

## WELL SUMMARY

page 1 of 3Location ID: PL-2-504 Field Representative(s): P. EGAN, J. KASZUBANorthing: 227742.47 Easting: 401193.52Date Started: 22 SEPT 88 Date Completed: 28 NOVEMBER 1988Drilling Method: MUD/AIR-FOAM ROTARY Drilling Contractor: LARJONDriller: J. GOWERTotal Depth Borehole: 532' Total Depth Well Casing: 519.7'Total Depth Surface Casing: 102'Diameter Well Casing: 4" Diameter Surface Casing: 10"Length of Bottom Blank: 5.29Type of Screen: Extra Strength 0.02 slotScreen Interval: 504 to 514.4Water First Detected: 486'-491' Water Level Open Borehole: 435.8'  
(below grade)Water Level Cased Borehole: 435.5' (below grade)

Quik-Foam Use: 5 gal. and 2 1/2 gal. E-Z Mud.

Estimated Water Use: 8080 gal. water used for drilling.  
16,845 gal. recirculated into pit (includes formation water).Well Casing:

4in x 3ft SCD 40 PVC:		stock SS centralizers:	
4in x 5ft SCD 40 PVC:		custom SS centralizers:	2
4in x 10ft SCD 40 PVC:		4"x2' SS locking riser:	1
4in x 20ft SCD 40 PVC:		4" SS locking cap:	1
Total SCD 40 PVC pipe:	0 ft	4" SS female cap:	1
4in x 3ft SCD 5 SS pipe:	1		
4in x 5ft SCD 5 SS pipe:		4in x 5ft SCD 10 SS pipe:	1
4in x 10ft SCD 5 SS pipe:	1	4in x 10ft SCD 10 SS pipe:	1
4in x 20ft SCD 5 SS pipe:	19	4in x 20ft SCD 10 SS pipe:	5
Total SCD 5 SS pipe:	393 ft	Total SCD 10 SS pipe:	115 ft

Well Completion:

100# bags 16/40 sand: 5 bags  
100# bags 10/20 sand: 0 bags  
100# bags 8/14 sand: 0 bags  
100# bags 8/20 sand: 120 bags  
  
94# bags cement: 114 bags  
  
5 gal. buckets bentonite: 13 buckets  
  
Benseal powder: 8 1/2 bag

Surface Casing:

94# bags cement: 70 bags  
50# bags bentonite powder: 4 bags

Pertinent Field Notes:

- 9/22/88 Spud borehole with Frank's rig, 9 7/8" pilot hole, 0'-75'. Mud pump filled with 900 gal. water. Drilling slow due to many clay zones.
- 9/23/88 Complete pilot hole, 75'-100'. Ream hole, 16" bit, 0'-100'. 600 gal. water added to mud pump.
- 9/24/88 Install and grout 102'x10" steel surface casing.
- 9/25/88 Steam clean and mobilize CP Rig, pipe, tools. Remove Frank's rig. Drill with air-foam rotary, 9 7/8" bit, 112'-292'. Monitor main and auxiliary compressors. Drilling is rapid. 1800 gal. water used.
- 9/26/88 Continue drilling, 292'-410'. Monitor main and auxiliary compressors. Blew hydraulic line - down for 2.5 hours. Slow drilling. 2550 gal. water used.
- 9/27/88 Continue drilling, 410' to 532' (T.D.). Monitor both compressors. 2150 gal. water used. Southwest Surveys logs hole, standard suite plus drift. Borehole drifted 29' to the southwest.
- 9/28/88 Choose screened interval 504'-514'. Install bottom sand. No bottom plug required. Install 4" x 521.9' stainless steel casing and gravel pack.

- 9/29/88 Bail gravel pack to settle. Pump 6' Benseal upper plug. Install filler sand to 416.4'. Remove tremie.
- 9/30/88 Bail 13 times and set submersible pump at 507'. Well maintains 9 GPM. Pumped 2123 gal., have difficulty clearing out a slug of silt. Average pH is 7.45. Grout casing in borehole.
- 10/1/88 Prepare to continue development. Submersible pump not functioning. Larry Johnson (Larjon) informed.
- 10/2/88 Remove submersible pump. Lowermost 11 joints of tremie and connecting pump wire coated with grout and submersible pump encrusted in grout. Bail 11 times (more than 1 casing volume) to test screen. No problems with bailing or well recovery; screen is still transmissive. Install new submersible pump. Cannot get pump past a hard barrier at 506' (probably cured grout). May only be 2' of open screen left. Set pump at 486' and pump at 11 GPM. pH levels are initially high but decrease with pumping.
- 10/3/88 Remove submersible pump and install in PL-1.
- 10/4/88 Set submersible pump back into PL-2 at 465'.
- 10/6/88 Purge 585 gal. from PL-2 at a rate of 11 GPM. pH decreased from 9.1 to 7.55.
- 10/7/88 Purge 615 gal. pH stabilizes at 7.45 after 270 gal. are purged. Well may need more frequent maintenance for siltation if stool and most of screen is filled with grout.
- 11/10/88 Steam clean and mobilize to finish well completion. Top of grout at 284.2'. Will install alternating layers of sand (50-foot thick) and bentonite to seal the annulus and prevent further leakage in the damaged casing. Formation water is added to each bentonite plug to promote swelling and ensure a good seal. Bentonite and sand installed from 284.2' to 172.8'.
- 11/11/88 Install alternating layers of bentonite and sand from 172.8' to 97' (5' within surface casing).
- 11/16/88 Install grout from 97' to grade.
- 11/28/88 Pour well pad and set brass cap.

06/05/89 Redevelop well; *Surged with surge block;* Set shp pump at 496' and pump 2090 gallons. Final turbidity 4.8 NTU. See redevelopment sheet for details PL2504.WSM