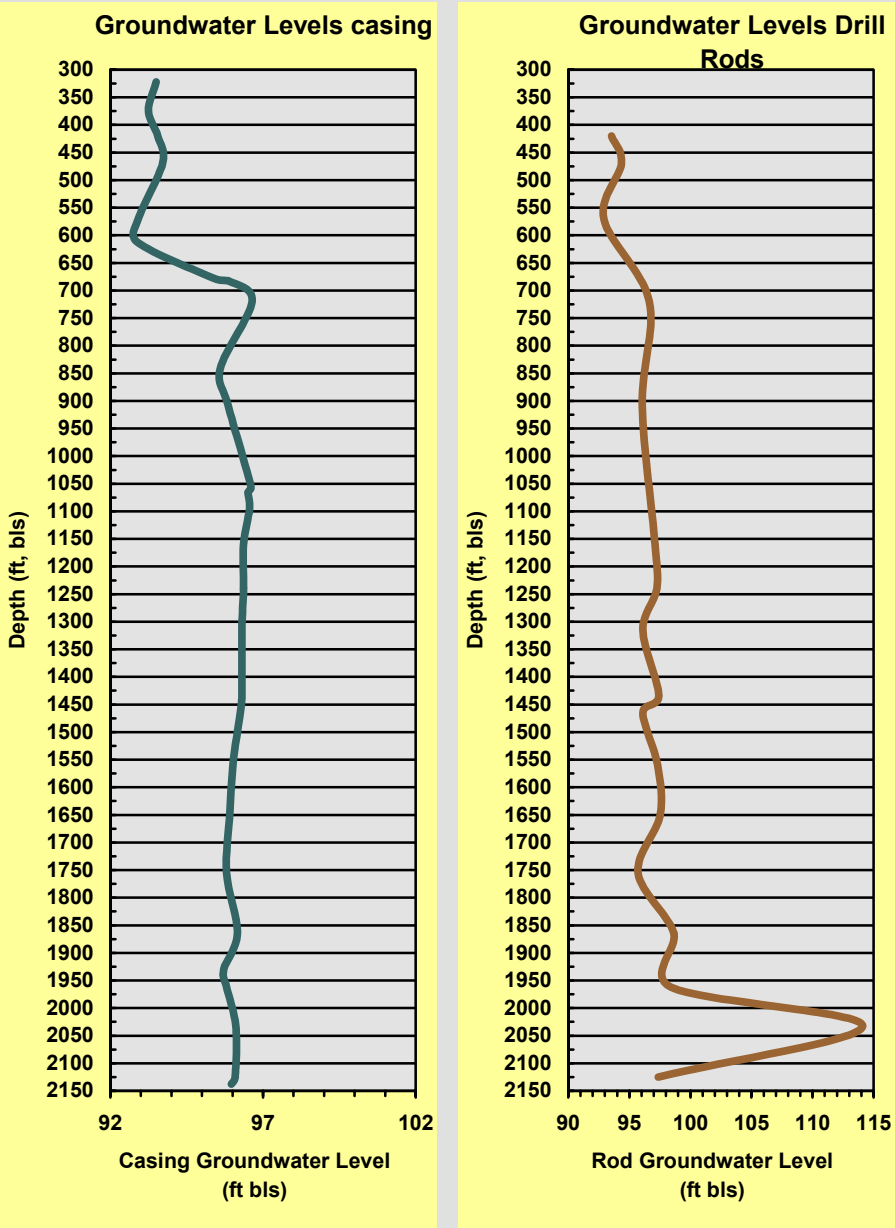
Site: Plymouth Fire Tower **Well ID:** OR-0794

Water Levels				Borehole	
Static ✓	**Date/Time (yymmdd/hhmm)**	**Casing (ft, bls)**	**Rod (ft, bls)**	**Total Depth (ft, bls)**	**Open Hole (ft)**
✓	030318/1015	95.81	98.41	1,962	1,349
	030318/1325	95.93	99.03	1,992	1,379
	030318/1610	95.71	98.31	2,023	1,410
✓	030319/0720	96.11	114.11	2,033	1,420
	030319/0925	95.96	99.56	2,055	1,442
	030319/1240	95.76	98.73	2,086	1,473
	030319/1600	95.72	97.82	2,116	1,503
✓	030320/0740	96.09	97.36	2,125	1,508
✓	030328/1345	95.96	-	2,138	1,525



Groundwater Levels Recorded After Advancement of Drill Rods

Site:	Plymouth Fire Tower	**SJRWMD**
Driller:	Southern Well Services, INC.	**Figure 3.Groundwater Levels After Advancement of Drill Rods Floridan Monitor Well OR-0794**
Well Completed:	August 21, 2003	



Static Groundwater Levels

Site:	Plymouth Fire Tower	**SJRWMD**
Driller:	Southern Well Services, INC.	**Figure 4. Static Groundwater Levels Floridan Monitor Well OR-0794**
Well Completed:	August 21, 2003	

Table 2. **Drilling Data**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

Date (yymmdd)	From (ft, bls)	To (ft, bls)	Method Mud/ Rev Air	Bit Size (inch)	Time (min)	Rate (ft/hr)	Comments
021210	245	258	Mud	18	80	10	
021210	258	289	Mud	18	90	21	
021210	289	322	Mud	18	43	46	Change to reverse air at 322-ft
021211	322	353	RA	18	190	10	
021211	353	375	RA	18	180	7	
021212	375	385	RA	18	120	5	
021212	385	416	RA	18	265	7	
021212	416	420	RA	18	85	3	
021216	420	447	RA	18	153	11	
021216	447	470	RA	18	160	9	
021217	470	477	RA	18	40	11	
021217	477	508	RA	18	130	14	
021217	508	538	RA	18	140	13	
021217	538	570	RA	18	80	24	
021218	570	600	RA	18	-	-	
021218	600	613	RA	18	40	20	Set 12-inch steel casing
030122	613	625	RA	12	-	-	
030122	625	658	RA	12	90	22	
030122	658	677	RA	12	90	13	
030128	677	688	RA	12	40	17	
030128	688	720	RA	12	70	27	
030129	720	751	RA	12	120	16	
030129	751	782	RA	12	130	14	
030129	782	814	RA	12	90	21	
030129	814	842	RA	12	85	20	
030204	842	876	RA	12	120	17	
030204	876	908	RA	12	93	21	
030205	908	940	RA	12	160	12	
030205	940	971	RA	12	205	9	
030206	971	1,002	RA	12	285	7	
030206	1,002	1,033	RA	12	285	7	
030207	1,033	1,065	RA	12	255	8	
030210	1,065	1,095	RA	12	240	8	
030211	1,095	1,096	RA	12	20	3	
030211	1,096	1,127	RA	12	190	10	
030211	1,127	1,158	RA	12	154	12	

Table 2. **Drilling Data**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

Date (yymmdd)	From (ft, bls)	To (ft, bls)	Method Mud/ Rev Air	Bit Size (inch)	Time (min)	Rate (ft/hr)	Comments
030211	1,158	1,160	RA	12	30	4	
030212	1,160	1,189	RA	12	130	13	
030212	1,189	1,220	RA	12	105	18	
030212	1,220	1,240	RA	12	310	4	
030213	1,240	1,252	RA	12	85	8	Soft limestone, drill slow too keep from plugging up rods
030213	1,252	1,283	RA	12	180	10	
030213	1,283	1,315	RA	12	140	14	
030225	1,315	1,340	RA	10	60	25	Change to10-inch bit, add 3-extra collars, 6-total
030225	1,340	1,371	RA	10	105	18	
030225	1,371	1,402	RA	10	90	21	
030225	1,402	1,434	RA	10	100	19	
030226	1,434	1,465	RA	10	135	14	
030228	1,465	1,496	RA	10	120	16	
030228	1,496	1,527	RA	10	85	22	
030228	1,527	1,559	RA	10	60	32	
030303	1,559	1,589	RA	10	90	20	
030303	1,589	1,620	RA	10	115	16	
030303	1,620	1,651	RA	10	80	23	
030304	1,651	1,682	RA	10	130	14	
030304	1,682	1,714	RA	10	110	17	
030304	1,714	1,745	RA	10	95	20	
030304	1,745	1,755	RA	10	60	10	
030305	1,755	1,776	RA	10	70	18	
030305	1,776	1,806	RA	10	135	13	
030305	1,806	1,837	RA	10	125	15	
030305	1,837	1,865	RA	10	105	16	Rods plug up with cuttings (fine to boulder size dolomite) at 1,865-ft
030306	1,845	1,865	RA	10	150	8	Dredge fine to boulder size dolomite that accumulated in borehole overnight
030306	1,865	1,869	RA	10	20	12	
030306	1,869	1,900	RA	10	115	16	
030306	1,900	1,930	RA	10	110	16	

Table 2. **Drilling Data**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

Date (yymmdd)	From (ft, bls)	To (ft, bls)	Method Mud/ Rev Air	Bit Size (inch)	Time (min)	Rate (ft/hr)	Comments
030310	1,930	-	RA	10	-	-	Rods plug up with fine to coarse dolomite
030313	1,930	1,942	RA	10	360	2	Dredge boulder size cuttings
030314	1,932	1,942	RA	10	300	2	Dredge 10-ft of fill, dolomite and clay
030314	1,942	1,950	RA	10	135	4	
030317	1,950	1,962	RA	10	150	5	
030318	1,962	1,992	RA	10	130	14	
030318	1,992	2,023	RA	10	120	16	
030318	2,023	2,033	RA	10	45	13	
030319	2,033	2,055	RA	10	120	11	
030319	2,055	2,086	RA	10	150	12	
030319	2,086	2,117	RA	10	105	18	
030319	2,117	2,125	RA	10	45	11	
030320	2,125	2,138	RA	10	105	7	

Table 3. Groundwater Quality/Field Samples

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

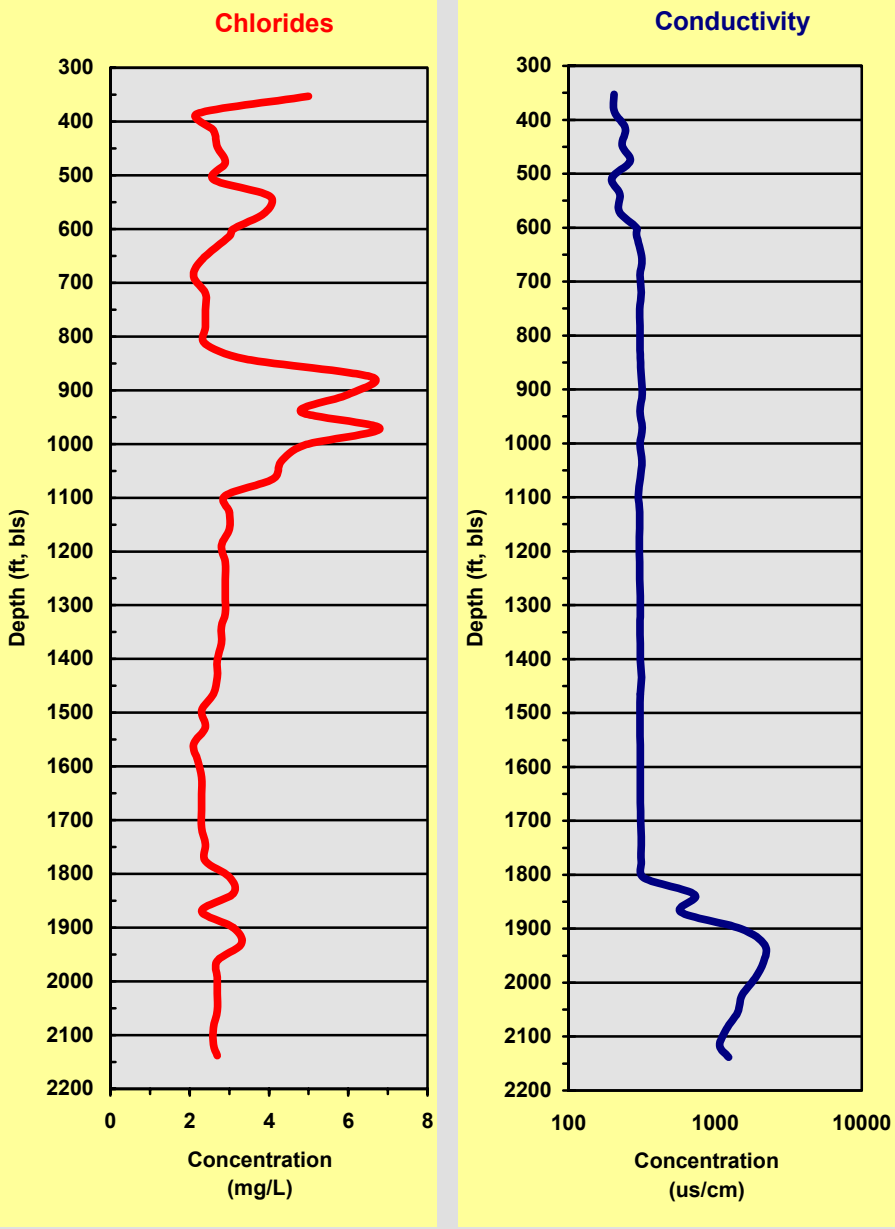
LAB ✓	Date/Time (yymmdd/hhmm)	Sample Depth (ft, bls)	pH	Temp (Deg C)	Chlorides (mg/L)	Specific Conductivity (us/cm)	Comments
	021211/1405	353	9.0	23.0	5.0	205	pH influenced by drilling mud
✓	021212/1000	385	7.3	22.8	2.2	206	
	021212/1520	416	7.2	23.3	2.6	245	
	021216/1355	447	-	22.7	2.7	232	
	021217/0920	477	-	23.0	2.9	264	
	021217/1210	508	-	23.0	2.6	198	
	021217/1510	538	-	23.0	4.0	224	
	021217/1705	570	-	23.6	3.9	222	
	021218/1010	600	-	23.3	3.1	292	
	021218/1200	613	-	23.3	3.0	292	12-inch casing set 613-ft
	030122/1305	658	-	23.5	2.3	318	
	030127/1505	688	-	23.7	2.1	308	
	030128/1715	720	-	23.9	2.4	314	
✓	030129/0930	751	7.3	23.2	2.4	306	
	030129/1250	782	-	23.9	2.4	308	
	030129/1520	814	-	24.1	2.4	308	
	030129/1725	842	-	24.2	3.4	310	
	030204/1330	876	-	23.0	6.6	315	
	030204/1600	908	-	23.8	6.0	319	
	030205/0950	940	-	22.7	4.8	308	
	030205/1352	971	-	24.0	6.8	319	
	030206/0848	1,002	-	23.8	4.9	308	
	030206/1416	1,033	-	24.5	4.3	317	
	030207/1045	1,065	-	24.1	4.1	309	
	030211/0835	1,096	-	-	2.9	300	
	030211/1150	1,127	-	23.8	3.0	307	
	030211/1505	1,158	-	24.0	3.0	307	
	030212/0950	1,189	-	23.1	2.8	305	
	030212/1210	1,220	-	23.8	2.9	307	
	030213/0920	1,252	-	23.5	2.9	306	
	030213/1255	1,283	-	24.0	2.9	310	
	030213/1545	1,315	-	24.1	2.9	309	
	030225/1020	1,340	-	24.1	2.8	308	
	030225/1250	1,371	-	24.3	2.8	310	

Table 3. Groundwater Quality/Field Samples

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

LAB ✓	Date/Time (yymmdd/hhmm)	Sample Depth (ft, bls)	pH	Temp (Deg C)	Chlorides (mg/L)	Specific Conductivity (us/cm)	Comments
	030225/1505	1,402	-	24.5	2.7	310	
	030225/1720	1,434	-	24.6	2.7	316	
	030226/1000	1,465	-	24.3	2.6	310	
	030228/1320	1,496	-	24.3	2.3	308	
	030228/1510	1,527	-	24.2	2.4	308	
	030228/1650	1,559	-	24.0	2.1	310	
	030303/0920	1,589	-	24.1	2.2	310	
	030303/1150	1,620	-	24.3	2.3	309	
	030303/1650	1,651	-	-	2.3	310	
	030304/1055	1,682	-	24.3	2.3	311	
	030304/1320	1,714	-	24.6	2.3	313	
	030304/1535	1,745	-	24.5	2.4	315	
	030305/0905	1,776	-	24.5	2.4	315	
	030305/1155	1,806	-	24.1	3.0	329	
	030305/1450	1,837	-	25.3	3.1	727	
	030306/1040	1,869	-	25.2	2.3	582	
	030306/1315	1,900	-	25.5	3.1	1,487	
	030306/1550	1,930	-	25.2	3.3	2,187	
	030317/1300	1,962	-	24.6	2.7	2,141	
	030318/1305	1,992	-	24.8	2.7	1,880	
	030318/1550	2,023	-	24.9	2.7	1,528	
	030319/0915	2,055	-	-	2.7	1,424	
	030319/1220	2,086	-	25.6	2.6	1,193	
	030319/1500	2,117	-	25.7	2.6	1,075	
✓	030320/1030	2,138	7.8	25.1	2.7	1,239	



Site:	Plymouth Fire Tower	**SJRWMD**
Driller:	Southern Well Services, INC.	**Figure 5. Field Groundwater Quality Floridan Monitor Well OR-0794**
Well Completed:	August 21, 2003	

Table 4. Field Groundwater Quality/Downhole Samples

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks

LAB ✓	Date/Time (yymmdd/hhmm)	Sample Depth (ft, bls)	Casing Depth	pH	Temp (Deg C)	Cl (mg/L)	Specific Conductivity (us/cm)	Comments
✓	030327/2135	1,915	613	-	23.2	2.7	330	
✓	030327/2230	2,000	613	-	23.3	36.0	2,122	
✓	030327/2330	2,137	613	-	23.3	44.0	1,860	
	030508/1536	1,407	1,050	13.3	-	-	12,200	Borehole back plugged to 1,407-ft; Water Quality related to well construction; Sample collected 1-day after well development
	030707/NR	1,407	1,050	13.0	-	-	7,600	Well redeveloped with reverse air 7/2/03 at reported depth of 1,400-ft
	082503/1445	1,140	1,050	12.4	-	-	7,600	Borehole back plugged to 1,407-ft; well developed 8/22/03

Comments: Well development methods limited by depth to water and casing diameter.
pH/conductance indicative of well construction activities.

Table 5. Well Development/Field Groundwater Quality

Site: Plymouth Fire Tower **Well ID:** OR-0794

Hydrologist: R. Brooks **Casing depth/Diameter:** 1,050-ft/6-inch
Open Hole: 357-ft

LAB	Date (yymmdd/hhmm)	Static GWL (ft bls)	Pumping GWL (ft bls)	Rate gpm	∑Vol (gal)	Temp (Deg C)	pH	Cl (mg/l)	Specific Conductivity (us/cm)	Comments
	030507/0830	-	-	86	0	-	-	-	-	Start pump
	030507/0940	-	-	86	6,020	25.4	7.8	-	369	
	030507/1030	-	-	86	10,320	25.4	7.7	-	368	
✓	030507/1100	-	97.5	86	12,900	25.4	7.7	-	365	
	030507/1130	-	-	0	15,480	-	-	-	-	Stop pump
	030507/1220	96.9	-	-	-	-	-	-	-	
Redevelopment Hydrologist Laura Nelms										
	030702/0941	-	-	50	0	-	-	-	-	Develop at 1,400 ft with reverse air
	030702/1000			50	950	25.1	7.3	-	349	
	030702/1034			50	2,650	25.3	7.8	-	353	
	030702/1102			50	4,050	25.5	8.0	-	359	
	030702/1133			50	5,600	25.6	7.8	-	356	
	030702/1154			50	6.650	25.6	7.9	-	360	
	030702/1238			50	8,850	25.7	7.9	-	360	
✓	030702/1305			50	10,200	25.7	7.9	-	359	
Borehole back plugged from 1,407-ft to 1,140-ft Redevelopment Hydrologist Nolan Col										
	082203/0735	-	-	55	0	24.5	7.4	-	289	Start pump
	082203/1057	-	-	55	NR	25.7	7.4	-	342	
✓	082203/1144	-	-	NR	NR	25.8	7.4	-	341	
	082203/1206	-	-	0	14,300	-	-	-	-	Stop pump, water levels non conclusive
Redevelopment Hydrologist Laura Nelms										
	090403/1616	-	-	100	0	-	-	-	-	Develop with air, gpm estimated
	090403/1622	-	-	100	2,200	25.6	7.3	-	346	
	090403/1710	-	-	100	5,400	25.4	7.9	-	345	
	090403/1740	-	-	100	8,400	25.4	8.1	-	345	
	090403/1840			100	14,400	25.3	8.0	-	351	
	090403/2000	-	-	100	~16,400	25.3	8.0	-	350	Stop development

Comments: Well development methods limited by depth to water and casing diameter.

Table 6. **Grout Data**

Site: Plymouth Fire Tower **Well ID:** OR-0794

DATE	TAG DEPTH (ft)	ANNULUS/ BORE (inch)	QUANITY (yds/bags)	MATERIAL	COMMENTS
11/05/02	36	B-36	200 bags	Grout	Set 36-ft of 30-inch dia. steel casing
11/21/02	82	B-30	200 bags	Grout	Set 82-ft of 24-inch dia. steel casing
11/26/02	167	B-23	200 bags	Grout	Set 148-ft of 18-inch dia. steel casing
11/27/02	42	A-23	40 bags	Grout	Tremie grout to surface
01/03/03	613	B-18	200 bags	Grout	Set 613-ft of 12-inch dia. steel casing
01/10/03	545	A-18	200 bags	Grout	Grout through tremie pipe
01/13/03	525	A-18	12 yds	Gravel	Gravel used to fill voids
01/13/03	420	A-18	30 bags	Grout	Grout through tremie pipe
01/15/03	420	A-18	10 yds	Gravel	Gravel used to fill voids
01/14/03	394	A-18	6 yds	Gravel	Gravel used to fill voids
01/15/03	320	A-18	50 bags	Grout	Grout through tremie pipe
01/16/03	294	A-18	200 bags	Grout	Grout through tremie pipe
01/17/03	189	A-18	200 bags	Grout	Grout through tremie pipe, return of grout to surface
04/02/03	1,050	A-12	10 bags	Hole Plug	Set 1,050-ft of 6-inch dia. SDR 17 well casing with 3-grout baskets attached at 1,049-ft, 1,047-ft, and 1,045-ft
04/03/03	-	A-12	10 bags	Grout	Grout through tremie pipe
04/04/03	1,025	A-12	25 bags	Grout	Grout through tremie pipe
04/07/03	992	A-12	50 bags	Grout	Grout through tremie pipe
04/08/03	966	A-12	100 bags	Grout	Grout through tremie pipe
04/09/03	966	A-12	5 yds	Gravel	Gravel used to fill voids
04/09/03	900	A-12	25 bags	Grout	Grout through tremie pipe
04/10/03 am	885	A-12	100 bags	Grout	Grout through tremie pipe
04/10/03 pm	777	A-12	100 bags	Grout	Grout through tremie pipe
04/11/03 am	735	A-12	100 bags	Grout	Grout through tremie pipe
04/11/03 pm	651	A-12	100 bags	Grout	Grout through tremie pipe
04/14/03	588	A-12	100 bags	Grout	Grout through tremie pipe
04/15/03 am	336	A-12	75 bags	Grout	Grout through tremie pipe
04/15/03 pm	147	A-12	50 bags	Grout	Grout through tremie pipe
04/21/03	2,138	B-10	100 bags	Grout	Backplug through tremie pipe

Table 6. **Grout Data**

Site: Plymouth Fire Tower **Well ID:** OR-0794

DATE	TAG DEPTH (ft)	ANNULUS/ BORE (inch)	QUANITY (yds/bags)	MATERIAL	COMMENTS
04/22/03	1,974	B-10	50 bags	Grout	Backplug through tremie pipe
04/23/03	1,960	B-10	13 yds	Gravel	Gravel used to fill voids
04/23/03	1,910	B-10	25 bags	Grout	Backplug through tremie pipe
04/24/03	1,890	B-10	100 bags	Grout	Backplug through tremie pipe
04/25/03	1,795	B-10	4 yds	Gravel	Gravel used to fill voids
04/25/03	1,740	B-10	25 bags	Grout	Backplug through tremie pipe
04/28/03	1,722	B-10	100 bags	Grout	Backplug through tremie pipe
04/29/03 am	1,677	B-10	100 bags	Grout	Backplug through tremie pipe
04/29/03 pm	1,491	B-10	25 bags	Grout	Backplug through tremie pipe
04/30/03 am	1,407	B-10	-	-	Final tag on bore
05/16/03	20	A-12	20 bags	Grout	Finish grouting 6-inch dia. casing to surface
07/30/03	1,407	B-10	110 bags	Grout	Second stage of back plugging begins due to construction related poor water quality in lower portion of open hole
07/31/03	1,332	B-10	110 bags	Grout	Backplug through tremie pipe
08/04/03	1,249	B-12	110 bags	Grout	Backplug through tremie pipe
08/08/03	1,239	B-12	110 bags	Grout	Backplug through tremie pipe
08/11/03	1,239	B-12	3 yards	Gravel	Gravel used to fill voids
08/19/03	1,185	B-12	25 bags	Grout	Backplug through tremie pipe
08/20/03	1,170	B-12	25 bags	Grout	Backplug through tremie pipe
08/21/03	1,140	B-12	-	-	Final tag

Table 7. **Lithologic Description-Drill Cuttings**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Samples Described By: Robert Brooks & Laura Nelms (842-1,060)

From (ft)	To (ft)	Lithology
0	5	**Sand**, moderate yellowish brown, very fine to medium
5	15	**Sand**, dark yellowish brown, very fine, organic
15	25	**Sand**, moderate yellowish brown, very fine
25	30	**Sand**, very pale orange, fine, void filling silts
30	40	**Clay**, very pale orange, sandy
40	75	**Clay**, light greenish gray
75	80	**Clay**, light greenish gray, phosphatic
80	85	**Clay**, light greenish gray, phosphatic, minor shell
85	100	**Shell bed**
100	110	**Dolostone**, moderate to dark yellowish brown, phosphatic
110	160	**Limestone**, yellowish gray, forams
160	170	**Limestone**, very pale orange, soft, forams
170	180	**Limestone**, very pale orange, cherty
180	190	Missing
190	230	**Limestone**, yellowish gray, soft
230	240	**Dolomite**, pale yellowish brown, cones present
240	250	**Dolomite**, moderate yellowish brown, pin point vugs
250	260	**Limestone**, yellowish gray, cones present
260	320	**Limestone**, yellowish gray, abundant cones
320	330	**Limestone**, pale yellowish brown, dolomitic, pin point vugs
330	340	**Limestone**, pale yellowish brown, dolomitic, interbedded with limestone, very pale orange, echinoid fragments
340	350	**Limestone**, pale yellowish brown, dolomitic
350	360	**Dolomite**, pale yellowish brown
360	370	**Dolomite**, light olive gray, with pockets of porous dolomite
370	380	**Dolomite**, moderate yellowish brown, with pockets of porous dolomite
380	390	**Dolomite**, moderate yellowish brown, with pockets of porous dolomite, minor peat
390	410	**Dolomite**, moderate yellowish brown, dense, well indurated
410	420	**Dolomite**, moderate yellowish brown to medium olive brown, pockets of porous dolomite

Table 7. **Lithologic Description-Drill Cuttings**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Samples Described By: Robert Brooks & Laura Nelms (842-1,060)

From (ft)	To (ft)	Lithology
420	430	**Dolomite**, moderate yellowish brown, good intergranular porosity
430	450	**Limestone**, yellowish gray, dolomitic
450	460	**Dolomite**, light olive to olive gray, well indurated, pin point vugs
460	470	**Dolomite**, moderate yellowish brown, well indurated, pin point vugs
470	480	**Limestone**, moderate yellowish brown, dolomitic
480	490	**Limestone**, yellowish gray, micritic
490	510	**Limestone**, yellowish gray, fossil casts
510	613	**Limestone**, yellowish brown, dolomitic
613	630	**Limestone**, yellowish brown, dolomitic, moldic and small vugs
630	640	**Limestone**, yellowish brown, dolomitic, some moldic porosity
640	650	**Limestone**, light yellowish brown, dolomitic, some moldic porosity
650	660	**Limestone**, yellowish brown, dolomitic, some moldic porosity, more dense than above
660	670	**Limestone**, light yellowish brown, dolomitic
670	678	**Limestone**, pale yellowish brown, dolomitic
677	682	**Core: Limestone**, pale yellowish brown, dolomitic, vuggy, remnant fossils
683	710	**Limestone**, light yellowish brown, dolomitic, some moldic and pin point vugs
710	720	**Limestone**, very pale orange
720	740	**Limestone**, light yellowish brown, dolomitic, dense, fossil casts and molds
740	750	**Limestone**, yellowish brown, dolomitic, good intergranular porosity
750	770	**Limestone**, yellowish brown, dolomitic, dense, moldic
770	780	**Limestone**, yellowish brown, dolomitic, moldic
780	790	**Limestone**, dark yellowish brown, dolomitic, high peat content
790	800	**Limestone**, yellowish brown, dolomitic, moldic, minor chert
800	810	**Limestone**, yellowish brown, dolomitic, dense
810	820	**Limestone**, yellowish brown, dolomitic
820	835	**Limestone**, yellowish brown, dolomitic, minor opaque geode quartz
835	842	**Dolomite**, moderate yellowish brown, dense, minor peat
842	910	**Dolomite**, moderate yellowish brown, indurated
910	915	**Dolomite**, light brownish gray, indurated
915	920	**Dolomite**, moderate yellowish brown, sucrosic, vuggy
920	930	**Dolomite**, moderate yellowish brown, indurated
930	940	**Dolomite**, moderate yellowish brown, indurated, lenses of peat, softer
940	960	**Dolomite**, pale yellowish brown/gray, indurated
960	970	**Dolomite**, moderate yellowish brown, indurated

Table 7. **Lithologic Description-Drill Cuttings**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Samples Described By: Robert Brooks & Laura Nelms (842-1,060)

From (ft)	To (ft)	Lithology
970	980	**Dolomite**, moderate yellowish brown to pale yellowish brown, indurated
980	1,000	**Dolomite**, pale yellowish brown, indurated, vuggy
1,000	1,010	**Dolomite**, pale yellowish brown, indurated
1,010	1,020	**Dolomite**, pale yellowish brown, mottled brownish gray at 1,020, indurated, pin point vugs
1,020	1,030	**Dolomite**, dark yellowish brown, veins of minor peat, chalky, soft
1,030	1,040	**Dolomite**, dark yellowish brown, indurated
1,040	1,050	**Dolomite**, pale yellowish brown, indurated
1,050	1,060	**Dolomite**, dark yellowish brown, indurated, vuggy
1,060	1,070	**Dolomite**, dark yellowish brown to pale yellowish brown, well indurated
1,070	1,080	**Dolomite**, pale yellowish brown, indurated
1,080	1,090	**Dolomite**, dark yellowish brown, well indurated
1,090	1,100	**Dolomite**, moderate yellowish brown, well indurated
1,100	1,120	**Dolomite**, dark yellowish brown, soft to medium, moderate peat content, pockets of good intergranular porosity, remnant echinoids?
1,120	1,130	**Dolomite**, moderate yellowish brown, well indurated
1,130	1,150	**Dolomite**, dark yellowish brown, soft to medium, good intergranular porosity
1,150	1,158	**Limestone**, pale yellowish brown, moderately to poorly indurated, some sand size cuttings, opaque to translucent calcite crystals
1,158	1,160	**Dolomite**, moderate yellowish brown
1,160	1,210	**Limestone**, very pale orange to very pale brown, sparite, some calcite crystals, echinoids
1,210	1,220	**Dolomite**, moderate yellowish brown, good intergranular porosity
1,220	1,230	**Dolomite**, moderate yellowish brown, chert nodules
1,230	1,240	**Dolomite**, moderate to dark yellowish brown, good intergranular porosity (honeycomb), cry
1,240	1,260	**Limestone**, yellowish gray, soft, sparite
1,260	1,280	**Limestone**, yellowish gray, harder than above, sparite, remnant fossils, calcite replacement
1,280	1,290	**Limestone**, yellowish gray, soft, calcite replacement, interstitial gray calcite filling in matrix
1,290	1,315	**Limestone**, yellowish gray, soft, calcite replacement
1,315	1,320	**Dolomite**, light olive gray, crystalline
1,320	1,340	**Limestone**, yellowish gray, soft, calcite replacement, remnant fossils
1,340	1,350	**Limestone**, yellowish gray, mottled gray, minor glauconite, remnant fossils
1,350	1,360	**Limestone**, yellowish gray, calcite replacement, echinoids and remnant fossils

Table 7. **Lithologic Description-Drill Cuttings**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Samples Described By: Robert Brooks & Laura Nelms (842-1,060)

From (ft)	To (ft)	Lithology
1,360	1,370	**Limestone**, yellowish gray, mottled gray, calcite replacement, echinoids and remnant fossils
1,370	1,390	**Limestone**, light olive gray, crystalline matrix, soft, good intergranular porosity
1,390	1,410	**Limestone**, yellowish gray, mottled gray, minor glauconite, echinoids, brachiopods and other remnant fossils
1,410	1,420	**Dolomite**, moderate olive brown, moderate induration, sucrosic, microcrystalline
1,420	1,430	**Dolomite**, olive gray, well indurated, sucrosic, microcrystalline
1,430	1,440	**Dolomite**, light olive gray, moderate induration, sucrosic, microcrystalline, some void filling opaque to clear quartz
1,440	1,450	missing
1,450	1,460	**Limestone**, yellowish gray, micritic, poorly indurated
1,460	1,470	**Dolomite**, light olive gray, moderate induration, peaty
1,470	1,480	**Limestone**, light olive gray, dolomitic, moderate induration, some void filling opaque to clear quartz
1,480	1,500	**Limestone**, yellowish gray, micritic, poorly indurated, opaque to clear quartz, peat possible cavings from above
1,500	1,510	**Dolomite**, light olive gray, moderate induration, some void filling opaque to clear quartz
1,510	1,520	**Limestone**, dusky yellow, cry matrix, indurated and **Limestone**, yellowish gray, micritic, indurated to poorly indurated, some calcite crystals in matrix
1,520	1,535	**Dolomite**, dark yellowish brown, dense, peat inclusions, opaque quartz
1,535	1,540	**Limestone**, yellowish gray, with minor dolomite, gray
1,540	1,550	**Limestone**, yellowish gray, dolomitic
1,550	1,560	**Limestone**, yellowish gray, pelletal
1,560	1,570	**Limestone**, yellowish gray, some cones
1,570	1,630	**Limestone**, yellowish gray
1,630	1,640	**Limestone**, yellowish gray with minor bed of dolomite, yellowish brown
1,640	1,650	**Limestone**, yellowish gray, dolomitic
1,650	1,660	**Limestone**, light olive gray, dolomitic, mottled gray in some areas
1,660	1,670	**Limestone**, dark yellowish brown, dolomitic
1,670	1,700	**Limestone**, yellowish gray, with pockets of dolomitic limestone, dusky yellowish brown, minor white clay (gypsum) <1%
1,700	1,710	**Dolomite**, olive gray, crystalline matrix
1,710	1,730	**Limestone**, yellowish gray, and dolomite (~30%), olive gray

Table 7. **Lithologic Description-Drill Cuttings**

Site: Plymouth Fire Tower **Well ID:** OR-0794

Samples Described By: Robert Brooks & Laura Nelms (842-1,060)

From (ft)	To (ft)	Lithology
1,730	1,750	**Dolomite**, dusky yellowish brown to olive gray, and Limestone ~(30%), yellowish gray
1,750	1,770	**Dolomite**, moderate olive brown
1,770	1,810	**Limestone**, yellowish gray, minor white clay (gypsum) <1%
1,810	1,900	**Dolomite**, moderate olive brown, dense, well indurated
1,900	1,920	**Dolomite**, light olive brown, dense, well indurated
1,920	1,930	**Dolomite**, moderate to dark olive brown, dense, well indurated
1,930	1,940	**Dolomite**, medium gray, dense, granular, well indurated and **Clay**, medium to dark gray
1,940	1,950	**Dolomite**, light gray to olive gray, dense
1,950	1,970	**Limestone**, light olive gray, dolomitic
1,970	1,980	**Limestone**, light olive gray to olive gray, dolomitic, microcrystalline
1,980	1,990	**Limestone**, light olive gray, remnant fossil molds, with minor light gray clay (possible gypsum)
1,990	2,000	**Dolomite**, olive gray, microcrystalline
2,000	2,010	**Dolomite**, dark gray, microcrystalline
2,010	2,020	**Limestone**, yellowish gray, with minor clay, yellowish gray to white (possible gypsum) calcareous
2,020	2,050	**Limestone**, light gray, dolomitic, minor gypsum
2,050	2,070	**Limestone**, light olive gray, dolomitic
2,070	2,080	**Limestone**, moderate olive brown, dolomitic
2,080	2,110	**Limestone**, light to medium gray, dolomitic, minor gypsum
2,110	2,130	**Limestone**, light to medium gray, dolomitic, with nodular gypsum paste/crystals
2,130	2,138	**Limestone**, light gray, dolomitic
2,138	2,143	**Core: Limestone**, grayish orange, dolomitic, embedded small gypsum crystals; bottom half: **Clay**, light gray, calcareous (core broken up not suitable for permeability analysis)

Table 8. ***Permeability**

MONITORING WELL		Collection Method	Sample Depth	Dry Density	Coefficient Of Permeability
Site	Well ID		(ft, bls)	(PCF)	(cm/sec)
Plymouth Fire Tower	OR-0794	Core	677-682	129	5.0×10^{-5}

* Permeability test (ASTM D5084) performed by MACTEC Engineering and Consulting, Inc.

Table 9. **Video Logs**

Date	Survey	Casing/ Bore dia. (inch)	Survey Depth (ft bls)	Stated Depth (ft bls)	Comments
12/19/02	FDOT	18/18	154	613	Bore hole blocked with boulders at 154-ft
12/27/02	Hausinger and Associates	18/18	500	613	Video under pumped conditions, abundant flow at 390-ft, zero visibility below 500-ft
03/24/03	Deep Venture	12/12-10	1,937	2,138	Bore hole blocked with boulders at 1,937-ft
03/28/03	Deep Venture	12/12-10	2,131	2,138	Contractor cleared obstruction at 1,937-ft

Appendix A
Laboratory Groundwater Quality

Laboratory Groundwater Quality

Site: Plymouth Fire Tower **Well ID:** OR-0794

Sample Date	2002/12/12
Water Temp	22.800 deg C
Conductivity-Field	206.000 umhos/cm
Conductivity	183.100 umhos/cm
pH-Field	7.300 std units
Alkalinity	55.893 mg/L
Ca-T	390.994 mg/L
Mg-T	36.418 mg/L
Na-T	10.166 mg/L
K-T	2.666 mg/L
Cl	8.893 mg/L
SO4	23.310 mg/L
F	.206 mg/L
Si-T	7.682 mg/L
Ba-T	41.634 ug/L
Fe-T	7550.740 ug/L
Sr-T	525.093 ug/L
TDS	135.000 mg/L
Depth Bot Samp	353.000 ft
Casing Depth	148 ft

Sample Date	2003/01/29
Water Temp	23.200 deg C
Conductivity-Field	306.000 umhos/cm
Conductivity	300.000 umhos/cm
pH-Field	7.300 std units
Alkalinity	136.404 mg/L
Ca-T	39.025 mg/L
Mg-T	15.661 mg/L
Na-T	8.209 mg/L
K-T	1.040 mg/L
Cl	10.624 mg/L
SO4	9.033 mg/L
F	.165 mg/L
Si-T	6.201 mg/L
Ba-T	14.423 ug/L
Fe-T	660.655 ug/L
Sr-T	175.131 ug/L
TDS	157.000 mg/L
Depth Bot Samp	751 ft
Casing Depth	613 ft

Sample Date	2003/03/20
Water Temp	25.100 deg C
Conductivity-Field	1239.000 umhos/cm
Conductivity	1226.000 umhos/cm
pH-Field	7.800 std units
Alkalinity	109.938 mg/L
Ca-T	260.002 mg/L
Mg-T	54.893 mg/L
Na-T	8.027 mg/L
K-T	1.289 mg/L
Cl	11.188 mg/L
SO4	595.644 mg/L
F	.483 mg/L
Si-T	6.827 mg/L
Ba-T	8.970 ug/L
Fe-T	1980.232 ug/L
Sr-T	5227.052 ug/L
TDS	1036.000 mg/L
Depth Bot Samp	2,138 ft
Casing Depth	613 ft

Sample Date	2003/05/07
Water Temp	25.400 deg C
Conductivity-Field	365.000 umhos/cm
Conductivity	337.000 umhos/cm
pH-Field	7.700 std units
Alkalinity	98.518 mg/L
Ca-T	44.033 mg/L
Mg-T	14.872 mg/L
Na-T	5.894 mg/L
K-T	1.214 mg/L
Cl	8.350 mg/L
SO4	72.122 mg/L
F	.233 mg/L
Si-T	6.211 mg/L
Ba-T	10.987 ug/L
Fe-T	29.837 ug/L
Sr-T	661.719 ug/L
TDS	222.000 mg/L
Depth Bot Samp	1,407 ft
Casing Depth	1,050 ft

Some Laboratory Data not available at time of report

Laboratory Groundwater Quality

(Downhole Samples)

Site: Plymouth Fire Tower **Well ID:** OR-0794

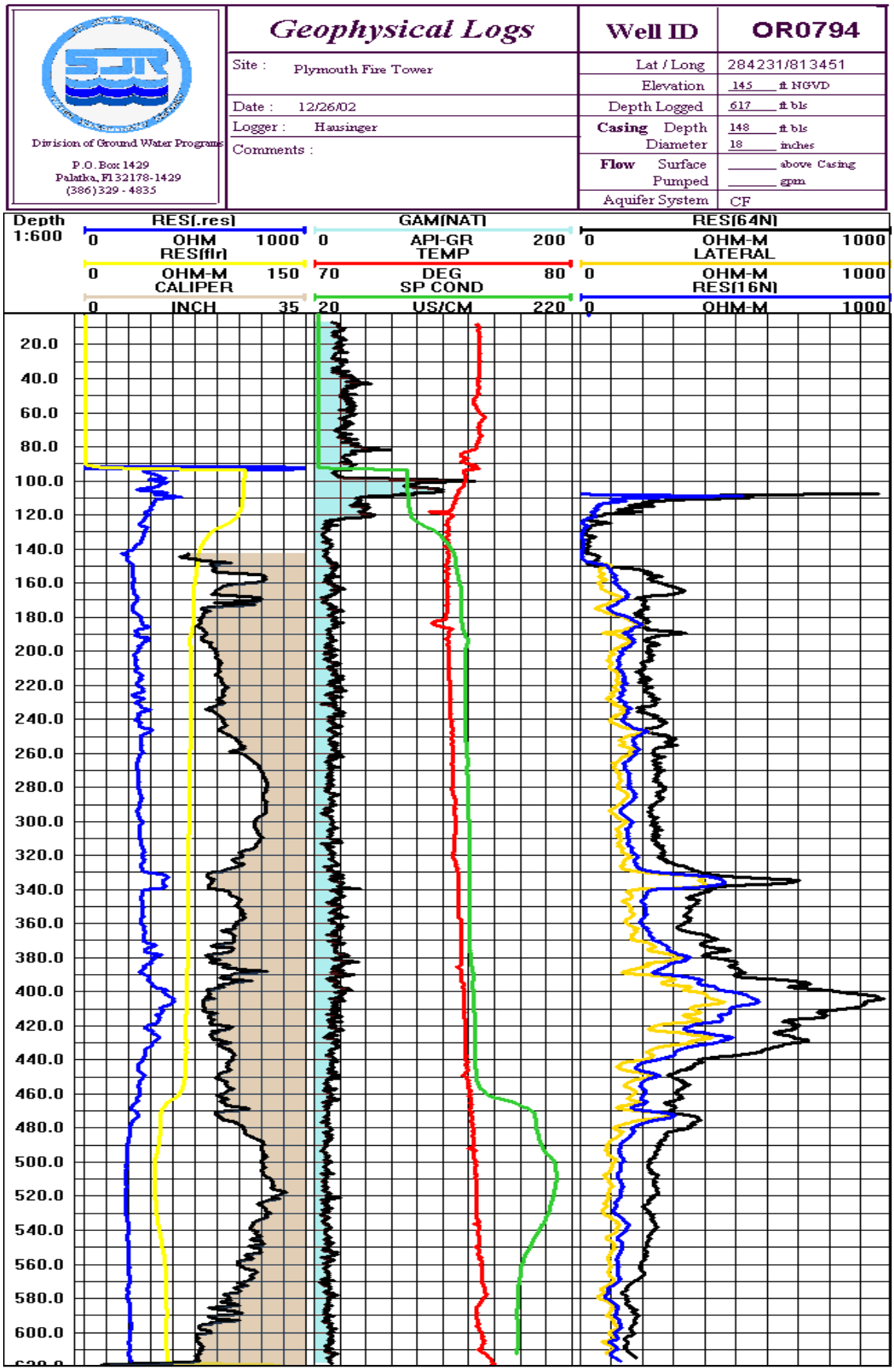
Sample Date	**2003/03/27**
Water Temp	23.200 deg C
Conductivity-Field	330.000 umhos/cm
Cl	10.467 mg/L
SO4	34.381 mg/L
TDS	182.000 mg/L
Depth Bot Samp Int	1,915.00 ft

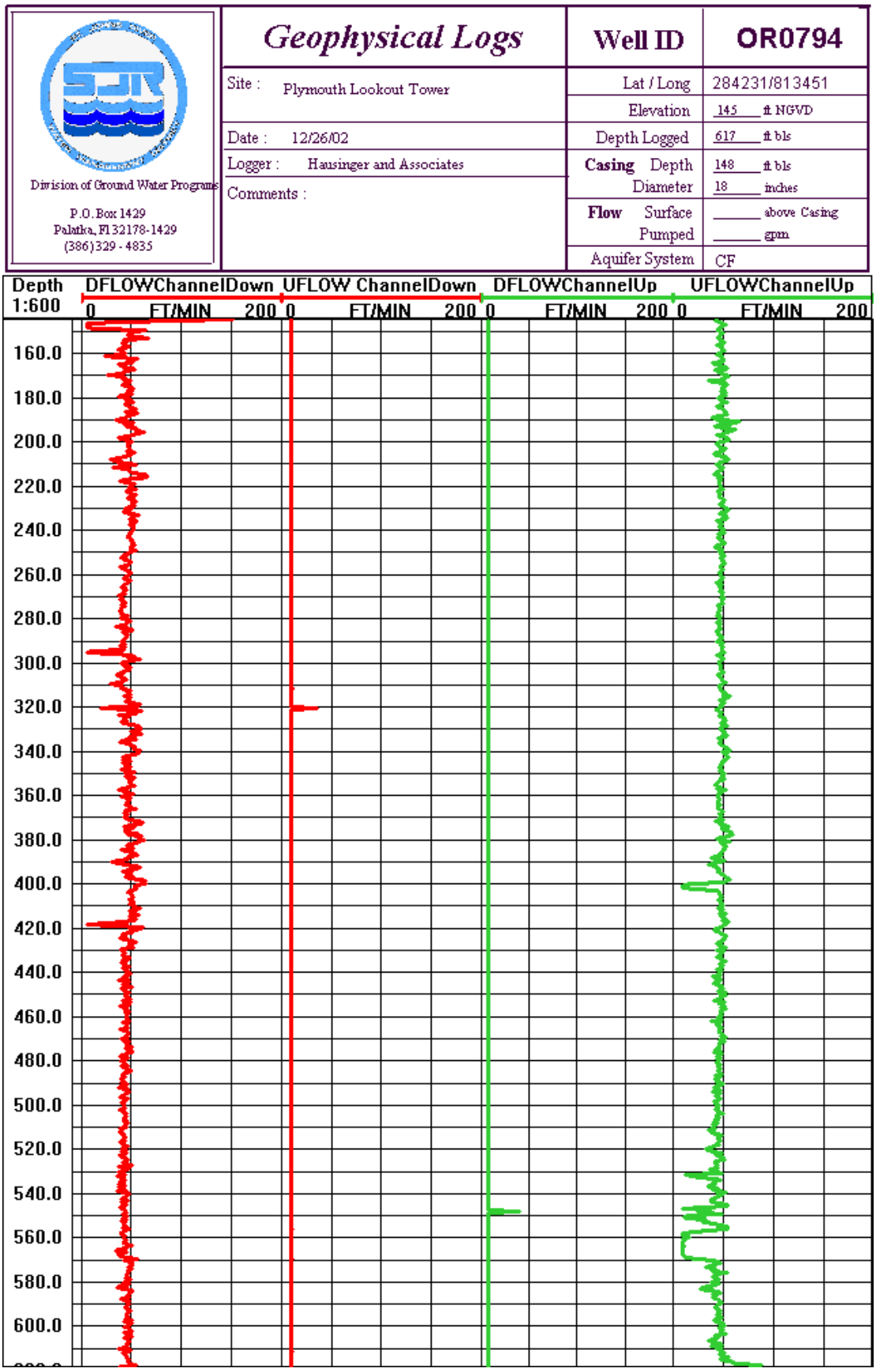
Sample Date	**2003/03/27**
Water Temp	23.300 deg C
Conductivity-Field	2022.000 umhos/cm
Cl	43.492 mg/L
SO4	1251.190 mg/L
TDS	1864.000 mg/L
Depth Bot Samp Int	2,000.00 ft

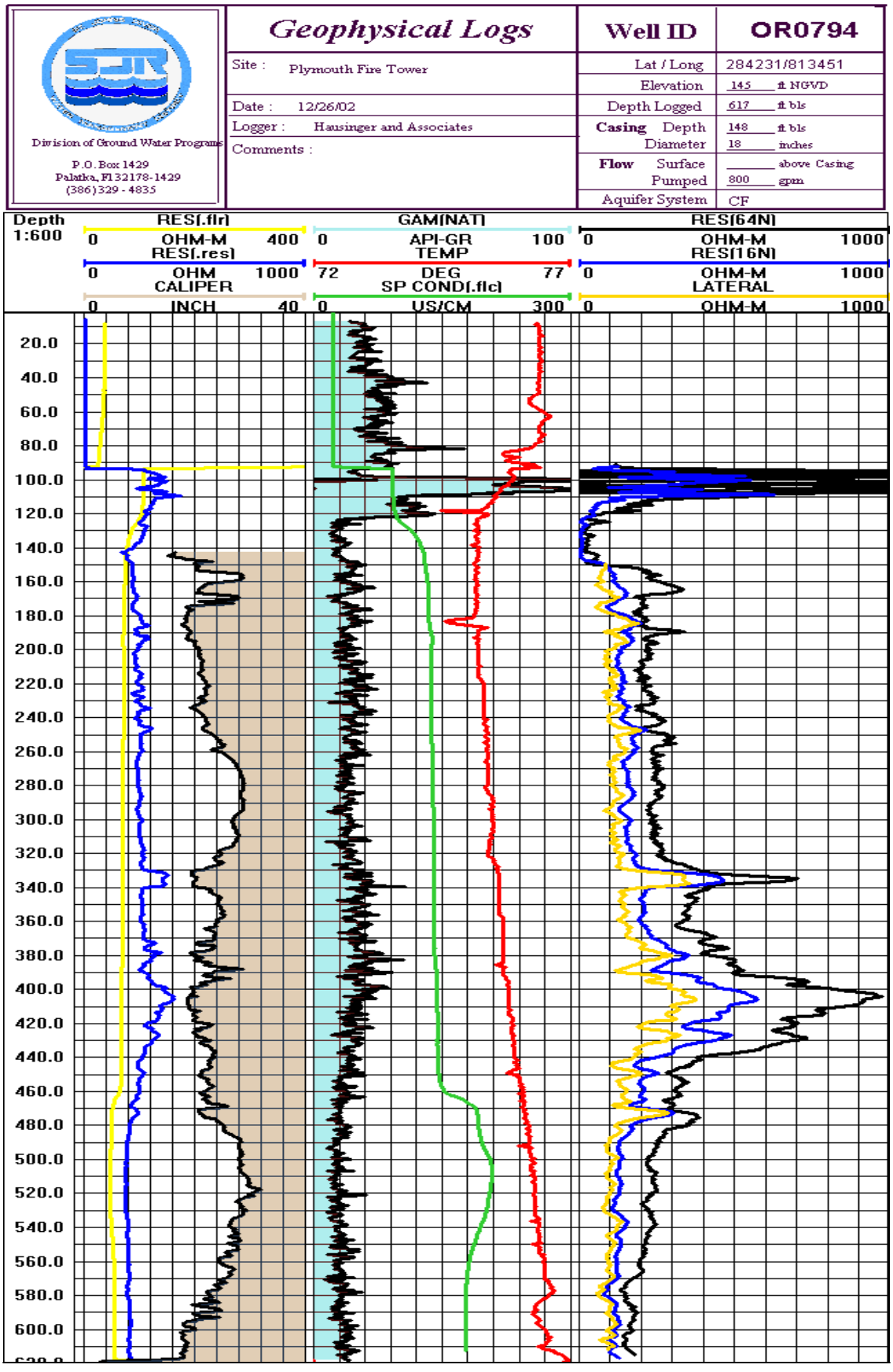
Sample Date	**2003/03/27**
Water Temp	23.300 deg C
Conductivity-Field	1860.000 umhos/cm
Cl	54.216 mg/L
SO4	987.748 mg/L
TDS	1624.000 mg/L
Depth Bot Samp Int	2,137.00 ft

Some Laboratory Data not available at time of report

Appendix B
Geophysical Logs


Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Geophysical Logs
Site : Plymouth Fire Tower
Date : 12/26/02
Logger : Hausinger
Comments :
Well ID
OR0794
Lat / Long 284231/813451
Elevation 145 ft NGVD
Depth Logged 617 ft bls
Casing Depth 148 ft bls
Diameter 18 inches
Flow Surface above Casing
Pumped gpm
Aquifer System CF
Depth 1:600
RES[.res] 0 OHM 1000
RES[flr] 0 OHM-M 150
CALIPER 0 INCH 35
GAM[NAT] 0 API-GR 200
TEMP 70 DEG 80
SP COND 20 US/CM 220
RES[64N] 0 OHM-M 1000
LATERAL 0 OHM-M 1000
RES[16N] 0 OHM-M 1000
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
420.0
440.0
460.0
480.0
500.0
520.0
540.0
560.0
580.0
600.0


Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386)329 - 4835
Geophysical Logs
Well ID
OR0794
Site : Plymouth Lookout Tower
Lat / Long 284231/813451
Elevation 145 ft NGVD
Date : 12/26/02
Depth Logged 617 ft bls
Logger : Hausinger and Associates
Casing Depth 148 ft bls
Diameter 18 inches
Comments :
Flow Surface above Casing
Pumped gpm
Aquifer System CF
Depth 1:600
DFLOWChannelDown
UFLOW ChannelDown
DFLOWChannelUp
UFLOWChannelUp
0 FT/MIN 200
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
420.0
440.0
460.0
480.0
500.0
520.0
540.0
560.0
580.0
600.0


Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Geophysical Logs
Site : Plymouth Fire Tower
Date : 12/26/02
Logger : Hausinger and Associates
Comments :
Well ID
OR0794
Lat / Long 284231/813451
Elevation 145 ft NGVD
Depth Logged 617 ft bls
Casing Depth 148 ft bls
Diameter 18 inches
Flow Surface above Casing
Pumped 800 gpm
Aquifer System CF
Depth 1:600
RES[.flr] 0 OHM-M 400
RES[.res] 0 OHM 1000
CALIPER 0 INCH 40
GAM[NAT] 0 API-GR 100
TEMP 72 DEG 77
SP COND[.flc] 0 US/CM 300
RES[64N] 0 OHM-M 1000
RES[16N] 0 OHM-M 1000
LATERAL 0 OHM-M 1000
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
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420.0
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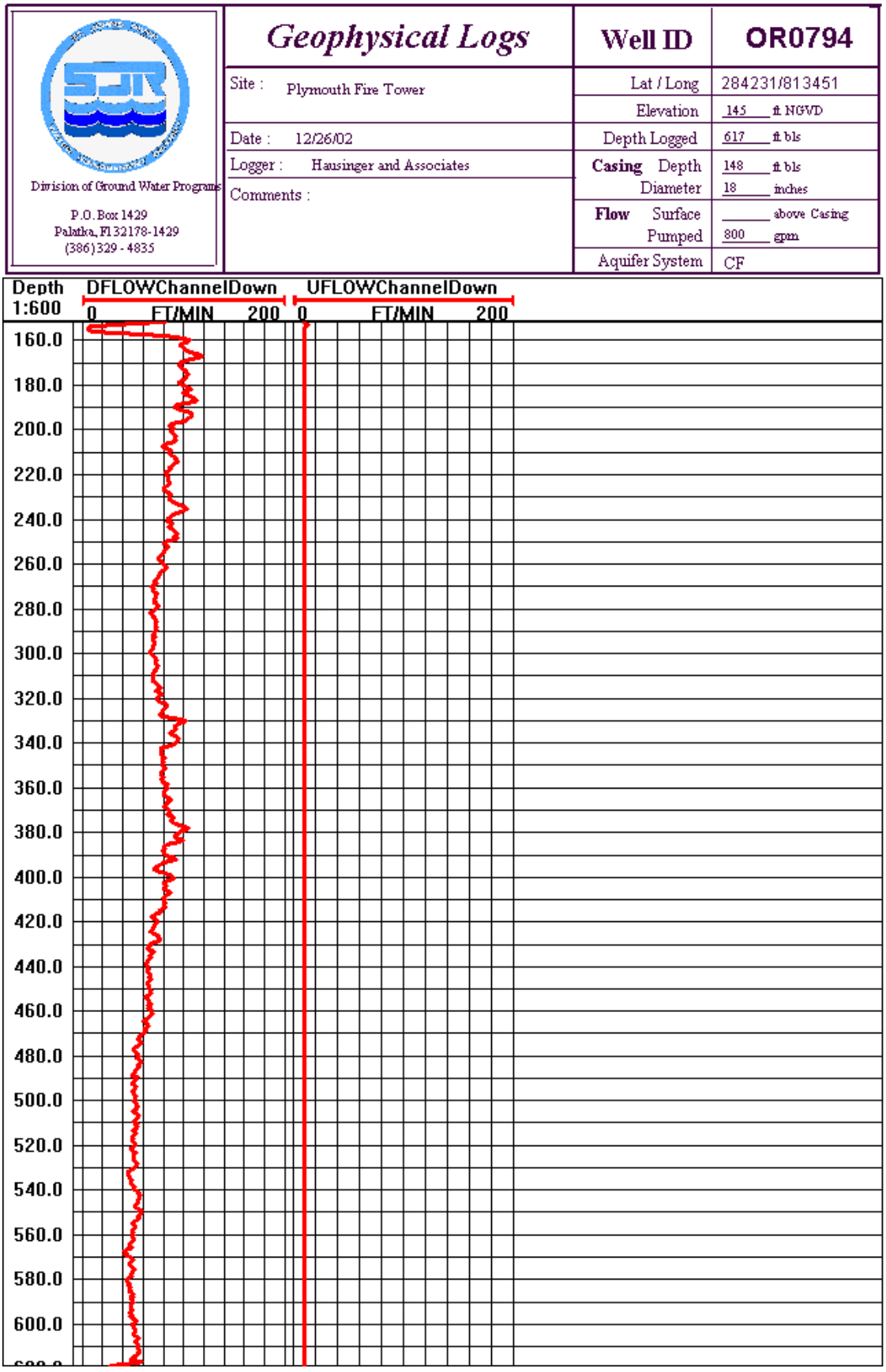
600.0


Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Geophysical Logs
Well ID
OR0794
Site : Plymouth Fire Tower
Lat / Long 284231/813451
Elevation 145 ft NGVD
Date : 12/26/02
Depth Logged 617 ft bls
Logger : Hausinger and Associates
Casing Depth 148 ft bls
Diameter 18 inches
Comments :
Flow Surface above Casing
Pumped 800 gpm
Aquifer System CF
Depth 1:600
DFLOWChannelDown
UFLOWChannelDown
0 FT/MIN 200
0 FT/MIN 200
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
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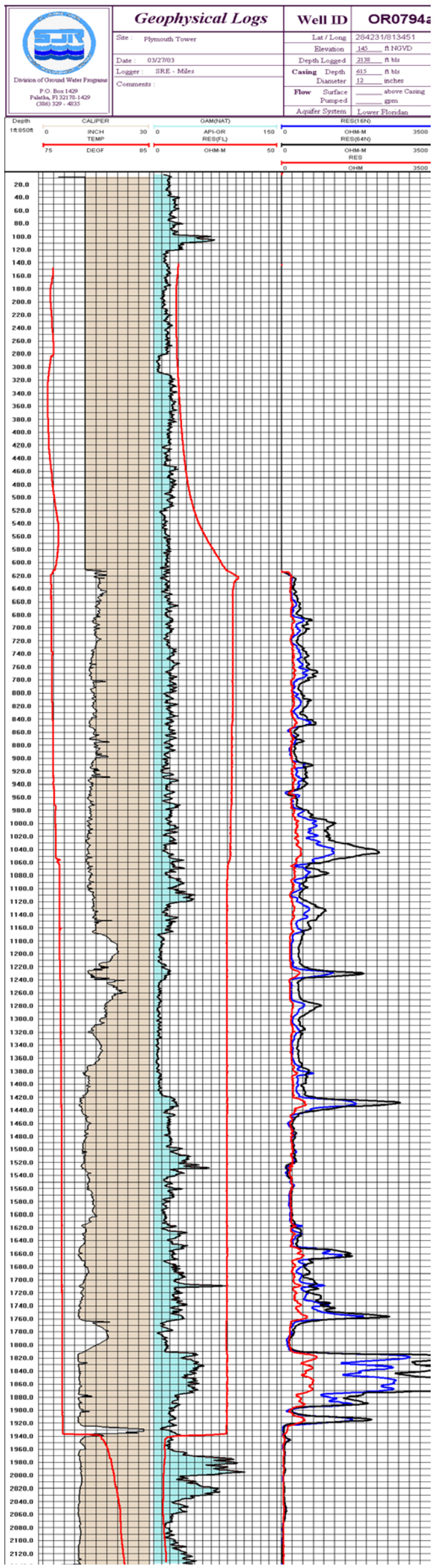
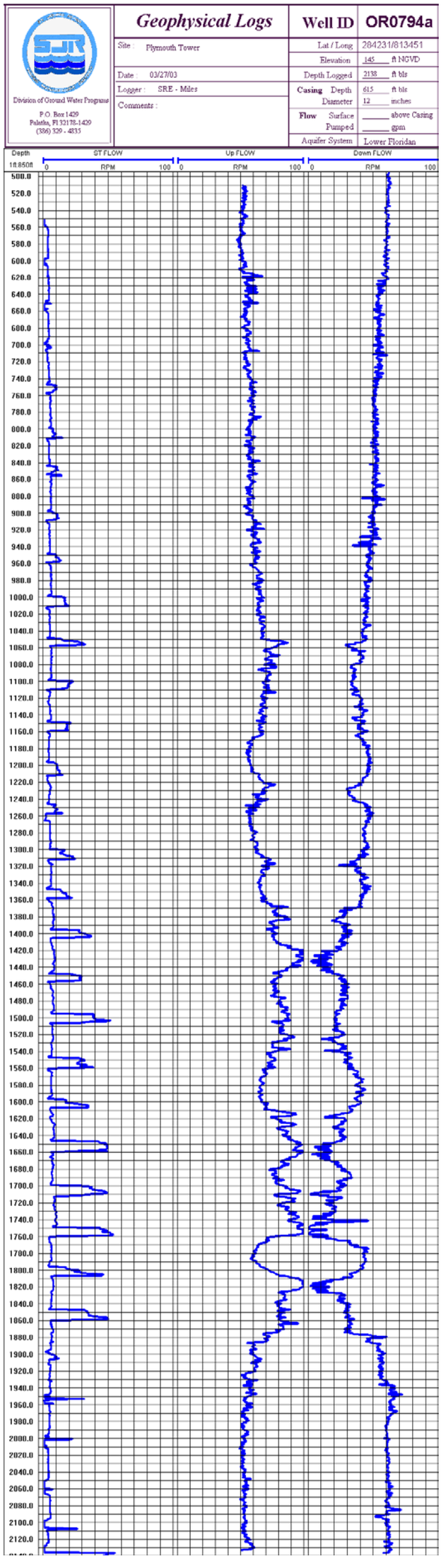
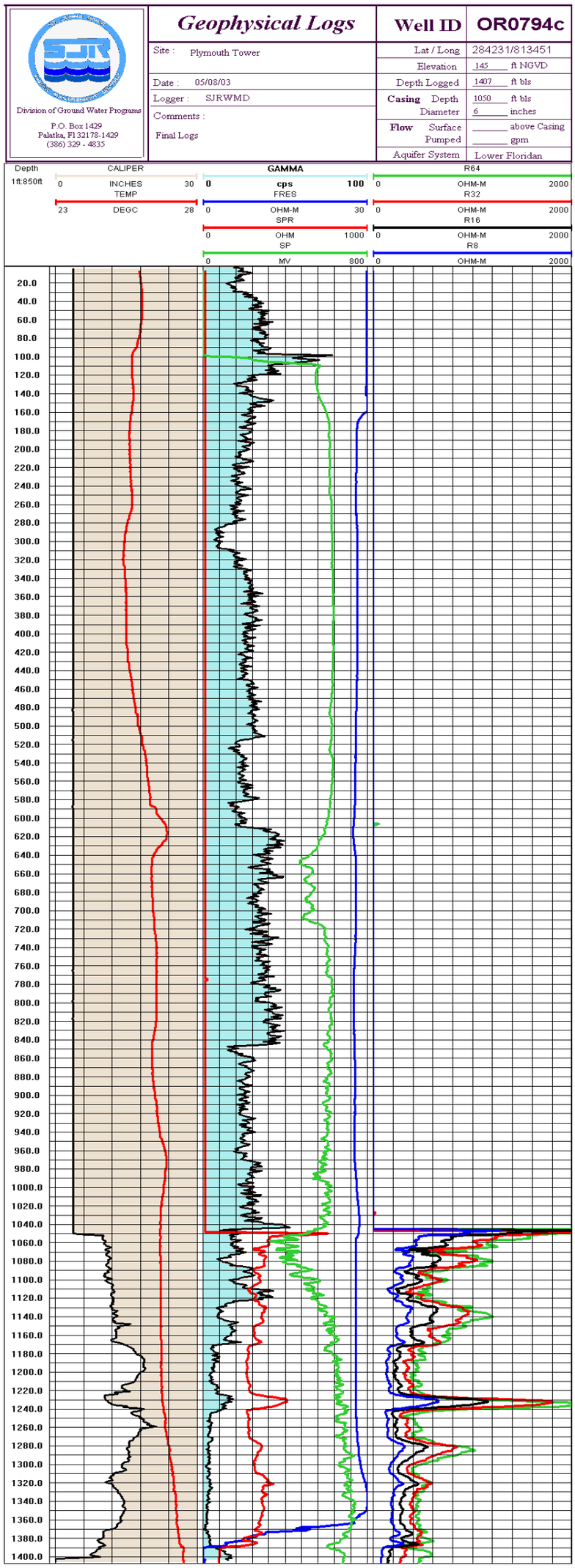
480.0
500.0
520.0
540.0
560.0
580.0
600.0


Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Geophysical Logs
Site : Plymouth Tower
Date : 03/27/03
Logger : SRE - Miles
Comments :
Well ID OR0794a
Lat / Long 284231/813451
Elevation 145 ft NGVD
Depth Logged 2138 ft bls
Casing Depth 615 ft bls
Diameter 12 inches
Flow Surface above Casing
Pumped gpm
Aquifer System Lower Floridan
Depth
1ft:850ft
CALIPER
INCH
TEMP
DEGF
GAM(NAT)
API-GR
RES(FL)
OHM-M
RES(16N)
RES(64N)
RES
OHM


Geophysical Logs
Well ID
OR0794a
Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Site : Plymouth Tower
Lat / Long 284231/813451
Elevation 145 ft NGVD
Date : 03/27/03
Depth Logged 2138 ft bls
Logger : SRE - Miles
Casing Depth 615 ft bls
Diameter 12 inches
Comments :
Flow Surface above Casing
Pumped gpm
Aquifer System Lower Floridan
Depth
1ft:850ft
ST FLOW
Up FLOW
Down FLOW
0
RPM
100


Geophysical Logs
Well ID
OR0794c
Division of Ground Water Programs
P.O. Box 1429
Palatka, Fl 32178-1429
(386) 329 - 4835
Site : Plymouth Tower
Date : 05/08/03
Logger : SJRWMD
Comments :
Final Logs
Lat / Long 284231/813451
Elevation 145 ft NGVD
Depth Logged 1407 ft bls
Casing Depth 1050 ft bls
Diameter 6 inches
Flow Surface above Casing
Pumped gpm
Aquifer System Lower Floridan
Depth
1ft:850ft
CALIPER
0 INCHES 30
TEMP
23 DEGC 28
GAMMA
0 cps 100
FRES
0 OHM-M 30
SPR
0 OHM 1000
SP
0 MV 800
R64
0 OHM-M 2000
R32
0 OHM-M 2000
R16
0 OHM-M 2000
R8
0 OHM-M 2000
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
220.0
240.0
260.0
280.0
300.0
320.0
340.0
360.0
380.0
400.0
420.0
440.0
460.0
480.0
500.0
520.0
540.0
560.0
580.0
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620.0
640.0
660.0
680.0
700.0
720.0
740.0
760.0
780.0
800.0
820.0
840.0
860.0
880.0
900.0
920.0
940.0
960.0
980.0
1000.0
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1060.0
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1160.0
1180.0
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1240.0
1260.0
1280.0
1300.0
1320.0
1340.0
1360.0
1380.0
1400.0