

**Appendix 2.** Location, physical characteristics, borehole-geophysical logs and interpreted structures for well Act 2.

This well is situated at the Quayle Ridge Golf Club. The well is located at the intersection of Routes 119 and 3A in Acton, MA at approximately 50 meters above sea level. The well was drilled for golf course irrigation but because the reported yield was approximately 2 gpm, it has been left unused. This well is located near the clubhouse. The ID number is act2.110707. The well was logged in a two day period spanning several months, between November 7, 2007 and May 14, 2008. The delay was due to repairs needed on the acoustic televiewer tool.

The mapped overburden is glacial till but it is very thin to non-existent. The thin till is composed of a nonsorted, unstratified matrix of sand with small amounts of silt and clay. There are scattered clasts and few small boulders. The bedrock unit is schist of the Nashoba formation. It is a fine to medium grained, and well foliated, gray to silvery-gray quartz-mica schist that may contain biotite, garnet and sillimanite.

The act2.110707 well is 181 meters deep and has 3.6 meters of casing. There were a total of 35 fractures identified in this well. Of the total fracture set, 7 are FPF, 8 are subhorizontal unloading joints and 20 are tectonic joints.

The water table in the well was 3.32 meters. The heat pulse flow meter testing was done on the well under ambient and pumping conditions. The well was pumped for a total of 2 hours 14 minutes at 0.5 gallons per minute during which time the well was drawdown 0.35 meters. Three fractures were contributing flow to the well. Of the flowing fractures, all were tectonic joints.

**Appendix 2, continued.** Location, physical characteristics, borehole-geophysical logs and interpreted structures for well Act 2 (Azimuths and dips follow right hand rule, t=tectonic, s = sheeting, p = foliation parallel fractures). Flow data shown for the pumping test have not been normalized.

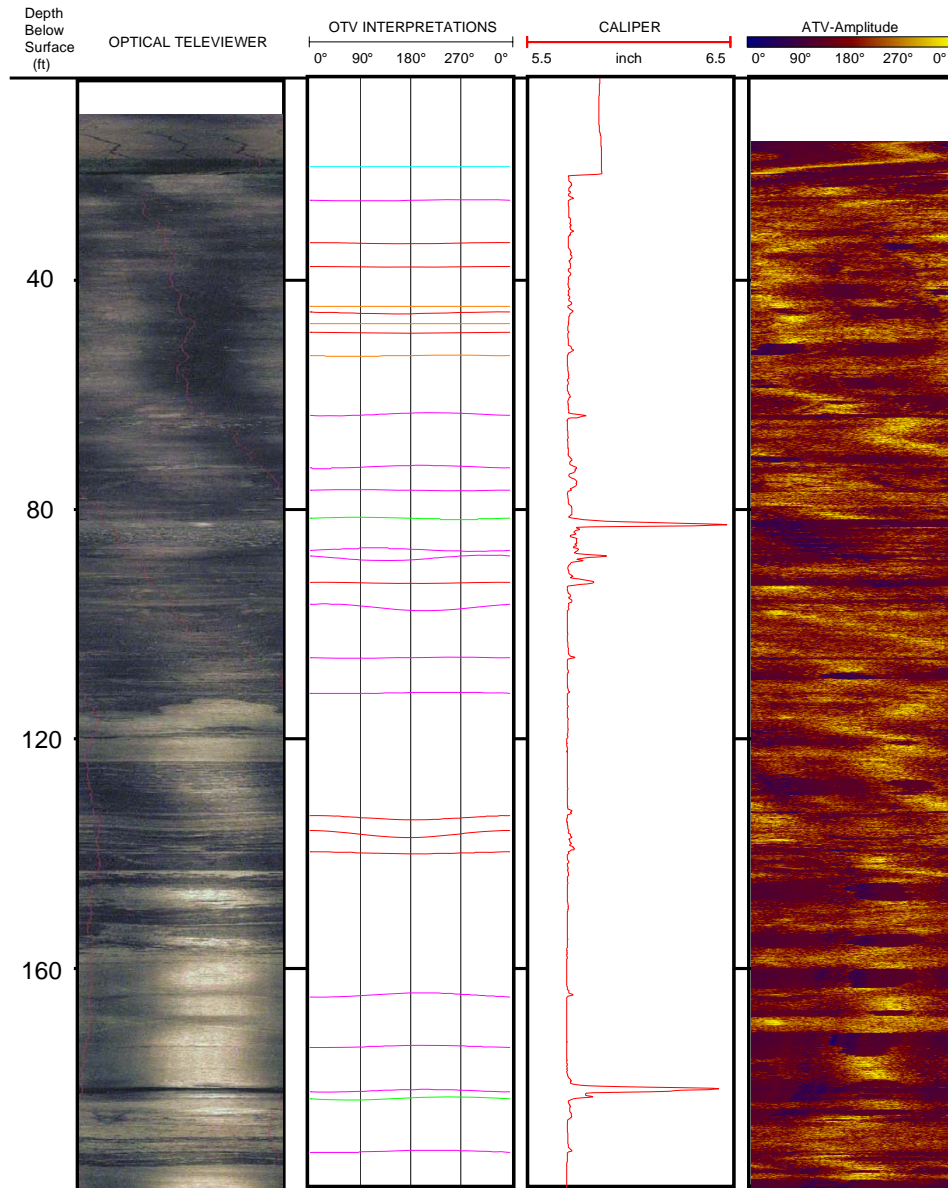
Site ID: act2.110707  
Location: "Quayle Ridge Golf Course Well #1" Acton, MA

Elevation (m) 50  
Reported Yield (gpm) 2  
Rock Type: Schist

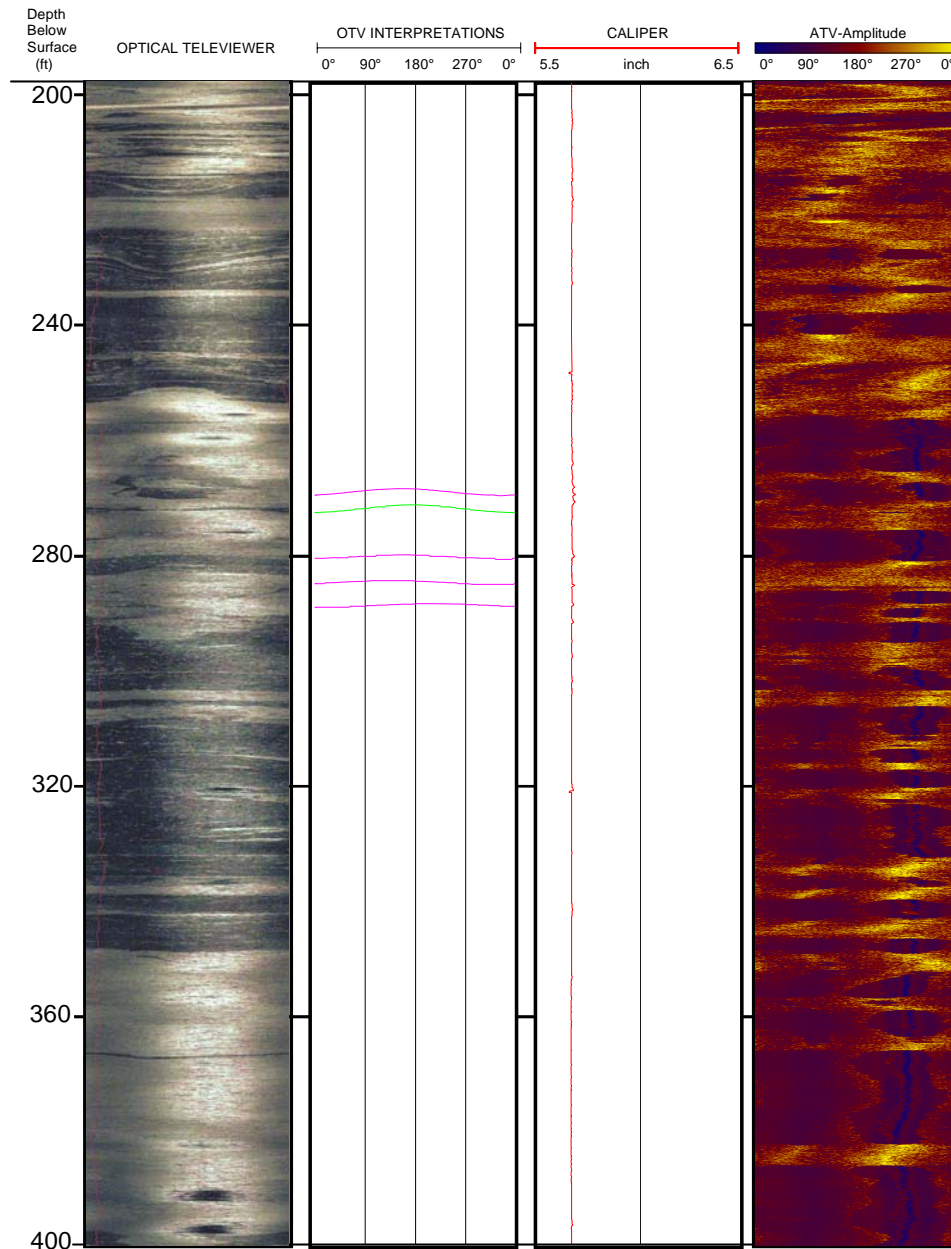
Depth to water: 10.89 ft 3.32 m  
Depth of casing: 12 ft 3.66 m  
Depth of well: 595 ft 181.36 m  
Land surface to MP: 1.8 ft 0.55 m

Fractures						Ambient			Pump at 0.5 gpm		
number	depth (m)	depth (ft)	Azimuth	Dip	Type	Flow (y/n)	gpm (amb)	notes	Flow (y/n)	gpm (pump)	notes
1	6.2	20.2	79	7	s	y	-0.02	flow in	n	0.2	
2	7.9	26.0	99	37	t	n	-0.02		n	0.2	
3	10.2	33.4	169	36	p	n	-0.02		n	0.2	
4	11.4	37.5	174	36	p	n	-0.02		n	0.2	
5	13.5	44.4	75	6	s	n	-0.02		n	0.2	
6	13.9	45.5	154	44	p	n	-0.02		n	0.2	
7	14.4	47.3	53	13	s	n	-0.02		n	0.2	
8	14.9	49.0	176	22	s	n	-0.02		n	0.2	
9	16.1	52.9	77	23	s	n	-0.02		n	0.2	
10	19.2	63.1	37	58	t	n	-0.02		n	0.2	
11	22.0	72.2	21	55	t	n	-0.02		n	0.2	
12	23.3	76.3	262	25	s	n	-0.02		n	0.2	
13	24.7	81.2	265	45	t	n	-0.02		y	0.2	flow in
14	26.4	86.6	294	57	t	n	-0.02		n	0.1	
15	26.8	88.0	137	72	t	n	-0.02		n	0.1	
16	28.2	92.4	184	39	p	y	-0.02		n	0.1	
17	29.4	96.6	206	75	t	n	-0.02		n	0.1	
18	32.1	105.4	78	23	s	n	-0.02		n	0.1	
19	34.0	111.5	61	37	t	n	-0.02		n	0.1	
20	40.6	133.1	185	66	p	n	-0.02		n	0.1	
21	41.4	135.9	176	75	p	n	-0.02		n	0.1	
22	42.4	139.2	187	44	p	n	-0.02		n	0.1	
23	49.9	163.9	22	66	t	n	-0.02		n	0.1	
24	52.7	172.8	25	48	t	n	-0.02		n	0.1	
25	55.0	180.5	26	55	t	n	-0.02		n	0.1	
26	55.5	181.9	72	59	t	y	0.02	flow out	y	0.1	flow in
27	58.2	191.1	39	51	t	n	0.02		n	0.02	
28	82.0	268.9	335	75	t	n	0.02		n	0.02	
29	82.8	271.8	355	75	t	y	0.02	flow in	y	0.02	flow in
30	85.4	280.2	338	63	t	n	0		n	0	
31	86.8	284.6	317	61	t	n	0		n	0	
32	88.0	288.6	30	59	t	n	0		n	0	
33	135.5	444.6	81	14	s	n	0		n	0	
34	143.9	472.1	283	63	t	n	0		n	0	
35	160.6	526.9	128	75	t	n	0		n	0	

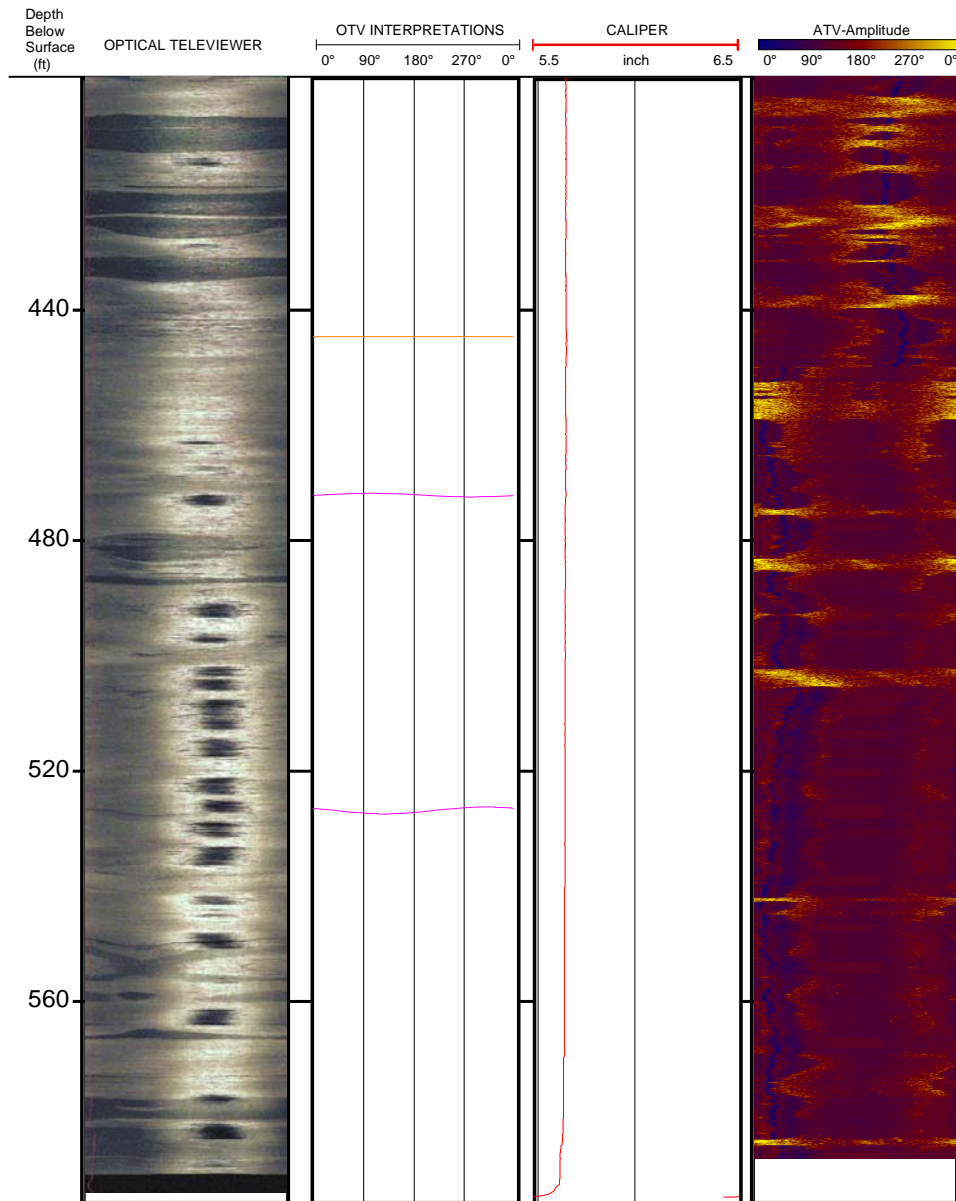
**Appendix 2, continued.** Interpreted features for Act 2. Optical televiewer interpretations indicated by color: orange – subhorizontal sheeting joint; magenta – tectonic joint; red – foliation parallel fracture (FPF); cyan – transmissive subhorizontal sheeting joint; green – transmissive tectonic joint; grey – transmissive foliation parallel fracture (FPF). OTV – optical televiewer; ATV – acoustic televiewer.



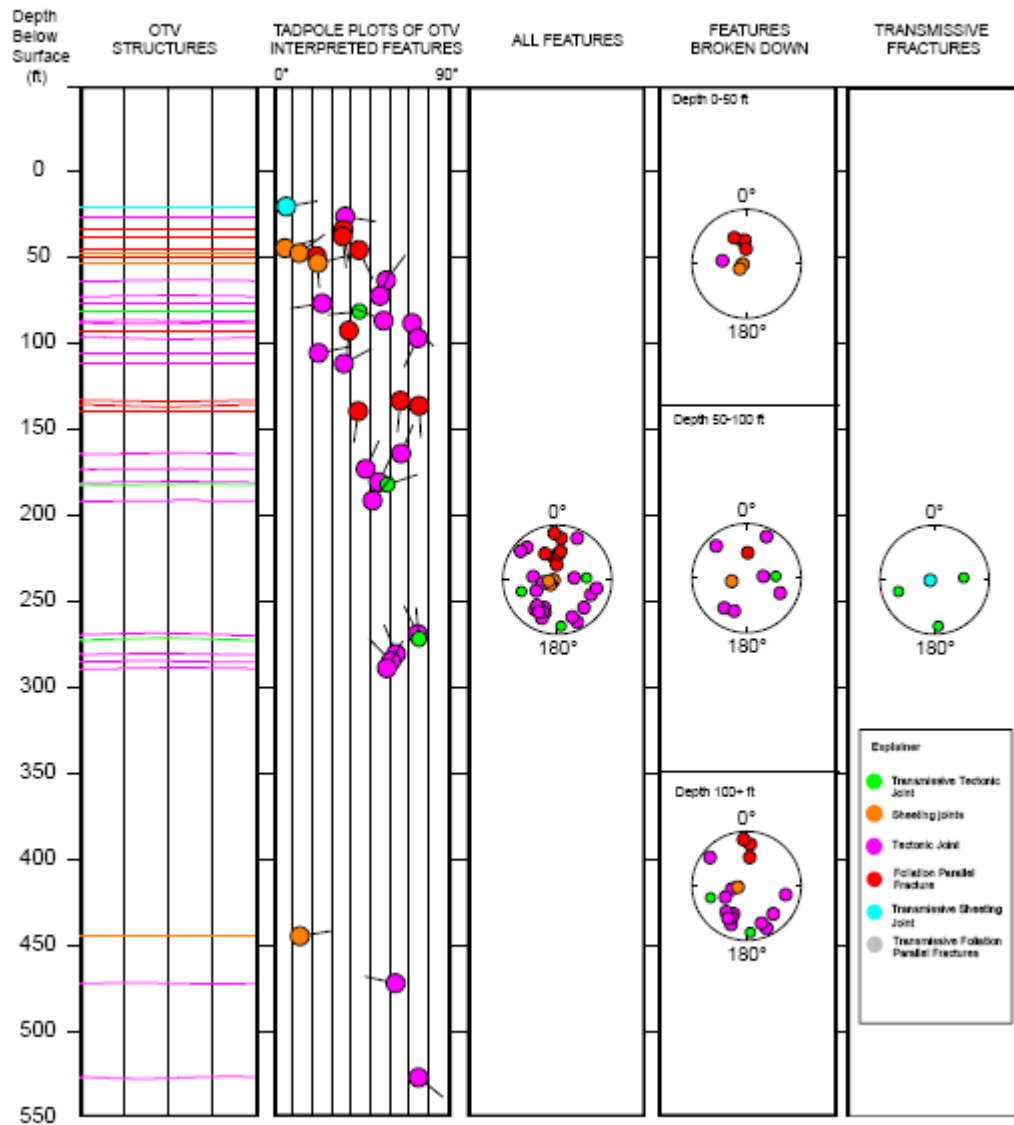
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**Appendix 2, continued.** Tadpole plots and stereoplots of interpreted optical televiewer (OTV) structures for Act 2. In the tadpole plot depth is plotted along the y-axis and magnitude of the dip plotted on the x-axis. The tail of the tadpole points in the direction of the dip, relative to true north, which is toward the top of the page. The stereonets represent poles to planar features plotted on a lower-hemisphere equal-area stereonet. Stereonets use right hand rule convention. Colors on the OTV structures plot correspond to those in the tadpole explanation.



**Appendix 2, continued.** Composite log for Act 2 of natural gamma, fluid resistivity, fluid temperature and heat pulse flowmeter data under ambient and stressed (pumping) conditions. For the heat pulse flowmeter data collected under pumping conditions, the well was pumped at 0.5 gallons per minute and the data have been normalized.

