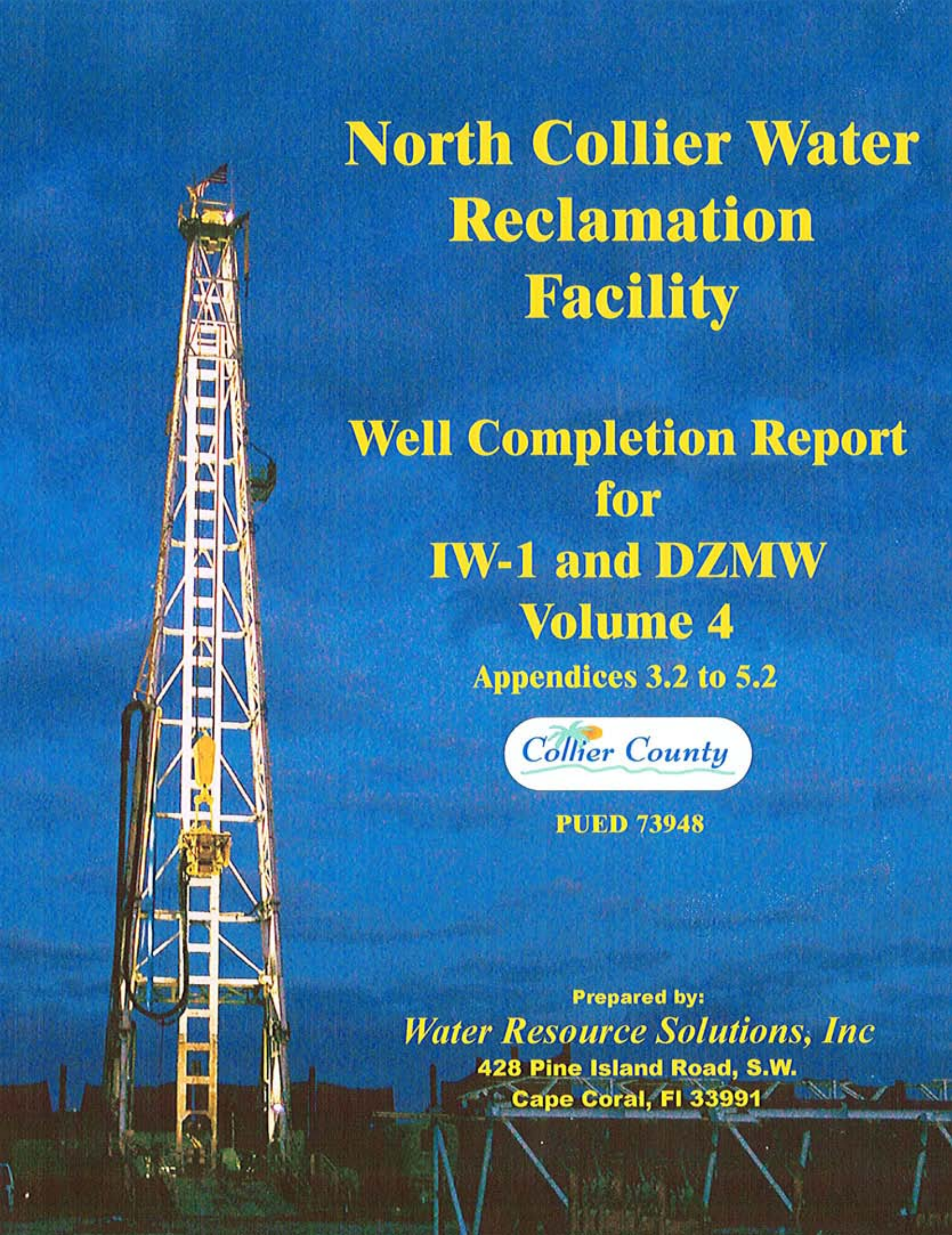


North Collier Water Reclamation Facility

Well Completion Report for IW-1 and DZMW Volume 4

Appendices 3.2 to 5.2

Collier County

PUED 73948

Prepared by:

Water Resource Solutions, Inc

428 Pine Island Road, S.W.

Cape Coral, Fl 33991

APPENDIX 3.2

WEEKLY CONSTRUCTION SUMMARY REPORTS

APPENDIX 3.2.1

IW-1 WEEKLY REPORTS

Week 1

WATER RESOURCE SOLUTIONS

Date: 1/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site. Rig is 186 foot tall, OIME-1000, top-head drive rig constructed by YBI.
	Organizational meeting held at the NCWRF plant with County and Contractors .
	All pad monitor wells are 4-inch diameter pvc. The wells were drilled to approximately 20 feet bpl and cased to 10 feet bpl with 10 feet of slotted screen on 1/21/03. Background for pad monitor wells - sampled 1/21/03:
	Top of casing (Toc), Above pad level (apl), Below pad level (bpl), Depth to water (DTW)

Well #	Toc (feet apl)	Temp. (degrees C)	DTW (feet btoc)	Cl- (mg/L)	Cond. (Us/cm)	pH (SU)
PMW-1	2.04	22	11.10	185	1120	7.5
PMW-2	1.67	22	10.95	155	930	7.4
PMW-3	2.05	22	11.02	170	1150	7.2
PMW-4	2.12	23	11.31	155	1070	7.1

WATER RESOURCE SOLUTIONS

Date: 1/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site.

WATER RESOURCE SOLUTIONS

Date: 1/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site.

WATER RESOURCE SOLUTIONS

Date: 1/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site.

WATER RESOURCE SOLUTIONS

Date: 1/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site.
	Contractor collects pad monitor well samples.

WATER RESOURCE SOLUTIONS

Date: 1/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
	Contractor (Youngquist Brothers, Inc.) is setting up drilling rig and preparing site.

WATER RESOURCE SOLUTIONS

Date: 1/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler, F. Procta, T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time | **Description of Activities**

8:30 — Noah Kugler on-site. Contractor is mixing drilling mud and making final preparations to begin drilling at IW-1. A 12.25-inch pilot hole will be drilled to approximately 400 feet bpl, to identify any potential lost circulation zones, prior to reaming the hole to a nominal 54-inch diameter.

10:30 — Bottom hole assembly (BHA) in feet = 1.00 (bit) + 2.00 (sub) + 31.19 (drill collar 1) + 31.25 (drill collar 2)+ 29.30 (drill collar 3) + 30.24 (drill collar 4) = 124.98 feet. The bit is a 12.25-inch, tricone, button bit. The rig floor is 5.5 feet above pad level. 120-foot stands of drillpipe will generally be used during the project. Initially drillpipe will be picked up, added to drillstring one joint at a time, made up into 120-foot stands using rig's hydraulic system, and stood-back in the derrick upon tripping out.

11:00 — Analyze pad monitor well samples collected on 1/28/03. Future pad monitor well analysis will be summarized on a separate form.

Well #	Temp. (degrees C)	DTW (feet btoc)	Cl- (mg/L)	Cond. (Us/cm)	pH (SU)
PMW-1	24	11.30	155	910	7.4
PMW-2	24	11.08	150	900	7.4
PMW-3	24	11.21	170	1165	7.1
PMW-4	24	11.38	150	1110	7.0

12:45 — Pick up BHA with rig tongs and prepare to attach BHA to top head drive. Top head drive is receiving final maintenance.

13:45 — Contractor is still working on attaching BHA to top head drive.

15:00 — Rig is ready to drill. Waiting on set-up of geolograph.

15:45 — Frank Procta on-site.

16:20 — The bit is at 0 feet (pad level) and the Contractor is prepared to begin drilling. A 60-inch temporary pit casing was set to 8 feet bpl and plumbed in to the circulation system to act as a sump for drilling fluids, therefore, the bit will not make penetration with the formation until after 8 feet bpl. The temporary pit casing will be removed after cementing of the 48-inch casing.

16:47 — Begin advancing a 12.25-inch pilot hole at the site of well IW-1.

18:47	Top head drive down with BHA at 119.5 feet below pad level (bpl).
19:10	YBI crew currently performing planned rig maintenance.
19:35	Make connection w/ STAND #1.
19:52	Resume pilot-hole drilling at 120' bpl.
20:32	
21:29	Currently drilling with STAND #1 at 200 feet bpl. NOTE: Last recorded mud viscosity: 37 in and 39 seconds out. Mud weight at 8.7 lbs./gal.
21:43	Currently drilling with STAND #1 at 210 feet bpl. NOTE: Last recorded mud viscosity at 65 seconds.
22:05	Recorded mud weight at 8.8 lbs./gal., viscosity at 65 seconds.
22:48	Currently drilling with STAND #1 at 225 feet bpl.
23:11	Top head drive down with STAND #1 at 239.5 feet bpl.
23:30	Continue to circulate at bottom of borehole.
23:45	YBI crew begin early preparations for inclination surveys at 90' and 180'bpl
23:55	Todd Tubbert arrives on-site.
0:10	Frank Procta leaves the site.
0:35	Perform inclination surveys at 90' and 180' bpl. Results: 0.4 and 0.25 deg.
1:00	Connect (40') JOINT # 4.
1:16	Resume pilot-hole drilling at 239.5' bpl.
3:06	Top head drive down with JOINT # 4 at 279.5 feet bpl.
3:15	Connect (40') JOINT # 5.
3:20	Resume pilot-hole drilling at 279.5' bpl.
3:45	Top head drive down with JOINT # 5 at 319.5 feet bpl.
4:15	Connect (40') JOINT # 6.
4:30	Resume pilot-hole drilling at 319.5' bpl.
5:10	Top head drive down with JOINT # 6 at 359.5 feet bpl.
5:35	Perform inclination surveys at 270' and 360' bpl. Results: 0.5 and 0.6 deg.
6:00	Connect (40') JOINT # 7.
6:19	Resume pilot-hole drilling at 359.5' bpl.
7:00	YBI crew change.

Week 2

WATER RESOURCE SOLUTIONS

Date: 1/31/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
L. Holland
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Currently drilling pilot hole with 12.25-inch bit at approximately 387 feet bpl.
7:00	YBI crew change. Green clay was encountered at approximately 380 feet bpl, causing the rate of penetration to decrease significantly.
7:30	Noah Kugler on-site. Todd Tubbert off.
8:00	Slow rate of penetration (clay).
8:55	Encountered competent limestone at 393 feet bpl.
	Reached total depth for this portion of pilot hole at 400 feet bpl. Circulate hole
9:03	for approximately one hour.
10:00	Begin tripping out of hole with 12.25-inch bit.
11:10	Bit out of hole. Break 12.25-inch bit from drill string.
11:30	Make up nominal 54-inch bit.
13:00	Bit made-up. Begin reaming with nominal 54-inch bit.
13:30	Reaming suspended at 8 feet bpl to maintenance de-sander.
15:05	De-sander repaired. Continue reaming.
16:00	Frank Procta on-site.
	Noah Kugler leaves site. Currently reaming at approximately 47 feet bpl.
16:45	After this joint is drilled down, the stabilizer will be added to the drillstring.
	Currently YBI crew working with stabilizer positioned by the rig V-door in
18:00	preparation for connection with reaming bit assembly.
18:45	Raise stabilizer using top head drive unit and front-end loader.
18:55	Connect stabilizer to the bit assembly.
19:37	The stabilizer is lowered down the wellbore.
20:30	Begin reaming pilot hole with a 59-inch bit.
20:40	Currently reaming with JOINT #1 (40-foot long single) at 52 feet bpl.
23:30	YBI crew adjusting mud while circulating at 57 feet bpl.
23:50	Larry Holland arrives on-site.
0:05	Frank Procta leaves the site.
	Currently reaming with JOINT #1 (40-foot long single) at 65 feet bpl. Mud vis =
2:00	63, mud wt. = 9.2 lb.
	Currently reaming with JOINT #2 (40-foot long single) at 82 feet bpl. Mud vis =
4:00	63, mud wt. = 9.2 lb.
6:00	Currently reaming with JOINT #2 (40-foot long single) at 101 feet bpl.
	Currently reaming with JOINT #2 (40-foot long single) at 111 feet bpl. Mud vis
7:00	= 63, mud wt. = 9.2 lb.

8:00	Frank Procta on-site. Holland off. JOINT #2 down, 115 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 2/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
L. Holland

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
8:00	Frank Procta arrives on-site. Current ops. : Reaming with JOINT #2.
8:40	Currently reaming with JOINT #3 at 135.5 feet bpl.
8:50	Trika Nelson arrives on-site.
10:15	Top head drive down with JOINT #3 at 155.5 feet bpl.
10:30	Currently reaming with JOINT #4.
10:50	Currently reaming with JOINT #4 at 157 feet bpl.
12:28	Currently reaming with JOINT #4 at 179 feet bpl. NOTE: Last recorded mud weight at 9.2 lbs./gal.
14:55	Currently reaming with JOINT #4 at 187 feet bpl.
15:30	Header plate is currently being welded to the last joint of 48-inch conductor casing.
16:21	Currently reaming with JOINT #4 at 190 feet bpl.
18:15	Currently reaming with JOINT #4 at 192.5 feet bpl.
19:15	Crew currently servicing the rig at the shift change.
19:35	Make connection with JOINT #5 - resume reaming operations.
20:00	Larry Holland (WRS) arrives on-site.
	Frank Procta leaves the site.
22:00	Currently reaming with JOINT #5 at 195 feet bpl.
0:00	Currently reaming with JOINT #5 at 200 feet bpl.
0:01	Rig shut down to repair return mud line.
1:35	Mud line repaired. Rig operating again.
2:00	Currently reaming with JOINT #5 at 203 feet bpl.
4:00	Currently reaming with JOINT #5 at 211 feet bpl.
6:00	Currently reaming with JOINT #5 at 220 feet bpl.
7:00	Crew shift change. Currently reaming with JOINT #5 at 227 feet bpl.
7:50	Nelson on-site.
8:00	Holland off, Frank Procta arrives on-site.

WATER RESOURCE SOLUTIONS

Date: 2/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
8:00	Frank Procta arrives on-site. Current ops. : Reaming with JOINT #5.
8:22	Currently reaming with JOINT #5 at 228 feet bpl.
10:13	Lower shot tool (wireline) down the drill string to run inclination survey at 180 feet bpl.
10:35	Make connection with JOINT #6.
10:47	Resume reaming operations w/ JOINT #6 at 235.5 feet bpl.
13:00	Currently reaming with JOINT #6 at 265 feet bpl. NOTE: Last recorded mud weight at 9.4 lbs./gal., viscosity of 61 seconds.
14:30	Currently down for repairs - leaking hydraulic hose.
15:00	Top head drive down with JOINT #6 at 275.5 feet bpl.
15:18	Run inclination survey at 270 feet bpl.
15:40	Make connection with JOINT #7.
15:44	Resume reaming operations w/ JOINT #7 at 275.5 feet bpl.
16:50	Currently reaming with JOINT #7 at 289 feet bpl. YBI crew measuring joints of 48-inch steel casing.
17:45	Currently reaming w/ JOINT #7 at 296' bpl.
18:38	Currently reaming w/ JOINT #7 at 300' bpl.
19:22	Currently reaming w/ JOINT #7 at 303' bpl.
19:45	Frank Procta leaves the site.
	Larry Holland arrives on-site.
20:05	Make connection with JOINT #8.
20:08	Resume reaming operations w/JOINT #8 at 315.5 feet bpl.
22:00	Currently reaming w/JOINT #8 at 336 feet bpl. Increasing mud viscosity back to 60 seconds.
23:55	Complete reaming w/JOINT #8 at 355 feet bpl. Make connection with JOINT #9.
2:00	Currently reaming w/JOINT #9 at 374 feet bpl.
3:00	Currently reaming w/JOINT #9 at 379 feet bpl. Into clay at approx. 375 ft.
5:00	Currently reaming w/JOINT #9 at 386 feet bpl.
7:00	Currently reaming w/JOINT #9 at 395 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 2/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Noah Kugler on-site. Currently reaming with nominal 54-inch bit at 389 feet bpl. Slow progress through clay starting at approximately 375 feet bpl.
8:00	Larry Holland leaves site.
8:15	Noah calls Mark Pearce with progress update.
8:55	Cuttings indicate predominantly Clay with lesser amounts of Limestone at 390 feet bpl.
10:30	Cuttings indicate predominantly Clay with lesser amounts of Limestone at 392 feet bpl.
12:10	Cuttings indicate predominantly Clay with lesser amounts of Limestone at 393 feet bpl. Still very slow rate of penetration.
12:20	Noah off site for lunch.
13:00	Mr. Mohan Thampi visits site.
13:10	Cuttings indicate predominantly Clay with lesser amounts of Limestone at 394 feet bpl. Still very slow rate of penetration.
13:50	Reached top head drive down at 395 feet bpl. Circulate hole.
14:05	Run inclination survey at 360 feet bpl.
14:20	Pick up single 40-foot joint of drillpipe and attach to drillstring.
14:25	Resume reaming at 395 feet bpl. Inclination survey at 360 feet bpl = 0.5 deg
15:00	Cuttings indicate predominantly Limestone beginning at 396 feet bpl. Penetration rate has increased significantly.
15:30	Trika Nelson on-site for swing shift.
16:20	Currently reaming at 415 feet bpl. The Lithology has been competent Limestone from 396 to 415 feet bpl. Based on conversation with Mark Pearce and the Contractor, the 48-inch casing will be set at 410 feet bpl. Stop reaming at 415 feet bpl and circulate hole.
17:20	Noah Kugler leaves site.
18:25	Currently circulating hole at 415 feet bpl.
19:00	Stopped circulating hole.
19:15	Starting to trip out.
21:00	Begin wiper trip to 415 feet bpl.
22:00	Start circulating hole at 415 feet bpl.
22:45	End circulating, start to trip out of hole.

23:45	Finish tripping out of hole.
0:00	Started second wiper trip to clean hole due to a lot of drag on first wiper trip.
0:40	Trika Nelson leaves site.
0:45	Holland on-site.
1:30	Continuing to circulate in hole.
3:00	Continuing to circulate in hole.
4:30	Tripping out of hole to prepare for logger.
5:37	Geophysical logging truck arrives on site.
6:05	Going in hole with gamma ray/caliper tool.
7:03	Completed gamma ray and caliper logs. Out of hole.

WATER RESOURCE SOLUTIONS

Date: 2/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:15	Preparing rig to run 48-inch surface casing to 410 feet bpl.
7:45	Noah Kugler on-site.
8:00	Larry Holland leaves site.
8:25	Run casing Joint #1 in hole (cut piece). See casing log.
8:35	Raise Joint #2 and begin welding Joint #2 to Joint #1.
9:25	Weld Complete. Lower Joint #2 into hole.
9:30	Raise Joint #3 and begin welding Joint #3 to Joint #2.
9:45	Contractor begins sampling pad monitor wells.
10:00	Weekly progress meeting at trailer with Noah Kugler, Mark Pearce and Ronnie Thames.
10:18	Weld Complete. Lower Joint #3 into hole.
10:24	Raise Joint #4 and begin welding Joint #4 to Joint #3.
11:12	Weld Complete. Lower Joint #4 into hole.
11:17	Raise Joint #5 and begin welding Joint #5 to Joint #4.
12:02	Weld Complete. Lower Joint #5 into hole.
12:05	Raise Joint #6 and begin welding Joint #6 to Joint #5.
12:48	Weld Complete. Lower Joint #6 into hole.
12:52	Raise Joint #7 and begin welding Joint #7 to Joint #6.
13:31	Weld Complete. Lower Joint #7 into hole.
13:35	Raise Joint #8 and begin welding Joint #8 to Joint #7.
14:19	Weld Complete. Lower Joint #8 into hole.
14:22	Raise Joint #9 and begin welding Joint #9 to Joint #8.
14:30	Mike Sordan (cementer) on-site and figuring cement calculations. Trika Nelson on site.
15:13	Weld Complete. Lower Joint #9 into hole.
15:15	Contractor is preparing cement truck and hoses for cementing
17:10	Cement tremie set at 405 feet bpl inside casing.
17:20	Install stripper head.
17:33	Attach cement header to tremie.
17:34	Begin freshwater pre-flush.
17:38	Finish freshwater pre-flush (15 bbls).

17:39	Begin pumping Stage #1 cement mixed with 12% bentonite gel by pressure grout (see cementing log for summary). 12% head will be followed by neat tail to surface. Caliper log indicates approx. 560 bbls as theoretical annular fill volume, with a necessary pressure of approx. 100 psi to lift cement to surface.
18:13	Switch to neat cement.
19:05	See cement at surface.
19:06	Stop cementing. Total volume pumped 532 bbls.
19:06	Start fresh water chase.
19:08	End fresh water chase. Total fresh water chase 4.5 bbls.
19:08	Detach header & clear lines.
19:12	Release stripper head, pull tremie up 80 feet and re-seal stripper head.
19:27	Noah Kugler leaves site.
20:15	Trika Nelson leaves site.

WATER RESOURCE SOLUTIONS

Date: 2/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:55	Noah Kugler on-site. Preparing to run cement top temperature log of Stage #1 cement for the 48-inch casing. Cement returns were noted at surface at the end of Stage #1.
8:00	Tim Dennison (Florida Geophysical) is on-site to run temperature log. Begin setting up logging truck and logging tool.
9:00	Issues with the logging cable have delayed the running of the temperature log. Contractor working to solve problem.
9:10	Problem with cable resolved. Begin running temperature tool in hole and recording temperature downward.
9:30	Temperature tool on bottom, log complete.
10:00	Contractor will begin converting circulation system from mud-rotary to reverse-air. Plan to resume drilling 12.25-inch pilot hole on Thursday (2/6/03) in the evening.
10:25	Analyze pad monitor well samples. Results presented on separate form.
11:45	Noah leaves site. NO SITE ACTIVITY EXCEPT CIRCULATION SYSTEM CONVERSION.

WATER RESOURCE SOLUTIONS

Date: 2/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
12:10	Noah Kugler on site. Contractor is making finally preparations to resume drilling 12.25" pilot hole beginning with cement plug at 408 feet bpl, and into formation at 415 feet bpl. Circulation system has been converted to reverse-air. Drill bit is in the hole at 407 feet bpl (1 foot above cement plug inside 48-inch casing).
14:35	Trika Nelson on site.
16:00	Still waiting on final circulation system conversions.
16:50	Prepare to run in reverse-air tubing inside drill pipe. Tubing will be set at 300 feet bpl for the first part of well.
17:15	Begin running-in reverse-air tubing inside drill pipe.
18:20	Noah Kugler leaves site.
18:40	Finish circulation conversions. Troubles starting compressor.
19:20	Compressor broke down. Currently fixing compressor.
19:36	Tag cement at 408 feet bpl. Start drilling.
19:38	Stop drilling. Pulled up 60 feet. No returns, problem with circulation system. Currently fixing problem.
20:20	Currently fixing air line.
20:50	Air line fixed. Resume pilot hole drilling.
21:18	Drilling with JOINT # 8 at 408 feet bpl.
21:40	Drilling with JOINT # 8 at 415 feet bpl.
23:15	Complete pilot hole drilling with JOINT # 8 at 439.5 feet bpl. Make connection with JOINT # 9 (40').
23:45	Trika Nelson leaves site.
0:08	Resume pilot hole drilling with JOINT # 9.
0:46	Top head drive down with JOINT #9 at 479.5 feet bpl. Perform inclination survey at 450 feet bpl = 0.1 degree dev.
1:30	Make connection with JOINT # 10 (40') and resume pilot hole drilling.
2:10	Top head drive down with JOINT #10 at 519.5 feet bpl.
2:48	Make connection with JOINT # 11 (40') and resume pilot hole drilling.
3:25	Top head drive down with JOINT #11 at 559.5 feet bpl. Perform inclination survey at 540 feet bpl = 0.1 degree dev.
4:07	Make connection with JOINT # 12 (40') and resume pilot hole drilling.

4:48	Top head drive down with JOINT #12 at 599.5 feet bpl.
5:18	Make connection with JOINT # 13 (40') and resume pilot hole drilling.
5:49	Top head drive down with JOINT #13 at 639.5 feet bpl. Perform inclination survey at 630 feet bpl = 0.1 degree dev.
6:24	Make connection with JOINT # 14 (40') and resume pilot hole drilling.
7:00	Currently drilling at approximately 660 feet bpl.

Week 3

WATER RESOURCE SOLUTIONS

Date: 2/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently drilling 12.25-inch pilot hole at 660 feet bpl.
7:45	Top head drive down with JOINT # 14 at 679.5 feet bpl. Noah Kugler on-site. Holland off.
7:55	Connect JOINT #15 (40'). Resume drilling pilot hole.
9:38	Top head drive down with JOINT #15 at 719.5 feet bpl.
10:00	Connect JOINT #16 (40'). Resume drilling pilot hole.
11:10	Top head drive down with JOINT #16 at 759.5 feet bpl. Perform inclination survey at 720 feet bpl = 0.5 degrees dev.
11:49	Connect JOINT #17 (40'). Resume drilling pilot hole.
12:25	Top head drive down with JOINT #17 at 799.5 feet bpl.
12:45	Connect JOINT #18 (40'). Resume drilling pilot hole.
13:36	Top head drive down with JOINT #18 at 839.5 feet bpl. Perform inclination survey at 810 feet bpl = 0.5 degrees dev.
14:10	Connect JOINT #19 (40'). Resume drilling pilot hole.
14:50	Top head drive down with JOINT #19 at 879.5 feet bpl.
14:55	Trika Nelson arrives onsite.
15:17	Connect JOINT #20 (40'). Resume drilling pilot hole.
16:00	Top head drive down with JOINT #20 at 919.5 feet bpl. Perform inclination survey at 900 feet bpl = 0.5 degrees dev.
16:25	Kugler off site.
16:30	Connect JOINT #21 (40'). Resume drilling pilot hole.
17:05	Top head drive down with JOINT #21 at 959.5 feet bpl.
17:06	Connect JOINT #22 (40'). Resume drilling pilot hole.
18:18	Top head drive down with JOINT #22 at 999.5 feet bpl. Perform inclination survey at 990 feet bpl = 0.5 degrees dev.
19:20	Connect JOINT #23 (40'). Resume drilling pilot hole.
20:00	Top head drive down with JOINT #23 at 1039.5 feet bpl.
20:12	Connect JOINT #24 (40'). Resume drilling pilot hole.
:20:48	Top head drive down with JOINT #24 at 1079.5 feet bpl.
21:00	Connect JOINT #25 (40'). Resume drilling pilot hole.
21:52	Top head drive down with JOINT #25 at 1119.5 feet bpl. Perform inclination survey at 1080 feet bpl = 0.5 degrees dev.
22:18	Connect JOINT #26 (40'). Resume drilling pilot hole.
22:50	Top head drive down with JOINT #26 at 1159.5 feet bpl.

23:15	Connect JOINT #27 (40'). Resume drilling pilot hole.
23:57	Top head drive down with JOINT #27 at 1199.5 feet bpl. Perform inclination survey at 1170 feet bpl = 0.5 degrees dev.
0:00	Tubbert arrives on site. Nelson leaves site.
0:33	Connect JOINT #28 (40'). Resume drilling pilot hole.
1:00	Top head drive down with JOINT #28 at 1239.5 feet bpl.
1:22	Connect JOINT #29 (40'). Resume drilling pilot hole.
1:50	Top head drive down with JOINT #29 at 1279.5 feet bpl. Perform inclination survey at 1260 feet bpl = 0.5 degrees dev.
2:20	Connect JOINT #30 (40'). Resume drilling pilot hole.
2:50	Top head drive down with JOINT #30 at 1319.5 feet bpl.
3:15	Connect JOINT #31 (40'). Resume drilling pilot hole.
3:30	Reach Total Depth with JOINT #31 at 1350 feet bpl.
4:30	Crew preparing to pump water down hole from slurry pit
7:00	YBI crew shift change. Continue mixing kill.
7:45	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 2/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
8:00	Frank Procta arrives on-site. Current ops. : Crew mixing kill fluid.
9:20	Continue to mix barite to kill the well flow before tripping out drill string.
9:42	Re-tag the bottom of the borehole to determine the presence of any fill. Result: Tagged at 1350' bpl, the original termination depth.
9:55	Run wireline down the drill string in preparation for inclination survey at 1350' bpl.
10:40	Currently tripping out air line.
11:05	Mark Pearce calls for update of site status.
11:25	Currently tripping out the drill string.
12:45	YBI crew continue to kill well flow while loggers standby on-site.
14:45	Run logging tool down the wellbore.
14:46	Begin recording temperature on the downhole run from a depth of 395' bpl at a logging speed of approximately 40 feet/minute.
15:08	Reach termination depth - begin uphole (caliper/gamma ray tool). NOTE: A knot is seen in the cable while running the tool uphole.
15:25	Loggers work to untangle the knot in the logging cable.
15:32	Discover a second larger knot in the cable - loggers move to repair it.
15:55	Update Mark Pearce of current site operations.
15:59	Update Todd Tubbert (WRS) of current site operations.
16:10	Tim Denison of YBI explains that a section of the cable has been damaged and must be cut and the cable respooled before resuming logging activities. The delay may be two hours. NOTE: The tool never reached the bottom of the borehole as first indicated by the depth recorder.
17:53	Cable repairs are made, loggers prepare the dual induction tool.
18:05	Begin to lower the dual induction tool down the wellbore. NOTE: The tool is soon hung up at a depth of 414' bpl (as the tool leaves the casing and enters the 12.25-inch pilot hole) - plan to trip in drill pipe to a depth just below the conductor casing.
18:30	Crew begin tripping in drill pipe (three stands of 120 feet plus two 30-foot joints).
19:45	Lower the dual induction tool down the wellbore.

19:50	Retrieve the tool as it hangs up in the wellbore. NOTE: Plan to add another stand of drill pipe to the string and convey the tool past any obstruction.
20:00	Frank Procta leaves the site.
20:05	Todd Tubbert on-site.
20:25	Drill string hung up at 415' bpl. Plan on attaching drill bit and running bit to TD to clear obstruction.
21:00	Crew pumping water down hole from slurry pit
23:30	Crew mixing barite mud to kill well flow.
0:00	Trip out drill string and air line.
0:30	Trip in 3 Stands of drill pipe.
1:30	Begin reaming with 12.5" drill bit to TD.
4:00	Continue reaming with 12.5" bit.
5:30	Continue reaming with 12.5" bit.
7:00	Continue reaming with 12.5" bit at approximately 640' bpl.
7:40	Continue reaming with 12.5" bit.
7:45	Frank Procta arrives on-site.
7:50	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 2/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:45	Frank Procta arrives on-site. Current ops. : Drilling pilot hole with 12.25-inch bit to clear original borehole to allow clearance for logging tools.
8:00	Currently drilling w/ STAND #5 at 557 feet bpl.
8:05	Call Mark Pearce with update of current site operations.
9:08	Top head drive down with STAND #5 at 598' bpl.
10:25	Currently drilling w/ STAND #6.
12:35	Currently the crew is tripping out the air line.
15:06	Crew begin tripping in the air line.
15:34	Resume drilling operations.
15:45	Top head drive down with STAND #5 at 598' bpl.
17:50	Currently drilling w/ STAND #6 at 777 feet bpl. NOTE: This string includes one 120-foot drill collar. Few cuttings are seen in the discharge fluid.
18:30	Add STAND #7 to the drilling string.
18:35	Resume drilling operations (redrilling the 12.25-inch pilot hole).
19:20	Frank Procta leaves the site.
20:30	Todd Tubbert arrives on-site. Current ops.: Drilling with STAND # 8.
21:30	Top head drive down with STAND #8.
22:30	Add STAND #9 to the drilling string.
23:20	Currently drilling with STAND # 9 at 1090' bpl.
0:40	Top head drive down with STAND #9 at 1198' bpl.
0:55	Add STAND # 10 to the drilling string.
2:50	Top head drive down with STAND #10 at 1318' bpl.
3:15	Add STAND # 11 to the drilling string.
5:30	Pilot hole stopped at approx. 1450 feet bpl. Begin tripping out reverse- air tubing and drill string.

WATER RESOURCE SOLUTIONS

Date: 2/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler speaks with Ronnie Thames (YBI Site Supervisor) and Todd Tubbert regarding current ops. The 12.25-inch pilot hole has been swabbed/cleaned-out to approximately 1450 feet bpl. The Contractor will trip out of hole and run logging tool on wireline to verify depth of pilot hole.
7:30	Noah Kugler on-site. Currently killing flow in drill pipe with barite.
8:00	Todd Tubbert leaves the site.
8:30	Flow in drill pipe has been killed using 200 lbs. of barite. Continue tripping out of hole.
9:05	Drill pipe and drill collars and bit have been tripped out. The Contractor will attach 8-inch to 6-inch bell nipple to bottom of drill pipe Stand #1 and trip in hole to 413 feet bpl (three feet below base of 48-inch casing). Three stands (120 feet X 3) + two single 30-footers (30 feet X 2) will be tripped in (-7 feet for drill pipe above pad). Logging tools will be run down the drill pipe to keep them centralized until in the open hole.
9:45	Geophysical loggers (Tim Dennison and Joel Barret) are on-site to run suite of geophysical logs in 12.25-inch pilot hole. To be run: dual induction, caliper/ gamma, sonic porosity, temperature, static and dynamic flow logs.
10:25	Bottom of hole has been tagged at 1456 feet bpl. Prepare dual induction tool for logging.
11:05	Run in hole with dual induction tool.
11:20	Dual induction tool at total depth. Begin logging up hole.
11:45	Dual induction log complete. Calibration gains look good. Run tool out of hole.
11:59	Dual induction tool out of hole. Prepare to run temperature log and caliper/ gamma logs.
12:05	Run in hole with temperature and caliper/gamma tools.
12:10	Begin running temperature log down hole.
12:35	Temperature log complete. Tools at bottom of hole (1456 feet bpl). Begin running caliper/gamma logs uphole.
13:20	Caliper/gamma tools inside drill pipe at 413 feet bpl. Logging complete. Run tools out of hole.

13:32	Temperature and caliper/gamma tools out of hole. Prepare BHC sonic porosity tool for logging.
14:50	BHC sonic porosity tool is in hole. Calibrate
15:00	Begin running BHC sonic porosity log down hole.
15:35	BHC sonic porosity log has been complete. Loggers prepare merged TDS log to help pick USDW. Remove tool from hole. Prepare to run static flow log.
16:00	Frank Procta on. Noah Kugler off.
16:35	Currently recording data on down pass (static flow meter) at 60 feet/min.
16:55	Logger hangs tool at a depth of 359' bpl (inside casing) as the static log is completed. Crew prepare surface pump for running a dynamic flow log. NOTE: Using a 25-foot pvc drop pipe connected to a high-pressure hose and centrifugal pump.
17:24	Begin recording data on down pass (dynamic flow meter) at a logging speed of 60 feet/minute. NOTE: Pumping rate measured through the hose at 375 gpm.
17:56	End pumping. Logger works on merging plots.
18:20	Remove the flow tool from the wellbore.
19:00	Call Mark Pearce with update of logging operations. Mark Pearce directs the contractor to plug back, using cement, the over-drilled section of the pilot hole (1350-1456 feet bpl) to 1350' bpl, the original termination depth of the pilot hole.
19:30	Frank Procta faxes the logging plots to WRS office for Mark Pearce.
20:28	Currently the crew is mixing kill fluid (gel and barite).
22:20	YBI crew begin early preparations for plugging back the over-drilled section of the pilot hole. NOTE: Theoretical fill volume for the over-drilled section of the pilot hole (1450 to 1350 ft.,bpl), based on the caliper log, is 19 barrels. Plan to pump, by tremie using 2 3/8-inch steel tubing, 12% gel mixed w/ cement and added CaCl accelerator.
0:00	Todd Tubbert arrives on-site.
0:10	Frank Procta leaves the site.
0:30	After additional review of caliper log along with the tag depth of 1456' bpl, theoretical fill volume is estimated at 22 bbls. Conversed and reviewed caliper and sonic logs with Mike Sordan. Plan is to pump 22bbls of cement, 12% gel mixed with CaCl accelerator.
0:45	Crew continues tripping cement tubing. NOTE: 47 joints of cement tubing will be tripped in for a depth of 1445.78 plus 20' of subs for a total of 1465.78'. There is 5.5' from pad to floor and approximately 5' will be above pad level, bringing total depth to 1456' bpl.
1:00	Repair being made to lever in drillers cockpit.
2:10	Resume tripping in cement tubing with joint #21.
2:50	Finish tripping in cement tubing.
2:55	Connect header to cement tubing.
3:00	Begin fresh water pre-flush.

3:07	End pre-flush with 25 bbls of fresh water.
3:15	Begin pumping cement.
3:21	Finish pumping/begin freshwater flush. Note: 22 bbls of cement have been pumped with a weight of 12.6 ppg.
3:25	Trip out 5 dbls of cement tubing and 20' of subs.
3:40	Second fresh water flush with 6 bbls.
3:44	Raise cement tubing 60' above pad level.
3:45	Waiting on cement.
	NOTE: A hard tag will be made at 7:30 - 8:00am depending on hardness of samples. (3 cubes and three cups of cement samples have been taken)
4:00	There will be no further site activity until morning shift.
4:30	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 2/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:00	Noah Kugler calls Ronnie Thames for site update. Currently waiting for cement to set. The 12.25-inch pilot hole was cemented back from 1456 to approximately 1350 feet bpl using 22 bbls cement.
8:15	Noah Kugler on-site. Waiting on cement.
9:45	Mark Pearce on-site for weekly meeting. Discuss setting single packer at 1200 feet bpl and evacuating water to collect formation sample.
10:00	Jack Breland (WRS) on-site for project orientation.
11:45	Mark Pearce and Jack Breland leave site.
10:50	Hard tag cement in pilot hole at 1357 feet bpl with tremie pipe.
11:05	Begin tripping out tremie pipe.
12:55	Tremie pipe is out of hole. Prepare to run packer in hole. Set centerline of packer as follows: 10 stand of drill pipe (10X120 feet) + distance to center-line of packer (6.60 feet) - drill pipe above pad level (8 feet) = 1198.4 feet bpl. A 5-hp submersible pump will be set inside the drill string at 180 feet bpl.
13:15	Noah and Ronnie confirm packer setting depth.
14:10	Crew begins tripping out remaining drill pipe that was set to 420 feet to guide tremie into 12.25 pilot hole. Need to control flow.
15:25	Drill pipe out of hole. Used approx. 4200 lbs. barite to control flow while tripping.
16:00	Crew preparing to attach packer to drill pipe. Noah Kugler off, Frank Procta on. NOTE: Current ops. : Crew are killing the well in preparation for tripping in the packer string.
16:30	Calculate open hole and drill stem volumes. Plan to pump out 5 well volumes (that is, combined 160-foot open hole plus 1200-foot drill stem volume). NOTE: One well volume is equal to 2,866 gallons.
17:35	Lower the packer w/ 40-foot single (to be a part of STAND #1) joint of drill pipe down the wellbore.
18:00	Frank Procta completes filling out the chain-of-custody forms for the reverse-air 30-foot water samples.
18:30	Lower STAND #1 down the wellbore. NOTE: There remains 15 stands of 120-foot drill pipe and 1 collar stand on the derrick.

18:58	Lower STAND #2 down the wellbore.
19:00	Driller's shift change.
20:30	Crew begin early preparations to inflate the packer. The last stand of drill pipe (STAND #10) has been tripped in.
20:50	Set the annular pressure transducer (INPUT 1) at 55 feet below the rig floor or 49.5 feet bpl.
21:00	Lower the packer string to 2.5 feet above rig floor placing the centerline of packer at 1198.5 feet bpl.
21:02	Begin inflating the packer. NOTE: Using a 5-hspr. submersible pump connected to 3 doubles of cement tubing plus 4.5 feet from top of pump to the pump intake gives a total pump string length of 189.25 feet. Pump intake set at 180' bpl.
21:30	Crew work to assemble pump string.
22:24	Record packer pressure steady at 375 psi.
22:30	Connect header to packer string.
22:34	Begin tripping in the pump string.
22:40	Pressure up packer to 422 psi. NOTE: Pressure transducer set in the drill stem at 169 feet bpl (INPUT 6), annular transducer set at 49.5 feet bpl (INPUT 1)
23:40	Record head in the drill stem (INPUT 6) at 162.98 feet.
23:45	Record packer pressure at 400 psi.
23:46	Todd Tubbert on-site. Review tonights work plan with frank.
0:00	Frank Procta leaves the site.
0:05	Both transducers are recording background (static water levels). (TEST 1)
0:35	Beginning totalizer reading : 8016_{00}
0:38	Pre-test water levels: 46.054 Annulus (input 1), 163.095 drill pipe (input 5)
0:41	Begin Pump test (TEST 2)
0:47	Pumping at 74 gal/min
0:49	Water levels: 46.895 Annulus (input 1), 156.501 drill pipe (input 5)
1:05	Water levels: 46.963 Annulus (input 1), 160.405 drill pipe (input 5), Collect water sample: Conductivity = 18,600 mS. Pump rate = 73 gal/min.
1:25	Water sample: Conductivity = 30,800 mS
1:36	Water levels: 47.148 Annulus (input 1), 161.032 drill pipe (input 5), Pump rate = 73 gal/min. (NOTE: 4000 gals have been pumped.)
1:45	Water sample: Conductivity = 33,700 mS
2:05	Water levels: 47.315 Annulus (input 1), 160.519 drill pipe (input 5), Collect water sample: Conductivity = 36,200 mS. Pump rate = 73 gal/min.
2:35	Water levels: 47.469 Annulus (input 1), 159.849 drill pipe (input 5), Collect water sample: Conductivity = 38,500 mS. Pump rate = 75 gal/min. (NOTE: 8400 gals have been pumped)
3:05	Water levels: 47.618 Annulus (input 1), 159.291 drill pipe (input 5), Collect water sample: Conductivity = 40,100 mS. Pump rate = 75 gal/min. (NOTE: 10,600 gals have been pumped: 3.7 well volumes)

3:35	Water levels: 47.740 Annulus (input 1), 158.811 drill pipe (input 5), Collect water sample: Conductivity = 41,800 mS. Pump rate = 73 gal/min. (NOTE: 12,600 gals have been pumped: 4.4 well volumes)
4:05	Water levels: 47.857 Annulus (input 1), 158.330 drill pipe (input 5), Collect water sample: Conductivity = 42,600 mS. Pump rate = 73 gal/min. (NOTE: 14,900 gals have been pumped: 5.2 well volumes)
4:25	Collect 4 water samples, label and place into refrigerator.
4:26	Shut in pump: Step the data logger to record recovery (NOTE: Final totalizer reading is 8178_{00}) Total gallons pumped = 16200 gallons or 5.7 well volumes.
5:26	Water levels: 48.079 Annulus (input 1), 170.283 drill pipe (input 5)
7:00	Water levels: 48.273 Annulus (input 1), 170.163 drill pipe (input 5)
7:02	End recovery - stop recording on data logger.
7:10	Update Noah Kugler via phone.
7:20	Todd Tubbert leaves the site.

Week 4

WATER RESOURCE SOLUTIONS

Date: 2/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently reaming with nominal 42-inch bit on STAND #5 at 577 feet bpl. Examination of three separate cuttings samples revealed no cement. Cement is difficult to identify in clay and marl. NOTE: Specific capacity calculated from the drillstem packer test that was performed on 2/11/03 over the interval from 1198 to 1357 feet bpl = 73 gpm/ 12 feet drawdown = 6 gpm/ft.
7:15	Temporarily suspend drilling to service the rig.
7:30	Converse with Noah Kugler via phone for operations update.
7:35	Resume drilling.
7:50	Currently reaming with STAND #5 at 583 feet bpl. NOTE: Examination of cuttings samples revealed no cement.
8:00	Noah Kugler on-site.
8:06	Todd Tubbert leaves the site
9:10	Currently reaming with STAND #5 at 596 feet bpl. Examination of cuttings reveals presence of cement. Cement is minor and hard to see due to highly turbid circulation water and formation clay.
9:50	Currently reaming with STAND #5 at 599 feet bpl. Cuttings reveal presence of cement.
10:40	Currently reaming with STAND #5 at 606 feet bpl. Cuttings reveal presence of cement.
11:30	Currently reaming with STAND #5 at 614 feet bpl. Cuttings reveal presence of cement.
12:15	Currently reaming with STAND #5 at 622 feet bpl. Cuttings reveal presence of cement. Lithology change from clay to predominantly limestone since last sample.
13:20	Top head drive down with Stand #5 at 637 feet bpl. Perform inclination survey at 590 feet bpl.
13:55	Make connection with Stand #6 and resume reaming. Inclination survey at 590 feet bpl = 0.25 degrees dev.
14:30	Currently reaming with STAND #6 at 643 feet bpl. Cuttings reveal presence of cement.
15:20	Currently reaming with STAND #6 at 646 feet bpl. Cuttings reveal presence of cement.

16:00	Frank Procta on-site. Currently reaming with STAND #6 at 649 feet bpl.
16:30	Noah kugler off.
17:15	Currently reaming w/ STAND #6 at 658.5 feet bpl. Cuttings reveal presence of cement.
17:35	Mark Pearce calls for current site status.
18:50	Currently reaming w/ STAND #6 at 663 feet bpl. Examination of cuttings reveals no cement fragments. Jack Breland (WRS) arrives on site.
19:50	Frank Procta orients Jack to the reaming operation and the site. Jack Breland off site after orientation.
20:33	Currently reaming w/ STAND #6 at 682.5 feet bpl. Examination of cuttings reveals no cement fragments. NOTE: The pilot-hole cement may not show up in the cuttings due to the action and design of the reaming bit as a short-toothed non-aggressive button bit is positioned in the center surrounded by long mill-toothed rollers. The reaming bit may be tracking the pilot hole but the cement is being pulverized due to the action of this center bit.
21:00	Update Mark Pearce of current status of reaming operations.
22:20	Currently reaming w/ STAND #6 at 694 feet bpl. Examination of cuttings reveals trace amounts of cement.
23:30	Currently reaming w/ STAND #6 at 702 feet bpl. Examination of cuttings reveals no cement fragments.
23:45	Jack Breland (WRS) arrives on-site.
0:00	Frank Procta leaves the site.
1:00	Reaming at the depth of 712 feet bpl. Traces of cement fragments were noticed in the cuttings. WOB-(8-12 lbs).
2:00	Reaming at the depth of 714 feet bpl. No cement fragments were noticed in the cuttings. Drilling slow. Noticed hard dolomitic layers in the cuttings.
3:05	Reaming at the depth of 715 feet bpl. No cement fragments were noticed in the cuttings. Drilling very slow . WOB-(15-20 lbs)
4:00	Reaming at 717 feet bpl. Samples indicate very hard dolomitic limestone.
5:10	Still reaming with STAND #6 at 719 ft. bpl. Noticed traces of cement frags.
6:00	Reaming at the depth of 723 ft bls. WOB-(8-12 lbs). No cement fragments noticed. Picking up white,soft,cohesive clay chunks in the cuttings.
7:00	Reaming at the depth of 729 ft bls. WOB-(8-12 lbs). Traces of cement fragments noticed in the cuttings. .
7:30	Trika Nelson on site. Reaming at the depth of 729 ft. bls.
8:00	Jack Breland (WRS) off-site.

WATER RESOURCE SOLUTIONS

Date: 2/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Trika Nelson on site. Reaming at the depth of 729 ft. bpl with nominal 42-inch bit.
8:00	Jack Breland (WRS) off-site.
8:10	Still reaming with STAND #6 at 731 ft. bpl.
9:00	Still reaming with STAND #6 at 734 ft. bpl. Traces of cement fragments noticed. Picking up white,soft,cohesive clay chunks in the cuttings.
9:45	Air compressor broke down. Hooking up second air compressor.
10:13	Second air compressor hooked up.
10:45	Still fixing technical difficulties.
11:00	Still reaming with STAND # 6 at 736 ft. bpl. No cement fragments noticed in cuttings.
11:30	Still reaming with STAND # 6 at 737 ft. bpl. Traces of cement fragments present in cuttings.
12:15	Still reaming with STAND # 6 at 740 ft. bpl.
13:10	Still reaming with STAND # 6 at 743 ft. bpl. Samples indicate very soft marl with traces of cement.
14:07	Still reaming with STAND # 6 at 745 ft. bpl. Samples indicate abundant very soft marl with traces of cement fragments noticed.
15:06	Still reaming with STAND # 6 at 747 ft. bpl. Samples indicate abundant very soft marl with no fragments of cement noticed.
16:03	Still reaming with STAND # 6 at 747 ft. bpl.
17:00	Still reaming with STAND # 6 at 748.5 ft. bpl. Samples indicate very soft marl with traces of cement noticed.
17:25	Still reaming with STAND # 6 at 751 ft. bpl.
18:17	Still reaming with STAND # 6 at 753 ft. bpl. No fragments of cement present in cuttings.
18:50	Top head drive down with STAND # 6 at 757 feet bpl. Youngquist switching crews. Temporarily suspend drilling to service the rig.
19:07	Perform inclination survey at 680 feet bpl.
19:30	Mark Pearce calls for an update.
19:35	Make connection with STAND # 7 and resume reaming. Inclination survey at 680 feet bpl = 0.5 degrees dev.

19:42	Took STAND # 7 down, replacing airline cable. Jack Breland on site.
19:50	Trika Nelson off site.
21:00	Replaced airline connection cable. There were some frayed areas on the cable line near the connection face.
21:15	On bottom reaming at the beginning of STAND #7. Depth is 757 ft bpl.
22:00	Reaming at the depth of 760 ft. bpl. No noticeable cement fragments.
23:10	Reaming at the depth of 772 ft. bpl. No cement fragments were noticed in the cuttings.
0:40	Reaming at the depth of 778 ft. bpl. Traces of cement fragments and very hard phosphatic grains were noticed in the cuttings. WOB-(15-20 lbs).
1:30	Reaming STAND #7 at the depth of 793 ft. bpl.
2:15	Reaming at the depth 799 ft. bpl. Some cement fragments were noticed.
3:20	Reaming at the depth of 802 ft. bpl. Traces of cement fragments were noticed in the cuttings. WOB-(8-12 lbs).
4:45	Reaming STAND #7 at the depth of 808 ft. bpl.
0:00	Reaming at the depth of 813 ft. bpl. WOB- (8-12 lbs).
6:20	Reaming at the depth of 817 ft. bpl. No cement cuttings were noticed.
7:20	Reaming STAND #7 at the depth of 827 ft. bpl. YBI shift change occurred at 0700 hours.
7:35	Trika Nelson on site. Jack Breland off site.

WATER RESOURCE SOLUTIONS

Date: 2/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:35	Trika Nelson on site. Jack Breland off site.
8:30	Reaming with nominal 42-inch bit on STAND # 7 at the depth of 837 ft. bpl. Traces of cement fragments were noticed in the cuttings. WOB-(8-12 lbs).
9:32	Reaming with STAND # 7 at the depth of 847 ft. bpl. No fragments of cement were seen in cuttings. WOB 8 lbs.
10:30	Reaming with STAND # 7 at the depth of 857 ft. bpl. No fragments of cement were seen in cuttings.
11:28	Reaming with STAND # 7 at the depth of 859 ft. bpl. Traces of cement fragments were noticed in cuttings.
12:30	Reaming with STAND # 7 at the depth of 868 ft. bpl.Traces of cement fragments were noticed in cuttings. WOB 10 lbs.
13:30	Reaming with STAND # 7 at the depth of 876 ft. bpl. No fragments of cement were seen in cuttings. WOB 10 lbs.
13:45	Top head drive down with STAND # 7 at 877 feet bpl. Servicing rig.
14:20	Perform inclination surveys at 770 feet bpl & 860 feet bpl.
15:24	Make connection with STAND # 8 and resume reaming. Inclination survey at 770 feet bpl = 0.5 degrees dev & inclination survey at 860 feet bpl = 0.8 degrees dev.
16:00	Traces of cement fragments were noticed in cuttings.
16:33	Reaming with STAND # 8 at the depth of 883 ft. bpl.
17:33	Reaming with STAND # 8 at the depth of 886 ft. bpl. Traces of cement fragments were noticed in cuttings.
18:27	Reaming with STAND # 8 at the depth of 890 ft. bpl. No fragments of cement were seen in cuttings.
19:00	YBI shift change.
19:30	Reaming with STAND # 8 at the depth of 891 ft. bpl
19:52	Jack Breland on site. Trika Nelson off site.
20:20	Reaming at 894 ft. bpl. WOB-(8-12 lbs.) Traces of cement fragments.
20:55	Raining.
21:20	Drizzling rain. Reaming STAND #8 at the depth of 912 ft. bpl.
22:30	Still drizzling rain. Traces of cement fragments in cuttings. Depth 916 ft.bpl.

23:30	Reaming at 919 ft. bpl. WOB-(12 lbs.) Cobble size cement fragments were noticed in the cuttings.
0:50	Reaming at the depth of 924 ft. bpl. WOB-(8lbs).
1:00	Reaming at the depth of 930 ft. bpl. WOB-(8lbs). Noticed traces of cement fragments in the cuttings. Rain is starting to pick up. Note: Roof above the light in the trailer is starting to leak.
2:45	Reaming at the depth of 936 ft. bpl. Traces of cement fragments were noticed in the cuttings . WOB-(8-12 lbs). Rain has stopped.
3:42	Reaming at the depth of 938 ft. bpl. Traces of cement fragments.
4:30	Reaming STAND #8 at the depth of 945 ft. bpl. No notice any cement fragments in the cuttings. WOB- (8 lbs).
5:20	Reaming at the depth of 958 ft. bpl. WOB (8-12 lbs). Traces of cement fragments noticed in the cuttings.
6:15	Reaming STAND #8 at the depth of 968 ft. bpl. WOB- (8-12 lbs).
7:00	Stopped drilling during YBI Shift change. Reaming at the depth of 971 ft. bpl. Traces of cement fragments were noticed in the cuttings.

WATER RESOURCE SOLUTIONS

Date: 2/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Stopped drilling during YBI Shift change. Reaming at the depth of 971 ft. bpl with nominal 42-inch bit. Traces of cement fragments were noticed in the cuttings.
7:30	Reaming at the depth of 972 ft. bpl. WOB (8-12 lbs).
7:45	Noah Kugler on site. Jack Breland off site.
8:20	Reaming at the depth of 983 ft. bpl. WOB (8-12 lbs). Lithology has become marly, probably contributing to low rate of penetration.
9:40	Reaming at the depth of 990 ft. bpl. WOB (8-12 lbs). Still in marl/light-colored clay. Cement fragments were noted in the cuttings.
10:30	Reaming at the depth of 996 ft. bpl. WOB (8-12 lbs). Still in marl/light-colored clay. Large cement fragments were noted in the cuttings.
10:42	Top head drive down with Stand #8 at 997 feet bpl. Circulate hole.
10:50	Run inclination survey for 950 feet bpl.
11:15	Make connection with Stand #9 and continue reaming with nominal 42-inch bit. Inclination survey for 950 feet bpl = 0.25 degrees.
11:50	Reaming at the depth of 998 ft. bpl. Cement fragments were noted in the cuttings.
12:30	Reaming at the depth of 1002 ft. bpl. Still in marl/light-colored clay. Cement fragments were noted in the cuttings.
13:30	Reaming at the depth of 1005 ft. bpl. Lithology change to yellow-gray, friable grainstone/packstone. Trace of cement noted in the cuttings.
14:20	Reaming at the depth of 1008 ft. bpl. Lithology change to yellow-gray, hard, moldic, packstone/wackestone. Trace of cement noted in the cuttings.
15:10	Reaming at the depth of 1011 ft. bpl. Lithology change to yellow-gray, friable grainstone/packstone. Trace of cement noted in the cuttings.
15:20	Trika Nelson on-site.
16:00	Reaming at the depth of 1017 ft. bpl. Lithology change to marl/light-colored clay. No cement noted in the cuttings.
16:10	Noah Kugler leaves site.
17:05	Reaming at the depth of 1035 ft. bpl. No cement noted in the cuttings. Still in marl/light colored clay.
18:02	Reaming at the depth of 1054 ft. bpl. Trace of cement noted in cuttings. Lithology change to yellow-gray, friable grainstone/packstone.

19:00	YBI shift change.
19:15	Reaming at the depth of 1077 ft. bpl. No cement noted in the cuttings.
20:10	Reaming at the depth of 1085 ft. bpl. Traces of cement noted in the cuttings.
21:05	Reaming at the depth of 1086 ft. bpl. Traces of cement noted in the cuttings.
22:05	Reaming at the depth of 1090 ft. bpl.
23:00	Reaming at the depth of 1096 ft. bpl. No cement noted in the cuttings.
23:30	Reaming at the depth of 1100 ft. bpl.
23:35	Jack Breland on site.
23:40	Trika Nelson off site.
0:20	Reaming at the depth of 1108 ft. bpl. Traces of cement fragments were recovered from the cuttings.
1:40	Top head drive down with Stand #9 at 1117 feet bpl. Circulated hole. Performed inclination survey.
2:10	Made connection with Stand #10. Reaming with nominal 42-inch bit at the depth of 1117 ft. bpl.. Inclination survey for 1040 feet bpl = 0.25 degrees.
3:40	Reaming at the depth of 1123 ft. bpl. WOB-(12-15 lbs).
4:30	Reaming at the depth of 1127 ft. bpl. No cement noted in the cuttings.
5:35	Reaming at the depth of 1130 ft. bpl. Traces of cement noted in the cuttings
6:40	Reaming very slowly at the depth of 1133 ft. bpl.
7:00	Continue reaming at depth of 1134 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 2/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Reaming with nominal 42-inch bit on Stand #9 at a depth of 1134 feet bpl. Very low rate of penetration (approx. 20 min. per foot).
7:30	Noah Kugler on site. Jack Breland off site.
7:50	Reaming at a depth of 1138 feet bpl. Very low rate of penetration (approx. 20 min. per foot). Lower collection bucket to retrieve cuttings sample.
9:00	Reaming at a depth of 1145 feet bpl. Slight rate of penetration increase. Very little formation material in collection bucket. Greenish clay and quartz-sandy, very friable grainstone/packstone with f.g. phosphate make-up cuttings sample. No cement noted in cuttings.
9:45	Noah speaks with Frank Procta about project status.
10:15	Reaming at a depth of 1154 feet bpl. Very little formation material in collection bucket, mostly light-colored marl. Apparent rare cement fragments in cuttings.
11:15	Ronnie Thames gives Noah the Contractor's cement plan for 34-inch casing.
11:30	Reaming at a depth of 1164 feet bpl. Very little formation material in collection bucket. No cement noted in cuttings.
12:40	Reaming at a depth of 1171 feet bpl. Rare cement fragments in cuttings.
13:30	Reaming at a depth of 1177 feet bpl. Rare cement fragments in cuttings.
13:35	Mark Pearce on-site for weekly progress meeting
14:25	Reaming at a depth of 1182 feet bpl. Very little formation material in collection bucket. No cement noted in cuttings.
15:30	Trika Nelson on-site for swing shift.
16:00	Reaming at a depth of 1196 feet bpl. Rare cement fragments in cuttings. Noah Kugler leaves site.
17:00	Reaming at a depth of 1205 feet bpl. Rare cement fragments in cuttings.
18:00	Reaming at a depth of 1210 feet bpl. Rare cement fragments in cuttings.
19:05	Reaming at a depth of 1215 feet bpl. No cement seen in cuttings.
20:02	Reaming at a depth of 1220 feet bpl. No cement seen in cuttings.
21:00	Reaming at a depth of 1230 feet bpl. Rare cement fragments in cuttings.

21:45	Top head drive down with Stand #10 at 1237 feet bpl. Circulated hole. Performed inclination surveys at 1130 feet bpl and 1220 feet bpl. Changing rubbers around the casing; leaking severely.
23:40	Jack Breland on site.
23:46	Trika Nelson off site.
1:00	Made connection with Stand #11. Inclination survey for 1130 feet bpl = 0.0 degrees and for 1220 feet bpl = 0.25 degrees. On bottom reaming.
2:00	Reaming at the depth of 1239 ft. bpl. WOB-(8-12 lbs). Traces of cement fragments were noticed in the cuttings.
3:00	Reaming at the depth of 1242 ft. bpl. Still picking up traces of cement fragments in the cuttings.
4:36	Reaming at the depth of 1246 ft. bpl. WOB-(8-12 lbs). Confirmed cement fragments in the cuttings.
5:00	Reaming at the depth of 1249 ft. bpl. Traces of cement seen in cuttings.
6:00	Reaming at the depth of 1258 ft. bpl. No cement seen in cuttings.
7:00	YBI shift change. Reaming at the depth of 1265 ft. bpl.

WATER RESOURCE SOLUTIONS

Date: 2/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	YBI shift change. Reaming at the depth of 1265 ft. bpl. with nominal 42-inch bit.
8:00	Noah Kugler on site. Jack Breland off site. Reaming at the depth of 1269 ft.
9:00	Reaming at the depth of 1275 ft. bpl.
10:00	Reaming at the depth of 1281 ft. bpl.
10:30	Pre-construction meeting for pump station and other surface work at NCWRF plant.
11:00	Reaming at the depth of 1286 ft. bpl.
12:00	Reaming at the depth of 1290 ft. bpl.
13:00	Reaming at the depth of 1294 ft. bpl.
14:20	Reaming at the depth of 1300 ft. bpl. Reaming with nominal 42-inch bit will terminate at 1310 ft. bpl. A 34-inch O.D., 0.375-wall, spiral welded, steel casing will be set at 1300 ft. bpl (leaving 10 feet of rathole). The first stage of cement will be a single, neat stage and emplaced from the base of the casing for a minimum of 200 ft. upward.
14:35	Mark Pearce calls Noah to advise him that the FDEP has given approval to set the 34-inch casing at 1300 ft. bpl. Noah forwards information to Ronnie Thames.
15:00	Reaming at the depth of 1304 ft. bpl.
15:20	Trika Nelson on-site for swing shift.
16:00	Reaming at the depth of 1308 ft. bpl.
16:40	Reamed to 1310 ft. bpl. Start to circulate hole at 1310 ft. bpl.
16:50	Noah Kugler leaves
17:10	Stop circulating the hole at 1310 ft. bpl. Start to trip 8 stands out of the hole.
18:07	Still tripping out of hole.
18:30	Finish tripping out of hole. Letting hole sit for an hour.
19:00	YBI shift change.
19:35	Begin wiper trip to 1310 ft. bpl.
19:45	Stop wiper trip. Not getting enough water for circulation. Currently fixing problem.
20:45	Problem fixed. Continue with wiper trip.

22:00	Currently wiper tripping to 1310 ft. bpl.
23:00	Currently wiper tripping to 1310 ft. bpl.
23:37	Jack Breland on site.
23:42	Trika Nelson off site.
0:00	Wiper tripping with STAND #9. Will make two runs up and down, if no movement shows up on weight indicator, will proceed to next STAND.
0:20	Wiper tripping # 10.
0:50	Having trouble maintaining reverse-air flow. The weight of the drilling fluid has increased significantly with depth. Drilling fluid is starting to look like tooth paste.
3:00	Still working on Wiping STAND #10. The heavy fluid is slowly being air lifted out of the hole.
4:00	Still circulating with STAND #10.
4:30	YBI logger on site. Added STAND #11. Lost reverse-air flow.
5:00	Racked STAND #11. Regained air flow with STAND #10. Circulating.
5:50	Added Stand #11 to string again. Circulating.
6:00	YBI shift change. Starting down with STAND #11 to 1310 ft. bpl.
6:30	Wiper trip within 20 feet from bottom.

WATER RESOURCE SOLUTIONS

Date: 2/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	YBI logger off site. Still running wiper trip on final stand with nominal 42-inch bit at 1290 ft. bpl. Circulation pressure keeps dropping off due to partial plugging of the drill bit from friable, fine-grained, limestone. NOTE: a producing flow-zone is estimated to lie between 1260 and 1290 ft. bpl based upon a major salinity spike in the reverse-air water samples and very porous limestone noted in the cuttings between those depths.
7:50	Noah Kugler on site. Jack Breland off site.
8:10	Swabbing hole at 1303 feet bpl.
8:45	Drill bit is on bottom at 1310 ft. bpl. Circulate hole.
9:10	Pick up current stand of drillpipe and prepare to re-swab hole. Note: no drag was noted while picking up drillstring.
9:15	Geophysical logger (Joel Barrett) on-site to run caliper/gamma logs. May be some time before logging proceeds.
9:22	Begin re-swabbing hole from to 1310 feet bpl.
9:45	Finished re-swab to 1310 feet bpl. Begin tripping out drill-string.
9:52	Silty circulation water continues to flow from the drill-pipe until it is raised approximately 60 feet above the rig floor. Begin mixing barite kill.
10:35	Before pumping kill, the flow from the drill pipe was down to 2 ft. above the rig floor. Xxx ft. of reverse-air tubing have been tripped-out. Continue tripping out drill pipe.
11:40	Drill pipe has been tripped-out. Open rig floor doors and begin removing stabilizer and bit.
12:35	Stabilizer and bit (BHA) out of hole. Prepare to lay down BHA and move aside to make access for geophysical logger. Bit will be broken-out later. Welders are on-site and preparing for 34-inch casing run.
13:15	BHA has been laid down and move aside. Setup caliper/gamma tools and prepare to log nominal 42-inch reamed hole to 1310 ft. bpl.
13:40	Run in hole with caliper/gamma tools
13:55	Tools at bottom. Open caliper arms and begin logging hole upwards at approximately 40 ft. per minute.
14:35	Logs complete, including 200 ft. repeat pass. Remove tools from hole and prepare to run 34-inch casing.

15:05	Raise joint #1 of 34-inch casing (cut joint) and lower in hole.
15:15	Trika Nelson on-site for swing shift.
15:30	Raise joint #2, align, and begin welding joint #2 to joint #1.
15:59	Weld between joint #2 and joint #1 complete. Lower joint #2 in hole.
16:05	Raise joint #3, align, and begin welding joint #3 to joint #2.
16:25	Weld between joint #3 and joint #2 complete. Lower joint #3 in hole.
16:30	Noah Kugler off site.
16:35	Raise joint #4, align, and begin welding joint #4 to joint #3.
16:59	Weld between joint #4 and joint #3 complete. Lower joint #4 in hole.
17:05	Raise joint #5, align, and begin welding joint #5 to joint #4.
17:20	Weld between joint #5 and joint #4 complete. Lower joint #5 in hole.
17:30	Raise joint #6, align, and begin welding joint #6 to joint #5.
17:55	Weld between joint #6 and joint #5 complete. Lower joint #6 in hole.
18:02	Raise joint #7, align, and begin welding joint #7 to joint #6.
18:25	Weld between joint #7 and joint #6 complete. Lower joint #7 in hole.
18:29	Raise joint #8, align, and begin welding joint #8 to joint #7.
18:50	Weld between joint #8 and joint #7 complete. Lower joint #8 in hole.
18:57	Raise joint #9, align, and begin welding joint #9 to joint #8.
19:20	Weld between joint #9 and joint #8 complete. Lower joint #9 in hole.
19:25	Raise joint #10, align, and begin welding joint #10 to joint #9.
19:41	Weld between joint #10 and joint #9 complete. Lower joint #10 in hole.
19:51	Raise joint #11, align, and begin welding joint #11 to joint #10.
20:11	Weld between joint #11 and joint #10 complete. Lower joint #11 in hole.
20:18	Raise joint #12, align, and begin welding joint #12 to joint #11.
20:40	Weld between joint #12 and joint #11 complete. Lower joint #12 in hole.
20:44	Raise joint #13, align, and begin welding joint #13 to joint #12.
21:07	Weld between joint #13 and joint #12 complete. Lower joint #13 in hole.
21:12	Raise joint #14, align, and begin welding joint #14 to joint #13.
21:31	Weld between joint #14 and joint #13 complete. Lower joint #14 in hole.
21:36	Raise joint #15, align, and begin welding joint #15 to joint #14.
21:55	Weld between joint #15 and joint #14 complete. Lower joint #15 in hole.
22:00	Raise joint #16, align, and begin welding joint #16 to joint #15.
22:23	Weld between joint #16 and joint #15 complete. Lower joint #16 in hole.
22:31	Raise joint #17, align, and begin welding joint #17 to joint #16.
22:52	Weld between joint #17 and joint #16 complete. Lower joint #17 in hole.
22:55	Jack Breland on site.
22:57	Raise joint #18, align, and begin welding joint #18 to joint #17.
23:05	Trika Nelson off site.
23:14	Weld between joint #18 and joint #17 complete. Lower joint #18 in hole.
23:20	Raise joint #19, align, and begin welding joint #19 to joint #18.
23:45	Weld between joint #19 and joint #18 complete. Lower joint #19 in hole.
23:55	Raise joint #20, align, and begin welding joint #20 to joint #19.
0:19	Weld between joint #20 and joint #19 complete. Lower joint #20 in hole.
0:27	Raise joint #21, align, and begin welding joint #21 to joint #20.

0:53	Weld between joint #21 and joint #20 complete. Lower joint #21 in hole.
1:04	Raise joint #22, align, and begin welding joint #22 to joint #21.
1:18	Weld between joint #22 and joint #21 complete. Lower joint #22 in hole.
1:24	Raise joint #23, align, and begin welding joint #23 to joint #21.
1:40	Weld between joint #23 and joint #22 complete. Lower joint #23 in hole.
1:52	Raise joint #24, align, and begin welding joint #24 to joint #23.
2:18	Weld between joint #24 and joint #23 complete. Lower joint #24 in hole.
2:25	Raise joint #25, align, and begin welding joint #25 to joint #24.
2:48	Weld between joint #25 and joint #24 complete. Lower joint #25 in hole.
2:53	Raise joint #26, align, and begin welding joint #26 to joint #25.
3:15	Weld between joint #26 and joint #25 complete. Lower joint #26 in hole.
3:21	Raise joint #27, align, and begin welding joint #27 to joint #26.
4:45	Welded header plate to casing. Cut out annulus opening in header. Capped off 3" diameter opening.
5:30	Set up table and slips. Preparing to run 2 3/8" diameter cement pipe.
6:00	Tallied cement pipe. 21 joints = 1293.85 feet.
6:15	5 joints on string. Length of string is 308.62 ft.
6:30	12 joints on string. Length of string is 738.14 ft.
6:45	17 joints on string. Length of string is 1049.60 ft.
7:00	YBI shift change. 21 joints in the hole. 5 ft. above pad level. 1288.85 total length. Will place a small sub to get it as close to 1290 ft bpl as possible.

Week 5

WATER RESOURCE SOLUTIONS

Date: 2/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Preparing for 1st stage cement operation using the pressure grout method. YBI shift change. 21 joints in the hole. 5 ft. above pad level. 1288.85 total length. Will place a small sub to get it as close to 1290 ft bpl as possible.
7:30	Drilling crew is hooking up cement line from the cement pipe to the cement truck. YBI cement man on site.
7:50	Noah Kugler on site. Jack Breland off site. Almost ready to pump 1st stage cement.
7:55	Confer with Ronnie Thames and Mike Sordan (cementer) regarding cement plan for stage #1. Plan to pump 222 bbls. of neat cement. Caliper log indicates a fill of 300 feet with that volume. Expected pressure on casing is approximately 100 psi at 300 feet of fill.
8:06	Test cement lines with water pressured from the cement truck.
8:09	Begin pumping freshwater flush.
8:15	Header is leaking water. Remove gooseneck connection and replace pipe-sub on tremie tubing. Reattach gooseneck.
8:20	Cement header reattached. Retest cement line.
8:22	Leak has been fixed. Resume filling casing with water and pre-flushing system.
8:27	Total of 60 bbls. of flush water were pumped before and after leak problem.
8:29	Begin pumping cement stage #1 (neat). SEE CEMENT LOG.
9:15	Complete pumping 221 bbls. of neat cement. Pressure on casing is approximately 100 psi at surface. Cement cubes were collected and will be taken to YBI shop by Mike Sordan for 24 and 72-hour compressive strength testing. Temperature log scheduled for 15:15 (six hours), cement stage #2 scheduled for 21:15 (12 hours)
9:15 to 14:45	Waiting on cement. Noah works on preparation of weekly report to TAC, plan for packers and cores (depths) and organization of filing system.
14:50	Pressure in casing down to 10 psi. Release pressure and begin tripping out cement tremie. Geophysical logger (Tim Denison) has been on-site for some time waiting to run cement top temperature log.
15:20	Trika Neslon on-site for swing shift.
15:30	YBI start to run temperature log to 1310 ft. bpl.
16:15	Noah Kugler off site.
16:30	YBI finish running temperature log. Estimated cement tag depth at 1030 ft bpl.
17:38	Still waiting on cement. YBI crew working on cement truck lines & fittings.

19:00	YBI shift change.
19:28	Start to trip in cement tremie.
20:40	Finished tripping in cement tremie. Tag depth at 997 ft. bpl.
20:57	Trika converses with Mike Sordan about cement plan for stage 2.
21:12	Test cement line.
21:19	Begin freshwater preflush.
21:25	End freshwater preflush. (15 bbls.)
21:26	Problems building up pressure in silo. Fixing problem.
22:20	Problem fixed.
22:23	Begin pumping 12 % bentonite cement.
22:42	Stop pumping. Trip out one stand.
22:47	Resume pumping cement.
23:05	Stop pumping. Having technical difficulties. Total pumped 203 bbls.
23:08	Begin tripping out cement tremie.
23:30	Trika Nelson off site.
0:00	Todd Tubbert on-site. Current ops.: Crew cleaning rig/waiting on cement.
0:40	Confirm with Ronnie Thames that a temperature log will be performed at 6:00.
1:00	Waiting on cement.
3:00	Crew cleaning rig/waiting on cement.
5:40	Geophysical logger (Tim Dennison) arrives on-site.
6:00	Begin logging.
6:21	End logging. Retrieve tool. (NOTE: Temp. log shows cement estimated to be at 650' bpl.)
6:30	Tool out of hole.
6:45	Geophysical logger (Tim Dennison) leaves the site.
7:00	YBI shift change.
7:20	Confirm with Ronnie Thames that a hard tag attempt will be at 10:00.
7:50	Frank Procta arrives on-site.

WATER RESOURCE SOLUTIONS

Date: 2/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:55	Frank Procta arrives on-site. Current ops. : Waiting on cement.
8:30	Currently tripping in 2 3/8-inch cement tubing in preparation for hard tag of second-stage cement.
9:10	Down with 11th double of cement tubing.
9:15	Hard tag the top of second-stage cement (34-inch casing) at 652 feet bpl, higher in the borehole than expected.
9:28	Discuss pre-cementing plan with R. Thames of YBI. Plan to pump water, from cementing truck, to clear cement tubing (tremie) and wash out any possible formation material that may be atop the annular cement, follow with second hard tag of second-stage cement.
9:40	Begin pumping water down tremie.
9:50	Add a single to string and reattach the header.
9:51	Flow water while working the tremie up and down.
10:12	Re-tag the top of second-stage cement at 670 feet bpl.
10:17	Currently mixing gel. Discuss the cementing plan with R. Thames. Plan to pump 242 barrels of cement (12% gel) immediately following a pre-flush of 5 barrels.
10:50	Begin 5-barrel pre-flush.
10:52	Begin pumping cement (STAGE #3).
11:57	End pumping cement, move to freshwater chase. NOTE: Pumped 242 barrels of cement (w/ 12% gel), chased with 2.25 barrels of freshwater.
11:58	Begin tripping out cement tubing.
12:15	Crew involved with post-cementing cleaning activities.
12:50	Waiting on cement.
13:30	Waiting on cement.
15:00	Waiting on cement.
16:30	Waiting on cement.
18:00	Waiting on cement.
19:13	Lower the temperature logging tool down the wellbore.
19:18	Begin recording data, logging down, from 230 feet bpl.
19:27	End recording data at a depth of 712 feet bpl. NOTE: Top of third-stage cement, based on the temperature log, picked at 393 feet bpl.

19:30	Logger retrieves the tool.
19:50	Frank Procta leaves the site.
21:15	Todd Tubbert arrives on-site. Current ops.: Crew mixing gel.
21:30	Hard tag the top of third-stage cement (34-inch casing) at 377 feet bpl.
22:30	Crew mixing gel water/waiting on cement.
23:00	Currently mixing gel. Discuss the cementing plan with R. Thames. Plan to pump 377 barrels of cement (12% gel) immediately following a pre-flush of 5 to 10 barrels.
23:40	Jim Brantley of YBI, arrives on site to operate cement truck.
23:57	Begin 10-barrel pre-flush.
0:02	Begin pumping cement (STAGE # 4).
1:00	End pumping cement. NOTE: Pumped 382 barrels of cement (w/ 12% gel). Cement has reached surface.
1:02	Begin tripping out cement tubing.
1:10	Jim Brantley of YBI, leaves the site.
1:20	Crew involved with post-cementing cleaning activities.
1:30	Waiting on cement.
3:30	Waiting on cement.
5:30	Waiting on cement.
6:50	Geophysical logger (Tim Dennison) arrives on-site for temp. log survey.
7:00	YBI crew change.
7:20	Begin logging.
7:30	End logging. Retrieve tool. (NOTE: Temp. log shows cement estimated to be at 4' bpl.)
7:35	Tool out of hole.
7:45	Receive 15 copies of combined temperature logs (Stages 1 to 4).
7:50	Frank Procta arrives on-site.

WATER RESOURCE SOLUTIONS

Date: 2/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:50	Frank Procta arrives on-site. Current ops. : Waiting on cement.
9:03	Welder arrives on-site.
10:12	Welder begins cutting the casing (stickup).
12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Attach the bit assembly to the collar stand. **NOTE**: The overall bottom hole assembly length measures 124.98 feet and is composed as follows: 12.25-inch drill bit w/ sub measures 3.00 feet in length, followed by one collar stand that measures 121.98 feet in length. The drilling string will be assembled by adding 27 joints of drill pipe (40-foot joints) one at a time, followed by 120-foot stands of drill pipe. Distance from the rig floor to pad level is 5.5 feet.
14:17	Downhole with JOINT #1. The drilling string trip-in has begun.
14:39	Downhole with JOINT #5.
15:10	Downhole with JOINT #10.
15:40	Downhole with JOINT #15.
16:24	Downhole with JOINT #20.
17:34	Downhole with JOINT #27. NOTE: Drill string length w/ JOINT #27 is 1205 feet. There remains 15 stands of drill pipe, 120-foot long each, on the derrick.
18:00	Crew currently assembling joints of air line in preparation for tripping in the air line string.
18:30	Currently tripping in the air line. NOTE: To set air line at approx. 330' bpl.
19:50	Discuss the planned night tour with Ronnie Thames (YBI). Plan to start drilling the cement plug out of the surface casing at approx. 1:00 AM.
20:00	Frank Procta leaves the site.
20:10	Todd Tubbert on-site.
21:00	Driller confirms (390' of airline consisting of 6 doubles & 1 single) were tripped in during the day shift
23:00	Waiting on cement.
0:00	Waiting on cement.

1:00	Discuss the planned night tour with driller (YBI). Plan to circulate and clean up hole before putting weight on string. Marks will be made every 5 foot starting at the 1200' (joint connecting JOINT # 27 and STAND # 1) for accurate tag depth.
1:10	Start up rig and compressors, prepare to circulate.
1:15	Circulating at 1200' bpl with STAND # 10.
2:00	Circulating at 1275' bpl. NOTE: Driller having moderate circulation pressure losses.
2:20	Drilling with STAND # 10 at 1279' bpl. First tag of cement. Circ. Pressure stable.
3:30	Drilling with STAND # 10 at 1295' bpl.
4:45	Drilling/dredging with STAND # 10 at 1310' bpl.
5:20	Top head drive down with STAND # 10 at 1320' bpl.
5:30	No inclination survey was performed at 1310' bpl, due to the driller is out of inclination charts. Will perform two surveys at next top head down.
5:40	Connect STAND # 11. Resume drilling.
6:10	Currently drilling with STAND # 11 at 1350' bpl.
6:27	Currently drilling with STAND # 11 at 1360' bpl. Resume collecting pilot-hole cuttings.
7:00	Currently drilling with STAND # 11 at 1400' bpl.

WATER RESOURCE SOLUTIONS

Date: 2/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently drilling 12.25-inch pilot-hole with STAND #11 at 1400' bpl. There are 13 stands left in derrick (total of 24 stands currently made-up of 40-footers). There are 17 single 30-footers laid down, one of which is ruined. Noah gets update from Todd Tubbert.
7:05	Todd Tubbert leaves the site.
7:30	Noah Kugler on-site. Current depth = 1413' bpl with STAND #11.
7:45	Noah checks inclination survey plan with the driller. Two surveys to be run at next top head drive down. Noah speaks with cuttings and water sample collector about sampling and labeling of samples.
8:10	Noah calls Mark Pearce with update. Plan to drill to 1500' bpl and run a packer test from 1450' to 1500' bpl. Drillstring will be tripped out and a single packer will be attached to the drillstring and run back in hole to 1450' bpl (centerline of bladder).
8:38	Top head drive down with STAND #11 at 1440' bpl.
8:45	Run inclination surveys (nom. 42-inch reamed hole:1310' bpl - makeup, 12.25-inch pilot hole:1400' bpl.) back to back.
9:35	Inclination surveys complete. 1310' bpl = 0.4 degrees dev., 1400' bpl = 0.75 degrees dev.
9:45	Make connection with STAND #12
10:02	Having difficulty starting rotation of bit.
10:45	Still having difficulty starting rotation of bit. Drillstring has also become stuck, not allowing driller to pick-up on drillstring (attempted 250 K lbs over string weight). YBI will-haul off several tankers of drill cuttings and silt-laden circulation water from the containment pit. Freshwater will be added and circulated with water from the pits prior to resuming drilling to lessen the turbidity of the water. This may alleviate the sticking problem. Driller believes that the drillstring is sticking to the borehole wall due to hydrostatic differences between the borehole and the formation as well as drilling fluid properties of the circulation water that verge on mud due to the turbidity.
11:30	Discuss sticking situation with Mark Pearce via phone.
12:00 to 15:15	Continue hauling-off tankers of drill cuttings and silt-laden circulation water from the containment pit.

15:15	Frank Procta on-site. Noah Kugler off. Continue hauling-off tankers of drill cuttings and silt-laden circulation water from the containment pit.
15:35	Crew continue to pump out containment pit to newly-arrived tanker truck.
17:25	Call Mark Pearce with update of current site status.
17:50	Crew continue to pump cuttings and silt-laden water from containment pit.
19:40	Update Mark Pearce with current site status.
19:48	Crew remove STAND #12 from the drill string. NOTE: We have isolation in the borehole as with time the string has had silt and other fines collect, pulling salty water from the formation. We do have some circulation.
20:20	Currently circulating w/ STAND #11 raised, a depth of approx. 1320 feet bpl.
22.20	Currently circulating while working STAND #11 down.
22:42	Currently circulating at 1440 feet bpl (THD down with STAND #11).
23:00	Frank Procta leaves the site.
23:10	Todd Tubbert on site. Currently swabbing hole with STAND # 11.
23:25	Currently circulating at 1440 feet bpl (THD down with STAND #11).
23:35	Make connection with STAND #12.
0:00	Resume drilling with STAND # 12 at 1440' bpl.
0:20	Currently drilling with STAND # 12 at 1450' bpl.
2:00	Currently drilling with STAND # 12 at 1457' bpl. (ROP has slowed due to drilling very hard crystalline dolostone)
3:30	Currently drilling with STAND # 12 at 1475' bpl.
4:35	Currently circulating with STAND # 12 at 1500' bpl.
4:40	Plan is to circulate at 1500' bpl for approximately 30 min. raise STAND # 12 to top of hanger, shut down rig and let sit for approx. 1 hr and then run drill string back down to 1500' bpl. If hole is clear, they will trip out drill string and connect single packer. NOTE: Total length of packer was measured at 14' 10.5". Center line from bottom of packer is 7' 5.5".
5:00	End circulating at 1500' bpl. Raise drill string to top of hanger. Turn off air.
5:50	Start air compressor and descend drill string to 1500' bpl. Circulate. NOTE: (there was approximately 1 foot of fill at the bottom of hole).
6:30	Begin tripping out drill string.
6:35	Noah Kugler calls for update.
6:40	Obtain and copy diagram of 12.25" packer assembly.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 2/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Finish tripping out reverse-air tubing. Begin tripping out 12 stands of drill pipe. Tim Denison (Florida Geophysical) is on-site to set up Hermit recording boxes for transducer reading during upcoming packer test. Packer test will be performed from 1450' to 1500' bpl.
7:05	Noah Kugler on-site. Review packer test plan and inspect packer. Inclination survey for 1490' bpl will be run when pilot-hole drilling resumes.
9:20	Drill-string is out of hole. Prepare to attach packer to drillstring. The centerline of packer will be set at 1450' bpl as follows: 7.0' (distance from top to center of packer element) + 10' (pup joint) + 1440' (twelve 120-foot stands) - 7.0' (distance above rig floor w/ slips) = 1450' to packer centerline.
10:10	Packer has been attached to drillstring. Begin lowering packer and pressure line for inflation.
11:45	Packer has been lowered to 1450' bpl.
11:55	Set transducer in annulus 53' below 34-inch flange (approx. 50' bpl)
12:10	Begin pressuring packer with water to make seal against borehole wall.
12:35	Packer has been pressured quickly to 450 psi, indicating good wall contact.
12:50	Begin setting 5-hp submersible pump inside drillpipe at 186' below top of drillpipe (approx. 179' bpl).
13:15	Pump set. Begin setting transducer in drillpipe at 176' below top of drillpipe (approx. 169' bpl or 10' above pump intake).
13:40	Mark Pearce on-site for weekly progress/planning meeting. Transducer has been set inside drillpipe.
14:03	Begin recording background. Annulus water level = 35.105' above transducer. Drillpipe water level = 157.769' above transducer.
14:36	Annulus water level = 35.133' above transducer. Drillpipe water level = 157.852' above transducer. Totalizer = 827,698 gallons. Pressure on packer = 450 psi.
14:37	Start pump.
14:38	Flow rate = 72 gpm.
14:39	Pump quit working. Annulus water level = 35.132' above transducer. Drillpipe water level = 156.174' above transducer.

14:42	After several failed attempts to get pump started, the Contractor decides to pull pump to inspect it.
14:50	Begin removing transducer from drillpipe.
14:52	Frank Procta on-site.
14:55	Representative from Ardaman & Associates (Len) on-site to pick up four cement cubes from cementing 34-inch casing (four stages). Ardaman will perform 28 day compressive strength test on cubes.
15:00	Frank Procta and Noah Kugler discuss packer test procedure.
15:30	Noah Kugler leaves site.
15:32	Submersible pump has been re-set in the well at 179 feet bpl. The pump is not working. Packer pressure recorded at 440 psi.
15:44	The pump is removed from the well as the pump is burned out. NOTE: Ronnie Thames (YBI) informs Frank Procta that another pump will be picked up soon.
16:15	Waiting on pump delivery.
16:24	New 5-hp pump arrives on-site.
17:07	Continue to work on new pump wiring in preparation for running the pump down the well. Record packer pressure at 435 psi.
17:19	Trip in the pump string. Pump intake set at 179 feet bpl.
17:42	Set the transducer (INPUT #7) inside the drill string at 169 feet bpl. The annular transducer (INPUT #1) remains set at 53 feet below 34-inch casing flange (approx. 50' bpl).
17:46	Record the head in annulus at 35.323 feet.
17:47	Record the head inside drill string at 157.498 feet, placing the water level at 11.5 feet bpl.
17:50	Begin recording background data as TEST #3 on the data logger. Record packer pressure at 430 psi.
18:16	Record packer pressure at 430 psi.
18:23	End background phase of test, begin recording data as TEST #4, begin pumping. NOTE: Record totalizer, before pumping, at 827,807 gallons.
18:25	Record flow rate at 68 gpm. NOTE: Pump valve is open full-bore.
18:28	Record flow rate at 68 gpm.
18:31	Record head inside the drill string at 159.461 feet.
18:49	Record flow rate at 68 gpm.
18:51	Record head in annulus at 35.396 feet.
18:52	Record head in drill string at 175.330 feet.
18:53	Collect first sample of discharge water. Totalizer at 829,848 gals., conductivity of 30,500 uS/cm.
19:23	Collect second sample of discharge water. Totalizer at 831,890 gals., conductivity of 41,500 uS/cm.
19:25	Record flow rate at 68 gpm.
19:26	Record head in annulus at 35.414 feet.
19:27	Record head in drill string at 174.478 feet. Packer pressure recorded at 428 psi.

19:59	Record flow rate at 68 gpm.
20:01	Collect third sample of discharge water. Totalizer at 834,300 gals., conductivity of 42,000 to 44,000 uS/cm.
20:02	Record head in drill string at 173.939 feet.
20:24	Record flow rate at 69 gpm. Record packer pressure at 420 psi.
20:30	Collect fourth sample of discharge water. Totalizer at 836,375 gals., conductivity of 44,000 uS/cm.
20:31	Record head in drill string at 173.594 feet.
20:34	Pressure up the packer to 450 psi.
21:00	Collect fifth water sample. Record flow rate at 69 gpm. Record packer pressure at 450 psi. Record totalizer at 838,440 gals.
21:03	Record head in annulus at 53.202 feet. NOTE: This last head measurement indicates a 17.8-foot increase in head over 97 minutes. The water level is nearly at the 34-inch casing flange.
21:04	Record head in drill string at 173.480 feet.
21:27	Record flow rate at 69 gpm. Record packer pressure at 450 psi.
21:30	Collect sixth sample of discharge water. Totalizer at 840,510 gals., conductivity of 45400 uS/cm.
21:32	Record head in annulus at 49.838 feet.
21:33	Record head in drill string at 173.284 feet.
21:57	Record flow rate at 68 gpm. Record packer pressure at 442 psi.
22:00	Collect seventh sample of discharge water. Totalizer at 842,500 gals., conductivity of 46,100 uS/cm.
22:02	Record head in annulus at 43.834 feet. Record head in drill string at 173.165 feet.
22:20	Collect eighth sample of discharge water. Record conductivity of 46,300 uS/cm. Chlorides = 16,900 mg/l.
22:22	Record head in annulus at 41.210 feet.
22:23	Record head in drill string at 172.977 feet.
22:23	Collect four bottles of discharge water for lab analyses (chloride,conductivity,sulfate,TDS).
22:51	Start a TEST #5 as no data has been recorded during the 4-hour pump test. Plan to pump for 1/2 hour and step test moving to the recovery phase. Recovery data will be collected for 5 hours.
22:55	Todd Tubbert arrives on-site.
23:20	Frank Procta leaves the site.
23:24	End Pump Test (Test 5) - Start Recovery (Test 6). Ending Totalizer at 848,300 gals.: Casing pressure at 441 psi. NOTE: There will be no manual head measurements read during recovery phase (due to problems with data logger during pump test) and no site activity until 7:00 am at which time Dr. Pearce will be contacted for further instructions. (as per Frank Procta).
0:34	Measure casing pressure at 439 psi.

1:30	Measure casing pressure at 438 psi.
2:30	Measure casing pressure at 435 psi.
3:30	Measure casing pressure at 430 psi.
4:30	Measure casing pressure at 420 psi.
5:00	Record head in annulus at 37.606 feet. Record head in drill string at 172.754 feet. Casing pressure at 420 psi.
5:03	End recovery phase (Test 6).
5:15	Geophysical logger (Tim Dennison) will be onsite at 7 to down data.
6:30	Waiting on geophysical logger.
6:55	Noah Kugler on-site.
7:00	Discuss Hermit data logger operating problems and possible solutions with Tim Dennison YBI.)

WATER RESOURCE SOLUTIONS

Date: 2/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah and Todd Discuss Hermit data logger operating problems and possible solutions with Tim Dennison (YBI.)
7:20	Todd Tubbert off.
8:05	Noah calls Mark Pearce to inform him of issues with the packer test.
8:15	Measure water level in drillpipe with beeper tape. WL = 0.5' bpl.
8:25	Measure water level in annulus with beeper tape. WL = 13' bpl.
8:35	Noah calls Mark Pearce to discuss situation and e-mails Mark the Hermit-recorded data files from the packer test for review.
9:30	Decision is made to re-run pump test.
9:46	Reattach Hermit box to transducers.
9:49	Annulus water level = 38.376' above transducer. Drillpipe water level = 172.962' above transducer.
9:51	Replace transducer in annulus.
9:57	Packer pressure = 410 psi.
10:15	Replacement transducer has been set in annulus at 49' bpl.
10:30	Measure water level in annulus again with beeper tape. WL = 12.95' bpl.
10:32	Annulus water level = 37.209' above transducer. Drillpipe water level = 173.010' above transducer.
10:34	Start recording 1/2 hour of background water levels (Test 1) on Hermit.
11:05	Totalizer = 848,305 gallons. Packer pressure = 410 psi.
11:06	Annulus water level = 37.277' above transducer. Drillpipe water level = 172.975' above transducer.
11:10	Start recording pumping water levels (Test 2) on Hermit, switch on pump within 5 seconds of data recording switch.
11:11	Collect water sample from discharge. Conductivity = 46,400 uS/cm
11:13	Flow rate = 68 gpm.
11:40	Collect water sample from discharge. Conductivity = 47,200 uS/cm. Totalizer = 850,300 gallons. Flow rate = 68 gpm.
12:10	Collect water sample from discharge. Conductivity = 47,600 uS/cm. Chlorides = 17,450 mg/l. Totalizer = 852,200 gallons. Annulus water level = 37.384' above transducer. Drillpipe water level = 172.151' above transducer (~0.8' of drawdown).

12:40	Collect water sample from discharge. Conductivity = 48,200 uS/cm. Chlorides = 17,450 mg/l (same value as previous sample).
12:45	Representatives from Sanders Labs on-site to pick up water samples from reverse-air drilling and packer test #2.
12:50	Collect 4 bottles of water sample from discharge and give to Sanders rep for analysis. Totalizer = 854,900 gallons. Over 10 well volumes have been purged since start of pumping yesterday.
13:06	Annulus water level = 37.483' above transducer. Drillpipe water level = 171.950' above transducer (~1.0' of drawdown).
13:10	Collect water sample from discharge. Conductivity = 48,800 uS/cm. Chlorides = 17,450 mg/l (same value as previous two samples). Totalizer = 856,200 gallons. Flow rate = 66 gpm.
13:30	Mark Pearce OK's shut-in of pump test.
13:37	Annulus water level = 37.541' above transducer. Drillpipe water level = 171.868' above transducer (~1.1' of drawdown).
13:40	Start recording recovery water levels (Test 3) on Hermit, shut-in pump within 5 seconds of data recording switch. Record recovery for 2 hours.
13:41	Totalizer = 858,194 gallons.
14:45	Frank Procta on-site.
14:53	Annulus water level = 37.640' above transducer. Drillpipe water level = 172.349' above transducer.
14.55	Mohan Thampi arrives on-site for update of site status.
15:30	Noah leaves site.
15:42	Record annular head at 37.694 feet.
15:43	Record the head in drill stem at 172.344 feet. NOTE: The water level in the drill stem has recovered to within 0.364% of the background level.
16:04	End recovery phase of Drill Stem Test 2a (1450' to 1500').
16:12	Logger reviews data and downloads data from the data logger.
16:44	E-mail recovery data file to Mark Pearce for review. Give Ronnie (YBI) the go to trip out the packer string.
17:00	Begin tripping out submersible pump string.
17:27	Frank Procta completes titration for chloride concentration in this week's pad monitoring well water samples.
17:40	Crew is currently tripping out the packer string.
19:08	Remove the packer assembly from the well.
21:00	Currently tripping in drill string. **NOTE**: The overall bottom hole assembly length measures 124.98 feet and is composed as follows: 12.25-inch drill bit w/ sub measures 3.00 feet in length, followed by one collar stand that measures 121.98 feet in length. The drilling string will be assembled with 120-foot stands of drill pipe. Distance from the rig floor to pad level is 5.5 feet. The bit will be at 1500' bpl at 60.5 feet in on STAND #12.
21:25	Crew tripping in the air line.
21:40	Begin to circulate air.
21:50	Prepare for pilot-hole drilling - lubricate the top head drive unit.

22:05	Connect STAND #12 to the drill string.
22:12	Begin circulating at 1500 feet bpl.
22:22	Begin to advance the pilot hole with STAND #12.
22:57	Currently drilling with STAND #12 at 1520 feet bpl.
23:12	Currently circulating at 1530 feet bpl.
23:15	Todd Tubbert arrives on-site.
23:20	Frank Procta leaves the site.
23:25	Resume drilling with STAND # 12 at 1530 bpl. NOTE: conferred with driller (tommy) to drill to 1600' bpl. At which time they will circ., trip out string, trip in coring tool and take 10' core sample from 1600' to 1610' bpl.
23:30	Obtain water sample from 1530' bpl. Conductivity = 19,600 uS/cm. Chlorides = 6500 mg/l.
23:55	Top head drive down with STAND # 12 at 1560' bpl. Circulate and swab.
0:35	Run inclination survey at 1490' bpl. Results = 0.55 degrees dev.
0:48	Connect STAND #13 to the drill string.
0:50	Obtain water sample from 1560' bpl. Conductivity = 27,000 uS/cm. Chlorides = 9450 mg/l.
1:00	Resume drilling with STAND # 13 at 1560' bpl.
1:15	Currently drilling with STAND #13 at 1570' bpl. Cement frags in cuttings.
1:22	Currently drilling with STAND #13 at 1580' bpl. Cement frags in cuttings.
1:40	Currently drilling with STAND #13 at 1590' bpl. Cement frags in cuttings.
1:45	Obtain water sample from 1590' bpl. Conductivity = 28,400 uS/cm. Chlorides = 9750 mg/l.
1:52	Currently drilling with STAND #13 at 1600' bpl. Cement frags in cuttings.
1:53	Currently circulating at 1600 feet bpl.
3:00	Continue circulating at 1600' bpl/ swabbing hole.
3:30	Begin tripping out drillstring and airline.
4:30	Continue tripping out drillstring.
5:30	Finish tripping out drill string.
6:00	Begin tripping coring string in hole.
6:40	Down hole with STAND # 6.
7:00	Noah Kugler on-site.

WATER RESOURCE SOLUTIONS

Date: 2/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Tripping in core barrel to retrieve core #1 from 1600' to 1611' bpl. Coring depth = 27' (core barrel) + 1560' (13 stands DP) + 17.5' (partial single 40-foot joint of DP) + 1' (core sub) - 5.5' (height of floor above pad level) = 1600' bpl. NOTE: Single 40-footer will be lowered 17.5' prior to start to place core barrel at 1600' bpl.
7:05	Suspend ops to service rig.
7:40	Service complete. Continue tripping in core barrel.
8:45	Core barrel has been has been set at 1600' bpl. Core sub between Stand #13 and the single 40-footer.
8:47	Trip in 62' of reverse-air tubing through core sub.
8:53	Make connection with single 40-foot DP and lower tag bottom.
9:01	Tag bottom at 1600' bpl (17.5' down on single 40-footer).
9:02	Pick up drillstring 2' and circulate hole with water.
9:14	Begin rotation and ease down to 1599.5' bpl.
9:20	Pick up drillstring and disconnect between Stand #13 and the core sub to access below the core sub.
9:35	Drop steel ball down drillstring below core sub. The ball will fall to the top of the core sub to divert water flow to the annular space between the inner and outer portions of the core barrel.
9:44	Begin coring Core #1 from 1600' to 1611' bpl. See core drilling log.
10:50	Coring completed at 1611' bpl.
10:51	Shut off water circulation, stop rotation and begin tripping out reverse-air tubing
10:59	Reverse-air tubing out of hole. Begin tripping out the core barrel.
13:10	Core barrel has been has been retrieved. Begin removing core from core barrel.
13:20	Core has been removed from core barrel. Approximately 8 feet of core have been retrieved, however, the longest continuos piece is approximately 6 inches long, with several pieces in the 4 $^1/_2$-inch range.

13:30	Noah calls Mark Pearce to discuss core recovery. Mark will visit site this afternoon to inspect the Core #1.
13:40	Begin tripping in 12.25-inch bit to 1600' bpl. The overall bottom hole assembly length measures 124.98 feet (drill collars, bit and sub). The bit will be at 1600' bpl when STAND #13 (120-foot stands) is 40.5 feet down.
14:50	Frank Procta on-site for swing shift.
15:05	Mark Pearce on-site to look at core.
15:09	Mark decides that this core will allow for analysis. Core #1 is acceptable.
15:50	Mark and Noah leave site. Plans Drill 12.25-inch pilot to 1700' bpl, trip out drillstring, attach core barrel, trip in core barrel and start core #2.
15:50	Currently tripping in the air line.
16:25	Resume pilot-hole drilling w/ STAND #13 at 1600 feet bpl.
16:57	Currently drilling at 1620 feet bpl, circulate at this depth 15 minutes to prepare for collection of reverse-air water sample.
17:26	Currently drilling w/ STAND #13 at 1630 feet bpl.
18:18	Currently drilling w/ STAND #13 at 1650 feet bpl. NOTE: Encounter a change in formation material (from limestone to dolostone) at 1649 feet bpl, as rate of penetration suddenly decreases with intermittent minor rig chatter.
19:00	Drilling operations temporarily suspended to perform routine service to the rig.
19:50	Currently drilling w/ STAND #13 at 1665 feet bpl.
20:48	Top head drive down with STAND #13 at 1679.5 feet bpl.
21:30	Run the inclination survey at 1580 feet bpl. NOTE: Invalid result - the inclination survey will have to be run again as will the next planned survey at 1670 feet bpl.
22:00	Connect STAND #14 to the drill string.
22:07	Resume pilot-hole drilling w/ STAND #14 at 1679.5 feet bpl.
22:28	Reach termination depth of 1700 feet bpl.
22:30	Circulating at 1700' bpl.
22.45	Todd Tubbert onsite.
23:05	End circulating; Raise drillstring off bottom, shut off air compressor.
23:15	Frank Procta leaves the site.
23:30	Resume circulating/swabbing.
23:50	Circulating at 1700' bpl.
0:00	Trip out STAND #14. NOTE: There is flow until drillstring is raised 50 feet.
0:15	Mixing barite kill.
1:15	Mixing barite kill.
2:00	Inform. YBI driller (tommy) that while killing the well, the water level is not to drop more than 15 feet below land surface.
2:15	Mixing barite kill.
2:40	Pumping kill down hole. NOTE: Water level approximately 2' below pad level via visual check by YBI tool pusher (Jack)

2:45	Water level approximately 2' below pad level via visual check by YBI tool pusher (Jack)
2:55	Run inclination survey at 1580 feet bpl : Resulting in 0.25 degrees dev.
3:30	Run inclination survey at 1670 feet bpl : Bad result.
4:00	Run inclination survey at 1670 feet bpl again: Resulting in 0.25 degrees dev.
4:30	Trip out airline. (6 doubles + 1 single)
4:45	Trip out drillstring.
6:20	Tripping in core barrel to retrieve core #2 from 1700' to 1711' bpl. Coring depth = 27' (core barrel) + 1680' (14 stands DP) + 1' (core sub) - 5.5' (height of floor above pad level) - 2.5 (height of stand #14 above rig floor at start) = 1700 bpl. A single 40-foot joint of DP will be added prior to start to accomplish coring to 1711' bpl.
6:30	Noah Kugler calls for site update.
7:00	Todd Tubbert leaves the site.

Week 6

WATER RESOURCE SOLUTIONS

Date: 2/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Continue tripping in core barrel to retrieve core #2 from 1700' to 1711' bpl. Coring depth = 27' (core barrel) + 1680' (14 stands DP) + 1' (core sub) - 5.5' (height of floor above pad level) - 2.5 (height of stand #14 above rig floor at start) = 1700 bpl. A single 40-foot joint of DP will be added prior to start to accomplish coring to 1711' bpl.
7:05	Noah Kugler on-site. Review coring plan. Prepare weekly report to TAC.
8:50	Tag bottom at 1703' bpl (0.5' down on single 40-footer).
8:57	Pick up drillstring 2' and circulate hole with water.
9:09	Begin rotation and ease down to 1702.5' bpl. Circulate
9:19	Pick up drillstring and disconnect between Stand #14 and the core sub to access below the core sub.
9:21	Drop steel ball down drillstring below core sub. The ball will fall to the top of the core sub to divert water flow to the annular space between the inner and outer portions of the core barrel. Reattach pipe and resume pumping water and rotating (14 rpm).
9:22	Core barrel at 1702.5' bpl. Circulate hole for 5 minutes.
9:27	Lower core barrel to 1703' bpl and begin coring Core #1 from 1703' to 1714' bpl. See core drilling log.
10:04	Coring completed at 1714 bpl. Void noted from 1713.5' to 1715' bpl by lowering of core barrel with no weight on bit.
10:10	Begin tripping out coring string and tubing used to circulate water.
12:15	Core barrel is at surface.
12:20	Begin removing core from core barrel.
12:30	Core #2 has been removed from barrel. Approximately five feet of material was recovered with the longest continuous piece being approximately 4 inches long. The material is a vugular dolostone with good apparent porosity.
12:45	Attach 12.25-inch bit to drill collars and begin tripping in hole to resume pilot hole drilling. Noah works on weekly report.
13:30	Mark Pearce OK's core #2 with the understanding that it is unacceptable according to the specifications and that, if need be, we will collect another core while constructing the dual zone monitor well. Noah passes this information on to Ronnie Thames (YBI Superintendent).

14:55	Currently tripped in with Stand #14. Twenty feet down on Stand #14 will put drill bit at 1700' bpl. Prepare to resume pilot hole drilling. NOTE: Using the same 12.25-inch bit and BHA as used during the previous interval.
15:00	Frank Procta on-site.
15:15	Noah Kugler off.
15:34	Currently drilling with STAND #14 at 1715 feet bpl.
15:56	NOTE: The drilling penetration rate suddenly slows down at a depth of 1731 feet bpl.
16:17	Currently drilling with STAND #14 at 1733 feet bpl.
16:46	Update Mark Pearce of current site status.
16:54	Currently circulating at 1740 feet bpl in preparation for sampling discharge water.
17:50	Currently drilling with STAND #14 at 1747.5 feet bpl.
18:15	Currently suspended drilling operations as driller loses circulation. Plan to add water and re-establish good circulation.
19:00	Night-tour crew perform routine rig servicing.
21:20	Currently drilling with STAND #14 at 1763 feet bpl.
21:40	Drilling operations are currently suspended to repair a water leak in the top head drive unit.
22:05	Welder continues repair work on the top head drive unit.
22:28	Re-connect STAND #14 to the string.
22:32	Resume pilot-hole drilling w/ STAND #14.
22:40	Larry Holland arrives on-site.
22:55	Frank Procta leaves the site.
0:00	Currently drilling with STAND #14 at 1772 feet bpl.
2:00	Currently drilling with STAND #14 at 1791 feet bpl.
3:50	Completed drilling pilot hole with STAND #14 to 1800 feet bpl. Initiating inclination survey.
4:34	Inclination survey completed.
4:35	Tripping in with STAND #15. Beginning drilling at 1800 feet bpl.
6:00	Currently drilling with STAND #15 at 1808 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 3/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Trika Nelson on site.
6:50	Holland off site.
7:40	Currently drilling with STAND #15 at 1820 feet bpl.
8:07	Currently drilling with STAND #15 at 1825 feet bpl. Drilling through dolostone.
8:30	Currently drilling with STAND #15 at 1830 feet bpl.
9:20	Currently drilling with STAND #15 at 1842 feet bpl.
10:30	Currently drilling with STAND #15 at 1855 feet bpl. Still drilling through dolostone.
11:00	Currently drilling with STAND #15 at 1860 feet bpl.
12:10	Currently drilling with STAND #15 at 1870 feet bpl.
13:25	Currently drilling with STAND #15 at 1890 feet bpl. Still drilling through dolostone.
13:50	Currently drilling with STAND #15 at 1896 feet bpl.
14:30	Currently drilling with STAND #15 at 1901 feet bpl.
15:30	Currently drilling with STAND #15 at 1909 feet bpl. Still drilling through dolostone.
16:30	Currently drilling with STAND #15 at 1914 feet bpl. Still drilling through dolostone.
17:48	Top head drive down to 1919.5 ft. bpl.
17:55	Run inclination survey to depth of 1850 ft. bpl.
18:17	Finish running inclination survey.
18:25	Make short STAND #16 connection, and resume drilling to 1925 ft. bpl.
18:35	Currently drilling with STAND #16 at 1921 ft. bpl.
18:50	Reached total depth of 1925 ft bpl. YBI shift change. Circulating the hole.
19:00	Trika Nelson off site.
19:00	Holland on-site.
19:21	Reached total depth of 1925 ft bpl again. Circulating the hole.
20:30	Complete swabbing and circulating hole. Starting to trip out. Called Mark Pearce for status report. He instructed us to continue packer test until he could discuss status next morning after 7:00.
22:50	Completed tripping out. Breaking bit from drill string.

23:00	Attaching packer assembly to drill string.
0:10	Tripping back in hole.
0:40	Driller experiencing trouble with hydraulic tongs. Difficulty tightening tool joints. Trying to repair.
0:45	Will repair tongs later. Tripping packer in. Well is not flowing. No kill used.
1:45	Still tripping in. Testing will not have to be extended to still be going for M. Pearce's update in morning.
2:05	Two 30-ft. joints and one 120-ft. stand left to run to place packer at 1875 feet bpl.
3:05	Packer difficulty going down hole last feet. Unable to seat correctly.
3:25	Tripping out of hole.
4:20	Packer out of hole. Large scuff marks on packer, apparently hung on ledge or combination of ledge and fill.
5:00	Tripping back in hole with bit on. Going to dredge and clean hole more.
6:00	Continue cleaning hole.

WATER RESOURCE SOLUTIONS

Date: 3/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Trika Nelson on site. Currently reaming at 1770 ft bpl. .
7:00	Larry Holland off site.
7:55	Top head drive down on STAND # 14 at 1799.5 ft. bpl.
8:05	Make connection with STAND # 15 and proceed with swab trip to 1919.5ft
8:20	Top head drive down on STAND # 15 at 1919.5 ft. bpl. Circulate hole.
8:55	Pull up out of hole 120 ft. Trip back in hole. Driller can not get to bottom
9:10	Trip back in hole. Driller can not get to bottom.
9:20	Proceed with one more swab trip to clean hole.
9:45	Circulating hole.
10:15	Start to trip out of hole again. Having a hard time tripping out. Driller decides to touch bottom again, and dredge hole.
11:00	Still dredging hole.
11:30	Hole is cleaned out. Driller does not notice any significant drag. Start to trip out of hole.
12:30	Still tripping out of hole.
13:42	Finish tripping out of hole.
14:10	Break off bit. Preparing to attach packer. Packer will be set at 1875 ft. bpl.
14:55	Packer has been attached to drill string.
15:08	Begin lowering packer and pressure line for inflation.
16:00	Still lowering packer in hole.
17:00	Still lowering packer in hole.
17:32	Reach 1875 ft bpl. with packer.
17:39	Lower annulus transducer to 50 ft. bpl.
17 42	Start to pressure packer.
18:07	Finish pressuring packer to 460 psi. Trip in reverse air tubing.
18:25	Start 1 volume air development. Annulus water level= 46.369 ft. above transducer. Producing about 300 gpm.
18:32	Trip out reverse air tubing.
18:45	Finish tripping out reverse air tubing. Begin setting sub. pump 180 feet bpl.
18:50	Holland on site. Nelson off site.
18:50	Install submersible pump and transducers.

19:35	Start pump development. Water very clear. Discharging initial 68 gpm then down to a steady 67 gpm.
19:50	Pump development continue. Q = 67 gpm. Little drawdown in open hole. No drawdown in annulus.
20:35	Pump development continue. Q = 67 gpm. Little drawdown in open hole. No drawdown in annulus.
21:35	Pump development completed. Q = 67 gpm. Plans are to recover until 0:00, then record water levels for 30 minutes and then start the pump test.
0:00	Start recording background water levels for 30 minutes.
0:32	Start pumping. Totalizer = 867500 gallons. Q rate = 67 gpm. Cond. = 53.300 mS/cm.
1:02	Totalizer = 869500 gallons. Q rate = 67 gpm. Cond. = 52,900 mS/cm.
1:32	Totalizer = 871900 gallons. Q rate = 67 gpm. Cond. = 52,200 mS/cm.
2:02	Totalizer = 873500 gallons. Q rate = 67 gpm. Cond. = 52,300 mS/cm.
2:32	Totalizer = 875700 gallons. Q rate = 67 gpm. Cond. = 52,500 mS/cm
3:02	Totalizer = 877700 gallons. Q rate = 67 gpm. Cond. = 52,200 mS/cm.
3:32	Totalizer = 880000 gallons. Q rate = 67 gpm. Cond. = 52,200 mS/cm.
4:02	Totalizer = 881600 gallons. Q rate = 67 gpm. Cond. = 52,500 mS/cm.
4:32	Totalizer = 883900 gallons. Q rate = 67 gpm. Cond. = 52,500 mS/cm. Pump stopped and recovery initiated. Water samples collected for Lab.
6:00	Recovery continues.
7:00	Recovery continues. Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Continue recording recovery from drill-stem packer test #3 (1875' to 1925' bpl). Noah Kugler on-site. Holland off.
8:32	Four hours of recovery have been recorded. Test may be stopped at any time.
8:55	Tim Denison is on-site to download drill-stem packer test data from Hermit box. End recording of data.
9:25	Data has been downloaded. Maximum drawdown of 0.7 feet at 67 gpm. Specific capacity = 96 gpm/ft at 67 gpm. Begin bleeding-off packer pressure.
9:35	Mark Pearce is on-site to discuss packer testing results and plans for next test. Jimmy Brantley (YBI project superintendent) has indicated that packer testing of smaller intervals will be accomplished, after drilling of the pilot hole, with a straddle packer assembly.
10:00	Contractor is receiving several shipments of 24-inch casing and will be primarily unloading casing for the next several hours.
10:40	Mark Pearce leaves site.
11:00	Continue unloading 24-inch casing.
12:00	Continue unloading 24-inch casing.
12:30	Begin tripping out submersible pump.
13:55	Pump out of hole. Begin tripping out packer assembly.
14:10	Noah takes noise level readings of the rig while tripping out drill pipe. The loudest readings near sound barrier (on rig side) are in the range of 80 decibels.
14:20	Trika Nelson on-site.
15:15	Noah Kugler leaves site. Continue tripping out drill pipe.
15:50	Packer out of hole. Preparing to attach bit.
16:15	Attach bit.
16:21	Start to trip back into hole.
17:30	Still tripping into hole.
18:42	Done tripping in STAND #15 to 1919.5 ft bpl. Preparing to trip in reverse air tubing.
18:50	Start to trip in reverse air tubing.
19:00	YBI shift change.

19:30	Finish tripping in reverse air tubing.
19:40	Connect STAND # 16. Connect geolograph.
19:55	Resume drilling at 1925 ft. bpl. TD is 2000 ft. bpl. at which time Core 3 will be taken from 2000 ft. bpl. to 2010 ft. bpl.
20:15	Currently drilling with STAND # 16 at 1933 ft. bpl.
21:10	Currently drilling with STAND # 16 at 1941 ft. bpl.
22:05	Currently drilling with STAND # 16 at 1950 ft. bpl.
22:40	Currently drilling with STAND # 16 at 1955 ft. bpl.
22:50	Larry Holland on site. Trika Nelson off site.
0:00	Currently drilling with STAND # 16 at 1974 ft. bpl. Very soft. Dredging.
1:00	Currently drilling with STAND # 16 at 1975 ft. bpl.
3:00	Currently drilling with STAND #16 at 1980 ft. bpl. Dredging.
4:30	Currently drilling with STAND # 16 at 1977 ft. bpl. Hole falling in. Very soft drilling.
6:30	Currently drilling with STAND # 16 at 1977 ft. bpl. Hole falling in.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Holland off. Continue dredging loose sand-sized dolostone from the interval starting at 1970' bpl. Progress was made to 1985' bpl several hours ago but has not been attained since. The driller must dredge a small amount of material at a time or the air-pressure falls off and circulation is lost. When circulation is lost, the bit must be picked-up to regain pressure. Once the bit is picked-up, material falls in the hole again and the process starts over.
8:00	Continue dredging loose sand-sized dolostone at 1970' bpl.
9:00	Continue dredging loose sand-sized dolostone at 1975' bpl.
10:00	Continue dredging loose sand-sized dolostone at 1975' bpl. Mark Pearce on-site for weekly meeting. Discuss next core interval and following packer test.
10:25	Meeting adjourned, Mark Pearce leaves site.
10:35	Pick up drill string and reswab/dredge hole from 1920' bpl. Resistance first noted at 1970' bpl
11:00	Continue dredging loose sand-sized dolostone at 1973' bpl.
12:00	Continue dredging loose sand-sized dolostone at 1970' bpl.
13:00	Continue dredging loose sand-sized dolostone at 1975' bpl.
13:25	Pick up drill string and reswab/dredge hole from 1920' bpl.
14:00	Continue dredging loose sand-sized dolostone at 1975' bpl.
14:20	Trika Nelson on-site.
15:00	Continue dredging loose sand-sized dolostone at 1977' bpl.
15:10	Noah Kugler off site.
15:30	Continue dredging loose sand-sized dolostone at 1977' bpl.
16:15	Pick up drill string and reswab/dredge hole from 1965' bpl.
16:30	Continue dredging loose sand-sized dolostone at 1975' bpl.
17:30	Pick up drill string and reswab/dredge hole from 1970' bpl.
18:30	Continue dredging loose sand-sized dolostone at 1975' bpl.
19:30	Continue dredging loose sand-sized dolostone at 1975' bpl.
20:30	Continue dredging loose sand-sized dolostone at 1975' bpl.
21:15	Pick up drill string and reswab/dredge hole from 1930' bpl.
21:20	Continue dredging loose sand-sized dolostone at 1945' bpl.

22:10	Pick up drill string and reswab/dredge hole from 1960' bpl.
22:24	Continue dredging loose sand-sized dolostone at 1977' bpl. Consistently losing air pressure. Hole keeps falling in, and plugging bit.
22:45	Larry Holland on site. Trika Nelson off site.
0:00	Continue dredging loose sand-sized dolostone at 1975' bpl.
0:15	Continue dredging loose sand-sized dolostone at 1980' bpl.
0:25	Making new hole.
1:25	Drilling at 2000' bpl. Determined to drill to 2010' bpl for coring review.
1:55	Drilling at 2010' bpl. Last 20 feet drilled with steady 10,000 lbs. weight. After cleaning hole will now stop drilling to complete core (2010 - 2020).
2:15	Swabbing and cleaning hole. Still some debris falling in hole.
4:00	Swabbing and cleaning hole.
4:30	Tripping out of hole to prepare and complete core at 2010'-2020'.
6:15	Completed tripping out of hole. Assembling coring equipment.
6:45	Core barrel assembled. Begin tripping in hole with core barrel.
6:50	Noah Kugler on-site.
7:00	Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Tripping-in core barrel to retrieve core #3 from 2010' to 2021' bpl. Coring depth = 27' (core barrel) + 1920' (16 stands DP) + 40' (single joint 1) + 1' (core sub) + 40' (single joint 2) - 5.5' (height of floor above pad level) - 12.5 (height of single 40-foot joint 2 above rig floor at start) = 2010 bpl.
7:15	Noah Analyzes reverse-air water samples from 1980' and 2010' bpl and reviews coring plan.
8:00	Continue tripping-in core barrel. Noah calls Mark Pearce with update.
8:50	Tag bottom at 2010.5' bpl (28' down on single 40-footer).
8:52	Pick up drillstring 1' and circulate hole with water.
9:08	Pick up drillstring and disconnect between Stand #16 and the core sub to access below the core sub.
9:10	Drop steel ball down drillstring below core sub. Reattach pipe and resume pumping water and rotating (16 rpm).
9:13	Lower core barrel to 2009' bpl. Circulate hole.
9:22	Lower core barrel to 2010.5' bpl and begin coring Core #3 from 2010.5' to 2021.5' bpl. See core drilling log.
11:00	Very soft material or void noted from 2015.5' to 2017' bpl by rapid lowering of core barrel (< 1 minute).
12:04	Coring completed at 2021.5' bpl. Pick-up 6" and rotate core to break loose. Lower core and repeat 2 times.
12:09	Begin tripping out coring string and tubing used to circulate water.
14:35	Core barrel is at surface. Break out core barrel.
14:40	Trika Nelson on site.
14:50	Begin removing core from core barrel.
15:05	Core #3 has been removed from barrel. Approximately 7 feet of material was recovered with the longest continuous piece being approximately 4 inches long. The material is vugular dolostone with fair to good apparent porosity and permeability. See core description log.
15:30	Replacing packing on swivel. (top head drive)
16:10	Noah Kugler off site.
16:30	Still replacing packing in swivel. (top head drive)
17:26	Still replacing packing in swivel. (top head drive)

18:40	Still replacing packing in swivel.
19:00	Still replacing packing in swivel.
20:07	Still replacing packing in swivel.
21:02	Finish replacing packing in swivel. Attaching bit to drill string.
21:15	Start to trip back into hole to 2010 ft. bpl. where drilling will resume to 2040 ft. bpl. Cuttings will be carefully assessed to determine if another core will be taken from 2040 ft. bpl to 2061 ft. bpl.
22:00	Still tripping in hole to 2010 ft. bpl.
22:57	Finish tripping in drill pipe. Start to trip in reverse air tubing.
23:00	Larry Holland on site. Trika Nelson off site.
1:00	Currently drilling at 2010 feet bpl.
3:00	Currently drilling with STAND #16 at 2028 feet bpl.
4:00	Currently drilling with STAND #16 at 2030 feet bpl. Dredging.
5:00	Currently drilling with STAND #16 at 2030 feet bpl. Still dredging. Formation appears poor candidate for coring.
6:00	Currently drilling with STAND #16 at 2040 feet bpl.
6:55	Noah Kugler on-site. Holland off. Dredging/cleaning hole. 2040 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 3/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Contractor has been dredging hole since 2:00 last night. Currently drilled to top head drive down at 2040' bpl. Driller is working drillstring between 2020' and 2040' bpl. Still unloading material.
8:00	Driller continues working drillstring between 2020' and 2040' bpl. Still unloading material. Driller is able to drill to top head drive down, however, soon after reaching it (2040' bpl), the air pressure starts to drop off and circulation is lost if the drillstring is not raised. Sandy dolostone is coming through the circulation system and appears to be sloughing in and clogging drill bit.
8:10	Noah calls Mark Pearce with update.
9:00	Continue dredging between 2020' and 2040' bpl. Still unloading sandy dolostone material.
10:00	Continue dredging between 2020' and 2040' bpl. Still unloading sandy dolostone material.
11:00	Continue dredging between 2020' and 2040' bpl. Still unloading sandy dolostone material.
12:00	Continue dredging between 2020' and 2040' bpl. Still unloading sandy dolostone material.
13:00	Continue dredging.
13:15	Top head drive down with Stand #16 at 2040' bpl. Hole has cleaned up significantly.
13:35	Run inclination survey at 1940' bpl = 0.1 degrees.
13:55	Run inclination survey at 2030' bpl = 0.25 degrees.
14:25	Make connection with a 40' joint and resume drilling at 2040' bpl.
14:30	Trika Nelson on site.
15:15	Noah leaves site. Current plan is to drill to 2200' bpl., take a core if suitable from 2200' bpl. to 2211' bpl., and then drill to 2220' bpl. to run a packer test from 2200' bpl. to 2220' bpl.
15:25	Currently drilling with a 40' joint at 2045' bpl.
16:25	Currently drilling with a 40' joint at 2050' bpl.
17:00	Currently drilling with a 40' joint at 2065' bpl.

17:30	Currently drilling with a 40' joint at 2068' bpl. Air pressure starts to drop off and circulation is lost if the drillstring is not raised. Sandy dolostone is coming through the circulation system and appears to be sloughing in and clogging drill bit.
18:00	Currently drilling with a 40' joint at 2070' bpl. Continuing to dredge hole.
18:45	Currently drilling with a 40' joint at 2080' bpl
19:00	YBI shift change. Servicing rig.
20:00	Circulating hole and cleaning out hole.
21:00	Greasing swivel, and re-tighten packing in swivel on top head drive.
21:15	Connect second 40' joint.
21:20	Resume drilling. Currently drilling at 2080' bpl.
22:25	Currently drilling at 2090' bpl. Dredging hole some.
22:55	Larry Holland on site. Trika Nelson off site.
0:00	Currently drilling with second 40' joint at 2110' bpl.
2:22	Greasing swivel packing
4:25	Connect third 40' joint.
5:00	Currently drilling at 2132' bpl. Formation drilling smoother.
6:00	Currently drilling at 2149' bpl.
6:10	Noah Kugler calls Larry Holland for update. Noah is getting supplies from WRS office.
7:00	Larry Holland off. Noah Kugler en-route from office. ETA 7:15.

Week 7

WATER RESOURCE SOLUTIONS

Date: 3/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently drilling with third 40' joint at 2110' bpl. Single joints are being added to drillstring instead of stands so that the driller is able to pick up the drillstring with plenty of room if the bit begins to plug-off. Typically the bit has been plugging and the system loosing air-pressure relatively frequently.
7:15	Noah Kugler on-site. Speak with driller about current ops. and how the formation has been acting with regard to bit plugging.
7:50	Top head drive down with Stand #17 (3 single 40 footers = 1 stand) at 2160' bpl. Perform inclination survey at 2120' bpl.
8:40	Inclination survey at 2120' bpl = 0.4 degrees. Make connection with single 30-footer and resume drilling at 2160' bpl
9:00	Currently drilling with single 30' joint at 2166' bpl.
10:25	Currently drilling with single 30' joint at 2175' bpl.
11:38	Top head drive down with single 30 footer at 2190' bpl. Very rapid rate of penetration (< 1 min/foot) noted from 2186' to 2188' bpl and 2189' to 2190' bpl. Circulate hole.
12:15	Make connection with 2nd single 30-foot joint of drillpipe and resume drilling.
12:25	Monitor cuttings every foot starting at 2196' bpl to verify good coring start-point at 2200' bpl.
12:47	Reached proposed coring depth of 2200' bpl. Circulate hole.
13:10	Pick up drillstring 100' and continue circulating.
13:40	Noah calls Mark Pearce with update and lithology description. Mark approves taking a core starting at 2200' bpl. Noah relates coring depth to Ronnie Thames (YBI site superintendent).
13:45	Lower drillstring to 2198' bpl and continue circulating until hole is clean.
14:35	Trika Nelson on-site.
15:25	Noah Kugler leaves site. Continue circulating hole clean at 2200' bpl.
15:26	Finish circulating, starting to trip out of the hole.
16:30	Still tripping out of hole.
17:10	Finish tripping out of hole. Assembling coring equipment.
17:52	Core barrel assembled. Begin tripping in hole with core barrel to retrieve core# 3b from 2200' to 2211' bpl.
18:40	Continue tripping in core barrel.
19:20	Continue tripping in core barrel, connecting 30' joint.
19:40	Tag bottom at 2200' bpl.

19:50	Pick up drill string 1' and circulate hole.
20:06	Drop steel ball down drill string below core sub. Reattach pipe and resume pumping water and rotating.
20:08	Lower core barrel to 2200' bpl. and begin coring. See drilling log.
22:55	Todd Tubbert on site. Trika Nelson off site.
23:15	Continue coring at 2205.5' bpl.
0:00	Continue coring at 2207' bpl.
0:32	Coring complete at 2211' bpl.
0:45	Begin tripping out drill string to obtain core sample.
3:20	Remove core from core barrel and place in box. NOTE: approximately 6 foot of recovery, 1 piece greater than 7".
3:45	Crew delivers core to trailer.
4:00	Down with repair to top head drive.
4:30	Phone Dr. Pearce to discuss core results.
5:30	Down with repair to top head drive.
6:15	Dr. Pearce arrives onsite to view core sample. Dr. Pearce instructs Ronnie Of YBI, NOT to conduct a packer test and to continue drilling to 2350' bpl.
6:45	Dr. Pearce leaves the site.
7:00	YBI crew change.
7:30	Down with repair to top head drive.
7:55	Frank Procta arrives on site.
8:05	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 3/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert

Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:55	Frank Procta arrives on-site. Current ops. : Down with repairs to top head drive.
9:50	YBI crew continue to work on the top head drive unit (changing packing).
10:35	Update Mark Pearce of current site operations.
11:49	Connect the bit assembly to the collar stand. NOTE: BHA consists of 1-foot long, 12.25-inch diameter bit attached to 2-foot long sub, w/ 122-foot long collar stand. Total BHA length is 125 feet. There are now 23 stands of 120-foot long drill pipe on the derrick.
11:55	Begin tripping in stands of drill pipe in preparation for advancing the pilot hole from 2200 feet bpl.
13:20	Continue tripping in drill pipe.
13:35	Currently tripping in the air line.
14:20	Top head drive down with STAND #16. Crew inspect the THD unit.
14:55	Top head drive down with STAND #17. Crew work on the THD unit.
15:25	Add STAND #18 to the drill string.
15:37	Lower the drill string to 2200 feet bpl, connect the geolograph.
15:47	Begin advancing the pilot hole w/ STAND #18 at 2200' bpl.
17:18	Currently drilling w/ STAND #18 at 2214 feet bpl.
18:35	Currently drilling w/ STAND #18 at 2220 feet bpl.
19:10	Night-tour crew currently servicing the rig.
19:15	Resume drilling operations.
19:19	Update Mark Pearce, by phone message, of current site operations.
19:39	Currently drilling w/ STAND #18 at 2222.5 feet bpl.
19:50	Frank Procta leaves the site.
20:00	Todd Tubbert on-site. - continue drilling w/STAND #18.
22:00	Currently drilling w/ STAND #18 at 2235 feet bpl.
22:15	Currently drilling w/ STAND #18 at 2265 feet bpl. NOTE: drill string weight fell off at approx. 2233' bpl, very cavernous zone, drilled 30 ft in 15 minutes.
22:30	Currently drilling w/ STAND #18 at 2275 feet bpl. NOTE: see ROP.
23:00	Top head drive down at 2280' bpl - circulate.
23:30	Run inclination survey at 2210' bpl. Result: .55 degrees dev.
23:50	Make connection with STAND # 19.

0:20	Resume drilling.
1:30	Currently drilling w/ STAND #19 at 2310 feet bpl.
2:05	Currently drilling w/ STAND #19 at 2320 feet bpl.
3:25	Currently drilling w/ STAND #19 at 2345 feet bpl.
4:30	Currently circulating w/ with STAND #19 at 2350' bpl.
5:00	Trip out drill string.
6:00	Continue tripping out drill string.
7:00	Crew change/servicing rig.
7:30	Continue tripping out drill string.
8:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 3/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
8:00	Frank Procta arrives on-site. Current ops. : Tripping out drilling string in preparation for running in coring string to 2350 feet bpl.
8:33	Run 27-foot long core barrel down well - prepare to trip in drill pipe.
8:45	Crew is currently tripping in drill pipe (coring string). NOTE: Coring string is composed as follows: 27-foot long, 4-inch diameter core barrel, 19 stands of 120-foot drill pipe (2280 feet), 40-foot single joint of drill pipe,1-foot long coring sub, 7.5 feet up on a 30-foot single joint of drill pipe. Bottom of core barrel placed at 2350 feet bpl correcting for distance from rig floor to pad level (5.5 feet).
10:28	THD down with STAND #19.
10:37	Add 40-foot single to the coring string.
10:42	Add 1-foot coring sub to the string.
10:46	Begin tripping in 2 3/8-inch steel tubing.
10:55	Add 30-foot single to the coring string.
10:59	Begin pumping water before tagging bottom.
11:00	Tag the bottom of the pilot hole at 2347.5 feet bpl.
11:01	Raise the coring string approx. 1 foot off bottom and circulate water.
11.16	Raise the coring string and break at the core sub.
11:19	Drop the steel ball below the core sub and reconnect to the string.
11:21	Lower the core barrel to 2347.5 feet bpl and circulate water.
11:25	Begin coring the interval between 2347.5 to 2358.5 feet bpl (Core #5).
15:46	Reach a depth of 2352.5 feet bpl while coring. NOTE: The last foot cored (2351.5 to 2352.5' bpl) took 106 minutes applying 5,000 lbs. on core barrel, turning at 14 RPM.
17:30	Update Mark Pearce of current site operations.
20:02	Coring at 2356.5 feet bpl.
20:20	Todd Tubbert arrives on-site.
20:25	Frank Procta leaves the site.
21:10	Coring at 2357.5 feet bpl.
22:45	Coring at 2358.5 feet bpl. (TD)
22:50	Pick up 6" and rotate string to break core.
23:00	Begin tripping out drillstring

0:00	Continue tripping out drill string.
1:30	Remove core from core barrel and place in box. NOTE: approximately 6 foot of recovery, 1 piece greater than 7".
1:40	Crew delivers core to trailer.
1:50	Leave message for Dr. Mark Pearce regarding core recovery and appearance.
2:00	Crew preparing to trip in drillstring with 12.25 inch bit.
3:00	Connect the bit assembly to the collar stand. NOTE: BHA consists of 1-foot long, 12.25-inch diameter bit attached to 2-foot long sub, w/ 122-foot long collar stand. Total BHA length is 125 feet. There are now 23 stands of 120-foot long drill pipe on the derrick.
5:00	Tripping in drillstring.
5:15	Tripping in air line.
5:49	Begin advancing pilot hole with STAND # 19 at 2350' bpl
6:50	Currently drilling with STAND #19 at 2361' bpl.

WATER RESOURCE SOLUTIONS

Date: 3/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently drilling 12.25" pilot hole at 2361' bpl. Core #5 (2347.5 to 2358.5) has been removed from hole. Very hard dolostone, dark yellowish brown, with large cavities, some filled with recrystalized, large-grained dolomite.
7:05	Todd Tubbert leaves the site. Suspend drilling at 2366' bpl for normal rig service.
7:10	Noah Kugler on-site (accident on I-75).
7:35	Rig service complete. Resume drilling at 2366' bpl.
8:00	Currently drilling with Stand #19 at 2385' bpl
8:17	Rate of penetration decrease (hard material) starting at 2391' bpl.
8:20	Mark Pearce on-site to examine Core #5.
9:00	Currently drilling with Stand #19 at 2395' bpl
9:25	Top head drive down with Stand #19 at 2400' bpl. Circulate hole.
9:35	Perform inclination survey at 2300' bpl.
9:55	Perform inclination survey at 2390' bpl.
10:20	Inclination survey at 2300' bpl = 0.6 degrees. Inclination survey at 2390' bpl = 0.6 degrees. Make connection with Stand #20 and resume drilling.
11:00	Currently drilling with Stand #20 at 2407' bpl
12:00	Currently drilling with Stand #20 at 2411' bpl
12:20	Rate of penetration decrease (hard material) starting at 2411' bpl.
13:00	Currently drilling with Stand #20 at 2413' bpl
14:00	Currently drilling with Stand #20 at 2432' bpl
14:50	Frank Procta on-site.
15:10	Noah Kugler off. Currently drilling with Stand #20 at 2439' bpl
16:05	Update Mark Pearce of current site status.
18:24	Currently drilling with STAND #20 at 2452.5 feet bpl.
21:35	Currently drilling with STAND #20 at 2458 feet bpl.
22:35	Currently drilling with STAND #20 at 2459.5 feet bpl.
22:57	Currently drilling with STAND #20 at 2460 feet bpl.
23:00	Todd Tubbert arrives on-site.
23:05	Frank Procta leaves the site.
1:00	Currently drilling with STAND #20 at 2467 feet bpl.
2:00	Currently drilling with STAND #20 at 2468 feet bpl.

3:00	Currently drilling with STAND #20 at 2470 feet bpl.
4:00	Currently drilling with STAND #20 at 2475 feet bpl.
6:00	Currently drilling with STAND #20 at 2477 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 3/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently drilling 12.25-inch pilot hole with STAND #20 at 2477.5' bpl.
7:50	Todd Tubbert leaves site.
8:00	Currently drilling with STAND #20 at 2478' bpl. The rate of penetration has been in the range of 100 min/ft for the last several feet. Based upon hardness and density of strata being penetrated, Mark Pearce chooses to attempt a six-foot core starting at 2478' bpl. Stop drilling, pick up drillstring 2 feet and circulate hole.
8:15	Pick up drillstring to 2400' and continue circulating hole.
8:48	Lower drillstring to 2475' and continue circulating hole.
9:10	Release air pressure and begin tripping out of hole.
9:25	Some drag noted while pulling up Stand #20. Reswab hole with that stand.
10:40	Swabbing with Stand #20 complete. Resume tripping out of hole.
10:50	Some drag noted while pulling up Stand #19. Reswab hole with that stand.
11:55	Swabbing with Stand #19 complete. Resume tripping out of hole.
12:15	Some drag noted while pulling up Stand #18. Reswab hole with that stand.
13:05	Swabbing with Stand #18 complete. Resume tripping out of hole.
13:20	Mark Pearce calls site for update and summary of weekly progress.
14:00	Continue tripping out of hole.
14:30	Diamond tipped reaming bit has been delivered to site.
14:50	Frank Procta on-site.
15:30	Noah Kugler leaves. Continue tripping out of hole.
15:55	Remove the collar stand from the bit assembly.
16:25	YBI crew replacing the bit on the 27-foot long core barrel.
16:45	Lower the core barrel down the well.
17:07	Crew is currently tripping in drill pipe (coring string). NOTE: Coring string is composed as follows: 27-foot long, 4-inch diameter core barrel, 20 stands of 120-foot drill pipe (2400 feet), 40-foot single joint of drill pipe,1-foot long coring sub, 15 feet up on a 30-foot single joint of drill pipe. Bottom of core barrel placed at 2477.5 feet bpl correcting for distance from rig floor to pad level (5.5 feet).
17:41	Mark Pearce calls to give the OK to proceed with the sixth coring event.

18:46	Add 40-foot single to the coring string.
18:50	Add 1-foot coring sub to the string.
18:51	Begin tripping in 2 3/8-inch steel tubing.
19:04	Add 30-foot single to the coring string.
19:10	Begin pumping water before tagging bottom.
19:35	Tag the bottom of the pilot hole at 2476 feet bpl.
19:37	Raise the coring string approx. 1 foot off bottom and circulate water.
19:53	Raise the coring string and break at the core sub.
19:58	Drop the steel ball below the core sub and reconnect to the string.
20:14	Lower the core barrel to 2476 feet bpl and circulate water. NOTE: Pumping water at approx. 85 GPM.
20:17	Begin coring the interval between 2476 to 2482 feet bpl (Core #6).
20:38	Core out of fill and into solid formation at a depth of 2477.3 feet bpl.
23:45	Todd Tubbert arrives on-site.
23:48	Currently coring at 2480 feet bpl.
0:00	Frank Procta leaves the site.
0:05	Crew mark drill pipe to 2484' (4" from bottom of elevators.) Plan is to core to bottom of elevators. Adjusted core interval will be to will be 2476 to 2484'.
1:00	Currently coring at 2480.5 feet bpl.
3:00	Currently coring at 2481.2 feet bpl.
4:00	Currently coring at 2481.5 feet bpl.
5:00	Currently coring at 2481.8 feet bpl.
6:00	Currently coring at 2482 feet bpl.
7:00	Currently coring at 2482.1 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 3/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Continue coring at 2482.1' bpl (Core #6). Coring began at 20:17 hours last night.
7:05	Todd Tubbert leaves the site.
7:15	Noah Kugler on-site.
8:00	Continue coring at 2482.5' bpl.
8:05	Noah calls Mark Pearce with project update.
9:00	Continue coring at 2482.75' bpl.
10:00	Continue coring at 2483' bpl.
11:00	Continue coring at 2483.2' bpl.
12:00	Continue coring at 2483.4' bpl.
12:35	Mark Pearce calls for coring update. Estimate time to complete core to 2484' bpl at 14:30 hours.
13:00	Continue coring at 2483.7' bpl.
14:25	Reached core termination depth of 2484' bpl. Stop rotating.
14:27	Shut in water pump.
14:28	Break-out core by lifting up on drillstring ~6" and rotating. Repeat procedure several times.
14:40	Begin tripping coring string out of hole, stand of air tubing first.
15:00	Frank Procta on-site. Current ops. : Crew continue to trip out coring string.
15:15	Noah Kugler leaves site.
16:43	Remove inner unit from core barrel.
16:55	Remove the rock sample from the core barrel. NOTE: Retrieved core (100% recovery), see core description form.
17:46	Lower the 125-foot long BHA (3-foot bit assembly and 122-foot drill collar stand) down the well.
18:20	Finish core (#6) description. YBI crew currently tripping in the drill string.
18:30	Call Mark Pearce with coring results.
19:15	Tripping in the 2 3/8-inch air line.
19:41	Add STAND #20 to the drill string. NOTE: 76.5 feet up on STAND #20 places the bit at 2476 feet bpl.
20:00	Resume pilot-hole drilling with STAND #20 at 2476 feet bpl.
21:48	Currently drilling with STAND #20 at 2484 feet bpl.

22:00	Todd Tubbert arrives on-site, Frank Procta leaves the site.
22:10	Currently drilling with STAND #20 at 2485 feet bpl.
23:41	Currently drilling with STAND #20 at 2490 feet bpl.
0:15	Crew sample pmw #2 and place in refrigerator.
12:40	Currently drilling with STAND #20 at 2495 feet bpl.
2:04	STOP drilling with STAND #20 at 2500 feet bpl. Circulate.
2:10	Discuss plan with YBI driller (Tommy):Plan is to trip out 6 stands drill pipe, and then trip back in to TD (wiper trip). Circulate for 45 minutes. Trip out of hole for geophysical logs.
2:40	Begin tripping out 6 STANDS of drill pipe.
3:20	Begin tripping in drillstring with STAND # 15.
4:40	End tripping in drillstring with STAND # 20. (Note: wiper trip was clean except for 1' of fill accumulation at TD.)
4:45	Dredge 1 foot of fill at 2499 feet bpl. Circulate.
5:00	Circulating at 2500' bpl with STAND # 20.
5:45	Run short wiper trip with first six stands.
6:50	Wiper trip complete. Hole is clean with negligible fill (< 1'). Begin tripping drillstring out of hole. Plan to run suite of geophysical logs.
6:55	Noah Kugler on-site.

WATER RESOURCE SOLUTIONS

Date: 3/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Tripping drillstring out of hole in preparation to run suite of geophysical logs (caliper, temperature, flow survey).
7:05	Todd Tubbert leaves site.
8:00	Geophysical loggers (Tim Denison and Joel Barrett) on-site. Continue tripping out drillstring.
8:25	Drillstring out of hole. Setting up logging tools.
8:45	Run in hole with caliper/gamma and temperature tools. Calibrate caliper tool.
8:52	Begin running tools down hole.
9:00	Calibrate depth for line tension at 1000' bpl.
9:05	Calibrations complete. Continue down hole.
9:15	Begin running temperature log down hole from base of 34-inch casing at 1300' bpl. Line speed ~60'/minute.
9:40	Due to questionable line-tension and temperature responses, the logging tool will be picked up and the log re-run.
9:48	Begin re-running temperature log down hole.
10:05	Tool hung-up briefly at 2083' bpl.
10:11	Tool hung-up briefly at 2284' bpl.
10:15	Reach bottom of hole at 2500' bpl. Open caliper arms and begin logging upward (caliper and gamma).
10:24	Repeat pass (200') completed. Run tool back to bottom.
10:28	Tool on bottom. Begin main logging pass.
10:57	Tool inside casing above 1300' bpl. Note: cement plug to 1274' bpl.
11:10	Retrieve caliper and gamma tools from hole.
11:20	Start running in hole with flow survey tool and begin logging down hole at 40' per
11:28	Tool out of casing and into formation.
11:45	Tool hung-up briefly at 2180' bpl.
11:50	Spinner stopped working. Pull up to 2140' bpl and start to re-log section.
11:55	Tool hung-up briefly at 2233' bpl.
12:15	Cannot lower tool past 2230' bpl.
12:20	Mark Pearce OK's flow logs to 2230' bpl instead of 2500' bpl.

12:28	Start calibration passes from 1750' to 1900'.
12:42	Finished calibration passes at 40, 60, 80 feet/minute.
13:10	Begin tripping in 15-hp submersible pump to 120' bpl.
13:30	Wiring to pump has problems. Suspend ops. for wiring issue.
14:50	Frank Procta on-site.
15:20	Noah Kugler leaves.
16:00	Down for repairs (sub pump electrical problems).
17:00	Down for repairs.
18:30	Down for repairs, loggers are standing by.
18:58	Lower a 22-foot long, 3-inch diameter PVC drop pipe down the well.
19:35	Currently pumping, using centrifugal pump, at 275 GPM sustained rate. NOTE: Pump connected to a 3-inch diameter hose and 3-inch drop pipe.
19:38	Begin recording data at a depth of 1265' bpl at a downhole logging speed of approx. 60 feet/min., pumping at a sustained rate of 275 GPM.
19:54	End recording data at a depth of 2230' bpl - shut off pump. NOTE: the drawdown during pumping at 275 gpm was in the range of a few inches.
19:56	Remove the drop pipe from the well.
20:15	Remove the tool from the well.
20:45	YBI crew performing routine rig maintenance.
21:25	Currently tripping in stands of drill pipe. NOTE: Using 125-foot long BHA and 120-foot long stands of drill pipe.
23:00	Todd Tubbert on-site.
23:05	Frank Procta off-site.
23:30	Begin drilling with STAND # 20 at 2500' bpl.
0:30	Currently drilling with STAND #20 at 2505' bpl.
2:15	Currently drilling with STAND #20 at 2507' bpl.
2:45	Currently drilling with STAND #20 at 2510' bpl.
3:30	Currently drilling with STAND #20 at 2515' bpl.
4:06	Top head drive down with STAND # 20 at 2520' bpl. Circulate.
5:00	Perform inclination survey at 2480' bpl. Result: .5 degrees dev.
5:30	Make connection with STAND # 21.
6:30	Currently drilling with STAND #20 at 2523' bpl.
7:00	Todd Tubbert leaves site.

Week 8

WATER RESOURCE SOLUTIONS

Date: 3/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently drilling 12.25-inch pilot hole with STAND #21 at 2526' bpl.
7:05	Suspend drilling for normal rig service.
7:20	Rig service complete. Resume drilling.
7:35	Todd Tubbert leaves site.
7:45	Mark Pearce calls for update regarding flow testing completed yesterday.
8:00	Currently drilling with STAND #21 at 2528' bpl.
9:00	Currently drilling with STAND #21 at 2535' bpl.
10:00	Currently drilling with STAND #21 at 2543' bpl. Very hard, dense dolostone with few vugs or cavities since 2480' bpl (good confinement).
11:00	Currently drilling with STAND #21 at 2549' bpl.
12:00	Currently drilling with STAND #21 at 2553' bpl. Still drilling through very hard, dense dolostone with few vugs or cavities.
13:00	Currently drilling with STAND #21 at 2558' bpl.
14:00	Currently drilling with STAND #21 at 2565' bpl.
15:00	Frank Procta on-site.
15:30	Noah Kugler leaves site. Currently drilling with STAND #21 at 2569' bpl.
18:45	Currently drilling with STAND #21 at 2595' bpl.
19:00	Down for routine rig maintenance.
19:25	Resume pilot-hole drilling with STAND #21.
19:54	Currently drilling with STAND #21 at 2599.5' bpl.
22:18	Currently drilling with STAND #21 at 2616' bpl.
22:42	Currently drilling with STAND #21 at 2619.5' bpl.
22:55	Larry Holland arrives on-site, Frank Procta leaves the site.
0:30	Currently drilling with STAND #21 at 2625' bpl.
2:00	Currently drilling with STAND #21 at 2632' bpl.
3:00	Currently drilling with STAND #21 at 2634' bpl.
3:50	Rig shut down to repair top head drive.
4:37	Rig repaired. Resume drilling.
4:50	Currently drilling with STAND #21 at 2640' bpl.
4:57	Rig shut down to repair top head drive.
6:41	Trika Nelson on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T.Nelson
L.Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:41	Trika Nelson on-site. Holland off.
7:30	Top head drive fixed, top head drive down with STAND #21 at 2640' bpl. Circulating hole.
7:55	Perform inclination survey at 2570' bpl. Result: .75 degrees dev.
8:35	Make connection with STAND # 22.
9:32	Currently drilling with STAND #22 at 2645' bpl.
10:35	Currently drilling with STAND #22 at 2649' bpl.
11:35	Currently drilling with STAND #22 at 2655' bpl.
12:32	Currently drilling with STAND #22 at 2660' bpl.
13:33	Currently drilling with STAND #22 at 2670' bpl.
14:35	Currently drilling with STAND #22 at 2675' bpl.
15:30	Currently drilling with STAND #22 at 2677' bpl.
16:15	Currently drilling with STAND #22 at 2680' bpl.
17:00	Currently drilling with STAND #22 at 2690' bpl.
17:50	Currently drilling with STAND #22 at 2700' bpl.
18:20	Currently drilling with STAND #22 at 2710' bpl.
19:00	Trika Nelson off site. Larry Holland on site.
21:01	Currently drilling with STAND #22 at 2725' bpl.
23:19	Currently drilling with STAND #22 at 2735' bpl.
0:45	Currently drilling with STAND #22 at 2745' bpl.
2:38	Currently drilling with STAND #22 at 2760' bpl.
2:38	Perform inclination survey at 2660' bpl. Result: .45 degrees dev.
3:22	Make connection with STAND #23.
4:08	Currently drilling with STAND #23 at 2770' bpl.
5:38	Currently drilling with STAND #23 at 2785' bpl.
6:11	Currently drilling with STAND #23 at 2790' bpl.
6:50	Trika Nelson on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T.Nelson
L.Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on-site. Holland off.
7:00	Currently drilling with STAND #23 at 2797' bpl.
8:00	Currently drilling with STAND #23 at 2800' bpl.
9:00	Currently drilling with STAND #23 at 2812' bpl.
10:00	Currently drilling with STAND #23 at 2820' bpl.
11:05	Currently drilling with STAND #23 at 2831' bpl.
12:00	Currently drilling with STAND #23 at 2837' bpl.
13:10	Currently drilling with STAND #23 at 2849' bpl.
14:00	Currently drilling with STAND #23 at 2854' bpl.
15:00	Currently drilling with STAND #23 at 2861' bpl.
16:00	Currently drilling with STAND #23 at 2866' bpl.
17:00	Currently drilling with STAND #23 at 2871' bpl.
18:00	Currently drilling with STAND #23 at 2875' bpl.
18:42	Larry Holland on site. Trika Nelson off site.
19:11	Circulating hole preparing for inclination survey.
19:30	Perform inclination survey at 2750' bpl. Result: 0.25 degrees dev.
19:48	Perform inclination survey at 2840' bpl. Result: 0.50 degrees dev.
20:11	Make connection with STAND #24,drilling with STAND #24 at 2880' bpl. (*note: actually added 1st 40-foot joint)
22:03	Currently drilling with STAND #24 at 2890' bpl.
0:55	Currently drilling with STAND #24 at 2900' bpl.
2:42	Currently drilling with STAND #24 at 2910' bpl.
4:20	Currently drilling with STAND #24 at 2920' bpl.
4:48	Connecting 2nd 40-foot joint of STAND #24 and resume drilling.
5:45	Currently drilling with STAND #24 at 2925' bpl.
7:00	Currently drilling with STAND #24 at 2935' bpl.

WATER RESOURCE SOLUTIONS

Date: 3/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T.Nelson
L.Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Larry Holland off. Currently drilling 12.25-inch pilot hole with STAND #24 (2nd 40-foot joint) at 2935' bpl.
8:00	Drilling with STAND #24 (2nd 40-footer) at 2944' bpl.
8:15	Noah calls Mark Pearce with update.
9:00	Drilling with STAND #24 (2nd 40-footer) at 2948' bpl.
10:00	Drilling with STAND #24 (2nd 40-footer) at 2952' bpl.
11:00	Drilling with STAND #24 (2nd 40-footer) at 2956' bpl.
11:35	Bit drop from approx. 2958' to 2960' bpl (void). Top head drive down at 2960' bpl (2nd 40-foot joint of Stand #24). Circulate hole.
11:45	Perform inclination survey at 2930' bpl.
12:40	Connection made with single 40-foot joint (3rd 40-footer of Stand #24). Single 30-foot joints will be added to the drillstring until total depth is achieved at 3250' bpl.
12:42	Bit drop from approx. 2960' to 2962.5' bpl (continued void from 2958' bpl)
13:00	Drilling with STAND #24 (3rd 40-footer) at 2963' bpl.
14:00	Drilling with STAND #24 (3rd 40-footer) at 2969' bpl.
14:30	Trika Nelson on-site.
15:00	Drilling with STAND #24 (3rd 40-footer) at 2980' bpl.
15:25	Noah Kugler leaves site to pick-up chemicals for chloride analysis.
16:00	Drilling with STAND #24 (3rd 40-footer) at 2990' bpl.
17:00	Drilling with STAND #24 (3rd 40-footer) at 2997' bpl.
17:20	Top head drive down with STAND #24 to 2999.5' bpl. Greasing and tightening the packing in swivel on top head drive.
17:35	Connection made with STAND #25 (1st 30' joint).
18:00	Drilling with STAND # 25 (1st 30' joint) at 3000' bpl.
19:00	Servicing rig. YBI shift change.
19:15	Drilling with STAND # 25 (1st 30' joint) at 3003' bpl.
20:00	Drilling with STAND # 25 (1st 30' joint) at 3006' bpl.
21:00	Drilling with STAND # 25 (1st 30' joint) at 3010' bpl.
22:00	Drilling with STAND # 25 (1st 30' joint) at 3015' bpl.
22:46	Larry Holland on site. Trika Nelson off site.
0:01	Drilling with STAND # 25 (1st 30' joint) at 3025' bpl.

WATER RESOURCE SOLUTIONS

Date: 3/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T.Nelson
L.Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Larry Holland off. Drilling 12.25-inch pilot hole. Top head drive down on 2nd 30' joint of STAND #25 at 3060' bpl.
7:05	Service rig.
7:30	Rig service complete. Make connection with 3rd 30' joint of STAND #25. Resume drilling.
8:00	Noah calls Mark Pearce with update. Drilling with STAND #25 (3rd 30' joint) at 3062' bpl.
9:00	Drilling with STAND #25 (3rd 30' joint) at 3064' bpl. Very slow rate of penetration (~30 minutes/ft).
10:00	Drilling with STAND #25 (3rd 30' joint) at 3067' bpl. Still very slow drilling. Mark Pearce on-site for weekly progress meeting.
11:00	Drilling with STAND #25 (3rd 30' joint) at 3070' bpl. Still very slow drilling.
12:00	Drilling with STAND #25 (3rd 30' joint) at 3072' bpl.
13:00	Drilling with STAND #25 (3rd 30' joint) at 3074' bpl.
14:00	Drilling with STAND #25 (3rd 30' joint) at 3077' bpl. Still very slow drilling.
15:00	Trika Nelson on-site. Drilling with STAND #25 (3rd 30' joint) at 3079' bpl.
15:50	Noah Kugler off.
16:05	Drilling with STAND #25 (3rd 30' joint) at 3080' bpl.
17:05	Drilling with STAND #25 (3rd 30' joint) at 3082' bpl.
18:00	Drilling with STAND #25 (3rd 30' joint) at 3084' bpl.
19:00	Drilling with STAND #25 (3rd 30' joint) at 3085' bpl.
20:00	Drilling with STAND #25 (3rd 30' joint) at 3089' bpl.
20:10	Top head drive down on 3rd 30' joint at 3090' bpl.
20:20	Make connection with 4th 30' joint of STAND #25. Resume drilling.
21:10	Drilling with STAND #25(4th 30' joint) at 3094' bpl.
22:10	Drilling with STAND #25(4th 30' joint) at 3099' bpl.
22:50	Larry Holland on site. Trika Nelson off site.
0:19	Drilling with STAND #25 (4th 30' joint) at 3110' bpl.
2:08	Drilling with STAND #25 (4th 30' joint) at 3120' bpl. Tophead drive down on 4th joint of STAND #25.
2:08	Circulating, running inclination survey at 3110' bpl, and making connection on STAND #26 (1st 30' joint). Inclination survey: 0.50 degrees dev.

2:52	Resume drilling with STAND #26 at 3120' bpl.
4:17	Drilling with STAND #26 (1st 30' joint) at 3130' bpl.
5:54	Drilling with STAND #26 (1st 30' joint) at 3140' bpl.
6:50	Noah Kugler on-site.

WATER RESOURCE SOLUTIONS

Date: 3/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Larry Holland off. Drilling 12.25-inch pilot hole with 1st 30' joint of STAND #26 at 3145' bpl.
8:00	Drilling with STAND #26 (1st 30' joint) at 3148' bpl. Noah calls Mark Pearce with progress update.
8:30	Tophead drive down on 1st joint of STAND #26 at 3150' bpl. Circulate hole.
8:45	Due to excess drag on the drillstring while picking-up, the drillstring will be tripped out to 1680' bpl and a short wiper trip will be run to 3150' bpl to clean up the hole.
9:25	Finish circulating. Shut-in air and being tripping out drillstring to 1680' bpl, reverse-air tubing first.
9:55	Reverse-air tubing out of hole.
11:10	Five stands have been tripped out.
12:50	Tag obstruction at 2570' bpl (50' down on STAND # 20). Trip in reverse-air tubing and prepare to resume cleaning hole.
13:10	Trip in air line.
13:30	Reattach STAND #20 and resume cleaning hole.
14:20	Trika Nelson on-site.
15:15	Noah Kugler leaves.
15:20	Attach STAND #22 and resume wiper trip.
16:20	Top head drive down with STAND# 22. Circulating hole.
16:45	Connect STAND# 23 and resume wiper trip.
17:45	Top head drive down with STAND# 23. Circulating hole.
18:25	Connect STAND# 24 and resume wiper trip.
19:20	Top head drive down with STAND# 24. Circulating hole.
19:35	Connect STAND# 25 and resume wiper trip.
20:00	Top head drive down with STAND# 25. Circulating hole.
20:20	Connect 1st joint of STAND #26 and resume wiper trip.
20:30	Top head drive down with 1st joint of STAND# 26. Circulating hole.
21:20	Connect 2nd 30' joint of STAND# 26 and resume pilot hole drilling.
22:12	Currently drilling with 2nd 30' joint of STAND# 26 at 3155' bpl.
23:00	Trika Nelson off site. Larry Holland on site.

0:08	Currently drilling with 2nd 30' joint of STAND #26 at 3165' bpl.
1:28	Currently drilling with 2nd 30' joint of STAND #26 at 3170' bpl.
2:25	Currently drilling with 2nd 30' joint of STAND #26 at 3175' bpl.
3:27	Currently drilling with 2nd 30' joint of STAND #26 at 3180' bpl.
3:27	Circulating and making connection to 3rd 30' joint of STAND #26.
3:59	Resume drilling.
4:45	Currently drilling with 3rd 30' joint of STAND #26 at 3185' bpl.
5:33	Currently drilling with 3rd 30' joint of STAND #26 at 3190' bpl.
6:35	Currently drilling with 3rd 30' joint of STAND #26 at 3200' bpl.
7:00	Frank Procta on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 3/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site.
7:05	Currently drilling with STAND #26 at 3202' bpl.
7:40	Currently drilling with STAND #26 at 3203' bpl.
8:45	Top head drive down with STAND #26 (90-foot stand) at 3209.5 feet bpl.
9:15	Mark Pearce calls for current site status.
9:20	Currently performing inclination survey at 3200 feet bpl.
9:45	Add 30-foot joint to STAND #26.
9:50	Resume drilling with STAND #26 (120-foot stand) at 3209.5 feet bpl.
11:50	Currently drilling with STAND #26 at 3217.5' bpl.
12:57	Currently drilling with STAND #26 at 3220.5' bpl.
14:30	Currently drilling with STAND #26 at 3224' bpl.
14:35	Trika Nelson arrives on-site.
14:45	Mark Pearce arrives on-site for meeting with Ronnie Thames of YBI.
15:47	Currently drilling with STAND #26 at 3226' bpl.
16:15	Frank Procta leaves the site.
17:00	Currently drilling with STAND #26 at 3230' bpl.
18:00	Currently drilling with STAND #26 at 3232' bpl.
19:00	Currently drilling with STAND #26 at 3235' bpl.
20:00	Top head drive down with STAND#26 at 3240' bpl. Circulating hole.
21:00	Re-running inclination survey for 3200' bpl due to bad results.
21:20	Inclination survey complete. Bad results. Running inclination survey again due to inconclusive results.
21:25	Wire on spool became tangled. Fixing problem.
21:45	Problem fixed. Continue running inclination survey.
22:15	Inclination survey complete. Bad results again. Going to drill to TD (3250' bpl), and run inclination survey again.
22:25	Connect 30' joint, and resume drilling.
23:00	Larry Holland on site. Trika Nelson off site.

0:16	Currently drilling with STAND #26 at 3250' bpl.
0:50	Circulating, preparing to run inclination survey.
1:30	Completing inclination survey for 3200'. Results: 0.60 degrees dev.
1:50	Tripping 17 stands out of hole, bringing string into casing prior to wiper run.
3:02	Tripping out complete.
4:00	Starting back in hole with stands.
6:00	Drill string at 3240' bpl. Hooking up air line for circulation. Drill string encountered resistance from 2690' bpl to 2810' bpl.
6:10	Drill string at 3240' bpl. Circulating and rotating.
7:00	Frank Procta on-site. Holland off.

Week 9

WATER RESOURCE SOLUTIONS

Date: 3/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Tripping out the drill string in preparation for geophysical logging, scheduled to start at 10:00 AM.
8:38	Call Mark Pearce with update of site operations.
9:00	YBI crew continue to trip out the drill string.
10:15	Crew move the drill collar stand to the rack.
10:30	Loggers arrive on-site.
11:09	Lower the caliper/temperature tool down the wellbore.
11:15	Begin recording temperature data on downhole run.
12:06	Begin logging uphole with the caliper tool from 2600 feet bpl.
12:38	Remove the combination logging tool from the wellbore. NOTE: Plan to use centralizers on the temperature logging tool and re-enter the wellbore without the caliper tool.
12:52	Currently logging down with the temperature tool.
13:16	Retrieve the temperature tool. NOTE: Loggers could not advance the tool beyond 2500 feet bpl. Plan to trip in the drill string to clear borehole.
13:35	Update Mark Pearce of current site status.
14:40	Trika Nelson on site.
14:41	Dual induction tool is lowered down the wellbore.
15:05	Pulling out dual induction tool. Logger could not get past 2600' bpl.
15:13	Frank Procta off site.
15:50	Sonic log tool is being lowered into the hole.
16:30	Pulling sonic log tool out of hole. Logger could not get past 2600' bpl.
17:05	Sonic log tool is out of the hole.
17:15	Connect bit, and preparing for wiper trip.
17:40	Run drill collar in hole.
17:45	YBI crew decides to change rubbers in the can.
19:00	Rubbers changed. Connect STAND #2. Resume wiper trip.
20:00	Connect STAND# 9, resume wiper trip.
20:05	Mark Pearce calls for a update. Dr. Pearce informs Trika that he would like 12 stations run on flow log, and a couple extra run around 1700' to resolve where water is going in. Depths should be evenly spaced, and at places where the hole is gauged well.
20:50	Connect STAND #21, and resume wiper trip.
21:00	Wiper trip and swab hole ten times for interval 2519.5' bpl to 2639.5' bpl.

21:30	Connect STAND# 22, and resume wiper trip.
22:00	Connect STAND# 24, and resume wiper trip. Swabbing hole.
22:25	Connect STAND# 25, and resume wiper trip. Swabbing hole.
22:50	Swabbing hole with STAND #25 for interval 3004.5' bpl to 3124.5' bpl.
23:00	Todd Tubbert on site. Trika Nelson off site.
23:05	Connect STAND# 26, and resume wiper trip. Swabbing hole.
23:30	Top head drive down with STAND # 26 at 3240' bpl.
23:35	Trip in air line.
23:50	Connect 10' pup joint.
0:00	Circulating at 3250' bpl.
0:50	Trip out 10' pup joint.
1:00	Trip out airline.
1:20	Trip out drill string.
3:45	Geophysical logger onsite (Lee).
4:15	Sonic logging tool is lowered down hole.
4:40	Sonic logging tool at 2350' bpl (TD), begin logging bottom up.
4:57	End logging at 2507' bpl.
5:18	Dual induction tool is lowered down the wellbore.
5:39	Dual induction tool is at 2350' bpl (TD), begin login bottom up.
5:53	End logging at 2490' bpl.
6:12	Temperature/caliper logging tool lowered down the wellbore.
6:53	Temperature/caliper logging tool is at 2350' bpl (TD), begin logging bottom up.
6:55	Noah Kugler arrives on-site.

WATER RESOURCE SOLUTIONS

Date: 3/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Caliper/gamma, temperature (static), dual induction and BHC sonic porosity logs have been complete. Noah Kugler on-site.
7:15	Todd Tubbert leaves the site. Preparing to run static spinner survey. The flow tool will be lowered to 2880' bpl and held stationary for several minutes (under static conditions) to detect any interzone flow.
7:20	Run in hole with flow tool. Noah calls Mark Pearce with update. Kenwin Lee (geophysical logger) editing and annotating previous log runs.
7:50	Lower flow tool to 2880' bpl.
8:07	Flow tool at 2880' bpl. Hold tool stationary for approximately 8 minutes and record spin rate and direction on flow tool (clockwise spinner increase indicates upward flow). Some upward flow indicated.
8:20	Raise flow tool to 2750' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
8:24	Raise flow tool to 2630' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
8:32	Raise flow tool to 2485' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
8:37	Raise flow tool to 2350' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
8:42	Raise flow tool to 2220' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
8:47	Raise flow tool to 2000' bpl. Hold tool stationary for approximately 5 minutes and record spinner data. Small amount of upward flow indicated.
8:53	Raise flow tool to 1945' bpl. Hold tool stationary for approximately 5 minutes and record spinner data. Small amount of upward flow indicated.
8:59	Raise flow tool to 1820' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
9:04	Raise flow tool to 1735' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.
9:07	Raise flow tool to 1680' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated.

9:15	Raise flow tool to 1530' bpl. Hold tool stationary for approximately 2 minutes and record spinner data. No flow indicated. Start out of hole with tool.
9:26	Tool out of hole.
9:50	Kenwin provides Noah with 2 field copies of each log run so far.
11:10	Based on caliper log and discussion with Mark Pearce, we will set a single packer at 2539' bpl (centerline) and perform a flow test of the interval from 2539' to 3250' bpl through the drillpipe. Pressure recording devices will be set on the tool to assess pressure changes in the formation, without friction loss up the drillpipe.
11:25	Start running packer in hole on drillstring. Packer centerline depth = 2520' (21 stands of drillpipe) + 15' (sub) + 5' (sub) + 6.6 (centerline of packer element to sub connection) - 7.5 (height of drillpipe above pad level) = 2539.1' bpl.
11:45	Suspend operations to work on rig.
12:40	Resume running packer in hole on drillstring.
14:25	Packer string cannot be lowered below 1760' bpl due to narrow bore hole (~13 inches wide) at that depth. Begin pull packer string from hole.
16:45	Packer is out of hole. Crew will make-up 12.25-inch bit on stand of drill collars and trip back in hole to clean out borehole starting at 1760' bpl.
17:45	Todd Tubbert calls Noah for packer plan update for tonight's shift.
17:50	Bit made up. Begin tripping in hole to clear out restriction at 1760' bpl and clean out hole.
18:55	Noah Kugler leaves site. Continue tripping in hole.
19:10	Todd Tubbert arrives onsite.
19:30	Currently dredging/cleaning wellbore with STAND # 14.
21:30	Currently dredging/cleaning wellbore with STAND # 26.
22:00	Tripping drill string out of hole.
23:00	Continue tripping out drill string.
1:38	Start running packer in hole on drillstring. Packer centerline depth = 2520' (21 stands of drillpipe) + 15' (sub) + 5' (sub) + 6.6 (centerline of packer element to sub connection) - 7.5 (height of drillpipe above pad level) = 2539.1' bpl.
3:30	Continue tripping in packer assembly down hole.
4:30	Begin inflating packer with centerline at 2520' bpl.
5:00	Packer pressured up to 400 psi.
5:05	Set transducer in annulus. (52' total length of cable)
5:20	Crew preparing pump and waiting on geophysical logger to arrive on-site.
6:00	Geophysical logger arrives on-site.
6:10	Review plans with Tim Dennison and Ronnie Thames (YBI). Note: Pressure gauge on flow tool runs constant taking readings every minute.
6:30	Noah Kugler calls for plan update.
6:35	Run in hole with flow tool. Will be set 5' above bottom of drill pipe, 2534' bpl
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 3/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Tubbert

Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Todd Tubbert leaves the site. Preparing to run flow and pressure tests of zone from 2539' to 3250' bpl using centrifugal pump.
7:22	Start recording water levels in annulus and drill pipe on Hermit. Transducer set in drillpipe at 20' below drop pipe/discharge hose connection (~7.5' bpl). Transducer set in annulus at 50' bpl. Downhole pressure recorder started recording data at 06:11 hours and has been stationary at 2534' bpl (5' above base of drillpipe) since 07:00 hours.
7:32	Start static flow log downhole.
7:40	Tool set down at 2964' bpl. Pull tool up to 2890' bpl and retry.
7:51	After several attempts to get tool below 2964' bpl, Tim Denison (logger) states that further attempts may damage tool.
7:57	Mark Pearce approves running of flow logs to 2960' bpl, given that the log will have to be rerun if results are unacceptable.
8:12	Pull tool back up to 2534' bpl (actually went to 2480' bpl and then back up to proper spot).
8:22	Tool at 2534' bpl. Remain stationary for 10 minutes. Hermit box recording data every 1 minute. Check hermit box to make sure it is recording data.
8:33	Start pump for dynamic portion of test.
8:34	Pump is cavitating (pulling air) and must be primed.
8:36	Pump primed. Restart. Still cavitating.
8:40	Water level in drillpipe ~ 9.5' above transducer. Pump still cavitating.
8:48	Water level in drillpipe = 9.952' above transducer. Pump still cavitating at 20 gpm.
8:49	Shut-in pump.
8:50	Seal cam-look fittings on hose connections with grease and re-prime pump.
8:52	Restart pump.
8:53	Pump still cavitating. Shut-in pump and re-prime.
8:59	Cannot get pump to flow without cavitating. Prepare to switch to backup pump (same model).
9:16	Replacement pump has been setup. Re-prime pump.
9:19	Start pump.

9:21	Pump still cavitating. Shut-in pump, switch around intake and discharge lines, and re-prime.
9:27	Pump primed. Restart. Still cavitating.
9:30	Pump still cavitating. Water level in drillpipe = 10.026' above transducer.
9:35	Valve back discharge end of hose and begin adjusting valve to gain back-pressure on pump.
9:48	Flow rate adjusted to 73 gpm with 9.985' of water above transducer in drillpipe. Pump still cavitating. Close discharge valve slightly and increase pump speed.
9:58	Shut-in pump. Pull drop pipe and inspect. Replace non-working check valve on bottom of drop pipe.
10:09	Check valve replaced. Lower drop pipe inside drillstring and reset
10:14	Water level in drillpipe = 9.925' above transducer.
10:15	Restart pump.
10:19	Flow rate = 190 gpm with 9.618' of water above transducer in drillpipe.
10:28	Shut-in pump and attach discharge end of hose (4-inch) to a 3-inch line that will be tied in to the circulation system to increase back pressure on pump.
10:35	Restart pump. Hose leaking at cam-look fitting. Replace rubber gasket.
10:37	Hose fixed. Restart pump.
10:38	Flow rate = 180 gpm with 5.83' of water above transducer in drillpipe.
10:59	Increase flow rate to maximum pump speed as per Mark Pearce. Desire approximately 300 gpm.
11:02	Flow rate = 210 gpm with 5.120' of water above transducer in drillpipe at maximum pump speed.
11:07	Flow rate = 200 gpm.
11:15	Flow tool at depth of 2534.44' bpl (5 feet inside base of drillpipe). Begin running dynamic flow log downhole.
11:21	Flow tool stopped spinning at 2790' bpl. Pick up tool to 2534' bpl and re-run dynamic flow log.
11:25	Tool at 2534' bpl. Re-run dynamic flow log downhole.
11:34	Tool made it to 2960' bpl with no problems. Start back uphole.
11:38	Flow rate = 195 gpm with 5.234' of water above transducer in drillpipe.
11:41	Tool at 2543.45' bpl. Hold tool stationary for 10 minutes.
11:46	Line slipped slightly to 2543.8' bpl. Re-adjust depth to 2543.44' bpl.
11:56	Shut-in pump and continue recording pressure data for 30 minutes.
11:59	Water level fluctuating between 9' and 14' above transducer in drillpipe.
12:02	Discharge line leaking a few gpm. Shut off leak.
12:28	Stop recording data and pull tools from hole.
14:15	Data has been downloaded and forwarded to Mark Pearce for review.
15:05	Mark Pearce approves test data. Contractor releases pressure on packer.
15:45	Begin tripping out packer string.
16:05	Noah confers with Ronnie Thames about running a video survey next with focus on side views of areas where the borehole is significantly enlarged between 1700' and 2260' bpl. Video may be run tonight, if clear conditions.

17:30	Packer string is out of hole.
17:45	Prepare to pump develop well with centrifugal pump to increase visibility.
17:50	Begin setting up logging truck to run video.
18:35	Begin pumping well.
18:45	Run camera in hole to base of casing (1300' bpl) and wait for good clarity.
19:00	Todd Tubbert on-site. Clay Ferguson (Florida Geophysical) on-site to run video log.
19:05	Noah confers with Todd and Mark Pearce about video and packer tests
19:37	Begin recording video log at 1300' bpl at 20 ft per min.
19:40	Noah Kugler leaves site.
21:03	Video logging tool reached a total depth of 2963' bpl due to plugged hole.
21:04	Begin recording video log at 2963' bpl up hole rotating to video side walls.
	Notes: 2874-2873 deep fractures, cannot see lateral wall.; 2829-2828' deep fracture, cannot see lateral wall.;2235-2234 cannot see lateral wall, 2150-2148 dark cavern, (note: caliper only measured 26"), 1743-1741, 1722 1716,1703-1695 dark, cannot see to wall, very large cavities.
22:21	Stop recording video at 1673 and raise to video bottom of casing.
22:25	Video bottom of casing at 1300 ft,
22:30	End video log, retrieve video tool from hole. NOTE: Visibility is very good through out duration of video survey.
22:50	Crew prepare to trip in straddle packer.
23:30	Start running straddle packer in hole on drillstring. Straddle packer perforation centerline depth: 1320' (11 stands of drillpipe) + 15' (sub) + 5' (sub) +5' (sub)+ 18' (length of top packer to perforation) - 7.5 (height of drillpipe above pad level) = 1355.5' bpl. NOTE: no pup joints between top and bottom packer.
0:30	Continue tripping in packer assembly down hole.
1:00	Down with repair.
1:45	Continue tripping in packer assembly down hole.
3:10	Continue tripping in packer assembly down hole with STAND # 10.
3:20	Begin inflating packer at 1355.5' bpl.
3:30	Set transducers in Annulus
4:45	Packers inflated and holding pressure at 180 psi.
5:00	Trip in pump and attached tremie tubing. Pump set at 179' bpl. (2 dbls at 61.58 + 1 dbl at 61.64 + 4.29 (pump length) - 10' (above pad level) = 179.09' bpl.
6:00	Connect and set up data logger to run packer test. Annulus transducer input #1, Drill pipe transducer input #7.
6:17	Record head in annulus at 48.005 ft and drillpipe at 160.720 ft.
6:20	Beginning totalizer reading at 4100 gals.
6:29	Start pump test (Test #2 on data logger). Note: Pumped 45 gallons first minute then slowed rate to 2 gals per minute.

6:35	Pump not working.
6:45	Abort test # 2.
6:55	Trip out pump from well.
7:00	Frank Procta on-site.
7:10	Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 3/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Submersible pump is pulled as the first straddle packer test (center of perforations set at 1355.5' bpl) was aborted due to pump failure.
7:50	Mark Pearce calls for update of site operations. NOTE: Mark does not want to see the rate of drawdown exceed 0.25 feet per minute during the pump test.
7:55	Ronnie Thames plans to set a 3-hp submersible pump in the well and attempt a straddle packer test at 1355.5 feet bpl. The pump intake is to be set at 179 feet bpl.
8:25	Currently wiring the replacement sub pump. NOTE: Totalizer reading before the start of pumping at 4,216 gals.
10:19	Record the head in annulus at 48.040 feet, and in drill stem (INPUT #7) at 161.891 feet. Record packer pressure at 350 psi.
10:27	Start pumping (TEST #3).
10:30	Record pumping rate at 10 GPM.
10:32	Record packer pressure at 330 psi.
10:36	Pressure up packer to 350 psi., record flow rate at 8 GPM.
10:45	Call Mark Pearce with update of test. Mark gives the OK to abort the test (TEST #3), the first straddle packer test (centerline of perforated pipe at 1355.5' bpl). NOTE: Test duration of 24 minutes with maximum drawdown of 1.114 feet, pumping at a sustained flow rate of 8 GPM. Gallons pumped during TEST #3 equals 252.
10:51	End the test. Last recorded packer pressure of 345 psi taken at 10:49 hours. NOTE: Plan to lower the packer string to the next test interval at 1420 feet bpl.
11:30	Record totalizer reading of 4,572 gals. before the start of second straddle packer test (centerline of perforated pipe set at 1420 feet bpl). NOTE: Plan to add two 30-foot joints of drill pipe and a 5-foot pup joint to the packer string.
12:09	Add the second 30-foot joint of drill pipe to the packer string.
12:19	Begin to trip out the packer string as we cannot advance the straddle packer to our next planned test interval of 1420 feet bpl.

13:35	Crew continue tripping out the packer string.
14:50	Noah Kugler arrives on-site.
15:05	Packer string has been inspected and looks OK. Begin running straddle packer to 1420' bpl (center of 5' perf. sub). Straddle packer perforation centerline depth: 1320' (11 stands of drillpipe) + 15' (sub) + 5' (sub) + 5' (sub) + 5' (sub) + 18' (length of top packer to perforation center) +60' (two 30' joints of drillpipe) - 8' (height of drillpipe above pad level) = 1420' bpl.
15:30	Frank Procta leaves the site.
16:20	Packer string has been set at 1420' bpl (center of 5' perf. sub). Begin inflating packers with water. Both packers are inflated together.
16:35	Start running 5-hp submersible pump in hole.
17:00	Pump intake set at 177' bpl. Set transducer in drillpipe at 163' bpl. Set transducer in annulus at 49' bpl.
17:45	Packer have been inflated to 420 psi.
17:50	Start recording data on Hermit box (TEST #4).
17:52	Water level in drillpipe = 159.965' above transducer. Water level in annulus = 47.290' above transducer.
17:59	Start pumping.
18:02	Pressure on packer = 350 psi. Increase to 420 psi. Water level in drillpipe = 153.454' above transducer. Water level in annulus = 47.249' above transducer. Flow rate = 8 gpm.
18:07	Pressure on packer = 420 psi. Water level in drillpipe = 155.773' above transducer. Water level in annulus = 47.249' above transducer. Flow rate = 7 gpm.
18:13	Pressure on packer = 420 psi. Water level in drillpipe = 155.938' above transducer. Water level in annulus = 47.250' above transducer. Flow rate = 7 gpm.
18:21	Pressure on packer = 420 psi. Water level in drillpipe = 155.938' above transducer. Water level in annulus = 47.232' above transducer. Flow rate = 7 gpm.
18:27	Pressure on packer = 420 psi. Water level in drillpipe = 156.019' above transducer. Water level in annulus = 47.237' above transducer. Flow rate = 7 gpm.
18:29	Shut-in pump due to specific capacity in the range of 7gpm/4' drawdown. NOTE: it is not possible to verify for certain that the bottom packer has sealed. However, annular water levels suggest that water is not leaking past the upper packer, and the lower packer is in a thinner portion of the borehole than the upper packer.
18:35	Start deflating packer assembly.
18:55	Remove submersible pump from hole.

19:20	Packer pressure at 0 psi. Start to reset packer at 1610.5' bpl (center of 1' perf. sub). Straddle packer perforation centerline depth = 15' (sub) + 5' (sub) + 5' (sub) + 1440' (12 stands of drillpipe) + 18' (length of top packer to center of perf. sub) + 40' (single 40' joint of drillpipe) + 90' (three 30' joints of drill-pipe) + 5' (sub) - 7.5' (height of slipped drillpipe above pad level) = 1610.5' bpl.
20:45	Packer assembly taking weight at 1440' bpl. Suspend running downhole and wait for packer to deflate more.
22:30	Continue to wait for packer to deflate more to move downhole.
23:00	Noah Kugler updates Todd Tubbert and leaves site.
23:10	Todd Tubbert onsite. Current ops.: Crew inflating packer.
23:50	Waiting for packer pressure to stabilize to assure that it is squared to the hole.
0:00	Crew pressure up packer from 310 to 400 psi as per Ronnie Thames (YBI).
0:30	Packer lost all pressure. Possible ruptured bladder.
0:40	Attempt to reinflate packer.
1:25	Packers not inflating.
1:30	Trip out packer assembly.
4:10	Lift packer assembly above floor level.
4:20	Inflate bottom packer. Good. No leaks.
4:30	Inflate Top packer.
4:45	Locate rupture in bladder of Top packer (just above centerline).
4:55	Resume tripping packer assembly out of hole and lay down.
6:00	As Per Ronnie Thames of YBI, a packer will be sent over from the east coast of Florida and will arrive on-site around 11:00 .
7:00	Frank Procta arrives on-site. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 3/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Site operations are temporarily suspended as the crew wait for a replacement packer to be delivered to the site.
8:00	Mark Pearce calls for update of site operations.
11:25	Ronnie Thames explains to Frank Procta YBI's plan to trip in a nominal 20-inch bit and ream the pilot hole to a depth of 1700 feet bpl. A straddle packer will be fitted with sleeves and used for subsequent pump tests.
12:46	Connect the bit assembly to the drill collar stand. NOTE: Bottom hole assembly is as follows: 20-inch OD, 1.48-foot long mill-toothed bit, 1.48-foot long bit sub, 122-foot long collar stand. Total BHA length is 124.94 feet. Distance from rig floor to pad level is 5.5 feet. There are 26 stands of 120-foot long drill pipe currently on the derrick.
13:00	Begin tripping in the reaming string.
13:05	Update Mark Pearce of current site operations.
14:00	Crew continue to trip in the reaming string.
14:15	Crew currently tripping in 2 3/8-inch air line.
14:30	Add STAND #10 to the reaming string. Mark the drill pipe "1200" approx. 1/2 foot above the joint break between STAND #9 and STAND #10.
15:00	Noah Kugler arrives on-site.
15:00	Tag cement inside casing at 1276 feet bpl - begin reaming with 20-inch bit.
15:15	Frank Procta leaves the site.
16:20	Noah calls Mark Pearce with update.
16:30	Drilling through cement plug at 1296' bpl. Bottom of cement plug is indicated at 1300' bpl on caliper log.
16:55	Drilled through bottom of cement plug at 1300' bpl.
17:05	Top head drive down on Stand #10 at 1320' bpl.
17:15	Connection made with Stand #11. Continue reaming hole with 20-inch bit.
18:10	Top head drive down on Stand #11 at 1440' bpl.
18:20	Connection made with Stand #12. Continue reaming hole with 20-inch bit.
19:55	Mark Pearce calls Noah to discuss plan for straddle packer testing based on observations from the video log. Twelve (12) preliminary depths for testing are proposed. Noah summarizes plan for following shift personnel.

20:25	Top head drive down on Stand #12 at 1560' bpl.
20:35	Connection made with Stand #13. Continue reaming hole with 20-inch bit.
21:35	Top head drive down on Stand #13 at 1680' bpl.
21:45	Connection made with Stand #14. Continue reaming hole with 20-inch bit to 1700' bpl (20' down on this stand).
22:00	Reach total depth for 20-inch reamed hole of 1700' bpl. Circulate hole.
22:05	Shut-in air and prepare to trip out of hole. Straddle packer testing next.
22:10	Begin tripping out drillstring.
22:45	Noah Kugler calls Todd Tubbert with update and leaves site.
23:15	Todd Tubbert onsite. Current ops.: Crew tripping out drillstring.
23:30	Geophysical logger onsite to run caliper log.
23:55	Drill bit out of hole. Prepare to log.
0:10	Run gamma/caliper tool down hole.
0:24	Record bottom up from 1700' bpl.
0:46	End logging at 1700' bpl.
0:50	Retrieve gamma/caliper tool from hole.
1:15	Review and discuss first packer depth with Jack of YBI. NOTE: first suggested packer depth of 1316' will be skipped reason being that the top of the top packer bladder must be below 1312' bpl (see caliper log) to square, the top of the bladder to center of perf. sub is approx. 13 ft. hence, the perf. would be at 1325' bpl. which falls out side of the "good interval to test 1316 to 1320 and into the "bad interval to test" at 1320 to 1331. **Therefore the first packer depth with be at 1377' bpl.**
1:30	Start running straddle packer in hole on drillstring. Straddle packer perforation centerline depth: (11 stands of drillpipe) + 40' (joint) +5' (sub)+ 19.5' (length of top packer to perforation) - 7.5 (height of drillpipe above pad level) = 1377' bpl.
2:30	Continue tripping in packer.
4:30	Pressure up packers.
5:15	Set pump in drillpipe. (3 dbls + pump)
5:54	Totalizer reading before the start of pumping at 3000 gals.
5:55	Record the head in annulus (INPUT #1)at 46.455 feet, and in drill stem (INPUT #7) at 160.273 feet. Record packer pressure at 400 psi.
5:57	Start pumping (TEST #5).
6:00	Record the head in annulus (INPUT #1)at 46.437 feet, and in drill stem (INPUT #7) at 157.560 feet. Record packer pressure at 400 psi. Record pumping rate at 1 gpm.
6:05	Adjust pumping rate to 3 gpm.
6:06	Record the head in annulus (INPUT #1)at 46.447 feet, and in drill stem (INPUT #7) at 158.238 feet. Record packer pressure at 400 psi. Record pumping rate at 2.7 gpm.

6:09	Record the head in annulus (INPUT #1)at 46.447 feet, and in drill stem (INPUT #7) at 158.238 feet. Record packer pressure at 400 psi. Record pumping rate at 2.7 gpm.
6:19	Record the head in annulus (INPUT #1)at 46.441 feet, and in drill stem (INPUT #7) at 158.860 feet. Record packer pressure at 400 psi. Record pumping rate at 2.4 gpm.
6:25	Record the head in annulus (INPUT #1)at 46.455 feet, and in drill stem (INPUT #7) at 158.883 feet. Record packer pressure at 400 psi. Record pumping rate at 2.0 gpm.
6:27	Shut in pump.
6:29	Record the head in annulus (INPUT #1)at 46.455 feet, and in drill stem (INPUT #7) at 160.065 feet. Record packer pressure at 400 psi.
6:30	End test on data logger.
6:40	Prep to set packer at next interval with centerline of perf. At 1405'.
7:00	Frank Procta onsite.
7:15	Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 3/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Bleeding off packer bladders and service the rig. NOTE: Plan to lower packer string to the next test interval (1405' bpl) by removing 5-foot pup joint, adding a 30-foot joint of drill pipe and reconnect the 5-foot pup joint to the string.
7:15	Todd Tubbert leaves the site.
8:25	Add last joint (15-foot pup) to the string.
8:27	Lower the packer string to the next test interval, center of perforated pipe set at 1405 feet bpl.
8:36	Set the transducer (INPUT #1) in the annulus at 49.5 feet bpl.
8:44	Begin to pressure up the packer bladders. NOTE: The packer is fitted with sleeves.
9:15	Tripping in submersible pump (3-hspr.) to 178 feet bpl (position of pump intake), record packer pressure at 405 psi.
9:30	Transducer (INPUT #7) set in the drill stem at 162 feet bpl.
9:37	Record the head in the drill stem at 161.988 feet, and in the annulus at 47.218 feet. Begin pumping (start of TEST #6) at 3 GPM.
9:45	Adjust flow rate to 1.5 GPM.
9:55	Increase the flow rate to 2 GPM.
10:10	Increase the flow rate to 2.75 GPM.
10:20	Call Mark Pearce with current test status. Mark gives the OK to end the test and move to the next test depth (1543' bpl).
10:30	Record the head in the drill stem at 149.484 feet or 12.5 feet of drawdown in 53 minutes of pumping. NOTE: The pumping rate ranged from 1.5 to 2.75 GPM throughout the test duration, with 117 total gallons pumped.
10:34	End pumping - TEST #6 is completed.
11:00	Currently bleeding off the packer bladders. NOTE: The packer string for the next test interval (1542' bpl) consists of the following: 12 120-foot stands of drill pipe, 3 30-foot joints of drill pipe, 19.5 feet from top of packer to the center of perforated pipe. Consider 2 feet of stickup for elevators and 5.5 feet from rig floor to pad level places the center of perforated pipe at 1542 feet bpl.

12:30	Continue to allow packer bladders to bleed as our first attempt to advance the packer string to the next test interval failed.
13:08	Attempt to lower the packer string to the next test interval.
13:30	Sanders lab stops by the site to pick up remaining reverse-air water samples.
13:40	Tim of YBI begins to download recent pump test data from the data logger.
13:45	Continue to wait for packer to bleed off.
14:20	Crew begin to trip out packer string as we cannot advance the packer to the next test interval. YBI plan to remove the packer and examine it to be sure it is completely deflated and not damaged. A smaller-diameter sleeve will replace the original sleeve on the top packer bladder only, then trip in the packer again.
14:35	Update Mark Pearce of current site operations.
14:45	Crew continue to trip out the packer string.
15:00	Noah Kugler arrives on-site.
15:20	Frank Procta leaves the site.
15:30	Continue tripping out the packer string.
16:20	Straddle packer assembly has been retrieved from hole. **Upon retrieval, it is noted that the rubber sleeve and lower steel clamp on the lower of the two packers have been lost downhole. The rubber sheath and lower steel clamps were fabricated to enlarge the diameter of the packers for testing purposes. The Contractor will run a video log to locate these items.**
16:45	Noah calls Mark Pearce with situation update.
17:20	Start setting up centrifugal pump to assist possible visibility problems.
17:35	Tim Denison (Florida Geophysical) is on-site to run video log. Start setting up logging truck.
18:03	Run video camera in hole.
18:35	Camera is 11' below the base of the 34-inch casing (1311' bpl). Visibility is poor.
18:40	Begin pumping water from well to improve visibility.
19:15	Visibility has improved to an acceptable level. Begin downhole with camera.
19:40	Packer parts have been located. Rubber sleeve located from 1473' to 1482' bpl. Top of clamp located at 1489' bpl. Begin out of hole with camera.
19:55	Camera is out of hole. Contractor works on fabricating a "fishing tools" to retrieve packer parts.
20:30	Noah makes diagrams of fishing tools (2) and works on stratigraphic formation picks based on relative dating of fossil types.
21:10	Begin running in hole with first tool to retrieve rubber sleeve.
22:05	Noah updates Todd Tubbert about site activities.
22:30	Noah Kugler leaves site. Continue running in first fishing tool.

23:05	Todd Tubbert on-site. Current ops.: Crew tripping out drillstring with "fishing tool", crew has "punched" threw the packer and is attempting to retrieve.
23:50	Pull fishing tool from hole. EMPTY. No packer parts were retrieved.
0:00	Discuss plan with Ronnie and Jack of YBI. They will try second attempt to fish out the bladder with hook tool.
0:30	Tripping in drillpipe with attached hook tool.
1:30	Tripping OUT drillpipe with attached hook tool.
3:00	Pull fishing tool from hole. EMPTY. No packer parts were retrieved.
4:00	Tripping in drillpipe.
4:05	Geophysical logger onsite.
4:20	Run video camera in hole.
4:55	Video camera is at bottom of drillstring at 1465' bpl. NOTE: poor vis.
5:00	Start setting up centrifugal pump to assist visibility problems.
5:40	Begin pumping water from well to improve visibility.
6:00	Visibility has improved to an acceptable level. Begin downhole with camera.
6:05	Packer parts have been located. Rubber sleeve located from 1489' to 1498' bpl. Top of clamp located at 1498' bpl. Begin out of hole with camera.
6:20	Disconnect centrifugal pump and retrieve video logging tool.
6:30	Connect a 5' and 10' sub to drill string.
6:45	Run video camera down hole. NOTE: Attempt will be made to hook bladder by lowering fish tool down threw rubber sleeve with visual guidance from video camera.
7:00	Frank Procta arrives on-site.
7:05	Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 3/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : YBI crew are attempting to retrieve the sleeve and clamp from the lower packer which was lost downhole yesterday while tripping out the packer string.
7:05	Todd Tubbert leaves the site.
8:10	Crew pull the submersible pump from the well. NOTE: The last attempt to fish out the packer sleeve was unsuccessful. Plan to trip out the drill pipe string and attach a decentralizer then re-enter the wellbore rotating the string at depth to catch the sleeve which is positioned against one side of the borehole wall.
8:40	Update Mark Pearce of fishing operations.
10:00	YBI crew begin to purge and sample the pad monitoring wells.
10:20	Crew is currently tripping out the drill pipe string.
13:10	Frank Procta completes field testing/analysis of pad monitoring well water samples.
14:35	Current ops. : A single joint of drill pipe is added to the string and lowered just below the position of the packer sleeve. Another attempt to snag the sleeve is underway.
15:05	Call Mark Pearce with update of current site operations.
15:15	Frank Procta leaves the site.
15:20	Noah Kugler on-site. Crew is tripping out fishing tool to make adjustments to the barbs.
15:50	Tool is out of hole. Welder (Richard Harris) replaces current barbs with longer barbs (3) at the same level on the drillpipe.
16:05	Barbs replaced. Start back in hole with drillpipe.
17:25	Add last joint of drillpipe to get fishing tool at depth to retrieve rubber sleeve. Logger prepares to go in hole with video camera to monitor retrieval efforts.
17:50	Camera is at the base of the tool. Begin trying to retrieve rubber sleeve.
19:15	Contractor believes he might have rubber sleeve secured on fishing tool. Begin tripping out drillpipe and fishing tool.

21:55	Fishing tool out of hole. No rubber sleeve attached. Prepare to run video camera down hole to locate rubber sleeve and try a different fishing tool design.
22:15	Noah updates Todd Tubbert with site activities.
22:50	Noah Kugler leaves site.
11:10	Todd Tubbert arrives on-site. Current ops.: Tim Dennison on site to run video log.
11:30	Top of rubber sleeve located with video at 1307' bpl.
11:45	Remove video tool from hole.
11:50	Crew tripping in drill pipe with attached "J" hook tool to 1300' bpl.
1:20	Run video tool threw drillstring.
1:50	Hook the bottom of the rubber sleeve with the "J" hook tool at ~1317.5. The rubber sleeve folded (inside out).
2:05	Trip video tool out of hole.
2:20	Trip "J" tool out of hole . NOTE: Plan is to have welder onsite to weld four more barbs on the previous hook tool, trip in tool and fish out rubber sleeve.
2:30	Waiting on welder.
3:30	Welder fabricating fishing tool.
6:00	Trip in fishing tool down hole.
7:00	Frank Procta onsite. Todd Tubbert off.

Week 10

WATER RESOURCE SOLUTIONS

Date: 3/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
N. Kugler
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site, Todd Tubbert leaves the site. Current ops. : Welders are working on an alternate fishing tool design for the purpose of retrieving the packer sleeve lost downhole.
8:45	Frank Procta completes the WEEK #9 TAC package.
9:00	Update Mark Pearce of site operations.
10:00	Fishing operations continue.
11:30	Fishing operations continue.
13:00	Fishing operations continue.
13:50	Logger begins to retrieve the video tool as the packer sleeve has been pushed farther downhole in attempting to snag it with hook. This last position, before it fell farther down the hole, was 1440 feet bpl. Plan to add drill pipe to the string and re-enter with video tool to search.
14:45	Update Mark Pearce of fishing operations.
15:00	Noah Kugler arrives on-site, Frank Procta leaves the site.
15:50	Contractor attempts to work tool and expected rubber sleeve up into 34-inch casing by rotating string slowly while pulling up.
17:15	Tool is at surface. Many steel barbs have been broken or bent on fishing tool. Rubber sleeve has not been retrieved. Remove tool from well.
17:25	Contractor begins running video camera to locate rubber sleeve. Welders work on replacing lost and bent barbs on fishing tool.
18:35	Rubber sleeve has been located just below the base of the 34-inch casing (1300' bpl). Start out of hole with video camera.
18:55	Camera is out of hole. Contractor continues working on fishing tool.
20:10	Many barbs have been added to the fishing tool along the lower 10 feet of the drillpipe. Start tripping in fishing tool to attempt a retrieval of rubber sleeve.
22:35	Tool is located beneath the base of the rubber sleeve. Attempting to "snag" sleeve using video camera as guide.
22:40	Larry Holland on-site.
23:10	Noah Kugler off.
23:35	Water disturbed. No visibility at packer and fishing tool. Removing video camera. Tripping out to check for rubber piece and the condition of the fishing tool.
1:15	Fishing tool out of hole, with rubber sleeve attached. Preparing to run video camera back in hole to locate metal clip.

3:25	Located metal clip at 1505' bpl.
5:00	Driller is constructing a new fishing tool to attempt to retrieve metal clip.
6:50	Holland off-site. Trika Nelson on.

WATER RESOURCE SOLUTIONS

Date: 3/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
6:50	Holland off-site. Trika Nelson on.
7:30	Still constructing fishing tool to retrieve metal clip.
8:30	Still constructing fishing tool to retrieve metal clip.
9:00	Start to trip in hole with tool attached to retrieve metal clip.
10:15	Finish tripping in the hole. Currently sitting at 1502' bpl.
10:20	Prepare to run camera in the hole.
10:25	Camera in drill string. Run camera down hole to 1505' bpl.
10:55	Metal clip is sitting at 1505.5' bpl. Start lowering drill string in hole slowly! All 4 arms on tool appear to be down to catch clip.
11:00	Trying to align drill string with clip so tool is able to go through clip, and can catch it when tripping out of the hole.
11:20	Aligned with hole. Drill string is being inched down more through clip.
11:25	Metal clip fell. Camera finds clip at 1510' bpl.
11:30	Reattempt to retrieve clip.
11:35	Metal clip is knocked down again.
11:47	Metal clip found at 1520' bpl.
11:52	Bringing camera out of hole. Need to connect 15' sub in order to reattempt to retrieve clip.
12:05	Connect 15' sub.
12:15	Start to lower camera in the hole.
12:30	Found metal clip with camera. Drill string is being aligned with metal clip.
12:48	Tool went through clip, arms on tool are out and snagged metal clip.
12:55	Begin to take camera out of hole.
14:00	Continue to slowly trip out drill pipe.
15:10	Done tripping out of hole. Lost metal clip while tripping out of hole.
15:20	Prepare to run camera in the hole and find metal clip.
15:30	Finish camera preparations. Waiting for logger to come to site.
16:30	Welder is making changes on old tool. Making the arms longer.
17:30	YBI logger on site (Clay), preparing to run camera in hole.
17:35	Proceed going down hole with camera.
17:51	Found metal clip at 1453' bpl laying on its side. Note: Some fall in was noticed at 1306' bpl. (small boulders)
17:55	Start to bring camera out of hole.

18:05	Camera is out of hole.
18:45	Connect bit to drill collar. Plans are to trip into the hole, drill out small boulders that are at 1306' bpl, and try to straighten the metal clip. Then proceed with connecting tool, and fishing out the metal clip.
19:00	Larry Holland on site. Trika Nelson off site.
19:30	Driller preparing to go in hole with bit and drill out cement boulders at 1306' bpl.
21:35	Bit at base of casing. Starting to swab hole.
2:25	Swabbing complete. Tripping out of hole.
4:55	Going in hole with video camera.
5:20	Cement boulders cleaned out at base of casing. Metal clip still at ~1453' bpl. and standing straight up. A rock on top of clip.
5:55	Driller preparing to go back in hole with fishing tool.
6:50	Trika Nelson on site. Larry Holland off site.

WATER RESOURCE SOLUTIONS

Date: 3/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on site. Larry Holland off site.
7:00	Preparing fishing tool, adjusting arms.
8:00	Tool in hole, start to trip in drill pipe.
9:15	Going in hole with video camera.
9:30	Camera at 1447' bpl. Turning on pump to clear out hole in order to locate
9:56	Metal clip located at 1455' bpl. Driller attempts to align tool with clip.
11:00	Tool is in clip.
11:05	Tool has a good hold on clip. Pull up several feet with drill pipe to make sure
11:17	Come out of hole with camera.
12:15	Still tripping out drill string.
13:00	Still tripping out drill string.
13:26	Tool is out of the hole with metal clip attached. Cutting metal clip off.
13:30	Plans are to ream a 22" hole to 1550' bpl. to prevent packer loss again.
14:20	Connect bit to drill collar.
15:00	Tripping in hole with STAND# 5
16:00	Tripped in hole with STAND# 9 at1200' bpl. Start to trip in reverse air tubing.
16:35	Connect STAND# 10 and start reaming.
17:15	Top head drive down with STAND# 10 at 1319.5' bpl. Connect STAND#11, and resume reaming.
18:12	Connect STAND #12, and resume reaming.
18:55	Larry Holland on site. Trika Nelson off site.
19:18	Complete reaming to ~1560' bpl. Tripping out. Caliper log scheduled 21:30.
21:10	Driller completed tripping out of hole. Preparing wellhead for logger.
	YBI logger going in hole with caliper log.
21:45	Logger running caliper log from 1700'-1300' bpl.
23:15	Caliper log complete.
0:15	Caliper log indicates a pinch (rock fall?) at ~1582' bpl. Driller will swab hole at this depth tomorrow morning while waiting on new packer assembly.
1:30	Holland off-site. Waiting on new packer assembly.

WATER RESOURCE SOLUTIONS

Date: 3/31/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F.Procta
T.Nelson
L.Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting on delivery of new packer assembly.
9:15	Crew currently tripping in the drill string (nominal 22-inch bit) in preparation for re-drilling the pilot hole. NOTE: Plan to re-drill the pilot hole to 1700 feet bpl.
11:25	Update Mark Pearce of site operations.
13:50	Currently reaming pilot hole with nominal 22-inch bit. NOTE: Ronnie Thames of YBI informs Frank Procta that the new packer will be delivered to the site on Saturday, April 5th.
14:00	Top head drive down at 1700 feet bpl, the termination depth of the 22-inch reamed borehole.
14:05	Crew begin tripping out the drill string.
14:10	Mark Pearce meets with Ronnie Thames of YBI and Frank Procta. Plan to set a bridge plug at 2590 feet bpl.
14:30	Trika Nelson arrives on-site.
15:30	Frank Procta leaves the site.
15:55	Finished tripping out drill string.
16:10	Breaking off 22' bit.
16:30	Attaching 12.25' bit to drill collar to do a wiper trip to 2590' bpl. The overall bottom hole assembly length measures 124.98 feet and is composed as follows: 12.25-inch drill bit w/ sub measures 3.00 feet in length, followed by one collar stand that measures 121.98 feet in length.
16:45	Trika Nelson prepares cores to be sent out. (Depths: 2019', 2206.5', 2209', 2210', 2357', 2356'.)
17:11	Begin tripping in bottom hole assembly to start reaming.
18:10	Tripping in STAND# 10 to 1319.5' bpl.
18:20	YBI crew changing pads in tongs.
19:20	YBI crew changing pads in tongs.
20:00	Resume tripping in pipe. Connecting STAND# 11.
20:10	Center pin on spinners broke. Currently putting pin back in, and welding the bottom.
21:20	Spinners fixed. Resume tripping pipe in hole with STAND# 11.

21:30	Attaching can.
21:50	Top head drive down on STAND# 11. Connect STAND# 12.
22:10	Spinners not working correctly. YBI crew is adding hydraulic fluid to rig to help spinners work properly.
22:50	Larry Holland on site. Trika Nelson off site.
23:45	Driller still repairing spinners and hydraulic. Unable to make STAND #12 connection.
0:45	Still problems with spinners and hydraulic. Driller possibly shutting down for night.
1:30	Driller shutting down until parts arrive in morning. Holland off-site.

WATER RESOURCE SOLUTIONS

Date: 4/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Down for rig maintenance.
7:15	First truck load of gravel arrives on-site.
8:00	Currently tripping in the 12.25-inch bit. NOTE: Plan to trip in string to 2620 feet bpl and then trip back out if no obstructions are encountered, and prepare to run in a bridge plug.
8:05	Update Mark Pearce of site operations.
8:40	Continue to trip in drill pipe.
9:40	Update Noah Kugler of site operations.
10:50	Currently down for repairs.
11:30	Currently tripping out the drill string (12.25-inch bit).
12:50	Remove the collar stand from the well.
13:40	Connect the bridge plug assembly to the first double joint of tubing (2 3/8-inch steel). NOTE: Overall length of bridge plug assembly (4-inch PVC with double canvas baskets and end cap) including a 2-inch long crossover sub at the top equals 11.71 feet. Length from the top to the base of the first basket equals 5.96 feet. Length from the top to the base of the second basket equals 11.22 feet. Plan to set the base of the second basket at 2590 feet bpl.
13:44	The bridge plug assembly with first double joint of tubing lowered down the wellbore.
14:05	Currently tripping in double joints of 2 3/8-inch steel tubing.
14:15	Update Mark Pearce of site operations. Mark says the tentative pick for our longstring casing setting depth is 2580 feet bpl. Mark would like to cement the pilot hole from the base of the bridge plug to at least 2250 feet bpl, before using gravel fill.
14:30	Crew continue to trip in bridge plug tubing string.
14:40	Trika Nelson arrives on-site.
15:00	Frank Procta leaves the site.
15:15	All current operations stop. Waiting on Mark Pearce to speak with the FDEP.
15:25	Trika speaks with Mark Pearce: decision is made to set a packer at 2490' bpl. Looking to pump 1 gpm with 100 ft. of drawdown.

15:32	Trika speaks with Mark Pearce again: Current plans are to continue setting bridge plug at 2590' bpl., cement to 2500' bpl, and then set a single packer ***around*** 2475' bpl.
16:15	Continue to trip in tubing string, currently on tubing #39.
17:10	Problems tripping in tubing. Hole falling in at 2116' bpl. Trying to work through it.
18:10	Still trying to work past 2116' bpl.
18:30	Plan is to trip out tubing string, and perform a wiper trip.
18:35	Begin tripping out tubing string.
19:35	Continue to trip out tubing string.
20:30	Finished tripping out tubing string. No bridge plug attached. Going to drill it out of hole.
20:37	Attaching bails to top head drive.
20:55	Working on spinners. Not working properly.
21:30	Spinners fixed.
21:45	Connect 12.25' bit to drill collar to begin wiper trip to 2600' bpl. The overall bottom hole assembly length measures 124.98 feet and is composed as follows: 12.25-inch drill bit w/ sub measures 3.00 feet in length, followed by one collar stand that measures 121.98 feet in length.
22:25	Connecting STAND# 3.
22:35	Spinners not working properly again. Trying to fix spinners.
22:45	Larry Holland on site. Trika Nelson off site.
0:00	Cleaning out hole. 2100' bpl.
2:30	Complete swabbing at 2640' bpl. Repairing spinners.
3:35	Completing repair of spinners. Tripping out of hole.
6:15	Done tripping out of hole.
6:25	Tripping back in hole. Preparing to run in open-ended drill pipe to 2400' bpl.
7:00	Holland off-site. Procta on.

WATER RESOURCE SOLUTIONS

Date: 4/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Frank Procta arrives on-site. Current ops. : Down for rig maintenance.
7:15	Larry Holland leaves the site.
8:00	Update Mark Pearce of recent and current site operations. Mark decides to discuss options with Jimmy Brantley (YBI), then the FDEP.
9:10	YBI crew begin to purge/sample the pad monitoring wells.
10:40	Last pad monitoring well is sampled (PMW-4).
10:55	Frank Procta completes the field testing of the pad monitoring well water samples (WEEK #10).
11:00	Waiting on orders.
12:30	Mark Pearce calls to inform Frank Procta that the latest plan is to run a specially designed bridge plug run inside drill pipe to set at 2590 feet bpl.
14:30	YBI currently fabricating the new bridge plug. NOTE: There are currently 6 stands of open-ended drill pipe in the hole.
14:35	Trika Nelson arrives on-site.
14:45	Frank Procta leaves the site.
15:30	STAND# 10 being tripped in the hole.
16:30	STAND# 21 tripped into the hole. A 15' pup joint is being added. NOTE: 21 Stands=2520' bpl + 15' pup=2535' bpl -5.5' pad= 2529.5' bpl of open ended drill pipe.
17:00	New bridge plug has arrived on site.
17:30	Connect the bridge plug assembly to the first double joint of tubing (2 3/8-inch steel). NOTE: Overall length of bridge plug assembly is 21.09'. Length from the top to the base of the first basket equals 17.64 feet. Length from the top to the base of the second basket equals 20.39 feet. Plan to set
18:30	Continue tripping in bridge plug.
19:30	Driller found tubing that was loose. Double checking all tubing, tripping it out of hole.
20:15	Done tripping out tubing. Bridge plug still attached. Beginning to trip tubing back in hole to 2590' bpl.
21:28	Still tripping in tubing.
22:22	Still tripping in tubing.
22:50	Larry Holland on site. Trika Nelson off site.

23:30	Tripping in tubing string (not including bridge plug assembly) to a final depth of 2567' bpl. NOTE: The base of the first (upper) basket of the bridge plug set at 2585 feet bpl, placing the bottom end of the bridge plug assembly at 2588 feet bpl.
1:35	Completed installing tubing. Preparing to spot in 1 barrel of cement. Difficulty in starting pump.
3:00	Driller still struggling with pump. Unable to spot cement plug.
5:00	Waiting on pump.
6:45	Waiting on pump.
7:00	Holland off-site. Procta on.

WATER RESOURCE SOLUTIONS

Date: 4/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F.Procta
T.Nelson
L.Holland
Well: IW-1
Page 1 of 1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting on a trash pump to perform first cementing event to secure the bridge plug in the borehole. NOTE: The base of the first (upper) basket of the bridge plug positioned at 2585 feet bpl.
7:45	Waiting on pump.
8:00	Trash pump is delivered to the site.
8:20	Early preparations to cement in the bridge plug begin.
9:10	Discuss cementing plan with Ronnie Thames of YBI. Plan to pump approx. 1 barrel of neat cement (25+ gals. of dry cement, 20+ gals. of freshwater, 10+ lbs. of CaCl accelerator) using the trash pump.
9:15	Update Mark Pearce of site operations.
9:37	Begin pumping pre-flush. NOTE: Pumped 295 gals. of freshwater.
9:46	Begin mixing cement.
10:19	Begin pumping cement. NOTE: Last cement weight recorded at 15.0 lbs./gal., before adding approx. 10 lbs. of calcium chloride accelerator.
10:22	Disconnect pumping hose to the cement tubing string as the trash pump doesn't have the power to push the cement downhole against the natural upward flow of water in the wellbore.
10:29	Abort the cementing effort - flush equipment and hoses with freshwater.
11:00	Waiting on delivery of second pump.
11:05	Update Mark Pearce of cementing operations.
11:33	Move the newly-delivered trash pump to the rig floor.
11:55	Remove the trash pump from the rig floor as it isn't functioning properly.
13:12	Begin mixing cement using replacement trash pump.
13:30	Add approx. 10 lbs. of CaCl accelerator to the mix. NOTE: Last recorded cement weight, before adding the CaCl, at 15.3 lbs./gal.
13:31	Begin pumping cement down the tubing string (STAGE #1). NOTE: Pumped approx. 100 gals. of freshwater during pre-flush.
13:33	End cement pumping - move to freshwater chase.
13:41	End of freshwater chase. NOTE: Pumped 1 barrel of neat cement w/ CaCl accelerator and chased with 425 gals. of freshwater.
13:42	Crew begin post-cementing clean-up.

14:00	Waiting on cement.
14:30	Waiting on cement.
14:45	Trika Nelson arrives on-site.
14:50	Frank Procta leaves the site.
15:30	Waiting on cement.
16:30	Begin mixing cement using trash pump.
16:45	Add approx. 10 lbs. of CaCl accelerator to the mix.
17:10	Begin pumping cement down the tubing string (STAGE #2). NOTE: Pumped approx. 100 gals. of freshwater during pre-flush.
17:12	End cement pumping - move to freshwater chase.
17:20	End of freshwater chase. NOTE: Pumped 1 barrel of neat cement w/ CaCl accelerator and chased with 400 gals. of freshwater.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Preparing to cement. Hooking up hoses.
21:15	Begin mixing cement slurry.
21:30	Add approx. 10 lbs. of CaCl accelerator to the mix.
21:36	Begin pumping cement down the tubing string (STAGE #3). NOTE: Pumped approx. 100 gals. of freshwater during pre-flush.
21:40	End cement pumping - move to freshwater chase.
21:45	End of freshwater chase. NOTE: Pumped 2 barrel of neat cement w/ CaCl accelerator and chased with 400 gals. of freshwater.
22:10	Begin tripping out tubing.
23:00	Larry Holland on site. Trika Nelson off site.
23:35	Driller tripping out cementing tubing. Will then remove a 15' pup joint and 4 120' stands of drill pipe. Bottom of drill pipe will be at 2035' bpl.
1:20	Driller completed tripping out of hole. Drill pipe at 2035' bpl.
3:05	Driller tripping in cement tubing. Driller will tag last stage and spot 10 bbls.
4:05	Driller hard tag of cement at 2580' bpl (1 foot above top of basket).
4:15	Raise cement tremie to 2579' bpl.
4:30	Attach hose from cementer to wellhead.
4:39	Pump 12 bbls. (~500 gal.) of pre-flush water.
4:43	Start pumping 10 bbls (~420 gal.) of neat cement (no CaCl).
4:47	Complete cement pumping. Pump 15 bbls. (~700 gal.) of chase water.
5:05	Remove two joints of tremie pipe (60 feet per joint) from well.
5:15	Raise cement tremie an additional 90' into rigging.
5.30	Waiting for cement to set and complete tag.
6:30	Holland off-site.
7:00	Procta on-site.

Week 11

WATER RESOURCE SOLUTIONS

Date: 4/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting on cement (STAGE #4).
9:30	Frank Procta completes the TAC package for the tenth reporting period.
10:00	Waiting on cement.
10:40	Update Mark Pearce of next planned cementing event.
12:30	Hard tag top of fourth-stage cement at 2545 feet bpl.
12:40	Update Mark Pearce of site status.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:15	Update Mark Pearce of site status.
14:35	Trika Nelson on site.
15:10	Frank Procta leaves the site.
14:55	Preparing to cement.
15:08	Begin freshwater preflush.
15:12	End freshwater preflush. Pumped 1000 gals. of freshwater.
15:13	Begin pumping 12% bent. cement.
15:19	End pumping cement. Pumped 31 bbls. of cement. Begin freshwater chase.
15:22	End freshwater chase. Pumped 420 gals. of freshwater chase.
15:24	Begin tripping out 5 joints of 60' tubing.
15:35	Finish tripping out tubing.
15:40	Pulling up one 60' joint of tubing. Currently hanging.
16:25	Waiting on cement.
17:30	Waiting on cement.
18:30	Waiting on cement.
19:30	Waiting on cement.
20:30	Waiting on cement.
21:30	Waiting on cement.
22:30	Confusion as to what depth driller is hard tagging. Begin to trip out tubing. Plans are to trip out all tubing, and then trip tubing back in for correct tag depth. Then proceed with cement STAGE 6.
23:00	Trika Nelson off site. Todd Tubbert on site.
23:30	Continue tripping out cement tubing.
23:50	Tripped out 41 dbls and 2 singles of cement tubing and 1 pup.
12:00	Re-tally cement tubing.
0:15	Begin tripping in cement tubing.

1:45	Hard tag top of fifth-stage cement at 2571 feet bpl. NOTE: The hard tag for Stage 4 is inaccurate due to mis-calculation of cement tubing.
2:00	Cementer Mike Sordan on-site.
2:35	Begin freshwater preflush.
2:37	End freshwater preflush. Pumped 1000 gals. of freshwater.
2:39	Begin pumping 12% bent. cement (Stage #6).
2:44	End pumping cement. Pumped 20 bbls. of cement. Begin freshwater chase.
2:47	End freshwater chase. Pumped 700 gals. of freshwater chase.
2:50	Begin tripping out 5 joints of 60' tubing.
3:05	Finish tripping out tubing. (laid down on derrick floor)
3:10	Cementer Mike Sordan off-site.
3:15	Waiting on cement.
5:00	Waiting on cement.
6:30	Waiting on cement.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:10	Noah Kugler on-site. Waiting for cement to cure from Stage 6 of the 12.25-inch pilot-hole cement-back. Last night's hard tag at 2571' bpl indicates a total of 14' of cement fill was made prior to pumping cement Stage 6.
8:30	Cement samples are still soft. Waiting to hard tag.
10:35	Cement samples are semi-hard. Hard tag Stage 6 at 2567.5' bpl. Hard tag indicates 3.5 feet of fill since last hard tag.
10:55	Apparatus to pump gravel (trough) has been delivered to site.
11:15	Cementer Mike Sordan on-site. Begin setting up cement truck and hoses to wellhead and prepare to pump Stage 7 cement.
11:25	Begin mixing CaCl (hardening accelerator) with cement in truck.
11:58	Clear and test hoses with pressured water from truck.
12:02	Attach cement header to tremie pipe at wellhead.
12:03	Begin pumping freshwater flush.
12:06	Finish pumping freshwater flush (12 bbls).
12:08	Start pumping cement with 12% bentonite and 3% CaCl for Stage 7. See cement log.
12:10	Finish pumping cement Stage 7. Ten (10) bbls pumped. Begin pumping freshwater chase.
12:12	Finish pumping freshwater chase (10.25 bbls).
12:14	Disconnect cement header from tremie pipe. Pull 3 doubles (180') of tremie pipe.
13:20	Noah calls Mark Pearce with update. Mark stresses that **only cement, and no gravel** shall be pumped until notice is given to proceed with gravel. Noah forwards information to Ronnie Thames (YBI site superintendent).
15:00	Waiting on cement.
15:50	Cement samples from Stage 7 are hard.
16:05	Hard tag Stage 7 at 2562' bpl. Hard tag indicates 5.5' of fill since last hard tag.
16:55	Mike Sordan on-site for cement Stage 8. Begin setting up cement truck and hoses to wellhead.
17:05	Clear and test hoses with pressured water from truck.
17:07	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
17:08	Begin pumping freshwater flush.

17:11	Finish pumping freshwater flush (10 bbls). Start pumping cement with 12% bentonite and 3% CaCl for Stage 8. See cement log.
17:14	Finish pumping cement Stage 8. Eleven (11) bbls pumped. Begin pumping freshwater chase.
17:17	Finish pumping freshwater chase.
17:19	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
18:15	Noah and Todd Tubbert discuss planned activities for night shift via phone.
19:00	Noah Kugler leaves site. Waiting for cement to cure.
19:15	Todd Tubbert on-site.
20:00	Waiting on cement.
21:30	Hard tag Stage 8 at 2562' bpl. Hard tag indicates 0' of fill since last hard tag.
22:00	Waiting on cement.
22:10	Mike Sordan on-site for cement Stage 9.
22:20	Clear and test hoses with pressured water from truck.
22:25	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
22:27	Begin pumping freshwater flush.
22:30	Finish pumping freshwater flush (10 bbls). Start pumping cement with 12% bentonite and 3% CaCl for Stage 9. See cement log.
22:34	Finish pumping cement Stage 9. Ten (10) bbls pumped. Begin pumping freshwater chase.
22:37	Finish pumping freshwater chase.
22:40	Disconnect cement header from tremie pipe. Pull 3 doubles (180') of tremie pipe.
23:00	Waiting on cement.
1:00	Waiting on cement.
2:00/3:00	Day light savings: Set clocks ahead 1 hour.
4:00	Waiting on cement.
6:00	Hard tag Stage 9 at 2559' bpl. Hard tag indicates 3' of fill since last hard tag.
6:15	Noah Kugler calls for site activities update.
6:30	Mike Sordan on-site to pump cement stage 10. (NOTE: With time change it has been 7 hours between stages).
6:55	Begin pumping freshwater flush.
6:57	Finish pumping freshwater flush (10 bbls). Start pumping neat cement with 3% CaCl for Stage 10. See cement log.
7:02	Start pumping neat cement with 3% CaCl for Stage 10. See cement log.
7:05	Finish pumping cement Stage 10. Ten (10) bbls pumped. Begin pumping freshwater chase.
7:07	Finish pumping freshwater chase.
7:10	Disconnect cement header from tremie pipe. Pull 3 doubles (180') of tremie pipe.
7:15	Waiting on cement.
7:30	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
9:00	Noah Kugler on-site. Waiting for cement from Stage 10 of the pilot-hole cement-back to cure. Last hard tag of cement was at 2559' bpl. Next cement stage (11) will be pumped late this afternoon.
10:00	Waiting on cement.
11:00	Waiting on cement.
12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Waiting on cement.
15:00	Waiting on cement.
16:05	Hard tag cement from Stage 10 at 2550' bpl (9' of difference in tremie-pipe tally since last hard tag). This is the most fill since cementing-back of the pilot hole started.
17:00	Waiting to pump next cement stage.
17:25	Prepare cement silo and rig for next cement stage.
17:35	Mike Sordan on-site for cement Stage 11.
17:47	Clear and test hoses with pressured water from truck.
17:49	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
17:50	Begin pumping freshwater flush.
17:52	Finish pumping freshwater flush (10 bbls). Start pumping cement with 12% bentonite and 3% CaCl for Stage 11. See cement log.
17:57	Finish pumping 20 bbls of cement for Stage 11. Begin pumping freshwater chase.
17:59	Finish pumping freshwater chase (10.25 bbls).
18:00	Disconnect cement header from tremie pipe. Pull 5 doubles (300') of tremie pipe.
18:20	Noah and Todd Tubbert discuss planned activities for night shift via phone.
18:55	Noah confers with Ronnie Thames about upcoming cement operations and leaves site.
19:15	Todd Tubbert arrives onsite.
20:00	Waiting on cement.
21:00	Waiting on cement.
22:10	Hard tag cement from Stage 11 at 2547' bpl (3' of fill)
22:30	Prepare cement silo and rig for next cement stage.

23:20	Mike Sordan on-site for cement Stage 12.
23:25	Clear and test hoses with pressured water from truck.
23:35	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
23:37	Begin pumping freshwater flush.
23:40	Finish pumping freshwater flush (10 bbls).
23:45	Start pumping neat cement and 3% CaCl for Stage 12. See cement log.
23:48	Finish pumping 10.5 bbls of cement for Stage 12. Begin pumping freshwater chase.
23:52	Finish pumping freshwater chase (10 bbls).
23:55	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
0:00	Waiting on cement.
2:00	Waiting on cement.
4:00	Waiting on cement.
6:00	Waiting on cement.
6:30	Hard tag cement from Stage 12 at 2532' bpl (15' of fill)
7:00	Noah Kugler on-site. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 4/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Preparing to pump cement Stage 13 of the pilot-hole cement-back.
7:03	Mike Sordan on-site for cement Stage 13.
7:07	Clear and test hoses with pressured water from truck.
7:13	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
7:14	Begin pumping freshwater flush.
7:16	Finish pumping freshwater flush (10 bbls).
7:19	Start pumping cement with 12% bentonite and 3% CaCl for Stage 13. See cement log.
7:22	Finish pumping 11 bbls of cement for Stage 13. Begin pumping freshwater chase.
7:24	Finish pumping freshwater chase (10.25 bbls).
7:25	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
7:31	Clear cement hose from truck with fresh water.
7:36	Reattach cement header to tremie pipe and re-chase.
8:00	Waiting on cement.
9:00	Waiting on cement.
10:00	Waiting on cement.
11:00	Waiting on cement.
12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:10	Hard tag cement from Stage 13 at 2524' bpl (8' of fill).
14:15	Remove one 30-foot joint of tremie pipe and replace with one x-foot sub of tremie pipe in preparation for the next cement stage.
14:35	Mike Sordan on-site for cement Stage 14.
14:40	Clear and test hoses with pressured water from truck.
14:44	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
14:48	Begin pumping freshwater flush.

14:50	Finish pumping freshwater flush (10 bbls).
14:54	Start pumping neat cement with 3% CaCl for Stage 14. See cement log.
14:57	Finish pumping 11 bbls of cement for Stage 14. Begin pumping freshwater chase.
15:00	Finish pumping freshwater chase (10 bbls).
15:00	Frank Procta on-site.
15:04	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
15:20	Noah Kugler leaves the site.
15:45	Update Mark Pearce of cementing operations. Mark says that a 3-hour wait period between stages is OK when using neat w/ 3% CaCl.
16:00	Waiting on cement. NOTE: Next planned cementing event scheduled for today at 18:00 hours.
18:00	Hard tag cement from Stage 14 at 2524' bpl (0' of fill).
18:02	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
18:02	Begin pumping freshwater pre-flush.
18:05	Start pumping neat cement with 3% CaCl for Stage 15. See cement log.
18:09	Finish pumping 10.5 bbls of cement for Stage 15. Begin pumping freshwater chase.
18:11	Finish pumping freshwater chase (10 bbls).
18:12	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
18:35	Waiting on cement. NOTE: Next planned cementing event scheduled for today at 21:00 hours.
20:45	Hard tag cement from Stage 15 at 2524' bpl (0' of fill).
20:50	Update Mark Pearce of cementing operations.
21:07	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
21:09	Begin pumping freshwater pre-flush.
21:12	Start pumping neat cement with 3% CaCl for Stage 16. See cement log.
21:20	Finish pumping 30 bbls of cement for Stage 16. Begin pumping freshwater chase.
21:23	Finish pumping first-phase freshwater flush (10 bbls).
21:24	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
21:33	Begin pumping second-phase freshwater flush.
21:36	End of second flush (10+ bbls).
22:15	Waiting on cement. NOTE: Next planned cementing event scheduled for today at 24:00 hours.
22:30	Waiting on cement.
23:00	Todd Tubbert on-site.
0:15	Hard tag cement from Stage 16 at 2524' bpl (0' of fill).
1:10	Mike Sordan (cementer) arrives on-site.

1:15	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above
1:17	Begin pumping freshwater flush.
1:20	Finish pumping freshwater flush (10 bbls).
1:21	Start pumping neat cement and 3% CaCl for Stage 17. See cement log.
1:22	Finish pumping 5 bbls of cement for Stage 17. Begin pumping freshwater chase.
1:25	Finish pumping freshwater chase (10 bbls).
1:27	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
1:40	Begin pumping second-phase freshwater flush.
1:46	End of second flush (10+ bbls).
1:50	Waiting on cement.
3:00	Waiting on cement.
5:00	Waiting on cement.
6:00	Waiting on cement.
6:10	Cement truck on-site. Silo being filled with cement.
6:30	Hard tag cement from Stage 17 at 2524' bpl (0' of fill).
7:00	Noah Kugler on-site. Todd Tubbert off-site.

WATER RESOURCE SOLUTIONS

Date: 4/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Preparing to pump Stage 18 cement.
7:02	Mike Sordan on-site for cement. Prepare cement truck.
7:25	Clear and test hoses with pressured water from truck.
7:35	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
7:36	Begin pumping freshwater flush.
7:38	Finish pumping freshwater flush (10 bbls).
7:40	Building air pressure in silo to blow cement into mixing tank on truck.
7:45	Start pumping neat cement with 3% CaCl for Stage 18. See cement log.
7:49	Finish pumping 15 bbls of cement for Stage 18. Begin pumping freshwater chase.
7:52	Finish pumping freshwater chase (10.25 bbls).
7:53	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
7:54	Clear cement hose from truck with fresh water.
8:00	Reattach cement header to tremie pipe and re-chase.
9:00	Waiting on cement.
9:45	Cement sample is relatively hard. Hard tag Stage 18 cement at 2524' bpl (no fill). Water is flowing from tremie pipe at same tag depth as last tag, this indicates that the tremie is not sitting on or in semi-hard cement. Based on this, the Contractor has decided to pump another stage of cement soon.
9:47	Mike Sordan prepares cement truck.
9:49	Clear and test hoses with pressured water from truck.
9:50	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
9:51	Begin pumping freshwater flush.
9:54	Finish pumping freshwater flush (10.25 bbls). Start pumping neat cement with 3% CaCl for Stage 19. See cement log.
9:57	Finish pumping 10.5 bbls of cement for Stage 19. Begin pumping freshwater chase.
9:59	Finish pumping freshwater chase (10.25 bbls).

10:01	Disconnect cement header from tremie pipe. Clear cement hose from truck with fresh water.
10:02	Pull 4 doubles (240') of tremie pipe.
10:06	Reattach cement header to tremie pipe and re-chase.
11:00	Waiting on cement.
12:00	Waiting on cement.
12:45	Cement sample is hard. Hard tag Stage 19 cement at 2524' bpl (no fill).
13:00	Josh (Mike Sordan's assistant) prepares cement truck.
13:25	Mike Sordan on-site to pump cement with sand.
13:27	Clear and test hoses with pressured water from truck.
13:29	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
13:30	Begin pumping freshwater flush.
13:34	Finish pumping freshwater flush (12 bbls). Start mixing neat cement with pre-hydrated CaCl (3%) for Stage 20. See cement log.
13:37	Start pumping neat cement with 3% CaCl for Stage 20. Add one sack of standard sand approximately every 15 seconds. See cement log.
13:43	Finish pumping 20 bbls of cement with standard sand for Stage 20. Begin pumping freshwater chase.
13:46	Finish pumping freshwater chase (10 bbls).
13:48	Disconnect cement header from tremie pipe.
13:49	Pull 5 doubles (300') of tremie pipe. Clear cement hose from truck with freshwater.
13:56	Reattach cement header to tremie pipe and re-chase.
13:59	Re-chase complete. Disconnect cement header from tremie pipe and raise tremie pipe 90'.
15:00	Frank Procta on-site. Waiting on cement.
15:15	Noah Kugler leaves the site.
16:25	Cement sample is hard. Hard tag Stage 20 cement at 2524' bpl (no fill).
16:38	Begin pouring sodium silicate (accelerator) into steel mixing drum.
16:49	Begin pumping sodium silicate down the cement tubing (110 gals.).
16:54	Chase with approximately 3 barrels of freshwater.
16:56	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
16:57	Start pumping neat cement for Stage 21. See cement log.
17:00	Finish pumping 10 bbls of neat cement w/ 2%CaCl for Stage 21. Begin pumping freshwater chase.
17:03	Finish pumping freshwater chase (10 bbls).
17:04	Begin tripping out cement tubing (5 doubles).
17:45	Waiting on cement.
19:20	Cement sample is hard. Hard tag Stage 21 cement at 2524' bpl (no fill).
19:25	Currently mixing 11 barrels of cement slurry (100 lbs. of CaCl, 300 lbs. gel, water and dry cement) with added viscosity.
19:27	Begin pumping freshwater pre-flush (10 bbls.).

19:31	Start pumping cement slurry for Stage 22. See cement log.
19:35	End cementing - move to freshwater flush.
19:38	End of first-phase flush (10 bbls.), pull 4 doubles of cement tubing.
19:50	Re-attach cementing header, begin second-phase flush.
19:53	End of flush (10 bbls.). NOTE: Pumped 11 barrels of cement w/ 24% gel and 3% CaCl.
20:30	Waiting on cement.
21:15	Update Mark Pearce of cementing operations.
21:45	Waiting on cement.
22:15	Update Todd Tubbert (WRS) of cementing operations.
22:30	Waiting on cement.
23:10	Todd Tubbert on-site.
23:30	Waiting on cement.
0:30	Waiting on cement.
1:30	Waiting on cement.
2:00	Hard tag cement from Stage 22 at 2524' bpl (0' of fill).
2:10	Prepare to pump gravel.
2:45	Begin pouring gravel from Bucket loader directly into wellbore.
3:30	Two bucket loaders (approximately 54 cu.feet) of gravel have been poured into wellbore.
3:45	Hard tag top of gravel 2518' bpl (6' of fill).
4:00	Resume pouring gravel from bucket loader.
5:00	A total of three (3) bucket loads (approximately 324 cu. feet) have been poured into well bore.
5:15	Attempting to hard tag top of gravel. Note: Gravel has bridged in the open hole at 2438' bpl. Tremie cannot be lowered past this point.
6:30	Driller continues to run tremie through plug.
7:00	Ronnie of YBI plans to trip out tremie tubing and go in with drill bit to clear wellbore.

WATER RESOURCE SOLUTIONS

Date: 4/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:05	Noah Kugler on-site. Heavy regional rain. Contractor servicing rig. Gravel operations have produced approximately 6' of fill (hard tagged at 2518' bpl). After filling open hole to 2518' bpl, gravel bridged in the open hole at 2438' bpl. Tremie cannot be lowered past this point. The Contractor will trip-out cement tremie and trip-in additional drillpipe to clean out the bridged area. Currently the drillpipe is in the hole to 2130' bpl for cementing operations.
7:20	Todd Tubbert leaves site.
8:00	Noah discusses operations with Ronnie Thames and calls Mark Pearce with update.
8:15	Tremie pipe out of hole. Start tripping in additional drillpipe to clear bridged gravel.
9:35	Drill pipe is getting hung-up on ledges in the borehole. The drill pipe was not able to advance beyond 2375' bpl. The Contractor decides to trip out drill-pipe, attach 12.25-inch bit and drill collars, and trip back in to drill-out and clean open hole.
12:05	Drill pipe is out of hole. Attach bit to stand of drill collars.
12:15	Due to heavy wind, a stand of drill pipe has fallen out of the rack and across the derrick. Suspend operations to stand-back fallen stand and tie down drillpipe.
13:30	Fallen stand of drillpipe has been laid back in rack and drillpipe has been secured.
13:50	Continue attaching drill bit to drill collars.
14:15	Drill bit and drill collars made-up. Begin tripping in drillstring.
14:55	Drillpipe is in the hole, tagged at 2375' bpl. Trip in reverse-air tubing.
15:00	Frank Procta on-site. Drillstring almost tripped in.
15:15	Noah Kugler leaves site.
15:30	Currently tripping in the 2 3/8-inch air line. NOTE: Drill string is tripped in the wellbore. STAND #18 down places the bit at 2279.5 feet bpl.
16:00	Currently reaming with STAND #19 at approximately 2375 feet bpl.
17:30	Continue reaming with STAND #19.
18:30	Top head drive down with STAND #19 at 2399.5 feet bpl.

18:54	Add STAND #20 to the drill string.
19:05	Currently reaming with STAND #20.
21:00	Currently reaming with STAND #20.
21:20	Reach the planned reamed depth of 2518 feet bpl.
21:35	Crew begin tripping out the air line.
22:00	Crew begin tripping out stands of drill pipe.
22:45	Continue tripping out the drill string.
23:15	Todd Tubbert on-site.
23:30	Continue tripping out the drill string.
23:50	Finish tripping out drillstring/detach drill bit.
0:00	Begin tripping in 18 stands of drillstring. (tremie tubing will be run through drillstring)
2:06	Finish tripping in drillstring with STAND # 18.
2:20	Begin tripping in tremie tubing.
4:00	Jim Brantley on-site to cement.
4:12	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
4:15	Begin pumping freshwater pre-flush.
4:17	Start pumping neat cement with 3% CaCl for Stage 23. See cement log.
4:21	Finish pumping 11 bbls of cement for Stage 23. Begin pumping freshwater chase.
4:24	Finish pumping freshwater chase (10 bbls).
4:25	Disconnect cement header from tremie pipe. Pull 4 doubles +15' pup (255') of tremie pipe.
4:31	Attach cement header to tremie pipe at wellhead.
4:34	Finish pumping 2nd freshwater chase (10 bbls).
4:40	Jim Brantley leaves the site.
4:45	Waiting on cement.
5:30	Waiting on cement.
6:45	Waiting on cement.
7:00	Todd Tubbert leaves site.

WATER RESOURCE SOLUTIONS

Date: 4/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:05	Noah Kugler on-site. Waiting on cement to set from Stage 23
8:00	Waiting on cement.
8:40	Cement sample is very hard. Hard tag Stage 23 cement at 2510' bpl (approximately 10' of fill).
8:45	Noah calls Mark Pearce with update.
9:00	Waiting on cement.
9:10	Jimmy Brantley (YBI) on-site to pump Stage 24 cement.
9:14	Clear and test cement hoses and lines from truck.
9:16	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
9:17	Begin pumping freshwater pre-flush.
9:19	Pre-flush complete (10 bbls). Start pumping neat cement with 3% CaCl for Stage 24. See cement log.
9:24	Finish pumping 21 bbls of cement for Stage 24. Begin pumping freshwater chase.
9:26	Finish pumping freshwater chase (10 bbls).
9:27	Disconnect cement header from tremie pipe. Pull 5 doubles (300') of tremie pipe.
9:35	Attach cement header to tremie pipe at wellhead. Re-chase.
9:37	Finish pumping re-chase. Pull up tremie 90'.
10:00	Waiting on cement.
11:00	Waiting on cement.
12:00	Waiting on cement.
12:45	Cement sample is hard. Hard tag Stage 24 cement at 2498' bpl (approximately 12' of fill). Noah leaves update for Mark Pearce.
12:50	Jimmy Brantley (YBI) on-site to pump Stage 25 cement.
12:53	Clear and test cement hoses and lines from truck.
12:57	Attach cement header to tremie pipe at wellhead. Tremie set 1 foot above hard tag.
12:58	Begin pumping freshwater pre-flush.
13:01	Pre-flush complete (10 bbls). Start pumping neat cement with 3% CaCl for Stage 25. See cement log.

13:06	Finish pumping 21 bbls of cement for Stage 25. Begin pumping freshwater chase.
13:09	Finish pumping freshwater chase (10 bbls).
13:10	Disconnect cement header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
13:16	Attach cement header to tremie pipe at wellhead. Re-chase.
13:19	Finish pumping re-chase. Pull up tremie 90'.
14:00	Waiting on cement.
15:00	Noah Kugler off. Waiting on cement.
15:20	Frank Procta arrives on-site. Current ops. : Waiting on cement (STAGE #25).
16:30	Hard tag top of cement (STAGE #25) at 2487 feet bpl.
17:30	Waiting on cement.
17:35	Update Mark Pearce, by phone message, of cementing status.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:28	Begin freshwater pre-flush. NOTE: Tremie set 1 foot above hard tag.
20:30	Pre-flush complete (10+/- bbls.). Start pumping neat cement with 3% CaCl for Stage 26. See cement log.
20:35	Finish pumping 21 bbls. of cement for Stage 26. Begin pumping freshwater chase.
20:36	Finish pumping first-phase freshwater flush.
20:37	Disconnect cementing header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
20:44	Pump second-phase freshwater flush.
20:45	End flush, remove cementing header, raise cement tubing string.
21:00	Waiting on cement.
22:00	Waiting on cement.
22:20	Update Todd Tubbert (WRS) of cementing status.
22:50	Waiting on cement.
23:05	Todd Tubbert on-site.
23:40	Trip in 4 dbls of tremie pipe.
23:55	Hard tag top of cement (STAGE #26) at 2482 feet bpl. (5 feet of fill)
0:00	Break off 5 foot pup joint. Raise 60' out of hole. Jim Brantley is planned to arrive on-site at 4:00 for the next cement stage.
1:00	Waiting on cementer.
2:00	Waiting on cementer.
3:00	Waiting on cementer.
4:00	Waiting on cementer.
4:15	Jim Brantley arrives on-site to cement stage 27.
4:27	Begin freshwater pre-flush. NOTE: Tremie set 1 foot above hard tag.
4:30	Pre-flush complete (10+/- bbls.). Start pumping neat cement for Stage 27. See cement log.

4:32	Finish pumping 15 bbls. of cement for Stage 27. Begin pumping freshwater chase.
4:34	Finish pumping first-phase freshwater flush.
4:35	Disconnect cementing header from tremie pipe. Pull 4 doubles (240') of tremie pipe.
4:40	Pump second-phase freshwater flush.
4:45	End flush, remove cementing header, raise cement tubing string.
4:50	Jim Brantley leaves the site.
5:00	SHUT DOWN RIG UNTIL SATURDAY MORNING 4/12/03 -due to no cementers available. - as per Jim Brantley of YBI.
5:15	Phone Noah Kugler with update.
5:30	YBI Crew leaves the site.
5:35	Todd Tubbert leaves the site.

Week 12

WATER RESOURCE SOLUTIONS

Date: 4/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler calls Ronnie Thames for site update. The Contractor recommends drilling out the cemented-back pilot hole from 2473' to 2560' bpl and re-cementing to assess cement fill the second time around.
8:20	Mark Pearce approves Contractor recommendation to drill-out pilot hole to 2560' bpl and re-cement.
8:45	Contractor begins tripping out cement tremie and drillpipe to attach a 12.25-inch bit for drilling operations. Open-ended drillpipe was set in the open hole at 2130' bpl as part of the cementing operations.
9:45	Tremie out of hole. Begin tripping out drillpipe.
12:30	Drillpipe has been tripped out. Attach 12.25-inch tricone bit to stand of drill collars.
12:50	Bit has been attached. Begin tripping back in hole. Noah returns Mark Pearce's call with update.
14:35	Bit tripped in to 2400' bpl (19 stands). Trip-in 2 & 3/8-inch reverse-air tubing.
14:50	Noah Kugler leaves site for office to discuss formation picks based on fossil identification.
15:00	Frank Procta arrives on-site. Current ops. : Tripping in stands of drill pipe.
15:20	Top of cement (STAGE #27) tagged, using drill pipe, at 2473 feet bpl.
15:30	Resume drilling operations with STAND #20.
17:30	Continue drilling with STAND #20.
18:04	Currently drilling with STAND #20 at 2515 feet bpl. NOTE: Examination of cuttings from the discharge stream reveal abundant cement.
18:35	Top head drive down with STAND #20 at 2519.5 feet bpl.
20:38	Currently drilling with STAND #21 at 2545 feet bpl. NOTE: Examination of cuttings from the discharge stream reveal abundant cement.
21:30	Reach termination depth of 2560 feet bpl. NOTE: Plan to circulate at 2560 feet bpl for 1/2 hour and raise string. YBI crew plan to be off the site by 10:00 PM as the night tour has been cancelled.
21:45	Frank Procta leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:10	Trika Nelson on site.
7:30	YBI Crew currently tripping out tubing.
8:30	Currently tripping out drill pipe.
9:30	Currently tripping out drill pipe.
10:10	Done tripping out of hole. Breaking off bit.
10:30	Spinners are back from YBI shop. Begin reattaching spinners.
11:30	Still reattaching spinners.
12:10	Spinners attached. Start tripping in hole.
13:00	Still tripping drill pipe in the hole.
13:30	Done tripping drill pipe in the hole. (17 Stands=2040' bpl. - 5.5'pad=2034.5' bpl.)
13:35	Changing elevators in order to trip in cement tubing.
13:40	Begin tripping in cement tubing.
14:00	Still tripping in cement tubing.
15:00	Still tripping in cement tubing.
15:12	Finish tripping in cement tubing (2558' bpl.). Tag at 2561' bpl. Preparing to cement.
15:25	Jimmy Brantley onsite to cement.
15:29	Begin freshwater preflush.
15:31	End freshwater preflush (10 bbls.). Begin cementing.
15:35	End cementing. (20 bbls of neat) Begin freshwater chase.
15:37	End freshwater chase. (10 bbls)
15:38	Detach header. Pull out 4 doubles. (Tremie at 2318' bpl.)
15:46	Reattach header. Begin 2nd freshwater flush.
15:48	End 2nd freshwater flush. (10 bbls.)
16:00	Waiting on cement.
17:00	Waiting on cement.
18:00	Waiting on cement.
19:00	Trika Nelson off site. Holland on-site.
19:05	Tripping in tremie pipe to tag cement.
19:30	Tagged cement at 2486' bpl. Theoretical fill was to 2440' bpl.
19:40	Begin freshwater preflush.

19:44	Begin cementing. 20 bbls of neat cement (4.7 bbls/min, 15.7 ppg).
19:48	Begin freshwater chase. 10 bbls.
19:50	Picking up 4 stands.
19:58	Begin 2nd flush. 10 bbls.
20:00	2nd flush complete.
21:00	Waiting on cement.
23:35	Tagged cement at 2478' bpl. Theoretical fill was to 2350' bpl.
12:11	Begin freshwater preflush.
12:14	Begin cementing. 11 bbls of neat cement (4.7 bbls/min, 15.6 ppg).
12:17	Begin freshwater chase. 10 bbls.
12:19	Picking up 3 stands.
12:23	Begin 2nd flush. 10 bbls.
12:25	2nd flush complete.
12:30	Waiting on cement. Anticipate a tag at ~ 04:00.
2:00	Waiting on cement.
4:00	Waiting on cement.
5:00	Tagged cement at 2477' bpl. A total on 1' of fill. Theoretical was 64 feet of fill.
6:45	Trika Nelson on site.
7:00	Holland off.

WATER RESOURCE SOLUTIONS

Date: 4/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Trika Nelson on site.
7:00	Holland off.
7:35	Trika Nelson speaks with Mark Pearce about current operations. Mark **does not** give the OK to begin graveling, and would like to resume cementing up to 2300' bpl.
8:00	Mark P. wants to proceed with trying to cement to 2300' bpl. Preparing to cement.
8:35	Jimmy Brantley on site to cement Stage 31.
8:40	Begin freshwater preflush.
8:43	End freshwater preflush (10 bbls). Begin cement.
8:46	End neat cement (12 bbls). Begin freshwater chase.
8:47	End freshwater chase (10 bbls).
8:48	Detach header. Pull out 3 double stands of tremie.
8:54	Reattach header. Begin 2nd freshwater chase.
8:56	End 2nd freshwater chase (8 bbls.).
9:00	Waiting on cement. Plans are to cement and gravel at the same time.
10:00	Waiting on cement.
11:00	Waiting on cement.
12:00	Waiting on cement.
12:40	Prepare to hard tag cement.
12:55	Hard tag cement at 2464' bpl.
13:10	Jimmy Brantley on site to cement Stage 32.
13:20	Begin freshwater preflush.
13:22	End freshwater preflush (10 bbls). Begin cement.
13:25	End neat cement (11 bbls). Begin freshwater chase.
13:26	End freshwater chase (10 bbls). Detach header.
13:27	Pull out 4 double stands of tremie.
13:33	Attach header. Begin 2nd freshwater chase.
13:34	End 2nd freshwater chase (10 bbls.).
14:00	Waiting on cement.
15:00	Waiting on cement.
16:30	Waiting on cement.

16:50	Prepare to hard tag cement.
17:00	Hard tag cement at 2453' bpl. Waiting for cementer.
18:05	Jimmy Brantley on site to cement Stage 33.
18:10	Begin freshwater preflush.
18:12	End freshwater preflush (10 bbls). Begin cement.
18:14	End neat cement (12 bbls). Begin freshwater chase.
18:16	End freshwater chase (10 bbls). Detach header.
18:17	Pull out 3 double stands of tremie.
18:23	Attach header. Begin 2nd freshwater chase.
18:24	End 2nd freshwater chase (10 bbls.).
18:40	Waiting on cement.
19:00	Larry Holland on site. Trika Nelson off site.
20:05	Driller tripping out tubing. Preparing to run in double tremie line set-up to pump cement and gravel at same time. Final volumes/ratio to be determined.
23:35	Driller preparing to modify floor and work up header for dual tremie.
1:00	Holland off.

WATER RESOURCE SOLUTIONS

Date: 4/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Preparing to set additional string of tremie pipe to pump gravel (if needed) during cement operations. Last hard tag of cement at 2439' bpl. Contractor has tripped in one set of 2 3/8-inch tremie tubing and is setting up a second slip system to run in second string of tubing. Tubing will generally be set 1 foot above each tag prior to each cement stages.
8:15	Second slip system has been set up. Prepare to run in second string of tubing for gravel.
10:30	Second string (gravel) of tubing has been tripped in.
11:20	Set gravel tubing at 2100' bpl to keep safely above any possible cement height.
11:25	Mike Sordan sets up truck and begins mixing CaCl with water for cement Stage 34.
11:28	Tag last cement stage at 2439' bpl, then set cement tubing at 2438' bpl.
11:42	Attach cement header and begin tubing pre-flush with freshwater.
11:46	Pre-flush complete. Begin pumping cement Stage 34 (neat with 4% CaCl).
11:51	Finish pumping 15 bbls cement. Switch to chase water.
11:53	Finish pumping 10 bbls chase water.
11:54	Remove cement header and pull 4 doubles of tubing (~240').
12:00	Reattach header and reflush.
13:00	Waiting on cement.
14:10	Tag last cement stage at 2417' bpl. Set cement tubing at 2416' bpl for next cement stage. Mike Sordan sets up truck.
14:15	Attach cement header and begin tubing pre-flush with freshwater.
14:19	Pre-flush complete. Begin mixing CaCl with water for cement Stage 34.
14:30	Begin pumping cement Stage 35 (neat with 3% CaCl). Mohan Thampi on-site for update.
14:35	Trika Nelson on-site for swing.
14:36	Finish pumping 20 bbls cement. Switch to chase water.
14:39	Finish pumping 10 bbls chase water.
14:40	Remove cement header and pull 4 doubles of tubing (~240').
14:46	Reattach header and reflush.

15:40	Noah Kugler leaves site. Waiting on cement.
16:40	Tag last cement stage at 2351' bpl. Set cement tubing at 2350' bpl for next cement stage. Mike Sordan on site to prepare to cement Stage 36.
16:54	Begin freshwater preflush.
16:55	End freshwater preflush. (10 bbls.)
16:56	Begin cement Stage 36. (neat with 3% CaCl)
17:02	Finish pumping 19 bbls cement. Switch to chase water.
17:05	End freshwater chase. (12 bbls). Detach header.
17:06	Pull out 5 doubles of tubing.
17:14	Begin 2nd flush chase.
17:17	End 2nd flush chase. (12 bbls)
17:30	Waiting on cement.
18:30	Waiting on cement.
18:40	Tag last cement stage at 2337' bpl. Set cement tubing at 2336' bpl for next cement stage. Mike Sordan is preparing for cement Stage 37.
19:03	Begin freshwater preflush.
19:05	End freshwater preflush. (10 bbls.)
19:07	Begin cement Stage 37. (neat with 3% CaCl)
19:13	Finish pumping 20 bbls cement. Switch to chase water.
19:16	End freshwater chase. (10 bbls). Detach header.
19:17	Pull out 4 doubles of tubing.
19:25	Reattach header
19:26	Begin 2nd flush chase.
19:28	End 2nd flush chase. (10 bbls)
20:00	Waiting on cement.
21:14	Tag cement at 2313' bpl with cement tubing at 2312' bpl.
22:05	Mike Sordan on site to cement Stage 38.
22:11	Begin freshwater preflush.
22:13	End freshwater preflush. (10 bbls.)
22:15	Begin cement Stage 38. (neat with 3% CaCl)
22:20	Finish pumping 20 bbls cement. Switch to chase water.
22:23	End freshwater chase. (10 bbls). Detach header.
22:25	Pull out 4 doubles of tubing.
22:32	Reattach header
22:33	Begin 2nd flush chase.
22:35	End 2nd flush chase. (10 bbls)
22:40	Waiting on cement.
22:46	Larry Holland on site. Trika Nelson off site.
0:15	Tag cement at 2301 bpl and set cement tubing at 2300' bpl for this stage.
0:27	Begin freshwater preflush.
0:30	End freshwater preflush. (10 bbls.)
0:36	Begin cement Stage 39. (neat with 3% CaCl)
0:42	Finish pumping 20 bbls cement. Switch to chase water.
0:45	End freshwater chase. (10 bbls). Detach header.

0:46	Pull out 4 doubles of tubing.
0:55	Begin 2nd flush chase.
0:58	End 2nd flush chase. (10 bbls). Theoretical fill ~ 2236' bpl.
1:22	Driller removing one tremie line from well. Removing slips and elevators.
2:50	Tag cement at 2294' bpl and set cement tubing at 2293' bpl for this stage.
3:15	Waiting on cementer.
4:02	Begin freshwater preflush.
4:04	End freshwater preflush. (10 bbls.)
4:05	Begin cement Stage 40. (neat cement)
4:11	Finish pumping 20 bbls cement. Switch to chase water.
4:14	End freshwater chase. (10 bbls). Detach header.
4:15	Pull out 4 doubles of tubing.
4:22	Begin 2nd flush chase.
4:26	End 2nd flush chase. (10 bbls). Theoretical fill ~ 2234' bpl. Tag at ~8:30.
6:00	Waiting on cement.
7:00	Noah Kugler on-site. Larry Holland off. Waiting on cement.

WATER RESOURCE SOLUTIONS

Date: 4/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting to tag Stage 40 cement. Last stage (39) tagged at 2294' bpl
7:55	Hard tag Stage 40 cement at 2263' bpl (31' of fill). The pilot hole is currently filled with cement to 7' below the extensively enlarged borehole area from approximately 2256' to 1954' bpl. Another extensively enlarged borehole area is noted from approximately 1760' to 1690' bpl by the caliper log.
8:10	Noah leaves update message for Mark Pearce and faxes him the cementing summary.
8:30	Waiting on cementer to pump next stage.
9:02	Jimmy Brantley on site to cement Stage 41.
9:05	Begin freshwater preflush.
9:06	End freshwater preflush (10 bbls). Begin pumping cement Stage 41 (neat). See cement log.
9:12	Finish pumping 21 bbls cement. Switch to chase water.
9:16	End freshwater chase. (10 bbls). Detach header.
9:17	Pull out 4 doubles of tubing.
9:22	Reattach header. Begin 2nd flush chase.
9:26	End 2nd flush chase. (10 bbls)
10:00	Waiting on cement.
10:05	Noah and Mark Pearce discuss, via phone, the gravel and cement plans through the next section of the extensively enlarged borehole. Enlarged areas may require pumping gravel and emplaceing cement in the gravel if extensive amounts of gravel are needed to fill a given area. At the current time, use of 20,000 ft^3 of gravel has been approved. NO MORE THAN 20,000 FT^3 SHOULD BE USED PRIOR TO FURTHER APPROVAL.
11:00	Waiting on cement. NOTE: At 108 ft^3 per load (4 $yards^3$), it will take ~185 loads to equal 20,000 ft^3
12:00	Waiting on cement. Mike Sordan on site to cement Stage 42.
12:15	Hard tag Stage 41 cement at 2256' bpl (7' of fill). Cement is filled to the base of the extensively enlarged borehole that begins just above 2256' bpl.
12:20	Clear and test hoses and lines from cement truck.

12:27	Begin freshwater preflush.
12:30	End freshwater preflush (10 bbls). Begin mixing CaCl with water.
12:37	Begin pumping cement Stage 42 (neat with 3% CaCl). See cement log.
12:42	Finish pumping 20 bbls cement. Switch to chase water.
12:45	End freshwater chase. (10 bbls). Detach header.
12:46	Pull out 3 doubles of tubing.
12:52	Reattach header. Begin 2nd flush chase.
12:55	End 2nd flush chase. (10 bbls)
14:00	Waiting on cement.
14:25	Hard tag Stage 42 cement at 2249' bpl (7' of fill).
14:35	Trika Nelson on-site.
14:43	Begin freshwater preflush.
14:46	End freshwater preflush (10 bbls). Begin mixing CaCl with water.
14:50	Begin pumping cement Stage 43 (neat with 3% CaCl). See cement log.
14:53	Finish pumping 11 bbls cement. Switch to chase water.
14:55	End freshwater chase. (10 bbls). Detach header.
14:56	Pull out 2 doubles of tubing.
15:03	Reattach header. Begin 2nd flush chase.
15:07	End 2nd flush chase. (10 bbls)
15:40	Noah Kugler leaves site. Waiting on cement.
16:30	Tag cement. No fill. Trika Nelson calls Dr. Pearce for an update. He gives the okay to begin graveling.
17:10	Trika Nelson receives fax from Dr.Pearce. Updated procedure for graveling. Trika Nelson relays message to Ronnie Thames. First stage of 50' of graveling should come up to 2199' bpl~ 1 bucket of gravel.
17:35	Preparing to gravel. Begin to trip out tubing.
18:00	Still tripping out tubing.
18:50	Finish tripping out tubing. Changing elevators to prepare to trip in 3 stands of drill pipe. Then trip tubing back in the hole.
19:00	YBI shift change.
19:30	Trip in STAND# 1 of drill pipe.
19:35	Trip in STAND# 2 of drill pipe.
19:45	Trip in STAND# 3 of drill pipe, and attach can.
20:14	Change elevators.
20:30	Begin to trip in tubing.
21:15	Still tripping in tubing.
21:46	Finish tripping in tubing. Bottom of tubing is set at 2219' bpl.
22:00	Preparing to gravel. Attach curve header to tubing. Begin hooking up assortment of hoses.
22:40	Still preparing to gravel.
23:00	Holland on-site. Nelson off.
23:15	Driller preparing to pump 1/2 load of gravel. Then tag.
23:40	Tremie pipe clogged. Driller attempting to break free.
0:45	Driller still having trouble with fine clogging.

1:50	1/2 load gravel in well. Lowering tremie pipe to tag gravel.
2:05	Gravel tagged at 2247' bpl. Pumping more gravel.
3:00	Driller still having trouble with line clogging. Still emplacing 1st load of gravel.
4:30	Driller still working on pumping in first load of gravel.
5:50	1st load of gravel tremied in well, completed.
5:55	2nd load of gravel started in well. Tremie still at 2219' bpl.
6:40	Shut pump down after ~1/4 of 2nd load into well. Will let gravel settle, then tag at start of next shift.
7:00	Frank Procta on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 4/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Prepare to tag last stage of gravel placement.
7:38	Tag top of gravel (first and part of second load) at 2230 feet below pad level. NOTE: Plan to jet down to 2240 feet bpl and cement 10 barrels of neat from 2240 to 2230 feet bpl, pumping 1 barrel of cement per vertical foot. After pumping 10 barrels of neat without accelerator, to follow with 7 additional barrels atop the gravel column using CaCl accelerator.
8:20	Attach cementing header to the tubing string.
8:26	Begin pumping water to clear tubing.
8:40	Re-attach cementing header and continue to pump water attempting to wash down to 2240 feet bpl.
9:11	Attempt to wash down to 2240 feet bpl. NOTE: All attempts to wash down have failed. Bottom end of cement tubing string set at 2229 feet bpl.
9:15	Begin cementing (STAGE #44).
9:20	End cementing - move to freshwater flush. NOTE: Pumped 10 barrels of neat followed with 7 additional barrels of neat w/ 3% CaCl added.
9:22	End first-phase flush (10 bbls.).
9:25	Remove single and 3 double joints of tubing.
9:35	Attach cementing header to the tubing string - resume flush.
9:38	End second-phase freshwater flush (10 bbls.). Raise string.
10:00	Waiting on cement.
10:05	Update Mark Pearce of cementing operations.
11:00	Waiting on cement.
11:57	Tag top of cement (STAGE #44) at 2209 feet bpl. NOTE: Plan to pump 135 cubic feet or approx. 1.25 loads (theoretical volume) of gravel to reach a depth of 2154 feet bpl.
12:12	Begin pumping gravel (1/5th into second load). NOTE: Bottom end of tubing string set at approx. 2175 feet bpl.
12:25	Update Mark Pearce of site operations.
12:30	Continue pumping gravel.
14:30	Currently pumping water. NOTE: Estimated volume of gravel pumped at 135 cubic feet.

14:40	Trika Nelson arrives on-site.
14:50	Frank Procta leaves the site.
15:15	Waiting to tag gravel. Letting gravel settle.
16:00	Tag gravel at 2186' bpl.
16:10	Preparing for cement Stage 45.
16:13	Begin freshwater flush.
16:15	End freshwater flush. Begin cementing. Pump 9 bbls of neat then 4 bbls of 3% CaCl.
16:17	End cementing. Move to freshwater chase.
16:19	End chase (10bbls). Detach header.
16:20	Pull out 1 single and 3 doubles.
16:27	Reattach header. Begin 2nd chase.
16:30	End 2nd chase. (10 bbls)
17:35	Cement was worked into gravel.
17:40	Preparing to gravel.
17:55	Begin graveling. Dump 1 bucket in trough. Plan to pump 2 buckets (216cu. ft.) to bring up to 2096' bpl. Then tag it, and call Mark Pearce.
16:30	Tubing got plugged. Unplugging tubing. Trying to fix trough so big pieces of gravel can not get into tubing and plug it.
17:00	Problem fixed. Resume pumping gravel.
18:00	Pumping gravel.
19:00	Pumping gravel.
20:00	Pumping gravel.
21:00	Pumping gravel.
21:30	Dump half of second bucket into trough.
22:00	Pumping gravel.
22:20	Empty other half of 2nd bucket into trough.
22:30	Pumping gravel.
22:52	Larry Holland on site. Trika Nelson off site.
23:20	Driller having trouble pumping last of 2nd bucket. Lifting tremie. Located at depth of 2148' bpl. If pump works well then, gravel has probably filled up to the depth of the tremie.
23:30	Raised tremie from 2148' bpl to 2137' bpl. Pump now moving gravel easily. Now starting new bucket. Number 1 bucket on PM shift.
23:45	Tremie at 2133' bpl. Pumping gravel. 6 bbls. to fill 15 feet of hole.
1:00	Pumped 1/2 of first bucket. Tagging gravel?
1:10	Driller also rigging additional water line to improve gravel washing pressure.
1:30	Tag gravel at 2162 feet bpl. Tremie at 2148' bpl. Driller states he will pump in one more load and tag again. 1 load gives theoretical fill to 2108' bpl.
1:40	Tagging process may not pick up actual top of gravel fill (observation).
3:20	Complete 1.25 loads of gravel emplacement.
4:00	Tag gravel at 2162 ' bpl. No apparent fill.
4:10	Emplacing 1 more load of gravel. Same theoretical fill, to 2108' bpl.

6:05	2nd load of gravel emplaced (total of 2.25 loads on PM shift). Waiting for gravel to settle. Tag gravel at 6:40.
6:45	Tag gravel at 2155' bpl. Preparing to spot cement.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 4/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Preparing to emplace cement in gravel. Contractor will work tremie into gravel approximately 10' and pump cement while pulling up tremie at about 20 seconds per foot to emplace approximately 1 barrel of cement per vertical foot of borehole (theoretical).
7:05	Mike Sordan on-site to pump cement.
7:15	Pressure test cement hoses and lines from truck to wellhead.
7:22	Attach header to cement tremie and water-jet tremie into gravel approximately 10'.
7:24	Pick up tremie and re-tag gravel by water pressure fall-off. Assume gravel is filled approximately 5' above where water pressure falls off (approximately 2155' bpl).
7:26	Water-jet tremie back into gravel approximately 10' in preparation for cement.
7:30	Tremie set at approximately 2165' bpl. Start freshwater pre-flush.
7:33	Freshwater pre-flush complete (10 bbls). Begin pumping cement Stage 46. See cement log.
7:40	End cementing NOTE: Pumped 10 barrels of neat while pulling up tremie through gravel, followed by 13 additional barrels of neat w/ 3% CaCl. Switch to freshwater chase.
7:42	End first-phase chase (9 bbls).
7:43	Remove 4 double joints of tubing.
7:49	Attach cementing header to the tubing string and re-chase.
7:52	End second-phase freshwater flush (10 bbls.). Raise string.
8:00	Waiting on cement.
9:00	Waiting on cement.
9:50	Cement sample is hard.
10:05	Hard tag cement Stage 46 at 2152' bpl (3' of cement fill above gravel tag at 2155' bpl).
10:15	Remove one single joint of tremie (31.5') and add one 4' sub, one 11' sub and one 6' sub (total of 21') of tremie in preparation for graveling.
10:30	Gravel tremie set at 2141.5' bpl. Add gravel to trough from loader and start pumping gravel slurry from trough down 2-3/8" tremie using freshwater.

11:45	One loader full of gravel pumped down hole this shift. Retrieve 2nd loader full of gravel and begin adding gravel to trough. Continue pumping gravel.
12:40	Tremie is starting to back-up with gravel indicating that the gravel has filled to 2141.5' bpl. One and 1/2 loaders have been pumped so far during this shift. Prepare to emplace cement.
12:55	Mike Sordan sets up cement truck. Pull out one 4' sub, one 11' sub and one 6' sub (total of 21') and replace with one single joint of tremie (31.5').
13:15	Attach header to cement tremie and water-jet tremie into gravel. Tag gravel by water pressure fall-off. Assume gravel is filled approximately 5' above where water pressure falls off (approximately 2152' bpl).
13:20	Water-jet tremie back into gravel approximately 9' in preparation for cement.
13:22	Tremie set at approximately 2151' bpl. Start freshwater pre-flush.
13:24	Freshwater pre-flush complete (10 bbls). Begin pumping cement Stage 47. See cement log.
13:31	End cementing NOTE: Pumped 10 barrels of neat while pulling up tremie through gravel, followed by 14 additional barrels of neat w/ 3% CaCl. Switch to freshwater chase.
13:33	End first-phase chase (10 bbls).
13:34	Remove 1 single and 4 double joints of tubing.
13:41	Attach cementing header to the tubing string and re-chase.
13:44	End second-phase freshwater flush (10 bbls.). Raise string.
14:00	Waiting on cement.
14:30	Trika Nelson on-site.
15:30	Noah Kugler leaves site. Hard tag cement Stage 47 at 2148' bpl (4' of cement fill above gravel tag at 2152' bpl).
16:40	Pumping gravel.
17:40	Pumping gravel.
18:40	Pumping gravel.
19:05	Pumped half a bucket of gravel. Gravel tag is around 2143' bpl.
19:10	Mike Sordan on site. Preparing for cement Stage 48.
19:15	Begin freshwater flush.
19:17	End freshwater flush. (10 bbls). Begin pumping neat cement
19:21	Switch to neat cement with 3% CaCl.
19:25	End cementing. Move to freshwater chase.
19:27	End chase (10 bbls). Detach header.
19:28	Pull out 4 doubles and one single
19:34	Reattach header. Begin 2nd chase.
19:36	End 2nd chase. (10 bbls)
19:40	Pumped 10 barrels of neat while pulling up tremie through gravel, followed by 14 additional barrels of neat w/ 3% CaCl.
20:00	Waiting on cement.
21:00	Hard tag cement Stage 48 at 2100' bpl. Begin pumping gravel.
22:00	Tremie at 2090' bpl. Pumping gravel.

22:30	Pumped half a bucket of gravel. Currently letting gravel settle out, and then will tag.
22:35	Larry Holland on site.
23:00	Nelson off.
23:15	Tag gravel at 2091' bpl.
23:25	Driller setting tremie at 2080' bpl. Driller allowed to pump up to six loads (5 times volume to fill 10' of hole.
23:40	Pumping gravel.
0:15	Complete pumping 1/2 bucket. Starting 2nd bucket.
1:25	Complete pumping 2nd bucket. Starting 3rd bucket.
2:40	Complete pumping 3rd bucket. Starting 4th bucket.
3:45	Complete pumping 4th bucket. A total of 3.5 buckets on PM shift. Preparing to tag.
3:55	Tag gravel at 2088' bpl. 3 feet of fill for 3.5 buckets.
4:05	Placing tremie pipe back at 2080' bpl. Preparing to pump 4 more buckets.
5:25	Complete pumping 5th bucket. A total of 4.5 buckets on PM shift. Starting 6th Bucket
6:15	Gravel clogging. Raising tremie allows easier pumping.
6:45	Preparing to tag gravel. Total of 5.5 bucket loads pumped on night shift..
6:50	Holland off-site.
6:55	Noah Kugler on.

Week 13

WATER RESOURCE SOLUTIONS

Date: 4/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Waiting for gravel to settle to tag. Last tag of gravel was at 2088' bpl. Two loads of gravel pumped since last tag (~ 38 dry bbls). Due to pump problems, the pad monitor wells have yet to be sampled. The Contractor is getting a new pump and they will be sampled ASAP.
7:55	1/2 load of gravel pumped from trough so far during this shift. Start adding another bucket load full of gravel to trough.
8:10	Noah leaves update message for Mark Pearce.
9:00	Complete pumping 1-1/2 buckets this shift. Starting 2nd bucket.
10:10	Complete pumping 2-1/2 buckets this shift. Starting 3rd bucket.
11:25	Complete pumping 3-1/2 buckets this shift. Starting 4th bucket.
12:35	Complete pumping 4-1/2 buckets this shift. Starting 5th bucket.
13:05	Complete pumping 5-1/2 buckets this shift. 1/2 bucket left in trough. Prepare to tag gravel and emplace cement.
13:20	Tentatively hard tag gravel at 2084' bpl with tremie. Prepare to pump cement into recently pumped gravel.
13:50	Jimmy Brantley on-site to pump cement.
14:02	Pick up tremie and water-jet into gravel. Retag gravel by water pressure fall-off. Assume gravel is filled approximately 5' above where water pressure falls off (approximately 2076' bpl).
14:04	Water-jetted tremie back into gravel approximately 8' in preparation for cement.
14:05	Tremie set at approximately 2087' bpl. Start freshwater pre-flush.
14:07	Freshwater pre-flush complete (10 bbls). Begin pumping cement Stage 49. See cement log.
14:12	End cementing NOTE: Pumped 10 barrels of neat while pulling up tremie through gravel, followed by 13 additional barrels of neat w/ 3% CaCl. Switch to freshwater chase.
14:13	End first-phase chase (10 bbls).
14:14	Remove 4 double joints of tubing.
14:19	Attach cementing header to the tubing string and re-chase.
14:21	End second-phase freshwater flush (10 bbls.). Raise string.
14:30	Trika Nelson on-site.

15:10	Noah Kugler off-site. Waiting on cement.
16:40	Tagged cement Stage 49 at 2075' bpl. Preparing to begin graveling.
17:30	Finish pumping 1 bucket of gravel.
18:30	Complete pumping 2 buckets of gravel.
19:30	Still pumping gravel. Having clogging problems.
20:30	Complete pumping 2 1/2 buckets of gravel. Going to let gravel settle and attempt to tag gravel.
21:10	Tagging gravel around 2073' bpl. Plans are to pump 2 more buckets, and then cement.
21:30	Pumping 3rd bucket for swing shift.
22:00	Problems with clogging. Fixing problem.
22:30	Still pumping 3rd bucket for swing shift. Total pumped for swing shift is 3 buckets.
22:57	Todd Tubbert on site. Trika Nelson off site.
0:45	Finish pumping half of swing shifts 3rd bucket.
1:00	Add 1 bucket of gravel to trough and begin pumping.
1:45	Problems with clogging. NOTE: String was taking weight during attempt to clear tremie tubing.
2:15	Tag top of gravel at 2073' bpl. NOTE: No fill since last tag. Plan is to finish pumping previous bucket of gravel, tag and move to cement stage.
2:30	Resume pumping gravel.
3:00	Continuing problems with clogging.
3:10	Driller trips out 1 single of tremie tubing and flushes.
3:20	Trip in 1 single of tremie tubing. NOTE: Tubing will not descend past 2049.8' bpl, due to solid obstruction. Obstruction held entire string weight.
3:30	Continue attempt to work tubing past obstruction.
3:45	Attempt to flush out obstruction.
5:00	Continue attempt to work tubing past obstruction.
6:00	Continue attempt to work tubing past obstruction.
6:50	Update mark Pearce via phone. NOTE: Final attempt at hard tag indicates top of gravel at 2053 feet bpl.
7:00	Frank on-site.

WATER RESOURCE SOLUTIONS

Date: 4/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting on cementing crew. NOTE: Plan to pump 30 barrels of neat (STAGE #50) atop last gravel stage.
7:51	Jimmy Brantley arrives on-site. Prepare to pump neat cement.
7:59	Begin freshwater pre-flush.
8:08	Begin pumping neat cement.
8:13	End cementing - move to first-phase flush.
8:14	End first-phase flush and pull joints of cement tubing.
8:25	Begin second-phase flush.
8:26	End second-phase flush. NOTE: Pumped 31 barrels of neat cement without accelerator and flushed with approx. 20 barrels of freshwater.
8:27	Raise tubing string.
9:00	Waiting on cement.
10:00	Waiting on cement.
11:00	Waiting on cement.
11:45	Update Mark Pearce of site operations.
12:11	Hard tag top of cement (STAGE #50) at 2042 feet bpl.
12:30	Currently pumping gravel.
12:55	Update Mark Pearce of site operations. Mark instructs Frank Procta to pump 500 cubic feet (4.6 loads) of gravel before considering another cementing event.
14:00	Continue pumping gravel.
14:55	Collect second load of gravel for this pumping event.
15:50	Tag top of gravel (2 1/2 loads or approx. 270 cubic feet) at 2014 feet bpl.
16:00	Resume pumping gravel.
16:30	Continue pumping gravel. NOTE: Currently pumping remaining gravel of third load of the day.
18:00	Continue pumping gravel (start of the fourth load).
18:10	Update Mark Pearce of site operations.
18:16	Update Todd Tubbert of site operations.
18:30	Frank Procta leaves the site.
19:15	Todd Tubbert on-site. Current ops.: Repairing pump.

19:35	Resume pumping gravel.
20:00	Jimmy Brantley arrives on-site. Prepare to pump neat cement.
20:15	Update Mark Pearce with site progress. Mark ok's cement stage.
20:23	Set cement tubing inside gravel at 1950' bpl.
20:24	Plan is to pump 30 bbls of neat cement with 3% CaCl.
20:25	Begin freshwater pre-flush.
20:28	Begin pumping STAGE 51 neat cement.
20:35	End cementing - move to first-phase flush.
20:36	End first-phase flush and pull joints of cement tubing.
20:52	Begin second-phase flush.
20:54	End second-phase flush. NOTE: Pumped 31 barrels of neat cement without
20:55	Raise tubing string.
21:00	Waiting on cement. NOTE: Hard tag will be made in 2 1/2 hours.
21:05	Mark Pearce called.: Plan is to continue cement stages to 1750' bpl then gravel.
21:30	Waiting on cement.
22:30	Waiting on cement.
23:00	Crew filling silo with cement./ Waiting on cement.
0:30	Hard tag top of cement (STAGE #51) at 1970 feet bpl. NOTE: This is 20' below our Gravel tag before Stage # 51. Theory is that gravel was not allowed to settle and washed out with a cementing rate of almost 6 bbls/min.
1:00	Discussed with Ronnie and ok'd the plan to pump 1 load of gravel to try to gain the 20 feet that was lost. The gravel will be allowed to settle for 1 hour before a hard tag will be made. The hard tag result, will determine next phase.
1:10	Begin pumping gravel. Note: this is the second load of the night shift.
2:05	Finish pumping gravel.
3:00	Tag top of gravel at 1970 feet bpl. No fill since last tag.
3:35	Call Mark Pearce with update. Mark would like to continue to gravel with the tremie set at 1955' bpl. Plan to gravel until frequent clogging. Tag.
3:45	Begin pumping gravel. Note: this is the Third load of the night shift.
4:15	Stop pumping. Tremie has clogged.
4:30	Trip out 6 doubles and flush with 350 gallons of fresh water to clear tubing.
5:10	Trip in 6 doubles and hard tag at 1970' bpl.
5:20	Pull up tubing to 1950' bpl and pump freshwater. Hole will not take fluid.
5:30	Pull up on tubing while pumping freshwater, hole started taking fluid at 1948 ' bpl. Therefore, unofficial top of gravel is at 1948' bpl.
6:00	Plan to pump cement STAGE # 52. Waiting on Jimmy Brantley.
7:00	Todd Tubbert leave-site.

WATER RESOURCE SOLUTIONS

Date: 4/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting for gravel to settle and prepare to re-tag to confirm gravel top position.
7:37	Ronnie Thames informs Frank Procta that he has lowered the tremie to 1967' bpl without any resistance, therefore the top of gravel is below 1967 feet bpl. The decision is made to resume pumping gravel.
7:42	Resume gravel pumping operations. NOTE: Pumping the remaining 1/4 load from the night tour's third full load.
8:40	Update Mark Pearce of site operations.
8:54	Begin pumping the second full load of gravel for the day. NOTE: Pumped approximately 135 cubic feet or 1.25 loads of gravel since the start of this gravel-pumping event.
9:25	Begin pumping the third full load of gravel for the day.
11:00	Tag top of gravel at 1949 feet bpl. NOTE: Total volume of gravel pumped during this event is approximately 2 3/4 loads or 300 cubic feet.
11:05	Currently running water to settle gravel in borehole in preparation for confirming second tag.
11:45	Re-tag the top of gravel at 1949 feet bpl. NOTE: Volume of gravel pumped at 5.3 times the theoretical volume for the filled portion of the borehole.
12:00	Frank Procta calls Mark Pearce to discuss the cementing plan.
12:41	Begin freshwater pre-flush.
12:43	Begin pumping neat cement (STAGE #52).
12:48	End cementing - move to first-phase flush.
12:49	End first-phase flush and pull 4 double joints of cement tubing.
12:56	Begin second-phase flush.
12:57	End second-phase flush. NOTE: Pumped 21 barrels of neat cement with 3% CaCl, and flushed with approx. 20 barrels of freshwater.
12:58	Raise tubing string.
13:00	Waiting on cement.
14:00	Waiting on cement.
15:10	Hard tag top of cement (STAGE #52) at 1911 feet bpl.
15:15	Update Mark Pearce, via voice mail message, of site operations.

15:17	Resume pumping gravel.
16:00	Tag top of gravel at 1893 feet bpl. NOTE: Total volume of gravel pumped during this event is approximately 1/2 load or 54 cubic feet.
16:10	Continue to run water downhole.
16:35	Re-tag top of gravel at 1893 feet bpl.
16:58	Frank Procta calls Mark Pearce to discuss the cementing plan.
17:13	Begin freshwater pre-flush.
17:17	Begin pumping neat cement (STAGE #53).
17:19	End cementing - move to first-phase flush.
17:21	End first-phase flush and pull cement tubing (2 double joints and sub).
17:31	Begin second-phase flush.
17:32	End second-phase flush. NOTE: Pumped 11 barrels of neat cement with 3% CaCl, and flushed with approx. 20 barrels of freshwater.
17:34	Raise tubing string.
18:00	Waiting on cement.
19:00	Waiting on cement.
19:20	Todd Tubbert on-site.
19:30	Tag top of STAGE #53 cement at 1900 feet bpl. (loss of 7 feet)
19:45	Phone Dr. Pearce with results.
20:00	Begin pumping gravel.
20:45	Finish pumping 1/2 load (54 cubic feet) for Theoretical 30 ft of fill.
21:00	Tag top of gravel at 1868 feet bpl. (NOTE: 32 ft. of fill)
21:15	Prepare to pump 2 bbls of cement with CaCl using centripetal pump.
21:30	Begin mixing cement.
22:00	Begin freshwater pre-flush.
22:10	Phone Dr. Pearce for an update.
22:16	Begin pumping neat cement with CaCl (STAGE #54).
22:17	End cementing. NOTE: Pumped 2 barrels of neat cement with 3% CaCl.
22:18	Flush with 330 gallons of fresh water.
22:20	Waiting on cement.
0:20	Hard tag top of cement (STAGE #54) at 1874 feet bpl.
0:25	Prepare to pump 2 bbls of cement with CaCl using centripetal pump.
0:35	Begin mixing cement.
1:10	Begin freshwater pre-flush.
1:15	Begin pumping neat cement with CaCl (STAGE #55).
1:16	End cementing. NOTE: Pumped 2 barrels of neat cement with 3% CaCl.
1:24	Flush with 330 gallons of fresh water.
1:30	Waiting on cement.
3:30	Hard tag top of cement (STAGE #55) at 1874 feet bpl. (no fill)
5:45	Mike Sordan arrives on-site for cement (STAGE # 56).
6:10	Begin freshwater preflush.
6:12	End freshwater preflush (10 bbls.). Begin cementing.
6:21	End cementing. (13 bbls of neat with 3% CaCl) Begin freshwater chase.

6:23	End freshwater chase. (10 bbls)
6:24	Detach header. Pull out 3 doubles.
6:32	Reattach header. Begin 2nd freshwater flush.
6:35	End 2nd freshwater flush. (10 bbls.)
6:45	Waiting on cement.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently waiting for cement to cure for Stage 56. Last tag was at 1874' bpl.
8:00	Waiting on cement. Noah calls Mark Pearce with update.
8:45	Hard tag cement Stage 56 at 1869' bpl (5' of fill).
8:50	Mike Sordan sets up cement truck for Stage 57.
8:54	Begin freshwater preflush.
8:57	End freshwater preflush (10 bbls). Begin mixing CaCl with water.
9:02	Begin cementing Stage 57 using neat with 3% CaCl. See cement log.
9:06	Cementing complete. Pumped 13 bbls of neat with 3% CaCl. Begin freshwater chase.
9:08	End freshwater chase. (10 bbls). Detach header and pull out 3 doubles of tubing.
9:15	Reattach header. Begin 2nd freshwater chase.
9:18	End 2nd freshwater chase. (10 bbls.)
10:00	Waiting on cement.
10:35	Mike Sordan setting up cement truck.
10:48	Cement samples are hard. Hard tag Stage 57 at 1868.5' bpl (0.5' fill).
10:55	Noah calls Mark Pearce with update. Mark's directives are: attempt to cement borehole to approximately 1760' bpl. If two consecutive cement tags indicate less than 2' of fill total - then pump a theoretical gravel volume to produce 5' of vertical fill, followed directly by cement (no need to tag gravel).
11:00	Begin mixing CaCl and bentonite with water.
11:12	Begin freshwater preflush.
11:15	End freshwater preflush (10 bbls). Begin pumping Stage 58 using cement with 20% bentonite and 4% CaCl. See cement log.
11:19	Cementing complete. Pumped 14 bbls. Begin freshwater chase.
11:22	End freshwater chase. (8 bbls). Detach header and pull out 3 doubles of tubing.
11:28	Reattach header. Begin 2nd freshwater chase.
11:31	End 2nd freshwater chase. (10 bbls.)

12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:38	Cement samples are hard. Hard tag cement Stage 58 at 1868.25' bpl (0.25' of fill).
14:45	Prepare to pump approximately 1.5 barrels of gravel.
15:00	Frank Procta on-site.
15:10	Finish pumping approximately 1.5 barrels of gravel. Let gravel settle for 15 to 20 minutes.
15:20	Noah Kugler leaves site.
15:32	Resume pumping gravel. NOTE: Approximately 1/3 of a load of gravel remains in trough.
16:20	Tag top of gravel at 1866 feet bpl. NOTE: Achieved 2 feet of vertical fill with approximately 40 cubic feet of gravel pumped.
16:30	Resume pumping gravel. NOTE: Approximately 1/3 of a load of gravel
17:20	Tag top of gravel at 1867 feet bpl. NOTE: Lost 1 vertical foot of fill with this last tag. Pumped approximately 25 cubic feet of gravel.
17:51	Begin freshwater pre-flush.
17:56	Begin cementing (STAGE #59) with neat.
18:00	Switch to pumping neat w/ 3% CaCl accelerator.
18:04	End cementing - move to first-phase flush.
18:06	End flush, pull tremie (1 single and 4 doubles).
18:18	Begin second-phase flush.
18:20	End second-phase flush. NOTE: Pumped 25 barrels of neat cement and flushed with 18 barrels of water.
18:50	Update Mark Pearce of current site operations.
19:00	Waiting on cement.
20:15	Tag top of cement (STAGE #59) at 1856 feet bpl.
20:29	Begin freshwater pre-flush.
20:32	Begin cementing (STAGE #60) with neat plus 3% CaCl accelerator.
20:36	End cementing - move to first-phase flush.
20:38	End flush, pull tremie (3 doubles).
20:48	Begin second-phase flush.
20:51	End second-phase flush. NOTE: Pumped 12 barrels of neat cement and flushed with 18 barrels of water.
21:00	Waiting on cement.
21:30	Frank Procta leaves the site.
22:00	Waiting on cement.
22:36	Hard tag cement Stage 60 at 1854' bpl (2' of fill).
22:41	Begin freshwater pre-flush.
22:44	End fresh water pre-flush
22:57	Todd Tubbert on-site.
23:00	Begin cementing (STAGE #61) with neat plus 3% CaCl accelerator.
23:04	End cementing - move to first-phase flush.

23:06	End flush, pull tremie (3 doubles).
23:15	Begin second-phase flush.
23:17	End second-phase flush. NOTE: Pumped 12 barrels of neat cement and flushed with 7+ barrels of water.
23:20	Waiting on cement.
0:30	Waiting on cement.
1:40	Hard tag cement Stage 61 at 1847' bpl (7' of fill).
2:00	Crew preparing to mix 2 bbls of cement for stage# 62.
2:20	Begin freshwater pre-flush.
2:29	Cement weight = 14.0
2:31	Begin cementing (STAGE #62) with neat plus 3% CaCl accelerator.
2:32	End cementing - move to flush.
3:30	Waiting on cement
4:30	Waiting on cement
5:00	Hard tag cement Stage 62 at 1847'bpl (0' of fill)
5:10	Crew preparing to mix 2 bbls of cement for stage# 63.
5:40	Begin freshwater pre-flush.
5:55	Cement weight = 14.3
6:00	Begin cementing (STAGE #63) with neat plus 3% CaCl accelerator.
6:01	End cementing - move to flush.
6:30	Waiting on cement
7:00	Noah Kugler on. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 4/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting on cement from Stage 63. Last stage hard tagged at 1847'bpl with 0' of fill since previous cement stage.
7:45	Noah calls Mark Pearce with update.
8:30	Hard tag cement Stage 63 at 1847' bpl (0' of fill). Noah calls Mark Pearce with tag update.
8:35	Prepare to pump approximately 5 vertical feet of gravel (~3 dry barrels).
8:45	Begin pumping gravel. Tremie set 8 feet above tag.
9:20	Finish pumping approximately 3 dry barrels of gravel. Gravel starts to plug-off in tremie. Pick-up tremie and clear lines with water.
9:30	Mike Sordan sets up cement truck for Stage 64. Begin mixing CaCl with water.
9:50	Gravel tagged at approximately 1835' bpl (12' of fill).
9:59	Begin freshwater preflush and work tremie down approximately 10' into gravel (to 1845' bpl).
10:02	End freshwater preflush (20 bbls). Begin cementing Stage 64. Neat cement will be pumped into gravel while raising the tremie slowly. At the top of the gravel (1835' bpl) an additional amount of neat cement with 3% CaCl will be pumped. See cement log.
10:05	Finish pumping 11 bbls neat cement. Switch to neat cement with 3% CaCl.
10:10	Finish pumping additional 14 bbls of neat cement with 3% CaCl (25 bbls total). Begin freshwater chase.
10:12	End freshwater chase. (10 bbls). Detach header and pull out 4 doubles and 1 single of tubing.
10:19	Reattach header. Begin 2nd freshwater chase.
10:21	End 2nd freshwater chase. (10 bbls.)
11:00	Waiting on cement.
12:00	Waiting on cement.
12:10	Hard tag cement Stage 64 at 1835' bpl (0' of fill).
12:25	Mike Sordan sets up cement truck for Stage 65. Begin mixing CaCl with water.
12:38	Begin freshwater preflush and lower tremie down to approximately 1.5' above hard tag.

12:40	End freshwater preflush (10 bbls).
12:43	Begin cementing Stage 65 using neat cement with 3% CaCl. See cement log.
12:47	Finish pumping 12 bbls neat cement with 3% CaCl. Begin freshwater chase.
12:49	End freshwater chase. (8 bbls). Detach header and pull out 2 doubles and 1 single of tubing.
12:56	Reattach header. Begin 2nd freshwater chase.
12:58	End 2nd freshwater chase. (10 bbls.)
13:55	Mohan Thampi (Collier County) on-site with persons from the neighborhood to visit the site.
14:00	Waiting on cement.
14:45	Hard tag cement Stage 65 at 1830' bpl (5' of fill).
14:50	Mike Sordan sets up cement truck for Stage 66.
14:54	Begin freshwater preflush.
14:57	End freshwater preflush (10 bbls). Begin cementing Stage 66 using neat cement with 3% CaCl. See cement log.
15:00	Frank Procta on.
15:05	Finish pumping 24 bbls neat cement with 3% CaCl. Begin freshwater chase.
15:07	End freshwater chase. (8 bbls). Detach header and pull out 3 doubles and the subs.
15:12	Reattach header. Begin 2nd freshwater chase.
15:15	End 2nd freshwater chase. (10 bbls.)
15:20	Noah Kugler leaves site.
16:00	Waiting on cement.
16:51	Hard tag top of cement (STAGE #66) at 1829 feet bpl.
16:58	Begin freshwater pre-flush.
17:02	End freshwater pre-flush (10 bbls). Begin cementing Stage 67 using neat cement with 3% CaCl. See cement log.
17:05	Finish pumping 10 bbls. neat cement with 3% CaCl. Begin freshwater chase.
17:07	End freshwater chase (8 bbls.). Detach header and pull out 2 doubles and the sub.
17:19	Reattach header. Begin 2nd freshwater chase.
17:21	End 2nd freshwater chase. (10 bbls.)
17:22	Raise string.
18:00	Waiting on cement.
19:00	Waiting on cement.
19:15	Hard tag top of cement (STAGE #67) at 1828 feet bpl.
19:19	Resume gravel pumping operations.
19:20	Update Mark Pearce of site operations.

19:32	End gravel pumping. NOTE: Pumped approximately 12 cubic feet of gravel.
20:13	Begin freshwater pre-flush.
20:15	End freshwater pre-flush (10 bbls). Begin cementing Stage 68 using neat cement with 3% CaCl. See cement log.
20:18	Finish pumping 12 bbls. neat cement with 3% CaCl. Begin freshwater chase.
20:20	End freshwater chase (8 bbls.). Detach header and pull out 2 doubles and the sub.
20:28	Reattach header. Begin 2nd freshwater chase.
20:30	End 2nd freshwater chase (10 bbls.).
20:31	Raise string.
21:00	Waiting on cement.
22:00	Waiting on cement.
22:06	Hard tag top of cement (STAGE #68) at 1826 feet bpl.
22:11	Begin freshwater pre-flush.
22:13	End freshwater pre-flush (10 bbls). Begin cementing Stage 69 using neat cement with 3% CaCl. See cement log.
22:19	Finish pumping 24 bbls. neat cement with 3% CaCl. Begin freshwater chase.
22:22	End freshwater chase (8 bbls.). Detach header and pull out 4 doubles and the sub.
22:32	Reattach header. Begin 2nd freshwater chase.
22:34	End 2nd freshwater chase (10 bbls.).
22:35	Raise string.
22:45	Todd Tubbert on-site.
23:00	Waiting on cement.
23:15	Frank Procta leaves the site.
0:00	Waiting on cement.
0:15	Hard tag top of cement (STAGE #69) at 1824 feet bpl.
0:25	Begin freshwater pre-flush.
0:30	End freshwater pre-flush (330 gals).
0:32	Begin mixing cement Stage 70 using neat cement with 3% CaCl in bucket. See cement log.
1:09	Measure cement weight at 14.2
1:10	Begin pumping cement.
1:12	Finish pumping 2 bbls. neat cement with 3% CaCl using hydraulic pump at 1.5 bbls/min. Begin freshwater chase.
1:20	End freshwater chase (330 gals.).
1:30	Waiting on cement.
2:30	Waiting on cement.
3:10	Hard tag top of cement (STAGE #70) at 1821 feet bpl.
3:17	Begin freshwater pre-flush.
3:25	End freshwater pre-flush (330 gals).

3:30	Begin mixing cement Stage 71 using neat cement with 3% CaCl in bucket.
4:15	Measure cement weight at 14.3
4:18	Begin pumping cement.
4:20	Finish pumping 2 bbls. neat cement with 3% CaCl using hydraulic pump at 1.5 bbls/min. Begin freshwater chase.
4:28	End freshwater chase (330 gals.).
4:30	Waiting on cement.
5:30	Waiting on cement.
6:30	Waiting on cement.
7:00	Noah Kugler on. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 4/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting on cement from Stage 71. Last stage hard tagged at 1821' bpl.
7:25	Hard tag cement Stage 71 at 1820' bpl (1' of fill). Noah calls Mark Pearce with tag update. Noah approves pumping 1.5 bbls gravel (~5 vertical feet).
7:35	Begin pumping 1.5 bbls gravel slurry with water down tremie. Tremie set at 1810' bpl (10' above tag).
7:55	Suspend operations to work on rig's transmission. Approximately 0.75 bbls gravel pumped so far.
8:40	Resume pumping gravel.
8:55	Pumped approximately 1.5 bbls gravel total.
9:00	Crew performs more work on rig's transmission. Operations suspended.
9:40	Tag gravel at 1804' bpl (16' of fill - more that 2 times theoretical).
9:45	Mike Sordan prepares cement truck.
9:55	Water jet the tremie 10' into gravel with preflush water.
9:58	Tremie set at 1814' bpl. Continue preflush.
10:00	Begin pumping neat cement with 3% CaCl for Stage 72. See cement log.
10:04	Finished pumping 10 bbls cement (cement volume should have just filled tremie). Begin freshwater chase while pulling tremie up slowly for 10'.
10:06	Chase complete. Pull out 2 doubles and 1 single of tremie. Clear cement hoses from truck with water.
10:16	Reattach header and rechase with water.
10:20	Rechase complete. Pull up tremie 90'.
11:00	Waiting on cement.
11:45	Hard tag cement Stage 72 at 1804' bpl (0' of fill). Mike Sordan prepares cement truck.
11:55	Remove single joint of tremie (31.5') and add one 6' and one 10' sub.
11:58	Tremie set at 1800' bpl. Begin preflush.
12:00	Finish preflush. Begin pumping neat cement with 3% CaCl for Stage 73. See cement log.
12:04	Finished pumping 13 bbls cement. Begin freshwater chase.
12:07	Chase complete. Pull out 2 doubles and tremie subs. Clear cement hoses from truck with water.

12:12	Reattach header and rechase with water.
12:15	Rechase complete. Pull up tremie 90'.
13:00	Waiting on cement.
13:30	Mark Pearce calls Noah to discuss gravel and cement operations.
14:10	Hard tag cement Stage 73 at 1804' bpl (0' of fill).
14:25	Begin pumping approximately 4 barrels of gravel (dry) with water, down the tremie (approximately 15' of vertical fill).
14:55	Frank Procta on.
15:05	Finish pumping 4 barrels of gravel. Let gravel settle for 15 to 20 minutes.
15:15	Noah Kugler off.
15:32	Hard tag top of gravel at 1788 feet bpl. Prepare to pump cement (STAGE #74).
15:48	Begin pre-flush.
15:54	End pre-flush and begin pumping neat cement (STAGE #74).
15:57	Switch to pumping neat w/ 3% CaCl accelerator.
16:00	End cementing - move to first-phase flush.
16:03	End flush - pull tremie (sub and 2 double joints).
16:19	Begin re-flush.
16:21	End final flush. NOTE: Pumped 10 bbls. of neat followed by 12 bbls. of neat w/ CaCl. Flushed with 18 bbls. of freshwater.
17:00	Waiting on cement.
17:45	Hard tag top of cement (STAGE #74) at 1802.5 feet bpl.
17:57	Begin pumping gravel downhole.
18:03	End pumping gravel (approx. 25 cubic feet).
18:04	Running water to settle out gravel.
18:22	Resume pumping water while lowering string in preparation for tagging top.
18:27	Tag top of gravel at approx. 1798 feet bpl.
18:34	Resume pumping gravel.
18:55	End gravel pumping (approx. 25 cubic feet).
19:05	Fill trough with approx. 60 cubic feet of gravel. Currently running water to settle out gravel.
19:30	Tag top of gravel at 1790 feet bpl.
19:41	Begin pre-flush.
19:47	End pre-flush and begin pumping neat cement (STAGE #75).
19:50	Switch to pumping neat w/ 3% CaCl accelerator.
19:53	End cementing - move to first-phase flush.
19:56	End flush - pull tremie (sub and 2 double joints).
20:06	Begin re-flush.
20:08	End final flush. NOTE: Pumped 10 bbls. of neat followed by 12 bbls. of neat w/ CaCl. Flushed with 18 bbls. of freshwater.
21:00	Waiting on cement.
21:05	Update Mark Pearce of site operations.
21:50	Hard tag top of cement (STAGE #75) at 1795 feet bpl.
21:57	Begin pre-flush.

21:59	End pre-flush and begin pumping neat cement (STAGE #76).
22:03	End cementing - move to first-phase flush.
22:06	End flush - pull tremie (sub and 2 double joints).
22:15	Begin final flush.
22:17	End final flush. NOTE: Pumped 13 bbls. of neat w/ CaCl. Flushed with 18 bbls. of freshwater.
22:30	Waiting on cement.
23:00	Todd Tubbert on-site. Frank Procta off.
23:30	Waiting on cement.
0:00	Hard tag top of cement (STAGE #76) at 1793 feet bpl. (2' of fill).
0:45	Begin freshwater pre-flush.
0:52	End freshwater pre-flush (330 gals).
0:53	Begin mixing cement Stage 77 using neat cement with 3% CaCl in bucket. See cement log.
1:15	Measure cement weight at 15.6
1:17	Begin pumping cement.
1:19	Finish pumping 2 bbls. neat cement with 3% CaCl using hydraulic pump at 1.5 bbls/min. Begin freshwater chase.
1:30	End freshwater chase (330 gals.).
2:00	Waiting on cement.
3:40	Hard tag top of cement (STAGE #77) at 1791 feet bpl. (2' of fill).
3:45	Begin freshwater pre-flush.
3:53	End freshwater pre-flush (340 gals).
3:55	Begin mixing cement Stage 78 using neat cement with 3% CaCl in bucket. See cement log.
4:20	Measure cement weight at 15.6
4:22	Begin pumping cement.
4:24	Finish pumping 2 bbls. neat cement with 3% CaCl using hydraulic pump at ~2.0 bbls/min. Begin freshwater chase.
4:30	End freshwater chase (340 gals.).
5:00	Waiting on cement.
6:00	Waiting on cement.
6:45	Noah Kugler calls Ronnie Thames and Todd Tubbert to discuss gravel and cement operations.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Setting up to pump gravel.
7:20	Hard tag cement Stage 78 at 1789' bpl (2' of fill).
7:30	Noah Kugler on-site. Begin pumping approximately 5 bbls of gravel (theoretical height of 15' to 20').
7:40	Noah calls Mark Pearce with update.
8:10	Finish pumping 5 bbls gravel. Let gravel settle for 20 minutes.
8:32	Tag gravel at 1769' bpl (20' of fill).
8:40	Mike Sordan prepares cement truck.
8:43	Water jet the tremie 10' into gravel with preflush water.
8:49	Tremie set at 1779' bpl. Continue preflush.
8:51	Begin pumping neat cement for Stage 79. See cement log.
8:54	Finished pumping 9 bbls cement (cement volume should have just filled tremie). Switch to neat cement with 3% CaCl while pulling tremie up slowly for 10'.
8:56	Finished pumping 7 bbls neat cement with 3% CaCl (16 total bbls). Begin freshwater chase.
8:59	Chase complete.
9:00	Pull out 2 doubles and 1 single of tremie. Clear cement hoses from truck with water.
9:07	Reattach header and rechase with water.
9:10	Rechase complete. Pull up tremie 90'.
10:00	Waiting on cement.
10:45	Mark Pearce calls Noah with graveling directive. Mark has directed Jimmy Brantley (YBI Vice President) to pump approximately 2,000 cubic feet of gravel, or fill to 1680' bpl, whichever comes first. An assessment will be made at that time regarding further plug-back of the pilot hole.
10:50	Hard tag cement Stage 79 at 1777' bpl (lost 8' of gravel fill).
11:00	Prepare to begin pumping gravel. 19 loaders full of gravel = 2052 cubic feet at 108 cubic feet (4 cubic yards) per loader full.
11:10	Add gravel bucket loader #1 (of 19) to trough. Begin pumping gravel slurry down tremie with water. Tremie set at 1752' bpl (25' above tag).
12:00	Continue pumping gravel slurry.

12:20	Add gravel bucket loader #2 (of 19) to trough.
13:00	Continue pumping gravel slurry.
14:00	Continue pumping gravel slurry.
15:00	Frank Procta on-site. On 3rd bucket of shift.
15:15	Noah Kugler off.
15:40	Complete field titration's for chlorides in pad monitoring well water samples.
15:45	Continue pumping gravel slurry.
16:30	Currently pumping 1st load of gravel of the swing shift (4 of 19).
16:46	Wash down gravel column using the cement truck pumping water at a rate of 3.5 barrels per minute. NOTE: Approximately 1/4 of 1st load of the swing shift downhole before starting to jet water.
16:56	Begin pumping neat cement to stabilize gravel column. NOTE: Bottom of tremie set at approximately 1746 feet bpl during cementing.
16:57	Begin freshwater flush.
17:00	End first-phase flush.
17:17	Begin second-phase flush.
17:19	End flush.
17:22	Resume pumping remaining 1st gravel load of today's swing shift. NOTE: Gravel pumping operations resumed immediately after cementing (STAGE #80). This cement stage was not tagged.
18:30	Currently pumping 3rd load of the swing shift or 6 of 19 planned.
21:40	Currently pumping 7th load of the swing shift or 10 of 19 planned.
22:00	Currently pumping 8th load of the swing shift or 11 of 19 planned.
22:15	Gravel pump develops a puncture. Operations are down as crew wait for a welder.
22:38	Welder arrives on-site.
23:00	Down for repairs. Todd Tubbert on-site, Frank Procta leaves the site.
0:10	Repair to pump complete. Welder leaves the site.
0:15	Resume pumping gravel.
1:10	Currently pumping 1st load of the night shift or 12 of 19 planned.
3:30	Currently pumping 2nd load of the night shift or 13 of 19 planned.
5:15	Currently pumping 3rd load of the night shift or 14 of 19 planned.
6:30	Tag gravel at 1748' bpl.
7:00	Noah Kugler on. Todd Tubbert off.

Week 14

WATER RESOURCE SOLUTIONS

Date: 4/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Gravel tagged at 1748' bpl. 14 loaders or approximately 1512 cubic feet of gravel pumped so far since last cement tag at 1777' bpl. Crew working on pump system to resume pumping gravel.
8:55	Mark Pearce calls and advises Noah that the Contractor may pump an additional 2000 cubic feet of gravel (total of 38 loaders buckets full) before assessing the pilot hole plug-back further.
9:05	Resume pumping gravel - Start pouring 1st loader of shift (15 of 38 loader buckets full) into trough.
10:20	Start pouring 2nd loader of shift (16 of 38 loader buckets full) into trough. Continuously pumping gravel.
11:25	Start pouring 3rd loader of shift (17 of 38 loader buckets full) into trough. Continuously pumping gravel.
12:25	Start pouring 4th loader of shift (18 of 38 loader buckets full) into trough. Continuously pumping gravel.
13:20	Start pouring 5th loader of shift (19 of 38 loader buckets full) into trough. Continuously pumping gravel.
14:25	Start pouring 6th loader of shift (20 of 38 loader buckets full) into trough. Continuously pumping gravel.
15:00	Frank Procta on-site. Noah Kugler off. Shift change.
15:05	Start pouring 1st loader of shift (21 of 38 loader buckets full) into trough. Continuously pumping gravel.
15:29	Mark Pearce calls for update.
17:08	Currently pumping 3rd loader of shift (23 of 38).
18:00	Continuous gravel pumping.
19:45	Currently pumping 9th loader of shift (29 of 38).
20:15	Frank Procta talks to Ronnie Thames about tagging top of gravel during this shift.
20:45	Currently pumping 10th loader of shift (30 of 38).
21:35	Tag top of gravel, after completely emptying the 10th loader of the shift, at 1748 feet bpl. NOTE: Tag result indicates no vertical fill since the last recorded tag.
21:45	Resume pumping gravel. NOTE: Start of 11th loader of shift.

22:25	Currently pumping 12th loader of shift (32 of 38).
22:30	Jack Breland arrives on-site.
22:55	Frank Procta leaves the site.
0:00	Tubing is plugged
1:00	Attempts to unplugged tubing have failed. YBI are pulling the plugged tubing out of the hole.
2:30	Tubing is out of the hole.
3:30	Drilling crew is cleaning the site area.
5:00	YBI have decided to pour the gravel slurry down the pilot hole from the top of the well using the gravity method.
6:50	Trika Nelson on site.
7:00	Jack Breland leaves the site.

WATER RESOURCE SOLUTIONS

Date: 4/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on site.
7:00	Jack Breland leaves the site.
7:30	YBI crew tripping drill pipe back in the hole.
8:00	Still tripping in drill pipe. (Inclement weather slowing crew down)
9:00	Finish tripping in drill pipe. Drill pipe set at 1647' bpl.
9:30	Waiting for welder to arrive on site. Welder is going to weld a hole in trough, and run a pipe from the trough to the drill pipe to make it easier and more efficient to deliver gravel down hole.
10:00	Welder on site. Welder begins to modify trough.
10:30	Trika Nelson speaks with Dr. Pearce. Plans are to do a small shot of cement (~ 10 bbls), and then resume graveling. Gravel tag around 6am was 1721' bpl.
11:00	Welder still modifying gravel trough.
12:00	Welder still modifying gravel trough. Driller begins to trip in cement tubing.
13:00	Still tripping in cement tubing.
13:30	Finish tripping in cement tubing.
13:40	Preparing to cement. Hooking up hoses.
14:00	Mixing cement slurry. Hooking up trash pump.
14:30	Trash pump not working. Hooking up second trash pump. Tremie set at 1719 ' bpl.
15:00	Begin preflush.
15:02	End preflush. (6bbls). Pump 2.5 bbls of neat cement.
15:06	Flush with 4 bbls of freshwater.
15:10	Mix 7.5bbls of neat with 3% CaCl.
15:15	Pump 7.5 bbls of neat with 3% CaCl. Total cement pumped was 10 bbls.
15:19	Begin freshwater chase.
15:25	End freshwater chase. (6 bbls).
15:27	Pull up tremie. (double joint)
15:30	YBI crew starts cement clean up. Prepare to gravel pump gravel directly down the drillpipe. NOTE: More gravel can be delivered using the drillpipe (6" I.D.) with less chance of bridging off and causing a clog than with the tremie tubing (2" I.D.).

15:40	Start pouring 1st loader of shift (33 of 38 loader buckets full) into trough. Continuously pumping gravel.
16:10	Start pouring 2nd loader of shift (34 of 38 loader buckets full) into trough. Continuously pumping gravel.
16:40	Start pouring 3rd loader of shift (35 of 38 loader buckets full) into trough. Continuously pumping gravel.
17:10	Start pouring 4th loader of shift (36 of 38 loader buckets full) into trough. Continuously pumping gravel.
17:40	Start pouring 5th loader of shift (37 of 38 loader buckets full) into trough. Continuously pumping gravel.
18:10	Start pouring 6th loader of shift (38 of 38 loader buckets full) into trough. Continuously pumping gravel.
18:30	Letting gravel settle to get a good tag.
18:50	Jack Breland on site. Trika Nelson off site.
19:15	Tagged top of gravel plug at 1722' (8 inches lower than previous tag).
19:20	Started pouring 1st gravel batch from loader bucket (39 total buckets) into trough this shift. Continuously pumping gravel slurry. 1rst load this shift.
20:00	Started pouring 2nd gravel batch from loader bucket (40 total buckets) into trough.
20:20	Started pouring 3rd gravel batch from loader bucket (41 total buckets) into trough this shift. Continuously pumping gravel slurry.
20:45	Started pouring 4th gravel batch from loader bucket (42 total buckets) into trough.
21:00	Started pouring 5th gravel batch from loader bucket (43 total buckets) into trough this shift.
21:15	Started pouring 6th gravel batch from loader bucket (44 total buckets) into trough. Total amount of gravel poured into well this shift is 648 cubic feet.
21:30	Started pouring 7th gravel batch from loader bucket (45 total buckets) into trough.
21:42	Started pouring 8th gravel batch from loader bucket (46 total buckets) into trough. Increased gravel amount going into well by increasing velocity of water flowing into trough.
21:52	Started pouring 9th bucket (47 total buckets) into trough.
22:00	Started pouring10th bucket (48 total buckets) into trough.
22:17	Started pouring 12th bucket (50 total buckets) into trough.
22:32	Started pouring 13th bucket (51 total buckets) into trough.
22:57	Started pouring 14h bucket (52 total buckets) into trough.
23:25	Started pouring 15th bucket (53 total buckets) into trough.
23:40	Started pouring 16th bucket (54 total buckets) into trough.
0:15	Finished pouring 17th bucket (55 total buckets) into trough. Stopped to work on Sump Pump. Tagged top of Gravel plug 4 inches below last mark on tubing. Gained 4 inches.
0:45	Pump is back on line and bucket #18 is on its way down the well.
0:50	Started pouring 19th bucket (57 total buckets) into trough.

1:10	Started pouring 20th bucket (58 total buckets) into trough.
1:20	Started pouring 21st bucket (59 total buckets) into trough.
1:45	Started pouring 22nd bucket (60 total buckets) into trough.
2:15	3/4 of bucket load #22 in well and the Gravel slurry has bridged! Drilling crew is working with the inside tubing in order to try and free the bridge. Water is being pumped through tubing as the driller is raising the strand while trying to lower the tubing back down.
4:00	Gravel is still bridged between tubing and hole.
6:00	Still bridged.
6:50	Trika Nelson on site. Jack Breland off site.

WATER RESOURCE SOLUTIONS

Date: 4/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on site. Jack Breland off site.
7:00	Still trying to unclog pipe.
8:00	Still trying to unclog pipe.
9:00	Still trying to unclog pipe.
9:15	All attempts to unclog drill pipe have failed using high water pressure. YBI crew is now going to trip all the tubing out of the hole, and then trip the drill pipe out of the hole to unclog it.
9:30	Tripping tremie tubing out of hole.
10:00	Finished tripping out tubing. Begin tripping out drill pipe.
11:00	Finish tripping out drill pipe. Trip drill pipe back in.
12:00	There was **no** bridge before in the drill pipe. Gravel had simply reached bottom of drill pipe. Driller has a good hard tag at 1670' bpl with drill pipe.
12:10	Trika Nelson calls Dr. Pearce. Plans are to put a 10 bbls. plug on top of the gravel, and get a good cement tag. Then ream with a 34" bit to 2580' bpl.
12:15	YBI crew is measuring cement tubing, and tallying it.
12:25	YBI crew is changing the elevators to prepare to run tremie tubing in the hole.
13:40	Finish running tremie tubing in the hole. Re-tag gravel with tubing at 1641' bpl.
13:50	Jimmy Brantley on site to cement Stage 82.
14:03	Begin preflush.
14:05	End preflush. (10 bbls) Begin neat cement.
14:07	End cement. (13 bbls of neat) Begin freshwater chase.
14:09	End freshwater chase (10 bbls). Detach header.
14:10	Pull out 3 double tubing.
14:16	Reattach header. Begin 2nd freshwater chase.
14:18	End 2nd freshwater chase. (10 bbls)
14:30	Waiting on cement.
15:30	Waiting on cement.
16:30	Waiting on cement.
17:30	Waiting on cement.

17:45	Winch line broke on top head drive. YBI crew currently replacing cable & snake.
18:30	Still repairing wench line.
19:00	Jack Breland on site. Trika Nelson off site.
20:05	Tagged top of cement at the depth of 1632.3 ft. Cement plug is 9.7 ft thick.
20:30	Preparing for the next reaming phase with nominal 34-inch diameter bit (actual diameter = 32.5-inch).
21:30	Tripping tremie tubing out of hole.
22:00	Tripping drill string out of the hole.
0:00	Drill string out of the hole. Preparing bit assembly.
1:00	Placed 32.5-inch diameter bit and sub (11.7 ft.) on stabilizer (34.8 ft.). Added transfer sub (5.58 ft.) Total BHA = 52.08 ft. in length.
2:35	Added and lowered Stand #1 to drill string.
2:44	Added and lowered Stand #2 to drill string.
2:49	Added and lowered Stand #3 to drill string.
3:00	Added and lowered Stand #4 to drill string. Seating rotary "can".
4:00	Added and lowered Stand #5 to drill string.
4:14	Added and lowered Stand #6 to drill string.
4:30	Added and lowered Stand #7 to drill string.
4:45	Added and lowered Stand #8 to drill string.
4:50	Added and lowered Stand #9 to drill string.
4:58	Added and lowered Stand #10 to drill string. Total length of string is 1247.08 ft bpl. and 1241.58 bls.
5:12	Ran air line down pipe string. 6 1/2 stands (~400 ft)
5:45	Added Stand #11. Hooked up reverse air line. Lowering drill string down to ream cement plug inside the base of 34 inch diameter casing.
6:00	Top of cement located at 1276 ft. bpl. Reaming.
6:30	Reaming cement at the depth of 1280 ft. bpl.
6:55	Noah Kugler arrives on site.
7:00	Jack Breland leaves site.

WATER RESOURCE SOLUTIONS

Date: 4/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:55	Noah Kugler arrives on site. Currently reaming through cement plug inside 34-inch casing at 1282' bpl with nominal 34-inch bit. NOTE: Crew should inspect for cement and gravel starting at 1632' bpl (top of cement plug on gravel). Hole will be reamed to 2580' bpl
7:45	Noah leaves update message for Mark Pearce.
8:10	Hole is making water. Suspend operations to pump water off containment pad into circulation pit.
10:25	Sufficient water has been pumped off the containment pad into the circulation pit. Resume reaming at 1288' bpl.
12:00	Reaming at 1325' bpl.
13:00	Reaming at 1355' bpl.
13:45	Top head drive down with Stand #11 at 1367' bpl. Circulate hole.
13:55	Make connection with Stand #12 and resume reaming.
14:00	Reaming at 1380' bpl.
14:35	Trika Nelson on-site.
15:00	Reaming at 1395' bpl.
15:15	Noah Kugler off site.
16:00	Reaming at 1414' bpl.
17:00	Reaming at 1432' bpl.
18:00	Reaming at 1457' bpl.
19:00	Reaming at 1460' bpl.
20:00	Reaming at 1465' bpl.
21:00	Reaming at 1470' bpl.
22:00	Reaming at 1475' bpl.
22:40	Reaming at 1480' bpl.
23:00	Jack Breland on site. Trika Nelson off site.
1:00	Top head drive down with Stand #12. Inclination surveys were performed at depths 1390 ft (0.25) and 1480 ft. (0.65).
1:20	Made connection with Stand #13 and resume reaming at the depth of 1486.58.
2:30	Reaming at 1492' bpl.
3:30	Reaming at 1505' bpl.

4:30	Reaming at 1514' bpl.
5:30	Reaming at 1520' bpl.
6:30	Reaming at 1528' bpl.
7:00	Noah Kugler on site. Jack Breland off site.

WATER RESOURCE SOLUTIONS

Date: 4/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler arrives on site. Currently reaming on Stand 13 at 1533' bpl with nominal 34-inch bit.
7:55	Noah leaves update message for Mark Pearce.
8:30	Reaming on Stand 13 at 1563' bpl.
10:00	Reaming on Stand 13 at 1589' bpl.
11:00	Reaming on Stand 13 at 1601' bpl.
12:00	Dredging material from 1595' to 1607' bpl
13:00	Continue dredging material from 1595' to 1607' bpl.
13:50	Top head drive down with Stand 13 at 1607' bpl. Circulate hole.
14:00	Perform inclination survey at 1570' bpl = 0.25 degrees deviation.
14:15	Make connection with Stand #14 and resume reaming.
14:30	Trika Nelson on-site.
14:45	Noah Kugler off site.
15:00	Reaming at 1612' bpl.
16:00	Reaming at 1625' bpl.
17:00	Reaming at 1633' bpl. Cement and gravel noted in cuttings.
18:00	Reaming at 1640' bpl. Predominantly cement and gravel noted in cuttings.
19:00	Reaming at 1652' bpl.
20:00	Reaming at 1664' bpl.
21:00	Reaming at 1684' bpl.
22:00	Reaming at 1691' bpl.
22:52	Jack Breland on site. Trika Nelson off site.
0:30	Reaming at 1693' bpl. Cuttings are plugging line. Having to lift off bottom and work the Kelly up and down several times before going back to drilling.
1:30	Reaming at 1695' bpl. Slow reaming. Gravel plug is flowing into the hole causing the line to plug off. It is dredging time.
2:30	Dredging at 1696 ' bpl. Top head drive is still leaking formation water. Looks like a heavy rain falling on the rig floor.
3:30	Dredging at the same depth of 1696' bpl. No gain or loss of depth while dredging. The driller is unplugging the line at least 75% more than he is dredging.

4:30	Dredging , plugging, unplugging, then dredging again. Driller is having a hard time getting back on bottom before line is plugging up.
5:30	Reaming and Dredging at the depth of 1697' bpl.
6:30	Reaming and Dredging at the depth of 1698' bpl.
7:00	Todd Tubbert on site. Jack Breland off site.

WATER RESOURCE SOLUTIONS

Date: 4/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler arrives on site. Currently reaming on Stand 14 at 1698' bpl with nominal 34-inch bit. Predominantly cement and gravel noted in cuttings.
7:20	Noah calls Mark Pearce with update.
8:00	Reaming on Stand 14 at 1699' bpl. Dredging large amounts of material from 1690' to 1699' bpl.
9:00	Still Reaming at 1699' bpl. Dredging large amounts of material from 1690' to 1699' bpl.
9:25	Gary Susdorf (WRS) on-site to become oriented with weekly reporting for this project.
10:00	Reaming and dredging large amounts of material with Stand 14 from 1690' to 1725' bpl.
11:00	Continue dredging over the length of Stand 14. Most dredging occurring between approximately 1690' and 1727' bpl (top head drive down is at 1727' bpl).
13:00	Continue dredging over the length of Stand 14. Most dredging still occurring between approximately 1690' and 1727' bpl.
14:00	Continue dredging over the length of Stand 14.
14:30	Trika Nelson on-site.
15:00	Noah Kugler off site. Continue dredging over the length of Stand 14. Most dredging still occurring between approximately 1690' and 1727' bpl.
16:00	Reaming on Stand 14 at 1699' bpl. Dredging large amounts of material from 1690' to 1699' bpl.
17:00	Reaming on Stand 14 at 1699' bpl. Dredging large amounts of material from 1690' to 1699' bpl.
18:00	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
19:00	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
20:00	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
21:00	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
22:00	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
22:45	Jack Breland on site. Trika Nelson off site.
0:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.

1:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
2:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
3:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
4:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
5:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
6:30	Still Reaming at 1699' bpl. Dredging material from 1690' to 1699' bpl.
7:00	Jack Breland off site. Todd Tubbert on site.

WATER RESOURCE SOLUTIONS

Date: 5/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Tubbert
T. Nelson
J. Breland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Todd Tubbert on-site. Jack Breland off. Current ops.: Crew servicing rig.
7:20	Resume dredging with STAND # 14 at 1701' bpl.
8:30	Continue dredging with STAND #14 at 1701' bpl.
9:30	Down with Repair. (replacing swivel packing)
10:30	Down with repair.
11:30	Down with repair.
12:30	Down with repair.
13:30	Down with repair.
13:50	Resume dredging with STAND # 14 at 1701' bpl.
14:50	Continue dredging with STAND #14 at 1701' bpl.
14:55	Trika Nelson on-site.
15:00	Todd Tubbert of site.
15:30	Continue dredging with STAND #14 at 1701' bpl.
16:00	Continue dredging with STAND #14 at 1701' bpl.
17:00	Continue dredging with STAND #14 at 1701' bpl.
18:00	Still dredging with STAND # 14 at 1701' bpl.
19:00	Still dredging with STAND # 14 at 1701' bpl.
20:00	Continue dredging with STAND #14 at 1701' bpl.
21:00	Continue dredging with STAND #14 at 1701' bpl.
22:00	Continue dredging with STAND #14 at 1701' bpl.
23:00	Jack Breland on site. Trika Nelson off site.
0:00	Continue dredging with STAND #14 at 1701' bpl.
1:30	Continue dredging with STAND #14 at 1703' bpl.
3:00	Continue dredging with STAND #14 at 1703' bpl.
5:00	Continue dredging with STAND #14 at 1705' bpl.
6:30	Continue dredging with STAND #14 at 1706' bpl.
7:00	Holland on-site. Breland off.

Week 15

WATER RESOURCE SOLUTIONS

Date: 5/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: G. Susdorf
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Holland preparing remainder of weekly report. Faxing driller daily report for 4/30 and 5/1. Emailing our daily logs and the weekly letter.
8:00	Currently drilling with STAND #14 at 1714' bpl.
9:30	Currently drilling with STAND #14 at 1716' bpl.
11:00	Currently drilling with STAND #14 at 1716' bpl.
13:00	Currently drilling with STAND #14 at 1717' bpl.
14:15	Currently drilling with STAND #14 at 1712' bpl. Driller moving bit slowly up and down, dredging gravel.
14:35	Trika Nelson on site.
14:40	Larry Holland off site.
15:00	Currently drilling with STAND #14 at 1715' bpl. Driller moving bit slowly up and down, dredging gravel.
16:00	Currently drilling with STAND #14 at 1715' bpl.
17:00	Rubber blew in air line. YBI crew currently replacing rubbers.
18:00	Still replacing rubbers.
19:00	Finished replacing rubbers. Resume drilling & dredging with STAND # 14 at 1715' bpl.
20:00	Drilling & dredging with STAND # 14 at 1715' bpl.
21:00	Drilling & dredging with STAND # 14 at 1715' bpl.
22:00	Drilling & dredging with STAND # 14 at 1715' bpl.
23:00	Todd Tubbert on site. Trika Nelson off site.
0:00	Drilling & dredging with STAND # 14 at 1715' bpl.
2:00	Drilling & dredging with STAND # 14 at 1716' bpl.
3:00	Drilling & dredging with STAND # 14 at 1716' bpl.
4:00	Drilling & dredging with STAND # 14 at 1717' bpl.
5:00	Drilling & dredging with STAND # 14 at 1717' bpl.
6:00	Drilling & dredging with STAND # 14 at 1718' bpl.
6:45	Drilling & dredging with STAND # 14 at 1718' bpl.
7:00	Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 5/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Frank Procta arrives on-site. Current ops. : Servicing rig.
8:15	Currently reaming with STAND #14 at 1721.5 feet bpl.
9:30	Continue reaming with STAND #14.
10:25	Top head drive down with STAND #14 at 1726.5 feet bpl.
10:30	Currently circulating at 1726.5 feet bpl.
11:00	Continue to circulate at the bottom of reamed hole.
11:15	Currently performing inclination survey in the reamed hole at 1660 feet bpl.
11:45	Resume reaming operations with STAND #15 at 1726.5 feet bpl. Inclination survey taken at 1660 feet bpl = 0.4 degrees deviation.
13:00	Continue reaming with STAND #15.
14:00	Continue reaming with STAND #15.
14:40	Currently reaming with STAND #15 at 1729.5 feet bpl.
17:10	Currently reaming with STAND #15 at 1734.5 feet bpl.
17:20	Examination of cuttings from discharge stream reveal fragments of dolostone only.
18:50	Currently reaming with STAND #15 at 1738 feet bpl.
19:00	Frank Procta leaves the site.
19:10	Todd Tubbert arrives on-site.
20:00	Continue reaming with STAND #15.
21:00	Currently reaming with STAND #15 at 1740 feet bpl.
23:00	Continue reaming with STAND #15.
1:00	Currently reaming with STAND #15 at 1743 feet bpl.
2:00	Currently reaming with STAND #15.
3:00	Currently reaming with STAND #15 at 1746.5 feet bpl.
4:00	Currently reaming with STAND #15.
5:00	Currently reaming with STAND #15 at 1748 feet bpl.
6:00	Currently reaming with STAND #15.
6:30	Currently reaming with STAND #15 at 1751 feet bpl.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:20	Frank Procta arrives on-site. Current ops. : Reaming with STAND #15.
8:30	Currently reaming with STAND #15 at 1748 feet bpl.
12:15	Currently reaming with STAND #15 at 1749 feet bpl.
14:30	Currently reaming with STAND #15 at 1751 feet bpl.
16:00	Continue reaming with STAND #15.
18:00	Currently reaming with STAND #15 at 1751.5 feet bpl.
18:20	Update Todd Tubbert of current reaming status.
18:45	Frank Procta leaves the site.
19:20	Todd Tubbert arrives on-site.
20:30	Continue reaming with STAND #15.
21:00	Continue reaming with STAND #15 at 1753 feet bpl.
0:00	Continue reaming with STAND #15.
1:35	Continue reaming with STAND #15 at 1754 feet bpl.
3:10	Continue reaming with STAND #15.
4:30	Continue reaming with STAND #15 at 1757 feet bpl.
5:20	Continue reaming with STAND #15.
6:35	Continue reaming with STAND #15 at 1759 feet bpl.
7:00	Noah Kugler on-site.

WATER RESOURCE SOLUTIONS

Date: 5/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming/dredging with STAND #15 at 1760 feet bpl.
7:25	Todd Tubbert off site. Noah leaves update message for Mark Pearce.
8:00	Still reaming/dredging with STAND #15 at 1760 feet bpl.
9:00	Reaming/dredging with STAND #15 at 1761 feet bpl.
10:00	Reaming/dredging with STAND #15 at 1762 feet bpl.
11:00	Still reaming/dredging with STAND #15 at 1762 feet bpl.
12:00	Reaming/dredging with STAND #15 at 1764 feet bpl.
13:00	Reaming/dredging with STAND #15 at 1765 feet bpl.
14:00	Reaming/dredging with STAND #15 at 1764 feet bpl (lost 1 foot upon pick up of drillstring). NOTE: Examinations of the discharge stream throughout the day reveals gravel, cement and formation cuttings.
15:00	Frank Procta on-site. Noah Kugler off. Reaming/dredging with STAND #15 at 1765 feet bpl. Very little vertical-footage-progress during AM shift.
15:15	Reaming/dredging with STAND #15 at 1764 feet bpl.
17:00	Continue to ream/dredge with STAND #15.
18:50	Reaming/dredging with STAND #15 at 1778 feet bpl.
21:05	Reaming/dredging with STAND #15 at 1782 feet bpl.
21:50	Reaming/dredging with STAND #15 at 1783 feet bpl.
22:35	Reaming/dredging with STAND #15 at 1784.5 feet bpl. Crew starts to purge and sample pad monitor wells.
22:50	Frank Procta leaves the site.
23:15	Todd Tubbert arrives on-site.
0:00	Reaming/dredging with STAND #15.
1:25	Reaming/dredging with STAND #15 at 1791 feet bpl.
3:35	Reaming/dredging with STAND #15 at 1795 feet bpl.
5:10	Reaming/dredging with STAND #15 at 1801 feet bpl.
6:37	Reaming/dredging with STAND #15 at 1805 feet bpl.
7:00	Noah Kugler on-site. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 5/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming/dredging with STAND #15 at 1806' feet bpl.
7:15	An assessment of the recent rock cuttings from the discharge stream shows approximately 70% formation material - 20% gravel - 10% cement. This indicates tracking of the pilot hole.
7:50	Noah calls Mark Pearce with update.
8:10	Noah begins analysis of pad monitor well samples. NOTE: PMW-2 was purged for 72 hours prior to sampling. Discharge was routed to the containment pad and circulation system.
9:00	Reaming/dredging with STAND #15 at 1811' feet bpl.
10:00	Reaming/dredging with STAND #15 at 1815' feet bpl.
11:40	Reaming/dredging with STAND #15 at 1819' feet bpl.
13:00	Reaming/dredging with STAND #15 at 1823' feet bpl.
14:30	Reaming/dredging with STAND #15 at 1828' feet bpl. Recent cuttings contain approximately 90% formation material (abundant blocky, v. coarse pebbles of dolostone) and 10% gravel-entrained cement.
15:00	Frank Procta on-site. Noah Kugler off. Suspend operations to work on air brake system.
16:00	Down for repairs.
17:00	Down for repairs.
18:00	Down for repairs.
19:00	Down for repairs.
20:00	Down for repairs.
21:30	Crew begin tripping out stands of drill pipe. NOTE: Plan to pull 4 stands of drill pipe which will allow the reaming string to hang inside the casing and prepare to start breaking down transmission housing. A new transmission will be installed tomorrow.
21:55	Call Todd Tubbert to inform him there will be no operations during the night tour other than preparing for the rig's transmission replacement.
22:00	Update Noah Kugler of tomorrow's planned site activities.
22:15	Frank Procta leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
7:40	Noah leaves update message for Mark Pearce. Operations have been suspended since yesterday at 15:00 hours to replace worn air-brake parts and perform significant maintenance to the rig's transmission.
8:40	Noah Kugler on-site. Contractor performing maintenance and repair.
8:40 to 15:15	Contractor performing maintenance and repair. Noah works on file organization and weekly report prep. Mohan Thampi visits site at 13:50. Ronnie Thames cancels night shift at 14:00. No activities other than maintenance and repair until at least tomorrow AM. Noah cancels WRS swing and night shifts - leaves site at 15:15.
	Contractor performing maintenance and repair.

WATER RESOURCE SOLUTIONS

Date: 5/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:05	Noah Kugler on-site. This is the 2nd day that the rig has been down for maintenance and repair to the air brake and transmission systems. Operations are expected to resume late morning.
8:05	Noah calls Mark Pearce with update. Continue maintenance and repair.
8:05 to 10:45	Contractor continues maintenance and repair. Noah works on file organization and weekly report prep.
10:45	The majority of maintenance and repair has been complete. Additional work may be done as parts become available. Begin tripping in drill pipe (bit had been picked-up inside the 34-inch casing prior to initiation of work).
11:10	Bottom of reamed hole tagged with Stand 15 at 1827' bpl. Resume reaming with nominal 34-inch bit.
11:45	Suspend reaming operations to tighten small leak of transmission fluid coming from top head drive. Pull up drill bit a few feet and rotate/circulate.
12:10	Leak fixed. Resume reaming with nominal 34-inch bit at 1827' bpl.
12:40	Contractor begins purging PMW-4. Discharge routed to the containment pad and circulation system.
13:00	Reaming/dredging on Stand 15 at 1829' bpl.
14:00	Reaming/dredging on Stand 15 at 1832' bpl.
14:20	Noah calls Mark Pearce with update.
15:00	Reaming/dredging on Stand 15 at 1835' bpl.
16:00	Reaming/dredging on Stand 15 at 1837' bpl.
16:35	Frank Procta on.
17:00	Noah Kugler off. Reaming/dredging on Stand 15 at 1839' bpl.
19:05	Currently reaming/dredging with STAND #15 at 1845.5 feet bpl.
19:30	Top head drive down with STAND #15 at 1846.5 feet bpl.
20:45	Resume reaming operations with STAND #16 at 1846.5 feet bpl. NOTE: Inclination surveys conducted at depths of 1750 (0.25 degrees) and 1840 (0.4 degrees) feet bpl.
21:15	Currently reaming with STAND #16 at 1848 feet bpl.
22:45	Currently reaming with STAND #16 at 1852 feet bpl.
22:50	Frank Procta leaves the site.
23:15	Todd Tubbert on-site.

0:00	Currently reaming with STAND #16 at 1856 feet bpl.
0:55	Currently reaming with STAND #16 at 1859.5 feet bpl.
2:30	Currently reaming with STAND #16 at 1865 feet bpl.
4:12	Currently reaming with STAND #16 at 1872 feet bpl.
5:20	Currently reaming with STAND #16 at 1876 feet bpl.
6:30	Currently reaming with STAND #16 at 1878 feet bpl.
7:00	Noah Kugler on-site. Todd Tubbert off.

Week 16

WATER RESOURCE SOLUTIONS

Date: 5/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Todd Tubbert off. Currently reaming with STAND #16 at 1878 feet bpl.
7:55	Noah sends weekly report via e-mail and fax to Mark Pearce and leaves update message.
8:20	Reaming with STAND #16 at 1882 feet bpl.
8:35	Reaming/dredging with STAND #16 at 1879 feet bpl. Several feet of hole lost upon picking up drillstring.
9:40	Reaming/dredging with STAND #16 at 1883.5 feet bpl.
11:00	Reaming/dredging with STAND #16 at 1888.5 feet bpl.
11:50	Contractor discontinues purging of PMW-4 (pumped for 23 hours). The conductivity of the well water has returned to week 14 levels (~1170 uS/cm). The conductivity had increased from week 14 to week 15.
12:00	Frank Procta on, Noah Kugler off. Reaming/dredging with STAND #16 at 1892 feet bpl.
12:40	Reaming/dredging with STAND #16 at 1894.5 feet bpl.
13:00	Continue to ream with STAND #16.
15:30	Reaming/dredging with STAND #16 at 1900 feet bpl.
17:10	Reaming/dredging with STAND #16 at 1902 feet bpl.
18:55	Reaming/dredging with STAND #16 at 1906.5 feet bpl.
19:05	Night tour crew begin routine rig maintenance.
21:15	Reaming/dredging with STAND #16 at 1910.5 feet bpl.
22:30	Reaming/dredging with STAND #16 at 1911.5 feet bpl.
22:45	Frank Procta leaves the site.
22:50	Holland on.
23:30	Reaming/dredging with STAND #16 at 1913 feet bpl.
1:00	Reaming/dredging with STAND #16 at 1914 feet bpl.
3:00	Reaming/dredging with STAND #16 at 1917 feet bpl.
4:30	Reaming/dredging with STAND #16 at 1919 feet bpl.
6:00	Reaming/dredging with STAND #16 at 1920 feet bpl.
6:45	T. Nelson on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	T. Nelson on-site. Holland off.
7:00	Reaming/dredging with STAND #16 at 1921 feet bpl.
8:00	Reaming/dredging with STAND #16 at 1924 feet bpl.
9:00	Reaming/dredging with STAND #16 at 1928 feet bpl.
10:00	Reaming/dredging with STAND #16 at 1931 feet bpl.
11:00	Reaming/dredging with STAND #16 at 1934 feet bpl.
12:00	Reaming/dredging with STAND #16 at 1939 feet bpl.
13:00	Reaming/dredging with STAND #16 at 1942 feet bpl.
14:00	Reaming/dredging with STAND #16 at 1945 feet bpl.
15:00	Reaming/dredging with STAND #16 at 1948 feet bpl.
16:00	Reaming with STAND #16 at 1950 feet bpl.
17:00	Reaming with STAND #16 at 1952 feet bpl.
18:00	Reaming with STAND #16 at 1960 feet bpl.
19:00	Larry Holland on site. Trika Nelson off site. Reaming with STAND #16 at 1965 feet bpl.
19:30	STAND #16 all the way down at 1967 feet bpl. Circulating.
19:45	Running verticality test for 1930 feet bpl.
20:30	Verticality test complete. Vertical deviation of 0.25 degrees.
20:45	STAND #17 attached. Reaming at 1968 feet bpl.
0:00	Reaming with STAND #17 at 1970 feet bpl.
1:45	Reaming with STAND #17 at 1972 feet bpl.
2:45	Reaming with STAND #17 at 1973 feet bpl.
4:00	Reaming with STAND #17 at 1976 feet bpl.
5:30	Reaming with STAND #17 at 1979 feet bpl.
6:40	Reaming with STAND #17 at 1982 feet bpl.
6:50	T. Nelson on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	T. Nelson on-site. Holland off.
7:00	Reaming with STAND #17 at 1982 feet bpl.
8:00	Reaming/dredging with STAND #17 at 1982 feet bpl.
9:00	Reaming/dredging with STAND #17 at 1982.5 feet bpl.
10:00	Reaming/dredging with STAND #17 at 1983 feet bpl.
11:00	Reaming/dredging with STAND #17 at 1983 feet bpl.
12:00	Reaming/dredging with STAND #17 at 1984 feet bpl.
13:00	Reaming/dredging with STAND #17 at 1984 feet bpl. Dredging large amounts of material from 1980' to 1984'.
14:00	Reaming/dredging with STAND #17 at 1982 feet bpl.
15:00	Reaming/dredging with STAND #17 at 1983 feet bpl. Dredging large amounts of material from 1980' to 1984'.
16:00	Reaming/dredging with STAND #17 at 1982 feet bpl.
17:00	Reaming/dredging with STAND #17 at 1983 feet bpl.
18:00	Reaming/dredging with STAND #17 at 1982 feet bpl. Still dredging large amounts of material.
18:50	Trika Nelson off site. Holland on.
20:30	Reaming/dredging with STAND #17 at 1982 feet bpl.
22:00	Reaming/dredging with STAND #17 at 1982 feet bpl. Still dredging large amounts of material. Less large pieces and large % of dolostone sand.
22:40	Bit/drill pipe clogging. Driller trying to dislodge. Fluctuating air pressure.
1:00	Tripping out of hole.
1:45	Some trouble getting BHA past the bottom of the casing.
3:00	BHA up inside casing. Tripping out of hole to inspect bit.
5:05	Bit out of hole.
5:15	Cones of bit appear worn. Seals out and bearings loose.
5:30	Shut-down rig to return bit to yard for repairs. No activity besides general maintenance until bit is repaired.
6:30	Holland off-site.

WATER RESOURCE SOLUTIONS

Date: 5/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Operations suspended until nominal 34-inch bit can be repaired (possibly late today). All drillpipe is out of hole. Breaking-out bit to send to YBI shop.
7:45	Noah Kugler on-site. Leave update message for Mark Pearce.
8:20	Bit transported off-site for repair.
8:20 to 14:30	Waiting on bit repair. General site maintenance. Organization and review of project files on computer.
14:30	Trika Nelson on site. YBI truck on site with repaired bit.
15:15	Attaching bit.
15:30	Noah Kugler off-site.
16:15	Begin to trip drillpipe and bit back in hole.
17:00	Still tripping drill pipe in hole
17:30	Attaching can.
18:00	Problems attaching can. Currently trying to fasten can on properly.
18:30	Resume tripping in drill pipe.
19:00	Still tripping in drill pipe.
20:15	Begin tripping in tubing.
21:00	Resume reaming with nominal 34-inch bit . There was a substantial amount of material that has fallen in the hole ~ 230 ft. Reaming/dredging operations resume with STAND #15 at 1752 ' bpl in order to clean hole out.
22:20	Still cleaning out hole. Dredging material at 1760 ' bpl.
22:45	Larry Holland on site. Trika Nelson off site.
23:45	Dredging material at 1760 feet bpl.
1:00	Dredging material at 1771 feet bpl.
2:00	Dredging material with STAND #15 at 1779 feet bpl.
3:00	Dredging material at 1787 feet bpl. Debris still falling on bit.
4:30	Dredging material at 1787 feet bpl. Debris still falling on bit.
6:30	Dredging material with STAND #15 at 1787 feet bpl. Debris still falling on bit.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Dredging material with nominal 34-inch bit on Stand 15 at 1787 feet bpl.
7:45	Noah leaves update message for Mark Pearce.
8:35	Pull-up drillstring and swab/re-dredge hole starting at 1726 feet bpl.
9:10	Pull-up drillstring to 1726 feet bpl. Suspend swabbing/dredging to maintenance circulation system and pump circulation water down-hole.
11:48	Water level in pit is lowered to an acceptable level. Resume swabbing/ dredging hole at 1735 feet bpl.
12:55	Contractor begins purging and sampling pad monitor wells. PMW-4 will be purged for approximately 24 hours prior to sampling.
13:40	Dredging on Stand 15 at 1759 feet bpl. Contractor prepares new collections bucket for rock cuttings from the discharge stream.
14:30	Trika Nelson on-site.
15:10	Noah Kugler off. Dredging on Stand 15 at 1770 feet bpl.
16:00	Dredging/swabbing on Stand 15 at 1773 feet bpl.
17:00	Dredging/swabbing on Stand 15 at 1777 feet bpl.
18:00	Dredging/swabbing on Stand 15 at 1781 feet bpl.
19:00	Dredging/swabbing on Stand 15 at 1786 feet bpl.
20:00	Dredging/swabbing on Stand 15 at 1790 feet bpl.
21:00	Top head drive down on STAND 15 at 1847 ft. bpl.
21:20	Connect Stand #16, and resume swabbing. **Note:** Since Stands 15 & 16 took very little time to swab, driller thinks there was a/ or several big rocks that fell in the hole, and there probably was not 230 ft. of fall in.
22:10	Top head drive down on Stand 16 at 1967 ft. bpl.
22:20	Connect Stand #17, and resume reaming.
22:55	Larry Holland on site. Trika Nelson off site.
23:30	Dredging/swabbing on STAND #17 at 1970 feet bpl.
1:00	Dredging/swabbing on STAND #17 at 1974 feet bpl.
2:00	Dredging/swabbing on STAND #17 at 1977 feet bpl.
3:30	Dredging/swabbing on STAND #17 at 1980 feet bpl.
4:30	Dredging/swabbing on STAND #17 at 1981 feet bpl.
5:00	Rig down. Waiting on welder to patch hole in goose neck.

5:45	Welder on-site.
7:00	Noah Kugler on-site. Larry Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Operations suspended to repair small hole in rig's gooseneck (part of circulation system) by welding a steel patch over it.
7:55	Repairs complete. Resume/dredging reaming with nominal 34-inch bit on Stand 17 at 1981 feet bpl.
8:05	Noah calls Mark Pearce with update.
9:40	Still dredging material on Stand 17 at 1981 feet bpl.
9:55	The cuttings from the discharge stream contain pre-dominantly formation material with traces of gravel and cement.
11:35	Dredging material on Stand 17 at 1983 feet bpl. The cuttings from the discharge stream contain predominantly formation material with common cement and trace gravel.
12:35	Reaming on Stand 17 at 1984 feet bpl. Formation unloading (dredging) has decreased significantly
13:10	Noah coordinates swing shift activities with Trika Nelson.
13:20	Reaming on Stand 17 at 1988 feet bpl (Note: rate of penetration increase within the last hour). Very little dredging of formation material. Cuttings from the discharge stream contain predominantly formation material with common cement and trace gravel.
13:25	Collect and analyze water sample from PMW-4 after approximately 24-hours of purging.
14:20	Noah Kugler leaves site (not feeling well). Reaming on Stand 17 at 1995 feet bpl
14:25	Trika Nelson on-site.
15:05	Reaming on Stand 17 at 2005 feet bpl. Cuttings from the discharge stream contain predominantly formation material with common cement and trace gravel.
16:00	Reaming on Stand 17 at 2008 feet bpl
17:00	Reaming on Stand 17 at 2013 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / trace dolomite sand formation material with trace cement and common gravel.

18:00	Reaming on Stand 17 at 2018 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
19:00	Reaming on Stand 17 at 2022 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles /trace dolomite sand formation material with no cement and common gravel.
19:30	YBI crew tightening swivel packing on top head drive.
20:00	Reaming on Stand 17 at 2024 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
21:00	Reaming on Stand 17 at 2026 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / very little dolomite sand formation material with no cement and common gravel.
21:45	Larry Holland on site.
22:00	Cleaning out hole. Gravel clogging bit. Currently swabbing hole with STAND # 17 at 2022 feet bpl.
23:05	Reaming on Stand #17 at 2028 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
1:00	Reaming on Stand #17 at 2033 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
2:35	Reaming on Stand #17 at 2036 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / dolomite sand formation material with no cement and minor gravel.
4:05	Reaming on Stand #17 at 2039 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / dolomite sand formation material with no cement and minor gravel.
6:00	Reaming on Stand #17 at 2042 feet bpl. Cuttings from the discharge stream contains predominantly dolostone cobbles / dolomite sand formation material with no cement and minor gravel.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Reaming with nominal 34-inch bit on Stand #17 at 2044 feet bpl.
7:10	Suspend operations for daily rig service.
7:40	Rig service complete. Resume reaming on Stand #17 at 2044 feet bpl.
11:00	Reaming with STAND #17 at 2064 feet bpl.
12:00	Reaming with STAND #17 at 2064.5 feet bpl. Fair amount of dredging.
12:35	Noah Kugler leaves site (not feeling well). Frank Procta will cover the rest of the AM shift. Cuttings from the discharge stream contains mostly dolostone cobbles with lesser dolomitic sand, and common gravel with trace cement.
14:00	Continue to ream/dredge with STAND #17.
14:10	Mohan Thampi arrives on-site for update of site status.
15:30	Trika Nelson arrives on-site.
16:00	Reaming with STAND #17 at 2071 feet bpl. Frank Procta off site.
17:00	Reaming with STAND #17 at 2075 feet bpl.
18:00	Reaming with STAND #17 at 2079 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with trace cement and common gravel.
19:00	Servicing Rig. General maintenance.
19:25	Reaming with STAND #17 at 2081 feet bpl.
20:27	Reaming with STAND #17 at 2083 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
21:30	Top head drive down with STAND #17 at 2087 feet bpl.
21:35	Perform inclination survey to 2020 feet bpl.
22:05	Inclination survey done. 0.3 deg. dev. for 2020 feet pl.
22:15	Connect STAND #18 and resume reaming at 2087 feet bpl.
22:45	Larry Holland on site. Trika Nelson off site.
0:00	Reaming with STAND #18 at 2087 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.

1:45	Reaming with STAND #18 at 2095 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
3:15	Reaming with STAND #18 at 2100 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
5:30	Reaming with STAND #18 at 2109 feet bpl. Cuttings from the discharge stream contains common dolostone cobbles / trace dolomite sand formation material with no cement and common gravel.
6:45	Flushing/swabbing hole. STAND #18, bit at 2090 feet bpl.
7:00	Noah Kugler on. Larry Holland off.

Week 17

WATER RESOURCE SOLUTIONS

Date: 5/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Reverse-air tubing has become clogged while dredging material. Suspend operations to clear tubing and for daily rig service. Hole was reamed to 2110 feet bpl prior to tubing clog. Noah works on weekly report to the TAC.
7:50	Mark Pearce calls for update.
10:15	Reverse-air tubing clear and rig service complete. Driller has tripped in reverse-air tubing and will start swabbing hole with Stand 14 at 1606 feet bpl.
11:30	Hole has been swabbed with stands 14, and then 15, several times with no indication of hole collapse.
13:05	Hole has been swabbed to 2101 feet bpl (9 feet above previously reamed depth) with minimal dredging, indicating that the reamed hole is relatively stable from 1606 to 2101 feet bpl. Begin dredging material from hole with Stand 18 at 2101 feet bpl.
13:50	Still dredging material with Stand 18 at 2101 feet bpl. Mostly sand-sized dolostone with lesser amounts of gravel coming through circulation system.
13:58	Suspend reaming operation to work on the rig's transmission hydraulics.
14:35	Trika Nelson on-site.
15:00	Noah Kugler leaves site.
15:20	Crew still working on rig's transmission hydraulics.
16:30	Crew still working on rig's transmission hydraulics.
17:20	Resume reaming with STAND #18 at 2101 feet bpl.
17:55	Reaming/dredging with STAND #18 at 2101 feet bpl. Mostly sand sized dolostone.
19:00	Reaming/dredging with STAND #18 at 2102 feet bpl. Mostly sand sized dolostone with common gravel.
20:00	Reaming/dredging with STAND #18 at 2096 feet bpl. Mostly sand sized dolostone which is severely clogging the bit reducing air pressure. Trying to clean hole out thoroughly.
21:00	Reaming/dredging with STAND #18 at 2097 feet bpl. Mostly sand sized dolostone.

22:00	Reaming/dredging with STAND #18 at 2098 feet bpl. Mostly sand sized dolostone.
22:40	Still dredging material with Stand 18 at 2098 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system.
22:45	Larry Holland on site. Trika Nelson off site.
0:30	Still dredging material with Stand #18 at 2099 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system.
2:00	Still dredging material with Stand #18 at 2101 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system.
3:30	Still dredging material with Stand #18 at 2101 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system.
5:15	Still dredging material with Stand #18 at 2103 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system.
6:30	Still dredging material with Stand #18 at 2104 feet bpl. Mostly dolostone cobbles & gravel with lesser amounts of sand sized dolostone coming through circulation system. Losing hole when picking up bit.
7:15	Holland off. Day tour crew perform routine rig maintenance.

WATER RESOURCE SOLUTIONS

Date: 5/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Frank Procta arrives on-site. Current ops. : Reaming/dredging with STAND #18.
9:00	Continue to ream/dredge with STAND #18.
10:00	End reaming, pull STAND #18, prepare to change out swivel packing.
10:30	Down for repairs.
11:45	Crew continue to work on top head drive unit changing out the swivel packing.
13:00	Resume reaming/dredging operations as repairs are completed.
15:10	Currently reaming/dredging with STAND #18 at 2106 feet bpl.
17:15	Currently reaming/dredging with STAND #18 at 2103.5 feet bpl.
18:45	Currently reaming/dredging with STAND #18 at 2103.5 feet bpl.
19:00	Frank Procta off, Larry Holland on-site.
20:30	Currently reaming/dredging with STAND #18 at 2103.5 feet bpl.
22:30	Currently reaming/dredging with STAND #18 at 2103.5 feet bpl. Drilling returns of formation dolostone and sand and some gravel.
0:30	Currently reaming/dredging with STAND #18 at 2105 feet bpl.
2:00	Currently reaming/dredging with STAND #18 at 2105 feet bpl.
4:00	Currently reaming/dredging with STAND #18 at 2107 feet bpl.
6:00	Currently reaming/dredging with STAND #18 at 2110 feet bpl. Still losing hole when picking up bit. Drilling returns of formation dolostone and sand, some gravel and cement.
6:50	Frank Procta on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
L. Holland

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
6:50	Frank Procta arrives on-site. Current ops. : Reaming/dredging with STAND #18 at 2110 feet bpl.
8:30	Continue to ream/dredge with STAND #18.
9:30	Currently reaming/dredging with STAND #18 at 2118 feet bpl.
11:30	Continue to ream/dredge with STAND #18.
13:35	Currently reaming/dredging with STAND #18 at 2136.5 feet bpl.
15:00	Currently reaming/dredging with STAND #18 at 2150 feet bpl. NOTE: Examination of cuttings collected from the discharge stream reveal dolostone from sand-sized to cobbles, gravel and common large fragments of cement.
16:30	Continue to ream/dredge with STAND #18.
18:25	Currently reaming/dredging with STAND #18 at 2162 feet bpl.
18:45	Frank Procta leaves the site.
19:00	Larry Holland arrives on-site
20:30	Currently reaming/dredging with STAND #18 at 2108 feet bpl. Hole fell in when picking up bit. Circulation returns primarily dolostone cobbles.
22:30	Currently reaming/dredging with STAND #18 at 2115 feet bpl.
0:00	Currently reaming/dredging with STAND #18 at 2119 feet bpl.
1:45	Currently reaming/dredging with STAND #18 at 2124 feet bpl.
3:30	Currently reaming/dredging with STAND #18 at 2118 feet bpl. Hole falling in when picking up bit.
5:00	Currently reaming/dredging with STAND #18 at 2115 feet bpl. Hole falling in when picking up bit.
6:15	Currently reaming/dredging with STAND #18 at 2118 feet bpl. Hole falling in when picking up bit. Circulation returns primarily dolostone cobbles.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming/dredging with nominal 34-inch bit on STAND #18 at 2110 feet bpl. Hole continues to fall in to approximately 2110 feet bpl when bit is picked up to swab hole. Progress was made to 2162 before wall collapse.
7:15	Noah calls Mark Pearce with update. Leaves message.
7:55	Cuttings collected from the discharge stream contain predominantly large angular pebbles of dolostone with lesser amounts of smaller sized material ranging down in sand-sized. Also occasional large fragments of cement containing gravel. No free gravel noted.
8:15	Dredging material at 2125 feet bpl. Weight indicator on-bit suggests that some material has fallen-in on top of bit. Pick-up bit and re-dredge hole from 2100 feet bpl.
8:26	Tag hole with bit at 2116 feet bpl. Resume dredging material.
9:15	Jim Brantley (V.P. YBI) visits site to yell at Ronnie.
9:35	Dredging material with STAND #18 at 2121 feet bpl.
10:25	Dredging material with STAND #18 at 2124 feet bpl. Suspend reaming to repack swivel in top head drive.
13:05	Swivel has been repacked. Resume dredging material with STAND #18 at 2124 feet bpl.
14:00	Still dredging material at 2124 feet bpl.
14:20	Problems with circulation system (downhole pump). Not able to pump circulated water back down hole. Contractor suspends reaming operations to fix the problem.
15:00	Frank Procta on-site. Noah Kugler off. Down for repairs.
15:30	Down for repairs.
16:15	Resume reaming operations with STAND #18.
16:55	Continue to ream/dredge with STAND #18 at 2126 feet bpl.
18:50	Currently dredging with STAND #18 at 2124 feet bpl.
20:00	Continue to ream/dredge with STAND #18.
21:45	Continue to ream/dredge with STAND #18 at 2126.5 feet bpl.
22:30	Continue to ream/dredge with STAND #18 at 2125 feet bpl.
22:50	Frank Procta leaves the site.

23:10	Todd Tubbert arrives on-site.
0:00	Continue to ream/dredge with STAND #18.
1:35	Continue to ream/dredge with STAND #18 at 2151 feet bpl.
3:03	Continue to ream/dredge with STAND #18 at 2157 feet bpl.
4:37	Continue to ream/dredge with STAND #18 at 2164 feet bpl..
6:30	Continue to ream/dredge with STAND #18 at 2171 feet bpl.
7:00	Todd Tubbert leaves the site. Noah Kugler on.

WATER RESOURCE SOLUTIONS

Date: 5/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming/dredging new hole with nominal 34-inch bit on STAND #18 at 2178 feet bpl.
7:35	Noah calls Mark Pearce with update.
7:45	Cuttings collected from the discharge stream contain predominantly large angular pebbles of dolostone with abundant free gravel and rare cement. Lesser dolostone ranging down in size to fine-sand.
8:00	Reaming/dredging on STAND #18 at 2178 feet bpl.
9:00	Still reaming/dredging at 2178 feet bpl.
10:00	Reaming on STAND #18 at 2180 feet bpl. Contractor begins weekly purging and sampling of pad monitor wells. PMW-4 will be purged for several days prior to sampling due to slightly elevated conductivity and chloride levels when compared with samples from previous weeks.
11:00	Reaming on STAND #18 at 2183 feet bpl.
12:00	Reaming on STAND #18 at 2190 feet bpl.
12:15	Cuttings collected from the discharge stream contain predominantly large angular pebbles of dolostone with abundant free gravel and rare cement. Lesser dolostone ranging down in size to fine-sand (same as this morning).
13:00	Reaming on STAND #18 at 2194 feet bpl.
14:00	Reaming on STAND #18 at 2197.5 feet bpl.
15:00	Frank Procta on-site. Reaming on STAND #18 at 2200 feet bpl.
15:50	Noah Kugler off.
16:40	Top head drive down with STAND #18 at 2206.5 feet bpl.
16:50	Currently performing inclination surveys at depths of 2110 and 2200 feet bpl. NOTE: Repairs (starter replaced in air compressor) made after performing inclination surveys.
19:33	Resume reaming operations with STAND #19.
20:40	Currently reaming with STAND #19 at 2217 feet bpl.
22:13	Suspend reaming operations at 2224.5 feet bpl as discharge line ruptures. A welder is immediately called out to make the repairs.
22:45	Down for repairs.
23:00	Frank Procta leaves the site - Todd Tubbert arrives on-site.
23:30	Down for repairs.

0:05	Welder arrives on-site.
0:50	Repair complete - welder leaves the site.
0:55	Resume reaming operations with STAND #19 at 2224 feet bpl.
2:20	Currently reaming with STAND #19 at 2235 feet bpl.
4:00	Currently reaming with STAND #19 at 2247 feet bpl.
5:25	Currently reaming with STAND #19 at 2260 feet bpl.
6:30	Currently reaming with STAND #19 at 2269 feet bpl.
7:00	Todd Tubbert leaves site. Noah Kugler on-site.

WATER RESOURCE SOLUTIONS

Date: 5/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming new hole with nominal 34-inch bit on STAND #19 at 2270 feet bpl.
7:05	Suspend reaming for rig service.
7:20	Noah calls Mark Pearce with update.
7:35	Rig service complete. Resume reaming on STAND #19 at 2270 feet bpl.
8:40	Suspend reaming at 2271 feet bpl to fix problems with rig's air compressor. Temporary repairs will be made this morning and a replacement air compressor will be delivered to site late today or tomorrow morning.
10:00	Electrical conductivity readings of water in the nearest holding pond north of the rig and PMW-3/PMW-4 = 1080 uS/cm. Similar readings of water in the canal directly south of the rig and PMW-1/PMW-2 = 1025 uS/cm.
11:05	Temporary repairs have been made to air compressor. Resume reaming on STAND #19 at 2271 feet bpl.
12:10	Reaming/dredging at 2271.5 feet bpl.
12:25	Cuttings collected from the discharge stream contain predominantly dolostone (from sand to large pebble size) with minor limestone and rare free gravel, cement.
13:20	Reaming/dredging at 2272 feet bpl.
14:20	Reaming/dredging at 2273 feet bpl.
14:25	Noah converses with Omar Rodriguez (WRS staff geologist) over the phone regarding expected activities that he may encounter while covering this Sunday's night shift (5/25).
14:35	Suspend reaming at 2273 feet bpl to change out rig's temporary air compressor with a larger temporary air compressor.
15:00	Frank Procta on-site. Noah Kugler off.
15:15	Resume reaming/dredging operations with STAND #19.
16:55	Reaming/dredging at 2277 feet bpl.
17:55	Reaming/dredging at 2282 feet bpl.
20:15	Reaming/dredging at 2288 feet bpl.
21:12	Currently reaming with STAND #19 at 2300 feet bpl.
22:22	Currently reaming with STAND #19 at 2313 feet bpl.
22:45	Frank Procta leaves the site.

23:15	Todd Tubbert arrives on-site.
23:55	Reaming/dredging at 2321 feet bpl.
0:40	Top head drive down with STAND #19 at 2326.5 feet bpl.
1:10	Perform inclination survey at 2290 feet bpl. Result in 0.40 degrees.
1:30	Connect STAND # 20.
2:30	Reaming/dredging with STAND # 20 at 2331 feet bpl.
2:45	Down with repair to discharge line.
3 15	Welder on-site.
3:45	Repair complete. Resume reaming/dredging operations.
4:35	Reaming/dredging with STAND # 20 at 2335 feet bpl.
6:15	Reaming/dredging with STAND # 20 at 2339 feet bpl.
6:30	Noah Kugler and Todd Tubbert discuss the night's activities via phone.
6:55	Reaming/dredging with STAND # 20 at 2339 feet bpl.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Currently reaming with nominal 34-inch bit on STAND #20 at 2339.5 feet bpl. The rapid progress made over night has slowed considerably since reaching approximately 2339 feet bpl.
7:05	Suspend reaming for rig service.
7:10	Noah Kugler on-site.
7:30	Rig service complete. Resume reaming on STAND #20 at 2339.5 feet bpl.
7:40	Noah leaves update message for Mark Pearce.
8:05	Cuttings collected from the discharge stream contain predominantly dolostone (from sand to large pebble size) with rare limestone and rare cement.
8:40	Reaming at 2339.5 feet bpl.
9:30	Reaming at 2343 feet bpl.
10:20	Reaming at 2349 feet bpl.
11:30	Reaming at 2353 feet bpl.
12:15	Collect and analyze weekly water sample from PMW-4. Water quality is near background.
13:00	Reaming at 2358.5 feet bpl.
13:25	Cuttings collected from the discharge stream contain predominantly dolostone (mostly sand to small pebble-sized with occasional larger pebbles) with common cement and rare limestone.
14:20	Reaming at 2363 feet bpl. Cuttings collected from the discharge stream contain predominantly dolostone (from fine- to very-coarse sand sized with occasional larger gravel sizes) occasional cement and rare limestone.
15:00	Frank Procta on-site.
15:30	Currently reaming with STAND #20 at 2367 feet bpl. Noah Kugler leaves the site.
15:35	Penetration rate slows as system loses air pressure.
18:00	Continue to have problems advancing the reamed hole as system continues to lose air pressure - currently reaming/dredging with STAND #20 at 2367 feet bpl.
20:15	Currently down for repairs.
21:00	Down for repairs.

22:30	Down for repairs.
22:45	Frank Procta leaves the site.
23:00	Todd Tubbert arrives on-site.
0:00	Down for repairs.
0:35	Repair complete and tested.
0:55	Connect STAND # 20.
1:05	Resume drilling/reaming with STAND # 20 at 2367 feet bpl.
2:10	Temporarily stop drilling to pump water from full frack tank.
4:30	Resume drilling/reaming with STAND # 20 at 2370 feet bpl.
5:45	Reaming at 2376 feet bpl.
6:45	Reaming at 2383 feet bpl.
7:00	Todd Tubbert leaves the site. Noah Kugler on.

Week 18

WATER RESOURCE SOLUTIONS

Date: 5/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Suspend reaming ops. to service rig at 2383 feet bpl.
7:20	Rig service complete. Resume reaming with nominal 34-inch bit on Stand #20 at 2383 feet bpl.
8:05	Noah calls Mark Pearce with update. Working on weekly report to TAC.
8:20	Reaming at 2390 feet bpl.
8:50	Reaming at 2395 feet bpl.
10:00	Reaming at 2399 feet bpl.
11:30	Reaming at 2401 feet bpl.
13:20	Reaming at 2406 feet bpl.
14:40	Reaming at 2410 feet bpl.
15:00	Frank Procta on-site. Noah Kugler off.
15:05	Currently reaming at 2411 feet bpl.
17:15	Currently reaming at 2413.5 feet bpl.
18:50	Currently reaming at 2415 feet bpl.
20:00	Continue reaming with STAND #20.
20:55	Currently reaming with STAND #20 at 2421 feet bpl.
21:00	End reaming operations as the rubber seals to the air line fitting in the top head drive fail and require replacement. Also, a rupture in the discharge pipe system requires repair by welding.
21:30	Down for repairs.
22:00	Down for repairs.
22:30	Down for repairs.
22:45	Frank Procta leaves the site.
23:05	Todd Tubbert arrives on-site.
23:10	Currently reaming at 2420.5 feet bpl.
0:40	Currently reaming at 2421 feet bpl.
2:19	Currently reaming at 2425 feet bpl.
4:15	Currently reaming at 2432 feet bpl.
6:20	Currently reaming at 2439 feet bpl.
6:40	Trika Nelson on site.
7:00	Todd Tubbert off site.

WATER RESOURCE SOLUTIONS

Date: 5/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson on site.
7:00	Todd Tubbert off site.
8:00	Currently reaming with STAND #20 at 2440 feet bpl.
9:00	Currently reaming with STAND #20 at 2442 feet bpl.
10:00	Currently reaming with STAND #20 at 2445 feet bpl.
10:45	Top head drive down with STAND #20.
10:50	Run inclination survey to 2380 feet bpl.
11:20	Inclination survey down. Results for 2380 feet bpl. 0.25 deg. dev.
11:30	Connect STAND #21 and resume reaming.
12:00	Currently reaming with STAND #21 at 2447 feet bpl.
13:00	Currently reaming with STAND #21 at 2449 feet bpl.
14:00	Currently reaming with STAND #21 at 2451 feet bpl.
15:00	Currently reaming with STAND #21 at 2451 feet bpl.
16:00	Currently reaming with STAND #21 at 2452 feet bpl.
17:00	Currently reaming with STAND #21 at 2455 feet bpl.
18:00	Currently reaming with STAND #21 at 2458 feet bpl. Sample from pit shows dolostone ranging from sand size to cobbles.
18:50	Trika Nelson off site. Todd Tubbert on site.
19:30	Currently reaming with STAND #21 at 2460 feet bpl.
19:45	Down with repair to air compressor.
21:00	Down with repair to air compressor.
22:00	Down with repair to air compressor.
23:00	Down with repair to air compressor.
23:55	Resume reaming operations with STAND #21 2460 feet bpl.
1:30	Currently reaming with STAND #21 at 2462 feet bpl.
3:35	Currently reaming with STAND #21 at 2464 feet bpl.
5:45	Currently reaming with STAND #21 at 2468 feet bpl.
5:50	Down with repair to air compressor.
6:45	Down with repair to air compressor. Trika Nelson on site.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Down with repair to air compressor. Trika Nelson on site.
7:00	Todd Tubbert leaves the site.
7:10	Waiting for a store to open up to buy a proper replacement hose for air compressor.
8:00	Down with repair to air compressor.
9:00	Down with repair to air compressor.
10:00	Down with repair to air compressor.
11:00	Down with repair to air compressor.
11:45	Repair to air compressor complete. Resume reaming operations with STAND #21 at 2468 feet bpl.
12:00	Currently reaming with STAND #21 at 2469 feet bpl.
13:00	Currently reaming with STAND #21 at 2472 feet bpl.
14:00	Currently reaming with STAND #21 at 2474 feet bpl.
15:00	Currently reaming with STAND #21 at 2476 feet bpl.
16:00	Currently reaming with STAND #21 at 2478 feet bpl.
17:00	Currently reaming with STAND #21 at 2478.5 feet bpl.
18:00	Currently reaming with STAND #21 at 2479 feet bpl.
18:45	Omar Rodriguez on site.
19:00	Trika Nelson off site.
19:05	Currently reaming with STAND #21 at 2480 feet bpl.
20:00	Currently reaming with STAND #21 at 2483 feet bpl.
21:00	Currently reaming with STAND #21 at 2484 feet bpl.
22:00	Currently reaming with STAND #21 at 2485 feet bpl.
23:00	Currently reaming with STAND #21 at 2486 feet bpl.
0:00	Currently reaming with STAND #21 at 2488 feet bpl.
1:15	Currently reaming with STAND #21 at 2491 feet bpl.
2:40	Currently reaming with STAND #21 at 2492 feet bpl.
4:10	Currently reaming with STAND #21 at 2494 feet bpl.
5:15	Currently reaming with STAND #21 at 2495 feet bpl.
6:30	Currently reaming with STAND #21 at 2496.5 feet bpl.
6:53	Noah Kugler on site.
7:00	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Currently reaming with nominal 34-inch bit on STAND #21 at 2497 feet bpl.
7:20	Noah confers with Ronnie Thames (YBI site superintendent) on the current depth and target depth of 2580 feet bpl.
7:25	Noah leaves update message for Mark Pearce.
9:00	Reaming on STAND #21 at 2501 feet bpl. Slow rate of penetration due to hard material (dolostone).
10:00	Reaming on STAND #21 at 2502.5 feet bpl.
11:00	Reaming on STAND #21 at 2504 feet bpl.
11:35	Reaming on STAND #21 at 2505.5 feet bpl.
13:10	Reaming on STAND #21 at 2508 feet bpl.
14:35	Trika Nelson on-site. Reaming on STAND #21 at 2509 feet bpl.
15:00	Noah Kugler off.
15:30	Reaming on STAND #21 at 2510 feet bpl.
16:00	Reaming on STAND #21 at 2512 feet bpl.
17:00	Reaming on STAND #21 at 2513 feet bpl.
18:00	Reaming on STAND #21 at 2515 feet bpl.
19:00	Reaming on STAND #21 at 2517 feet bpl.
20:00	Reaming on STAND #21 at 2520 feet bpl.
21:00	Reaming on STAND #21 at 2521 feet bpl.
22:00	Reaming on STAND #21 at 2523 feet bpl.
23:00	Trika Nelson off-site. Holland on.
23:45	Reaming on STAND #21 at 2526 feet bpl.
1:00	Reaming on STAND #21 at 2527 feet bpl.
2:30	Reaming on STAND #21 at 2528 feet bpl.
4:05	Reaming on STAND #21 at 2529 feet bpl.
6:15	Reaming on STAND #21 at 2530 feet bpl.
7:00	Noah Kugler on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Currently reaming with nominal 34-inch bit on STAND #21 at 2532 feet bpl.
7:35	Noah calls Mark Pearce with update.
7:45	Cuttings collected from the discharge stream representing a depth of 2532.5 feet bpl contain common cement fragments, indicating positive tracking of the pilot hole thus far.
8:20	Contractor begins weekly purging and sampling of pad monitor wells.
8:40	Reaming on STAND #21 at 2535 feet bpl.
9:15	Mark Pearce on-site for update meeting. Discuss casing setting.
10:00	Reaming on STAND #21 at 2536 feet bpl.
10:25	Contractor will purge PMW-4 through tomorrow, prior to sampling.
10:45	Mohan Thampi visits site for progress update. We plan to set 24-inch longstring casing in the next few days.
11:30	Reaming on STAND #21 at 2537 feet bpl. Progress is very slow. Rate of penetration is less than 1 ft/hour over the last several hours.
12:40	Reaming on STAND #21 at 2539.5 feet bpl.
13:50	Reaming on STAND #21 at 2541 feet bpl.
14:35	Trika Nelson on-site. Reaming on STAND #21 at 2542 feet bpl.
15:10	Noah Kugler off.
15:30	Reaming on STAND #21 at 2542 feet bpl.
16:00	Reaming on STAND #21 at 2543 feet bpl.
17:00	Reaming on STAND #21 at 2544 feet bpl.
18:00	Reaming on STAND #21 at 2544.5 feet bpl.
19:00	Reaming on STAND #21 at 2545 feet bpl.
20:00	Reaming on STAND #21 at 2545 feet bpl.
21:00	Reaming/dredging on STAND #21 at 2546 feet bpl.
22:25	Reaming/dredging on STAND #21 at 2546 feet bpl. Driller thinks that a large rock is stuck on the end of the bit due to slow or no air recovery when air compressor is surged.
23:00	Trika Nelson off-site. Holland on.
0:25	Reaming on STAND #21 at 2548 feet bpl.
1:45	Reaming on STAND #21 at 2550 feet bpl.

3:20	Reaming on STAND #21 at 2553 feet bpl.
5:00	Reaming on STAND #21 at 2555 feet bpl.
6:30	Reaming on STAND #21 at 2557 feet bpl.
6:55	Frank Procta on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Reaming with STAND #21.
8:15	Reaming with STAND #21 at 2560 feet bpl.
9:45	Update Mark Pearce, via phone message, of current reaming status.
9:51	Currently reaming with STAND #21 at 2562 feet bpl.
10:25	Currently reaming with STAND #21 at 2563 feet bpl.
12:25	Currently reaming with STAND #21 at 2565 feet bpl.
13:41	Top head drive down with STAND #21 at 2566.6 feet bpl.
13:51	Crew prepare to run inclination surveys at depths of 2470 and 2560 feet bpl.
14:30	Crew currently running inclination surveys.
14:40	Trika Nelson arrives on-site.
14:55	Frank Procta leaves the site.
15:00	Connect 30 foot joint and resume reaming to 2580 feet bpl.
15:15	Currently reaming with 30 foot joint at 2568 feet bpl. Results from inclination surveys: 2470 feet bpl = 0.25 deg. dev and 2560 feet bpl = 0.25 deg. dev.
17:00	Currently reaming with 30 foot joint at 2571 feet bpl.
18:00	Currently reaming with 30 foot joint at 2573 feet bpl.
19:00	Currently reaming with 30 foot joint at 2574 feet bpl.
20:00	Currently reaming with 30 foot joint at 2574 feet bpl. Driller started to drill through the top of the bridge plug which is thick metal. A lot of metal shavings on magnet up at the pit.
21:10	Currently reaming with 30 foot joint at 2574 feet bpl.
22:05	Currently reaming with 30 foot joint at 2574 feet bpl.
22:50	Larry Holland on site. Trika Nelson off site.
0:15	Currently reaming with 30 foot joint at 2574 feet bpl.
1:45	Currently reaming with 30 foot joint at 2575 feet bpl.
3:30	Currently reaming with 30 foot joint at 2577 feet bpl.
5:00	Currently reaming with 30 foot joint at 2579 feet bpl.
6:05	Currently reaming with 30 foot joint at 2580 feet bpl. (TD)
6:45	Picking up bit for wiper trip.
7:00	Frank Procta on-site. Holland off.

WATER RESOURCE SOLUTIONS

Date: 5/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
L. Holland
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Performing routine rig maintenance.
7:33	Early preparations begin for the first wiper run of the reamed hole.
8:00	Currently tripping out the air line.
8:40	Currently tripping out stands of drill pipe.
9:30	Mark Pearce calls for site status.
10:45	YBI crew re-measure casing joints as witnessed by the on-site geologist.
11:15	Currently tripping in stands of drill pipe.
12:00	Continue tripping in drill pipe.
13:34	Continue tripping in drill pipe.
13:48	Drill pipe down with no hang-ups; circulating water to flush hole.
14:20	Crew begin tripping out the air line.
14:30	Update Mark Pearce of current status.
14:35	Trika Nelson arrives on-site.
14:55	Frank Procta leaves the site.
14:40	Finish tripping out the air line. Begin to trip out drill pipe.
16:00	Finish tripping out drill pipe with STAND # 12 hanging from top head drive. Letting hole sit for a while before YBI crew begins to trip back in the hole.
16:40	Begin tripping drill pipe back into the hole.
17:00	Down for some rig maintenance.
17:30	Resume tripping in drill pipe.
18:00	Still tripping drill pipe in hole.
19:15	Finish tripping in drill pipe. Begin to trip in air line. Hole clean, no obstructions.
19:45	Finish tripping in air line tubing. Circulate hole.
20:10	Begin tripping out air line tubing.
20:35	Finish tripping out air line. Begin tripping out drill pipe.
21:10	Still tripping out drill pipe.
21:30	Finish tripping out drill pipe. Begin tripping drill pipe back in hole.

22:20	Finish tripping in drill pipe. Begin tripping in air line tubing. Plans are to do several wiper trips through the night shift to keep the hole clean. Loggers will be onsite at 5am to log the hole and then proceed with setting casing at 7am.
22:45	Finish tripping in air line tubing. Attach 30 foot joint to drill stand. Circulate hole.
22:52	Larry Holland on site. Trika Nelson off site.
0:00	Wiper trip.
2:00	Wiper trip. Hole staying open.
3:45	Wiper trip. Hole staying open.
4:15	Tripping out of hole. Preparing for geophysical logger.
6:25	Breaking down rig floor and BHA.
7:00	Noah Kugler on-site. Holland off.

Week 19

WATER RESOURCE SOLUTIONS

Date: 5/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently tripping out BHA. Waiting to run geophysical logs prior to setting 24-inch O.D., 0.5-inch wall, steel longstring casing to approximately 2575 feet bpl. Craig Boomgaard is on-site for project orientation.
7:45	Geophysical loggers arrive on-site. Crew is breaking-out stabilizer.
7:55	Noah calls Mark Pearce with update.
9:15	Bottom hole assembly has been tripped out and bit broken-out. Tim Denison (Florida Geophysical) preparing logging truck to run caliper/ gamma logs.
9:55	Begin in hole with caliper/gamma tool.
10:38	Tool on bottom. Begin running logging tools uphole while recording data.
11:30	Caliper/gamma logs complete.
11:35	Fax copy of logs to Mark Pearce and discuss casing setting.
11:45	Crew begins moving casing Joint #1 to rig.
12:45	Lower Joint #1 and begin welding Joint #2 to Joint #1.
13:15	Weld complete. Lower Joint #2.
13:19	Joint #3 raised and aligned. Begin welding Joint #3 to Joint #2.
13:42	Weld complete. Lower Joint #3.
13:45	Joint #3 raised and aligned. Begin welding Joint #4 to Joint #3.
14:11	Weld complete. Lower Joint #4.
14:18	Joint #5 raised and aligned. Begin welding Joint #5 to Joint #4.
14:35	Trika Nelson on-site.
14:40	Weld complete. Lower Joint #5.
14:46	Joint #5 raised and aligned. Begin welding Joint #6 to Joint #5.
15:05	Noah Kugler leaves.
15:10	Weld complete. Lower Joint #6.
15:17	Joint #7 raised and aligned. Begin welding Joint #7 to Joint #6.
15:38	Weld complete. Lower Joint #7
15:44	Joint #8 raised and aligned. Begin welding Joint #8 to Joint #7.
16:05	Weld complete. Lower Joint #8.
16:12	Joint #9 raised and aligned. Begin welding Joint #9 to Joint #8.
16:35	Weld complete. Lower Joint #9.

16:42	Joint #10 raised and aligned. Begin welding Joint #10 to Joint #9.
17:02	Weld complete. Lower Joint #10.
17:09	Joint #11 raised and aligned. Begin welding Joint #11 to Joint #10.
17:29	Weld complete. Lower Joint #11.
17:35	Joint #12 raised and aligned. Begin welding Joint #12 to Joint #11.
17:57	Weld complete. Lower Joint #12.
18:04	Joint #13 raised and aligned. Begin welding Joint #13 to Joint #12.
18:25	Weld complete. Lower Joint #13.
18:32	Joint #14 raised and aligned. Begin welding Joint #14 to Joint #13.
19:11	Weld complete. Lower Joint #14.
19:23	Joint #15 raised and aligned. Begin welding Joint #15 to Joint #14.
19:57	Weld complete. Lower Joint #15.
20:05	Joint #16 raised and aligned. Begin welding Joint #16 to Joint #15.
20:29	Weld complete. Lower Joint #16.
20:37	Joint #17 raised and aligned. Begin welding Joint #17 to Joint #16.
20:58	Weld complete. Lower Joint #17.
21:09	Joint #18 raised and aligned. Begin welding Joint #18 to Joint #17.
21:34	Weld complete. Lower Joint #18.
21:43	Joint #19 raised and aligned. Begin welding Joint #19 to Joint #18.
22:06	Weld complete. Lower Joint #19.
22:19	Joint #20 raised and aligned. Begin welding Joint #20 to Joint #19.
22:42	Weld complete. Lower Joint #20.
22:53	Joint #21 raised and aligned. Begin welding Joint #21 to Joint #20.
23:00	Todd Tubbert on site. Trika Nelson off site.
23:23	Weld complete. Lower Joint #21.
23:30	Joint #22 raised and aligned. Begin welding Joint #22 to Joint #21.
23:54	Weld complete. Lower Joint #22.
0:04	Joint #23 raised and aligned. Begin welding Joint #23 to Joint #22.
0:24	Weld complete. Lower Joint #23.
0:30	Joint #24 raised and aligned. Begin welding Joint #24 to Joint #23.
0:55	Weld complete. Lower Joint #24.
1:06	Joint #25 raised and aligned.
2:01	Begin welding Joint #25 to Joint #24.
2:18	Weld complete. Lower Joint #25.
2:28	Joint #26 raised and aligned. Begin welding Joint #26 to Joint #25.
2:50	Weld complete. Lower Joint #26.
3:00	Joint #27 raised and aligned. Begin welding Joint #27 to Joint #26.
3:23	Weld complete. Lower Joint #27.
3:30	Joint #28 raised and aligned. Begin welding Joint #28 to Joint #27.
3:55	Weld complete. Lower Joint #28.
4:04	Joint #29 raised and aligned.
4:25	Begin welding Joint #29 to Joint #28.
4:55	Weld complete. Lower Joint #29.
5:11	Joint #30 raised and aligned. Begin welding Joint #30 to Joint #29.

5:30	Weld complete. Lower Joint #30.
5:39	Joint #31 raised and aligned. Begin welding Joint #31 to Joint #30.
6:05	Weld complete. Lower Joint #31.
6:12	Joint #32 raised and aligned. Begin welding Joint #32 to Joint #31.
6:39	Weld complete. Lower Joint #32.
6:45	Welder shift change.
7:00	Frank Procta arrives on-site. Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 5/31/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Welders on break, prepare to raise JOINT #33 into position for welding.
7:23	Welders begin work on JOINT #33.
7:44	Weld complete, lower JOINT #33.
7:51	Raise JOINT #34 into position for welding.
8:16	Weld complete, lower JOINT #34.
8:23	Raise JOINT #35 into position for welding.
8:25	Welders begin work on JOINT #35.
8:43	Weld complete, lower JOINT #35.
8:51	Welders begin work on JOINT #36.
9:10	Weld complete, lower JOINT #36.
9:16	Raise JOINT #37 into position for welding.
9:19	Welders begin work on JOINT #37.
9:38	Weld complete, lower JOINT #37.
9:43	Raise JOINT #38 into position for welding.
9:45	Welders begin work on JOINT #38.
10:07	Weld complete, lower JOINT #38.
10:12	Raise JOINT #39 into position for welding.
10:14	Welders begin work on JOINT #39.
10:50	Weld complete, lower JOINT #39.
10:56	Raise JOINT #40 into position for welding.
10:59	Welders begin work on JOINT #40.
11:20	Weld complete, lower JOINT #40.
11:25	Raise JOINT #41 into position for welding.
11:28	Welders begin work on JOINT #41.
11:53	Weld complete, lower JOINT #41.
11:59	Raise JOINT #42 into position for welding.
12:02	Welders begin work on JOINT #42.
12:35	Welders currently taking a lunch break.
12:47	Weld complete, lower JOINT #42.
12:55	Raise JOINT #43 into position for welding.
12:57	Welders begin work on JOINT #43.

13:15	Weld complete, lower JOINT #43.
13:19	Raise JOINT #44 into position for welding.
13:24	Welders begin work on JOINT #44.
13:45	Weld complete, lower JOINT #44.
13:50	Raise JOINT #45 into position for welding.
13:52	Welders begin work on JOINT #45.
14:17	Weld complete, lower JOINT #45.
14:22	Raise JOINT #46 into position for welding.
14:27	Welders begin work on JOINT #46.
14:45	Weld complete, lower JOINT #46.
14:55	Welders begin work on JOINT #47.
15:14	Weld complete, lower JOINT #47.
15:19	Raise JOINT #48 into position for welding.
15:21	Welders begin work on JOINT #48.
15:42	Weld complete, lower JOINT #48.
15:46	Raise JOINT #49 into position for welding.
15:52	Welders begin work on JOINT #49.
16:12	Weld complete, lower JOINT #49.
16:20	Welders begin work on JOINT #50.
16:38	Weld complete, lower JOINT #50.
16:43	Raise JOINT #51 into position for welding.
16:45	Welders begin work on JOINT #51.
17:05	Weld complete, lower JOINT #51.
17:11	Raise JOINT #52 into position for welding.
17:13	Welders begin work on JOINT #52.
17:33	Weld complete, lower JOINT #52.
17:39	Raise JOINT #53 into position for welding.
17:42	Welders begin work on JOINT #53.
18:03	Weld complete, lower JOINT #53.
18:09	Raise JOINT #54 into position for welding.
18:13	Welders begin work on JOINT #54.
18:35	Weld complete.
18:40	Welders currently on break.
19:00	Todd Tubbert arrives on-site, Frank Procta leaves the site.
19:50	Lower JOINT # 54.
20:00	Joint #55 raised and aligned. Begin welding Joint #55 to Joint #54.
20:30	Weld complete. Lower Joint #55.
20:40	Joint #56 raised and aligned. Begin welding Joint #56 to Joint #55.
21:10	Weld complete. Lower Joint #56.
21:19	Joint #57 raised and aligned. Begin welding Joint #57 to Joint #56.
21:50	Weld complete. Lower Joint #57.
21:56	Joint #58 raised and aligned. Begin welding Joint #58 to Joint #57.
22:28	Weld complete. Lower Joint #58.
22:39	Joint #59 raised and aligned. Begin welding Joint #59 to Joint #58.

22:59	Weld complete. Lower Joint #59.
23:08	Joint #60 raised and aligned. Begin welding Joint #60 to Joint #59.
23:35	Weld complete. Lower Joint #60.
23:46	Joint #61 raised and aligned. Begin welding Joint #61 to Joint #60.
0:15	Weld complete. Lower Joint #61.
0:51	Joint #62 raised and aligned. Begin welding Joint #62 to Joint #61.
1:25	Weld complete. Lower Joint #62.
1:50	Joint #63 raised and aligned. Begin welding Joint #63 to Joint #62.
2:23	Weld complete. Lower Joint #63. (Final Joint of casing)
2:50	Begin welding header plates.
5:10	Begin welding gussets.
5:30	Crew lining up cement tubing on derrick floor.
6:20	Welder completes welding gussets to header joint.
6:40	Crew preparing to trip cement tubing.
6:55	Frank Procta arrives on-site. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 6/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Crew prepare to trip in 2 3/8-inch steel cement tubing.
7:10	YBI crew measure joints of tubing in preparation for trip in and pressure grouting (first-stage cementing) the 24-inch (longstring) casing.
8:09	Begin tripping in cement tubing.
9:45	Reconcile cement tubing tally with YBI. NOTE: The string total length is 2583 feet (81 joints). The bottom end of the tubing string to set at 2568 feet bpl or 7 feet inside the casing.
9:50	Crew continue tripping in cement tubing.
10:15	Crew continue tripping in cement tubing.
10:48	Attach cementing header to the tubing string.
10:49	Rig up the pressure gauge/line used to monitor casing pressure during pressure grouting.
10:51	Begin pre-flush.
10:53	End pre-flush.
10:54	Begin pressure grouting the 24-inch casing using neat cement (STAGE #1).
11:12	Note the pressure gauge readings have all zero values, cement is being lost to the lowermost section of the formation. Also, no water returns coming out of the annulus. J. Brantley of YBI decides to pump 100 barrels and chase.
11:16	End cementing (103 bbls. pumped). Begin freshwater chase.
11:19	End chase, break cementing header.
11:22	Raise the tubing string and begin cleaning/flushing the cementing truck and equipment.
12:15	Waiting on cement.
13:00	Waiting on cement.
14:00	Waiting on cement.
15:00	Waiting on cement.
16:00	Waiting on cement. NOTE: Plan to tag the cement plug inside of the casing upon arrival of YBI's night crew at 1900 hours.
17:00	Update Todd Tubbert (WRS) of current status.

18:00	Waiting on cement.
18:05	Update Mark Pearce of current status.
18:30	Waiting on cement.
19:00	Todd Tubbert arrives on-site, Frank Procta leaves the site.
20:00	Hard Tag inside of casing at 2570' bpl. (10 feet of fill).
20:05	Trip out cement tubing.
21:10	Update Mark Pearce of current status.
21:30	Geophysical logger onsite to run Temperature log.
22:00	Geophysical logger down with repair to computer.
22:40	Geophysical logger's computer is repaired.
22:45	Down hole with temp. logging tool.
23:33	Temperature log complete. NOTE: estimated at 2570' bpl.
23:35	Run tool out of hole.
0:15	Begin tripping in cement tubing.
0:30	Driller not able to get tubing past elevators. Plan is to remove elevators and replace with gussets.
1:00	Welders on-site to weld gussets onto casing.
3:00	Welders continue to weld gussets onto casing.
4:00	Welders continue to weld gussets onto casing.
5:00	Begin tripping in cement tubing.
6:00	Jimmy Brantley arrives on-site.
6:15	Tubing hung up around 2040 foot bpl.
6:45	Resume tripping in remaining joints of cement tubing.
7:00	Noah Kugler on. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 6/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Attempting to work tremie down annulus to last tag depth to pump Stage 2 cement (neat). First stage to fill the annulus between the 24-inch longstring casing and the formation was tagged at 2570' bpl. Craig Boomgaard on-site for project orientation.
7:25	Noah updates Mark Pearce.
7:32	Start freshwater pre-flush for cement Stage 2.
7:34	End pre-flush (10 bbls).
7:35	Start pumping neat cement for Stage 2 (see cement log).
7:41	End pumping cement (24 bbls neat). Start chase.
7:45	End chase. Pull 3 stands of tubing (180 feet) and re-chase.
8:05	Mark approves running temperature logs every three stages when minimal fill has been made (~10 feet).
9:00	Waiting on cement.
10:05	Waiting on cement. Craig Boomgaard leaves site.
10:10	Noah collects and labels cement sample cubes from Stage 1 for future compressive strength testing. Sample cubes will be picked-up and analyzed for 28-day compressive strength by Ardaman & Associates, Inc.
11:00	Waiting on cement.
12:00	Cement samples are hard. Hard tag Stage 2 at 2555' bpl.
12:20	Waiting for Jimmy Brantley to arrive for cementing.
12:33	Start freshwater pre-flush for cement Stage 2.
12:36	End pre-flush (20 bbls). Mix cement.
12:37	Start pumping neat cement for Stage 3 (see cement log).
12:43	End pumping cement (22 bbls neat). Start chase.
12:45	End chase. Pull 2 stands of tubing (120 feet) and re-chase.
13:15	Mark calls to relay that the FDEP has approved use of cement with CaCl on future stages to decrease wait times between cement stages to approximately 4 hours, or until the cement samples have hardened.
13:30	Waiting on cement.
15:00	Frank Procta on. Noah Kugler off. Waiting on cement.
16:35	Crew begin adding joints of tubing to tag top of third-stage cement.

16:48	Hard tag top of third-stage cement at 2542 feet bpl. NOTE: Plan to pump STAGE #4 at 1800 hours.
17:00	Waiting on cement.
18:00	Waiting on cement.
18:35	Begin cementing, by tremie, STAGE #4.
18:40	End of cementing, begin freshwater chase. NOTE: Pumped 22 barrels of neat cement.
18:42	End chase.
18:43	Break cementing header, begin removing joints of cement tubing.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Waiting on cement.
21:42	Currently lowering temperature logging tool down the well.
22:00	Begin recording temperature data downhole from a starting depth of 2350 feet bpl. NOTE: Attempt to show signatures for second, third, and fourth cement stages.
22:05	Reach end of run at 2580 feet bpl. NOTE: Temperature log pick of fourth-stage cement top at 2512 feet bpl.
22:33	Logger leaves the site. Waiting on cement.
22:50	Frank Procta leaves the site.
23:10	Todd Tubbert arrives on-site.
23:40	Hard tag top of fourth-stage cement at 2527 feet bpl.
0:10	Begin cementing, by tremie, STAGE #5.
0:15	End of cementing, begin freshwater chase. NOTE: Pumped 21 barrels of neat cement.
0:18	End chase.
0:20	Trip out 2 doubles of tremie tubing.
0:30	Waiting on cement.
1:30	Waiting on cement.
2:30	Waiting on cement.
3:30	Waiting on cement.
4:30	Hard tag top of fifth-stage cement at 2508 feet bpl.
5:15	Begin cementing, by tremie, STAGE #6.
5:20	End of cementing, begin freshwater chase. NOTE: Pumped 21 barrels of neat cement.
5:23	End chase.
5:24	Trip out 2 doubles of tremie tubing.
5:30	Waiting on cement. Next cement stage is planned for 9:30.
6:00	Crew leaves the site. No site operations until morning shift at 7:00.
6:15	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Waiting to tag cement from Stage 6 to fill the annulus between the 24-inch longstring casing and the formation. Craig Boomgaard and Trika Nelson on-site. Last stage (#5) tagged at 2508 feet bpl. Next stage likely run around 9:00 - 9:30.
7:10	Noah Kugler on-site.
7:55	Noah calls Mark Pearce with update.
8:30	Waiting on cement.
9:10	Hard tag Stage 6 at 2485 feet bpl.
9:15	Begin warming up cement truck for Stage 7 cement.
9:30	Mike Sordan will direct cement operations.
9:35	Begin pumping freshwater pre-flush.
9:40	End freshwater pre-flush (20 bbls).
9:42	Start pumping neat cement for Stage 7 (see cement log).
9:46	End pumping cement (21 bbls neat). Start chase.
9:48	End chase (10.4 bbls). Pull 2 stands of tubing (120 feet).
9:52	Finish pulling 2 stands of tubing. Re-chase.
11:00	Waiting on cement.
12:00	Waiting on cement.
12:15	Geophysical logger on-site to run cement top temperature log for cement stages 5, 6 and 7.
12:20	Begin lowering temperature logging tool down the well.
12:46	Begin temperature log from 2570 feet bpl upward.
12:55	Log complete. Begin running tool out of hole.
13:10	Cement sample hard. Run tremie in to hard tag.
13:15	Stage 7 hard tagged at 2477 feet bpl.
13:30	Preparing truck for cement Stage 8. Mike Sordan will pump cement.
13:34	Begin pumping freshwater pre-flush.
13:36	End freshwater pre-flush (10 bbls).
13:40	Start pumping neat cement for Stage 8 (see cement log).
13:44	End pumping cement (21 bbls neat). Start chase.
13:46	End chase (10.4 bbls). Pull 2 stands of tubing (120 feet).
13:51	Finish pulling 2 stands of tubing. Re-chase.

15:00	Waiting on cement. Frank Procta on.
15:15	Noah Kugler off site.
16:00	Waiting on cement.
17:00	Waiting on cement.
17:05	Hard tag top of eighth-stage cement at 2470 feet bpl.
17:31	Attach cementing header to tubing string.
17:32	Pump pre-flush.
17:39	End pre-flush, begin pumping neat cement (STAGE 9).
17:44	End cementing, move to chase. NOTE: Pumped, by tremie, 22 barrels of neat cement.
17:47	End first-phase chase, remove cementing header.
17:48	Pull two doubles of cement tubing.
18:13	Re-attach the cementing header to the tubing string.
18:14	Begin second chase.
18:16	End second chase, break cementing header.
18:17	Raise tubing string.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Waiting on cement.
21:38	Hard tag top of ninth-stage cement at 2457 feet bpl.
21:47	Attach cementing header to tubing string.
21:48	Pump pre-flush.
21:49	End pre-flush.
21:53	Begin pumping neat cement (STAGE #10).
21:58	End cementing, move to chase. NOTE: Pumped, by tremie, 22 barrels of neat cement.
22:01	End first-phase chase, remove cementing header.
22:03	Pull two doubles of cement tubing.
22:14	Re-attach the cementing header to the tubing string.
22:14	Begin second chase.
22:16	End second chase, break cementing header.
22:17	Raise tubing string.
22:30	Waiting on cement. NOTE: A temperature log is planned after the tenth cementing event.
22:45	Frank Procta leaves the site.
23:00	Todd Tubbert arrives on-site.
23:30	Waiting on cement.
0:00	Geophysical logger on-site to run cement top temperature log for cement stages 8, 9 and 10.
0:20	Down hole with temp. logging tool.
0:43	Temperature log complete. NOTE: estimated at 2445' bpl.
0:45	Run tool out of hole.
1:20	Begin tripping in 2 doubles of cement tubing for hard tag.
1:30	Stage 10 hard tagged at 2440 feet bpl.

1:35	Preparing truck for cement Stage 11. Mike Sordan will pump cement.
1:56	Begin cementing, by tremie, STAGE #11. See cement log.
2:00	End of cementing, begin freshwater chase. NOTE: Pumped 21 barrels of neat cement.
2:03	End chase (10 bbls)/ Pull 2 dbls of tremie tubing.
2:21	Begin second chase.
2:24	End chase. (10 bbls)
2:30	Waiting on cement.
4:30	Waiting on cement.
5:30	Waiting on cement.
6:30	Stage 11 hard tagged at 2440 feet bpl.
6:45	Preparing truck for cement Stage 12. Mike Sordan will pump cement.
6:53	Begin cementing, by tremie, STAGE #12. See cement log.
7:00	Shift change, Noah Kugler on. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 6/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Currently pumping Stage 12 cement to fill the annulus between the 24-inch longstring casing and the formation.
7:06	End of cementing, begin freshwater chase. NOTE: Pumped 25 barrels of neat cement.
7:08	End chase (10.4 bbls). Pull 2 dbls of tremie tubing (120 feet). Flush cement lines, discharging into the containment pad.
7:13	Begin second chase.
7:15	End second chase (10 bbls).
8:00	Waiting on cement. Noah calls Mark Pearce with update.
9:00	Waiting on cement.
10:00	Waiting on cement.
10:35	Hard tag Stage 12 at 2439 feet bpl. (1 foot of fill).
10:55	Begin warming up cement truck for Stage 13 cement. Mike Sordan will direct cement operations.
11:12	Begin pumping freshwater pre-flush.
11:15	End freshwater pre-flush (10 bbls).
11:16	Start pumping neat cement for Stage 13 (see cement log).
11:21	End pumping cement (24 bbls neat). Start chase.
11:24	End chase (10.4 bbls). Pull 2 stands of tubing (120 feet).
11:29	Finish pulling 2 stands of tubing. Re-chase.
12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Waiting on cement. Noah coordinates swing shift transition with Frank Procta.
14:40	Noah leaves site to deliver caliper/gamma logs to WRS office for forwarding to the FDEP. Frank Procta will be on-site before 15:00. Cement top temperature log for stages 11, 12 and 13 will be started at 15:00.
14:55	Frank Procta arrives on-site. Current ops. : Loggers prepare to conduct temperature log for stages 11, 12, and 13.
15:03	Lower the temperature tool down the well.
15:11	Begin recording temperature data downhole from approx. 2200 feet bpl.

15:14	Reach the end of run at approx. 2480 feet bpl., retrieve the tool.
15:32	Hard tag top of thirteenth-stage cement at 2430 feet bpl.
15:43	Attach cementing header to tubing string.
15:45	Pump pre-flush.
15:48	End pre-flush, begin mixing cement.
15:51	Begin pumping neat cement (STAGE #14).
15:56	End cementing, move to chase. NOTE: Pumped, by tremie, 23 barrels of neat cement.
15:59	End first-phase chase, remove cementing header.
16:00	Pull two doubles of cement tubing.
16:20	Re-attach the cementing header to the tubing string.
16:21	Begin second chase.
16:22	End second chase, break cementing header.
16:24	Raise tubing string.
20:01	Hard tag top of fourteenth-stage cement at 2406 feet bpl.
20:10	Attach cementing header to tubing string.
20:11	Pump pre-flush.
20:13	End pre-flush, begin mixing cement.
20:16	Begin pumping neat cement (STAGE #15).
20:22	End cementing, move to chase. NOTE: Pumped, by tremie, 31 barrels of neat cement.
20:24	End first-phase chase, remove cementing header.
20:26	Pull two doubles of cement tubing.
20:40	Re-attach the cementing header to the tubing string.
20:41	Begin second chase.
20:43	End second chase, break cementing header.
20:44	Raise tubing string.
21:00	Waiting on cement.
21:30	Waiting on cement.
21:35	Frank Procta leaves the site.
23:00	Todd Tubbert On-site.
23:05	Waiting on cement.
0:00	Waiting on cement.
0:40	Hard tag top of 15th-stage cement at 2399 feet bpl.
0:46	Pump pre-flush.
1:02	Begin pumping neat cement (STAGE #16).
1:07	End cementing, move to chase. NOTE: Pumped, by tremie, 21 barrels of neat cement.
1:09	End first-phase chase, remove cementing header.
1:11	Pull two doubles of cement tubing.
1:34	End 2nd phase chase.
1:40	Waiting on cement.
3:30	Waiting on cement.
4:15	Geophysical logger on-site to run temp log for STAGES 14, 15 and 16.

4:30	Lower the temperature tool down the well.
4:40	Begin recording temperature data downhole from approx. 2200 feet bpl.
4:45	Reach the end of run at approx. 2450 feet bpl., retrieve the tool.
5:04	Hard tag top of sixteenth-stage cement at 2398 feet bpl.
5:11	Pump pre-flush.
5:16	Begin pumping neat cement (STAGE #17).
5:19	End cementing, move to chase. NOTE: Pumped, by tremie, 13 barrels of neat cement.
5:21	End first-phase chase, remove cementing header.
5:25	Pull two doubles of cement tubing.
5:39	End 2nd phase chase.
5:45	Waiting on cement.
6:00	Waiting on cement.
6:15	Todd Tubbert leaves the site.
7:00	Noah Kugler on.

WATER RESOURCE SOLUTIONS

Date: 6/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting to hard tag cement Stage 17 to fill the annulus between the 24-inch longstring casing and the formation. Stage 16 was tagged at 2398 feet bpl.
7:40	Noah leaves update for Mark Pearce.
7:55	Phone service is still down. YBI will send technician to assess problem. Sprint has determined that the problem lies in YBI's lines and may be due to wires getting wet when it rains.
8:00	Waiting on cement.
9:17	Hard tag Stage 17 at 2398 feet bpl. (no fill).
9:20	Begin warming up cement truck for Stage 18 cement. Mike Sordan will direct cement operations. Test cement lines with water pressure.
9:29	Begin pumping freshwater pre-flush.
9:32	End freshwater pre-flush (10 bbls). Start mixing cement
9:35	Start pumping neat cement for Stage 18 (see cement log).
9:39	End pumping cement (12 bbls neat). Start chase.
9:42	End chase (10 bbls). Pull 2 stands of tubing (120 feet).
9:49	Finish pulling 2 stands of tubing. Re-chase.
10:00	Waiting on cement.
11:00	Waiting on cement. Contractor begins re-purging PMW-4.
12:00	Waiting on cement.
12:10	YBI electricians on-site to repair phone lines.
13:00	Waiting on cement.
13:20	Hard tag Stage 18 at 2398 feet bpl. No fill.
13:40	Begin warming up cement truck for Stage 19 cement. Mike Sordan will direct cement operations.
13:46	Begin pumping freshwater pre-flush.
13:49	End freshwater pre-flush (10 bbls). Start mixing cement
13:54	Start pumping neat cement for Stage 19 (see cement log).
13:57	End pumping cement (15 bbls neat). Start chase.
13:59	End chase (10 bbls). Pull 2 stands of tubing (120 feet).
14:04	Finish pulling 2 stands of tubing. Re-chase.
15:00	Waiting on cement. Frank Procta on. Noah Kugler off.

15:30	Waiting on cement.
16:10	Run temperature logging tool down the well.
16:18	Begin recording data downhole from 2290 feet bpl. NOTE: Temperature log run for cement stages 17, 18, and 19.
16:22	Begin retrieving the temperature tool.
16:32	Out of the well with tool. NOTE: Top of nineteenth cement stage based on the temperature log picked at 2380 feet bpl.
17:37	Hard tag top of nineteenth-stage cement at 2384 feet bpl.
17:45	Attach cementing header to tubing string.
17:50	Pump pre-flush.
17:53	End pre-flush, begin mixing cement.
18:07	Begin pumping neat cement (STAGE #20).
18:13	End cementing, move to chase. NOTE: Pumped, by tremie, 31 barrels of neat cement.
18:15	End first-phase chase, remove cementing header.
18:16	Pull two doubles of cement tubing.
18:32	Re-attach the cementing header to the tubing string.
18:33	Begin second chase.
18:35	End second chase, break cementing header.
18:36	Raise tubing string.
19:00	Waiting on cement.
20:00	Waiting on cement.
22:09	Hard tag top of twentieth-stage cement at 2368 feet bpl. NOTE: Over 200 feet of vertical fill, from the base of the casing upward, have been made using neat cement only with no CaCl. Cement cube samples have been collected for all stages so far and should be tested for 72 hour and 28 day compressive strength.
22:17	Attach cementing header to tubing string.
22:18	Pump pre-flush.
22:20	End pre-flush, begin mixing cement.
22:24	Begin pumping neat cement (STAGE #21).
22:30	End cementing, move to chase. NOTE: Pumped, by tremie, 31 barrels of neat cement.
22:32	End first-phase chase, remove cementing header.
22:33	Pull two doubles of cement tubing.
22:50	Re-attach the cementing header to the tubing string.
22:51	Begin second chase.
22:53	End second chase, break cementing header.
22:54	Raise tubing string.
23:00	Todd Tubbert arrives on-site. Waiting on cement.
23:30	Frank Procta leaves the site.
0:00	Waiting on cement.
1:00	Waiting on cement.
2:15	Hard tag top of 21st-stage cement at 2344 feet bpl.

2:25	Pump pre-flush.
2:31	Begin pumping neat cement (STAGE #22).
2:40	End cementing, move to chase. NOTE: Pumped, by tremie, 36 barrels of neat cement.
2:42	End first-phase chase, remove cementing header.
2:45	Pull two doubles of cement tubing.
3:07	End 2nd phase chase.
4:00	Waiting on cement.
5:00	Waiting on cement.
5:45	Geophysical logger on-site to run temp log for STAGES 20, 21 and 22.
5:57	Lower the temperature tool down the well.
6:07	Begin recording temperature data downhole from approx. 2200 feet bpl.
6:11	Reach the end of run at approx. 2430 feet bpl., retrieve the tool.
6:30	In attempt to hard tag Stage 22, tremie is prevented from descending down hole.
7:00	Contractor working to free tremie tubing and hard tag Stage 22 cement.

Week 20

WATER RESOURCE SOLUTIONS

Date: 6/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	While attempting to hard tag cement Stage 22, to fill the annulus between the 24-inch longstring casing and the formation, the cement tremie has become stuck and can't be lowered below 2050 feet bpl. The Contractor will trip out tremie, check it, and attempt to trip back in to tag.
7:30	Continue tripping out tremie tubing. Note: Contractor theorizes that the tubing had worked it's way around the casing, causing it to stick.
7:45	Todd Tubbert leaves the site. Noah Kugler on.
8:00	Contractor tripping out cement tremie.
9:00	Continue tripping out tremie tubing
9:40	Tremie has been tripped out. The lower 4 joints of tremie are bent badly. It appears that too much weight was lowered onto the tubing during a hard tag, causing the bending to occur.
9:50	The bent tremie has been replaced. Begin tripping back in hole. Perform new tubing tally to include replaced joints as tripping in.
10:45	Hard tag Stage 22 at 2330 feet bpl (14 feet of fill).
10:50	Warming up cement truck. Pressure test lines.
10:55	Noah updates Mark Pearce. Mark verifies that it is OK to use bentonite in the future cement mixtures for the 24-inch casing.
11:00	Cement truck is ready to go. Waiting on Mike Sordan to cement.
11:35	Mike Sordan on-site to pump cement Stage 23.
11:39	Start freshwater flush.
11:41	Finish freshwater flush (10 bbls). Begin mixing cement with 12% bentonite gel and 3% CaCl.
11:42	Begin pumping Stage 23 cement (12% bentonite and 3% CaCl). See cement log. NOTE: 1st stage to use any additives, i.e. bentonite, CaCl. Neat cement has been placed from the base of the casing upward to 2330 feet bpl (235 feet) with a plug left inside the casing (~5 to 10 feet).
11:47	Finish pumping cement (22 bbls). Switch to freshwater chase.
11:50	Freshwater chase complete (9.75 bbls). Disconnect header, pull 2 doubles of tremie tubing (120 feet), and flush lines.
11:56	Reattach header and re-chase.
11:59	Re-chase complete. Pull up tubing 90 feet.

13:00	Waiting on cement.
14:00	Waiting on cement.
15:00	Waiting on cement. Frank Procta on.
15:20	Noah Kugler off.
16:00	Waiting on cement.
16:50	Hard tag Stage 23 at 2313 feet bpl (17 feet of fill).
17:00	Attach cementing header to tubing string.
17:02	Pump pre-flush.
17:03	End pre-flush, begin mixing cement.
17:04	Begin pumping neat cement (STAGE #24).
17:09	End cementing, move to chase. NOTE: Pumped, by tremie, 21 barrels of cement mixed w/ 12% gel and CaCl accelerator.
17:11	End first-phase chase, remove cementing header.
17:12	Pull two doubles of cement tubing.
17:25	Re-attach the cementing header to the tubing string.
17:25	Begin second chase.
17:27	End second chase, break cementing header.
17:28	Raise tubing string.
17:30	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Waiting on cement.
21:30	Waiting on cement.
21:55	Hard tag Stage 24 at 2301 feet bpl (12 feet of fill).
22:03	Attach cementing header to tubing string.
22:05	Pump pre-flush.
22:06	End pre-flush, begin mixing cement.
22:11	Begin pumping neat cement (STAGE #25).
22:17	End cementing, move to chase. NOTE: Pumped, by tremie, 31 barrels of cement mixed w/ 12% gel and CaCl accelerator.
22:19	End first-phase chase, remove cementing header.
22:20	Pull two doubles of cement tubing.
22:36	Re-attach the cementing header to the tubing string.
22:37	Begin second chase.
22:39	End second chase, break cementing header.
22:40	Raise tubing string.
22:50	Omar Rodriguez arrives on-site.
23:00	Waiting on cement.
23:20	Frank Procta leaves the site.
0:00	Waiting on cement.
0:45	Geophysical Logger on-site.
0:56	Run temperature logging tool down the well.
1:00	Begin recording temperature data downhole from 2146 feet bpl.

1:05	Reach the end of run at 2405 feet bpl. Note: Top of cement estimated at 2280 feet bpl.
1:06	Begin retrieving the temperature tool.
1:15	Out of the well with temperature tool.
2:00	Trying to hard tag stage 25.
3:00	Still trying to hard tag stage 25.
3:26	Attach cementing header to tubing string to flush and get the actual top of cement.
3:28	Hard tag stage 25 at 2253 feet bpl. NOTE: Actual footage for this stage is higher than the theoretical footage.
3:30	Pre-flush is completed (33 bbls).
3:35	Begin pumping stage 26 cement (12% bentonite and 3% CaCl).
3:40	End cementing (13 bbls), move to chase.
3:41	End first-phase chase (9.5 bbls), remove cementing header.
3:43	Pull two doubles of cement tubing.
3:58	Re-attach the cementing header to the tubing string.
4:00	Begin second chase.
4:02	End second chase (10 bbls), break cementing header.
4:05	Raise tubing string.
5:00	Waiting on cement.
6:00	Waiting on cement.
6:40	Trika Nelson arrives on-site.
7:00	Omar Rodriguez leaves the site

WATER RESOURCE SOLUTIONS

Date: 6/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson arrives on-site.
7:00	Omar Rodriguez leaves the site
8:15	Driller is unable to get hard tag. Going to trip out all tubing, YBI crew believes some stands maybe bent.
9:20	Finished tripping out all tubing. Upper 3 double stands are all bent.
10:00	Begin to trip tubing back in hole.
11:15	Still tripping in tubing.
12:15	Measuring out new tally with four new 30' stands of tubing.
12:30	Tag cement stage 26 at 2301 feet bpl. Flushing tubing.
12:38	Finish flushing tubing.
13:00	Waiting for cementer to show up to site.
13:50	Mike Sordan on site.
14:04	Start freshwater flush.
14:08	Finish freshwater flush (15 bbls). Begin mixing cement with 12% bentonite gel and 3% CaCl.
14:09	Begin pumping Stage 27 cement (12% bentonite and 3% CaCl). See cement log.
14:15	Finish pumping cement (32 bbls). Switch to freshwater chase.
14:17	Freshwater chase complete (10 bbls). Disconnect header, pull 1 double of tremie tubing (120 feet), and flush lines.
14:30	Reattach header and re-chase.
14:32	Re-chase complete. Pull up tubing 90 feet.
15:00	Waiting on cement.
16:00	Waiting on cement.
17:00	Waiting on cement.
18:00	Waiting on cement.
18:35	Tag cement stage 27 at 2261 feet bpl.
18:47	Omar Rodriguez on site.
18:58	Attach cementing header to tubing string for pre-flush.
19:00	Start freshwater flush. Trika Nelson off site.
19:02	Pre-flush is completed (10 bbls). Begin mixing cement.
19:03	Begin pumping stage 28 cement (12% bentonite and 3% CaCl).

19:09	End cementing (32 bbls), move to chase.
19:11	End first-phase chase (9.5 bbls), remove cementing header.
19:13	Pull one double of cement tubing.
19:23	Re-attach the cementing header to the tubing string.
19:24	Begin second chase.
19:26	End second chase (10 bbls), break cementing header.
19:28	Raise tubing string.
20:00	Waiting on cement.
21:00	Waiting on cement.
22:00	Waiting on cement.
22:40	Geophysical logger on-site.
22:54	Run temperature logging tool down the well.
23:06	Begin recording data downhole from 2148 feet bpl.
23:09	Reach the end of run at 2354 feet bpl. Note: Top of cement estimated at 2250 feet bpl.
23:11	Begin retrieving the temperature tool.
23:17	Out of the well with temperature tool.
23:35	Hard tag stage 29 at 2244 feet bpl.
23:43	Attach cementing header to tubing string for pre-flush.
23:45	Start freshwater flush.
23:48	Pre-flush is completed (10 bbls). Begin mixing cement.
0:03	Begin pumping stage 28 cement (12% bentonite and 3% CaCl).
0:10	End cementing (32 bbls), move to chase.
0:12	End first-phase chase (9.5 bbls), remove cementing header.
0:13	Pull one double of cement tubing.
0:28	Re-attach the cementing header to the tubing string.
0:30	Begin second chase.
0:32	End second chase (10 bbls), break cementing header.
0:33	Raise tubing string.
1:00	Waiting on cement.
2:00	Waiting on cement.
3:00	Waiting on cement.
4:00	Waiting on cement.
5:00	Waiting on cement.
6:00	Waiting on cement.
6:40	Trika Nelson arrives on-site.
7:00	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson arrives on-site.
7:00	Omar Rodriguez leaves the site. Tag cement stage 29 at 2234 feet bpl.
7:16	Start freshwater flush.
7:19	Pre-flush is completed (10 bbls). Begin mixing cement.
7:19	Begin pumping stage 30 cement (12% bentonite and 3% CaCl).
7:25	End cementing (31 bbls), move to chase.
7:27	End first-phase chase (9.5 bbls), remove cementing header.
7:28	Pull one double of cement tubing.
7:39	Re-attach the cementing header to the tubing string.
7:40	Begin second chase.
7:42	End second chase (10 bbls), break cementing header.
8:00	Waiting on cement.
9:00	Waiting on cement.
10:00	Waiting on cement.
11:00	Waiting on cement.
11:25	Tag cement stage 30 at 2233 feet bpl. (1 foot of fill)
11:30	Mike Sordan on site.
11:45	Start freshwater flush.
11:48	Pre-flush is completed (10 bbls). Begin mixing cement.
11:49	Begin pumping stage 31 cement (12% bentonite and 3% CaCl).
11:52	End cementing (16 bbls), move to chase.
11:54	End first-phase chase (9.5 bbls), remove cementing header.
11:56	Pull one double of cement tubing.
12:07	Re-attach the cementing header to the tubing string.
12:08	Begin second chase.
12:10	End second chase (10 bbls), break cementing header.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:45	Logger on site.
14:50	Run temperature logging tool down the well.
14:57	Begin recording data downhole from 2148 feet bpl.

15:07	Reach the end of run at 2350 feet bpl. Note: Top of cement estimated at 2128 feet bpl.
15:10	Begin retrieving the temperature tool.
15:20	Out of the well with temperature tool.
15:30	Tag cement stage 31 at 2232 feet bpl. (1 foot of fill)
15:39	Start freshwater flush.
15:41	Pre-flush is completed (10 bbls). Begin mixing cement.
15:42	Begin pumping stage 32 cement (12% bentonite and 3% CaCl).
15:45	End cementing (13 bbls), move to chase.
15:47	End first-phase chase (9.5 bbls), remove cementing header.
15:48	Pull one double of cement tubing.
16:00	Re-attach the cementing header to the tubing string.
16:01	Begin second chase.
16:03	End second chase (10 bbls), break cementing header.
17:00	Waiting on cement.
18:00	Waiting on cement.
18:40	Omar Rodriguez on site.
19:00	Trika Nelson leaves the site.
19:15	Hard tag stage 32 at 2223 feet bpl.
19:23	Attach cementing header to tubing string for pre-flush.
19:26	Start freshwater flush.
19:28	Pre-flush is completed (10 bbls). Begin mixing cement.
19:31	Begin pumping stage 33 cement (12% bentonite and 3% CaCl).
19:38	End cementing (30 bbls), move to chase.
19:40	End first-phase chase (9.5 bbls), remove cementing header.
19:42	Pull one double of cement tubing.
19:52	Re-attach the cementing header to the tubing string.
19:53	Begin second chase.
19:55	End second chase (10 bbls), break cementing header.
19:56	Raise tubing string.
21:00	Waiting on cement.
22:00	Waiting on cement.
23:00	Waiting on cement.
23:15	Cementer pump motor is broken down. Crew go out to find replacement parts to get it fixed for Cementing Stage 34.
2:30	Cementer is fixed. Start uploading cementer for Stage 34.
3:50	Hard tag stage 32 at 2210 feet bpl.
3:55	Attach cementing header to tubing string for pre-flush.
3:56	Start freshwater flush.
3:58	Pre-flush is completed (10 bbls). Begin mixing cement.
4:01	Begin pumping stage 34 cement (12% bentonite and 3% CaCl).
4:07	End cementing (31 bbls), move to chase.
4:09	End first-phase chase (9.5 bbls), remove cementing header.
4:11	Pull one double of cement tubing.

4:23	Re-attach the cementing header to the tubing string.
4:24	Begin second chase.
4:26	End second chase (10 bbls), break cementing header.
4:27	Raise tubing string.
5:00	Waiting on cement.
6:00	Waiting on cement.
7:00	Noah Kugler on-site. Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting to run temperature log for cement Stages 32, 33 and 34 to fill the annulus between the 24-inch longstring casing and the formation. Stage 33 was hard tagged at 2210 feet bpl. Stage 34 was pumped at 4:00 this morning and the cement samples are still soft.
7:55	Call Mark Pearce with update. Mark relays that the FDEP has approved use of gravel at this point in areas where little (<2 feet) to no fill is made. Graveled areas should be "capped" with single cement stages at intervals where the borehole diameter is smaller.
8:35	Geophysical logger (Joel Barrett) is on-site to run temperature log.
8:47	Run temperature tool in hole.
9:00	Tool is at 2000 feet bpl. Start cement-top-temperature log for Stages 32, 33 and 34 downward.
9:03	Temperature log complete to 2310 feet bpl. Run tool out of hole. Cement top pick from temperature log is approximately 2180 feet bpl, although it is likely closer to 2200 feet bpl based on theoretical fill from past stages.
9:30	Hard tag Stage 34 at 2197 feet bpl.
9:35	Mike Sordan prepares cement truck and tests lines from truck to wellhead.
9:40	Attach cement header to tremie line.
9:41	Start freshwater pre-flush.
9:43	Pre-flush is completed (10 bbls). Begin mixing cement.
9:45	Begin pumping stage 35 cement using 12% bentonite and 3% CaCl cement (See cement log).
9:51	End cementing (31 bbls), move to chase.
9:53	End first-phase chase (9.5 bbls), remove cementing header.
9:54	Pull one double and one single joint of cement tubing.
10:05	Reattach header and re-chase.
10:10	End re-chase (9.5 bbls), remove cementing header.
10:12	Pull up tubing 90 feet.
11:00	Waiting on cement.
12:00	Waiting on cement.
13:00	Waiting on cement.

13:15	Cement sample is hard after 3 hours and 15 minutes. Hard tag Stage 35 at 2188 feet bpl.
13:20	Mike Sordan prepares cement truck and tests lines from truck to wellhead.
13:24	Attach cement header to tremie line.
13:25	Start freshwater pre-flush.
13:27	Pre-flush is completed (10 bbls). Begin mixing cement.
13:29	Begin pumping stage 36 cement using 12% bentonite and 3% CaCl cement (See cement log).
13:33	End cementing (31 bbls), move to chase.
13:35	End first-phase chase (9.5 bbls), remove cementing header. Pull one double and one single joint of cement tubing.
13:43	Reattach header and re-chase.
13:45	End re-chase (9.5 bbls), remove cementing header. Pull up tubing 80 feet.
14:00	Waiting on cement.
14:35	Trika Nelson on-site.
15:07	Noah Kugler off. Waiting on cement.
16:00	Waiting on cement.
17:00	Waiting on cement.
18:00	Waiting on cement.
18:20	Tag cement stage 36 at 2186 feet bpl. (2 feet of fill)
18:30	YBI crew setting up to pump gravel.
18:40	YBI crew begins to pump gravel.
18:55	Starter on pump bad. Hooking up to a different pump.
19:20	New pump hooked up; resume pumping gravel.
20:30	Still pumping first bucket of gravel.
21:20	Finished pumping first bucket of gravel. Start pumping second bucket.
22:00	Still pumping second bucket of gravel.
22:30	Still pumping second bucket of gravel.
22:43	Omar Rodriguez on site.
23:00	Trika Nelson leaves the site.
22:50	Finished pumping second bucket of gravel.
22:55	Hard tag top of gravel at 2186 feet bpl (top of cement). NOTE: 0 foot of fill was obtained with two buckets of gravel (216 cubic feet).
23:04	Start pumping third bucket of gravel.
0:05	Finished pumping third bucket of gravel.
0:06	Start pumping fourth bucket of gravel.
1:15	Finished pumping fourth bucket of gravel.
1:16	Start pumping fifth bucket of gravel.
2:33	Finished pumping fifth bucket of gravel.
2:40	Start flushing the tubing to tag top of gravel.
2:55	Hard tag top of gravel at 2186 feet bpl (top of cement). NOTE: 0 foot of fill have been obtained after a total of five buckets of gravel (540 cubic feet).
3:02	Start pumping sixth bucket of gravel.

4:16	Finished pumping sixth bucket of gravel.
4:17	Start pumping seventh bucket of gravel.
4:20	The gravel is stuck in the tubing. Contractor starts pulling out doubles of tubing and trying to get the remainder line of tubing flushed by pumping water. A total of 31 doubles was tripped out of the well before the tubing was completely cleaned. A battery was found stuck in the tubing.
5:25	Begin tripping back in the well.
6:21	Tripping in the well is completed.
6:36	Resume pumping gravel.
6:45	Currently pumping seventh bucket of gravel.
7:00	Noah Kugler on-site. Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently pumping 7th loader of gravel to fill an interval from 2186 to 2160 in the annulus between the 24-inch casing and an enlarged area of the borehole. Theoretical fill for that interval is approximately 62 barrels or 348 cubic feet or 3.25 loaders-full. A single cement cap will be placed on top of the gravel once the hole has been filled with gravel to approximately 2160 feet bpl.
8:15	A total of 7.5 loaders-full of gravel have been pumped. Carefully tag gravel at 2160 feet bpl by monitoring flow rate through tremie while working down and picking up tremie through gravel (flow rate decreases when tremie is actually in gravel).
8:20	Noah updates Mark Pearce with gravel-fill progress and cement plan.
8:25	Jimmy Brantley (YBI) setting up cement truck to place a cement "cap" on top of the graveled area.
8:35	Cement header attached to tremie.
8:44	Start freshwater pre-flush.
8:46	Pre-flush is completed (8 bbls). Begin mixing neat cement.
8:48	Begin pumping stage 37 cement using neat cement (See cement log).
8:51	End cementing (13 bbls), move to chase.
8:54	End first-phase chase (9 bbls), remove cementing header.
8:55	Pull one double and one single joint of cement tubing.
9:00	Reattach header and re-chase.
9:02	End re-chase (9 bbls), remove cementing header.
9:04	Pull up tubing 90 feet. Approval has been given by Mark Pearce to YBI to pump enough gravel to come up to approximately 2120 feet bpl (base of extensively enlarged area). A cement "cap" will be pumped at that point in an effort to stabilize the gravel.
10:00	Waiting on cement.
10:10	Representative from Ardaman Labs (Jessie) on-site to pick-up cement cubes (stages 1 through 35) to be tested for 28-day compressive strength.
10:55	Mark Pearce on-site for progress meeting with Noah and Ronnie Thames.
11:00	Waiting on cement.
12:00	Waiting on cement.

13:15	Hard tag Stage 37 cement at 2172 feet bpl (net loss of 10 feet due to re-settling of gravel).
13:20	Contractor prepares to pump gravel. Current plans call for pumping gravel to approximately 2120 feet bpl, followed by two consecutive stages of cement to stabilize the gravel. Further gravel will likely be pumped to fill an enlarged borehole area from 2120 to 2050 feet bpl, followed by two consecutive stages of cement as stabilization.
14:10	Unload 1st loader of gravel into trough since tagging cement . Resume pumping gravel.
14:35	Trika Nelson on-site.
15:00	Noah Kugler off. Unload 2nd loader of gravel since cement tag.
15:15	Still pumping 2nd loader of gravel since tagging cement.
15:50	Start pumping monitor well #4. Note: YBI crew will be pumping well through the night.
16:00	NCWRF site is experiencing electrical problems. Electricity is flicking on and off.
17:00	Still working on 2nd bucket of gravel since tag due to electrical problems.
17:42	2nd bucket of gravel pumped. Begin pumping 1st bucket on swing shift.
18:50	Start to pump 1st bucket of gravel on swing shift.
19:20	Still pumping 1st swing shift bucket.
20:30	Finish pumping 1st bucket. Begin pumping 2nd bucket.
21:30	Finish pumping 2nd bucket. Begin pumping 3rd bucket.
21:50	Replacing suction flange on pump.
22:00	Resume pumping 3rd bucket on swing shift.
22:35	Still pumping 3rd bucket on swing shift. Crew having plugging problems.
22:45	Omar Rodriguez on site.
23:00	Trika Nelson leaves the site.
23:05	Finish pumping third bucket on swing shift. Begin pumping first bucket on night shift.
0:10	Replacing valve on pump.
0:25	Resume pumping first bucket on night shift.
0:50	Still pumping first bucket on night shift. Around 75% is completed. Stop to tag top of gravel.
0:56	Hard tag gravel at 2142 feet bpl. No flow is observed through tremie while working down and picking up tremie through gravel. According to the theoretical, around 3 buckets are needed to reach the depth (2120 feet bpl) for the next cement stage ("cement cap"). YBI crew has been advised accordingly.
1:03	Resume pumping first bucket on night shift.
1:12	Finish pumping first bucket on night shift. Begin pumping second bucket on night shift.
2:25	Finish pumping second bucket on night shift.

2:30	Hard tag gravel at 2135 feet bpl. A single tubing is attached to the tremie, the 2120 feet bpl depth is marked on the tubing, so YBI crew is going to stop when they reach that depth.
2:35	Begin pumping third bucket on night shift.
3:30	Pumping third bucket on night shift.
4:05	The gravel is stuck in the tremie. Contractor starts to trip the tubing out of the hole to get the tremie ready to pump through.
6:25	Trip out of the hole is completed. Tremie tubing has been flushed completely.
6:30	Begin trip back in the well.
6:48	Continue tripping out tremie tubing.
6:50	Frank Procta on-site.
7:00	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Frank Procta arrives on-site. Current ops. : Crew continue tripping in cement tubing in preparation for resuming gravel pumping operations.
7:00	Omar Rodriguez leaves the site.
7:30	Continue tripping in the cement tubing.
8:10	Tag top of gravel at 2141 feet bpl. NOTE: Lost six feet based on the last recorded gravel tag at 2135 feet bpl.
8:20	Update Mark Pearce of progress.
8:25	Resume gravel pumping operations.
9:30	Pick up second load of gravel for the day.
9:40	Continue gravel pumping operations.
10:14	Pick up third load of gravel for the day.
10:20	Currently pumping the third load of gravel for the day shift.
11:14	Attempt to tag top of gravel. NOTE: Ronnie of YBI believes the cement tubing string is plugged off.
11:22	Remove pumping hose from the top of cement tubing string.
11:24	Begin removing joints of cement tubing while flowing water in an effort to unplug the string.
13:00	Currently tripping in joints of cement tubing in preparation for tagging gravel top. NOTE: Tubing string has been cleared after being tripped out.
13:30	Continue tripping in joints of cement tubing.
14:15	Tag top of gravel at 2121 feet bpl. NOTE: Plan to resume cementing operations. Pumped approximately 2.25 loads (243 cubic feet) of gravel on today's day shift.
14:30	Waiting on cementer.
14:35	Trika Nelson arrives on-site.
14:55	Frank Procta leaves the site.
15:00	Jimmy Brantley on site.
15:04	Pump pre-flush.
15:06	End pre-flush, begin mixing cement.
15:06	Begin pumping neat cement (STAGE #38).
15:09	End cementing, move to chase. NOTE: Pumped, by tremie, 10 barrels of cement mixed w/ 12% gel and CaCl accelerator.

15:11	End first-phase chase, remove cementing header.
15:12	Pull one doubles of cement tubing.
15:16	Re-attach the cementing header to the tubing string.
15:17	Begin second chase.
15:19	End second chase, break cementing header.
16:00	Waiting on cement.
17:00	Waiting on cement.
17:35	Test pad monitor well 4, chlorides at 195 mg/L. Trika Nelson advised YBI crew to pump for 24 more hours.
18:00	Try to tag cement stage 38. Unable to tag, probably bent pipe; currently tripping all tubing out of hole.
19:30	Done tripping tubing out of hole. No bent tubing. Tubing probably was getting caught on a ledge. Begin to trip tubing back in hole.
20:50	Tag cement Stage 38 tagged at 2124 feet bpl. Net loss of 3 feet.
21:25	Jimmy Brantley on site.
21:34	Pump pre-flush. (12 bbls)
21:37	End pre-flush, begin mixing cement.
21:37	Begin pumping neat cement (STAGE #39).
21:41	End cementing, move to chase. NOTE: Pumped, by tremie, 20 barrels of cement mixed w/ 12% gel and CaCl accelerator.
21:45	Not going to flush. Experiencing extremely high pressures. Going to trip all tubing back out of the hole and check to see if any are plugged or tubing is bent. .
22:30	Tripping tubing out of hole.
22:40	Finished tripping tubing out of hole. Waiting on cement.
22:45	Omar Rodriguez on-site.
23:00	Trika Nelson leaves the site.
23:30	Waiting on cement.
0:05	Begin tripping tremie in the hole.
1:10	Tripping tremie in the hole has been completed. Waiting on cement.
2:35	Tag cement Stage 39 tagged at 2124 feet bpl (0 foot of fill).
2:40	Call Mark Pearce to make a decision about future operations. Mark decides to pump 10 additional barrels of cement. Waiting on Jimmy Brantley to pump cementing stage 40.
3:25	Jimmy Brantley on site.
3:26	Start freshwater flush.
3:28	Pre-flush is completed (10 bbls). Begin mixing cement.
3:29	Begin pumping stage 40 cement (12% bentonite and 3% CaCl).
3:31	End cementing (10 bbls), move to chase.
3:33	End first-phase chase (9.5 bbls), remove cementing header.
3:34	Pull one double of cement tubing.
3:40	Re-attach the cementing header to the tubing string.
3:41	Begin second chase.

3:43	End second chase (10 bbls), break cementing header.
3:44	Raise tubing string.
4:00	Waiting on cement.
5:00	Waiting on cement.
6:00	Waiting on cement.
6:45	Waiting on cement.
6:50	Frank Procta on-site.
7:00	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
O. Rodriguez
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Frank Procta arrives on-site. Current ops. : Prepare to tag top of cement (STAGE #40).
7:00	Omar Rodriguez leaves the site.
7:10	Crew tripping in cement tubing.
7:30	Hard tag top of STAGE #40 at 2124 feet bpl. NOTE: The last three cement stages (#38-#40) resulted in no fill.
7:42	Update Mark Pearce of last tag result. Mark gives the OK to resume gravel pumping operations.
8:00	Currently pumping gravel. NOTE: Pumping the first load of gravel (3/4 load) for the day shift.
8:20	Pick up second load of gravel for the day shift.
9:02	Pick up third load of gravel for the day shift.
9:25	Currently pumping water to clear line.
9:40	Update Mark Pearce of current status.
10:00	Currently pumping gravel.
10:10	Titrate water sample (re-sampling of PMW-4) for chlorides and record.
11:30	Continue pumping gravel.
13:00	Continue pumping gravel.
13:35	Pick up fourth load of gravel for the day shift.
14:25	Continue pumping gravel.
14:33	Pick up fifth load of gravel for the day shift. NOTE: Currently pumping the fourth load of gravel for the day shift.
14:40	Trika Nelson arrives on-site.
14:50	Frank Procta leaves the site.
15:20	Pick up 6th load of gravel. Currently pumping 5th load of gravel.
17:00	Pick up 7th load of gravel. Currently pumping 6th load of gravel.
17:55	Pick up 8th load of gravel. Currently pumping 7th load of gravel.
18:20	Tag gravel at 2118 feet bpl. (poor tag)
18:35	Currently pumping 1st load of gravel.
19:30	Still pumping 1st bucket.
19:50	Pick up 2nd bucket since tag.
20:00	Pumping 2nd bucket since tag. Pick up 3rd bucket since tag.

21:07	Pick up 4th bucket since tag. Currently pumping 3rd bucket.
22:00	Replacing damaged hose.
22:15	Hose replaced. Begin pumping 4th bucket of gravel.
22:50	Omar Rodriguez on site.
23:05	Pick up 5th bucket of gravel. Currently pumping 4th bucket.
23:20	Begin pumping 5th bucket of gravel.
23:41	Pick up 6th bucket of gravel. Currently pumping 5th bucket.
0:10	Begin pumping 6th bucket of gravel.
0:45	Pumping 6th is completed. Stop pumping gravel to fix water pump. Pump is leaking a lot of water, YBI has the spare part on-site.
1:20	Pick up 7th bucket of gravel. Still working on pump.
1:33	Pump fixed. Resume pumping gravel. Begin pumping 7th bucket of gravel.
1:50	Pick up 8th bucket of gravel. Currently pumping 7th bucket.
2:30	Begin pumping 8th bucket of gravel.
2:45	Pick up 9th bucket of gravel. Currently pumping 8th bucket.
3:15	Begin pumping 9th bucket of gravel.
3:45	Pick up 10th bucket of gravel. Currently pumping 9th bucket.
4:00	Begin pumping 10th bucket of gravel.
4:58	Pick up 11th bucket of gravel. Currently pumping 10th bucket. According to YBI no significant filling has been obtained so far, that is why the top of the gravel has not been tagged during the night shift.
5:10	Begin pumping 11th bucket of gravel.
5:50	Pick up 12th bucket of gravel. Currently pumping 11th bucket.
6:45	Still pumping 11th bucket.
7:00	Noah Kugler on-site. Omar Rodriguez leaves the site.

Week 21

WATER RESOURCE SOLUTIONS

Date: 6/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently pumping 12th bucket since last tag to fill annular space between the 24-inch casing and the formation. Last tag at 2118 feet bpl. Tremie is set 30 feet above the last tag (2088 feet bpl).
7:25	Finish pumping 12th loader bucket since last tag. Add 13th bucket to trough.
7:55	Finish pumping 13th loader bucket since last tag. Add 14th bucket to trough.
8:40	Finish pumping 14th loader bucket since last tag. Add 15th bucket to trough.
9:20	Finish pumping 15th loader bucket since last tag. Add 16th bucket to trough.
9:45	Crew working on pump that delivers gravel. Suspend gravel operations.
10:05	Finish working on pump that delivers gravel. Resume gravel operations.
10:20	Mark Pearce on-site for progress meeting.
10:30	Finish pumping 16th loader bucket since last tag. Add 17th bucket to trough.
11:20	Finish pumping 17th loader bucket since last tag.
11:30	Tag gravel at 2114 feet bpl. Four (4) feet of fill since last tag
11:40	Add 1st loader bucket to trough. Resume pumping gravel.
12:10	Finish pumping 1st loader bucket since last tag. Add 2nd bucket to trough.
12:50	Finish pumping 2nd loader bucket since last tag. Add 3rd bucket to trough.
13:35	Finish pumping 3rd loader bucket since last tag. Add 4th bucket to trough.
13:45	Probable bridging has plugged the tremie line. Crew working to unclog tremie. Suspend gravel operations.
14:15	Tremie has been unclogged. Resume pumping gravel (4th bucket).
14:35	Trika Nelson on-site.
15:05	Noah Kugler off. Rate of water leaving gravel trough is 125-150 gpm. (Sprayer produces 100-125gpm, and other end hose produces approximately 25 gpm.)
15:30	Finish pumping 4th bucket. Add 5th bucket to trough.
16:40	Finish pumping 5th bucket. Add 6th bucket to trough.
17:00	Dump rest of bucket 6 in trough. Pick up 7th bucket.
17:45	Finish pumping 7th bucket. Pick up 8th bucket.
18:30	Experiencing plugging problems in hoses. Crew flushing hoses and tubing.
18:45	Finish pumping 8th bucket. Pick up 9th bucket.
19:15	Experiencing plugging problems in hoses. Crew flushing hoses and tubing.
19:50	Resume pumping gravel.

20:25	Finished pumping bucket 8. Begin to pump bucket 9. Pick up 10th bucket.
21:15	Begin pumping 10th bucket of gravel.
21:45	Empty the rest of bucket 10 in trough. Pick up 11th bucket of gravel.
22:10	Begin to pump 11th bucket of gravel.
22:45	Empty the rest of bucket 11 in trough. Pick up 12th bucket of gravel.
23:00	Todd Tubbert on site. Trika Nelson off site.
0:03	Empty the rest of bucket 12 in trough. Pick up 13th bucket of gravel.
0:10	Experiencing plugging problems in hoses. Crew flushing hoses and tubing.
0:30	Replace ruptured hose.
1:00	Tag gravel at 2114 feet bpl. No fill since last tag.(NOTE: 12 1/2 buckets pumped since last tag.)
2:10	Resume pumping remaining 1/2 bucket gravel.
3:00	Empty the rest of 1st full bucket in trough since last tag. Pick up 2nd bucket of gravel.
3:25	Empty the rest of bucket 2 in trough since last tag. Pick up 3rd bucket of gravel.
4:15	Empty the rest of bucket 3 in trough since last tag. Pick up 4th bucket of gravel.
5:00	Empty the rest of bucket 4 in trough since last tag. Pick up 5th bucket of gravel.
6:05	Empty the rest of bucket 5 in trough since last tag. Pick up 6th bucket of gravel.
6:50	Frank Procta on site.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Frank Procta arrives on-site. Current ops. : Pumping gravel (sixth loader bucket since the last gravel tag).
7:00	Todd Tubbert leaves the site.
8:10	Collect seventh loader bucket of gravel.
8:30	Currently running water.
8:38	Resume pumping gravel (sixth loader bucket).
9:35	Collect eighth loader bucket of gravel.
10:45	Collect ninth loader bucket of gravel.
11:20	Mark Pearce calls for update.
11:30	Continue pumping gravel (eighth loader bucket).
13:12	Collect twelfth loader bucket of gravel.
13:30	Continue pumping gravel (twelfth loader bucket).
13:48	Collect thirteenth loader bucket of gravel.
14:33	Collect fourteenth loader bucket of gravel.
15:30	Continue pumping gravel (thirteenth loader bucket).
16:15	Tag top of gravel at 2113 feet bpl. NOTE: Pumped 13 full loads or 1404 cubic feet since the last gravel tag. Also, we've pumped 6534 cubic feet of gravel since the last cement tag at 2124 feet bpl.
16:38	Update Mark Pearce of current status. Mark instructs Frank Procta to have the contractor pump a 20-barrel stage of cement tomorrow morning. The new plan is to pump 10 to 20-barrel stages of cement (w/ 12% gel) each time we've pumped 2000 cubic feet of gravel. Also, gravel pumping will resume after cementing while the cement is tacky (not hard).
17:00	Inform Ronnie Thames of YBI that the plan is to pump a 20-barrel stage of cement tomorrow morning.
17:30	Currently pumping first loader bucket of gravel since this latest tag.
18:10	Collect second loader bucket of gravel.
18:20	Continue pumping gravel.
18:50	Continue pumping gravel (second loader bucket).
19:00	Frank Procta leaves the site.
19:05	Todd Tubbert arrives on-site.
19:50	Empty the rest of 2nd bucket in trough. Pick up 3rd bucket of gravel.

21:00	Empty the rest of 3rd bucket in trough. Pick up 4th bucket of gravel.
22:04	Empty the rest of 4th bucket in trough. Pick up 5th bucket of gravel.
22:45	Empty the rest of 5th bucket in trough. Pick up 6th bucket of gravel.
23:23	Empty the rest of 6th bucket in trough. Pick up 7th bucket of gravel.
0:47	Empty the rest of 7th bucket in trough. Pick up 8th bucket of gravel.
1:30	Empty the rest of 8th bucket in trough. Pick up 9th bucket of gravel.
2:13	Empty the rest of 9th bucket in trough. Pick up 10th bucket of gravel.
3:04	Empty the rest of 10th bucket in trough. Pick up 11th bucket of gravel.
3:31	Empty the rest of 11th bucket in trough. Pick up 12th bucket of gravel.
4:30	Empty the rest of 12th bucket in trough. Pick up 13th bucket of gravel.
5:20	Empty the rest of 13th bucket in trough. Pick up 14th bucket of gravel.
6:14	Empty the rest of 14th bucket in trough. Pick up 15th bucket of gravel.
6:20	Experiencing plugging problems. Crew flushing hoses and tubing.
6:50	Tubing clear. YBI Shift change.
6:52	Frank Procta on-site.
7:00	Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 6/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:52	Frank Procta arrives on-site. Current ops. : Running water to clear tubing string.
7:00	Todd Tubbert leaves the site.
7:20	Continue to run water to settle out gravel downhole.
8:00	Tag top of gravel at 2096 feet bpl.
8:15	Waiting on cementer.
9:00	Cementer on-site and early preparations for cementing begin.
9:07	Start freshwater pre-flush.
9:08	Pre-flush is completed (10 bbls.). Begin mixing cement.
9:09	Begin pumping Stage #41 cement (neat).
9:14	End cementing (20.5 bbls.), move to chase.
9:15	End first-phase chase (9.5 bbls.), remove cementing header.
9:16	Pull one double stand of cement tubing.
9:22	Re-attach the cementing header to the tubing string.
9:22	Begin second chase.
9:24	End second chase (10 bbls.), break cementing header, and raise string.
9:30	Waiting on cement.
10:30	Waiting on cement.
11:35	Begin to trip in cement tubing in preparation for gravel pumping. NOTE: Plan to resume pumping gravel while the cement is tacky. There will be no tag of cement top (STAGE #41).
11:41	Attach the hose to the cement tubing string. NOTE: The bottom of tubing string is set at 2064 feet bpl.
11:45	Resume pumping gravel (first loader bucket of the day shift). This first bucket of gravel is half full (approx. 54 cubic feet of gravel).
12:00	Pumping gravel.
13:15	Continue pumping gravel.
13:31	Collect the fourth loader bucket of gravel for the day shift.
14:55	Mark Pearce calls for update. NOTE: Mark gives the OK to continue pumping gravel until tomorrow morning, at which time the contractor will cement to stabilize the gravel.
15:00	Currently not pumping as the line is being cleared.

15:20	Currently pumping gravel.
16:22	Collect the fifth loader bucket of gravel for the day shift.
17:00	Continue pumping gravel.
18:20	Currently pumping the last of the sixth loader bucket of gravel. The seventh loader bucket of gravel has been collected.
19:00	Todd Tubbert on-site. Frank Procta leaves the site.
19:20	Empty the rest of 7th bucket in trough. Pick up 8th bucket of gravel.
21:03	Empty the rest of 8th bucket in trough. Pick up 9th bucket of gravel.
22:30	Empty the rest of 9th bucket in trough. Pick up 10th bucket of gravel.
0:22	Empty the rest of 10th bucket in trough. Pick up 11th bucket of gravel.
1:25	Empty the rest of 11th bucket in trough. Pick up 12th bucket of gravel.
2:15	Empty the rest of 12th bucket in trough. Pick up 13th bucket of gravel.
3:20	Empty the rest of 13th bucket in trough. Pick up 14th bucket of gravel.
4:10	Empty the rest of 14th bucket in trough. Pick up 15th bucket of gravel.
5:00	Empty the rest of 15th bucket in trough. Pick up 16th bucket of gravel.
5:55	Empty the rest of 16th bucket in trough. Pick up 17th bucket of gravel.
6:15	Noah Kugler calls for site update. Coordinate activities around shift change.
6:55	Continue pumping gravel with 17th bucket load.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Continue pumping gravel to fill annulus between the 24-inch casing and an enlarged area of the borehole from 2055 to 2120 feet bpl. Currently pumping 17th loader (~1,700 cubic feet) since last tag of gravel at 2096 feet bpl. Cement stages of ~20 bbls will be pumped on top of gravel at intervals of 2,000 cubic feet in this area of the borehole. Noah Kugler picking-up data for formation picks and correlation of local wells from office.
7:20	Noah Kugler on-site. Still pumping 17th loader full of gravel. Large pieces of gravel have been causing bridging and plugging problems and slowed progress. New shipments of gravel arriving today.
8:00	Noah calls Mark Pearce with update.
8:25	Finish pumping 17th loader of gravel since last tag. Add 18th load to trough.
9:35	Finish pumping 18th loader (1944 cubic feet) since last tag. 101 total loads of gravel have been pumped into the annulus so far. Suspend graveling to hard tag gravel with tremie.
10:10	Hard tag gravel at 2079 feet bpl (17 feet of fill since last tag).
10:20	Mike Sordan on-site to pump cement.
10:29	Start freshwater pre-flush.
10:32	Pre-flush is completed (10 bbls.). Begin mixing cement.
10:34	Begin pumping Stage #42 cement (neat).
10:39	End cementing (20 bbls.), move to chase.
10:42	End first-phase chase (9 bbls.), remove cementing header.
10:43	Pull one double and one single of cement tubing (~90 feet). Clear tubing from truck.
10:49	Re-attach the cementing header to the tubing string. Begin second chase.
10:51	End second chase (10 bbls.), break cementing header, and raise string.
11:00	Waiting on cement.
12:00	Waiting on cement.
13:00	Prepare to resume pumping gravel.
13:15	Tremie lowered to 2049 feet bpl (~ 30 feet above tag at 2079 feet bpl). Dump 1st load of gravel since tag into trough. Resume pumping gravel.

14:15	1st loader of gravel has been pumped since last tag (*102 total*). Add 2nd loader of gravel into trough.
14:50	2nd loader of gravel still in trough (1/3 full). Frank Procta on.
15:00	Noah Kugler leaves site.
15:05	Currently pumping third loader of gravel.
15:27	Pick up fourth loader of gravel (second loader of today's swing shift).
16:00	Currently pumping the fourth loader of gravel.
16:30	Call Mark Pearce with update. NOTE: Mark wants to suspend gravel pumping when the annular fill reaches a depth of 2050 feet bpl. **The plan is to cement, at a minimum, a 10-foot cap between 2050 and 2040 feet bpl.**
17:00	Pick up fifth loader of gravel (third loader of today's swing shift).
17:41	Pick up sixth loader of gravel (fourth loader of today's swing shift).
18:50	Currently pumping eighth loader of gravel (sixth loader of today's swing shift).
20:02	Pick up tenth loader of gravel (eighth loader of today's swing shift).
21:07	Pick up eleventh loader of gravel (ninth loader of today's swing shift).
22:00	Currently pumping eleventh loader of gravel (112th total).
22:45	Continue to pump eleventh loader of gravel.
22:58	Pick up twelfth loader of gravel (first loader of today's night shift).
23:00	Frank Procta leaves the site.
	TODD: The twelfth loader will be your first loader of your shift.
23:05	Todd Tubbert on-site.
0:17	Empty the rest of 12th bucket in trough. Pick up 13th bucket of gravel.
1:33	Empty the rest of 13th bucket in trough. Pick up 14th bucket of gravel.
2:40	Empty the rest of 14th bucket in trough. Pick up 15th bucket of gravel.
3:25	Empty the rest of 15th bucket in trough. Pick up 16th bucket of gravel.
4:15	Empty the rest of 16th bucket in trough. Pick up 17th bucket of gravel.
5:05	Empty the rest of 17th bucket in trough. Pick up 18th bucket of gravel.
5:43	Empty the rest of 18th bucket in trough. Pick up 19th bucket of gravel.
6:10	Empty 1/2 of 19th bucket in trough. (note: 7.5 loads for night shift 119.5 total loads)
6:15	Begin trying to hard tag gravel.
7:00	Noah Kugler on. Todd Tubbert off. Still trying to hard tag gravel.

WATER RESOURCE SOLUTIONS

Date: 6/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Attempting to hard tag gravel to fill annulus between the 24-inch casing and the formation. Approximately 2000 cubic feet has been pumped since last hard tag at 2079 feet bpl.
7:45	Noah calls Mark Pearce with update.
7:55	Gravel hard tagged at 2063 feet bpl (16 feet of fill). A "cap" of cement will be pumped on top of gravel shortly.
8:00	Waiting for cementer to become available to pump cement Stage 43.
9:00	Waiting on cementer.
9:35	Mark Pearce on-site for progress meeting
10:15	Mark OK's continuation of gravel pumping until cementer arrives.
10:20	Resume pumping gravel. Pump half of loader that was in trough first.
10:35	Half loader of gravel has been pumped since last tag (*120 total*). Add 1st full loader of gravel into trough since last tag.
10:45	Gravel has plugged-off in tubing.
11:20	Still plugged-off. Contractor decides to pull tubing from annulus to make sure all tubing is cleared.
12:15	All tubing has been tripped-out and cleared. Start running cleared tubing back in annulus.
13:20	Mike Sordan on-site to pump cement Stage 43. Set up truck and test cement lines.
13:25	Tremie has been tripped back in. Hard tag gravel at 2050 feet bpl. Note: this tag seems high.
13:27	Pick up tremie 15 feet in preparation for cementing.
13:31	Start freshwater pre-flush.
13:32	Mike Sordan indicates that there is a slight pressure build up on the cement line indicating that the tremie is still in the gravel. He feels that the pressure is not too high to effect cementing negatively.
13:34	Pre-flush is completed (10 bbls.). Begin mixing cement.
13:35	Begin pumping Stage #43 cement (neat).
13:40	End cementing (20 bbls.), move to chase.
13:43	End first-phase chase (9 bbls.), remove cementing header.
13:44	Pull one double of cement tubing (~60 feet). Clear tubing from truck.

13:49	Re-attach the cementing header to the tubing string. Begin second chase.
13:51	End second chase (10 bbls.), break cementing header, and raise string.
14:00	Waiting on cement.
14:20	Upon further inspection of the drillers tubing tally it is believed that we mis-counted a single joint of tubing and therefore were about 30 feet deeper than indicated by the 2050 feet bpl tag (actually at 2080 feet bpl). Further the tubing was pulled up about 15 feet prior to cementing, placing the tremie at approximately 2065 feet bpl during cementing.
14:55	Frank Procta on-site.
15:50	Noah Kugler leaves site.
16:00	Waiting on cement.
16:50	Update Mark Pearce of status. Mark gives the OK to trip out cement tubing.
17:00	Waiting on cement.
17:18	Crew begin tripping out cement tubing string.
18:40	Last joint of tubing pulled from the well. NOTE: Pulled 64 joints of tubing.
19:00	Begin to measure/record joint lengths. Prepare tally.
19:30	Begin tripping in cement tubing.
21:28	Hard tag at 2050 feet bpl. NOTE: It is believed that this tag does not represent top of cement but a ledge which is clearly indicated on the caliper log.
21:40	Update Mark Pearce of tag result.
21:45	Attempt to jet water downhole while turning the tubing string to get past the ledge at 2050 feet bpl.
22:00	Hard tag the top of cement (STAGE #43) at 2061 feet bpl. NOTE: In 31.4 feet with JOINT #65 for hard tag.
22:30	Waiting on cementer.
22:54	Start freshwater pre-flush.
22:55	Todd Tubbert on-site. Frank Procta off site.
22:56	Pre-flush is completed (10 bbls.). Begin mixing cement.
22:57	Begin pumping Stage #44 cement (neat).
23:03	End cementing (21 bbls.), move to chase.
23:05	End first-phase chase (9 bbls.), remove cementing header.
23:09	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
23:16	Re-attach the cementing header to the tubing string. Begin second chase.
23:19	End second chase (10 bbls.), break cementing header, and raise string.
23:30	Waiting on cement.
0:30	Waiting on cement.
1:30	Waiting on cement.
2:30	Waiting on cement.
3:00	Mark Pearce calls for update. Mark gives ok pump gravel to 2050' bpl if hard tag reveals no fill from cement stage # 44.
3:30	Waiting on cement.

4:15	Hard tag the top of cement (STAGE #44) at 2056 feet bpl. (NOTE: 5 feet of fill since last tag.)
4:20	Plan to pump an additional 20 bbls of cement when cementer arrives.
4:38	Start freshwater pre-flush.
4:41	Begin pumping Stage #45 cement (neat).
4:47	End cementing (21 bbls.), move to chase.
4:49	End first-phase chase (9 bbls.), remove cementing header.
4:52	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
5:15	Re-attach the cementing header to the tubing string. Begin second chase.
5:17	End second chase (10 bbls.), break cementing header, and raise string.
5:30	Waiting on cement.
6:30	Waiting on cement.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting on cement from Stage 45. Stage 44 was hard tagged at 2056 feet bpl.
7:30	YBI crew on-site to fix sound barrier behind rig.
7:35	Update Mark Pearce with the current operations.
8:05	Mark Pearce and Noah agree that temperature logs should be run at approximately 12-hour intervals during cementing operations (after 3 stages given 4-hour wait time between stages). If CaCl accelerator is used than 4 or 5 stages may be pumped in that 12-hour period.
8:10	Noah passes on cement/gravel plan and temperature log information to Mike Sordan (YBI lead cementer).
8:20	Noah calls Craig Brugger (YBI site coordinator) about fixing phone service. Phone lines have been down for almost 3 weeks. Craig indicates that Sprint is working on the problem and that YBI staff will rig a temporary line today.
9:00	Waiting on cement.
9:45	Cement sample is hard.
10:00	Hard tag Stage 45 at 2056 feet bpl (no fill). Mike Sordan monitors tag for YBI and begins setting up to pump cement Stage 46.
10:11	Start freshwater pre-flush. Tremie set 1/2 foot above tag.
10:13	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
10:21	Begin pumping Stage #46 cement (neat with 3% CaCl). See cement log.
10:26	End cementing (20 bbls.), move to chase.
10:29	End first-phase chase (9 bbls.), remove cementing header.
10:30	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
10:35	Re-attach the cementing header to the tubing string. Begin second chase.
10:37	End second chase (10 bbls.), break cementing header, and raise string.
11:00	Waiting on cement.
12:00	Waiting on cement.
12:15	Geophysical logger (Tim Denison) on-site to run cement top temperature log for the last four cement stages (43, 44, 45 and 46). Set up logging truck.
12:26	Go in hole with temperature logging tool.

12:39	Temperature log complete to 2150 feet bpl. Start out of hole with tool.
12:45	Cement sample is very hard.
12:58	Temperature tool is out of hole. Temperature pick for cement top is 2056 feet bpl.
13:15	Hard tag Stage 46 at 2059 feet bpl (loss of 3 feet since last tag). Mike Sordan monitors tag for YBI. Based on no fill over the last two cement stages, the Contractor will pump a theoretical volume of gravel to come up to 2050 feet bpl (20 bbls or one loader full) and then attempt a tag. Gravel volume needed to fill to 2050 feet bpl will be recalculated after tag and the recalculated volume will be pumped, if needed, to reach 2050 feet bpl.
13:35	Upon starting to pump gravel, the tremie line has become plugged with gravel. Crew working to dislodge gravel and flush system with water.
14:30	Still working to dislodge gravel and flush system with water.
14:55	Frank Procta on-site
15:10	Contractor begins pumping 1st loader of gravel since tag. Set tremie approximately 25 feet above tag.
15:15	Noah Kugler leaves site.
15:30	Currently pumping gravel (1st loader of shift).
16:15	Continue pumping gravel.
17:03	Currently flowing water in preparation for tagging gravel.
18:24	Remove top joint from string.
18:30	Re-attach top joint to string and connect cementing header.
18:33	Begin to jet water downhole by using cement truck. NOTE: Attempting to jet past the ledge located at 2050 feet bpl which is hanging up string when attempting to tag.
18:38	Tag top of gravel at 2056 feet bpl. Plan to resume gravel pumping.
19:15	Currently pumping gravel (second loader of shift, first since last tag).
19:50	Call Mark Pearce with update.
20:15	Pumping water downhole after finishing the first load of gravel since the last tag.
21:51	Attempt to pump pre-flush in preparation for tagging gravel and cementing STAGE #47. NOTE: The tubing is plugged off as repeated attempts to pre-flush and advance the tubing string for tagging gravel fail.
22:07	Crew begin to trip out cement tubing to clear string of obstruction.
22:45	Crew continue tripping out the tubing string. Frank Procta leaves the site.
	TODD: They are currently tripping out the tubing to clear line. Prepare to cement STAGE #47. Cement all night pumping 20-barrel stages. Wait 4 hours or between 2-3 hours if accelerator is used. Get a good tag for each stage, collect cubes, temp log every 3rd.
23:05	Todd Tubbert on-site.
23:30	Complete tripping out cement tubing.
23:40	Begin tripping in cement tubing.
0:50	Finish tripping in 64 joints of cement tubing.

1:30	Flush tubing with 30 bbls of water to confirm that the tubing is clear.
1:35	End flush.
1:36	Trip in three (3) pup joints with a total length of 21.4 feet.
1:40	Gravel tag at 2050.2' bpl. Mike Sordan monitors tag for YBI.
1:45	Trip out three (3) pup joints.
1:55	Flush tubing with 20 bbls of water.
1:59	End flush.
2:00	Trip in three (3) pup joints with a total length of 21.4 feet.
2:10	Begin cementing STAGE # 47(neat).
2:15	End cementing (23 bbls.), move to chase.
2:17	End first-phase chase (9 bbls.), remove cementing header.
2:20	Pull three pup joints and two doubles of cement tubing (~141 feet). Clear tubing from truck.
2:35	Re-attach the cementing header to the tubing string. Begin second chase.
2:37	End second chase (10 bbls.), break cementing header, and raise string.
2:40	Waiting on cement.
3:30	Waiting on cement.
4:30	Waiting on cement.
5:30	Waiting on cement.
6:00	Waiting on cement.
6:30	Hard tag top of cement STAGE # 47 at 2047.8 feet bpl. (Note: 2.5' of fill)
6:45	Waiting on cementer.
7:00	Noah Kugler on-site. Waiting for cementer to arrive to pump Stage 48.

WATER RESOURCE SOLUTIONS

Date: 6/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting to pump cement Stage 48. Stage 47 was hard tagged at 2047.8 feet bpl.
7:05	Mike Sordan on-site to pump Stage 48 cement. Set up truck and test lines.
7:15	Todd Tubbert off site.
7:16	Start freshwater pre-flush. Tremie set 1 foot above tag.
7:18	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
7:26	Begin pumping Stage #48 cement (neat with 3% CaCl). See cement log.
7:31	End cementing (21 bbls.), move to chase.
7:33	End first-phase chase (9 bbls.), remove cementing header.
7:34	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
7:46	Re-attach the cementing header to the tubing string. Begin second chase.
7:49	End second chase (10 bbls.), break cementing header, and raise string.
8:00	Waiting on cement. Noah calls Mark Pearce with update.
9:00	Waiting on cement.
9:35	Geophysical logger (Tim Denison) on-site to run cement top temperature log for the last two cement stages (47 and 48). Set up logging truck.
9:50	Go in hole with temperature logging tool.
10:09	Temperature log complete to 2150 feet bpl. Start out of hole with tool.
10:10	Cement sample is very hard.
10:17	Temperature tool is out of hole. Temperature pick for cement top is 2056 feet bpl.
10:20	Mike Sordan preparing truck for Stage 49 cement.
10:28	Start freshwater pre-flush prior to tagging cement to make sure tremie line is clear.
10:30	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
10:34	Lower tremie to tag cement. Tremie subs removed and replaced with single joint to make tag.
10:44	Hard tag Stage 48 at 2053 feet bpl (lost 5 feet since last tag).
10:46	Begin pumping Stage #48 cement (neat with 3% CaCl). See cement log.
10:51	End cementing (21 bbls.), move to chase.
10:53	End first-phase chase (9 bbls.), remove cementing header.
10:54	Pull two doubles of cement tubing (~120 feet). Clear tubing from truck.

11:02	Re-attach the cementing header to the tubing string. Begin second chase.
11:04	End second chase (10 bbls.), break cementing header, and raise string.
11:05	Noah calls Mark Pearce with update. Mark and Noah agree that since fill has actually been lost over the last few cement stages, the Contractor should attempt to fill this portion of the hole with gravel to approximately 2020 feet bpl and attempt to stabilize the gravel with cement at that point.
12:00	Waiting on cement.
12:15	Crew sets up water lines going to gravel trough in preparation for graveling. Water will be gravity-fed from the holding tank on the circulation pit.
12:35	Start pumping gravel. Last hard tag at 2053 feet bpl. Theoretical fill volume to bring annular height to 2020 feet bpl = 72 bbls (3.75 loaders full).
13:25	1st loader of gravel has been pumped. Add 2nd loader to trough.
14:30	2nd loader of gravel has been pumped. Add 3rd loader to trough.
14:50	Large pieces of gravel found in second half of 3rd load. Dump 1/2 bucket loader and pick up fresh bucket loader.
14:55	Frank Procta on-site.
15:00	Note: 2+1/2 loaders pumped on day shift. Add 1st loader of the swing shift to trough (3+1/2 total since starting this cycle).
15:25	Noah Kugler leaves site.
15:30	Currently pumping first loader of swing shift.
16:30	Currently pumping water to settle out gravel. NOTE: The fourth load of gravel has been pumped downhole since the last tag.
16:45	Tag top of gravel at 2033.5 feet bpl. NOTE: Plan to resume gravel pumping to a depth of approximately 2020 feet bpl.
17:00	Pick up first load since recent tag (last half of second load of shift).
17:15	Currently pumping the first load since recent tag. NOTE: Theoretical gravel volume to fill annulus from last tag depth (2033.5' bpl) to the target depth of 2020' bpl is 178.4 cubic feet or 1.65 loaders. Plan to pump two full loaders and then tag.
17:29	Pick up second load since last tag.
17:45	Currently pumping gravel (first load since last tag).
17:50	Begin titrating pad monitoring well water samples for chloride.
17:55	End gravel pumping operations due to problem with pump. NOTE: Down for repairs involving a flange in the pump requiring replacement.
18:15	Last water sample titrated, values recorded in log.
18:40	Resume pumping gravel.
19:25	Mark Pearce calls for update.
20:02	Tag top of gravel at 2029 feet bpl.
20:10	Prepare to pump another loader of gravel.
20:25	Currently pumping second half of fourth load of swing shift (first loader since the last tag).
21:15	Currently running water to settle gravel.
21:30	Tag top of gravel at 2028 feet bpl. Plan to pump another loader (second half of fifth of swing shift) of gravel and then tag.

21:55	Update Mark Pearce of last tag result. Mark wants to pump a 20-barrel stage of cement **if** our target depth of 2020 feet bpl is not reached after pumping two more loader buckets of gravel. We are to cement from 2020 to 1986 feet bpl.
22:15	Cement tubing becomes plugged off with gravel while pumping first loader since the last tag.
22:30	Crew continue attempting to unplug the tubing string.
22:41	Crew begin to partially trip out the tubing string to locate the problem.
23:00	Todd Tubbert arrives on-site.
23:10	Frank Procta leaves the site.
0:00	Cement tubing has been cleared.
0:10	Begin tripping in cement tubing.
1:30	Tag gravel at 2021' bpl. (NOTE: No gravel has been pumped during night shift.) Gravel fill is likely due to gravel displaced from the tubing upon tripping out.
1:45	Mike Sordan (YBI cementer has been called). Plan to pump 20 bbl cement stage upon his arrival.
4:50	Mike Sordan has arrived on-site.
5:03	Begin pre-flush.
5:08	Pre-flush is completed (25 bbls.). Begin mixing cement.
5:12	Begin pumping Stage #50 cement (neat w/ 2% CaCl).
5:17	End cementing (21 bbls.), move to chase.
5:19	End first-phase chase (9 bbls.), remove cementing header.
5:20	Pull 21' of pup joints and two doubles of cement tubing (~141 feet). Clear tubing from truck.
5:35	Re-attach the cementing header to the tubing string. Begin second chase.
5:37	End second chase (10 bbls.), break cementing header, and raise string.
5:40	Waiting on cement.
6:40	Waiting on cement.
7:00	Noah Kugler on-site. Waiting to hard tag Stage 50.

Week 22

WATER RESOURCE SOLUTIONS

Date: 6/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Waiting to tag cement stage 50. The last gravel tag prior to cement was made at 2021 feet bpl.
7:15	Todd Tubbert leaves site.
8:00	Waiting on cement.
8:11	Hard tag cement stage 50 at 2035.3 feet bpl (net loss of ~14 feet). Tag was made 5.5 feet down on tremie joint #65. Tag depth = tremie length through joint #64 (2039.80) + feet down on joint #65 (5.5) - feet above pad level (10) = 2035.3 feet bpl.
8:12	Noah calls Mark Pearce with update. The Contractor may pump enough gravel to bring annular column to ~2020 feet bpl.
8:15	Contractor prepares to pump 2 and 1/2 loads of gravel for theoretical fill to ~2020 feet bpl. Freshwater preflush will be pumped prior to starting gravel.
8:35	Freshwater preflush complete (400 gallons). Tremie set at 2000 feet bpl. Start pumping gravel. There is 1/2 of a load currently in trough.
9:05	1/2 load has been pumped. Add 1st full load into trough.
10:00	1st full loader of gravel has been pumped. Add 2nd full loader to trough.
11:15	2nd full loader of gravel has been pumped (2 and 1/2 total since tag).
11:30	Set up to tag gravel. Pump 400 gallons of flush prior to tagging.
12:05	Hard tag gravel at 2005 feet bpl (35 feet of fill since last cement tag). Tag was made 5 feet down on tremie joint #62. Tag depth = tremie length through joint #63 (2010.05) + feet down on joint #62 (5) - feet above pad level (10) = 2005.05 feet bpl.
12:23	Start freshwater pre-flush for cement Stage 51.
12:24	Water-jet tremie into gravel approximately 5 feet.
12:26	Pre-flush is completed (20 bbls.). Begin mixing neat cement with 3% CaCl.
12:32	Begin pumping Stage 51 cement (neat with 3% CaCl). See cement log.
12:37	End cementing (21 bbls.), move to chase.
12:39	End first-phase chase (9 bbls.), remove cementing header.
12:40	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
12:47	Re-attach the cementing header to the tubing string. Begin second chase.
12:49	End second chase (10 bbls.), break cementing header, and raise string.
13:00	Waiting on cement. Noah calls Mark Pearce with update.

14:00	Waiting on cement
14:55	Hard tag cement Stage 51 at 2010 feet bpl (net loss of 5 feet). Frank Procta on-site.
15:10	Noah calls Mark Pearce with tag update.
15:20	Noah Kugler leaves site. Preparing to pump cement Stage 52.
15:25	Start freshwater pre-flush for cement Stage 52.
15:26	Water-jet tremie into gravel approximately 5 feet.
15:27	Pre-flush is completed (20 bbls.). Begin mixing neat cement with 3% CaCl.
15:32	Begin pumping Stage 52 cement (neat with 3% CaCl). See cement log.
15:37	End cementing (20 bbls.), move to chase.
15:38	End first-phase chase (9 bbls.), remove cementing header.
15:40	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
15:58	Re-attach the cementing header to the tubing string. Begin second chase.
16:00	End second chase (10 bbls.), break cementing header, and raise string.
16:15	Waiting on cement.
17:00	Waiting on cement.
17:45	Waiting on cement.
18:06	Hard tag cement Stage 52 at 2004.6 feet bpl (gain of 5.4 feet).
18:15	Start freshwater pre-flush for cement Stage 53.
18:17	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
18:23	Begin pumping Stage 53 cement (neat with 3% CaCl). See cement log.
18:28	End cementing (21 bbls.), move to chase.
18:29	End first-phase chase (9 bbls.), remove cementing header.
18:30	Pull one double of cement tubing (~60 feet). Clear tubing from truck.
18:45	Re-attach the cementing header to the tubing string. Begin second chase.
18:47	End second chase (10 bbls.), break cementing header, and raise string.
19:00	Waiting on cement.
19:02	Update Mark Pearce of cementing status.
20:00	Waiting on cement.
21:05	Lower the temperature tool down the well.
21:19	Begin recording data downhole from a depth of approximately 1880 feet bpl.
21:24	Retrieve the tool. NOTE: Top of cement (STAGE #53) picked at 1994 feet bpl.
21:30	Remove the tool from the well.
22:05	Hard tag cement Stage 53 at 1997 feet bpl (gain of 7.6 feet).
22:12	Start freshwater pre-flush for cement Stage 54.
22:14	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
22:18	Begin pumping Stage 54 cement (neat with 3% CaCl). See cement log.
22:22	End cementing (22 bbls.), move to chase.
22:24	End first-phase chase (9 bbls.), remove cementing header.
22:26	Pull two doubles of cement tubing. Clear tubing from truck.
22:30	Craig Boomgaard arrives on-site.
22:37	Re-attach the cementing header to the tubing string. Begin second chase.

22:39	End second chase (10 bbls.), break cementing header, and raise string.
23:00	Waiting on cement.
23:20	Frank Procta leaves the site.
0:17	Hard tag cement Stage 54 at 1989 feet bpl (gain of 8 feet)
0:31	Start freshwater pre-flush for cement Stage 55.
0:35	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
0:38	Begin pumping Stage 55 cement (neat). See cement log.
0:41	End cementing (22 bbls.), move to chase.
0:43	End first-phase chase (10 bbls.), remove cementing header.
0:45	Pull two doubles of cement tubing. Clear tubing from truck.
0:57	Re-attach the cementing header to the tubing string. Begin second chase.
0:59	End second chase (10 bbls.), break cementing header, and raise string.
1:00	Waiting on cement.
4:50	Hard tag cement Stage 55 at 1983 feet bpl (gain of 6 feet).
5:05	Freshwater preflush complete (400 gallons). Tremie set at 2000 feet bpl.
5:15	Adding 1st load to the trough.
6:50	Trika Nelson on site.
7:00	Craig Boomgaard leaves site.

WATER RESOURCE SOLUTIONS

Date: 6/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on site.
7:00	Craig Boomgaard leaves site.
7:15	1st full loader of gravel has been pumped. Add 2nd bucket of gravel to trough.
8:00	Still working on 2nd bucket. Tubing is plugging.
8:55	Dump rest of 2nd bucket in trough. Pick up 3rd bucket.
9:15	Finish pumping 2nd bucket. Begin to pump 3rd bucket.
10:00	Dump rest of 3rd bucket into trough. Pick up 4th bucket.
10:10	Begin to pump 4th bucket of gravel.
11:00	Finish pumping 4th bucket of gravel.
11:15	Tag gravel at 1974 feet bpl. Pull out two pup joints, bottom of tremie set at 1956 feet bpl.
11:20	Resume graveling. Dump 1st bucket of gravel in trough since last tag.
11:30	Tim Dennison on site to log cement stage 55. Setting up to log hole.
12:00	Begin to log cement stage 55.
12:30	Temperature log tool out of hole. Finished logging cement stage 55. Top of cement picked at 1981 feet bpl, tagged at 1983 feet bpl.
12:50	Resume pumping 1st bucket of gravel.
13:20	Still pumping 1st bucket of gravel since last tag. Experiencing plugging problems due to larger pieces of gravel.
14:00	Done pumping 1st bucket of gravel. Begin to pump 2nd bucket of gravel since last tag.
15:05	Finish pumping 2nd bucket of gravel since tag. Begin pumping 3rd bucket since tag.
16:00	Finished pumping 3rd bucket. Begin pumping 4th bucket.
17:00	Finished pumping 4th bucket. Begin pumping 5th bucket since last tag.
18:00	Finished pumping 5th bucket. Begin pumping 6th bucket.
18:30	Pumped 1/2 of 6th bucket. Preparing to tag.
18:45	Tag gravel at 1978 feet bpl. (Lost 4 feet of gravel)
19:00	Craig Boomgaard on site. Trika Nelson off site.
19:05	Repairing pump. Gravel wore out housing.

20:20	Pump fixed. Finishing last half of load before pump broke. (last half of 6th load). First half load since tag
21:14	Pump plugged with small rock. Flush pipe with 200 gallons fresh water while removing rock.
21:45	Pump plugged with small rock 2 more times. Drillers placing grate over
22:00	Mark Pearce call to check on status. Update him on current status.
22:10	First half load finished since tag. Begin pumping first full load.
22:15	Screen on top of trough works well.
23:10	Pump plugged. Working on last 1/3 of 1st full bucket.
0:08	Finished pumping 1st bucket. Begin pumping second bucket.
1:30	Still having problems with pump plugging. Modified intake screen.
2:35	Finished pumping 2nd bucket (2.5 total since last tag). Begin pumping 3rd full bucket.
3:50	Finished pumping 3rd bucket. Begin pumping 4th bucket.
5:11	Finished pumping 4th bucket (4.5 total since last tag) Preparing to tag.
5:27	Tag gravel at 1967 bpl. (Gained 7 feet)
5:46	Pumping first load since tag.
6:50	Trika Nelson on site.
7:00	Craig Boomgaard off site.

WATER RESOURCE SOLUTIONS

Date: 6/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:50	Trika Nelson on site.
7:00	Craig Boomgaard off site.
7:30	Currently pumping 1st bucket since last tag.
8:00	Finished pumping 1st bucket. Begin pumping 2nd bucket of gravel since last tag.
9:05	Finished pumping 2nd bucket of gravel. Begin pumping 3rd bucket of gravel since last tag.
10:10	Finished pumping 3rd bucket of gravel. Begin pumping 4th bucket of gravel.
11:00	Still pumping bucket four. Having plugging problems, large cobbles of gravel plugging tubing.
12:15	Done pumping 4th bucket. Begin pumping 5th bucket of gravel.
13:00	Still pumping 5th bucket.
14:30	Finished pumping 5th bucket. Begin pumping 6th bucket.
15:30	Still pumping 6th bucket.
16:30	Finished pumping 6th bucket. Preparing to tag gravel.
16:45	Tag gravel at 1966 feet bpl. (gained 1 foot)
17:00	Begin pumping 1st bucket since tag.
17:30	Flowmeter quit working. Assessing the problem.
17:45	Fixed problem, plugged tubing. Resume pumping gravel.
18:15	Finished pumping 1st bucket of gravel since tag. Begin to pump 2nd bucket of gravel.
19:00	Craig Boomgaard on site. Trika Nelson off site.
19:09	Still working on 2nd loader bucket since tag. Drillers calling this 1st load for the night.
20:20	Plugging problems with the pump. Big rocks are the problem
21:42	Finished 2nd loader bucket. Adding 3rd loader bucket since last tag; 2nd of the night. Mark Pearce calls to check on status. Updated him on footages and volumes of gravel.
0:36	Finished 3rd load since tag; 2nd of the night Adding 4th load.
1:10	Still pumping 4th load since last tag; 3rd for the night.
1:43	Tubing plugged. Tripping tubing out of the hole to clear line.

2:30	Pulled 1 stand of tubing and plug came out. Pumped 400 gallons of water to make sure tubing was clear.
2:53	Tag gravel at 1958 feet bpl (gained 8 feet). 4 loads since last tag. (less than half a trough left in 4th load when plugged).Set tremie at 1950 feet bpl.
3:18	Pumping last bit of gravel from last load.
4:10	Tubing plugged. Tripping tubing out of the hole to clear line.
4:39	Pulled 2 stand of tubing and plug came out. Pumped 400 gallons of water to make sure tubing was clear.
4:45	Checking gravel tag again to confirm last tag.
4:54	Retag gravel at 1949 feet bpl. 4 loads since last tag at 16:45. Gained 17 feet.
5:00	Preparing to cement.
6:32	Waiting on cementer.
6:37	Called Noah Kugler to update him.
7:00	Noah Kugler on. Josh Brown (YBI cementer) preparing to pump cement Stage 56.

WATER RESOURCE SOLUTIONS

Date: 6/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Setting up to cement Stage 56 to fill the annulus between the 24-inch casing and the formation. Tagged gravel early this morning at 1949 feet bpl. Note: this is 10 feet above the last extensively enlarged area of the borehole before the interval from approximately 1760 to 1690 feet bpl.
7:05	Begin freshwater pre-flush for cement Stage 56. Tremie set approximately 1 foot above gravel tag.
7:07	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
7:11	Begin pumping Stage 56 cement (neat with 3% CaCl). See cement log.
7:15	End cementing (22 bbls.), move to chase. Craig Boomgaard leaves site.
7:18	End first-phase chase (9 bbls.), remove cementing header.
7:20	Pull one double and 10-foot sub of cement tubing (~70 feet). Clear tubing from truck.
7:27	Re-attach the cementing header to the tubing string. Begin second chase.
7:30	End second chase (10 bbls.), break cementing header, and raise string.
8:00	Waiting on cement. Noah calls Mark Pearce with update.
9:00	Waiting on cement.
10:15	Hard tag cement stage 56 at approximately 1977 feet bpl (net loss of ~28 feet). Tag was made 8 feet down on the 12-foot sub joint with tremie joint #62 in the hole. Tag depth = tremie length through joint #62 (1978.62) + feet down on sub joint (8) - feet above pad level (10) = 1976.62 feet bpl.
10:17	Noah calls Mark Pearce with update. The Contractor may resume pumping gravel to bring annular column to ~1950 feet bpl.
10:25	Contractor prepares to pump 3 loads (58 cubic feet) of gravel for theoretical fill to ~1950 feet bpl (assuming maximum caliper log measurement). Freshwater preflush will be pumped prior to starting gravel. There is 1/2 of a load in the trough currently.
10:32	Start pumping gravel from trough.
11:15	1/2 load has been pumped. Add 1st full load into trough.
12:25	1 and 1/2 loaders of gravel have been pumped since the last cement tag at 1977 feet bpl. Tremie has become clogged or is backing up with gravel.

12:38	Gravel cleared from tremie. Hard tag gravel at approximately 1955.4 feet bpl (~21.6 feet of fill). Tag was made 20 feet down on tremie joint #62 (no subs). Tag depth = tremie length through joint #61 (1945.40) + feet down on tremie joint #62 joint (20) - feet above pad level (10) = 1955.4 feet bpl.
12:50	Resume pumping gravel from trough. Pump 1/2 more loads, then tag.
13:35	1/2 loader of gravel has been pumped since the last gravel tag at 1955 feet bpl. Tremie has become clogged.
13:45	After trying to clear tremie, it is still clogged. Contractor decides to trip-out tremie to clear.
14:35	Trika Nelson on-site.
14:50	Tremie has been cleared. Start to trip back in annulus to tag gravel.
15:10	Noah Kugler leaves site. Call Mark Pearce with update.
16:00	Finished tripping in tremie tubing.
16:35	Hard tag gravel at approximately 1944 feet bpl (~11 feet of fill). Tag was made 9.5 feet down on tremie joint #62 (no subs). Tag depth = tremie length through joint #61 (1945.40) + 9.5 feet down on tremie joint #62 joint (9.5) - feet above pad level (10) = 1943.5 feet bpl.
16:50	Begin pumping freshwater pre-flush.
16:52	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
16:58	Begin cementing by tremie using neat cement with 3% CaCl.
17:03	End cementing, move to chase.
17:04	End first chase (9 bbls.). Pulled one double stand and 10-foot sub of cement
17:20	Re-attach cementing header. Begin second chase.
17:22	End second chase (10 bbls.). Raise tremie.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
20:05	Hard tag cement stage 57 @ 1928 feet bpl.
20:15	Begin pumping freshwater pre-flush.
20:17	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
20:22	Begin cementing by tremie using neat cement with 3% CaCl.
20:26	End cementing, move to chase.
20:28	End first chase (9 bbls.). Pulled one double stand and 10-foot sub of cement
20:44	Re-attach cementing header. Begin second chase.
20:46	End second chase (10 bbls.). Raise tremie.
21:00	Waiting on cement.
22:00	Waiting on cement.
22:45	Tag cement stage 58 @ 1917' bpl.
22:55	Craig Boomgaard on site. Trika Nelson off site.
23:09	Begin pumping freshwater pre-flush.
23:14	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
23:22	Begin cementing by tremie using neat cement with 3% CaCl.
23:27	End cementing, move to chase.
23:28	End first chase (8 bbls.). Pulled one double stand and sub of cement tubing.

23:42	Re-attach cementing header. Begin second chase.
23:44	End second chase (10 bbls.). Raise tremie.
23:45	Logging truck on-site for temperature logging.
0:29	Getting ready to run temperature log.
0:39	Lower the temperature tool down the well.
0:52	Begin recording data downhole from a depth of approximately 1850 feet bpl.
0:58	Retrieve the tool. NOTE: Top of cement (STAGE #59) picked at 1906 feet
1:06	Remove the tool from the well.
1:27	Hard tag stage 59 at 1912 bpl.
1:30	Running 400 gallons of water flush tubing before pumping stage 60
1:36	Begin pumping freshwater pre-flush.
1:37	End pre-flush (10 bbls.). Begin mixing neat cement.
1:40	Begin cementing by tremie using neat cement.
1:44	End cementing, move to chase.
1:45	End first chase (8 bbls.). Pulled one double stand and sub of cement tubing.

WATER RESOURCE SOLUTIONS

Date: 6/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently setting up to pump re-chase water for cement Stage 61 to fill the annulus between the 24-inch casing and the formation. Cement Stage 60 was tagged this morning at 1910 feet bpl.
7:06	One double and 10-foot sub of cement tubing (~70 feet) have been removed from well. Reattach header and rechase with 10 bbls freshwater.
7:09	Rechase complete. Pull up tremie ~90 feet.
8:00	Waiting on cement. Noah calls Mark Pearce with update.
9:00	Waiting on cement.
9:08	Hard tag cement stage 61 at approximately 1910 feet bpl (no fill). Tag was made 10 feet down on tremie joint #61 in the hole. Tag depth = tremie length through joint #60 (1911.99) + feet down tremie joint #61 (10) - feet above pad level (12) = 1909.99 feet bpl.
9:15	Set up gravel system to pump 1 and 1/2 loads of gravel (29 barrels) to bring annular fill from 1910 to 1897 feet bpl. Tremie set at 1898 feet bpl.
9:31	Start pumping gravel (1/2 load already in trough).
10:14	First 1/2 load pumped. Add 1st full loader of gravel to trough since last cement tag.
12:15	Finish pumping 1 and 1/2 loads of gravel. Mark Pearce approves pumping another loader (+/-) to bring fill to approximately 1890 feet bpl prior to stabilizing with cement due to the enlarged and irregular nature of borehole from 1910 to 1890 feet bpl. Raise tremie to 1890 feet bpl.
12:25	Add 2nd full loader of gravel to trough since last cement tag.
13:05	Finish pumping 2 and 1/2 loads of gravel since last cement tag.
13:13	Add 3rd full loader of gravel to trough since last cement tag.
14:35	Trika Nelson on-site.
14:50	Finish pumping 3 loads of gravel since last cement tag. Tremie is backed up with gravel.
15:00	Noah Kugler leaves site.
15:05	Prepare to tag gravel. Pump 500 gallons of flush prior to tag.
15:10	Tag gravel at 1896' bpl. Resume pumping gravel to 1890 feet bpl.
15:30	Stop graveling and start circulating due to inclement weather.
16:45	Hard tag gravel at approximately 1890 feet bpl.

16:55	Preparing for cement stage 62.
17:15	Mike Sordan on site.
17:22	Begin pumping freshwater pre-flush.
17:24	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
17:30	Begin cementing by tremie using neat cement with 3% CaCl.
17:36	End cementing, move to chase.
17:38	End first chase (8 bbls.). Pulled one double stand of cement tubing.
17:47	Re-attach cementing header. Begin second chase.
17:50	End second chase (10 bbls.). Raise tremie.
18:00	Waiting on cement.
19:00	Waiting on cement.
19:50	Hard tag cement stage 62 at approximately 1912 feet bpl (no fill). Tag was made 9.9 feet down on tremie joint #61. Tag depth = tremie length through joint #60 (1911.99) + feet down tremie joint #61 (9.9) - feet above pad level (10) = 1911.89 feet bpl. **Net loss of 22 feet**.
20:00	Preparing to gravel. Going to pump gravel to 1902 feet bpl. Tremie tubing set at 1901 feet bpl.
20:10	Begin pumping 1st bucket of gravel since cement tag.
21:15	Finished pumping 1st bucket of gravel. Begin pumping 2nd bucket of gravel.
22:00	Tag gravel at 1871'bpl. Preparing to cement stage 63.
22:50	Craig Boomgaard on site. Trika Nelson off site.
22:57	Begin pumping freshwater pre-flush.
23:00	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
23:06	Begin cementing by tremie using neat cement with 3% CaCl.
23:11	End cementing, move to chase.
23:14	End first chase (8 bbls.). Pulled one double stand of cement tubing.
23:24	Re-attach cementing header. Begin second chase.
23:26	End second chase (10 bbls.). Raise tremie.
0:23	Waiting on cement
1:04	Waiting on cement
1:48	Tag cement after stage 63 at 1863 feet bpl. Preparing to cement stage 64.
1:49	Begin pumping freshwater pre-flush.
1:51	End pre-flush (10 bbls.). Begin mixing neat cement.
1:52	Begin cementing by tremie using neat cement.
1:57	End cementing, move to chase.
2:00	End first chase (8 bbls.). Pulled one stand of cement tubing.
2:10	Re-attach cementing header. Begin second chase.
2:13	End second chase (10 bbls.). Raise tremie.
3:00	Waiting on cement.
5:00	Waiting on cement.
6:43	Tag cement after stage 64 at 1864 feet bpl.
6:55	Frank Procta arrives on-site.

WATER RESOURCE SOLUTIONS

Date: 6/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:55	Frank Procta arrives on-site. Current ops. : Waiting on cement. Early preparations begin for cementing STAGE #65.
7:02	Craig Boomgaard leaves the site.
7:22	Begin freshwater pre-flush.
7:30	Begin cementing, by tremie, using neat cement w/ CaCl accelerator.
7:35	End cementing, move to chase. NOTE: Pumped 21 barrels of neat w/ CaCl for STAGE #65. Plan to perform a temperature log at 9:30 hours.
7:49	End the final flush and raise the cement tubing string.
8:00	Waiting on cement.
8:49	Update Mark Pearce of cementing operations.
8:52	Logger arrives on-site.
9:20	Lower the temperature tool down the well. NOTE: Logging run to include cement stages 60-65.
9:32	Begin recording data downhole from a depth of 1800 feet bpl.
9:37	End recording data at a depth of 2000 feet bpl.
9:37	Retrieve the tool. NOTE: Based on results of the temperature log, the top of cement (STAGE #65) is picked at 1862 feet bpl.
10:07	Hard tag top of cement (STAGE #65) at 1863.5 feet bpl.
10:12	Update Mark Pearce with results of last tag. Mark instructs Frank Procta to have the contractor resume gravel pumping to a depth of 1850 feet bpl.
10:45	Begin pumping gravel (first loader of day shift). NOTE: Bottom end of tubing string set at 1850 feet bpl.
11:35	Continue to pump gravel downhole.
11:48	Currently pumping water to settle out the gravel.
12:00	Tag top of gravel at 1846.4 feet bpl.
12:31	Begin freshwater pre-flush.
12:33	Begin cementing, by tremie, using neat cement w/ CaCl accelerator.
12:37	End cementing, move to chase. NOTE: Pumped 20.5 barrels of neat w/ CaCl for STAGE #66. Plan to tag cement at 14:30 hours.
12:50	End the final chase and raise the cement tubing string.
13:00	Waiting on cement.
14:00	Waiting on cement.

14:30	Waiting on cement.
14:40	Trika Nelson on site.
15:00	Hard tag top of cement (STAGE #66) at 1855 feet bpl.
15:10	Frank Procta leaves the site.
15:15	Cementer down. Currently trying to repair. Trika Nelson calls Mark Pearce with update of current operations.
16:00	Still repairing cement truck.
17:00	Still repairing cement truck.
18:00	Still repairing cement truck.
19:00	Still repairing cement truck. (Replacing 2 hydraulic pumps)
20:00	Still repairing cement truck.
21:00	Still repairing cement truck.
22:00	Still repairing cement truck.
23:00	Craig Boomgaard on site. Trika Nelson off site.
0:00	Still repairing cement truck.
0:14	Begin pumping freshwater pre-flush.
0:17	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
0:18	Begin cementing by tremie using neat cement with 3% CaCl.
0:23	End cementing, move to chase.
0:25	End first chase (8 bbls.). Pulled one double stand of cement tubing.
0:43	Re-attach cementing header. Begin second chase.
0:45	End second chase (10 bbls.). Raise tremie.
3:00	Waiting on cement.
4:30	Waiting on cement.
6:22	Tag at 1848 bpl after stage 67
6:46	Mike Sordan starts setting up cement truck.
7:00	Shift change. Begin pumping freshwater pre-flush.

WATER RESOURCE SOLUTIONS

Date: 6/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Finish setting up to pump cement Stage 68 to fill the annulus between the 24-inch casing and the formation. Cement Stage 67 was tagged this morning at 1848 feet bpl. Begin pumping freshwater pre-flush.
7:03	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
7:06	Begin cementing by tremie using neat cement with 3% CaCl. See log.
7:11	End cementing (21 bbls), move to chase.
7:13	End first chase (8 bbls.). Pulled one double stand of cement tubing.
7:20	Re-attach cementing header. Begin second chase.
7:23	End second chase (10 bbls.). Raise tremie.
8:00	Waiting on cement. Call Mark Pearce with update.
8:10	Discuss plan for cementing with Mike Sordan and Ronnie Thames. Try to get to at least 1765 feet bpl with cement. Only use gravel when successive stages of cement produce little or no fill Come up ~10 feet with gravel and resume pumping cement.
9:15	Cement sample is hard. Set up to tag Stage 68 cement.
9:38	Tag Stage 68 cement at 1847 feet bpl (1 foot of fill).
9:50	Mike Sordan setting up cement truck for Stage 69.
9:58	Begin pumping freshwater pre-flush.
10:01	End pre-flush (10 bbls.). Begin mixing neat cement with 3% CaCl.
10:06	Begin cementing by tremie using neat cement with 3% CaCl. See log.
10:11	End cementing (22 bbls.), move to chase.
10:13	End first chase (8 bbls.). Pulled one double stand of cement tubing.
10:26	Re-attach cementing header. Begin second chase.
10:28	End second chase (10 bbls.). Raise tremie.
11:00	Waiting on cement. Call Mark Pearce with update.
12:00	Waiting on cement.
12:10	Cement sample is hard. Set up to tag Stage 69 cement.

12:18	Tag Stage 69 cement at 1847 feet bpl (no fill). Since two consecutive cement stages have provided little to no fill, the Contractor may use gravel to fill approximately 10 vertical feet. Set tremie at 1837 feet bpl (10 feet above tag. Theoretical fill for 10 vertical feet is approximately 8 dry bbls or a little less than 1/2 of a loader bucket.
12:40	Start pumping 1/2 loader of gravel.
13:26	Tremie tubing has become clogged.
13:40	Begin tripping out tremie.
14:40	Trika Nelson on site. Finished tripping out tremie. Begin to trip tremie back in hole.
14:55	Noah Kugler off site.
15:00	Still tripping in tremie tubing.
15:40	Finish tripping in tubing. Tag gravel at 1837 feet bpl. Prepare to cement.
16:06	Begin pumping freshwater pre-flush.
16:09	End pre-flush (15 bbls.). Begin mixing neat cement with 3% CaCl.
16:10	Begin cementing by tremie using neat cement with 3% CaCl. See log.
16:15	End cementing (21 bbls.), move to chase.
16:17	End first chase (8 bbls.). Pulled one double stand of cement tubing.
16:27	Re-attach cementing header. Begin second chase.
16:29	End second chase (10 bbls.). Raise tremie.
17:00	Waiting on cement.
18:00	Waiting on cement.
18:15	Tag cement stage 70 at 1842 feet bpl.
18:24	Begin pumping freshwater pre-flush.
18:26	End pre-flush (15 bbls.). Begin mixing neat cement with 3% CaCl.
18:27	Begin cementing by tremie using neat cement with 3% CaCl. See log.
18:32	End cementing (21 bbls.), move to chase.
18:34	End first chase (8 bbls.). Pulled one double stand of cement tubing.
18:43	Re-attach cementing header. Begin second chase.
18:45	End second chase (10 bbls.). Raise tremie.
19:00	Waiting on cement.
20:00	Waiting on cement.
20:45	Tag cement stage 71 at 1839 feet bpl.
21:10	Mike Sordan on site to pump cement stage 72.
21:17	Begin pumping freshwater pre-flush.
21:19	End pre-flush (15 bbls.). Begin mixing neat cement with 3% CaCl.
21:23	Begin cementing by tremie using neat cement with 3% CaCl. See log.
21:28	End cementing (21 bbls.), move to chase.
21:31	End first chase (8 bbls.). Pulled one double stand of cement tubing.
21:41	Re-attach cementing header. Begin second chase.
21:43	End second chase (10 bbls.). Raise tremie.
22:00	Waiting on cement.
22:50	Craig Boomgaard on site. Trika Nelson off site.
23:50	Logging truck on site. Tim Denison logging

0:00	Tool in the hole
0:17	Logging from 1750 to 1900 feet bpl.
0:30	Tool out of the hole.
0:38	Tag cement stage 72 at 1836 feet bpl.
0:54	Mike Sordan on site to pump cement stage 73.
0:56	Begin pumping freshwater pre-flush.
0:58	End pre-flush (10 bbls.). Begin mixing neat cement.
1:00	Begin cementing by tremie using neat cement. See log.
1:06	End cementing (22 bbls.), move to chase.
1:08	End first chase (8 bbls.). Pulled one stand of cement tubing.
1:18	Re-attach cementing header. Begin second chase.
1:22	End second chase (10 bbls.). Raise tremie.
2:46	Waiting on cement.
4:00	Waiting on cement.
5:00	Waiting on cement.
6:03	Tag cement at 1839 feet bpl after stage 73. (net loss of 3 feet)
6:07	Call Noah Kugler to confirm adding more cement. He agrees.
7:00	Noah Kugler on-site. Setting up for Stage 74 cement.

WATER RESOURCE SOLUTIONS

Date: 6/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Setting up to cement Stage 74 to fill the annulus between the 24-inch casing and the formation. last stage of cement tagged this morning at 1839 feet bpl. Mike Sordan setting up truck.
7:05	Begin freshwater pre-flush for cement Stage 74. Tremie set approximately 1 foot above gravel tag.
7:08	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
7:18	Begin pumping Stage 74 cement (neat with 3% CaCl). See cement log.
7:23	End cementing (20 bbls.), move to chase.
7:25	End first-phase chase (8 bbls.), remove cementing header.
7:27	Pull one double stand of cement tubing (~60 feet). Clear tubing from truck.
7:33	Re-attach the cementing header to the tubing string. Begin second chase.
7:36	End second chase (10 bbls.), break cementing header, and raise string.
8:00	Waiting on cement. Noah calls Mark Pearce with update.
9:00	Waiting on cement.
9:27	Hard tag cement stage 74 at approximately 1834 feet bpl (~5 feet of fill). Tag was made with 5.5 feet of tremie left above the slips on joint #58. Tag depth = tremie length through joint #58 (1849.57) - feet on joint #58 left above slips (5.5) - feet of slips above pad level (10) = 1834.07 feet bpl.
9:32	Prepare to pump cement Stage 75. Mike Sordan sets up truck and pressure tests lines.
9:35	Begin freshwater pre-flush for cement Stage 75. Tremie set approximately 1 foot above gravel tag.
9:37	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
9:40	Begin pumping Stage 75 cement (neat). See cement log.
9:46	End cementing (22 bbls.), move to chase.
9:48	End first-phase chase (8 bbls.), remove cementing header.
9:50	Pull one double stand of cement tubing (~60 feet). Clear tubing from truck.
9:55	Re-attach the cementing header to the tubing string. Begin second chase.
9:58	End second chase (10 bbls.), break cementing header, and raise string.
10:10	Waiting on cement. Noah calls Mark Pearce with update.
11:00	Waiting on cement.

11:15	Clay Ferguson (geophysical logger) on-site to run cement-top-temperature log for stages 73, 74 and 75.
11:25	Go in hole with temperature logging tool.
11:40	Temperature log complete to 1900 feet bpl. Top of cement picked at either 1822 or 1834 feet bpl from log trends. Remove tool from hole.
12:00	Waiting on cement. Truck has been taken off site for activities at another YBI location. Expected back this afternoon.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:30	Trika Nelson on-site.
14:35	Cement sample is hard.
15:00	Noah Kugler leaves.
15:35	Hard tag cement stage 75 at approximately 1826 feet bpl (~8 feet of fill). Tag was made with 13 feet of tremie left above the slips on joint #58. Tag depth = tremie length through joint #58 (1849.57) - feet on joint #58 left above slips (13) - feet of slips above pad level (10) = 1826 feet bpl.
16:00	Waiting for cement truck to arrive back on site.
17:00	Waiting for cement truck to arrive back on site.
18:00	Waiting for cement truck to arrive back on site.
19:00	Waiting for cement truck to arrive back on site.
19:45	Cement truck back on site. Preparing to cement.
20:14	Begin freshwater preflush for cement stage 76.
20:16	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
20:17	Begin pumping Stage 76 cement (neat w/ 3% CaCl). See cement log.
20:23	End cementing (22 bbls.), move to chase.
20:25	End first-phase chase (8 bbls.), remove cementing header.
20:26	Pull one double stand of cement tubing (~60 feet). Clear tubing from truck.
20:35	Re-attach the cementing header to the tubing string. Begin second chase.
20:37	End second chase (10 bbls.), break cementing header, and raise string.
21:00	Waiting on cement.
22:00	Waiting on cement.
22:03	Tag cement stage 76 at 1826' bpl. (No fill)
22:10	Begin freshwater preflush for cement stage 77.
22:13	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
22:13	Begin pumping Stage 77 cement (neat). See cement log.
22:20	End cementing (26 bbls.), move to chase.
22:21	End first-phase chase (8 bbls.), remove cementing header.
22:22	Pull one double stand of cement tubing (~60 feet). Clear tubing from truck.
22:32	Re-attach the cementing header to the tubing string. Begin second chase.
22:34	End second chase (10 bbls.), break cementing header, and raise string.
23:00	Todd Tubbert on site. Trika Nelson off site.
0:00	Waiting on cement.
1:00	Waiting on cement.
2:00	Waiting on cement.

2:45	Hard tag top of cement Stage # 77 at 1822' bpl. (4' of fill)
3:00	Waiting on Geophysical loggers (est. 6:00), waiting on cementer (est. 6:30)
6:05	Clay Ferguson (geophysical logger) on-site to run cement-top-temperature
6:11	Go in hole with temperature logging tool.
6:25	Temperature log complete to 1890 feet bpl. Top of cement picked at either 1821feet bpl from log trends. Remove tool from hole.
6:30	Mike Sordan on-site, preparing for cement stage # 78.
6:41	Begin freshwater preflush for cement stage 78.
6:43	Pre-flush is completed (10 bbls.). Begin mixing neat cement w/ 3%CaCl.
6:44	Begin pumping Stage 78 cement (neat w/ 3% CaCl). See cement log.
6:51	End cementing (25 bbls.), move to chase.
6:52	End first-phase chase (8 bbls.), remove cementing header.
6:53	Pull pup joint and one double stand of cement tubing (~70 feet). Clear tubing from truck.
7:00	Frank Procta arrives on-site.
7:03	Re-attach the cementing header to the tubing string. Begin second chase.
7:09	End second chase (10 bbls.), break cementing header, and raise string.
7:15	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 6/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : In the process of cementing (STAGE #78).
7:09	End second chase (10 bbls.), break cementing header, and raise string.
9:00	Hard tag the top of cement (STAGE #78) at 1821.5 feet bpl.
9:14	Begin freshwater preflush for cement stage 79.
9:16	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
9:23	Begin pumping Stage 79 cement (neat w/ 3% CaCl). See cement log.
9:28	End cementing (20 bbls.), move to chase.
9:30	End first-phase chase (8 bbls.), remove cementing header.
9:31	Pull one double stand and one pup joint of cement tubing.
9:39	Re-attach the cementing header to the tubing string. Begin second chase.
9:41	End second chase (10 bbls.), break cementing header, and raise string.
10:00	Waiting on cement.
11:12	Hard tag the top of cement (STAGE #79) at 1818 feet bpl.
11:18	Begin freshwater preflush for cement stage 80.
1:20	Pre-flush is completed (10 bbls.). Begin mixing neat cement.
11:21	Begin pumping Stage 80 cement (neat w/ 3% CaCl). See cement log.
11:26	End cementing (22 bbls.), move to chase.
11:29	End first-phase chase (8 bbls.), remove cementing header.
11:29	Pull one double stand and one pup joint of cement tubing.
11:37	Re-attach the cementing header to the tubing string. Begin second chase.
11:39	End second chase (10 bbls.), break cementing header, and raise string.
12:00	Waiting on cement.
12:30	Waiting on cement.
12:55	Begin to lower temperature tool down the well.
13:08	Begin recording data downhole from a depth of 1700 feet bpl.
13:12	End data recording at just past 1900 feet bpl. Retrieve the tool. NOTE: Top of cement (STAGE #80) picked at 1819 feet bpl. Temperature log included cement stages 78,79, and 80.
13:35	Hard tag the top of cement (STAGE #80) at 1819 feet bpl.
13:39	Begin freshwater preflush for cement stage 81.
13:41	Pre-flush is completed (10 bbls.). Begin mixing neat cement.

13:45	Begin pumping Stage 81 cement (neat w/ 3% CaCl). See cement log.
13:49	End cementing (12 bbls.), move to chase.
13:51	End first-phase chase (8 bbls.), remove cementing header.
13:52	Pull one double stand and one pup joint of cement tubing.
14:00	Re-attach the cementing header to the tubing string. Begin second chase.
14:02	End second chase (10 bbls.), break cementing header, and raise string.
14:30	Waiting on cement.
15:00	Waiting on cement.
15:36	Hard tag the top of cement (STAGE #81) at 1815 feet bpl.
16:14	Begin freshwater preflush for cement stage 82.
16:15	Pre-flush is completed (5 bbls.). Begin mixing neat cement.
16:16	Begin pumping Stage 82 cement (neat w/ 3% CaCl). See cement log.
16:18	End cementing (10 bbls.), move to chase.
16:20	End first-phase chase (8 bbls.), remove cementing header.
16:21	Pull one double stand and one pup joint of cement tubing.
16:28	Re-attach the cementing header to the tubing string. Begin second chase.
16:29	End second chase (10 bbls.), break cementing header, and raise string.
16:30	Waiting on cement. NOTE: Jimmy Brantley of YBI cancels today's night shift and tomorrow for the purpose of giving his crews a break. Plan to resume work on Monday morning at 0700 hours.
17:00	Waiting on cement.
17:40	Todd Tubbert of WRS calls for update. Todd is informed that site operations are cancelled until Monday morning at 0700 hours.
17:55	Leave a voice mail message (site status report) for Mark Pearce.
18:10	Frank Procta leaves the site. **NOTE: The night tour has been cancelled.**

WATER RESOURCE SOLUTIONS

Date: 6/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	SUNDAY'S SHIFTS CANCELLED BY CONTRACTOR

WATER RESOURCE SOLUTIONS

Date: 6/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Operations were suspended from Saturday at 18:00 hours pending a meeting with the Contractor (YBI), the Engineer (WRS), and the County (Collier PUED). Further cement and gravel operations will be discussed.
7:45	Hard tag cement Stage 82 at approximately 1815 feet bpl (no fill). Tag was made when the 12-foot pup joint was 7 feet below the slips, with joint #57 in the hole. Tag depth = tremie length through joint #57 (1817.98) + feet down on pup joint (7) - feet of slips above pad level (10) = 1814.98 feet bpl.
8:16	Prepare to pump cement Stage 83. Mike Sordan sets up truck and pressure tests lines.
8:21	Begin freshwater pre-flush for cement Stage 83. Tremie set approximately 1 foot above cement tag.
8:24	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
8:31	Begin pumping Stage 83 cement (neat with 3% CaCl). See cement log.
8:33	End cementing (10 bbls.), move to chase.
8:35	End first-phase chase (8 bbls.), remove cementing header.
8:36	Pull subs and one double stand of cement tubing (~70 feet). Clear tubing from truck.
8:45	Re-attach the cementing header to the tubing string. Begin second chase.
8:48	End second chase (10 bbls.), break cementing header, and raise string.
8:55	Waiting on cement. Noah calls Mark Pearce with update.
10:00	Waiting on cement.
10:20	Hard tag cement Stage 83 at approximately 1815 feet bpl (no fill - 2nd consecutive stage). Tag was made when the 12-foot pup joint was 7 feet below the slips, with joint #57 in the hole. Tag depth = tremie length through joint #57 (1817.98) + feet down on pup joint (7) - feet of slips above pad level (10) = 1814.98 feet bpl.
10:23	Given the lack of fill on two consecutive cement stages, the Contractor prepares to pump gravel to bring up annular fill 10 to 15 feet.
10:30	Begin pumping 1st loader of gravel since last cement tag.

10:45	Due to the lack of significant fill progress from cement and the extensive time involved, the Contractor and Engineer have recommended using predominantly gravel from this point forward to bring the annular fill level to +/- 1690 feet bpl before filling the remainder of the annulus with cement.
11:10	Mark Pearce has discussed the recommendation to use predominantly gravel to +/- 1690 feet bpl with Mr. Jack Myers (FDEP - UIC Program). Mr. Myers has given the recommendation a verbal approval.
11:35	Plugging of the tremie tubing with gravel has slowed graveling process.
14:15	Finish pumping 1st loader of gravel since tag. Add 2nd loader to trough.
14:50	Frank Procta on-site. Current ops. : Pumping gravel (2nd loader of day shift).
15:10	Noah Kugler leaves site.
15:36	Pick up the first loader of the swing shift.
16:00	Currently pumping first loader of swing shift. NOTE: Bottom of tremie set at approximately 1756 feet bpl.
16:32	Pick up the second loader of the swing shift.
18:00	Currently pumping second loader of swing shift.
18:18	Pick up the third loader of the swing shift.
19:00	Currently pumping third loader of swing shift.
20:45	Currently running water after freeing tubing of gravel. NOTE: Currently pumping sixth loader of swing shift.
20:56	Resume gravel pumping.
22:00	Pick up the seventh loader of the swing shift.
22:40	Currently pumping seventh loader of swing shift.
22:55	Frank Procta leaves the site. Todd Tubbert on-site.
23:20	Pick up first loader of night shift.
0:30	Pick up second loader of night shift.
1:20	Pick up third loader of night shift.
1:45	Trip out 1 single (30') of tremie tubing and 1 Pup joint (11.8'). Bottom of tremie tubing set at 1710' bpl.
3:01	Pick up fourth loader of night shift.
4:00	Driller hurt ankle and was taken to emergency room by one of the crew.
4:35	Pick up sixth loader of night shift.
6:10	Pick up seventh loader of night shift.
6:58	Pick up first loader of day shift.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Pick up 1st loader of day shift (17th total since last cement). Plan to pump 19 loads of gravel (approximately 2052 cubic feet) and top with single cement stage.
7:25	Todd Tubbert leaves the site.
7:50	Noah discusses plan to pump cement with Ronnie Thames. Noah calls Mark Pearce with update.
8:10	Prepare to tag gravel with tremie.
8:45	Tag gravel at approximately 1755 feet bpl. Tag was made when the 12-foot pup joint was 10 feet below the slips, with joint #55 in the hole. Tag depth = tremie length through joint #55 (1755.22) + feet down on pup joint (10) - feet of slips above pad level (10) = 1755.22 feet bpl.
8:50	Prepare to pump single 20-barrel stage of cement on gravel.
8:55	Crew has suspended operations to help get the cement delivery truck from out of a ditch. The truck has become stuck in poorly consolidated soil.
9:50	Resume setting up to pump cement. Josh Brown will pump cement.
10:00	Begin freshwater pre-flush for cement Stage 84. Tremie set approximately 1 foot above cement tag.
10:03	Pre-flush is completed (11.5 bbls.). Begin mixing neat cement.
10:10	Tubing is clogged. Pressure from cement truck builds to 2,000 psi while pumping pre-flush.
15:15	Pull out tremie subs and pull up tremie line an additional 30 feet. Clear cement from truck. Reattach cement header to tremie and try to pump water.
10:18	Tubing is still clogged. Pressure still high from cement truck. Pick up tubing further and lower quickly to jar gravel loose, also hit tubing with sledge hammer.
10:20	Gravel is loose, water circulation has been regained. Mix more cement.
10:27	Begin pumping Stage 84 cement (neat). See cement log.
10:32	End cementing (21.5 bbls.), move to chase.
10:34	End first-phase chase (7.5 bbls.), remove cementing header.
10:35	Pull one joint of cement tubing (~30 feet). Clear lines from truck.
10:43	Re-attach the cementing header to the tubing string. Begin second chase.

10:45	End second chase (10 bbls.), break cementing header, and raise string. Wait one hour before pumping gravel. No tag of cement will be made.
11:45	Begin pumping 1st load of gravel since pumping cement Stage 84.
12:30	Finish 1st load of gravel since cement. Add 2nd loader to trough.
13:15	Noah instructs Tommy Rannels (driller) and Ronnie Thames (pusher) that the tremie should not be raised above approximately 1685 feet bpl while pumping gravel. The contact between massive dolostone and massive limestone occurs at approximately 1690 feet bpl. Cement will be placed upward from the dolostone/limestone contact to approximately 200 feet bpl for future cement bond log.
13:20	Finish 2nd load of gravel since cement. Add 3rd loader to trough.
14:05	Finish 3rd load of gravel since cement. Add 4th loader to trough.
14:30	Suspend graveling to fix hole in pump. Four loads of gravel pumped since cement (last load of AM shift). There is a very small amount of gravel left in trough.
14:55	Frank Procta on-site. Noah Kugler leaves site. Pumped four loads of gravel since cement. Five total loads pumped for AM shift.
15:00	Add 1st load of gravel for swing shift to trough (5th loader since cement).
15:20	Collect 2nd loader of gravel for swing shift.
15:55	Currently pumping 2nd loader of gravel for swing shift.
16:11	Collect 3rd loader of gravel for swing shift.
16:40	Currently pumping 3rd loader of gravel for swing shift.
17:04	Collect 4th loader of gravel for swing shift.
17:25	Currently pumping 4th loader of gravel for swing shift.
17:48	Collect 5th loader of gravel for swing shift.
18:20	Currently pumping 5th loader of gravel for swing shift.
18:37	Collect 6th loader of gravel for swing shift.
19:10	Currently pumping 6th loader of gravel for swing shift.
20:55	Currently pumping 9th loader of gravel for swing shift.
21:15	Collect 10th loader of gravel for swing shift.
21:40	Currently pumping 10th loader of gravel for swing shift.
22:15	Currently down for repairs - replacing pump's snail.
22:30	Frank Procta leaves the site.
23:00	Todd Tubbert on-site.
23:55	Pick up 1st loader of night shift.
0:43	Pick up 2nd loader of night shift.
1:20	Pick up 3rd loader of night shift.
2:10	Pick up 4th loader of night shift.
2:35	Pick up 5th loader of night shift.
3:15	Pick up 6th loader of night shift.
3:57	Pick up 7th loader of night shift.
4:40	Pick up 8th loader of night shift.
5:30	Pick up 9th loader of night shift.
6:35	Pick up 10th loader of night shift.

6:50	Suspend pumping gravel to tag and top with single cement stage.
7:00	Noah Kugler on. Todd Tubbert off. Pumped 9 loads through the PM shift.

WATER RESOURCE SOLUTIONS

Date: 7/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Todd Tubbert off. Pumped total of 24 loads of gravel (approximately 2600 cubic feet) since last cement "cap" to fill the annulus between the 24-inch casing and the formation. Prepare to tag gravel with tremie.
7:25	Tag gravel (very solid hard tag) at approximately 1731 feet bpl. Tag was made when joint #55 was 19 feet below the slips (no subs). Tag depth = tremie length through joint #54 (1722.16) + feet down on joint #55 (19) - feet of slips above pad level (10) = 1731.16 feet bpl.
7:30	Prepare to pump single 20-barrel stage of cement on gravel. Mike Sordan will pump cement.
7:42	Begin freshwater pre-flush for cement Stage 85. Tremie set approximately 1 foot above gravel tag.
7:46	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
7:49	Begin pumping Stage 85 cement (neat with 3% CaCl). See cement log.
7:56	End cementing (26 bbls.), move to chase.
7:58	End first-phase chase (7 bbls.), remove cementing header.
7:59	Pull subs and two joints of cement tubing (~70 feet). Clear lines from truck.
8:05	Re-attach the cementing header to the tubing string. Begin second chase.
8:07	End second chase (10 bbls.), break cementing header, and raise string. Wait one hour before pumping gravel. No tag of cement will be made.
9:50	Begin pumping 1st load of gravel since pumping cement Stage 85.
11:55	Finish 1st load of gravel since cement. Add 2nd loader to trough. Larger rocks in gravel are slowing pumping process.
14:25	Finish 2nd load of gravel since cement. Add 3rd loader to trough. Larger rocks in gravel are still slowing pumping process.
15:00	Frank Procta arrives on-site, Noah Kugler leaves the site.
15:05	Mark Pearce calls for update. Mark instructs the staff to notify him when the cumulative volume of gravel pumped reaches a value of 38,000 cubic feet.
15:10	Currently pumping 3rd loader of gravel for the day shift.
15:50	Currently pumping 1st loader of gravel for the swing shift.
16:12	Pick up 2nd loader of gravel for the swing shift.
16:30	Currently pumping 2nd loader of gravel for the swing shift.

Week 24

WATER RESOURCE SOLUTIONS

Date: 7/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Todd Tubbert off. Pumped total of 16 loads of gravel (approximately 1730 cubic feet) since last cement "cap" to fill the annulus between the 24-inch casing and the formation. Prepare to tag gravel with tremie.
7:12	Tremie joint #54 has a worn tool box and must be discarded. Replace with joint #55 to tag. Revise tally to show the change in length by +1.46 feet (the difference in length between joint #54 and joint #55).
7:25	Tag gravel at approximately 1715 feet bpl by monitoring water flow through tubing while lowering into gravel. Tag was made with joint #53 at 1.5 feet down (below the slips). Tag depth = tremie length through joint #55 (1723.62) + feet below slips on joint #53 (1.5) - feet of slips above pad level (10) = 1715.12 feet bpl.
7:43	Prepare to pump single 20-barrel stage of cement on gravel. Josh Brown will pump cement. Pressure test lines from truck.
7:45	Begin freshwater pre-flush for cement Stage 86. Tremie set approximately 3 feet above gravel tag (1712 feet bpl) as determined by lowering and raising tremie while monitoring water pressure from cement truck.
7:51	Pre-flush is completed (20 bbls.). Begin mixing neat cement with bentonite.
7:53	Begin pumping Stage 86 cement (12% bentonite). See cement log.
7:58	End cementing (20 bbls.), move to chase.
8:00	End first-phase chase (7 bbls.), remove cementing header.
8:02	Pull single joint of cement tubing (~30 feet). Clear lines from truck.
8:10	Re-attach the cementing header to the tubing string. Begin second chase.
8:13	End second chase (10 bbls.), break cementing header, and raise string. Wait one hour before pumping gravel. No tag of cement will be made.
8:15	Noah calls Mark Pearce with update. Weekly report will be completed through 7:00 hours this morning due to the holiday weekend and no site activity tomorrow. Next week's report will start from today at 7:00 hours.
9:05	Begin pumping 1st load of gravel since pumping cement Stage 86.
9:55	Finish pumping 1st load of gravel since cement. Add 2nd loader to trough.
10:40	Finish pumping 2nd load of gravel since cement. Add 3rd loader to trough.
11:25	Finish pumping 3rd load of gravel since cement. Add 4th loader to trough.

12:10	Finish pumping 4th load of gravel since cement. Add 5th loader to trough.
12:45	Finish pumping 5th load of gravel since cement. Add 6th loader to trough.
13:35	Finish pumping 6th load of gravel since cement. Add 7th loader to trough.
14:20	Finish pumping 7th load of gravel since cement. Add 8th loader to trough.
14:45	Frank Procta arrives on-site.
15:00	Noah Kugler leaves the site. Majority of 9th load of gravel has been pumped since cement. Total of 9 loads pumped during AM shift and since last cement.
15:09	Pick up first loader of gravel for the swing shift.
15:25	Currently pumping the first loader of gravel for the swing shift.
15:41	Pick up second loader of gravel for the swing shift.
16:15	Currently pumping the second loader of gravel for the swing shift.
16:40	Pick up third loader of gravel for the swing shift.
16:50	Currently pumping the third loader of gravel for the swing shift.
17:06	Pick up fourth loader of gravel for the swing shift.
17:46	Update Mark Pearce of site operations.
17:50	Currently pumping the fourth loader of gravel for the swing shift.
18:12	Pick up fifth loader of gravel for the swing shift.
19:00	Currently replacing the snail to gravel pump.
21:30	Resume pumping gravel.
22:30	Continue pumping gravel (eighth loader of shift).
22:55	Frank Procta leaves the site.
23:05	Todd Tubbert arrives on-site.
23:55	Pick up 1st loader of night shift.
1:03	Pick up 2nd loader of night shift.
2:12	Pick up 3rd loader of night shift.
3:20	Pick up 4th loader of night shift.
4:15	Pick up 5th loader of night shift.
5:11	Pick up 6th loader of night shift.
6:00	Pick up 7th loader of night shift.
6:05	Down with repair to gravel pump. (Replacing flange on pump).
6:27	Repair to pump complete. Prepare to shut down rig for Independence Day.
6:30	Flush tremie tubing with 600 gals of water.
6:45	Total of **6** loader buckets of gravel have been pumped during today's night shift. The bucket loader contains 3/4 of which would have been load # 7, the trough contains the remaining ~ 1/4 of load # 7. Therefore, Saturdays Mornings first load is in trough and loader in front of trough. NOTE: 23 bucket loads of gravel have been pumped since last cement stage. Plan to tag and cement on Sat. AM shift.
6:50	Rig is shut down until Saturday July 5th for Independence day.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	NO SITE ACTIVITY - INDEPENDENCE DAY

WATER RESOURCE SOLUTIONS

Date: 7/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
C. Boomgaard

Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson on site.
6:50	Trika Nelson calls Noah Kugler to confirm weekend activities
7:40	Gravel tag at 1748 feet bpl.
7:50	Preparing to cement.
8:02	Pre-flush is completed (10 bbls.).
8:05	Begin pumping Stage 87 cement . See cement log.
8:14	End cementing (25 bbls.), move to chase.
8:16	End first-phase chase (7.5 bbls.), remove cementing header.
8:16	Pull single joint of cement tubing (~30 feet). Clear lines from truck.
8:25	Re-attach the cementing header to the tubing string. Begin second chase.
8:28	End second chase (10 bbls.), break cementing header, and raise string.
8:30	Preparing to gravel.
8:40	Begin pumping 1st bucket of gravel.
9:10	Dump rest of 1st bucket in trough. Pick up 2nd bucket of gravel.
9:20	Begin pumping 2nd bucket.
10:00	Finished pumping 2nd bucket. Begin pumping 3rd bucket.
10:40	Finished pumping 3rd bucket. Begin pumping 4th bucket.
11:10	Finished pumping 4th bucket. Begin pumping 5th bucket.
12:15	Finished pumping 5th bucket. Begin pumping 6th bucket.
13:30	Finished pumping 6th bucket. Begin pumping 7th bucket.
14:27	Finished pumping 7th bucket. Begin pumping 8th bucket.
15:22	Finished pumping 8th bucket. Begin pumping 9th bucket.
16:20	Finished pumping 9th bucket. Begin pumping 10th bucket.
17:25	Finished pumping 10th bucket. Begin pumping 11th bucket.
18:23	Finished pumping 11th bucket. Begin pumping 12th bucket.
18:55	Craig Boomgaard on site. Trika Nelson off site.
19:47	Finished pumping 12th bucket. Begin pumping 13th bucket.
20:55	Finished pumping 13th bucket. Begin pumping 14th bucket.
22:16	Finished pumping 14th bucket. Begin pumping 15th bucket.
23:30	Finished pumping 15th bucket. Begin pumping 16th bucket.
1:11	Finished pumping 16th bucket. Begin 17th bucket.
2:16	Finished pumping 17th bucket. Begin 18th bucket.

3:38	Finished pumping 18th bucket. Begin 19th bucket
4:07	Finish half of bucket 19. (2000 cubic ft)
4:23	Gravel tag at 1735 feet bpl.
4:40	Preparing to cement. Josh on site.
4:47	Pre-flush is completed (22 bbls.). Begin mixing neat cement.
5:04	Begin pumping Stage 88 cement . See cement log.
5:10	End cementing (24 bbls.), move to chase.
5:12	End first-phase chase (7.5 bbls.), remove cementing header.
5:14	Pull single joint of cement tubing (~30 feet). Clear lines from truck.
5:16	Re-attach the gravel header to the tubing string. Begin second chase.
5:22	End second chase (400 gallons.) and raise string. Wait one hour before
5:48	Preparing to gravel.
5:50	Begin pumping half bucket gravel.
6:26	Begin pumping 1st full bucket since last tag.
6:45	Trika Nelson on site. Craig Boomgaard off site.

WATER RESOURCE SOLUTIONS

Date: 7/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Trika Nelson on site. Craig Boomgaard off site.
7:00	Still pumping 1st load of gravel since last tag.
8:00	Still pumping 1st load of gravel since last tag. Large gravel cobbles plugging tubing, slowing pace.
8:20	Finished pumping 1st bucket. Begin pumping 2nd bucket.
9:30	Finished pumping 2nd bucket. Begin pumping 3rd bucket.
10:45	Finished pumping 3rd bucket. Begin pumping 4th bucket.
12:00	Finished pumping 4th bucket. Begin pumping 5th bucket.
13:10	Finished pumping 5th bucket. Begin pumping 6th bucket.
14:15	Changing flange connected to shell on pump.
14:30	Finished pumping 6th bucket. Begin pumping 7th bucket.
15:22	Finished pumping 7th bucket. Begin pumping 8th bucket.
16:35	Finished pumping 8th bucket. Begin pumping 9th bucket.
17:30	Finished pumping 9th bucket. Begin pumping 10th bucket.
18:40	Finished pumping 10th bucket. Begin pumping 11th bucket. (Total pumped 11.5 buckets)
18:50	Craig Boomgaard on site. Trika Nelson off site.
20:33	Finished 11th bucket. Tremie plugging. Checking lines and flushing.
21:33	Gravel tag at 1690' bpl. Gravel at base of tremie cause of plugging.
21:34	Calling cementer.
22:20	Preparing to cement. Josh on site.
22:36	Start Pre-flush.
22:38	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
22:43	Begin pumping Stage 89 cement . See cement log.
22:49	End cementing (22 bbls.), move to chase.
22:51	End first-phase chase (7.5 bbls.), remove cementing header.
22:52	Pull double joint of cement tubing (~60 feet). Clear lines from truck.
22:56	Re-attach the gravel header to the tubing string. Begin second chase.
23:03	End second chase (400 gallons.) and raise string.
0:00	Waiting on cement
1:00	Waiting on cement
2:00	Waiting on cement

2:53	Tag cement at 1675' bpl.
3:00	Calling cementer.
4:30	Preparing to cement. Josh on site.
4:44	Start Pre-flush.
4:46	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
4:50	Begin pumping Stage 90 cement . See cement log.
4:56	End cementing (21 bbls.), move to chase.
4:58	End first-phase chase (7.25 bbls.), remove cementing header.
4:59	Pull double joint of cement tubing (~60 feet). Clear lines from truck.
5:02	Re-attach the gravel header to the tubing string. Begin second chase.
5:09	End second chase (400 gallons.) and raise string.
6:00	Waiting on cement
7:00	Craig Boomgaard off site. Noah Kugler on site.

WATER RESOURCE SOLUTIONS

Date: 7/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Waiting to hard tag cement Stage 90 to fill the annulus between the 24-inch casing and the formation. Cement Stage 89 was hard tagged at 1675 feet bpl.
7:50	Tag cement Stage 90 at approximately 1670 feet bpl. Tag was made with joint #53 at 10.2 feet above the slips. Tag depth = tremie length through joint #53 (1690.56) - feet above slips on joint #53 (10.2) - feet of slips above pad level (10) = 1670.36 feet bpl.
7:52	Prepare to pump ~20-barrel stage of cement (Stage 91). Mike Sordan setting up cement truck. Pressure test lines from truck.
8:09	Begin freshwater pre-flush for cement Stage 91. Tremie set approximately 2 feet above cement tag (1668 feet bpl).
8:11	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
8:15	Begin pumping Stage 91 cement (3% CaCl). See cement log.
8:20	End cementing (21 bbls.), move to chase.
8:22	End first-phase chase (7 bbls.), remove cementing header.
8:23	Pull two subs and single joint of cement tubing (~50 feet). Clear lines from truck.
8:36	Re-attach the cementing header to the tubing string. Begin second chase.
8:38	End second chase (10 bbls.), break cementing header, and raise string.
8:40	Noah calls Mark Pearce with update.
9:00	Waiting on cement.
10:00	Waiting on cement.
10:45	Clay Ferguson on-site to perform cement-top-temperature log for cement stages 89, 90 and 91. Due to small stages and short wait times between stages, three stages of cement were pumped prior to the logging. The three cement stages were all run within the last 12 hours.
10:50	Go in hole with logging tool.
10:58	Begin logging downward from 1550 feet bpl.
11:04	Log complete to 1925 feet bpl. Begin running tool out of hole.
11:20	Tool is out of hole.

11:37	Tag cement Stage 91 at approximately 1661 feet bpl. Tag was made with joint #53 at 19.5 feet above the slips. Tag depth = tremie length through joint #53 (1690.56) - feet above slips on joint #53 (19.5) - feet of slips above pad level (10) = 1661.06 feet bpl.
11:39	Prepare to pump ~20-barrel stage of cement (Stage 92). Mike Sordan setting up cement truck. Pressure test lines from truck.
12:12	Begin freshwater pre-flush for cement Stage 92. Tremie set approximately 2 feet above cement tag (1659 feet bpl).
12:14	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
12:21	Begin pumping Stage 92 cement (3% CaCl). See cement log.
12:27	End cementing (21 bbls.), move to chase.
12:29	End first-phase chase (7 bbls.), remove cementing header.
12:31	Pull sub and double joint of cement tubing (~70 feet). Clear lines from truck.
12:38	Re-attach the cementing header to the tubing string. Begin second chase.
12:40	End second chase (10 bbls.), break cementing header, and raise string.
13:00	Waiting on cement.
14:00	Waiting on cement.
14:35	Trika Nelson on-site.
15:00	Waiting on cement.
15:15	Noah Kugler off site.
15:20	Tag cement stage 92 @ 1631 feet bpl.
15:36	Begin freshwater pre-flush for cement Stage 93. Tremie set approximately 2 feet above cement tag (1631 feet bpl).
15:38	Pre-flush is completed (10 bbls.). Begin mixing neat cement with 3% CaCl.
15:49	Begin pumping Stage 93 cement 12% bentonite. See cement log.
16:10	End cementing (110 bbls.), move to chase.
16:12	End first-phase chase (7 bbls.), remove cementing header.
16:15	Pull 12 foot sub & 5 doubles of cement tubing . Clear lines from truck.
16:29	Re-attach the cementing header to the tubing string. Begin second chase.
16:31	End second chase (10 bbls.), break cementing header, and raise string.
17:00	Waiting on cement.
17:05	Richard Harris (YBI welder) was shocked by a proximal lightning strike, while on-site, and taken to the hospital by EMS to make sure he was alright. Mr Harris was cognizant shortly after being shocked but was unable to stand or walk for a period of time. No serious burns were noted.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Waiting on cement.
21:17	Clay Ferguson on-site to perform cement-top-temperature log for cement stages 92 and 93.
21:30	Go in hole with logging tool.
21:33	Begin logging downward from 1380 feet bpl.

21:43	Log complete to 1710 feet bpl. Begin running tool out of hole.
21:50	Tool is out of hole.
22:00	Waiting on cement.
22:50	Tag cement stage 93 at 1545' bpl. Craig Boomgaard on site.
23:25	Begin freshwater pre-flush for cement Stage 94. Tremie set approximately 2
23:28	Pre-flush is completed (10 bbls.). Begin mixing cement with 12% bentonite.
23:30	Begin pumping Stage 93 cement 12% bentonite. See cement log.
23:52	End cementing (100 bbls.), move to chase.
23:53	End first-phase chase (6.75 bbls.), remove cementing header.
23:54	Pull 5 doubles of cement tubing . Clear lines from truck.
0:06	Re-attach the cementing header to the tubing string. Begin second chase.
0:09	End second chase (10 bbls.), break cementing header, and raise string.
1:00	Waiting on cement.
2:00	Waiting on cement.
3:00	Waiting on cement.
4:00	Waiting on cement.
5:00	Waiting on cement.
5:20	Go in hole with logging tool.
5:27	Begin logging downward from 1300 feet bpl.
5:33	Log complete to 1600 feet bpl. Begin running tool out of hole.
5:39	Tool is out of hole.
6:00	Waiting on cement.
7:00	Craig Boomgaard off site. Noah Kugler on site. Waiting on cement.

13:38	Begin logging downward from 1200 feet bpl.
13:42	Log complete to 1550 feet bpl. Begin running tool out of hole.
13:55	Tool is out of hole.
14:00	Waiting on cement. Cement-top pick from temperature log ~1385 feet bpl.
14:35	Trika Nelson on-site.
15:00	Noah Kugler off. Waiting on cement.
15:30	Tag cement stage 95 at 1378 feet bpl.
15:35	Prepare to pump ~125-barrel stage of cement (Stage 96). Cementer (Josh Brown) setting up cement truck. Pressure test lines from truck.
15:37	Begin freshwater pre-flush for cement Stage 96. Tremie set approximately 1 foot above cement tag (1377 feet bpl).
15:39	Pre-flush is completed (10 bbls.).
15:41	Begin pumping Stage 96 cement (12% bentonite). See cement log.
16:09	End cementing (122 bbls.), move to chase.
16:10	End first-phase chase (6.75 bbls.), remove cementing header.
16:20	Pull 12 foot sub and five joints of cement tubing (~312 feet). Clear lines from truck.
16:26	Re-attach the cementing header to the tubing string. Begin second chase.
16:28	End second chase (10 bbls.), break cementing header, and raise string.
17:00	Waiting on cement.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
21:00	Waiting on cement.
21:25	Tag cement stage 96 at 1290 feet bpl.
21:40	Clay Ferguson on-site to perform cement-top-temperature log for cement stage 96.
21:43	Go in hole with logging tool.
21:47	Begin logging downward from 1090 feet bpl.
21:57	Log complete to 1406 feet bpl. Begin running tool out of hole.
22:00	Tool is out of hole. Waiting on cement.
22:45	Craig Boomgaard on site.
23:00	Trika Nelson off site.
23:32	Begin freshwater pre-flush for cement Stage 97. Tremie set approximately 1
23:35	Pre-flush is completed (10 bbls.).
23:37	Begin pumping Stage 97 cement (12 % bentonite and 1% CaCl). See
0:17	End cementing (182 bbls.), move to chase.
0:18	End first-phase chase (4.5 bbls.), remove cementing header.
0:19	Pull subs and 8 joints of cement tubing. Clear lines from truck.
0:32	Re-attach the cementing header to the tubing string. Begin second chase.
0:34	End second chase (10 bbls.), break cementing header, and raise string.
1:00	Waiting on cement.
2:00	Waiting on cement.
3:00	Waiting on cement.

4:00	Waiting on cement.
5:00	Waiting on cement.
5:20	Clay Ferguson on-site to perform cement-top-temperature log for cement stage 97.
5:30	Go in hole with logging tool.
5:33	Begin logging downward from 800 feet bpl.
5:41	Log complete to 1350 feet bpl. Begin running tool out of hole.
5:47	Tool is out of hole.
5:50	Waiting on cement. Cement-top pick from temperature log ~946 feet bpl.
7:00	Noah Kugler on. Craig Boomgaard off. Waiting to hard tag cement stage

WATER RESOURCE SOLUTIONS

Date: 7/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Waiting to hard tag cement Stage 97 to fill the annulus between the 24-inch casing and the formation. Cement Stage 96 was hard tagged at 1290 feet bpl.
7:12	Tag cement Stage 97 at approximately 937 feet bpl. Tag was made with joint #30 at 22 feet below the slips. Tag depth = tremie length through joint #29 (925.16) + feet below slips on joint #30 (22) - feet of slips above pad level (10) = 937.16 feet bpl.
7:20	Prepare to pump stage of cement (Stage 98). Mike Sordan setting up cement truck. Pressure test lines from truck.
7:32	Pressure 24-inch casing to 100 psi to counter-balance pressure on casing due to cement operations.
7:35	Begin freshwater pre-flush for cement Stage 98. Tremie set approximately 2 foot above cement tag (935 feet bpl).
7:37	Pre-flush is completed (10 bbls.). Continue mixing cement with 12% bentonite and 1.5% CaCl.
7:38	Begin pumping Stage 98 cement (12% bentonite and 1.5% CaCl). See cement log.
8:08	End cementing (100 bbls.), move to chase.
8:09	End first-phase chase (3 bbls.), remove cementing header.
8:10	Pull three subs and five doubles of cement tubing (500 feet). Clear lines from truck.
8:23	Re-attach the cementing header to the tubing string. Begin second chase.
8:25	End second chase (10 bbls.), break cementing header, and raise string.
8:30	Noah leaves update message for Mark Pearce.
9:00	Waiting on cement.
10:00	Waiting on cement. Resume purging PMW-4 prior to re-sampling.
11:00	Waiting on cement.
11:15	Mark Pearce calls site to discuss activities.
12:00	Waiting on cement.
13:00	Waiting on cement.
13:15	Clay Ferguson on-site to perform cement-top-temperature log for cement stage 98.

13:30	Go in hole with logging tool.
13:36	Begin logging downward from 420 feet bpl.
13:44	Log complete to 950 feet bpl. Begin running tool out of hole.
13:52	Tool is out of hole.
14:00	Waiting on cement. Cement-top pick from temperature log ~585 feet bpl.
14:25	Cement is hard. Tag cement Stage 98 at approximately 594 feet bpl. Tag was made with joint #19 at 3.5 feet above the slips. Tag depth = tremie length through joint #19 (607.44) - feet above slips on joint #19 (3.5) - feet of slips above pad level (10) = 593.94 feet bpl.
15:00	Waiting on cement.
15:05	Prepare to pump stage of cement (Stage 99). Mike Sordan setting up cement truck. Pressure test lines from truck.
15:10	Pressure 24-inch casing to 100 psi to counter-balance pressure on casing due to cement operations.
15:18	Begin freshwater pre-flush for cement Stage 99. Tremie set approximately 2 foot above cement tag (592 feet bpl).
15:20	Pre-flush is completed (10 bbls.). Continue mixing cement with 12% bentonite and 1.5% CaCl.
15:22	Begin pumping Stage 99 cement (12% bentonite and 1.5% CaCl). See cement log.
15:52	End cementing (181 bbls.), move to chase.
15:53	End first-phase chase (3 bbls.), remove cementing header.
15:54	Pull all tubing out of hole. Clear lines from truck.
16:00	Waiting on cement.
17:00	Waiting on cement.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:00	Waiting on cement.
20:30	Clay Ferguson on-site to perform cement-top-temperature log for cement stage 99.
20:32	Go in hole with logging tool.
20:34	Begin logging downward from 60 feet bpl.
20:36	Log complete to 650 feet bpl. Begin running tool out of hole.
20:38	Tool is out of hole.
21:00	Waiting on cement. Cement-top pick from temperature log ~252 feet bpl.
22:00	Waiting on cement.
22:45	Hard tag cement stage 99 at 262 feet bpl.
23:00	Craig Boomgaard on site. Trika Nelson off site.
23:12	Tubing out of hole.
23:15	Start running tubing back down hole for flushing.
0:30	Tubing from tally down hole. Getting 10 more singles (~300') more tubing.
0:50	Running additional tubing down hole
0:10	Tubing down hole. Total of ~2565' of tubing in hole.
0:23	Checking flow with meter to confirm clear tubing. Water flowing from well.

0:28	Start flushing well and recirculating through frac tank.
1:00	Flushing casing.
2:00	Flushing casing.
3:00	Flushing casing.
4:00	Flushing casing.
5:00	Flushing casing.
6:00	Flushing casing.

WATER RESOURCE SOLUTIONS

Date: 7/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Craig Boomgaard off. Currently flushing 24-inch casing with water to cool casing from cement operations. Pumping water through tremie tubing set at approximately 2555 feet bpl. Cement was hard tagged in the annulus between the 24-inch casing and the formation at 262 feet bpl.
7:20	Noah and Ronnie Thames (YBI site super.) discuss upcoming activities. The Contractor would like to perform pressure test on 24-inch casing and have the FDEP witness it tomorrow. Noah will call Mr. Jack Myers (FDEP-UIC Program) to try to schedule an FDEP representative to witness test.
7:40	Noah leaves update message for Mark Pearce.
8:00	Continue flushing casing.
8:40	Noah calls Mr. Jack Myers to schedule an FDEP representative to witness the pressure test of the 24-inch casing. Mr. Myers states that he will try to schedule Mr. Richard Orth to witness the test tomorrow. Mr. Orth should be updated as to the expected time of the test.
9:00	Continue flushing casing. Casing will be flushed with water until approximately 15:00 when the tremie tubing will be tripped-out and a single packer will be tripped-in on the drillstring to near the base of the 24-inch casing. Noah works on well completion report for IW-1.
11:05	Noah leaves update message on voice mail for Mr. Orth regarding the timing of tomorrow's planned casing pressure test.
13:00	Noah speaks with Trika Nelson about activities planned for the swing shift.
14:00	Noah Kugler leaves site. Continue flushing casing with water.
14:25	Trika Nelson on-site.
15:00	Still flushing casing.
16:00	Flushing casing.
17:00	Flushing casing.
18:00	Flushing casing.
19:00	Flushing casing.
20:00	Flushing casing.
21:00	Flushing casing. Water is still coming out of the hole relatively hot. Plans are to continue flushing casing till midnight, and begin to trip out tubing.

22:00	Flush casing. Decision is made to do a quick short preliminary run. Leaving tubing in the hole. Plugged of tubing, and casing (strip-n-head).
22:20	Begin to pressure casing.
22:40	Casing pressured to 150 psi. Begin preliminary test. Craig Boomgaard on site.
22:50	Valve on top of tubing leaking slightly. Put a cap on valve and re-pressurize.
11:03	Re-start pressure test.
11:10	Checked spec's on pressure testing. Spec's require 200 psi minimum. Asked drillers about difference, they said they wanted to run the pre-test at 150 psi.
0:03	After 1 hour lost 1.75 psi on test. Drillers changing valves and will re-run test.
0:28	Start second pressure test at 150 psi.
0:40	Lost 1.5 psi. Tightened valves.
0:48	Re-start pressure test.
1:48	Lost 1.75 psi after 1 hour.
2:30	Talk to drillers about what is written in the daily plan. Ronnie said that he talked to Noah and they agreed that if the casing holds that no packer is needed. Trika mentioned nothing about running packer either.
2:45	Putting 300 psi gage on well and will run a pressure test at 200 psi. Last test still running lost 5.5 psi in 2.5 hours.
3:27	Start pressure test @ 200 psi.
4:27	Pressure 197 psi. Lost 3 psi. Test good.
5:00	Craig Boomgaard leaves the site.

Week 25

WATER RESOURCE SOLUTIONS

Date: 7/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Waiting on the FDEP to arrive on-site to perform the official casing pressure test of the 24-inch casing string at well IW-1. NOTE: The casing pressure test will be performed without the use of a packer as successful trial tests were performed during the previous night tour. The cement plug inside the 24-inch casing is located at 2570 feet bpl, approximately five feet above the bottom end of the casing string.
8:35	Leave a voice mail message with Rich Orth of the FDEP regarding today's planned official casing pressure test.
9:50	Richard Orth arrives on-site.
10:00	Contractor begins to pressure-up the 24-inch casing to 200 psi.
10:02	Begin the 60-minute official casing pressure test witnessed by Richard Orth. NOTE: Casing pressure recorded at 200 psi at the start of test.
11:02	End test. NOTE: Results of test indicate a 3-psi or 1.5% loss of pressure over the 60-minute test duration. This loss of pressure is well within the allowable 5% standard as Richard Orth of the FDEP accepts these results as a satisfactory test.
11:02	Begin post-test procedure as water from the casing is released in 5-gallon increments while recording pressure values.
11:25	End post-test procedure. NOTE: Released approximately 57 gallons of water from the casing to bring the casing pressure to 0 psi. There were approximately 55,400 gallons of water in the casing at the start of today's pressure test.
12:30	Currently tripping out the tubing.
13:45	Continue to trip out the tubing.
13:50	Update Mark Pearce of site operations.
14:42	Trika Nelson on site. Removing header plate.
15:08	Frank Procta leaves the site.
15:10	Begin to cut casing.
16:10	Finished cutting casing. Servicing rig.
17:00	Trika Nelson prepares the drill pipe tally. There are currently 26 stands of drill pipe standing plus one drill collar on the rig floor.

18:00	Begin preparing to ream. Bolting down header plate to IW-1.
19:00	Finishing bolting down header plate. BHA consists of a 22-inch diameter tricone button bit and sub=3.3 feet + 121.98-foot long drill collar = 125.28 feet.
19:30	Begin to change oil in top head drive.
20:20	Finished changing oil. Attaching belles to top head drive.
21:10	Attaching bit to drill collar.
21:30	Begin to trip in the hole.
22:10	Breaks are hot. Fixing hose to cool them off.
22:30	Break hose fixed. Attaching stand #2.
23:02	Todd Tubbert on-site.
23:30	Continue to trip in drill string.
1:30	Continue to trip in drill string.
2:30	Tripping in airline.
3:10	Hard tag with drill string at 2568 feet bpl.
3:15	Begin drilling with STAND # 21 at 2570 feet bpl.
4:30	Continue drilling with STAND # 21 at 2574 feet bpl.
6:30	Continue drilling with STAND # 21 at 2582 feet bpl.
6:45	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Reaming nominal 22-inch open hole section of well IW-1 with STAND #21.
7:05	Suspend reaming operations at 2583 feet bpl to perform routine rig maintenance.
7:50	Currently reaming with STAND #21 at 2584.5 feet bpl.
9:00	Currently reaming with STAND #21 at 2587.5 feet bpl.
10:00	Currently reaming with STAND #21.
11:00	Currently reaming with STAND #21.
12:50	Currently reaming with STAND #21 at 2601.5 feet bpl.
14:35	Currently reaming with STAND #21 at 2607 feet bpl.
16:45	Currently reaming/dredging with STAND #21.
17:25	Currently reaming/dredging with STAND #21.
18:18	Currently reaming with STAND #21 at 2610 feet bpl.
18:33	Update Mark Pearce of site operations via voice mail message.
19:00	Todd Tubbert arrives on-site for night tour - Frank Procta leaves the site.
19:05	Suspend reaming operations perform routine rig maintenance.
19:20	Resume reaming with STAND # 21.
21:00	Currently reaming with STAND #21.
22:30	Currently reaming with STAND #21 at 2613 feet bpl.
0:00	Currently reaming with STAND #21
2:00	Currently reaming with STAND #21 at 2620 feet bpl.
4:00	Currently reaming with STAND #21
6:00	Currently reaming with STAND #21at 2628 feet bpl.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:15	Frank Procta arrives on-site. Current ops. : Crew performing routine rig maintenance.
7:38	Currently reaming the open-hole section of well IW-1 with STAND #21.
8:40	Continue to ream with STAND #21.
9:30	Currently reaming with STAND #21 at 2626.5 feet bpl.
11:26	Currently reaming with STAND #21 at 2634.5 feet bpl.
12:25	Currently reaming with STAND #21 at 2637 feet bpl.
13:00	Currently reaming with STAND #21.
14:30	Currently reaming with STAND #22.
14:50	Continue to ream with STAND #22.
16:00	Continue to ream with STAND #22.
17:18	Currently reaming with STAND #22 at 2648 feet bpl.
18:28	Currently reaming with STAND #22 at 2652 feet bpl.
18:35	Update Mark Pearce of site operations via voice mail message.
18:45	Frank Procta leaves the site.
19:05	Todd Tubbert arrives on site. Current ops.: Rig Maint.
19:25	Resume reaming operations.
20:00	Currently reaming with STAND #22 at 2655 feet bpl.
22:00	Currently reaming with STAND #22 at 2659 feet bpl.
0:00	Currently reaming with STAND #22 at 2662 feet bpl.
0:30	Down with repair to air compressor.
0:45	Part needed for repair to air compressor will not arrive until a.m. shift. Ronnie of YBI has ordered the crew to shut down rig until morning shift.
1:00	Trip out STAND # 22.
1:15	Raise STAND #21.
1:30	Driller and crew leave the site.
1:45	NO FURTHER OPERATIONS UNTIL AM SHIFT.
2:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Down for repairs. Waiting on delivery of air compressor.
9:00	Down for repairs
10:00	Down for repairs.
11:00	Currently cleaning out open hole with STAND #21 as rock has blocked off part of the previously reamed borehole.
11:20	Mohan Thampi from Collier County visits the site for update of progress.
12:40	Currently down with STAND #21 circulating at approximately 2632 feet bpl.
13:22	Currently reaming with STAND #22.
14:35	Currently reaming with STAND #22 at 2664 feet bpl.
14:50	Omar Rodriguez arrives on-site.
15:00	Frank Procta leaves the site.
15:05	Currently reaming with STAND #22 at 2668 feet bpl.
16:25	Currently reaming with STAND #22 at 2673 feet bpl.
17:30	Currently reaming with STAND #22 at 2677 feet bpl.
18:30	Currently reaming with STAND #22 at 2679 feet bpl.
19:10	Suspend reaming operations perform routine rig maintenance.
19:25	Resume reaming with STAND # 22.
19:45	Currently reaming with STAND #22 at 2680 feet bpl.
20:50	Currently reaming with STAND #22 at 2682 feet bpl.
21:30	Currently reaming with STAND #22 at 2683 feet bpl.
22:45	Currently reaming with STAND #22 at 2685 feet bpl.
23:00	Todd Tubbert arrives on-site. Omar Rodriguez leaves the site.
0:00	Currently reaming with STAND #22 at 2687 feet bpl.
1:30	Currently reaming with STAND #22 at 2692 feet bpl.
3:00	Currently reaming with STAND #22 at 2698 feet bpl.
4:30	Currently reaming with STAND #22 at 2703 feet bpl.
6:00	Currently reaming with STAND #22 at 2710 feet bpl.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Reaming with STAND #22 at 2711 feet bpl.
7:10	Currently the crew is performing routine rig maintenance.
7:30	Resume reaming operations.
9:05	Currently reaming the open-hole section of the well with STAND #22 at 2714 feet bpl. NOTE: Hard drilling with intense rig chatter.
10:00	Continue to ream with STAND #22.
11:25	Continue to ream with STAND #22.
11:55	Currently down for repairs. NOTE: Approximate depth before suspending reaming operations at 2720 feet bpl.
12:30	Down for repairs. Crew currently changing out the swivel packing.
13:30	Down for repairs.
14:30	Down for repairs.
14:55	Omar Rodriguez arrives on-site.
15:20	Frank Procta leaves the site.
16:30	Down for repairs.
16:55	Currently down with STAND #22 circulating at approximately 2719 feet bpl.
17:10	Currently reaming with STAND #22 at 2720 feet bpl.
18:10	Currently reaming with STAND #22 at 2725 feet bpl.
19:08	Currently the crew is performing routine rig maintenance.
19:25	Currently reaming with STAND #22 at 2728 feet bpl. NOTE: Hard drilling with intense rig chatter.
20:40	Currently reaming with STAND #22 at 2729 feet bpl.
21:35	Currently reaming with STAND #22 at 2730 feet bpl.
22:40	Currently reaming with STAND #22 at 2732 feet bpl.
23:00	Todd Tubbert arrives on-site. Omar Rodriguez leaves the site.
0:00	Currently reaming with STAND #22 at 2735 feet bpl.
1:00	Currently reaming with STAND #22 at 2737 feet bpl.
2:00	Currently reaming with STAND #22 at 2739 feet bpl.
3:00	Currently reaming with STAND #22 at 2740 feet bpl.
4:00	Currently reaming with STAND #22 at 2741 feet bpl.
5:00	Currently reaming with STAND #22 at 2743 feet bpl.

6:00	Currently reaming with STAND #22 at 2745 feet bpl.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:15	Frank Procta arrives on-site. Current ops. : Reaming with STAND #22.
7:45	Currently reaming with STAND #22 at 2748 feet bpl.
9:00	Continue reaming with STAND #22.
9:45	Currently reaming with STAND #22 at 2750.5 feet bpl.
11:25	Currently reaming with STAND #22 at 2756 feet bpl.
12:30	Currently down for repairs as the crew work on switching out the rig's weight indicator. NOTE: Reaming operations were suspended at a depth of 2757 feet bpl.
12:45	Currently reaming with STAND #22.
13:00	Begin running inclination surveys at depths of 2650 and 2740 feet bpl.
14:20	Currently re-reaming with STAND #23 at approximately 2758 feet bpl. NOTE: Heavy rig chatter.
14:55	Omar Rodriguez arrives on-site.
15:10	Currently re-reaming with STAND #23 at 2758.5 feet bpl.
15:15	Frank Procta leaves the site.
16:30	Currently reaming with STAND #23 at 2763 feet bpl.
17:45	Currently reaming with STAND #23 at 2765 feet bpl. NOTE: Heavy rig chatter.
18:55	Currently reaming with STAND #23 at 2767 feet bpl.
19:05	Currently the crew is performing routine rig maintenance.
19:18	Resume reaming with STAND #23.
20:20	Currently reaming with STAND #23 at 2768 feet bpl.
21:30	Currently reaming with STAND #23 at 2769 feet bpl.
22:40	Currently reaming with STAND #23 at 2770 feet bpl.
23:00	Todd Tubbert arrives on-site. Omar Rodriguez leaves the site.
0:00	Currently reaming with STAND #23 at 2771 feet bpl.
1:00	Currently reaming with STAND #23 at 2772 feet bpl.
2:00	Currently reaming with STAND #23 at 2774 feet bpl.
3:00	Currently reaming with STAND #23 at 2775 feet bpl.
4:00	Currently reaming with STAND #23 at 2776.5 feet bpl.
5:00	Currently reaming with STAND #23 at 2778 feet bpl.
6:00	Currently reaming with STAND #23 at 2780 feet bpl.
6:50	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:15	Frank Procta arrives on-site. Current ops. : Crew performing routine rig maintenance.
7:35	Resume reaming operations with STAND #23.
9:15	Currently reaming with STAND #23 at 2781.5 feet bpl.
10:45	Currently reaming with STAND #23 at 2781 feet bpl. NOTE: Due to a lack of air pressure, we cannot advance the borehole. A larger capacity air compressor is presently in route to the site.
11:30	Continue reaming with STAND #23.
13:15	Currently down for repairs as the new air compressor is connected to the system and tested.
14:00	Down for repairs.
14:45	Down for repairs.
15:00	Omar Rodriguez arrives on-site, Frank Procta leaves the site.
15:15	Resume reaming with STAND #23 at 2782 bpl. The capacity of the new air compressor is 900 cfm.
16:20	Currently reaming with STAND #23 at 2784 feet bpl.
17:35	Currently reaming with STAND #23 at 2785 feet bpl.
18:30	Currently reaming with STAND #23 at 2788 feet bpl.
19:10	Currently the crew is performing routine rig maintenance.
20:00	Currently reaming with STAND #23 at 2789 feet bpl.
21:20	Currently reaming with STAND #23 at 2792.5 feet bpl.
22:40	Currently reaming with STAND #23 at 2794 feet bpl.
23:00	Omar Rodriguez leaves the site. Todd Tubbert arrives onsite.
0:00	Currently reaming with STAND #23 at 2796 feet bpl.
1:00	Currently reaming with STAND #23 at 2797 feet bpl.
2:00	Currently reaming with STAND #23 at 2798 feet bpl.
3:00	Currently reaming with STAND #23 at 2800 feet bpl.
4:00	Currently reaming with STAND #23 at 2801 feet bpl.
5:00	Currently reaming with STAND #23 at 2802.5 feet bpl.
6:00	Currently reaming with STAND #23 at 2804 feet bpl.
6:45	Todd Tubbert leaves the site.

Week 26

WATER RESOURCE SOLUTIONS

Date: 7/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Frank Procta arrives on-site. Current ops. : Crew completing routine rig maintenance.
7:55	Currently reaming with STAND #23 at 2806 feet bpl.
8:50	E-mail WK #25 TAC package to Mark Pearce.
9:55	Currently reaming with STAND #23 at 2809.5 feet bpl.
10:40	Currently reaming with STAND #23 at 2810 feet bpl.
11:15	Mohan Thampi visits the site.
11:40	Currently reaming with STAND #23 at 2811 feet bpl.
13:18	Currently reaming with STAND #23 at 2813 feet bpl.
14:38	Currently reaming with STAND #23 at 2815.5 feet bpl.
14:55	Omar Rodriguez arrives on-site.
15:45	Frank Procta leaves the site.
16:25	Currently reaming with STAND #23 at 2818 feet bpl.
17:30	Currently reaming with STAND #23 at 2819.5 feet bpl.
18:30	Currently reaming with STAND #23 at 2820 feet bpl.
19:00	Currently the crew is performing routine rig maintenance.
19:30	Currently reaming with STAND #23 at 2821 feet bpl.
20:50	Currently reaming with STAND #23 at 2821.5 feet bpl.
22:00	Currently reaming with STAND #23 at 2822.5 feet bpl.
22:50	Currently reaming with STAND #23 at 2823.5 feet bpl.
23:00	Todd Tubbert arrives onsite. Omar Rodriguez leaves the site.
0:00	Currently reaming with STAND #23 at 2825 feet bpl.
1:00	Down with repair to discharge line.
1:35	Welder on-site.
2:00	Down with repair.
2:15	Repair complete.
3:08	Cleaning hole, due to cave in at ~ 2790 feet bpl.
5:15	Currently reaming with STAND #23 at 2827 feet bpl.
5:30	Down with repair to hydraulic line.
6.30	Down with repair - Note: New Hydraulic line is being delivered this morning.
6:40	Trika Nelson on-site. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 7/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
T. Tubbert

Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson on-site. Todd Tubbert off.
8:00	Waiting for hydraulic line & oil.
9:00	Hydraulic oil on site. Still waiting for hydraulic line.
10:12	Hydraulic line on site. Begin repairs.
11:00	Still installing hydraulic line.
12:15	Repair fixed resume with reaming operations at 2826 feet bpl.
13:25	Currently reaming with STAND #23 at 2829 feet bpl.
14:20	Begin to trip out tubing. Going to replace bit.
14:45	Finished tripping out tubing. Begin to trip out drill pipe.
15:15	Still tripping out drill pipe.
16:00	Tripping out STAND #9.
16:45	Finished tripping out drill pipe. Begin to break bit off of drill collar. (NOTE: Bit worn badly)
17:00	Attaching new bit to drill collar.
17:30	Finished attaching new bit. Resume tripping drill pipe back into hole.
18:00	Still tripping drill pipe in the hole.
19:00	Trika Nelson off site. Todd Tubbert on site.
20:00	Continue tripping in drill pipe.
21:15	Dredging/ cleaning hole with STAND # 21 at 2600 feet bpl.
23:00	Continue dredging/cleaning hole with STAND # 21.
0:12	Top head drive down with STAND # 21 connect STAND # 22.
0:45	Top head drive down with STAND # 22 - circulate.
1:15	Connect STAND # 23.
1:24	Continue dredging/cleaning hole with STAND # 23 at 2780 feet bpl.
3:00	Begin to ream/dredge with STAND #23 at 2829 feet bpl.
4:00	Currently reaming with STAND #23 at 2831 feet bpl.
5:00	Currently reaming with STAND #23 at 2833 feet bpl.
6:00	Currently reaming with STAND #23 at 2834 feet bpl.
6:45	Trika Nelson arrives onsite. Todd Tubbert off.

WATER RESOURCE SOLUTIONS

Date: 7/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Trika Nelson arrives onsite. Todd Tubbert off.
7:00	Currently reaming with STAND #23 at 2836 feet bpl.
8:00	Servicing rig.
9:00	Currently reaming with STAND #23 at 2837 feet bpl.
10:00	Currently reaming with STAND #23 at 2839 feet bpl.
11:00	Currently reaming with STAND #23 at 2843 feet bpl.
12:00	Currently reaming with STAND #23 at 2845 feet bpl.
13:00	Currently reaming with STAND #23 at 2848 feet bpl.
14:00	Currently reaming with STAND #23 at 2851 feet bpl.
15:00	Currently reaming with STAND #23 at 2852 feet bpl.
16:00	Currently reaming with STAND #23 at 2853 feet bpl.
17:00	Currently reaming with STAND #23 at 2854 feet bpl.
18:00	Currently reaming with STAND #23 at 2856 feet bpl.
18:30	Currently reaming with STAND #23 at 2857 feet bpl.
19:00	Trika Nelson off site. Todd Tubbert on site. Current ops.: Servicing rig.
19:30	Currently reaming with STAND #23 at 2859 feet bpl.
21:00	Currently reaming with STAND #23 at 2861 feet bpl.
22:00	Currently reaming with STAND #23 at 2863 feet bpl.
23:00	Down with repair.
23:55	Resume reaming with STAND #23 at 2865 feet bpl.
1:00	Currently reaming with STAND #23 at 2867 feet bpl.
2:00	Currently reaming with STAND #23 at 2869 feet bpl.
3:00	Currently reaming with STAND #23 at 2871 feet bpl.
4:00	Currently reaming with STAND #23 at 2872 feet bpl.
5:00	Currently reaming with STAND #23 at 2873 feet bpl.
6:30	Currently reaming with STAND #23 at 2875 feet bpl.
7:00	Noah Kugler arrives on-site. Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler arrives on-site. Todd Tubbert off. Currently reaming with 22-inch bit on STAND #23 at 2877 feet bpl.
7:40	Noah calls Mark Pearce with update.
8:00	Currently reaming with STAND #23 at 2877.5 feet bpl.
9:00	Currently reaming with STAND #23 at 2878 feet bpl. Very slow rate of penetration.
10:00	Currently reaming with STAND #23 at 2879 feet bpl.
10:23	Top head drive down on STAND #23 at 2879.78 feet bpl. Circulate hole for 10 minutes.
10:40	Perform inclination survey at 2830 feet bpl.
10:57	Inclination survey at 2830 feet bpl = 0.5 degrees. Make connection with Stand #24 and resume reaming with 22-inch bit.
12:00	Currently reaming with STAND #24 at 2881 feet bpl.
13:00	Currently reaming with STAND #24 at 2881 feet bpl.
13:10	Andy Powell (Wright Construction) is on-site to recon for space to store pipe until construction of the pump and distribution systems begins. Delivery of pipe for Wright Construction may begin as early as Monday 7/28/03. Ronnie Thames meets with Mr. Powell to discuss space issues.
13:35	Noah calls Mark Pearce to discuss staging issues for Wright/TKW and YBI. Mark will speak with Patrick Day (TKW) and Jimmy Brantley (YBI) about this issue.
13:40	Mohan Thampi (Collier County PUED) visits site for progress update.
14:00	Currently reaming with STAND #24 at 2888 feet bpl.
14:30	Trika Nelson on-site.
15:00	Currently reaming with STAND #24 at 2891 feet bpl.
15:10	Noah Kugler leaves site.
16:00	Currently reaming with STAND #24 at 2893 feet bpl.
17:00	Currently reaming with STAND #24 at 2895 feet bpl.
18:00	Currently reaming with STAND #24 at 2897 feet bpl.
19:00	Currently reaming with STAND #24 at 2899 feet bpl.
20:00	Currently reaming with STAND #24 at 2902 feet bpl.
21:00	Currently reaming with STAND #24 at 2905 feet bpl.
22:50	Craig Boomgaard on site. Trika Nelson off site.
0:00	Currently reaming with STAND #24 at 2908 feet bpl.

1:00	Currently reaming with STAND #24 at 2910 feet bpl.
2:00	Currently reaming with STAND #24 at 2912 feet bpl.
3:00	Currently reaming with STAND #24 at 2915 feet bpl.
4:00	Currently reaming with STAND #24 at 2917 feet bpl.
5:00	Currently reaming with STAND #24 at 2919 feet bpl.
6:30	Currently reaming with STAND #24 at 2922 feet bpl.
7:00	Craig Boomgaard off. Noah Kugler on.

WATER RESOURCE SOLUTIONS

Date: 7/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Craig Boomgaard off. Currently reaming with 22-inch bit on STAND #24 at 2923 feet bpl. Drilling through hard dolostone. No hole collapse or dredging has been noted while drilling with the current stand.
7:50	Noah calls Mark Pearce with update.
8:00	Reaming on STAND #24 at 2925 feet bpl.
9:00	Reaming on STAND #24 at 2929 feet bpl.
9:10	Mark Pearce on-site for progress meeting and to discuss staging issues for work being done by YBI and planned work for TKW/Wright. Mark will speak with Patrick Day (TKW) to coordinate staging of work. Ronnie Thames (YBI site superintendent) will clear agreed upon areas for Wright Construction to begin delivery of transmission piping. These areas should not impede any YBI activities necessary for the completion of IW-1 and the DZMW.
10:00	Reaming on STAND #24 at 2932 feet bpl.
11:00	Reaming on STAND #24 at 2935 feet bpl.
11:35	Drillstring becomes stuck at 2936.5 feet bpl (cannot rotate).
11:50	Contractor works drillstring free by rotating and picking up, and begins reaming/dredging from 2931 feet bpl (~5.5 feet of fill from formation material falling in hole).
12:00	Reaming/dredging on STAND #24 at 2932 feet bpl.
13:00	Reaming/dredging on STAND #24 at 2936 feet bpl.
14:00	Reaming/dredging on STAND #24 at 2936.5 feet bpl. Reached previously gained depth at 2936.5 feet bpl.
14:30	Contractor begins tripping drillstring out of hole to attach stabilizer for greater BHA weight.
14:35	Trika Nelson on-site.
15:00	Noah Kugler leaves site.
16:00	Still tripping out drill pipe.
17:00	Finished tripping out of the hole.
17:20	Breaking off bit. Driller prepares drawing of stabilizer. NOTE: Stabilizer is to wide to make it through the casing. Going to trip back into the hole with old BHA.

18:20	Decision is made to pick up a new bit. Old bit is worn badly; there are no inner buttons.
19:00	Waiting for new bit to arrive.
20:00	Waiting for new bit to arrive.
20:20	Begin pumping PMW-4 for 24 hours.
20:40	New bit arrives on site.
22:00	Attaching bit to drill collar.
22:15	Begin to trip in hole.
22:00	Still tripping in drill pipe.
22:50	Craig Boomgaard on site. Trika Nelson off site.
23:30	Still tripping in drill pipe.
23:46	Small bridge at top of Stand #21 ~ 2640' bpl. Drilling through it.
0:10	Running tubing inside drill rods so they can use air pressure if necessary to clear hole.
1:00	Still tripping in drill pipe.
1:20	Start reaming on STAND #24 at 2935 feet bpl.
2:00	Currently reaming with STAND #24 at 2936 feet bpl.
3:00	Currently reaming with STAND #24 at 2937.5 feet bpl.
4:00	Currently reaming with STAND #24 at 2938 feet bpl.
5:00	Currently reaming with STAND #24 at 2939 feet bpl.
6:00	Currently reaming with STAND #24 at 2939.5 feet bpl.
7:00	Currently reaming with STAND #24 at 2939.5 feet bpl. Boulder at the bottom of the hole. Noah Kugler on. Craig Boomgaard off.

WATER RESOURCE SOLUTIONS

Date: 7/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on. Craig Boomgaard off. Currently reaming with 22-inch bit on STAND #24 at 2939.5 feet bpl. The Contractor thinks that a large piece of formation material has fallen to the bottom of the hole and is currently being drilled-out.
7:45	Noah calls Mark Pearce to leave update message.
8:00	Reaming on STAND #24 at 2941 feet bpl.
9:00	Reaming on STAND #24 at 2942.5 feet bpl.
10:00	Reaming on STAND #24 at 2944 feet bpl.
11:00	Reaming on STAND #24 at 2945 feet bpl.
12:00	Reaming on STAND #24 at 2947 feet bpl.
13:00	Reaming on STAND #24 at 2949 feet bpl.
13:45	Trika Nelson on site.
14:00	Reaming on STAND #24 at 2951 feet bpl.
15:00	Reaming on STAND #24 at 2952 feet bpl.
16:00	Reaming on STAND #24 at 2953 feet bpl. Driller seems to be dredging this area of the hole.
17:00	Reaming/dredging on STAND #24 at 2951 feet bpl.
18:00	Reaming/dredging on STAND #24 at 2953 feet bpl.
19:00	Reaming/dredging on STAND #24 at 2953 feet bpl.
20:00	Reaming/dredging on STAND #24 at 2954 feet bpl.
21:00	Reaming/dredging on STAND #24 at 2956 feet bpl.
22:00	Reaming on STAND #24 at 2957 feet bpl.
23:00	Craig Boomgaard on site. Trika Nelson off site.
23:15	Reaming on STAND #24 at 2959 feet bpl.
0:00	Reaming on STAND #24 at 2960 feet bpl.
1:00	Reaming on STAND #24 at 2962 feet bpl.
2:00	Reaming on STAND #24 at 2963 feet bpl.
3:00	Reaming on STAND #24 at 2965 feet bpl.
4:00	Reaming on STAND #24 at 2966 feet bpl.
5:00	Reaming on STAND #24 at 2968 feet bpl.
6:20	Reaming on STAND #24 at 2970 feet bpl.
7:00	Craig Boomgaard off site. Noah Kugler on site.

WATER RESOURCE SOLUTIONS

Date: 7/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on site. Reaming with 22-inch bit on STAND #24 at 2971 feet bpl.
7:55	Noah calls Mark Pearce with update.
8:00	Reaming on STAND #24 at 2972 feet bpl.
8:30	Frank Procta on-site to work on well completion report for IW-1.
9:00	Reaming on STAND #24 at 2973 feet bpl.
10:00	Reaming on STAND #24 at 2974.5 feet bpl.
11:00	Reaming on STAND #24 at 2976 feet bpl. Slow rate of penetration over the last 24 to 36 hours (~1 to 2 feet per hour). Resample and analyze water from PMW-4 after 24 hours of pumping. Start pumping PMW-2.
12:55	Reaming on STAND #24 at 2982 feet bpl.
13:58	Representative from Ardaman and Associates stops by the site to pick up cement cube samples.
14:30	Trika Nelson arrives on-site.
14:45	Reaming on STAND #24 at 2989.5 feet bpl.
16:00	Reaming on STAND #24 at 2991 feet bpl.
17:00	Reaming on STAND #24 at 2993 feet bpl.
18:00	Reaming on STAND #24 at 2995 feet bpl.
19:00	Reaming on STAND #24 at 2998 feet bpl.
20:00	Swabbing hole with STAND #24. Some fall in occurred. Resume reaming hole with STAND # 24 at 2996 feet bpl.
20:40	Trika Nelson off site due to severe bug bite/ possible Brown Recluse. Trika calls Craig Boomgaard to inform him of current operations.
22:50	Craig Boomgaard on site. Collect inclination survey from drillers. Survey taken at 20:45 from a depth of 2920 feet bpl = 0.5 degrees.
23:00	Reaming on STAND #25 at 3003 feet bpl.
0:00	Reaming on STAND #25 at 3005 feet bpl.
1:00	Reaming on STAND #25 at 3006 feet bpl.
2:00	Reaming on STAND #25 at 3008 feet bpl.
3:00	Reaming on STAND #25 at 3009 feet bpl.
4:00	Reaming on STAND #25 at 3010 feet bpl.
5:00	Reaming on STAND #25 at 3012 feet bpl.
6:00	Reaming on STAND #25 at 3013 feet bpl.
7:00	Craig Boomgaard off site. Noah Kugler on site.

Week 27

WATER RESOURCE SOLUTIONS

Date: 7/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on site. Reaming with 22-inch bit on STAND #25 at 3014 feet bpl.
7:45	Noah calls Mark Pearce with update.
8:00	Reaming with 22-inch bit on STAND #25 at 3017 feet bpl.
9:00	Reaming with 22-inch bit on STAND #25 at 3019.5 feet bpl.
9:45	Noah sends draft of weekly report to Mark Pearce.
10:00	Reaming with 22-inch bit on STAND #25 at 3022 feet bpl.
11:00	Reaming with 22-inch bit on STAND #25 at 3025 feet bpl.
12:00	Reaming with 22-inch bit on STAND #25 at 3027 feet bpl.
12:15	The steel "Goose Neck" on rig's circulation system has developed a hole and is leaking water. Contractor suspends reaming operations pending welding a patch over the hole.
12:20	Welder has been called and is enroute to site. Stand back STAND #25 and lower top head drive to rig floor for welding repair.
13:00	Waiting for welder to arrive.
13:20	Welder has arrived and begins making repairs to "Goose Neck".
14:05	Welder has made repairs to "Goose Neck". Prepare to resume reaming.
14:30	Trika Nelson on site.
15:00	Reaming with 22-inch bit on STAND #25 at 3029 feet bpl.
16:00	Reaming with 22-inch bit on STAND #25 at 3031 feet bpl.
17:00	Reaming with 22-inch bit on STAND #25 at 3033 feet bpl.
18:00	Reaming with 22-inch bit on STAND #25 at 3034 feet bpl.
19:00	Reaming/dredging with 22-inch bit on STAND #25 at 3035.5 feet bpl.
20:00	Reaming with 22-inch bit on STAND #25 at 3038 feet bpl.
21:00	Reaming with 22-inch bit on STAND #25 at 3040 feet bpl.
22:00	Reaming with 22-inch bit on STAND #25 at 3042 feet bpl.
22:52	Craig Boomgaard on site. Trika Nelson off site.
23:00	Reaming with 22-inch bit on STAND #25 at 3043 feet bpl.
0:00	Reaming with 22-inch bit on STAND #25 at 3046 feet bpl.
1:00	Reaming with 22-inch bit on STAND #25 at 3049 feet bpl.
2:00	Reaming with 22-inch bit on STAND #25 at 3052 feet bpl.
3:00	Reaming with 22-inch bit on STAND #25 at 3055 feet bpl.

4:00	Reaming with 22-inch bit on STAND #25 at 3058 feet bpl.
5:00	Reaming with 22-inch bit on STAND #25 at 3060 feet bpl.
6:00	Reaming with 22-inch bit on STAND #25 at 3063 feet bpl.
6:30	Reaming with 22-inch bit on STAND #25 at 3064 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 7/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:20	Frank Procta arrives on-site. Current ops. : Performing routine rig maintenance.
7:50	Reaming with 22-inch bit on STAND #25 at 3064 feet bpl.
9:30	Steady reaming on STAND #25.
11:20	Reaming with 22-inch bit on STAND #25 at 3069 feet bpl.
12:30	Reaming operations are temporarily suspended as repairs are underway to replace a blown hydraulic hose.
13:30	Down for repairs.
13:45	Resume reaming operations.
15:10	Reaming with 22-inch bit on STAND #25 at 3074 feet bpl.
16:35	Reaming with 22-inch bit on STAND #25 at 3077 feet bpl.
18:05	Reaming with 22-inch bit on STAND #25 at 3080 feet bpl.
18:07	Call Mark Pearce with update.
18:30	Currently reaming at 3080.5 feet bpl.
18:45	Craig Boomgaard arrives on-site, Frank Procta leaves the site.
19:00	Performing routine rig maintenance.
19:20	Start reaming with 22-inch bit on STAND #25 at 3080.5 feet bpl.
20:23	Reaming with 22-inch bit on STAND #25 at 3083 feet bpl.
21:00	Reaming with 22-inch bit on STAND #25 at 3085 feet bpl.
21:30	Reaming with 22-inch bit on STAND #25 at 3087 feet bpl.
23:00	Reaming with 22-inch bit on STAND #25 at 3086 feet bpl.
0:00	Reaming with 22-inch bit on STAND #25 at 3089 feet bpl.
1:00	Reaming with 22-inch bit on STAND #25 at 3092 feet bpl.
2:00	Reaming with 22-inch bit on STAND #25 at 3095 feet bpl.
3:00	Reaming with 22-inch bit on STAND #25 at 3098 feet bpl.
4:00	Reaming with 22-inch bit on STAND #25 at 3102 feet bpl.
5:00	Reaming with 22-inch bit on STAND #25 at 3105 feet bpl.
6:30	Reaming with 22-inch bit on STAND #25 at 3108 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 7/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
C. Boomgaard
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:40	Frank Procta arrives on-site. Current ops. : Reaming open-hole section of well on STAND #25.
8:10	Reaming with 22-inch bit on STAND #25 at 3111 feet bpl.
9:55	Reaming with 22-inch bit on STAND #25 at 3115.5 feet bpl.
12:00	Top head drive down with STAND #25 at 3120 feet bpl.
12:10	Add STAND #26 to reaming string. NOTE: Inclination surveys (3010 and 3100 feet bpl) cannot be performed today as the wire-line tool is under repair. Contractor plans on performing all required surveys after reaching total depth.
12:15	Resume reaming operations with 22-inch bit on STAND #26 at 3120 feet bpl.
13:45	Reaming with 22-inch bit on STAND #26 at 3124.5 feet bpl.
15:18	Reaming with 22-inch bit on STAND #26 at 3130.5 feet bpl.
16:15	Reaming with 22-inch bit on STAND #26 at 3133.5 feet bpl.
17:42	Reaming with 22-inch bit on STAND #26 at 3137.5 feet bpl.
18:30	Reaming with 22-inch bit on STAND #26 at 3140 feet bpl.
19:00	Craig Boomgaard arrives on-site, Frank Procta leaves the site.
19:15	Reaming with 22-inch bit on STAND #26 at 3143 feet bpl.
20:40	Reaming with 22-inch bit on STAND #26 at 3147 feet bpl.
21:30	Reaming with 22-inch bit on STAND #26 at 3150 feet bpl.
22:30	Reaming with 22-inch bit on STAND #26 at 3152 feet bpl.
23:15	Reaming with 22-inch bit on STAND #26 at 3155 feet bpl.
0:15	Reaming with 22-inch bit on STAND #26 at 3157 feet bpl.
0:20	Return line (line carrying cuttings to tank) develops leak; calling welder to repair.
2:10	Line repaired beginning cleaning out hole.
3:00	Reaming with 22-inch bit on STAND #26 at 3157 feet bpl.
4:00	Reaming with 22-inch bit on STAND #26 at 3160 feet bpl.
5:30	Reaming with 22-inch bit on STAND #26 at 3165 feet bpl.
6:30	Reaming with 22-inch bit on STAND #26 at 3167 feet bpl.

WATER RESOURCE SOLUTIONS

Date: 7/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Nelson
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on site. Reaming with 22-inch bit on STAND #26 at 3170 feet bpl.
7:45	Noah calls Mark Pearce with update.
8:00	Reaming with 22-inch bit on STAND #26 at 3172 feet bpl.
9:00	Reaming with 22-inch bit on STAND #26 at 3177 feet bpl.
10:00	Reaming with 22-inch bit on STAND #26 at 3181 feet bpl.
11:00	Reaming with 22-inch bit on STAND #26 at 3186 feet bpl.
12:00	Reaming with 22-inch bit on STAND #26 at 3189 feet bpl.
13:00	Reaming with 22-inch bit on STAND #26 at 3192 feet bpl.
14:00	Reaming with 22-inch bit on STAND #26 at 3195 feet bpl.
14:25	Sample reverse air-circulation water from discharge stream. Conductivity = 52,900 US/cm, Chlorides = 20800 mg/l. Discuss water quality with Mark Pearce relative to purging method prior to collecting water quality samples from injection zone.
15:00	Frank Procta on. Noah Kugler off.
15:25	Reaming with 22-inch bit on STAND #26 at 3200 feet bpl.
15:35	Frank Procta discusses well development plan with Ronnie Thames (YBI).
17:05	Reaming with 22-inch bit on STAND #26 at 3205 feet bpl.
17:10	Update Mark Pearce of site operations.
18:25	Currently down for repairs - a rupture in stand pipe requires welding.
19:00	Repairs are made by 19:00 and reaming.
21:55	Reaming with 22-inch bit on STAND #26 at 3218 feet bpl.
22:42	Trika Nelson arrives on-site.
22:50	Frank Procta leaves the site.
23:00	Reaming with 22-inch bit on STAND #26 at 3220 feet bpl.
0:00	Reaming with 22-inch bit on STAND #26 at 3223 feet bpl.
1:00	Reaming with 22-inch bit on STAND #26 at 3226 feet bpl.
2:00	Reaming with 22-inch bit on STAND #26 at 3228 feet bpl.
3:00	Reaming with 22-inch bit on STAND #26 at 3230 feet bpl.
4:00	Reaming with 22-inch bit on STAND #26 at 3233 feet bpl.
5:00	Reaming with 22-inch bit on STAND #26 at 3235 feet bpl.
6:00	Reaming with 22-inch bit on STAND #26 at 3238 feet bpl.
6:50	Top head drive down with STAND #26 at 3240 feet bpl. Circulate hole.
7:00	Trika Nelson off.

WATER RESOURCE SOLUTIONS

Date: 7/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Circulating hole at 3240 feet bpl with 22-inch bit on STAND #26 at top head drive down.
7:15	Noah Kugler on-site. Attaching 10-foot drillpipe sub to ream to total depth.
7:25	Resume reaming with 22-inch bit on final 10-foot drillpipe sub at 3240 feet bpl.
7:50	Noah calls Mark Pearce with update and to discuss sampling plan.
8:00	Mark returns Noah's call and informs him that Mr. Jack Myers of the FDEP UIC program has given verbal approval to set the drill string (without packer) near the bottom of the open hole, develop out six drillstring volumes, then purge an addition six drillstring and sample injection zone. Developed and purged water will hauled off-site.
8:00	Reaming with 22-inch bit on final 10-foot drillpipe sub at 3242 feet bpl.
9:00	Reaming with 22-inch bit on final 10-foot drillpipe sub at 3245 feet bpl.
10:00	Reaming with 22-inch bit on final 10-foot drillpipe sub at 3248 feet bpl.
10:45	Reached total depth of open hole at 3250 feet bpl (top head drive down on 10-foot drillpipe sub plus 26 stands). Circulate hole and prepare to trip out drillpipe to the base of the 24-inch casing and run first of two short wiper trips to total depth. Due to damage of the inclination tool, inclination surveys will be performed at 3010, 3100 and 3190 feet bpl after development and sampling of the injection zone. The required replacement part for the survey tool is due to arrive within the next couple of days.
11:40	STAND #26 has been tripped out with no resistance to the drillstring indicating that the hole is relatively clean at this point. Note: material may be knocked off borehole wall and fall down well upon further tripping out.
12:00	Continue tripping out drillstring for short wiper trip.
12:50	Dump truck on-site to haul cuttings from circulation pit prior to hauling development water off site.
13:00	Continue tripping out drillstring for short wiper trip.
14:00	Continue tripping out drillstring for short wiper trip.
14:10	Begin first wiper trip from base of 24-inch casing to total depth.
15:00	Running wiper trip. Impediment (boulder or ledge) encountered at approximately 2960 feet bpl. Drilling out impediment.

15:10	Noah Kugler leaves site.
15:20	Frank Procta arrives on-site. Current ops. : Performing wiper run.
16:25	Top head drive down with STAND #24 at 3000 feet bpl.
16:35	Add STAND #25 to string in preparation for continuing wiper trip.
17:10	Currently the drill string is pulled up inside the casing ending the wiper run. NOTE: Suspending drilling operations was done due to lightning threat.
18:30	Drilling operations are currently suspended.
19:00	Driller's shift change.
20:40	Currently tripping in last stands of drill pipe in performing the final wiper trip.
21:00	Add 10-foot pup joint to complete the string and prepare to circulate at the bottom of the open hole.
21:20	Currently circulating several feet up from the bottom of the open hole.
21:45	Circulating at approximately 5 feet up from the bottom of the open hole. NOTE: Working approximately 7 feet of fill at the bottom of the hole during this final wiper trip.
22:25	Continue to drill out fill just above the bottom of the open hole.
22:50	Continue reverse-air pumping approx. 1 foot above the bottom of open hole.
23:00	Todd Tubbert arrives on-site, Frank Procta leaves the site.
0:35	Crew emptying frack tank water onto pad tanks.
1:30	Mark 30" line on inside wall of frack tank, representing 28,000 gallons.
1:38	Begin reverse-air purge.
2:12	Water level in frack tank reach 28,000 gallon mark.
2:27	End reverse-air purge. Water level is 12" above 30" mark. Est. purge total at 42,000 gallons.
2:30	Wire up 5hp pump for additional 28,000 gallon purge. (Note: Centripetal cannot be used due to bad alternator on hydraulic pump).
3:20	Trip out air line.
4:05	Down hole with 5hp pump, attached to three doubles of tremie tubing. (~175' bpl)
4:17	Start pump.
4:20	Estimate flow rate using 5 gallon bucket. (4 secs/5 gals = 75gpm) NOTE: There is not a working flowmeter on-site. A total of 28,000 gallons should be pumped in approx. 6.2 hours. Therefore purge should be complete at 10:30 am.
5:30	Purging well.
6:30	Purging well. Noah Kugler calls Todd Tubbert to coordinate shift transition.
7:10	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/30/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Contractor is currently purging water from the injection zone prior to collecting water samples that will be analyzed for primary and secondary drinking water standards as well as minimum criteria for sewage effluent.
7:10	Todd Tubbert leaves site.
7:20	Noah Kugler on-site.
7:45	Check conductivity and chlorides of purged water. Conductivity = 53,300 US/cm, Chlorides = 20,400 mg/l, 2nd Chloride titration = 20,300 mg/l.
8:05	Noah calls Mark Pearce with update.
8:20	Check conductivity and chlorides of purged water. Conductivity = 53,400 US/cm, Chlorides = 20,250 mg/l, 2nd Chloride titration = 20,300 mg/l.
8:35	Reduce pumping rate in anticipation of Sanders Lab representative arriving after planned sampling time of 10:30 this morning. Note that the original planned purge volume of six drillstring volumes will still be purged.
9:10	Check conductivity and chlorides of purged water. Conductivity = 53,400 US/cm, Chlorides = 20,400 mg/l, 2nd Chloride titration = 20,350 mg/l.
9:15	Pumping rate = 33 gpm (5 gallons in 9 seconds)
9:55	Check conductivity and chlorides of purged water. Conductivity = 53,400 US/cm, Chlorides = 20,300 mg/l
11:05	Check conductivity and chlorides of purged water. Conductivity = 53,400 US/cm, Chlorides = 20,350 mg/l
12:25	Check conductivity and chlorides of purged water. Conductivity = 53,300 US/cm, Chlorides = 20,250 mg/l, 2nd Chloride titration = 20,300 mg/l. Water quality has been stable for at least 4 and 1/2 hours (conductivity and chlorides were taken starting at 7:45. Waiting on representative from Sanders labs to arrive to collect suite of samples from the injection zone water.
13:00	Sanders Lab representative (Noah Olynech) has arrived on-site. Prepare to collect water samples for analysis of all primary and secondary drinking water standards as well as the minimum criteria for sewage effluent.
13:15	Begin collecting injection zone water samples.
13:42	Finish collecting injection zone water samples.
13:45	Prepare to remove submersible pump from well and begin tripping out drillstring. Contractor beginning to set up circulation system for drilling of DZMW.

14:40	Contractor has suspended pulling pump and tripping out drillstring to unload and set-up shale shakers for circulation system.
14:50	Frank Procta arrives on-site. Current ops. : Crew unloading and setting up equipment for circulation system.
15:30	Crew begin tripping out the reaming string.
17:30	Continue to trip out string.
18:00	Currently tripping out the collar stand.
19:00	Driller's shift change.
21:30	Waiting on logger. NOTE: Plan on performing a cement bond log of 24-inch casing cement.
21:43	Logger arrives on-site.
22:12	Lower the caliper tool down the well.
22:33	Reach the bottom of open hole tagging at 3250 feet bpl.
22:35	Begin recording data, logging uphole from 3250 feet bpl at a logging speed of 28 to 29 feet/minute.
23:09	Todd Tubbert arrives on-site, Frank Procta leaves the site.
23:17	End recording data at 2500 feet bpl.
23:30	Retrieve logging tool from hole.
23:35	Prepare to run cement bond log.
23:50	Lower the cement bond logging tool down the well.
0:08	Begin recording REPEAT data, logging uphole from 2600 feet bpl.
0:16	End recording REPEAT data - run tool down to 2600 feet bpl.
0:19	Begin recording MAINPASS data, logging uphole from 2593 feet bpl.
1:46	End recording MAINPASS data.
1:50	Retrieve logging tool from hole.
2:15	Trip in cement tubing.
3:00	Hard Tag top of cement at 253.22 feet bpl.
3:15	Set cement tubing ~ 2 foot above top of cement.
3:53	Pre-flush with 1bbl of fresh water.
3:55	Begin cement STAGE #100 - cementing 24" casing with 12% bentonite.
4:22	End cementing. (120.5 bbls) Note: Cement has reached top of casing - returns noted at surface.
4:25	Pull out all cement tubing.
4:30	Crew cleaning rig and preparing for breakdown.
5:30	Crew cleaning rig and preparing for breakdown.
6:30	Crew cleaning rig and preparing for breakdown. Noah and Todd discuss activities planned for day shift.
7:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 7/31/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: IW-1

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Contractor cleaning rig and preparing for initial stages of demobilizing drill rig from IW-1 and mobilizing to DZMW. Rig may be over the location of DZMW and ready to resume drilling operations by next Wednesday (8/6) or Thursday (8/7). All items except final logging, RTS and injection test have been completed at IW-1.
7:05	Noah Kugler on-site.
7:45	Noah calls Mark Pearce with update.
8:00	Noah preparing weekly report and putting together files to take to the office to work on well completion report for IW-1.
8:30	Contractor is pumping purged water from sampling event back down IW-1 at a rate of 100 gpm with no apparent water level increase.
11:00	Noah Kugler leaves site for the office. No further night shifts are scheduled until operations at DZMW commence. No site activities planned except demobilization and setup over DZMW location. Four surficial pad monitor wells will be installed early next week and sampled for background water quality prior to any activity at DZMW.

Week 28

WATER RESOURCE SOLUTIONS

Date: 8/1/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Well: IW-1/DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Demobilize rig from IW-1.

WATER RESOURCE SOLUTIONS

Date: 8/2/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1/DZMW

Time	Description of Activities
	Mobilize rig to DZMW.

WATER RESOURCE SOLUTIONS

Date: 8/3/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1/DZMW

Time	Description of Activities
	Mobilize rig to DZMW.

WATER RESOURCE SOLUTIONS

Date: 8/4/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Well: IW-1/DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Mobilize rig to DZMW. Install 4 pad monitor wells, one at each corner of the drilling pad at DZMW.

WATER RESOURCE SOLUTIONS

Date: 8/5/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: IW-1/DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Mobilize rig to DZMW. Sample pad monitor wells at IW-1.

WATER RESOURCE SOLUTIONS

Date: 8/6/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Well: IW-1/DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Mobilize rig to DZMW.

WATER RESOURCE SOLUTIONS

Date: 8/7/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well: IW-1/DZMW

Time	Description of Activities
	Mobilize rig to DZMW. Develop and sample pad monitor wells at DZMW for background water chemistry.

APPENDIX 3.2.2

DZMW WEEKLY REPORTS

Week 29

WATER RESOURCE SOLUTIONS

Date: 8/8/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Contractor has mobilized rig to DZMW location and is preparing to start drilling with a nominal 30-inch, flat-bottomed bit using standard mud rotary method. Inclination surveys due for IW-1 will be performed in the next few days. Still waiting on necessary part to run surveys.
7:50	Nominal 30-inch bit has been attached to bottom hole stabilizer and is hanging over the drilling location. Welders are making final adjustments to circulation piping. Crew working on rig's hydraulics.
8:10	Noah updates Mark Pearce via telephone.
8:45	Noah E-mails weekly report materials to Mark Pearce.
9:15	Measure depth of DZMW pad monitor wells and height of casings above land surface (measuring point). PMW-1 / PMW-2 / PMW-3 / PMW-4 Depth (ft bls): 20.0 +/- 0.1 / 20.0 +/- 0.1 / 20.0 +/- 0.1 / 20.0 +/- 0.1 TOC (ft als): 1.5 / 1.5 / 1.5 / 1.3
10:00	Crew working on rig's hydraulics system.
11:00	Crew working on rig's hydraulics system.
11:25	YBI specialist on-site to work on rig's hydraulics system.
12:00	Crew working on rig's hydraulics system.
13:00	Crew working on rig's hydraulics system.
14:00	Crew working on rig's hydraulics system.
14:30	Trika Nelson on-site.
14:45	Begin drilling with nominal 30-inch bit at 8 feet bpl. A Temporary pit casing was set to 8 feet bpl prior to the initiation of drilling.
15:20	Hole has developed in 6-inch steel circulation line. Suspend drilling operations at 12 feet bpl to repair/weld line.
15:55	Noah Kugler leaves site.
16:00	Still working on circulation line.
17:00	Still working on circulation line.
17:25	Circulation line has been replaced. Resume drilling at 12 feet bpl.
18:00	Drill with 30-inch bit at 18 feet bpl.

19:00	Drill with 30-inch bit at 25 feet bpl. Another circulation hose developed a hole. YBI Crew is replacing hose.
20:00	Still repairing hose.
20:20	Hose has been replaced. Resume drilling operations.
21:00	Drill with 30-inch bit at 30 feet bpl.
21:30	Shut down operations due to severe lightning and rain.
22:00	Operations are still shut down due to inclement weather.
22:40	Resume drilling operations with 30-inch bit at 37 feet bpl.
22:50	Omar Rodriguez on site. Trika Nelson off site.
23:05	Top head drive down with stabilizer at 38.43 feet bpl.
23:10	Connect Stand #1 (120')
23:50	Resume drilling operations with stand #1 at 38.43 feet bpl.
0:15	Currently down for repairs. Rig's hydraulic system failure, one pump blew up, some parts are needed for repair.
1:00	Down for repairs.
1:35	Resume drilling operations with stand #1 at 42 feet bpl.
1:50	Down for repairs. A circulation hose developed a hole. YBI Crew is replacing hose.
2:35	Hose has been replaced. Resume drilling operations at 43 feet bpl.
3:45	Currently drilling at 53 feet bpl.
5:00	Currently drilling at 61 feet bpl.
6:00	Currently drilling at 64 feet bpl.
6:40	Currently drilling at 66 feet bpl.
6:55	Frank Procta arrives on-site. Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/9/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Drilling with nominal 30-inch bit.
7:10	Currently drilling at 68.5 feet bpl.
7:20	Currently performing routine servicing of rig.
7:41	Resume drilling operations.
8:15	Currently drilling at 84 feet bpl.
8:25	Currently drilling at 88.5 feet bpl.
8:27	Suspend drilling operations as a hose on the return line ruptures.
9:00	Down for repairs.
10:00	Down for repairs.
11:00	Down for repairs.
11:20	Resume drilling operations.
11:31	Currently drilling at 100 feet bpl.
12:25	Currently drilling at 144 feet bpl. NOTE: Drilling penetration rate slows down at approx. 142 feet bpl.
12:52	Currently drilling at 147 feet bpl.
13:22	Top head drive down with STAND #1 at 158 feet bpl.
14:00	Currently circulating at 158 feet bpl.
14:30	Add STAND #2 to the drill string.
14:45	Resume drilling operations with STAND #2 at 158 feet bpl.
16:27	Currently drilling at 193 feet bpl.
17:20	Update Mark Pearce of drilling status. NOTE: Mark gives the OK to drill to 400 feet bpl before running inclination surveys, however these surveys must be satisfactorily performed before running 24-inch casing.
17:42	Currently drilling at 195 feet bpl.
18:30	Currently drilling at 197 feet bpl.
18:48	Omar Rodriguez arrives on-site.
19:00	Frank Procta leaves the site.
19:00	Currently performing routine servicing of rig.
19:30	Resume drilling operations.
20:20	Currently drilling at 203 feet bpl.
21:30	Currently drilling at 223 feet bpl.

22:50	Currently drilling at 225 feet bpl.
0:35	Currently drilling at 228 feet bpl.
1:45	Currently drilling at 235 feet bpl.
2:30	Currently drilling at 250 feet bpl.
3:30	Currently drilling at 270 feet bpl.
4:10	Top head drive down with Stand #2 at 278 feet bpl. Circulating at 278 feet bpl.
4:40	Connect Stand #3 to the drilling string.
5:10	Resume drilling operations with Stand #3
6:10	Currently drilling at 319 feet bpl.
6:43	Currently drilling at 325 feet bpl.
6:55	Frank Procta arrives on-site.
7:00	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/10/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Drilling with nominal 30-inch bit on STAND #3.
7:09	Currently drilling with STAND #3 at 329 feet bpl.
7:40	Currently drilling with STAND #3 at 334 feet bpl.
8:25	Currently drilling with STAND #3 at 340 feet bpl.
9:00	Currently drilling with STAND #3 at 344 feet bpl.
9:20	Measure/record joint lengths of 24-inch O.D. casing in preparation for the first casing run of well DZMW. NOTE: The last joint (JOINT #10), the header joint, will be set approx. 0.25 feet above pad level, placing the bottom end of the casing string at 395 feet bpl.
9:59	Currently drilling with STAND #3 at 358 feet bpl.
10:20	Currently drilling with STAND #3 at 367 feet bpl.
11:51	Currently drilling with STAND #3 at 383 feet bpl.
12:00	Update Mark Pearce of drilling status and today's planned activities. NOTE: Mark gives the OK to run inclination surveys by hand starting at 360 feet bpl and working up within the drill string at 90-foot intervals.
12:35	Currently drilling with STAND #3 at 384.5 feet bpl.
13:45	Drilling operations are currently suspended as the air filters to the rig motor require replacement.
14:03	Resume drilling operations.
14:12	Currently drilling with STAND #3 at 387.5 feet bpl.
14:55	Currently drilling with STAND #3 at 388 feet bpl.
16:05	Currently drilling with STAND #3 at 388.5 feet bpl.
17:00	Continue drilling with STAND #3 at 388.5 feet bpl.
17:45	Continue drilling with STAND #3 with little to no advancement of the borehole. NOTE: It is decided to trip out the drill string and clean and examine the bit.
18:00	Crew begin tripping out the drill string.
18:35	Crew cleaning the bit of clay.
18:45	Update Mark Pearce of drilling status.
18:50	Omar Rodriguez arrives on-site.
19:00	Frank Procta leaves the site.

19:40	Crew begin tripping in the drill string.
20:35	Resume drilling operations at 388.5 ft bpl.
21:50	Continue drilling with STAND #3 at 393 feet bpl. Still drilling in clay.
22:40	Continue drilling with STAND #3 at 397 feet bpl. Still drilling in clay.
23:10	Top head drive down with Stand #3 at 398 feet bpl. Circulating at 398 feet bpl. Still in clay but abundant limestone have appeared at this depth.
23:30	Add STAND #4 to the drill string.
23:50	Resume drilling operations with Stand #4
0:15	Top of limestone has been reached at 399 feet bpl. Casing will be set at 405 feet bpl.
0:30	Currently drilling at casing depth (405 feet bpl), in order to set casing at 405 feet bpl YBI needs to drill five additional feet (410 feet bpl).
1:10	Stop drilling at 410 feet bpl and circulate hole.
3:20	Currently circulating at 410 feet bpl. YBI crew is preparing cables to run inclination surveys by hand.
4:15	End circulating, start to trip out of hole. NOTE: Inclination surveys will be run by hand while tripping out of hole at 360, 270, 180, and 90 feet bpl.
6:00	Inclination surveys have been run successfully. Tripping out of hole to prepare for logger. 360' = 0.5 deg., 270' = 0.5 deg., 180' = 0.25 deg., 90' =0.4 deg. feet bpl.
6:40	Geophysical logging truck arrives on site.
7:00	Noah Kugler on-site. Omar Rodriguez off-site.

WATER RESOURCE SOLUTIONS

Date: 8/11/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Hole has been drilled with nominal 30-inch bit to 410 feet bpl. Clay Ferguson (Florida Geophysical) on-site to run caliper/gamma logs.
7:20	Run in hole with caliper/gamma tool.
7:25	Tool at 410 feet bpl. Open caliper arms and run 150-foot repeat pass.
7:31	Repeat pass complete. Run tool to bottom of hole for main pass
7:36	Tool on bottom. Begin Main logging run uphole at 30-feet per minute.
7:51	Logging tool at surface, log complete. Upon inspecting the caliper log, the borehole appears larger than would be expected given a 30-inch bit size.
7:53	Bit used to drill hole actually measures 42.5-inches (bit was thought to be 34.5-inches).
8:00	Noah calls Mark Pearce with update. Re-tally casing.
8:04	Re-tally 24-inch, 0.375-inch wall casing.
8:12	Casing re-tally complete. All measurements verify previous tallies
8:35	Contractor is advised to place 6-inch wide centralizers on casing at 0, 90, 180 and 270 degrees to accommodate larger than planned borehole.
8:45	Begin running 24-inch O.D., 0.375-inch wall mild steel casing. Plan to set at 405 feet bpl. Run 1st joint of casing (cut from 42.10 to 26.49 feet) in hole.
8:49	2nd joint of casing raised and aligned. Begin welding 2nd joint to 1st joint.
9:16	2nd joint welded to 1st joint. Lower 2nd joint.
9:21	3rd joint of casing raised and aligned. Begin welding 3rd joint to 2nd joint.
9:46	3rd joint welded to 2nd joint. Lower 3rd joint.
9:53	4th joint of casing raised and aligned. Begin welding 4th joint to 3rd joint.
10:15	4th joint welded to 3rd joint. Lower 4th joint.
10:21	5th joint of casing raised and aligned. Begin welding 5th joint to 4th joint.
10:37	5th joint welded to 4th joint. Lower 5th joint.
10:40	6th joint of casing raised and aligned. Begin welding 6th joint to 5th joint.
10:56	6th joint welded to 5th joint. Lower 6th joint.
10:59	7th joint of casing raised and aligned. Begin welding 7th joint to 6th joint.
11:14	7th joint welded to 6th joint. Lower 7th joint.
11:16	8th joint of casing raised and aligned. Begin welding 8th joint to 7th joint.
11:32	8th joint welded to 7th joint. Lower 8th joint.
11:35	9th joint of casing raised and aligned. Begin welding 9th joint to 8th joint.
11:52	9th joint welded to 8th joint. Lower 9th joint.

11:56	10th joint of casing (header) raised and aligned. Begin welding 10th joint to 9th joint.
12:12	10th joint welded to 9th joint. Lower 10th joint.
12:45	Attach top head drive to header joint, via drillpipe, and circulate drilling mud in preparation for cementing. Additional loads of dry cement are expected this afternoon. The Contractor will wait until dry cement has been delivered and blown into silo before running cement stage(s) for the 24-inch casing.
14:00	Waiting on cement delivery.
14:15	Dry cement delivered to site. More to come.
14:45	Frank Procta on-site.
15:00	Waiting on additional cement delivery.
15:30	Noah Kugler off.
16:00	Dry cement is currently being blown into the on-site silo.
16:05	Re-tally cement tubing string length for driller.
18:00	Currently tripping in cement tubing.
18:25	Discuss cementing plan with Mike Sordan (YBI). Plan to pump 12% followed by at least 300 bbls. of neat cement.
18:46	Attach cementing header to tubing string. Note: Bottom end of tubing string set at 397 feet bpl.
18:48	Begin freshwater pre-flush.
19:03	Begin cementing (pressure grouting).
20:29	End cementing, move to freshwater chase. Note: Pumped 200 barrels of cement mixed with 12% bentonite, followed by 400 barrels of neat cement. Cement returns seen at the surface.
20:30	End freshwater chase.
20:31	Break cementing header.
20:34	Raise the tubing string.
20:45	Call Mark Pearce with update. Mark cancels the night shift for Todd Tubbert and gives the OK to run the temperature log at 7:00 AM tomorrow morning.
21:00	Waiting on cement.
22:00	Waiting on cement.
23:00	Frank Procta leaves the site. Note: Night tour for WRS staff cancelled due to waiting on cement.

WATER RESOURCE SOLUTIONS

Date: 8/12/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Hole has been drilled with nominal 30-inch bit to 410 feet bpl. Kenwin Lee (Florida Geophysical) on-site to run cement-top-temperature log.
7:15	Cement-top-temperature log complete. Tool out of hole. Contractor will be converting circulation system from standard mud-rotary to reverse-air over the next day. Target to resume drilling operations - tomorrow PM.
7:35	Fax Mark Pearce a copy of temperature log and leave update message via voice-mail.
8:00	Noah works on completion report items: hydrogeology section, lithology log review, figures review.
8:30	Contractor begins purging and sampling the four pad monitor wells at IW-1, followed by the four pad monitor wells at DZMW.
8:55	Mark Pearce calls Noah to have the Contractor drill to 950 feet with the pilot hole, run a packer test (no flow log needed) from 900 to 950 feet bpl to verify flow for the upper monitor zone. Then drill the pilot hole to 1250, run a 2nd packer test (again, no flow log needed) from 1200 to 1250 feet bpl to verify flow for the lower monitor zone. This slightly varies the original plan but should provide more explicit answers to question of monitor zone specific capacities needed to size permanent pumps.
8:59	Noah relays Mark's directives to Ronnie Thames (YBI site superintendent).
14:00	Noah and Frank Procta discuss planned PM shift activities.
14:30	Noah leaves site for the office to pick-up supplies.
15:15	Frank Procta arrives on-site.
16:15	Complete cementing forms from previous day's cementing event.
17:15	Complete field testing the pad monitoring well water samples at well IW-1 and record results.
19:00	Frank Procta begins working on the well completion report.
22:00	Frank Procta leaves the site. Note: There will be no night tour by WRS staff as the contractor continues setting up for reverse-air drilling.

WATER RESOURCE SOLUTIONS

Date: 8/13/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Noah Kugler on-site. Stopped at Wal-Mart to pick-up storage containers for cuttings from DZMW. Work on completion report for IW-1 and set-up files for DZMW.
8:15	Contractor continues set-up of reverse-air circulation system.
8:30	Noah calls Mark Pearce with update. Working on report.
13:20	Noah calls Mark Pearce with update. Working on report.
15:00	Frank Procta on-site. Noah Kugler off.
16:00	Begin to label trays for storage of sediment samples collected while drilling well DZMW.
16:30	Crew continue to set-up the reverse-air circulation system and perform rig maintenance.
17:30	Begin transferring drill cuttings samples from bags to marked trays.
18:00	Frank Procta continues to pack trays with sediment samples.
20:00	Crew continue to set-up the reverse-air drilling system.
21:25	Tag the cement plug inside the 24-inch intermediate casing of well DZMW at 397.5 feet bpl. Note: The BHA was tripped in well DZMW at approximately midnight yesterday. The BHA consists of the following: 12.25-inch diameter button bit, bit with sub measures 3.97 feet, collar stand measures 121.98 feet. Total BHA length measures 125.95 feet.
21:45	Call Todd Tubbert with drilling status.
21:50	Currently circulating above the cement plug. Note: Contractor plans to circulate at the bottom of the borehole for hours.
22:00	Frank Procta leaves the site.
23:00	Todd Tubbert on-site. Current ops: Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.
0:00	Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.
1:00	Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.
2:00	Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.
3:00	Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.

4:00	Crew attempting to stop leaking from top of casing by tightening bolts and readjusting header plate.
5:00	Note: Circulation cannot be completed tonight, as the holding tank is full. Tankers will arrive in the a.m., Therefore drilling will not resume until circulation is complete and the holding tank is emptied, sometime during tomorrows shift.
5:15	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/14/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:15	Noah Kugler on-site. Contractor continues set-up of reverse-air circulation system. Likely to resume drilling operations of the 12.25-inch pilot hole this afternoon. The 42.5-inch-hole cement-plug, inside the 24-inch casing, was hard tagged at 397 feet bpl and extends to approximately 410 feet bpl.
7:50	Noah leaves update message for Mark Pearce.
9:00	Waiting to resume drilling operations. Noah works on weekly report to TAC and draft of well completion report.
10:00	The circulation system has basically been converted to reverse-air. Several more loads of cuttings and drilling mud will be hauled off-site by tanker truck, prior to resuming drilling.
13:00	Contractor still hauling cuttings and drilling mud and cleaning work-pits. First drill cuttings will be collected 420 feet bpl (410 to 420 sample). First water sample will be collected prior to drilling out cement plug and again every 30 feet starting at 420 feet bpl.
13:20	Last tanker of cuttings and fluid leaves site. Final preparations to start drilling out cement plug with 12.25-inch bit. The pilot hole will be drilled to +/- 950 feet bpl where a packer-facilitated pump-test will be performed over the interval from +/- 900 to 950 feet bpl.
13:25	Start circulating water (and heavier fluids remaining in bottom of hole) with 12.25-inch bit at 390 feet bpl. Bottom hole assembly is as follows: 1.50' (bit) + 2.47' (sub) + 121.98' (drill collars) = 125.95'.
13:55	Start drilling through cement plug at 397 feet bpl with Stand #3. Note: Top head drive down on this stand will place the bit at approximately 480.45 feet bpl. The Top head drive connection (saver sub) to the drill pipe is 5.5 feet above the drill pad when the top head drive is down.
14:20	Drilled through cement plug from 397 to 410 feet bpl. Start into formation at 410 feet bpl.
14:40	Drilling on Stand #3 at 418 feet bpl.
14:50	Frank Procta on-site.
15:00	Noah Kugler off.
16:05	Top head drive down with STAND #3 at 480.5 feet bpl.

16:15	Prepare to run inclination survey at 450 feet bpl.
16:42	Add STAND #4 to the drill string.
16:45	Resume pilot-hole drilling.
17:58	Currently drilling with STAND #4 at 530 feet bpl.
18:58	Down for routine rig maintenance.
19:19	Resume drilling operations with STAND #4.
19:35	Currently drilling with STAND #4 at 587 feet bpl.
20:15	Down for maintenance - lubrication.
20:37	Lower wireline shot tool down the drill stem in preparation for performing inclination survey at 540 feet bpl.
20:57	Add STAND #5 to the drill string.
21:02	Resume pilot-hole drilling.
22:20	Currently drilling with STAND #5 at 645 feet bpl.
23:00	Todd Tubbert arrives on-site.
23:10	Frank Procta leaves the site.
0:18	Currently drilling with STAND #5 at 700 feet bpl.
0:50	Top head drive down with STAND #5 at 720 feet bpl.
1:00	Prepare to run inclination survey at 630 feet bpl.
1:30	Add STAND #6 to the drill string.
1:40	Resume pilot-hole drilling.
3:40	Currently drilling with STAND #6 at 765 feet bpl.
5:10	Top head drive down with STAND #6 at 840 feet bpl.
5:25	Prepare to run inclination surveys at 720 and 810 feet bpl.
5:50	Add STAND #7 to the drill string.
6:00	Resume pilot-hole drilling.
7:00	Prepare to run inclination surveys at 720 and 810 feet bpl.

Week 30

WATER RESOURCE SOLUTIONS

Date: 8/15/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:10	Noah Kugler on-site. Currently circulating hole at a depth of 950 feet bpl. Caliper and gamma logs are scheduled to be run at 9:00, followed by set-up for a packer test over the interval from 900 to 950 feet bpl.
7:25	Pick up drillstring approximately 80 feet and continue to circulate hole.
7:50	Crew works to fix hydraulics problem with rig. Unable to trip-out drillstring until problem is fixed.
9:00	John Cathey (Florida Geophysical) on-site to run caliper/gamma logs. Waiting for crew to fix hydraulics and trip out drillstring to run tool in hole.
9:45	Inflatable packer for pump test has been delivered to site.
10:05	Hydraulics issue fixed. Resume tripping-out drillstring
11:05	Drillstring out of hole. Prepare to run caliper/gamma logs.
11:15	Go in hole with logging tool.
11:40	Logging complete from 950 feet bpl (total depth) to 300 feet bpl. Pull tool from hole.
11:50	Logging tool out of hole. Prepare to run packer in hole to approximately 900 feet bpl. Measure packer lengths.
12:30	The centerline of the packer will be set at approximately 902 feet bpl as follows: Length of packer from top of mandril to centerline (9.31 feet) + Seven stands of drillpipe (840 feet) + two 30-foot joints of drillpipe (60 feet) - slipped height of drillpipe above pad level (7 feet) = 902.31 feet bpl.
12:45	Start running packer in hole.
13:30	Noah calls Mark Pearce with update and e-mails weekly draft report to TAC.
14:25	Packer centerline set at 902 feet bpl. Begin inflating packer with water.
15:00	Frank Procta on-site. Noah Kugler off.
15:17	Record packer pressure at 360 psi.
15:24	Measure out 171 feet of transducer cable to be installed in drill stem (INPUT #7).
15:26	Set transducer in the drill stem at 171 feet bpl. Note: Pump intake set at 178 feet bpl. Using a 5-hp submersible pump.
15:41	Record head in drill stem (INPUT #7) at 172 feet.
15:43	Record packer pressure at 360 psi.

16:20	Record annular head pressure at 23.58 psi and head in drill stem at 171.4 feet, before starting pump test #1. Record totalizer at 1,352,295 gallons.
16:22	Begin pumping (test #1) at 35 gpm.
16:26	Adjust pump rate to 23 gpm.
17:23	Record last head data for test #1. Annular head recorded at 23.7 psi, head in drill stem recorded at 174.23 feet. Note: After pumping for 60 minutes at an average pumping rate of 18.5 gpm, a net increase in head in the drill stem of 2.83 feet, maximum hand-recorded drawdown of 0.3 feet. Last recorded packer pressure at 350 psi, ending T at approx. 1,353,500 gallons. Gallons pumped during 60-minute test at approx. 1,205.
17:25	Step test on data logger, increase pumping rate to approx. 40 gpm.
17:27	Flow gauge stops recording, change out gauges.
17:38	Re-start test #2 pumping at 61 gpm.
18:50	Record last head data for test #2. Annular head recorded at 23.57 psi, head in drill stem recorded at 176.53 feet. Note: After pumping for 72 minutes at an average pumping rate of 60 gpm, a net increase in head in the drill stem of 5.13 feet, maximum hand-recorded drawdown of 4 feet. Last recorded packer pressure at 320 psi, ending T at approx. 372300 gallons. Gallons pumped during 60-minute test at approx. 4,600.
19:05	Update Mark Pearce with test results.
19:35	Clay of YBI reviews the pump test data and discusses results with Mark Pearce.
20:05	Start pump test #3, pumping at a sustained rate of 65 gpm. Packer press. at 380 psi.
20:27	Record pump rate at 65 gpm, packer pressure at 380 psi. Note: Head in drill stem, before start of test, recorded at 178 feet, head in annulus at 53.6 feet.
20:29	Step test.
20:31	Shut-in pump, move to recovery. Record packer pressure at 380 psi.
20:32	Well begins to flow. Note: Static water level (before pumping) in the drill stem recorded at approximately pad level.
20:44	End recovery phase of test #3. Note: Head in the drill stem recorded at 190 feet.
21:10	Clay of YBI reviews test #3 data and calls Mark Pearce with results. Mark gives the OK to pull the packer and resume pilot-hole drilling to 1250 feet bpl.
21:25	Crew is currently working on an electrical short.
21:40	Begin field testing formation water samples from today's pump tests.
21:55	Crew is currently tripping out the submersible pump.
22:20	Crew prepare to trip out the packer string.
22:55	Currently tripping out the packer string.
23:20	Frank Procta leaves the site.
23:30	Todd Tubbert arrives on-site.

23:50	Begin tripping in drill string.
1:45	Finish tripping in drillstring. (STAND #7 in hanger)
2:15	Begin drilling 12.25" pilot hole with STAND #7 at 950 feet bpl.
2:30	Top head drive down with STAND #7 at 960 feet bpl.
2:40	Run inclination survey at 900 feet bpl.
2:55	Connect STAND # 8 to drillstring.
3:04	Resume drilling.
5:30	Top head drive down with STAND #8 at 1080 feet bpl.
5:50	Run inclination survey at 990 feet bpl.
6:00	Connect STAND # 9 to drillstring.
6:45	Currently drilling with STAND #9 at 1087 feet bpl. (NOTE: ROP has slowed considerably - due to clay) Trika Nelson on site.
7:05	Todd Tubbert off site.

WATER RESOURCE SOLUTIONS

Date: 8/16/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:45	Currently drilling with STAND #9 at 1087 feet bpl. (NOTE: ROP has slowed considerably - due to clay) Trika Nelson on site.
7:05	Todd Tubbert off site.
8:15	Currently drilling with STAND #9 at 1115 feet bpl.
10:07	Top head drive down with STAND #9 at 1200 feet bpl. Connect STAND #10, resume reaming to 1250 feet bpl.
11:30	Finished drilling to 1250 feet bpl. Circulate hole.
12:00	Begin to trip tubing out of hole.
12:25	Finished tripping out tubing. Begin to trip out drillpipe.
13:25	Finished tripping out drill pipe.
13:30	Break off bit.
13:50	Prepare for logging.
13:53	Tool in the hole.
14:12	Finish Temp. log. Begin repeat pass.
14:25	Finish repeat pass. Switch to caliper/gamma log.
14:55	End caliper/gamma log.
15:00	Switch tools.
15:05	Dual induction tool in the hole.
15:48	Finished with dual induction log.
15:52	Switch tools on winch line
16:05	Sonic log tool in the hole
17:05	Finished with sonic log. **NOTE: Logs are very similar to IW-1.**
17:20	Pick up and lower packer in the hole. The centerline of the packer will be set at **approximately 1202 feet bpl** as follows: Length of packer from top of mandril to centerline (9.31 feet) + ten stands of drillpipe (1200 feet) - slipped height of drillpipe above pad level (7 feet) = **1202.31 feet bpl**.
17:45	Connect Stand #1 and hook up water hose to pressure packer.
17:50	Poor water pressure going through hose. Looking for a kink.
18:25	Fixed problem. Hook water hose up to packer.
18:30	Begin to trip in the hole.
19:00	Todd Tubbert on site. Currently servicing rig.
20:00	Resume tripping in packer with fifth stand.

20:40	Packer centerline set at 1202 feet bpl. Begin inflating packer with water.
21:28	Set 5-hp submersible pump using tremie line. Intake at 178 feet bpl.
22:00	Set transducer in casing with 171 feet of cable (Input 7)
22:07	Set transducer in annulus with 55 feet of cable (Input 1)
22:30	Transducer in casing is not reading properly. Silt is clogging sensors during deployment.
23:00	Geophysical loggers called to site, to troubleshoot transducer problem.
23:10	Remove transducers and submersible pump from hole.
23:45	Begin reverse air development to flush drill pipe of sediment.
0:00	End reverse air.
0:20	Set 5-hp submersible pump using tremie line. Intake at 178 feet bpl.
0:30	Set transducer in casing with 171 feet of cable (Input 7)
0:35	Set transducer in annulus with 55 feet of cable (Input 1)
1:08	Record head in drill stem (INPUT #7) at 166 feet. Annulus (INPUT#1) 44.054 feet.
1:12	Record packer pressure at 398 psi.
1:15	Record head in drill stem at 166.332 feet, before starting pump test #1. Record totalizer at 378800 gallons.
1:16	Begin pumping (test #1) at 25 gpm.
1:17	Flow gauge not working. Disconnect and clean out. (NOTE: test #1 still recording)
1:20	Flow gauge is now working properly.
1:22	Adjust pump rate to 23 gpm.
2:30	Record last head data for test #1. Annular head recorded at 44.626, head in drill stem recorded at 145.787 feet. Note: After pumping for 60 minutes at an average pumping rate of 24.5 gpm, maximum hand-recorded drawdown of 20.9 feet. Last recorded packer pressure at 395 psi, ending Totalizer at approx. 379100 gallons (NOTE: flow gauge had stopped working during test, therefore not giving an accurate total.) Gallons pumped during 60-minute test at approx. 1,470.
2:32	Step test on data logger, increase pumping rate to approx. 45 gpm.
2:34	Adjust pump rate to 50 gpm.
2:35	Adjust pump rate to 55 gpm.
2:37	Adjust pump rate to 57 gpm.
2:39	Adjust pump rate to 60 gpm.
2:40	Record packer pressure at 395 psi.
2:52	Record head in drill stem at 118.576 feet. Record head in annulus at 44.766 feet

3:35	Record last head data for test #2. START recovery. Annular head recorded at 45.005, head in drill stem recorded at 122.080 feet. Note: After pumping for 63 minutes at an average pumping rate of 60 gpm, maximum hand-recorded drawdown of 23.7 feet. After initial drawdown, the head in the drill pipe slowly increased for the remainder of the test. Last recorded packer pressure at 380 psi, ending Totalizer at approx. 382700 gallons. Gallons pumped during 63-minute test at approx. 3600.
4:05	Record last head data for RECOVERY. Annular head recorded at 45.208, head in drill stem recorded at 170.662 feet. Last recorded packer pressure at 365 psi. Recovery produced a surplus of 4.33 feet of head.
4:20	Clay of YBI down loads and reviews data.
4:45	Crew tripping out packer.
6:00	Crew tripping out packer.
6:30	Prepare to trip in 17.5" drill bit.
6:40	Trika Nelson on site.
6:52	Todd Tubbert off site.

WATER RESOURCE SOLUTIONS

Date: 8/17/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: T. Nelson
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
6:40	Trika Nelson on site.
6:52	Todd Tubbert off site.
7:00	Cleaning off rig floor, and preparing to trip in 17 1/2" bit.
8:00	Trika Nelson speaks with Dr. Pearce about Packer test results, and informs him there will be two reaming stages. One using 17.5" bit-ream to 900 feet bpl, and conducting inclination surveys **every 120 feet**. Second stage using 22" bit-ream to 900 feet bpl, and conducting inclination surveys every 90 feet.
8:20	Connect bit to drill collar.
8:30	Trip in bit and drill collar.
8:45	Connect STAND #1 and attach can.
8:55	Trip in tubing.
9:25	Begin reaming to 900 feet bpl with STAND # 3.
10:00	Reaming with STAND #2 at 425 feet bpl.
11:00	Top head drive down with STAND #3. Greasing swivel packing on top head drive.
11:40	Connect STAND #4, and resume reaming at 480 feet bpl.
12:30	Reaming with STAND #4 at 512 feet bpl.
14:00	Reaming with STAND #4 at 545 feet bpl.
15:00	Top head drive down with STAND #4. Conduct inclination survey.
15:20	Connect STAND # 5 and resume reaming at 600 bpl.
16:00	Reaming with STAND #5 at 630 feet bpl.
17:00	Reaming with STAND #5 at 670 feet bpl.
18:00	Reaming with STAND #5 at 695 feet bpl.
19:00	Trika Nelson off site. Todd Tubbert on site.
19:20	Top head drive down with STAND #5 at 720 feet bpl.
19:30	Run inclination survey at 640 feet bpl.
19:45	Connect STAND #6 and resume reaming.
20:00	Reaming with STAND #6 at 755 feet bpl.
21:00	Top head drive down with STAND #6 at 840 feet bpl. Circulate.
21:10	End circulation. Begin reverse air.
21:30	End reverse air. Shut down rig.

21:35	NOTE: Ronnie Thames of YBI decided to suspend drilling until casing depth has been determined and approved by the FDEP, which should be tomorrow morning.
22:00	There will be no further operations conducted on today's night shift.
22:15	Call Noah Kugler with site operations update.
23:00	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/18/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Noah Kugler calls Ronnie Thames for site update. Currently drilled DZMW to 840 feet bpl with a 17.5-inch bit. Operations suspended pending FDEP approval to set casing for monitoring zones.
7:50	Noah calls Mark Pearce with update. Mark is preparing a package to the FDEP including all information necessary for a casing setting request.
8:30	Noah arrives on-site. Send Mark information concerning packer testing of monitoring zones.
9:00	Preparing package to FDEP for casing setting request approval. No site activity except cleaning and maintenance until approval is received.
9:00 to 15:40	Waiting on casing setting approval from FDEP.
15:40	Noah Kugler leaves site.
16:15	Trika Nelson on site.
16:45	**Mark Pearce calls and informs Trika Nelson that the FDEP has given approval to set 14-inch casing to 875 feet bpl. Plans are to ream with 17.5' bit to 876 feet bpl, and then ream with 22' bit to 874 feet bpl.**
17:30	Resume reaming with STAND # 7 at 840 feet bpl.
18:00	Reaming with STAND #7 at 855 feet bpl.
19:15	Finished reaming with 17.5 inch bit to 876 feet bpl. Circulate hole.
19:48	Pull up 120 feet of drill pipe and swab hole.
20:05	Begin to trip tubing out of hole.
20:25	Finished tripping out tubing. Perform inclination survey at 760 feet bpl.
20:45	Survey done. Begin to trip out drillpipe.
21:30	Still tripping out drillpipe. Experiencing rig difficulties. Slowing down process.
22:30	Decision is made to kill the well. Currently making a kill mix.
22:50	Omar Rodriguez on site. Trika Nelson off site.
0:00	Currently making a kill mix.
0:45	Begin to kill the well. Approximately 120 bags of Bentonite gel M-1 BAR and 100 bags of Pargel 220 Bentonite were used to obtain around 20 barrels of kill mix.
1:10	Currently curing the well.
1:30	Restart to trip out drillpipe.
2:30	Currently tripping out drillpipe.

2:50	Finished tripping out drillpipe.
3:10	Begin tripping in the hole with 22-inch diameter bit and drillpipe.
3:50	Begin to ream 22-inch diameter hole at 403 feet bpl.
4:55	Currently reaming with stand #3 at 450 feet bpl.
5:35	Top head drive down with Stand #3 at 480 feet bpl
5:45	Begin running inclination survey at 450 feet bpl.
5:55	Currently attaching Stand #4 to drillpipe.
6:00	Resume drilling operations with stand #4 at 480 feet bpl.
6:45	Currently reaming with stand #4 at 567.5 feet bpl.
7:00	Noah Kugler on-site. Omar Rodriguez off-site.

WATER RESOURCE SOLUTIONS

Date: 8/19/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently reaming DZMW at 599 feet bpl with a 22-inch bit. Plan to ream hole to 875 feet bpl and set 14-inch casing at that point.
7:25	Noah leaves update message for Mark Pearce.
7:30	Top head drive down on Stand #4 at 600 feet bpl. Circulate hole.
7:45	Run inclination survey at 540 feet bpl.
8:05	Inclination survey at 540 feet bpl = 0.25 degrees. Connection made with Stand #5. Resume reaming.
9:00	Reaming on Stand #5 at 635 feet bpl with a 22-inch bit.
10:00	Reaming on Stand #5 at 673 feet bpl with a 22-inch bit.
11:00	Reaming on Stand #5 at 716 feet bpl with a 22-inch bit.
11:10	Re-check 14-inch casing tally and heat numbers
11:20	Top head drive down on Stand #5 at 720 feet bpl. Circulate hole.
11:35	Run inclination survey at 630 feet bpl.
11:55	Inclination survey at 630 feet bpl = 0.5 degrees. Connection made with Stand #6. Resume reaming.
13:00	Reaming on Stand #6 at 725 feet bpl with a 22-inch bit. Slowed progress.
13:40	Mark Pearce calls Noah to discuss plan for setting 14-inch casing. Since we do not want to cement-up any portion of the planned upper monitor zone (875 to 930 feet bpl) by setting a bridge plug directly below the base of the casing, a bridge plug may be set with it's top at 950 feet bpl. Gravel will then be placed from 950 to 875 feet bpl and the casing would be set on the gravel. Mark Pearce has discussed this plan with Jimmy Brantley (YBI) and is waiting to hear back from Jimmy to finalize the plan.
14:00	Reaming on Stand #6 at 735 feet bpl with a 22-inch bit.
14:30	Trika Nelson on-site. Noah Kugler off.
15:00	Reaming on Stand #6 at 750 feet bpl with a 22-inch bit.
16:00	Reaming on Stand #6 at 775 feet bpl with a 22-inch bit.
16:25	**Trika Nelson speaks with Mark Pearce. Dr. Pearce wants to make sure that the top of the basket is set at 950 feet bpl, and that the gravel has to be brought up to 878 feet bpl with a cement cap put on top of it.**

17:00	**Trika Nelson verifies drill pipe tally. #1, #19, #22, and #23 were off. These have been fixed in the tally.** Reaming on Stand #6 at 800 feet bpl with a 22-inch bit.
18:00	Top head drive down with STAND #6 at 840 feet bpl. **There are currently 6 STANDS in the hole, and 20 STANDS in the derrick.**
18:15	Run two surveys at 720 feet bpl, and then at 810 feet bpl.
18:50	Inclination surveys done. 720 feet bpl inclination = 0.5 deg. dev., 810 feet bpl inclination = 0.25 deg.dev.
19:00	Connect STAND #7 and resume reaming at 840 feet bpl.
20:00	Reaming with STAND # at 850 feet bpl.
21:00	Reaming with STAND # at 860 feet bpl.
22:00	Reached TD of 875 feet bpl. Circulate hole.
22:35	Begin to trip out of hole. (Trip out 4 stands, and then trip back in-wiper trip)
22:47	Omar Rodriguez on site. Trika Nelson off site.
23:45	Finished trip out of hole with four stands.
23:55	Begin to trip in hole with tubing for wiper trip.
0:25	Finished tripping in tubing.
0:35	Begin wiper trip.
1:45	Begin to trip tubing out of hole.
2:05	Finished tripping tubing out of hole. Begin to trip drillpipe out of hole.
4:00	Finished tripping out of hole. Waiting on Geophysical logging truck.
5:50	Geophysical logging truck arrives on site.
6:27	Run in hole with caliper/gamma tool.
6:45	Caliper/gamma tool can not go deeper than 875 feet bpl. Geophysical Logger decides to retrieve the tool and use centralizers to try to get through that depth.
6:55	Back in hole with caliper/gamma tool and centralizers.
7:00	Noah Kugler on-site. Omar Rodriguez off-site.

WATER RESOURCE SOLUTIONS

Date: 8/20/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Noah Kugler on-site. Currently attempting to run caliper/gamma logs of the borehole. A 22-inch hole has been reamed to 875 feet bpl. Pilot hole (12.25 inch) has been drilled to 1250 feet bpl.
7:35	Caliper/gamma tool can not go deeper than 875 feet bpl. Geophysical Kenwin Lee (geophysical logger) has tried 3 attempts using centralizers on the last 2 attempts, to lower tool past 875 feet bpl, without success.
7:40	Contractor has decided to trip back in with the 12.25-inch bit and clean-out the hole. Logging will be attempted after clean-out.
7:45	Noah calls Mark Pearce with update.
8:50	Crew starts tripping in reverse-air tubing and drillpipe with 12.25-inch bit.
8:10	Contractor (Ronnie Thames for YBI) advises Noah that an exterior hole plug has been fabricated and will be set at the bottom of the 14-inch casing string to allow grouting. Note that this was a previous plan, but was abandoned for installing a bridge plug at 950 and graveling back to 878 feet bpl, due to the extended time needed to fabricate the plug.
9:00	Tripping-in drillstring
10:00	Tripping-in drillstring
10:50	Blockage at 875 feet bpl cleared by putting approximately 10K lbs on bit. Soft material likely pushed down to approximately 885 feet bpl which should not effect setting of hole plug at 875 feet bpl. Start tripping-out drillstring.
11:20	Representative from Sanders Laboratories on-site to pick up reverse-air water samples from DZMW. Samples will be analyzed for ammonia, TKN and TDS.
12:00	Tripping-out drillstring
13:00	Tripping-out drillstring
13:25	Drillstring out of hole. Kenwin Lee back on-site to run caliper/gamma log again.
13:35	Begin running caliper/gamma log of 22-inch hole
13:50	Finish running caliper/gamma log of 22-inch hole to 885 feet bpl. Run tool out of hole.
13:55	Tool out of hole.
14:10	Casing plan discussed with Mark Pearce and Ronnie Thames. Several feet of gravel should be used on top of the hole plug to make sure the plug has sealed, prior to pumping a small initial stage of cement. Waiting for hole plug to be delivered to site.

14:35	Trika Nelson on-site.
15:05	Noah Kugler off. Waiting for hole plug.
16:00	Waiting for hole plug.
17:30	Bridge plug on site, along with welders. Bridge plug is approximately 4.00 feet in length, and the widest part of it is 21.5 inches wide. Preparing to weld bridge plug to Joint 1.
18:00	Begin to weld bridge plug onto Joint 1.
18:30	Finished welding bridge plug onto joint #1.
19:00	Pick up and take it up to rig floor.
19:12	Begin running 14-inch O.D., 0.375-inch wall mild steel casing. Plan to set at 875 feet bpl. Run 1st joint of casing in hole.
19:27	2nd joint of casing raised and aligned. Begin welding 2nd joint to 1st joint.
19:45	2nd joint welded to 1st joint. Lower 2nd joint.
19:49	3rd joint of casing raised and aligned. Begin welding 3rd joint to 2nd joint.
20:08	3rd joint welded to 2nd joint. Lower 3rd joint.
20:16	4th joint of casing raised and aligned. Begin welding 4th joint to 3rd joint.
20:32	4th joint welded to 3rd joint. Lower 4th joint.
20:38	5th joint of casing raised and aligned. Begin welding 5th joint to 4th joint.
20:51	5th joint welded to 4th joint. Lower 5th joint.
20:57	6th joint of casing raised and aligned. Begin welding 6th joint to 5th joint.
21:14	6th joint welded to 5th joint. Lower 6th joint.
21:18	7th joint of casing raised and aligned. Begin welding 7th joint to 6th joint.
21:31	7th joint welded to 6th joint. Lower 7th joint.
21:37	8th joint of casing raised and aligned. Begin welding 8th joint to 7th joint.
21:50	8th joint welded to 7th joint. Lower 8th joint.
21:56	9th joint of casing raised and aligned. Begin welding 9th joint to 8th joint.
22:10	9th joint welded to 8th joint. Lower 9th joint.
22:15	10th joint of casing raised and aligned. Begin welding 10th joint to 9th joint.
22:31	10th joint welded to 9th joint. Lower 10th joint.
22:37	11th joint of casing raised and aligned. Begin welding 11th joint to 10th joint.
22:47	Omar Rodriguez on site. Trika Nelson off site.
22:53	11th joint welded to 10th joint. Lower 11th joint.
22:58	12th joint of casing raised and aligned. Begin welding 12th joint to 11th joint.
23:12	12th joint welded to 11th joint. Lower 12th joint.
23:17	13th joint of casing raised and aligned. Begin welding 13th joint to 12th joint.
23:34	13th joint welded to 12th joint. Lower 13th joint.
0:25	14th joint of casing raised and aligned. Begin welding 14th joint to 13th joint.
0:42	14th joint welded to 13th joint. Lower 14th joint.
0:46	15th joint of casing raised and aligned. Begin welding 15th joint to 14th joint.
0:58	15th joint welded to 14th joint. Lower 15th joint.
1:04	16th joint of casing raised and aligned. Begin welding 16th joint to 15th joint.

1:16	16th joint welded to 15th joint. Lower 16th joint.
1:22	17th joint of casing raised and aligned. Begin welding 17th joint to 16th joint.
1:36	17th joint welded to 16th joint. Lower 17th joint.
1:42	18th joint of casing raised and aligned. Begin welding 18th joint to 17th joint.
1:55	18th joint welded to 17th joint. Lower 18th joint.
2:00	19th joint of casing raised and aligned. Begin welding 19th joint to 18th joint.
2:10	19th joint welded to 18th joint. Lower 19th joint.
2:16	20th joint of casing raised and aligned. Begin welding 20th joint to 19th joint.
2:30	20th joint welded to 19th joint. Lower 20th joint.
2:36	21st joint of casing raised and aligned. Begin welding 21st joint to 20th joint.
2:49	21st joint welded to 20th joint. Lower 21st joint.
2:55	22nd joint of casing raised and aligned. Begin welding 22nd joint to 21st joint.
3:12	22nd joint welded to 21st joint. Lower 22nd joint. Casing stick up is 2.62 feet above the rig floor, 8.22 feet above the pad level.
3:20	Currently installing a cap to seal the annulus between the 24-inch casing and the 14 inch-casing.
5:20	Currently cutting off stick up above pad level to 36 inches for cementing gussets
6:32	Noah Kugler calls for update.
6:40	Currently preparing tubing string for graveling and cementing.
6:50	Omar Rodriguez leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/21/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
O. Rodriguez
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:05	Noah Kugler on-site. Currently running cement tremie in hole to tag top of cement hole plug fitted to the exterior of the 14-inch casing.
7:50	Hole plug top tagged at 872 feet bpl. Pull up tremie and prepare to fill 3-5 vertical feet of annular space with gravel prior to pumping 2-barrel cement cap using neat with 3% CaCl.
8:00	Noah calls Mark Pearce with update.
8:25	Begin pouring ten 5-gallon buckets of gravel into annulus.
9:05	Gravel has been poured down annulus. Mike Sordan prepares cement truck.
9:20	Compressor from nearby site must be brought to site for cementing.
9:30	Preflush tremie tubing to make sure it is clear of gravel.
10:10	Compressor has been delivered to site. Set-up to pump 2 bbls cement shot using neat with 3% CaCl to cap gravel.
10:38	Begin mixing neat cement with 3% CaCl.
10:40	Begin pumping cement shot (small stage to cap gravel for hole plug). Top of gravel estimated at 870 feet bpl. No temperature log will be run after this small stage.
10:41	Finish pumping 2.25 bbls cement. Chase with 4 bbls freshwater.
10:42	Chase complete.
13:50	Cement sample hard. Tag cement at 862 feet bpl. Prepare to pump first large stage of cement (stage #1).
14:12	Start freshwater pre-flush.
14:14	End preflush (9 bbls).
14:15	Start cementing stage 12 cement. (see cement log)
14:30	Trika Nelson on-site.
14:43	End cementing. Pumped 129 bbls neat cement. Go to chase.
14:45	Finish chase. Will pull 9 doubles of tubing.
15:50	Noah Kugler leaves site.
16:00	Waiting on cement.
17:00	Waiting on cement.
18:00	Waiting on cement.
19:00	Waiting on cement.
19:35	Preparing to perform temperature log.
20:00	Kenwin Lee on site to perform temperature log.

20:30	Temperature log finished. Estimated top of cement at 630 feet bpl.
21:00	Tag cement stage #1 at 622 feet bpl.
21:45	Prepare to pump stage #2 cement.
21:50	Start freshwater pre-flush.
21:58	End preflush (10 bbls).
21:59	Start cementing stage #2 cement. (see cement log)
22:20	Pull out one double of tubing to prevent from sticking.
22:27	Pull out one single of tubing. Tubing sticking. Restart cement.
22:30	Pull out one single of tubing. Tubing sticking. Restart cement.
22:38	Pull out one single of tubing. Tubing sticking. Restart cement.
22:42	End cementing. Pumped 152 bbls neat cement. Go to chase.
22:44	Finish chase. (3 bbls)
22:45	Pull out all tubing.
22:17	Plans are to perform a temperature log at 8am. Waiting on cement till 8am. No overnight site activity. Trika Nelson off site.

Week 31

WATER RESOURCE SOLUTIONS

Date: 8/22/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
T. Nelson
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:45	Noah Kugler on-site. Kenwin Lee (Florida Geophysical) is on-site to run cement top temperature log for cement stage #2
8:10	Cement top temperature log complete. Tool removed from hole.
8:15	Noah calls Mark Pearce with update.
8:25	Hard tag stage #2 cement in annulus at 215 feet bpl. Contractor will let cement set-up until 22:00 hours and then clean out the hole to 1250 feet bpl with a 12.25-inch bit, and then drill an additional 15 feet, extending the borehole 1265 feet bpl.
8:25 to 15:30	Noah Kugler works on weekly report to TAC and other project specific data record issues. No site activity except general site maintenance until 22:00 this evening. Crew will trip-in drillstring and reverse-air tubing and leave them inside the 14-inch casing in preparation to resume drilling.
15:30	Noah Kugler leaves site. Trika Nelson on.
16:00	Trika Nelson fills in WOB/ROP forms on computer.
17:00	Waiting until 22:00 to trip in hole. No site activity.
17:10	Packer arrives on site.
18:00	No site activity.
19:00	No site activity.
20:00	No site activity.
21:00	No site activity.
22:00	No site activity. Two hands sent to another rig to help. Waiting for them to arrive back on site.
23:00	Todd Tubbert arrives on-site. Trika Nelson off.
23:30	No site activity. Continue to wait on crew.
0:30	No site activity. Continue to wait on crew.
1:15	Begin tripping in drillstring with 12.25" drill bit.
2:45	Drillstring has reached obstruction in borehole with STAND # 8 at 965 feet bpl.
2:50	Trip in airline.
3:20	Begin circulating with STAND #7. NOTE: very low air pressure.
4:00	Continue circulating with STAND #7. NOTE: continue losing pressure at ~945' bpl.

4:30	Top Head drive down with STAND #7 at 960' bpl.
4:45	Connect STAND # 8. Resume dredging/cleaning.
5:40	Continue dredging with STAND #8.
6:30	Continue dredging with STAND #8.
7:00	Frank Procta arrives on-site, Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/23/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Cleaning out borehole to 1250 feet bpl, using a 12.25-inch diameter bit.
7:35	Currently drilling with STAND #8.
7:50	Top head drive down with STAND #8 at 1080.45 feet bpl.
8:45	Currently drilling and cleaning borehole with STAND #9.
10:15	Continue to clean out the 12.25-inch borehole with STAND #9.
11:35	Currently drilling with STAND #10 at 1203 feet bpl.
11:55	Update Mark Pearce of drilling status.
12:19	Currently drilling with STAND #10 at 1250 feet bpl.
12:23	Currently drilling with STAND #10 at 1255 feet bpl.
12:32	Currently drilling with STAND #10 at 1260 feet bpl.
12:38	Currently drilling with STAND #10 at 1265 feet bpl. Note: Last sediment sample collected representing the interval from 1250 to 1265 feet bpl.
12:45	Continue to circulate at the bottom of the borehole.
12:50	Frank Procta discusses packer testing plan with Ronnie Thames of YBI.
13:15	Crew prepare to conduct inclination survey at 1240 feet bpl.
13:22	Currently performing the inclination survey at 1240 feet bpl.
13:35	Complete the last sediment sample description collected from 1250 to 1265 feet bpl.
13:48	Currently tripping out the air line.
14:20	Crew resume tripping out the air line.
14:40	Currently tripping out the drill string.
15:50	Continue to trip out the drill string.
16:25	Waiting on logger.
17:00	Update Mark Pearce of site status.
17:03	Logger arrives on-site.
17:33	Lower the tool down the well. Prepare to run the cement bond log of the 14-inch casing cement.
17:45	Performing calibration of the tool downhole.
18:05	Retrieve the tool as there is a problem switching to bond mode.
18:45	Currently running in the caliper/gamma tool.
18:52	Reach the bottom of the borehole.

18:54	Begin recording data uphole at approximately 29 feet/minute.
19:07	Todd Tubbert arrives on-site.
19:08	Currently running main pass of caliper/gamma log. Note: Tag bottom of 12.25-inch borehole at 1265.5 feet bpl.
19:15	Frank Procta leaves the site.
19:30	End logging. Retrieve logging tool from hole. (Note: Borehole at packer setting depth is 17-19".)
20:00	Packer assembly consists of: 7 Stands of drill pipe = 840 + 90' drill pipe - 7' (pad to floor) + 10.6' Top of packer to centerline = 933.6 feet bpl.
20:20	Begin tripping in packer.
23:25	Set transducer in annulus 50' from top of well head.
23:40	Begin to pressure up packer.
23:50	Check head reading in annulus at 41.231 feet.
0:10	Packer pressured to 425 psi.
0:20	Trip in airline.
0:30	Begin air development.
1:00	End air development. Trip out airline.
1:10	Live well. 5 gallon bucket test resulted in 75 gpm. Crew connected flow meter - resulting in 59 gpm.
1:17	Head reading in annulus is 32.411
1:33	Decrease flow using valve to 41gpm. Annulus = 38.032'
1:36	Call Dr. Pearce with update.
1:42	Start data logger using only annulus transducer. Flow Rate is 41 gpm.
1:43	Open valve increasing the flow rate to 59 gpm. (Live well)
1:45	Packer pressure at 450 psi
2:09	Head reading in annulus is 37.178', Packer pressure is 450 psi, Flow rate remains at 59 gpm.
2:35	Collect eight water samples. Packer pressure is 400 psi. Head in annulus is 37.907'.
2:37	Pressure up packer to 440 psi.
2:40	Head reading in annulus is 37.920'.
2:41	STEP data logger to begin recovery or STATIC.
2:42	Shut in well.
3:16	End logging. Head in annulus is 43.126'. Packer psi at 419.
3:20	Crew bleeding the packer.
3:30	Trip out packer assembly.
5:30	Geophysical logger (Clay) on site.
5:35	Down loading tonight's shift packer test.
6:30	Prepare to run cement bond log.
6:45	Run tool down hole.
7:00	Frank Procta on-site.

WATER RESOURCE SOLUTIONS

Date: 8/24/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:00	Frank Procta arrives on-site. Current ops. : Performing the cement bond log of 14-inch casing cement.
7:08	Currently recording data for the main pass run of the cement bond log of the 14-inch casing cement.
7:42	Retrieve the tool from the well.
8:00	Measure/record length of each joint of 6.625-inch diameter casing.
8:30	Currently installing the tandem set of cement baskets on JOINT #1.
8:50	Perform final welding to secure cement baskets to JOINT #1. Note: Base of upper basket is positioned approximately 4 feet from the bottom end of casing or 1196 feet bpl when set. The lower basket is positioned at approximately 1 foot from the bottom end of casing.
9:21	Lower JOINT #1 down the wellbore. Note: Lower-monitoring-zone casing string consists of 30 joints of 6.625-inch diameter, 0.562-inch wall mild steel. The first 8 joints of casing have had their mill varnish removed as required. Casing joints fitted with centralizers as required.
9:28	Begin the first weld (JOINT #2 to JOINT #1) of the casing run.
9:55	Lower JOINT #2 down the wellbore.
10:12	Lower JOINT #3 down the wellbore.
10:29	Lower JOINT #4 down the wellbore.
10:49	Lower JOINT #5 down the wellbore.
11:05	Lower JOINT #6 down the wellbore.
11:25	Lower JOINT #7 down the wellbore.
11:42	Lower JOINT #8 down the wellbore.
12:00	Lower JOINT #9 down the wellbore.
12:20	Lower JOINT #10 down the wellbore.
12:38	Lower JOINT #11 down the wellbore.
12:54	Lower JOINT #12 down the wellbore.
13:47	Lower JOINT #13 down the wellbore.
14:03	Lower JOINT #14 down the wellbore.
14:20	Lower JOINT #15 down the wellbore.
14:38	Lower JOINT #16 down the wellbore.

6:08	Pull one Double of cement tubing.
6:28	End second chase.
6:30	Waiting on cement.

WATER RESOURCE SOLUTIONS

Date: 8/25/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
T. Tubbert
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:05	Noah Kugler on-site. Todd Tubbert leaves site. Waiting for cement to cure from 1 bbls shot to secure casing baskets on the 6.625-inch casing.
7:45	Tag 2nd cement shot at 1186 feet bpl. Prepare to run 1st larger cement stage between the 6.625 and 14-inch casings. Note: well is flowing with a head of ~5 feet above pad level. Well currently open from 1265 to 875 feet bpl.
7:48	Noah calls Mark Pearce with update and cement plan.
7:50	Noah confers with Mike Sordan (YBI cementer) about planned cement volumes. We will pump 40 bbls neat cement for theoretical fill to 956 feet bpl.
7:55	Pressure test cement line from truck with water.
7:58	Start freshwater pre-flush.
8:04	Pre-flush complete (20 bbls). Good fluid returns noted while flushing.
8:12	Start pumping Stage #1 - neat cement (see cement log).
8:28	End cement (40 bbls neat).
8:30	Start chase.
8:32	Chase complete (4.25 bbls). Pull 5 doubles and re-chase.
9:00	Waiting on cement.
10:00	Waiting on cement.
11:00	Waiting on cement.
12:00	Waiting on cement.
13:00	Waiting on cement.
14:00	Kenwin Lee on-site to run cement top temperature log for stage #1.
14:25	Cement top temperature log complete. Remove tool from hole.
14:45	Frank Procta on-site.
14:50	Hard tag stage #1 at 994.5 feet bpl. Noah discusses plan to pump theoretical volume to reach 940 feet bpl (safety factor for 930 feet bpl target) with Mark Pearce and Mike Sordan. Plan is OK'd to pump 13 bbls neat cement to fill annulus to 940 feet bpl.
14:55	Pressure test cement line from truck with water.
14:58	Start freshwater pre-flush.
15:04	Pre-flush complete (20 bbls). Good fluid returns noted while flushing.
15:04	Start pumping Stage #2 - neat cement (see cement log).
15:08	End pumping cement, move to freshwater flush. Note: Pumped 13 barrels of neat cement.

15:21	End second flushing event.
15:23	Raise cement tubing string 90 feet.
15:40	Waiting on cement. Note: Contractor has scheduled temperature log of second-stage cement between 21:30 and 22:00 tonight.
15:45	Noah Kugler leaves.
16:05	Update Mark Pearce of cementing operations.
16:50	Complete cementing forms.
17:15	Re-tally cement tubing and count remaining whole joints and pup joints currently on the rig's V-door.
18:00	Waiting on cement.
19:00	Waiting on cement.
20:10	Tag top of second-stage cement at 948.75 feet bpl.
20:45	Update Mark Pearce of second-stage tag depth and tonight's cementing plan. Note: Plan to pump 6 barrels of neat cement which should fill annulus to 930 feet bpl (theoretical).
21:55	Logger arrives on-site.
22:01	Currently lowering the temperature tool down the wellbore.
22:03	Begin recording data downhole from 476 feet bpl.
22:08	Reach a depth of 1053 feet bpl on the first pass. Note: Logger's pick for top of second-stage cement at 947 feet bpl.
22:14	Retrieve the tool from the wellbore.
23:00	Todd Tubbert arrives on-site. Frank Procta leaves the site.
23:26	Start pumping Stage #3 - neat cement (see cement log).
23:28	End pumping cement, move to freshwater flush. Note: Pumped 5.5 barrels of neat cement.
23:30	Trip out 2 singles and 1 pup joint of cement tubing.
23:44	End second flushing event.
23:45	Raise cement tubing string.
0:00	Waiting on cement.
1:00	Waiting on cement.
2:00	Waiting on cement.
3:00	Waiting on cement.
4:00	Waiting on cement.
5:25	Trip in 2 singles of cement tubing.
5:35	Hard tag top of STAGE #3 at 931.4 feet bpl. (29 joints at 909.9 + 28.5' of joint # 30 - 7.0' floor to top elev. = 931.4 feet bpl)
6:00	Waiting on Geophysical logger.
6:10	Noah Kugler calls Todd Tubbert for update and to coordinate shift change.
6:40	Geophysical logger on-site to run temp log.
6:45	Begin recording data downhole.
6:54	End logging. NOTE: Temp log top of cement stage #3 is at ~929 feet bpl.
7:05	Retrieve the tool from the wellbore.
7:15	Todd Tubbert leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/26/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
7:30	Noah Kugler on-site. Preparing to kill upper monitor zone (6.625"/14" annulus) with salt to trip-out tremie and seal well for wellhead installation. Upper zone currently flowing with a head of approximately 3 feet above pad level.
7:35	Mark Pearce calls site for update.
8:15	Added approximately 1000 lbs of salt (mixed with water) to kill well flow.
8:20	Well still flowing. Need to have salt delivered from a different site to mix additional kill fluid.
11:45	Pumped kill fluid using 6,000 lbs of salt and the well is still flowing. Need to have more salt delivered from a different site to mix additional kill fluid.
13:15	More salt arrives on-site. Prepare to mix another batch of saline kill fluid.
13:35	Begin mixing salt with water and pumping down annulus (3rd kill batch).
13:55	Mohan Thampi (Collier PUED) visits site for project update.
14:30	Noah Kugler off.
14:40	Frank Procta arrives on-site. Current ops. : Completed pumping an additional 4,500 pounds of salt (3rd batch), killing the well.
15:10	Calculate theoretical annular volume for cementing the annulus of the 14-inch casing to the surface, based on a tag depth of 215' bpl.
15:37	Crew begin tripping in cement tubing.
16:00	Tag top of annular cement (14-inch casing) at 207' bpl.
16:10	Attach cementing header to the cement tubing string.
16:16	Begin pumping third-stage cement.
16:32	End cementing. Note: Pumped 69 barrels of cement w/ 12% gel in filling the annulus of the remaining free casing (14-inch) to the surface. See cementing details in the cementing log.
17:15	Contractor continues demobilization of dual-zone monitoring well.
17:18	Call Todd Tubbert to cancel his night shift.
18:00	Frank Procta leaves the site to spend remaining shift hours preparing sections of site completion report. **Note**: The contractor has cancelled today's night tour. There will be no site activities after 19:00 today.

WATER RESOURCE SOLUTIONS

Date: 8/27/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta
Well: DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Contractor demobilizing rig from DZMW and preparing to mobilize to IW-2.
15:00	Begin pumping freshwater from the on-site production well down IW-1 to form a "freshwater bubble" prior to running RTS. Water being pumped down hole at approximately 80 gpm.

WATER RESOURCE SOLUTIONS

Date: 8/28/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler
F. Procta

Wells: IW-1
DZMW

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Time	Description of Activities
	Contractor is mobilizing rig to IW-2 location. Working on redirecting the circulation system piping from the well location to the circulation pits.
	Noah Kugler speaks with Jack Myers (FDEP UIC program) regarding the performance of a radioactive tracer survey (RTS) at IW-1. Mr. Myers states that the survey does not have to be witnessed by an FDEP representative. Mr. Richard Orth witnessed a successful pressure test of the injection string at IW-1 on 7/11/03.
	Clay Ferguson (YBI senior logger) is coordinating the video log of the casing and open hole for this afternoon and the RTS for tomorrow morning.
	Mark Pearce notifies Noah that the "operational dynamic test" needs to be run at 400 to 500 gpm. Noah notifies Clay Ferguson of the rate requirement.
11:30	Contractor begins sampling pad monitor wells at IW-1 and DZMW.
13:20	Mohan Thampi on-site to watch the actual movement of the rig over the drilling pad.
14:47	Lower the video tool down through the wellhead of IW-1.
14:49	Begin recording data at -5 feet so as to include the first flange.
15:02	Logging downhole at a speed of 33 feet/minute, past 450 feet bpl.
15:20	Logging downhole at a speed of 33 feet/minute, past 1,050 feet bpl.
15:32	Retrieve the tool as all clarity is lost.
16:35	Currently pumping IW-1 at 70 to 80 gpm using a trash pump attempting to lower the turbidity of the water column. Note: Logger plans to continue pumping IW-1 until late this afternoon when a larger-capacity pump will replace the current trash pump and resume pumping. Logger plans to start video logging run at 7:00 AM tomorrow morning.
18:30	Frank Procta leaves the site.

WATER RESOURCE SOLUTIONS

Date: 8/29/03
Project Name: NCWRF
Project No.: 01-04254.A8
Prepared By: N. Kugler

Injection Well Daily Log

North County Water Reclamation Facility
Class I Injection Well System

Well(s): DZMW, IW-1

Time	Description of Activities
6:30	Noah Kugler calls Clay Ferguson to coordinate video survey and RTS at IW-1. Geophysical loggers setting up for video at 7:00.
7:00	Approximately 187,000 gallons of freshwater has been pumped down IW-1 in preparation for a video log and RTS. Shut-in freshwater pump and begin running in hole with video camera.
7:30	Noah Kugler on-site. Visibility from the video is very poor inside the casing. We will try to video the open hole portion of IW-1 and then pump additional freshwater at a higher rate to attempt to create clear conditions for video inspection of the casing.
7:40	Contractor begins installing pad monitor wells at the corners of the drilling pad at IW-2.
7:50	Noah calls Mark Pearce with update.
8:10	Conditions in the open hole appear good. Base of casing located at 2575 feet bpl and inspected. Freshwater/saltwater transition noted at 258x feet bpl. Viewing conditions are quite clear below this point. Begin video survey down hole from the base of the casing.
8:45	Video log complete to 3239 feet bpl at which point the water becomes very silty. True bottom will be tagged with the RTS tool prior to injecting any tracer. Contractor will backflow freshwater that has been pumped into IW-1 and hold it in the circulation pit. The volume of water backflowed will be measured with a flow meter. This water will be pumped back down hole after a video of the casing is performed and prior to running the RTS so that a volume of freshwater equal to approximately three times the casing volume is in the well prior to the RTS.
10:35	Begin backflowing IW-1 into circulation pit (totalizer = 591,100 gallons, backflow rate = 260 gpm). Begin recording video uphole from the base of casing.
10:50	Increase backflow rate to 350 gpm due to deteriorating clarity. Suspend video at 2370 feet bpl.
11:20	Clarity improved, start uphole again from 2370 feet bpl. Video will be edited to show the well in order from top to bottom. Open hole video will be presented on a separate tape from the casing video.

11:50	Suspend video at 1460 feet bpl due to deteriorating clarity.
12:03	Clarity improved, start uphole again from 1460 feet bpl.
12:14	Video log of casing complete to 1200 feet bpl. Record side view back down to 1300 feet bpl due to deteriorating clarity. Clear video of casing from surface to 1200 feet bpl was completed yesterday (8/28/03).
12:20	Video log complete. Come out of hole with tool and prepare for RTS.
13:20	Shut-in backflow and run in hole with gamma tool for background gamma log. Approximately 18,000 gallons of freshwater removed from well during backflow, leaving approximately 169,000 gallons of freshwater in the well.
13:55	Tool cannot be lowered past 2820 feet bpl. Noah calls Mark Pearce who says this is acceptable. We have previous gamma log to total depth in 12.25-inch hole.
14:40	Background gamma log complete. Tool removed from hole
14:50	Prepare ejector tool and load radioactive source tracer.
15:00	Five (5) ml of Iodine 131 have been placed in the ejector chamber of the tool (1 ml = 1 millicurie).
15:05	Run in hole with RTS tool and temperature tool. Record static temperature on the way down.
15:50	Static temperature run to 2800 feet bpl. Start pumping water downhole at 108 gpm (5 foot per minute downhole velocity).
15:58	Ejector set at 2570 feet bpl (five feet inside casing). Bottom of tool is 13.5 feet below the ejector port and set at 2583.5 feet bpl.
16:02	Eject 1 milliliter of Iodine 131. Hold tool stationary while recording gamma in time drive mode for 60 minutes.
16:05	It took 30 seconds for the tracer front to reach detector GRM and 160 seconds to reach GRB
16:31	Flow rate = 110 gpm.
17:02	Begin log out of position (LOP) upward 200 feet to 2375 feet bpl. No increase in gamma was noted on GRT at any time during the test.
17:06	LOP complete. Log down to 2675 feet bpl.
17:08	Increased gamma noted only from 2590 to 2610 feet bpl.
17:12	Begin log after flush (LAF) upward 200 feet.
17:16	LAF complete.
17:20	Ejector set at 2570 feet bpl (five feet inside casing).
17:21	Check and adjust flow rate to 108 gpm from 100 gpm.
17:26	Eject 1 milliliter of Iodine 131. Hold tool stationary while recording gamma in time drive mode for 30 minutes.
17:28	It took 30 seconds for the tracer front to reach detector GRM and 120 seconds to reach GRB.
17:56	Begin log out of position (LOP) upward 200 feet to 2375 feet bpl. No increase in gamma was noted on GRT at any time during the test.
18:01	LOP complete. Log down to 2675 feet bpl.
18:02	Increased gamma noted only from 2590 to 2610 feet bpl.
18:06	Begin log after flush (LAF) upward 200 feet.

18:10	LAF complete.
18:11	Increase flow rate to 300 gpm.
18:16	Ejector set at 2570 feet bpl (five feet inside casing).
18:19	Eject 1 milliliter of Iodine 131. Hold tool stationary while recording gamma in time drive mode for 15 minutes.
18:20	It took 15 seconds for the tracer front to reach detector GRM and 50 seconds to reach GRB.
18:34	Begin log out of position (LOP) upward 200 feet to 2375 feet bpl. No increase in gamma was noted on GRT at any time during the test.
18:38	LOP complete. Log down to 2675 feet bpl.
18:40	Increased gamma noted from 2590 to 2605 feet bpl with lesser increase down to 2720 feet bpl. Continue down to 2800 feet bpl with tool.
18:44	Begin uphole with tool from 2800 feet bpl.
18:48	Release remaining ~2 ml of Iodine 131 at 2760 feet bpl while coming up hole.
18:51	Begin log after flush (LAF) upward and final gamma survey.
18:54	Final gamma matches background gamma by the time tool is inside 24-inch casing. No upward migration of source tracer.
19:02	Noah leaves site. Contractor will complete background gamma to surface and shut-in water going down hole.

APPENDIX 3.3

TEMPORARY DRILLING PADS

Water Resource Solutions
428 Pine Island Road SW • Cape Coral, Florida 33991 239 574-1919 Fax: 239 574-8106

January 14, 2003

Mr. Jack Myers, P.G.
Florida Department of Environmental Protection
Underground Injection Program
2295 Victoria Avenue, Suite 364
Ft. Myers, Florida 33901

Re: **Drill Pad**
North Collier Water Reclamation Facility, Collier Co., Florida
Permit # 189741-001-UC and 189741-002-UC

Dear Mr. Myers:

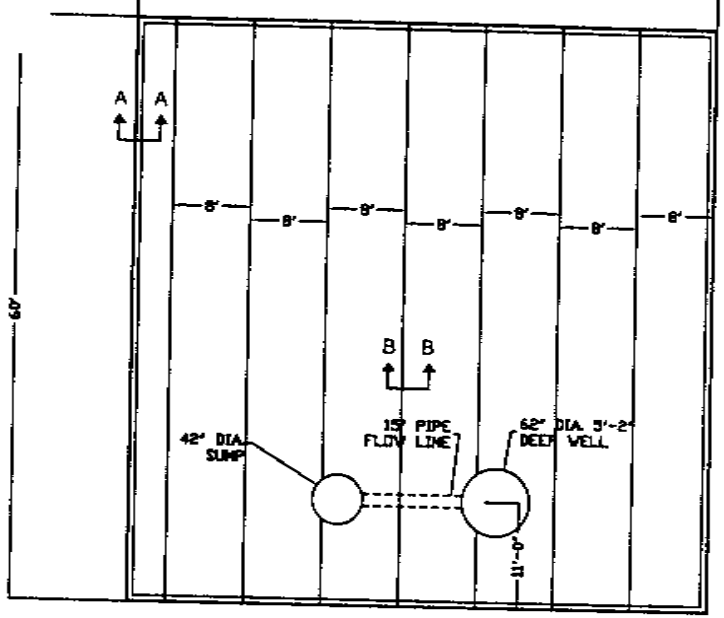
The Youngquist Brothers have submitted the following drilling pad diagram for final FDEP approval for the North County Injection wells. The pad design is the same pad layout used for the South County Water Treatment Facility and meets our general needs. Installation of this well will likely begin next week at which time we will begin to submit weekly reports as required.

Sincerely,

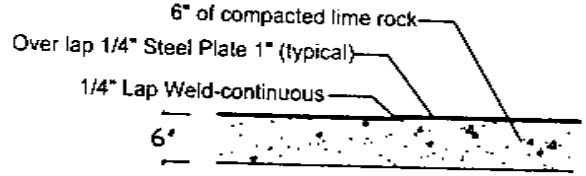
Mark S. Pearce

Mark S. Pearce, Ph.D.
Senior Scientist

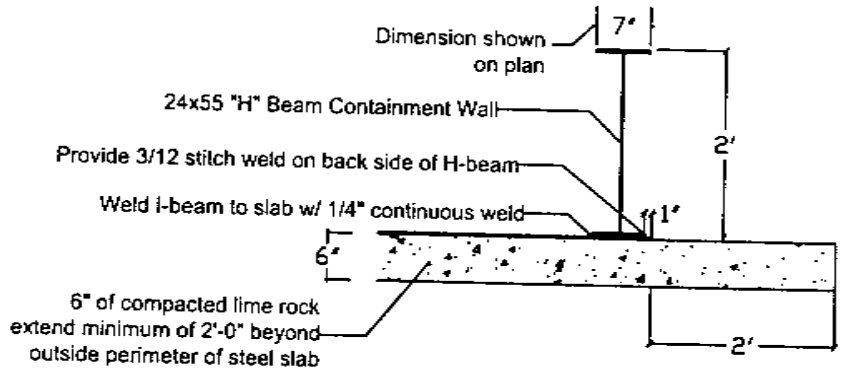
c. Mr. Joe Haberfeld



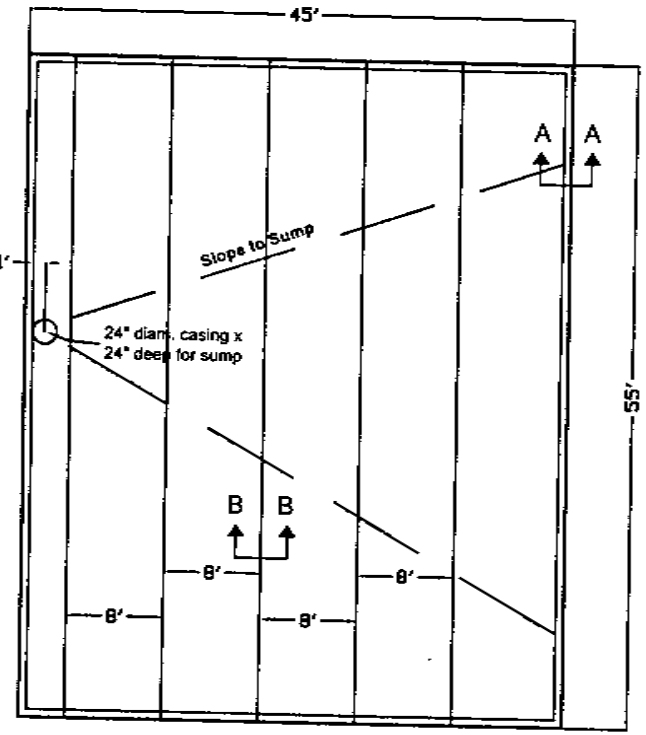
Steel Drilling Pad



Section B-B
Typical Lap Joint



Section A-A
Typical Wall Section



Mud System Pad

General Notes:

1)The drilling pad shall be constructed of continuous 1/4" thick ASTM A36 steel plate. All welding for the steel drilling pad and containment wall to be 1/4" continuous in accordance with the American Welding Society Structural Welding Code which shall be watertight.
2) Any required stabilization shall be in accordance with FDOT Standard Specification Section 160.
3) The steel drilling pad shall pitch to the sump constructed in such fashion as to be in accordance with FDOT Standard Specification Section 200.

NTS

Prepared by:

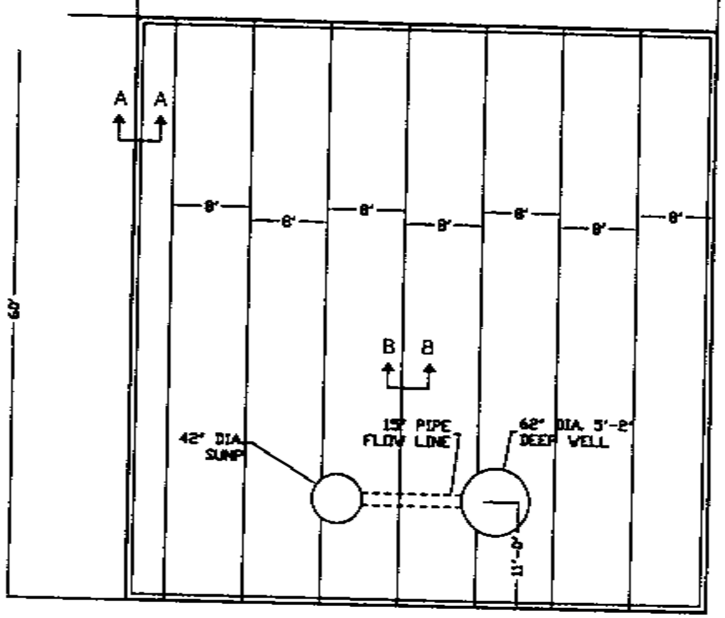
Youngquist Brothers, Inc.
15465 Pine Ridge Rd.
Ft. Myers, Fl. 33908
239-489-4444

12-10-02

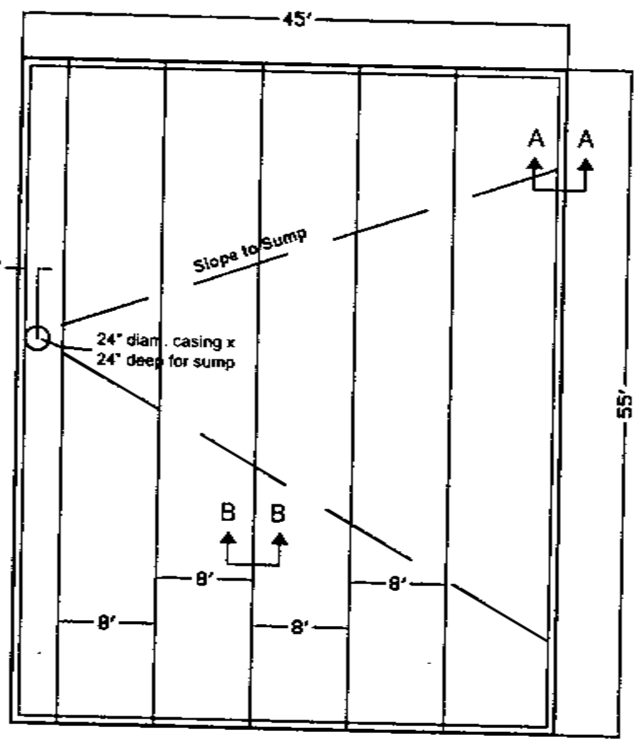
CONSULTING ENGINEERS INC.
environmental • civil • structural

YOUNGQUIST BROTHERS, INC.
Has Reviewed this Shop Drawing/Submittal
YBI/Section No. # 2001-03.4
Transmittal No. # _____ Date: 1-10-03
Signature _____

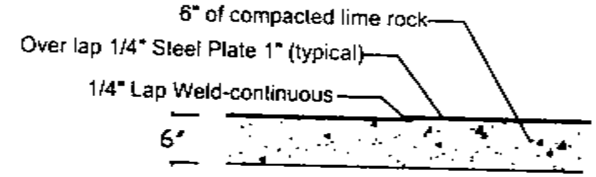
Youngquist Brothers, Inc.	NCWRF Injection Well	Sheet 1 of 1
15465 Pine Ridge Road	Steel Drilling/Mud Slab	
Ft. Myers, FL. 33908	Date: December 10, 2002	



Steel Drilling Pad

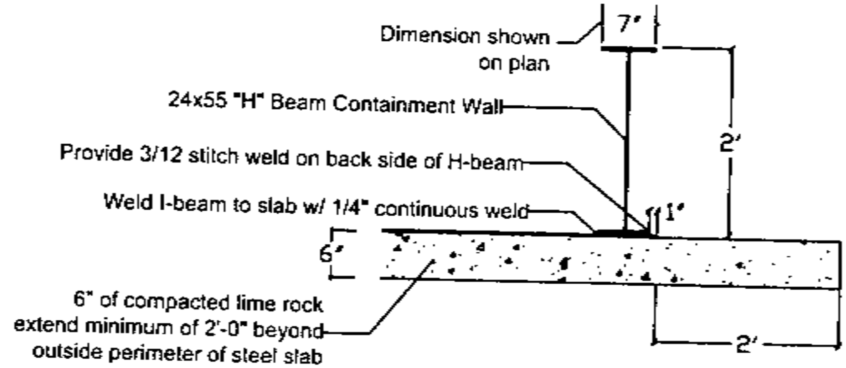


Mud System Pad



Section B-B

Typical Lap Joint



Section A-A

Typical Wall Section

NTS

General Notes:

1) The drilling pad shall be constructed of continuous 1/4" thick ASTM A36 steel plate. All welding for the steel drilling pad and containment wall to be 1/4" continuous in accordance with the American Welding Society Structural Welding Code which shall be watertight.
2) Any required stabilization shall be in accordance with FDOT Standard Specification Section 160.
3) The steel drilling pad shall pitch to the sump constructed in such fashion as to be in accordance with FDOT Standard Specification Section 200.

Prepared by:

Youngquist Brothers, Inc.
15465 Pine Ridge Rd.
Ft. Myers, Fl. 33908
239-489-4444

12-10-02

KW CONSULTING ENGINEERS, INC.
environmental • civil • structural

YOUNGQUIST BROTHERS, INC.
Has Reviewed this Shop Drawing/Submittal
YBI/Section No. # [illegible]
Transmittal No. # 2001-03-17 Date: 1-10-03
Signature [illegible]

Youngquist Brothers, Inc.	NCWRF Injection Well	Sheet 1 of 1
15465 Pine Ridge Road	Steel Drilling/Mud Slab	
Ft. Myers, FL. 33908	Date: December 10, 2002	

APPENDIX 3.4

PAD MONITORING WELL SAMPLE RESULTS

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: Background
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date Collected	Time Collected	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	1/21/03		11.10	22	185	1120	7.5
PMW-2	1/21/03		10.95	22	155	930	7.4
PMW-3	1/21/03		11.02	22	170	1150	7.2
PMW-4	1/21/03		11.31	23	155	1070	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #1
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	1/28/03		11.30	24	155	910	7.4
PMW-2	1/28/03		11.08	24	150	900	7.4
PMW-3	1/28/03		11.21	24	170	1165	7.1
PMW-4	1/28/03		11.38	24	150	1110	7.0

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #2
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	2/4/03	12:15	11.30	24	165	853	7.6
PMW-2	2/4/03	11:45	11.10	24	160	892	7.5
PMW-3	2/4/03	13:45	11.40	24	180	1108	7.3
PMW-4	2/4/03	13:10	11.50	25	160	1023	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #3
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	2/13/03	15:45	11.30	23	175	937	7.6
PMW-2	2/13/03	16:20	11.34	24	160	864	7.4
PMW-3	2/13/03	16:50	11.30	23	175	1065	7.3
PMW-4	2/13/03	17:25	11.62	23	165	1045	7.0

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #4
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	2/18/03	16:10	9.90	24	125	860	7.6
PMW-2	2/18/03	16:40	9.67	26	140	839	7.5
PMW-3	2/18/03	17:10	9.15	24	145	1050	7.3
PMW-4	2/18/03	17:40	9.25	24	130	1000	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #5
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	2/26/03	12:20	9.60	24	150	1000	7.8
PMW-2	2/26/03	12:50	9.50	24	160	981	7.6
PMW-3	2/26/03	1:20	8.90	25	180	1125	7.2
PMW-4	2/26/03	1:50	9.25	25	150	1073	7.0

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #6
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
T. Nelson

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	3/4/03	16:35	10.23	26	190	1050	7.7
PMW-2	3/4/03	16:05	10.00	26	150	1036	7.6
PMW-3	3/4/03	15:30	9.80	26	170	1190	7.1
PMW-4	3/4/03	14:55	9.80	26	140	1084	7.0

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #7
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	3/12/03	23:45	10.80	24	165	1127	7.8
PMW-2	3/13/03	1:00	10.50	24	160	936	7.6
PMW-3	3/12/03	14:05	10.20	24	180	1240	7.5
PMW-4	3/12/03	12:19	10.50	24	165	1298	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: #8
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	3/19/03	23:57	10.0	25	160	1600	7.6
PMW-2	3/20/03	0:30	9.8	25	165	1100	7.6
PMW-3	3/20/03	1:25	9.6	24	195	1300	7.3
PMW-4	3/20/03	1:55	9.8	24	160	1200	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 9
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	3/27/03	10:00	10.45	20	170	1030	7.6
PMW-2	3/27/03	10:30	10.30	19	245	1250	7.6
PMW-3	3/27/03	11:00	10.70	20	190	1190	7.2
PMW-4	3/27/03	11:30	10.73	19	160	1130	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 10
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	4/2/03	9:10	10.70	20	160	990	7.6
PMW-2	4/2/03	9:40	10.15	19	182	1010	7.6
PMW-3	4/2/03	10:10	9.90	19	195	1150	7.4
PMW-4	4/2/03	10:40	10.20	19	165	1080	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 11
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	4/10/03	16:15	10.62	22	160	969	7.7
PMW-2	4/10/03	17:00	10.46	22	280	1345	7.6
PMW-3	4/10/03	17:45	10.34	22	190	1100	7.3
PMW-4	4/10/03	18:30	10.71	22	170	1036	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 12
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	4/18/03	11:00	11.10	23	170	1063	7.6
PMW-2	4/18/03	11:30	11.00	23	225	1250	7.6
PMW-3	4/18/03	12:00	10.90	24	185	1133	7.4
PMW-4	4/18/03	12:30	11.30	24	160	1145	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 13
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	4/23/03	11:00	11.14	25	170	1080	7.7
PMW-2	4/23/03	11:30	11.01	25	255	1272	7.5
PMW-3	4/23/03	12:30	11.07	25	185	1141	7.4
PMW-4	4/23/03	13:15	11.45	25	165	1150	7.2

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 14
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: T. Nelson
N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	4/29/03	8:28	11.15	22	160	1067	7.8
PMW-2	4/29/03	9:02	11.00	22	290	1355	7.6
PMW-3	4/29/03	10:35	11.00	19	180	1129	7.4
PMW-4	4/29/03	12:10	11.03	20	185	1173	7.2

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 15
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	5/5/03	11:10	11.40	22	160	1043	7.6
* PMW-2	5/5/03	11:43	11.20	23	175	1011	7.6
PMW-3	5/6/03	0:15	11.40	23	180	1083	7.4
PMW-4	5/6/03	0:52	11.70	23	200	1272	7.1

* Purge PMW-2 from 4/29 to 5/2 (approx. 72 hours) prior to sampling. 24 hours after purging : chlorides = 205 mg/L.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 16
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
T. Nelson

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	5/13/03	14:15	11.80	16	165	1079	7.6
PMW-2	5/13/03	15:00	11.60	20	180	1056	7.6
PMW-3	5/13/03	15:40	11.70	20	185	1120	7.4
* PMW-4	5/14/03	13:35	11.85	20	165	1151	7.2

* PMW-4 purged for two 24-hour periods prior to sampling.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 17
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	5/20/03	11:40	9.95	23	170	1164	7.4
PMW-2	5/20/03	11:01	9.59	22	190	1092	7.6
PMW-3	5/20/03	10:30	9.25	23	165	1081	7.4
* PMW-4	5/22/03	12:15	9.11	21	160	1154	7.1

* PMW-4 purged for 48 hours prior to sampling.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 19
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler, F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	6/3/03	18:40	10.25	25	175	1186	7.5
PMW-2	6/3/03	19:32	10.00	23	180	1105	7.6
PMW-3	6/3/03	20:06	9.50	23	160	1030	7.3
* PMW-4	6/5/03	18:30	9.81	23	180	1100	7.1

* PMW-4 purged for approximately 8 hours prior to sampling.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 20
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N.Kugler
T.Nelson

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	6/10/03	14:00	10.50	21	185	1195	7.5
PMW-2	6/10/03	14:45	10.35	22	200	1172	7.6
PMW-3	6/10/03	15:15	10.15	23	175	1046	7.4
PMW-4	6/10/03	15:45	10.40	22	230	1327	6.9
*PMW-4	6/11/03	17:35	NM	NM	195	1178	7.2

*PMW-4: Re-pump well from 6/10/03 @ 15:50 to 6/11/03 @ 17:35 and perform field testing.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 21
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
F. Procta

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	6/18/03	6:50	10.78	25	205	1257	7.5
PMW-2	6/18/03	6:17	10.60	22	215	1179	7.5
PMW-3	6/18/03	5:46	10.60	24	170	1007	7.4
PMW-4	6/17/03	16:20	10.70	24	200	1220	6.9

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 22
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	6/24/03	8:12	9.35	22	220	1407	7.6
*PMW-1	6/26/03	21:45	-	-	190	1195	7.4
PMW-2	6/24/03	8:47	9.15	23	190	1116	7.6
PMW-3	6/24/03	9:20	8.65	23	170	1031	7.4
PMW-4	6/24/03	9:52	9.00	22	230	1430	7.1
*PMW-4	6/27/03	6:55	-	-	210	1380	7.1

*PMW-1: Re-pump well from 6/26/03 @ 9:00 to 6/26/03 @ 21:45 and perform field testing.
*PMW-4: Re-pump well from 6/26/03 @ 22:00 to 6/27/03 @ 6:55 and perform field testing.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 23
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F.Procta
T.Tubbert

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	7/2/03	15:16	9.75	23	192	1200	7.5
PMW-2	7/2/03	16:30	9.65	23	190	1020	7.6
PMW-3	7/2/03	17:40	9.20	23	170	970	7.2
PMW-4	7/2/03	15:40	9.35	23	195	1230	7.4

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 24
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
T. Nelson

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	7/8/03	15:15	10.00	24	205	1290	7.5
PMW-2	7/8/03	14:20	9.81	24	200	1140	7.6
PMW-3	7/8/03	13:32	9.45	25	185	1088	7.3
PMW-4	7/8/03	9:25	9.60	25	235	1250	7.3
*PMW-4	7/10/03	7:35	-	-	180	1210	7.1

*PMW-4: Re-pump well from 7/9/03 @ 13:00 to 7/10/03 @ 7:35 and re-perform field testing.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 25
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta
O. Rodriguez

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees F)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	7/15/03	10:33	10.05	75	205	1208	7.4
PMW-2	7/15/03	11:14	9.83	77	200	1093	7.6
PMW-3	7/15/03	11:50	9.55	73	175	1022	7.4
PMW-4	7/15/03	14:00	9.75	77	200	1280	7.3
*PMW-4	7/15/03	18:45	-	-	200	1244	7.2

*PMW-4: Re-pump well from 7/15/03 @ 15:30 to 7/15/03 @ 18:30 and perform field testing.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 26
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler
T. Nelson

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees F)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	7/22/03	12:20	10.55	23	230	1250	7.6
PMW-2	7/22/03	11:31	10.35	23	235	1210	7.6
*PMW-2	7/25/03	6:30	-	-	210	1250	7.5
PMW-3	7/22/03	9:52	10.30	24	175	1083	7.5
PMW-4	7/22/03	9:20	10.30	25	250	1390	7.4
*PMW-4	7/24/03	11:00	-	-	190	1250	7.2

*PMW-4: Re-pump well from 7/23/03 @ 11:00 to 7/24/03 @ 11:00 and perform field testing.
*PMW-2: Re-pump well from 7/24/03 @ 11:30 to 7/25/03 @ 6:30 and perform field testing.

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 27
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees F)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	7/29/03	8:28	10.25	24	200	1175	7.6
PMW-2	7/29/03	10:38	10.90	24	210	1195	7.4
PMW-3	7/29/03	11:45	9.76	24	160	1020	7.3
PMW-4	7/29/03	14:30	10.30	24	195	1245	7.1

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 28
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/5/03	9:45	10.25	25	290	1500	7.2
PMW-2	8/5/03	10:15	10.30	23	230	1100	7.4
PMW-3	8/5/03	10:45	10.20	23	185	900	7.2
PMW-4	8/5/03	11:30	10.40	23	220	1200	7.1

DZMW ** 1st Week of Sampling ** Wells installed 8/4/03

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/7/03	14:40	9.80	24	190	1115	7.2
PMW-2	8/7/03	16:05	9.90	24	200	1086	7.5
PMW-3	8/7/03	16:35	9.90	25	200	1110	7.4
PMW-4	8/7/03	17:20	9.60	24	240	1182	7.4

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 29
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler/F. Procta

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/12/03	9:05	9.50	22	190	1110	7.4
PMW-2	8/12/03	10:00	9.45	22	200	1040	7.8
PMW-3	8/12/03	10:30	9.10	23	170	970	7.2
PMW-4	8/12/03	11:30	9.50	22	260	1380	7.3

DZMW

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/12/03	13:30	9.90	24	190	1102	7.3
PMW-2	8/12/03	13:00	9.85	24	205	1104	7.6
PMW-3	8/12/03	12:30	9.55	25	195	1097	7.4
PMW-4	8/12/03	14:00	9.25	24	220	1151	7.6

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 30
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler/T.Nelson

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/21/03	18:30	9.70	23	190	1160	7.5
PMW-2	8/21/03	18:55	9.36	23	205	1194	7.8
PMW-3	8/21/03	19:45	9.08	23	180	1080	7.6
PMW-4	8/21/03	20:20	9.70	23	275	1450	7.4

DZMW

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/18/03	11:05	9.43	24	215	1220	7.3
PMW-2	8/18/03	12:05	9.50	23	205	1185	7.4
PMW-3	8/18/03	13:15	9.12	24	220	1170	7.2
PMW-4	8/18/03	8:00	8.55	24	235	1125	7.5

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 31
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: N. Kugler

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/28/03	12:15	9.70	23	185	1125	7.5
PMW-2	8/28/03	12:45	9.15	24	205	1190	7.6
PMW-3	8/28/03	13:25	9.35	24	185	1065	7.5
PMW-4	8/28/03	14:00	9.15	24	290	1540	7.4

DZMW

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/28/03	16:15	6.40	25	240	1365	7.2
PMW-2	8/28/03	15:30	9.00	24	220	1262	7.4
PMW-3	8/28/03	14:40	9.15	24	320	1500	7.1
PMW-4	8/28/03	17:00	6.88	25	230	1160	7.6

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 32
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	9/2/03	22:45	10.14	NM	175	1070	7.3
PMW-2	9/2/03	22:30	9.40	NM	225	1230	7.2
PMW-3	9/2/03	23:00	9.58	NM	190	1020	7.1
PMW-4	9/2/03	23:30	9.75	NM	350	1600	7.0

DZMW

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	9/3/03	6:00	7.92	NM	220	1280	7.4
PMW-2	9/3/03	0:30	7.87	NM	245	1220	7.4
PMW-3	9/3/03	1:15	7.55	NM	300	1350	7.2
PMW-4	9/3/03	5:00	6.75	NM	215	1210	7.1

IW-2 : Background readings prior to commencement of drilling operations.

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1	8/31/03	21:00	10.61	23	215	1210	7.6
PMW-2	8/31/03	22:00	10.85	23	200	1153	7.4
PMW-3	8/31/03	18:20	9.90	22	240	1255	7.3
PMW-4	8/31/03	16:00	10.13	23	230	1250	7.4

WATER RESOURCE SOLUTIONS

Pad Monitoring Well Analysis Log

Reporting Week: # 33
Project Name: NCWRF
Project No.: 04254.A8
Prepared By: F. Procta

North County Water Reclamation Facility
Class I Injection Well System

IW-1

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1			10.14	NM	175	1070	7.3
PMW-2			9.40	NM	225	1230	7.2
PMW-3			9.58	NM	190	1020	7.1
PMW-4			9.75	NM	350	1600	7.0

DZMW

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1			7.92	NM	220	1280	7.4
PMW-2			7.87	NM	245	1220	7.4
PMW-3			7.55	NM	300	1350	7.2
PMW-4			6.75	NM	215	1210	7.1

IW-2

Well	Date	Time	Depth to Water (feet btoc)	Temp. (degrees C)	Chlorides (mg/L)	Conductivity (Us/cm)	pH (SU)
PMW-1			10.61	23	215	1210	7.6
PMW-2			10.85	23	200	1153	7.4
PMW-3			9.90	22	240	1255	7.3
PMW-4			10.13	23	230	1250	7.4

APPENDIX 3.5

CEMENT STAGE AND VOLUME SUMMARY

APPENDIX 3.5.1

IW-1

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing Size: 48-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
1a	2/4/03	12% bent.	2.1	210 to surface	210	322	210 to surface	210	200	1	UNK	1123	TN
1b	2/4/03	neat	1.18	410 to 210	200	261	410 to 210	200	332	UNK	UNK	2987	TN

UNK-Unknown

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing Size: 12.25 pilot hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
1	11/11/03	12% gel w/ CaCl accelerator	2.2	1456 to 1350	106	22	1456 to 1357	99	22	1357	93%	123.5	TT
2	11/12/03	12% gel w/ CaCl accelerator	2.2	1357 to 400	957	200	1357 to 474	883	200	474	92%	1247	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing Size: 34-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
1	2/21/03	neat	1.18	1000 to 1300	300	222	997 to 1300	303	221	997	101%	1240	NK
2	2/21/03	2% bent.	2.2	997 to 712	285	203	670 to 997	327	203	670	115%	2379	TN
3	2/22/03	2% bent.	2.2	670 to 370	300	242	670 to 377	293	242	377	98%	3737	FP
4	2/23/03	12% bent.	2.2	377 to surface	377	382	377 to surface	377	382	returns to surface	100%	5880	TT

* bent.- bentonite gel

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
1	6/1/03	Neat	1.18	2580 to 2432	148	103	2580 to 2570	10	103	2570	7%	578	FP
2	6/2/03	Neat	1.18	2570 to 2535	40	24	2570 to 2555	15	24	2555	38%	713	NK
3	6/2/03	Neat	1.18	2555 to 2520	35	22	2555 to 2542	13	22	2542	37%	837	NK
4	6/2/03	Neat	1.18	2542 to 2506	36	22	2542 to 2527	15	22	2527	42%	960	FP/TT
5	6/3/03	Neat	1.18	2527 to 2490	37	21	2527 to 2508	19	21	2508	51%	1078	TT
6	6/3/03	Neat	1.18	2508 to 2471	37	21	2508 to 2485	22	21	2485	59%	1196	TT
7	6/3/03	Neat	1.18	2485 to 2450	35	21	2485 to 2477	8	21	2477	23%	1314	NK
8	6/3/03	Neat	1.18	2477 to 2445	32	21	2477 to 2470	7	21	2470	22%	1432	NK
9	6/3/03	Neat	1.18	2470 to 2438	32	22	2470 to 2457	13	22	2457	41%	1555	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
10	6/3/03	Neat	1.18	2457 to 2435	22	22	2457 to 2440	17	22	2440	77%	1679	FP
11	6/4/03	Neat	1.18	2440 to 2431	9	21	2440 to 2440	0	21	2440	0%	1797	TT
12	6/4/03	Neat	1.18	2440 to 2429	11	25	2440 to 2439	1	25	2439	9%	1937	TT,NK
13	6/4/03	Neat	1.18	2439 to 2429	10	24	2439 to 2430	9	24	2430	90%	2072	NK
14	6/4/03	Neat	1.18	2430 to 2406	24	23	2430 to 2406	24	23	2406	100%	2201	FP
15	6/4/03	Neat	1.18	2406 to 2367	39	31	2406 to 2399	7	31	2399	18%	2375	FP
16	6/5/03	Neat	1.18	2399 to 2374	25	21	2399 to 2398	1	21	2398	4%	2493	TT
17	6/5/03	Neat	1.18	2398 to 2380	18	13	2398 to 2398	0	13	2398	0%	2566	TT
18	6/5/03	Neat	1.18	2398 to 2382	16	12	2398 to 2398	0	12	2398	0%	2633	NK
19	6/5/03	Neat	1.18	2398 to 2378	20	15	2398 to 2384	14	15	2384	70%	2718	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
20	6/5/03	Neat	1.18	2384 to 2342	42	31	2384 to 2368	16	31	2368	38%	2892	FP
21	6/5/03	Neat	1.18	2368 to 2318	50	31	2368 to 2344	24	31	2344	48%	3066	FP
22	6/6/03	Neat	1.18	2344 to 2296	48	36	2344 to 2330	14	36	2330	29%	3268	TT
23	6/6/03	12% bentonite, 3% CaCl	2.2	2330 to 2302	28	22	2330 to 2313	17	22	2313	61%	3391	NK
24	6/6/03	12% bentonite, 3% CaCl	2.2	2313 to 2287	26	21	2313 to 2301	12	21	2301	46%	3509	FP
25	6/6/03	12% bentonite, 3% CaCl	2.2	2301 to 2255	46	31	2301 to 2301	0	31	2301	0%	3683	FP
26	6/7/03	12% bentonite, 3% CaCl	2.2	2301 to 2282	14	13	2301 to 2301	0	13	2301	0%	3756	OR
27	6/7/03	12% bentonite, 3% CaCl	2.2	2301 to 2256	47	32	2301 to 2261	40	32	2261	85%	3936	TN

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
28	6/7/03	12% bentonite, 3% CaCl	2.2	2261 to 2233	28	32	2261 to 2244	17	32	2244	61%	4116	OR
29	6/8/03	12% bentonite, 3% CaCl	2.2	2244 to 2216	28	32	2244 to 2234	10	32	2234	36%	4295	OR
30	6/8/03	12% bentonite, 3% CaCl	2.2	2234 to 2205	29	31	2234 to 2233	1	31	2233	3%	4470	TN
31	6/8/03	12% bentonite, 3% CaCl	2.2	2233 to 2218	15	16	2233 to 2232	1	16	2232	7%	4559	TN
32	6/8/03	12% bentonite, 3% CaCl	2.2	2232 to 2217	15	13	2232 to 2223	9	13	2223	60%	4632	TN
33	6/8/03	12% bentonite, 3% CaCl	2.2	2223 to 2197	26	30	2223 to 2210	13	30	2210	50%	4801	OR
34	6/9/03	12% bentonite, 3% CaCl	2.2	2210 to 2188	22	31	2210 to 2197	13	31	2197	59%	4975	OR

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
35	6/9/03	12% bentonite, 3% CaCl	2.2	2197 to 2179	18	31	2197 to 2188	9	31	2188	50%	5149	NK
36	6/9/03	12% bentonite, 3% CaCl	2.2	2188 to 2179	9	20	2188 to 2186	2	20	2186	22%	5261	NK
37	6/10/03	Neat	2.2	2160 (gravel tag) to 2153	6	13	2160 (gravel tag) to 2172	-12	13	2172	Net Loss	5334	NK
38	6/11/03	Neat	2.2	2121 (gravel tag) to 2117	4	10	2121 (gravel tag) to 2124	-3	10	2124	Net Loss	5390	TN
39	6/12/03	Neat	2.2	2124 to 2114	10	20	2124 to 2124	0	20	2124	0%	5503	TN
40	6/12/03	Neat	2.2	2124 to 2119	5	10	2124 to 2124	0	10	2124	0%	5559	OR
41	6/15/03	Neat	1.18	2096 (gravel tag) to	7	20.5	UKN	UKN	20.5	No Tag	UKN	5674	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
42	6/16/03	Neat	1.18	2079 (gravel tag) to 2072	7	20	UKN	UKN	20	No Tag	UKN	5786	NK
43	6/17/03	Neat	1.18	2063 (gravel tag) to 2055	8	20	2063 to 2061	2	20	2061	25%	5899	NK
44	6/17/03	Neat	1.18	2061 to 2051	10	21	2061 to 2056	5	21	2056	50%	6016	TT
45	6/18/03	Neat	1.18	2056 to 2045	11	21	2056 to 2056	0	20	2056	0%	6129	TT
46	6/18/03	Neat with 3% CaCl	1.18	2056 to 2045	11	20	2056 to 2059	-3	20	2059	Net Loss	6241	NK
47	6/19/03	Neat	1.18	2050 (Gravel tag) to 2039	11	23	2050 to2048	2.5	23	2048	23%	6370	TT
48	6/19/03	Neat with 3% CaCl	1.18	2048 to 2038	10	21	2048 to 2053	-5	21	2053	Net Loss	6488	NK
49	6/19/03	Neat with 3% CaCl	1.18	2053 to 2043	10	21	UKN	UKN	21	No Tag	UKN	6606	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
50	6/20/03	Neat with 2% CaCl	1.18	2021 (gravel tag) to 2000	21	20	2021 to 2035	-14	21	2035	Net Loss	6724	TT/NK
51	6/20/03	Neat with 3% CaCl	1.18	2005 (gravel tag) to 1986	19	21	2005 to 2010	-5	21	2010	Net Loss	6842	NK/FP
52	6/20/03	Neat with 3% CaCl	1.18	2010 to 1988	22	20	2010 to 2004.6	5.4	20	2004.6	25%	6954	FP
53	6/20/03	Neat with 3% CaCl	1.18	2004.6 to 1985	19.6	21	2004.6 to 1997	7.6	21	1997	39%	7072	FP
54	6/20/03	Neat with 3% CaCl	1.18	1997 to 1981	16	22	1997 to 1989	8	22	1989	50%	7196	FP
55	6/21/03	Neat	1.18	1989 to 1979	10	22	1989 to 1983	6	22	1983	60%	7319	CB
56	6/22/03	Neat with 3% CaCl	1.18	1949 (gravel tag) to 1912	37	22	1949 (gravel tag) to 1977	-28	22	1977	Net Loss	7443	NK
57	6/22/03	Neat with 3% CaCl	1.18	1944 (gravel tag) to 1910	34	21	1944 (gravel tag) to 1928	16	21	1928	47%	7561	TN

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
58	6/22/03	Neat with 3% CaCl	1.18	1928 to 1906	22	21	1928 to 1917	11	21	1917	50%	7678	TN
59	6/23/03	Neat with 3% CaCl	1.18	1917 to 1904	13	21	1917 to 1912	5	21	1912	38%	7796	CB
60	6/24/03	Neat Cement	1.18	1912 to 1903	8	21	1912 to 1910	2	21	1910	25%	7914	CB
61	6/24/03	Neat with 3% CaCl	1.18	1910 to 1902	8	21	1910 to 1910	0	21	1910	0%	8032	CB/NK
62	6/24/03	Neat with 3% CaCl	1.18	1890 (gravel tag) to 1868	22	21	1890 (gravel tag) to 1912	-22	21	1912	Net Loss	8150	TN
63	6/24/03	Neat with 3% CaCl	1.18	1871 (gravel tag) to 1849	22	21	1871 (gravel tag) to 1863	8	21	1863	36%	8268	CB
64	6/25/03	Neat	1.18	1863 to 1840	17	20	1863 to 1864	1	20	1864	6%	8380	CB
65	6/25/03	Neat with 3% CaCl	1.18	1864 to 1839	25	21	1864 to 1863.5	0.5	21	1863.5	2%	8498	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
66	6/25/03	Neat with 3% CaCl	1.18	1846.4 (gravel tag) to	28.4	20.5	1846.4 (gravel tag) to	8.6	20.5	1855	30%	8613	FP
67	6/26/03	Neat	1.18	1855 to 1837	18	21	1855 to 1848	7	21	1848	39%	8731	CB
68	6/26/03	Neat with 3% CaCl	1.18	1848 to 1819	29	21	1848 to 1847	1	21	1847	3%	8849	CB/NK
69	6/26/03	Neat with 3% CaCl	1.18	1847 to 1818	29	22	1847 to 1847	0	22	1847	0%	8972	NK/FP
70	6/26/03	Neat with 3% CaCl	1.18	1837 (gravel tag) to 1810	27	21	1837 (gravel tag) to 1842	-5	21	1842	Net Loss	9090	TN
71	6/26/03	Neat with 3% CaCl	1.18	1842 to 1815	27	21	1842 to 1839	3	21	1839	11%	9208	TN
72	6/26/03	Neat with 3% CaCl	1.18	1839 to 1812	27	21	1839 to 1836	3	21	1836	11%	9326	TN
73	6/27/03	Neat with 3% CaCl	1.18	1836 to 1806	30	21	1836 to 1839	-3	21	1839	Net Loss	9444	CB
74	6/27/03	Neat with 3% CaCl	1.18	1839 to 1813	26	20	1839 to 1844	5	20	1834	19%	9556	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
75	6/27/03	Neat	1.18	1834 to 1804	30	22	1834 to 1826	8	22	1826	27%	9680	NK
76	6/27/03	Neat with 3% CaCl	1.18	1826 to 1796	30	22	1826 to 1826	0	22	1826	0%	9803	TN
77	6/28/03	Neat	1.18	1826 to 1790	36	26	1826 to 1822	4	26	1822	11%	9949	TN/TT
78	6/28/03	Neat with 3% CaCl	1.18	1822 to 1790	32	25	1822 to 1821.5	0.5	25	1821.5	2%	10090	TT
79	6/28/03	Neat with 3% CaCl	1.18	1821.5 to 1795	26.5	20	1821.5 to 1818	3.5	20	1818	13%	10202	FP
80	6/28/03	Neat with 3% CaCl	1.18	1818 to 1789	29	22	1818 to 1819	-1.0	22	1819	Net Loss	10326	FP
81	6/28/03	Neat with 3% CaCl	1.18	1819 to 1805	14	12	1819 to 1815	4	12	1815	29%	10393	FP
82	6/28/03	Neat with 3% CaCl	1.18	1815 to 1802	13	10	1815 to 1815	0	10	1815	0	10449	FP/NK
83	6/30/03	Neat with 3% CaCl	1.18	1815 to 1802	13	10	1815 to 1815	0	10	1815	0	10505	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
84	7/1/03	Neat	1.18	1755 (gravel tag) to 1747	8	21.5	No Tag	No Tag	21.5	No Tag	No Tag	10626	NK
85	7/2/03	Neat with 3% CaCl	1.18	1731 (gravel tag) to 1723	8	26	No Tag	No Tag	26	No Tag	No Tag	10772	NK
86	7/3/03	12% bentonite	2.2	1715 (gravel tag) to 1708	7	20	No Tag	No Tag	20	No Tag	No Tag	10884	NK
87	7/5/03	Neat	1.18	1748 (gravel tag) to 1740	8	25	No Tag	No Tag	25	No Tag	No Tag	11025	TN
88	7/6/03	Neat	1.18	1735 (gravel tag) to 1727	8	24	No Tag	No Tag	24	No Tag	No Tag	11159	CB

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
89	7/6/03	Neat with 3% CaCl	1.18	1690 (gravel tag) to 1681	6	22	1690 to 1675	15	22	1675	250%	11283	CB
90	7/7/03	Neat with 3% CaCl	1.18	1675 to 1666	9	21	1675 to 1670	5	21	1670	56%	11401	CB
91	7/7/03	Neat with 3% CaCl	1.18	1670 to 1660	10	21	1670 to 1661	9	21	1661	90%	11519	NK
92	7/7/03	Neat with 3% CaCl	1.18	1661 to 1638	23	23	1661 to 1631	30	23	1631	130%	11648	NK
93	7/7/03	12% bentonite	2.2	1631 to 1500	131	110	1631 to 1545	86	110	1545	66%	12266	TN
94	7/7/03	12% bentonite	2.2	1545 to 1422	123	100	1545 to 1477	68	100	1477	55%	12827	CB
95	7/8/03	12% bentonite	2.2	1477 to 1360	117	101	1477 to 1378	99	101	1378	85%	13394	NK
96	7/8/03	12% bentonite	2.2	1378 to 1280	98	122	1378 to 1290	88	122	1290	90%	14079	TN
97	7/8/03	12% bentonite 1% CaCl	2.2	1290 to 916	364	182	1290 to 937	353	182	937	97%	15101	CB

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
98	7/9/03	12% bentonite 1.5% CaCl	2.2	937 to 577	360	180	937 to 594	343	180	594	95%	16112	NK
99	7/9/03	12% bentonite	2.2	594 to 260	334	181	594 to 262	332	181	262	99%	17128	TN
100	7/30/03	12% bentonite	2.2	262 to 0	262	131	262 to 0	262	120.5	surface	109%	17805	TT

UNK-Unknown

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
1	4/3/03	CaCl accelerator	1.18	UNK	UNK	UNK	UNK	UNK	1	UNK	UNK	6	FP
2	4/3/03	CaCl accelerator	1.18	UNK	UNK	UNK	UNK	UNK	1	UNK	UNK	11	TN
3	4/3/03	CaCl accelerator	1.18	UNK	UNK	UNK	UNK	UNK	2	2580	UNK	22	TN
4	4/4/03	Neat	1.18	2580 to 2520	60	10	2580 to UNK	0 to 9	10	UNK	0 to 15%	79	LH
5	4/4/03	12% Bentonite	2.2	2545 to 2375	170	30	2545 to 2571	0 to 9	31	2571	0 to 5%	253	TN
6	4/5/03	12% Bentonite	2.2	2571 to 2459	112	20	2571 to 2567.5	3.5	20	2567.5	3%	365	TT
7	4/5/03	12% Bentonite and 3% CaCl	2.2	2567.5 to 2516	51.5	10	2567.5 to 2562	5.5	10	2562	11%	421	NK
8	4/5/03	12% Bentonite and 3% CaCl	2.2	2562 to 2510	52	10	2562 to 2562	0	11	2562	0%	483	NK
9	4/5/03	12% Bentonite and 3% CaCl	2.2	2562 to 2510	52	10	2562 to 2559	3	10	2559	6%	539	TT
10	4/6/03	Neat and 3% CaCl	1.18	2559 to 2507	52	10	2559 to 2550	9	10	2550	17%	595	TT
11	4/6/03	12% Bentonite and 3% CaCl	2.2	2550 to 2430	120	20	2550 to 2547	3	20	2549	3%	707	NK
12	4/6/03	Neat and 3% CaCl	1.18	2549 to 2494	55	10	2549 to 2532	15	10.5	2532	27%	766	TT

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill Interval (ft bpl)	Theoretical Fill Footage (ft)	Theoretical Fill Volume (bbls)	Actual Fill Interval (ft bpl)	Actual Fill Footage (ft)	Actual Fill Volume (bbls)	Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
13	4/7/03	12% Bentonite and 3% CaCl	2.2	2532 to 2467	65	11	2532 to 2524	8	11	2524	12%	828	NK
14	4/7/03	Neat and 3% CaCl	1.18	2524 to 2460	64	11	2524 to 2524	0	11	2524	0%	890	NK
15	4/7/03	Neat and 3% CaCl	1.18	2524 to 2462	62	10.5	2524 to 2524	0	10.5	2524	0%	949	FP
16	4/7/03	Neat and 3% CaCl	1.18	2524 to 2355	169	30	2524 to 2524	0	30	2524	0%	1117	FP
17	4/8/03	Neat and 3% CaCl	1.18	2524 to 2500	26	5	2524 to 2524	0	5	2524	0%	1145	TT
18	4/8/03	Neat and 3% CaCl	1.18	2524 to 2435	89	15	2524 to 2524	0	15	2524	0%	1230	NK
19	4/8/03	Neat and 3% CaCl	1.18	2524 to 2460	64	10.5	2524 to 2524	0	10.5	2524	0%	1289	NK
20	4/8/03	Neat with sand and 3% CaCl	1.18	2524 to 2410	114	20	2524 to 2524	0	20	2524	0%	1401	NK
21	4/8/03	Neat with 2%CaCl and sodium silicate	1.18	2524 to 2465	59	10	2524 to 2524	0	10	2524	0%	1457	FP
22	4/8/03	Cement slurry w/ 24% gel and 3% CaCl	UKN	2524 to 2460	64	11	2524 to 2524	0	11	2524	0%	1519	FP
23	4/10/03	Neat and 3% CaCl	1.18	2520 to 2458	62	11	2520 to 2510	10	11	2510	16%	1581	TT
24	4/10/03	Neat and 3% CaCl	1.18	2510 to 2390	120	21	2510 to 2498	12	21	2498	10%	1699	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
25	4/10/03	Neat and 3% CaCl	1.18	2498 to 2378	120	21	2498 to 2487	11	21	2487	9%	1816	NK
26	4/10/03	Neat and 3% CaCl	1.18	2487 to 2372	115	21	2487 to 2482	5	21	2482	4%	1934	FP
27	4/10/03	Neat and 3% CaCl	1.18	2482 to 2390	92	15	2482 to 2473	9	15	2473	10%	2019	TT
DRILL OUT PILOT HOLE TO 2561' BPL AND RE-CEMENT													
28	4/12/03	Neat	1.18	2561 to 2440	121	20	2561 to 2486	75	20	2486	62% (*85% of previously cemented hole.)	112	TN
29	4/12/03	Neat	1.18	2486 to 2350	136	20	2486 to 2478	8	20	2478	6%	225	LH
30	4/12/03	Neat	1.18	2478 to 2414	64	11	2478 to 2477	1	11	2477	2%	286	LH
31	4/13/03	Neat	1.18	2477 to 2410	67	12	2477 to 2464	13	12	2464	19%	354	TN
32	4/13/03	Neat	1.18	2464 to 2404	60	11	2464 to 2453	11	11	2453	18%	416	TN
33	4/13/03	Neat	1.18	2453 to 2384	69	12	2453 to 2439	14	12	2439	20%	483	TN
34	4/14/03	Neat and 4% CaCl	1.18	2439 to 2360	79	15	2439 to 2417	22	15	2417	28%	567	NK
35	4/14/03	Neat and 3% CaCl	1.18	2417 to 2315	102	20	2417 to 2351	66	20	2351	65%	679	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill Interval (ft bpl)	Theoretical Fill Footage (ft)	Theoretical Fill Volume (bbls)	Actual Fill interval (ft bpl)	Actual Fill Footage (ft)	Actual Fill Volume (bbls)	Tag Depth (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
36	4/14/03	Neat and 3% CaCl	1.18	2351 to 2270	101	19	2351 to 2237	14	19	2337	14%	786	TN
37	4/14/03	Neat and 3% CaCl	1.18	2337 to 2248	89	20	2337 to 2313	24	20	2313	27%	898	TN
38	4/14/03	Neat and 3% CaCl	1.18	2313 to 2238	75	20	2313 to 2301	12	20	2301	16%	1010	TN
39	4/15/03	Neat and 3% CaCl	1.18	2301 to 2236	65	20	2301 to 2294	7	20	2294	11%	1123	LH
40	4/15/03	Neat	1.18	2294 to 2234	60	20	2294 to 2263	31	20	2263	52%	1235	LH
41	4/15/03	Neat	1.18	2263 to 2204	59	21	2263 to 2256	7	21	2256	12%	1353	NK
42	4/15/03	Neat and 3% CaCl	1.18	2256 to 2200	56	20	2256 to 2249	7	20	2249	13%	1465	NK
43	4/15/03	Neat and 3% CaCl	1.18	2249 to 2229	20	11	2249 to 2249	0	11	2249	0%	1527	TN, NK
*44	4/16/03	First 10 bbls. Neat, last 7 bbls. Neat w/ 3% CaCl	1.18	2230 (gravel tag) to 2180	50	17	2230 (gravel tag) to 2209	21	17	2209	42%	1622	FP
45	4/16/03	First 9 bbls neat, last 4 bbls neat w/ 3% CaCL	1.18	2186 (gravel tag) to 2154	34	13	2186 (gravel tag) to 2180	6	13	2185	18%	1695	TN
46	4/17/03	10 bbls neat followed by 13 bbls w/ 3% CaCl	1.18	2155 (gravel tag) to 2100	55	23	2155 (gravel tag) to 2152	3	23	2152	5%	1824	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill Interval (ft bpl)	Theoretical Fill Footage (ft)	Theoretical Fill Volume (bbls)	Actual Fill Interval (ft bpl)	Actual Fill Footage (ft)	Actual Fill Volume (bbls)	Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
47	4/17/03	10 bbls neat followed by 14 bbls w/ 3% CaCl	1.18	2152 (gravel tag) to 2096	56	24	2152 (gravel tag) to 2138	14	24	2138	25%	1959	NK
48	4/17/03	10 bbls neat followed by 14 bbls w/ 3% CaCl	1.18	2138 (gravel tag) to 2096	42	24	2138 (gravel tag) to 2100	38	24	2100	90%	2093	TN
49	4/18/03	10 bbls neat followed by 13 bbls w/ 3% CaCl	1.18	2076 (gravel tag) to 2070	9	23	2076 (gravel tag) to 2075	1	23	2075	11%	2222	NK/TN
50	4/19/03	Neat	1.18	2053 (gravel tag) to 1980	73	31	2053 (gravel tag) to 2042	11	31	2042	15%	2396	FP
51	4/19/03	Neat	1.18	1950 (gravel tag) to 1800	150	31	1950 (gravel tag) to 1970	-20	31	1970	Net Loss	2570	TT
52	4/20/03	Neat w/ 3% CaCl	1.18	1949 (gravel tag) to 1850	99	21	1949 (gravel tag) to 1911	38	21	1911	38%	2688	FP
53	4/20/03	Neat w/ 3% CaCl	1.18	1893 (gravel tag) to 1840	53	11	1893 (gravel tag) to 1900	-7	11	1900	Net Loss	2750	FP
54	4/20/03	Neat w/ 3% CaCl	1.18	1868 (gravel tag) to 1858	10	2	1868 to 1874	-6	2	1874	Net Loss	2761	TT
55	4/21/03	Neat w/ 3% CaCl	1.18	1874 to 1864	10	2	1874 to 1874	0	2	1874	0%	2772	TT
56	4/21/03	Neat w/ 3% CaCl	1.18	1874 to 1810	64	13	1874 to 1869	5	13	1869	8%	2845	TT

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
57	4/21/03	Neat w/ 3% CaCl	1.18	1869 to 1805	64	13	1869 to 1868.5	0.5	13	1868.5	1%	2918	NK
58	4/21/03	Neat w/ 20% bentonite and 4%	2.2	1868.5 to 1800	68.5	14	1868.5 to 1868.25	0.25	14	1868.25	0%	2996	NK
59	4/21/03	Neat and cap of neat w/ 3% CaCl	1.18	1867 (gravel tag) to 1752	115	25	1867 (gravel tag) to 1856	11	25	1856	10%	3137	FP
60	4/21/03	Neat w/ 3% CaCl	1.18	1856 (cement tag) to 1790	66	12	1856 (cement tag) to 1854	2	12	1854	3%	3204	FP/TT
61	4/21/03	Neat w/ 3% CaCl	1.18	1854 to 1795	59	12	1854 to 1847	7	12	1847	12%	3271	TT
62	4/22/03	Neat w/ 3% CaCl	1.18	1847 to 1837	10	2	1847 to 1847	0	2	1847	0%	3283	TT
63	4/22/03	Neat w/ 3% CaCl	1.18	1847 to 1837	10	2	1847 to 1847	0	2	1847	0%	3294	TT
64	4/22/03	11 bbls neat followed by 14 bbls w/ 3% CaCl	1.18	1835 (gravel tag) to 1740	103	25	1835 (gravel tag) to 1835	0	25	1835	0%	3434	NK
65	4/22/03	Neat w/ 3% CaCl	1.18	1835 to 1773	62	12	1835 to 1830	5	12	1830	8%	3501	NK
66	4/22/03	Neat w/ 3% CaCl	1.18	1830 to 1735	95	24	1830 to 1829	1	24	1829	1%	3636	NK
67	4/22/03	Neat w/ 3% CaCl	1.18	1829 to 1776	53	10	1829 to 1828	1	10	1828	2%	3692	FP
68	4/22/03	Neat w/ 3% CaCl	1.18	1828 to 1770	58	12	1828 to 1826	2	12	1826	4%	3759	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
69	4/22/03	Neat w/ 3% CaCl	1.18	1826 to 1730	96	24	*1826 to 1824	2	24	1824	8%	3894	FP
70	4/23/03	Neat w/ 3% CaCl	1.18	1824 to 1814	10	2	1824 to 1821	3	2	1821	20%	3905	TT
71	4/23/03	Neat w/ 3% CaCl	1.18	1821 to 1811	10	2	1821 to 1820	1	2	1820	10%	3916	TT
72	4/23/03	Neat w/ 3% CaCl	1.18	1804 (gravel tag) to 1758	46	10	1804 (gravel tag) to 1804	0	10	1804	0%	3973	NK
73	4/23/03	Neat w/ 3% CaCl	1.18	1804 to 1752	52	13	1804 to 1804	0	13	1804	0%	4046	NK
74	4/23/03	Neat followed by neat w/ 3% CaCl	1.18	1788 (gravel tag) to 1720	68	22	1788 (gravel tag) to 1802.5	-14.5	22	1802.5	Net Loss	4169	FP
75	4/23/03	Neat followed by neat w/ 3% CaCl	1.18	1790 (gravel tag) to 1722	68	22	1790 (gravel tag) to 1795	-5	22	1795	Net Loss	4292	FP
76	4/23/03	Neat w/ 3% CaCl	1.18	1795 (cement tag) to 1749	46	13	1795 (cement tag) to 1793	2	13	1793	15%	4365	FP
77	4/24/03	Neat w/ 3% CaCl	1.18	1793 to 1781	14	2	1793 to 1791	2	2	1791	14%	4376	TT
78	4/24/03	Neat w/ 3% CaCl	1.18	1791 to 1780	11	2	1791 to 1789	2	2	1789	18%	4388	TT
79	4/24/03	Neat followed by neat w/ 3% CaCl	1.18	1769 (gravel tag to 1725	44	16	1769 (gravel tag to 1777	-8	16	1777	Net Loss	4478	NK

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Borehole Size: 12.25-inch, open hole

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval (ft bpl)	Footage (ft)	Volume (bbls)	Interval (ft bpl)	Footage (ft)	Volume (bbls)				
80	4/24/03	Neat cement	1.18	UNK	UNK	UNK	tremie set at approx. 1746	UNK	5	no tag - go to gravel pumping	UNK	4506	FP
81	4/26/03	Neat followed by neat w/ 3% CaCl	1.18	1721(gravel tag) to 1710	11	10	tremie set at approx. 1719	UNK	10	no tag - go to gravel pumping	UNK	4562	TN
82	4/27/03	Neat	1.18	1641 to 1612	29	13	1641 to 1632.3	9.7	13	1632.3	33%	4635	TN

UNK-Unknown

APPENDIX 3.5.2

DZMW

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: DZMW
Casing/Hole Size: 24-inch/42.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill			Actual Fill			Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
				Interval	Footage	Volume (bbls)	Interval	Footage	Volume (bbls)				
1	8/11/03	cement w/ 12% gel followed by neat	2.2 and 1.18	410' bpl to surface	410	670	410' bpl to surface	410	200 bbls of 12% followed by 400 bbls of neat	Returns to surface - Hard tag at 6' bpl	90%	3366	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF Weeks 30,31
Job No.: 01-04254.A8
Well No.: DZMW
Casing/Hole Size: 14-inch/22.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill Interval	Theoretical Fill Footage	Theoretical Fill Volume (bbls)	Actual Fill Interval	Actual Fill Footage	Actual Fill Volume (bbls)	Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
Plug Seal	8/21/03	3% CaCl	1.18	870 (theoretical gravel fill) to 862	8	2	870 (theoretical gravel fill) to 862	8	2.25	862	89%	13	NK
1	8/21/03	neat	1.18	862 to 620	242	129	862 to 622	240	129	622	99%	736	NK
2	8/21/03	12% bent.	2.2	622 to 230	392	152	622 to 215	407	152	215	104%	1589	TN
3	8/26/03	12% bent.	2.2	215 to surface	215	72	215 to surface	215	69	surface	100%	1976	FP

Water Resource Solutions

Cement Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: DZMW
Casing/Hole Size: 6.625-inch/12.25-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Stage	Date	Cement additives	Yield (cf/sk)	Theoretical Fill Interval	Theoretical Fill Footage	Theoretical Fill Volume (bbls)	Actual Fill Interval	Actual Fill Footage	Actual Fill Volume (bbls)	Tag Depth (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
Cement Basket Seal	8/25/03	neat w/ 3% CaCl on top of 4 vertical feet of gravel	1.18	Gravel fill estimated from 1204 (cement basket) to 1200. Cement fill from 1200 to 1198	2	0.25	UNK	UNK	0.25	no tag	UNK	1	
Cement Basket Seal	8/25/03	neat w/ 3% CaCl	1.18	1198 to 1191	7	1	UNK to 1186	UNK	1	1186	UNK	7	TT
1	8/25/03	neat	1.18	1186 to 956	230	40	1186 to 994.5	191.5	40	994.5	83%	231	NK
2	8/25/03	neat	1.18	994.5 to 938	56.5	13	994.5 to 948.75	45.75	13	948.75	81%	304	NK/FP
3	8/25/03	neat	1.18	948.75 to 930	18.75	5.5	948.75 to 931.4	17.35	5.5	931.4	93%	335	FP/TT

APPENDIX 3.6

GRAVEL STAGE AND VOLUME SUMMARY FOR IW-1

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/9/03 Swing	2.0	2.0	39	216	2186 (cement tag) to 2171	15	2186 (cement tag) to 2186	0	2186 22:59	0%	2	216	TN
6/9/03 PM	3.0	3.0	58	324	2186 (cement tag) to 2160	26	2186 (cement tag) to 2186	0	2186 2:55	0%	5	540	OR
	2.0	2.0	39	216	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	7	756	OR
6/10/03 AM	1.0	3.0	58	324	2186 (cement tag) to 2166	20	2186 (cement tag) to 2160	26	2160 8:20	130%	8	864	NK
	1.0	1.0	19	108	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	9	972	NK
6/10/03 Swing	3.0	4.0	77	432	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	12	1296	TN

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/10/03 PM	0.75	4.75	92	513	2172 (cement tag) to 2132	40	2172 (cement tag) to 2142	30	2142 00:56	75%	12.75	1377	OR
	2.25	2.25	43	243	2172 (cement tag) to 2132	40	2172 (cement tag) to 2142	30	2142 00:56	75%	15	1620	OR
	1.0	1.0	19	108	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	16	1728	OR
6/11/03 AM	0.00	1.0	19	108	2142 to 2135	7	2142 to 2141	1	2141 8:10	14%	16	1728	FP
	2.25	2.25	43	243	2141 to 2122	19	2141 to 2121	20	2121 14:15	105%	18.25	1971	FP
6/11/03 Swing	none pumped										18.25	1971	TN
6/11/03 PM	none pumped										18.25	1971	OR
6/12/03 AM	5.0	5.0	97	540	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	23.25	2511	FP

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/12/03 Swing	3.0	8.0	154	864	2121 to 2073	48	2121 to 2118	3	2118 18:20	6%	26.25	2835	TN
	4.0	4.0	77	432	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	30.25	3267	TN
6/12/03 PM	7.0	11.0	212	1188	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	37.25	4023	OR
6/13/03 AM	6.0	17.0	328	1836	2118 to 2025	93	2118 to 2114	4	2114 11:30	4%	43.25	4671	NK
	4.0	4.0	77	432	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	47.25	5103	NK
6/13/03 Swing	7.0	11.0	212	1188	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	54.25	5859	TN
6/13/03 PM	1.5	12.5	241	1350	2114 to 2035	79	2114 to 2114	0	2114 1:00	0%	55.75	6021	TT
	6.5	6.5	125	702	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	62.25	6723	TT
6/14/03 AM	7.0	13.5	261	1458	2114 to 2030	84	2114 to 2113	1	2113 16:15	1%	69.25	7479	FP
	2.0	2.0	39	216	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	71.25	7695	FP

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/14/03 PM	12.0	14.0	270	1512	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	83.25	8991	TT
6/15/03 AM	0.0	14.0	270	1512	2113 to 2021	92	2113 to 2096	17	2096 8:00	18%	83.25	8991	FP
	5.5	5.5	106	594	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	88.75	9585	FP
6/15/03 PM	11.0	16.5	318	1782	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	99.75	10773	TT
6/16/03 AM	1.5	18.0	347	1944	2096 to 1908	188	2096 to 2079	17	2079 10:10	9%	101.25	10935	NK
	2.0	2.0	39	216	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	103.25	11151	FP
6/16/03 Swing	9.0	11.0	212	1188	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	112.25	12123	FP
6/16/03 PM	7.5	18.5	357	1998	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	119.75	12933	TT
6/17/03 AM	0.0	18.5	357	1998	2079 to 1852	227	2079 to 2063	16	2063 7:55	7%	119.75	12933	NK
	0.5	0.5	10	54	2063 to 2058	5	2063 to 2061	2	2050 13:25	40%	120.25	12987	NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/17/03 Swing	none pumped										120.25	12987	FP
6/17/03 PM	none pumped										120.25	12987	TT
6/18/03 AM	none pumped										120.25	12987	NK
6/18/03 Swing	1.0	1.0	19	108	2059 (cement tag) to 2049	10	2059 (cement tag) to 2056	3	2056 18:38	30%	121.25	13095	FP
6/18/03 Night	1.0	1.0	19	108	2056 (gravel tag) to 2046	10	2056 (gravel tag) to 2050	6	2050 1:40	60%	122.25	13203	TT
6/19/03 AM	2.5	2.5	48	270	approx. tag at 2053	No Tag	No Tag	No Tag	No Tag	No Tag	124.75	13473	NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/19/03 Swing	1.5	4.0	77	432	2053 (cement tag) to 2019	34	2053 (cement tag) to 2033.5	19.5	2033.5 16:45	57%	126.25	13635	FP
	2.5	2.5	48	270	2033.5 to 2012	21.5	2033.5 to 2028	5.5	2028 20:02	26%	128.75	13905	FP
	1.0	1.0	19	108	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	129.75	14013	FP
6/19/03 Night	0.0	1.0	19	108	2028 to 2018	10	2028 to 2021	7	2021 1:30	70%	129.75	14013	TT
6/20/03 AM	2.5	2.5	48	270	2035 (cement tag) to 2010	25	2035 to 2005	30	2005 12:05	120%	132.25	14283	NK
6/20/03 PM	1.0	1.0	19	108	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	133.25	14391	CB

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/21/03 AM	3.0	3.0	58	324	1983 (cement tag) to 1938	45	1983 (cement tag) to 1974	9	1974@ 11:15	20%	136.25	14715	TN
	5.5	5.5	106	594	1974 (gravel tag) to 1889	85	1974 (gravel tag) to 1974	Net loss	1978 @ 18:45	Net Loss	141.75	15309	TN
6/21/03 PM	4.5	4.5	87	486	1974 (gravel tag) to 1902	72	1974 (gravel tag) to 1967	7	1967 @ 5:27	10%	146.25	15795	CB
6/22/03 AM	6.0	6.0	116	648	1967 (gravel tag) to 1858	109	1967 (gravel tag) to 1966	1	1966 @ 16:45	1%	152.25	16443	TN
	1.0	1.0	19	108	No Tag	No Tag	No Tag	UNK	No Tag	UNK	153.25	16551	TN

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/22/03 PM	3.0	4.0	77	432	1966 (gravel tag) to 1894	72	1966 (gravel tag) to 1949	17	1949 @ 4:54	24%	156.25	16875	CB
6/23/03 AM	1.5	1.5	29	162	1977 (cement tag) to 1963	14	1977 (cement tag) to 1955	22	1955 @ 12:38	157%	157.75	17037	NK
	0.5	0.5	10	54	No Tag	No Tag	No Tag	UNK	No Tag	UNK	158.25	17091	NK
6/23/03 Swing	0.0	0.5	10	54	1955 (gravel tag) to 1940	15	1955 (gravel tag) to 1944	11	1944 @ 16:35	73%	158.25	17091	TN
6/23/03 PM	none pumped										158.25	17091	CB
6/24/03 AM	3.0	3.0	58	324	No Tag	No Tag	No Tag	UNK	No Tag	UNK	161.25	17415	NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/24/03 Swing	0.0	3.0	58	324	1910 (cement tag) to 1866	44	1910 (cement tag) to 1890	14	1890 @ 16:45	32%	161.25	17415	TN
	2.0	2.0	39	216	1912 (cement tag) to 1888	24	1912 (cement tag) to 1871	41	1871 @ 22:00	171%	163.25	17631	TN
6/25/03 AM	1.0	1.0	19.25	108	1863.5 (cement tag) to 1842	21.5	1863.5 (cement tag) to 1846.4	17.1	1846.4 @ 12:00	79.5%	164.25	17739	FP
6/25/03 Swing	none pumped										164.25	17739	TN
6/25/03 PM	none pumped										164.25	17739	CB
6/26/03 AM	0.5	0.5	10	54	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	164.75	17793	NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/26/03 Swing		0.0	0	0	1847 (cement tag) to 1834	13	1847 (cement tag) to 1837	10	1837 @ 15:40	77%	164.75	17793	TN
6/26/03 PM	none pumped										164.75	17793	CB
6/27/03 AM	none pumped										164.75	17793	NK
6/27/03 Swing	none pumped										164.75	17793	TN
6/27/03 PM	none pumped										164.75	17793	TT
6/28/03 AM	none pumped										164.75	17793	FP
6/28/03 PM to 6/30/03 AM	No site activity												
6/30/03 AM	1	1	19	108	1815 (cement tag) to 1800	15	1815 (cement tag) to 1800	15	1800 @ 13:45	100%	165.75	17901	NK
	1	1	19	108	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	166.75	18009	NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
6/30/03 Swing	7	8	154	864	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	173.75	18765	FP
6/30/03 PM	7	15	290	1620	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	180.75	19521	TT
7/1/03 AM	1	16	309	1728	1800 (gravel tag) to 1690	110	1800 (gravel tag) to 1755	45	1755 at 8:40	41%	181.75	19629	NK
	5	5	97	540	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	186.75	20169	NK
7/1/03 Swing	10	15	290	1620	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	196.75	21249	FP
7/1/03 PM	9	24	463	2592	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	205.75	22221	TT
7/2/03 AM	0	24	463	2592	1755 (gravel tag) to 1460	295	1755 (gravel tag) to 1731	24	1731 at 7:25	8%	205.75	22221	NK
	3	3	58	324	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	208.75	22545	NK
7/2/03 Swing	9	12	232	1296	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	217.75	23517	FP

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
7/2/03 PM	4	16	309	1728	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	221.75	23949	TT
7/3/03 AM	0	16	309	1728	1731 (gravel tag) to 1560	171	1731 (gravel tag) to 1715	16	1715 at 7:20	9%	221.75	23949	NK
	9	9	174	972	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	230.75	24921	NK
7/3/03 Swing	8	17	328	1836	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	238.75	25785	FP
7/3/03 PM	6	23	444	2484	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	244.75	26433	TT
7/4/03 AM to 7/5/03 AM	No site activity												
7/5/03 AM	10.0	10.0	193	1080	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	254.75	27513	TN
7/5/03 PM	8.5	18.5	357	1998	1748 (gravel tag) to 1665	83	1748 (gravel tag) to 1735	13	1735 @ 4:23	16%	263.25	28431	CB
	1.5	1.5	29	162	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	264.75	28593	CB

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Casing/Hole Size: 24-inch/32.5-inch

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Date & Shift	Loads by Shift (108 cu ft per load)	Loads since tag (108 cu ft per load)	Volume since last tag (bbls)	Volume since last tag (cu ft)	Theoretical Fill Interval	Theoretical Fill Feet	Actual Fill Interval	Actual Fill Feet	Tag Depth & Time (ft bpl)	Percent Filled	Cum. Total Loads full	Cum. Total (cu ft)	Obsrvr Init.
7/6/03 AM	10.0	11.5	222	1242	No Tag	No Tag	No Tag	No Tag	No Tag	No Tag	285.25	30807	TN
7/6/03 PM	0	11.5	222	1242	1735 (gravel tag) to 1694	41	1735 (gravel tag) to 1690	45	1690 at 21:33	110%	285.25	30807	CB

UNK-Unknown

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Hole Size: 12.25"

A	B	D	E	F	G	I	K	L	M	N
Date & Shift	Loads (108 cu ft per load)	Volume (cu ft)	Theoretical Fill Interval	Theoretical Fill Footage	Actual Fill Interval	Actual Fill Footage	Tag Depth & Time (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
4/9/03 PM	0.75	81	2524 to 2436	88	2524 to 2418	6	UNK	7%	81	TT
4/15/03 Swing	0.9	97	2249 to 2199	50	UNK	UNK	No Tag	UNK	178	TN
4/15/03 PM	1.25	135	2249 to 2184	65	2249 to 2230	19	2230 at 7:38AM	29%	313	LH/FP
4/16/03 AM	1.25	135	2209 (cement tag) to 2150	59	2209 (cement tag) to 2186	23	2186 at 16:00	39%	448	FP/TN
4/16/03 Swing	1.75	189	2180 (cement tag) to 2100	80	2180 (cement tag) to 2162	16	2162 at 1:30	20%	637	TN/LH
4/16/03 PM	2.25	243	2162 to 2092	70	2162 to 2155	7	2155 at 6:50	10%	880	LH
4/17/03 AM	1.5	162	2152 (cement tag) to 2096	56	2152 (cement tag) to 2148	4	2148 at 13:00	7%	1042	NK
4/17/03 Swing	0.5	54	2148 (cement tag) to 2118	30	2148 (cement tag) to 2143	5	2143 at 19:05	17%	1096	TN
	0.5	54	2100 (cement tag) to 2091	9	2100 (cement tag) to 2091	9	2091 at 23:15	100%	1150	TN/LH
4/17/03 PM	3.5	378	2091 to 2066	25	2091 to 2088	3	2088 at 3:55	12%	1528	LH
	2	216	2088 to 2078	10	UNK	UNK	To be tagged	UNK	1744	LH/NK

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Hole Size: 12.25"

A	B	D	E	F	G	I	K	L	M	N
Date & Shift	Loads (108 cu ft per load)	Volume (cu ft)	Theoretical Fill Interval	Theoretical Fill Footage	Actual Fill Interval	Actual Fill Footage	Tag Depth & Time (ft bpl)	Percent Filled (l/Fx100)	Cum. Total (cu ft)	Observer Init.
4/18/03 AM	5.5	594	2088 (gravel tag) to 1976	112	2088 (gravel tag) to 2076	12	2076 at 14:05	11%	2338	NK
4/18/03 Swing	3.0	324	2075 (cement tag) to 1978	97	2075 (cement tag) to 2053	22	2053 at 6:30	23%	2662	TN
4/19/03 AM	2.5	270	2042 (cement tag) to 1965	77	2042 (cement tag) to 2014	28	2014 at 15:50	36%	2851	FP
4/19/03 PM	1.0	108	2014 (gravel tag) to 1974	40	2014 (gravel tag) to 1950	64	1950 at 20:25	160%	2959	TT
4/20/03 AM	1.0	108	1970 to 1904	66	1970 to 1970	0	1970 at 3:00	0%	3067	TT
	2.75	297	1970 (cement tag) to 1752	218	1970 (cement tag) to 1949	21	1949 at 11:00	10%	3364	FP
4/20/03 PM	0.5	54	1911 (cement tag) to 1872	39	1911 (cement tag) to 1893	18	1893 at 16:00	46%	3418	FP
	0.5	54	1900 (cement tag) to 1854	46	1900 (cement tag) to 1868	32	1868 at 21:00	70%	3472	TT

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Hole Size: 12.25"

A	B	D	E	F	G	I	K	L	M	N
Date & Shift	Loads (108 cu ft per load)	Volume (cu ft)	Theoretical Fill Interval	Theoretical Fill Footage	Actual Fill Interval	Actual Fill Footage	Tag Depth & Time (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
4/21/03 AM	0.1	11	1868.25 (cement tag) to 1860.25	8	UNK	UNK	No Tag	UNK	3483	NK
4/21/03 PM	0.3	32	1868.25 (cement tag) to 1834	34	1868.25 (cement tag) to 1866	2.25	1866 at 16:20	7%	3515	FP
	0.23	25	NA	NA	1866 (gravel tag) to 1867	-1	1867 at 17:20	Net Loss	3540	FP
4/22/03 AM	0.25	27	1847 (cement tag) to 1837	10	1847 (cement tag) to 1837	12	1837 at 10:00	120%	3567	NK
4/22/03 Swing	0.11	12	1828 (cement tag) to 1820	8	UNK	UNK	No Tag	UNK	3579	FP
4/23/03 AM	0.08	9	1820 (cement tag) to 1813	7	1820 (cement tag) to 1804	16	1804 at 9:40	229%	3588	NK
	0.20	22	1804 (cement tag) to 1789	15	1804 (cement tag) to 1788	16	1788 at 15:32	107%	3610	NK, FP

Water Resource Solutions

Gravel Record

North County Water Reclamation Facility
Class I Injection Well System

Project Name: NCWRF
Job No.: 01-04254.A8
Well No.: IW-1
Hole Size: 12.25"

A	B	D	E	F	G	I	K	L	M	N
Date & Shift	Loads (108 cu ft per load)	Volume (cu ft)	Theoretical Fill Interval	Theoretical Fill Footage	Actual Fill Interval	Actual Fill Footage	Tag Depth & Time (ft bpl)	Percent Filled (I/Fx100)	Cum. Total (cu ft)	Observer Init.
4/23/03 Swing	0.46	50	1802.5 (cement tag) to 1758	44.5	1802.5 (cement tag) to 1790	12.5	1790 at 19:30	28%	3660	FP
4/24/03 AM	0.25	27	1789 (cement tag) to 1769	20	1789 (cement tag) to 1769	20	1769 at 8:32	100%	3687	NK
	3	324	1777 (cement tag) to 1692	85	UNK	UNK	continuous gravel	UNK	4011	NK
4/24/03 Swing	8	864	UNK	UNK	UNK	UNK	continuous gravel	UNK	4875	FP
4/24/03 PM	3	324	UNK	UNK	UNK	UNK	1748	UNK	5199	TT
4/25/03 AM	6	648	UNK	UNK	UNK	UNK	continuous gravel	UNK	5847	NK
4/25/03 Swing	13	1404	UNK	UNK	UNK	UNK	1748, tagged at 21:35	UNK	7251	FP
4/25/03 PM	0	0	UNK	UNK	UNK	UNK	No gravel	UNK	7251	JB
4/26/03 AM	6	648	UNK	UNK	UNK	UNK	1722, Tagged at 18:50	UNK	7899	TN
4/26/03 PM	22	2376	UNK	UNK	UNK	UNK	1641 on 4/27/03 at 13:40	UNK	10275	JB

UNK-Unknown

APPENDIX 3.7

CEMENT SPECIFICATIONS AND COMPRESSIVE STRENGTH SUMMARY

APPENDIX 3.7.1

IW-1 SUMMARY

Appendix 3.7.1
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
1*	2580 to 2570	10	103		980
2	2570 to 2555	15	24		5730
3	2555 to 2542	13	22		3600
4	2542 to 2527	15	22		2920
5	2527 to 2508	19	21		5960
6	2508 to 2485	22	21		4590
7	2485 to 2477	8	21		5820
8	2477 to 2470	7	21		4730
9	2470 to 2457	13	22		4760
10	2457 to 2440	17	22		6530
11	2440 to 2440	0	21		4840
12	2440 to 2439	1	25		6620
13	2439 to 2430	9	24		4640
14	2430 to 2406	24	23		5200
15	2406 to 2399	7	31		5960
16	2399 to 2398	1	21		1590
17	2398 to 2398	0	17		6180
18	2398 to 2398	0	18		4600
19	2398 to 2384	14	19		3530
20	2384 to 2368	16	31		5000
21	2368 to 2344	24	31		5100
22	2344 to 2330	14	22		7410
23	2330 to 2313	17	23	1280	

Appendix 3.7.1
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
24	2313 to 2301	12	21	1800	
25	2301 to 2301	0	31	1770	
26	2301 to 2301	0	13	1900	
27	2301 to 2261	40	32	2020	
28	2261 to 2244	17	32	1890	
29	2244 to 2234	10	32	1370	
30	2234 to 2233	1	31	1390	
31	2233 to 2232	1	16	2210	
32	2232 to 2223	9	13	3830	
33	2223 to 2210	13	30	5510	
34	2210 to 2197	13	31	3390	
35	2197 to 2188	9	35	4280	
36	2188 to 2186	2	36	890	
37	2160 (gravel tag) to 2172	-12	37		1980
38	2121 (gravel tag) to 2124	-3	10	Zone of Mixing. No cubes tested.	Gravel
39	2124 to 2124	0	20		Gravel
40	2124 to 2124	0	10		Gravel
41	UKN	UKN	20.5		Gravel
42	UKN	UKN	20		Gravel
43	2063 to 2061	2	20		Gravel
44	2061 to 2056	5	21		Gravel
45	2056 to 2056	0	20		Gravel

Appendix 3.7.1
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
46	2056 to 2059	-3	20		5860
47	2050 to2048	2.5	23		4210
48	2048 to 2053	-5	21		3880
49	UKN	UKN	21		4860
50	2021 to 2035	-14	21		4740
51	2005 to 2010	-5	21		3630
52	2010 to 2004.6	5.4	20		6600
53	2004.6 to 1997	7.6	21		2880
54	1997 to 1989	8	22		6710
55	1989 to 1983	6	22		3660
56	1949 (gravel tag) to 1977	-28	22		2950
57	1944 (gravel tag) to 1928	16	21		5540
58	1928 to 1917	11	21		2730
59	1917 to 1912	5	21		4710
60	1912 to 1910	2	21		5090
61	1910 to 1910	0	21		7680
62	1890 (gravel tag) to 1912	-22	21		3910
63	1871(gravel tag) to 1863	8	21		5240
64	1863 to 1864	1	20		7100
65	1864 to 1863.5	0.5	21		5170

Appendix 3.7.1
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
66	1846.4(gravel tag) to 1855	8.6	20.5		6010
67	1855 to 1848	7	21		5260
68	1848 to 1847	1	21		6680
69	1847 to 1847	0	22		4560
70	1837 (gravel tag) to 1842	-5	21		6000
71	1842 to 1839	3	21		4090
72	1839 to 1836	3	21		5870
73	1836 to 1839	-3	21		3920
74	1839 to 1844	5	20		6520
75	1834 to 1826	8	22		3430
76	1826 to 1826	0	22		7710
77	1826 to 1822	4	26		3620
78	1822 to 1821.5	0.5	25		5080
79	1821.5 to 1818	3.5	20		4730
80	1818 to 1819	-1	22		4150
81	1819 to 1815	4	12		5200
82	1815 to 1815	0	10		6430
83	1815 to 1815	0	10		4790
84	no tag	no tag	21.5		
85	no tag	no tag	26		
86	no tag	no tag	20	x	
87	no tag	no tag	25		
88	no tag	no tag	24		2590
89	1690 to 1675	15	22		2520

Appendix 3.7.1
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
90	1675 to 1670	5	21		4140
91	1670 to 1661	9	21		3130
92	1661 to 1631	30	23		3720
93	1631 to 1545	86	110	3070	
94	1545 to 1477	68	100	620	
95	1477 to 1378	99	101	500	
96	1378 to 1290	88	122	700	
97	1290 to 937	353	182	680	
98	937 to 594	343	180	970	
99	594 to 262	332	181	x	
100	262 to 0	120.5	surface	x	

*- Samples appears to have not been made in a cube mold.

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days

Slump (inches):

Air Content (percent):

MIX CODE _____

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-01-03		11:00 A.M.	M.B.O.
Concrete Truck No.:	**Ticket No.:**	**Size of Load (C.Y.):**	**Weather Conditions:**

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.

Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31 ☐ Yes ☒ No ☐ Unknown ☐ Not Applicable

Tested to ASTM C-39 ☒ Yes ☐ No

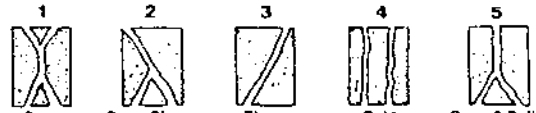
Location of Concrete
STAGE 1: WELL 1W-1, 24" Casing.

Sample appears to have not been made in a cube mold.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
5 A	6-10	6-30	29	1.997 - 1.993	3.98	3,900	980		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-02-03		7:40 A.M.	M.B.O.
Concrete Truck No.:	**Ticket No.:**	**Size of Load (C.Y.):**	**Weather Conditions:**

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

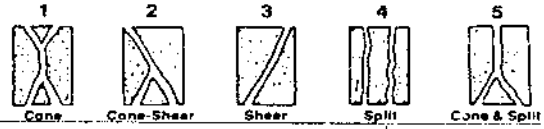
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☒ No ☐ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 2: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
6 A	6-10	6-30	28	2.02 X 2.01	4.06	23,260	5730		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/2/07

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE ———	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-02-03	Time Concrete Batched:	Time Concrete Sampled: 12:40 P.M.	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 3: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
7 A	6-10	6-30	28	1.999 -2.011	4.02	14,490	3600		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone, 2 Cone-Shear, 3 Shear, 4 Split, 5 Cone & Split

CONCRETE

By _____ 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

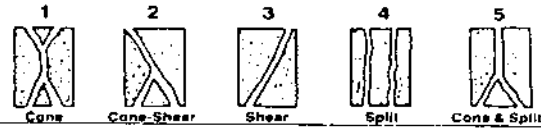
Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-02-03		18:35	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 4: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
8 A	6-10	6-30	28	1.998 - 2.010	4.02	11,720	2920		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By

7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

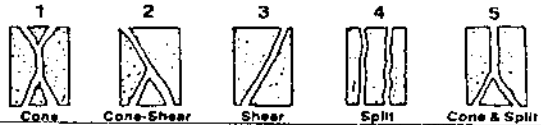
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-03-03	Time Concrete Batched:	Time Concrete Sampled:	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 5: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
9 A	6-10	7-1	28	2.05 X 2.02	4.14	24,690	5960		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

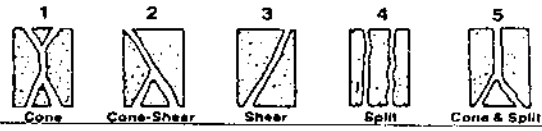
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-03-03	Time Concrete Batched:	Time Concrete Sampled: 5:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 6: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
10 A	6-10	7-1	28	2.04 X2.02	4.12	18,920	4590		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

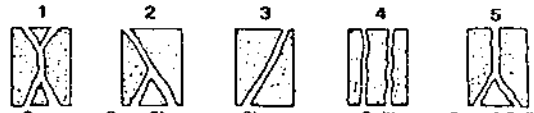
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-03-03	Time Concrete Batched:	Time Concrete Sampled: 9:45 A.M.	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 7: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
11 A	6-10	7-1	28	2.01 X 2.02	4.06	23,630	5820		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

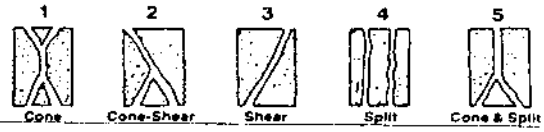
Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-03-03		13:40	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No

Location of Concrete
STAGE 8: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
12 A	6-10	7-1	28	2.03 X 2.00	4.08	19,300	4730		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

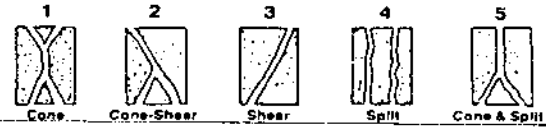
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-03-03	Time Concrete Batched:	Time Concrete Sampled: 17:40	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 9: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
13 A	6-10	7-1	28	1.99 X 1.98	3.94	18,760	4760		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days

Slump (inches):

Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-03-03		21:55	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.

Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable

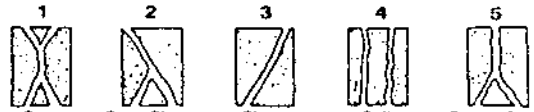
Tested to ASTM C-39 ☒ Yes ☐ No

Location of Concrete
STAGE 10: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
14 A	6-10	7-1	28	2.04 X 2.01	4.10	26,780	6530		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

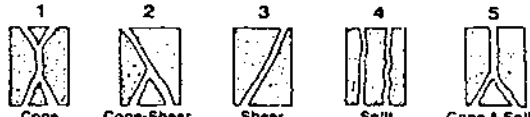
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-04-03	Time Concrete Batched:	Time Concrete Sampled: 2:00	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 11: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
15 A	6-10	7-2	28	2.06 x 2.07	4.26	20,610	4840		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/3/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCulliers

CONCRETE SUPPLIER:

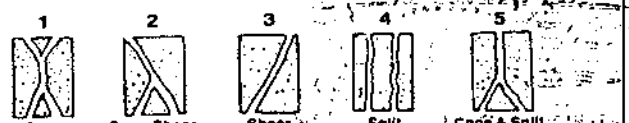
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-04-03	Time Concrete Batched:	Time Concrete Sampled: 7:00	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 12: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
16 A	6-10	7-2	28	1.99 x 2.02	4.02	26,620	6620		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/3/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

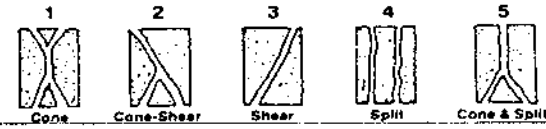
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-04-03	Time Concrete Batched:	Time Concrete Sampled: 11:15	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 13: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
17 A	6-10	7-2	28	2.01 x 2.02	4.06	18,830	4640		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/3/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

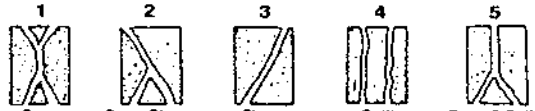
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-04-03	Time Concrete Batched:	Time Concrete Sampled: 15:55	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 14: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE DIAMETER (IN)	TEST SPECIMEN SIZE AREA (SQ IN)	TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
18 A	6-10	7-2	28	1.98 x 2.04	4.04	21,020	5200		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



NCRETE

By 7/30/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

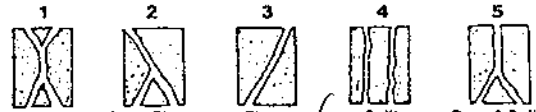
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-04-03	Time Concrete Batched:	Time Concrete Sampled: 20:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 15: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE DIAMETER (IN)	TEST SPECIMEN SIZE AREA (SQ IN)	TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
19 A	6-10	7-2	28	1.99 x 2.04	4.06	24,200	5960		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/3/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days

Slump (inches):

Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-05-03		1:05	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.

Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable

Tested to ASTM C-39: ☒ Yes ☐ No

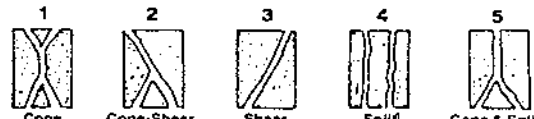
Location of Concrete
STAGE 16: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
20 A	6-10	7-3	28	1.95 X 2.01	3.90	6,210	1590		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

Bad specimen - Came in broken.



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-05-03	Time Concrete Batched:	Time Concrete Sampled: 5:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 17: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
21 A	6-10	7-3	28	2.02 X 2.01	4.06	25,100	6180		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CONCRETE

By SL 7/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-05-03	Time Concrete Batched:	Time Concrete Sampled: 9:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 18: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
22 A	6-10	7-3	28	2.00 X 1.97	3.94	18,130	4600		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

CONCRETE

By 7/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

MIX CODE

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-05-03		13:55	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

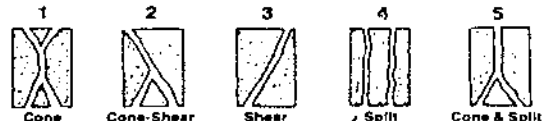
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 19: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
23 A	6-10	7-3	28	1.98 X 2.01	3.98	14,040	3530		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-05-03		18:10	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 20: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
24 A	6-10	7-3	28	2.04 X 2.02	4.12	20,610	5000		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CONCRETE

By D.L 7/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

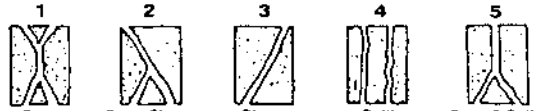
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-05-03	Time Concrete Batched:	Time Concrete Sampled: 22:25	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 21: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
25 A	6-10	7-3	28	2.02 X 2.00	4.04	20,590	5100		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By SL 7/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

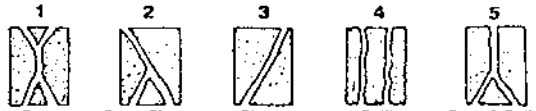
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-06-03	Time Concrete Batched:	Time Concrete Sampled: 2:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 22: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
26 A	6-10	7-7	31	1.96 x 1.99	3.90	28,890	7410		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-06-03		11:45	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 23: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
27 A	6-10	7-7	31	1.92 x 1.94	3.72	4,780	1280		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CONCRETE

By _____ 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

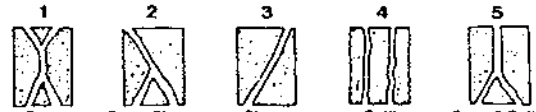
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-06-03	Time Concrete Batched:	Time Concrete Sampled: 17:05	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 24: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
28 A	6-10	7-7	31	1.95 x 1.93	3.76	6,750	1800		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/07

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

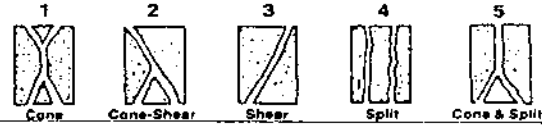
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE _____	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-06-03	Time Concrete Batched:	Time Concrete Sampled: 22:15	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 25: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
29 A	6-10	7-7	31	1.97 x 1.93	3.80	6,730	1770		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE _____

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-07-03		3:35	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

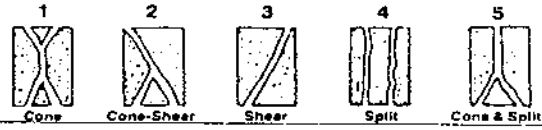
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 26: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
30 A	6-10	7-7	31	1.89 x 1.94	3.67	6,960	1900		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-07-03		14:10	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 27: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
31 A	6-10	7-7	31	1.96 x 1.94	3.80	7,680	2020		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

RECEIVED
JUL 17 2003

CONCRETE SUPPLIER:

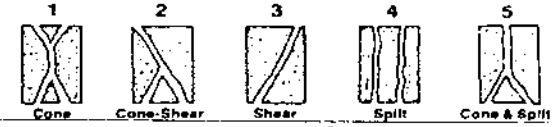
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE _____	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-07-03	Time Concrete Batched:	Time Concrete Sampled: 19:05	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 28: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
32 A	6-10	7-7	31	1.99 x 1.95	3.88	7,340	1890		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-08-03			M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable

Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 29: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
33 A	6-10	7-7	30	1.88 x 1.93	3.63	4,960	1370		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCuliers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-08-03	Time Concrete Batched:	Time Concrete Sampled: 7:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 30: WELL 1W-1, 24" Casing. .Cube appeared damaged.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
34 A	6-10	7-7	30	1.89 x 1.93	3.65	5,060	1390		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

CONCRETE

By _____ 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

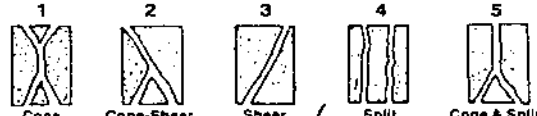
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-08-03	Time Concrete Batched:	Time Concrete Sampled: 11:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 31: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
35 A	6-10	7-7	30	1.98 x 1.96	3.88	8,560	2210		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By SL 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

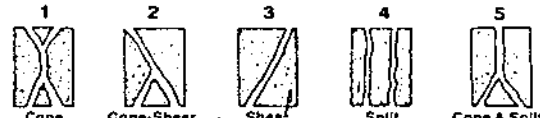
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-08-03	Time Concrete Batched:	Time Concrete Sampled: 15:45	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 32: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
36 A	6-10	7-7	30	1.93 x 1.98	3.80	14,560	3830		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCuliers

CONCRETE SUPPLIER:

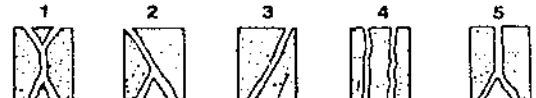
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-08-03	Time Concrete Batched:	Time Concrete Sampled: 19:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 33: WELL 1W-1, 24" Casing.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
37 A	6-10	7-7	30	1.98 x 1.98	3.92	21,600	5510		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

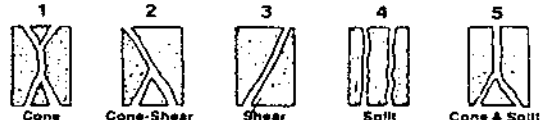
Date: 6-09-03	Time Concrete Batched:	Time Concrete Sampled: 4:05	Sampled By: M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No

Location of Concrete
STAGE 34: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
38 A	6-10	7-8	28	2.01 x 1.97	3.96	13,420	3390		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-09-03		9:50	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

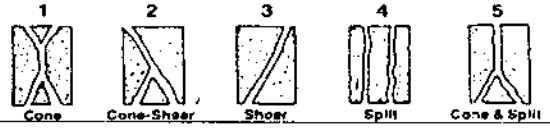
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 35: WELL 1W-1, 24" Casing.

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
39 A	6-10	7-8	28	1.96 x 1.98	3.89	16,650	4280		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/13
GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

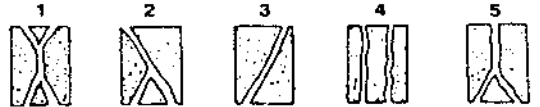
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-9-03	Time Concrete Batched:	Time Concrete Sampled: 13:30	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 36 - 24 INCH CASING.			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
40 A	7-1	7-7	28	1.93 x 1.96	3.78	3,380	890		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

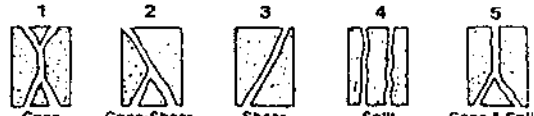
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-10-03	Time Concrete Batched:	Time Concrete Sampled: 8:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 37			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
41 A	7-1	7-8	28	1.96 x	3.90	7,740	1980		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodiette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE ———	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-18-03	Time Concrete Batched:	Time Concrete Sampled: 10:25	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 46			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
42 A	7-1	7-16	28	1.88 X 1.92	3.61	21,150	5860		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Sheer 3 Sheer 4 Split 5 Cone & Split

NCRETE

By SL 7/17/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

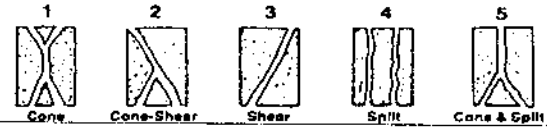
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE ———	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-19-03	Time Concrete Batched:	Time Concrete Sampled: 2:15	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 47			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
43 A	7-1	7-17	28	1.89 x 1.91	3.61	15,200	* 4210		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/17/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

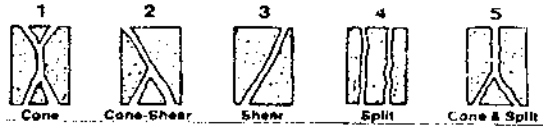
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE _____	Mix Type: [✓] Normal wt. [ ] Lightweight [ ] Mortar Mix [ ] Gunite [ ] Grout [ ] Other CEMENT TYPE: 12% [☒] Transit Mixed [ ] Pump Mix [ ] Other		

FIELD and LAB DATA	Date: 6-20-03	Time Concrete Batched:	Time Concrete Sampled: 5:15	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: [ ] Yes [☒] No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 [ ] Yes [ ] No [☒] Unknown [ ] Not Applicable		Tested to ASTM C-39 [☒] Yes [ ] No
	Location of Concrete STAGE 50			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
46 A	7-1	7-18	28	1.97 X 1.98	3.90	18,500	4740		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/21/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

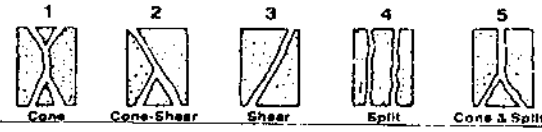
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-20-03	Time Concrete Batched:	Time Concrete Sampled: 12:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 51			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE DIAMETER (IN)	TEST SPECIMEN SIZE AREA (SQ IN)	TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
47 A	7-1	7-18	28	2.01 X 1.97	3.96	14,360	3630		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/24/07

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

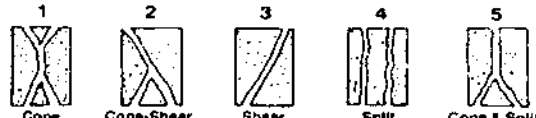
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-20-03	Time Concrete Batched:	Time Concrete Sampled: 15:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 52			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
48 A	7-1	7-18	28	2.02 X 2.03	4.10	27,080	6600		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/21/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

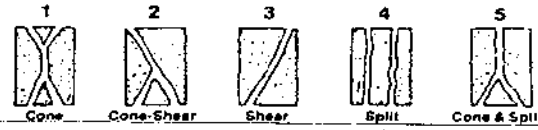
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE _____	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-20-03	Time Concrete Batched:	Time Concrete Sampled: 18:25	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 53			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
49 A	7-1	7-18	28	1.99 x 1.99	3.96	11,400	2880		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE _____

By _____ 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

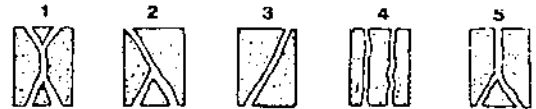
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-20-03	Time Concrete Batched:	Time Concrete Sampled: 22:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 54			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
50 A	7-1	7-18	28	2.02 X 2.01	4.06	27,230	6710		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-21-03		0:40	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

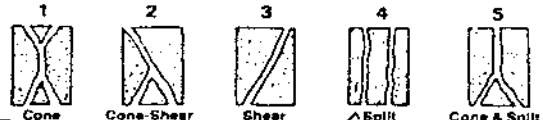
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 55

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
51 A	7-1	7-21	30	2.02 X 2.00	4.04	14,800	3660		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/22/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

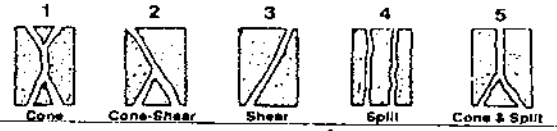
CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE ----------	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		
FIELD and LAB DATA	Date: 6-22-03	Time Concrete Batched:	Time Concrete Sampled: 7:15
	Sampled By: M.B.O.		
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):
	Weather Conditions:		
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.		Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)
	Wet Weight (P.C.F.):		
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable	Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 56		

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
52 A	7-1	7-21	29	2.02 X 2.02	4.08	12,040	2950		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



JNCRETE

By 7/22/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

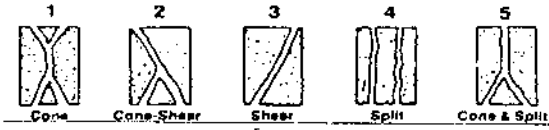
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-22-03	Time Concrete Batched:	Time Concrete Sampled: 17:00	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 57			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
53 A	7-1	7-21	29	2.02 X 2.02	4.08	22,620	5540		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/22/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

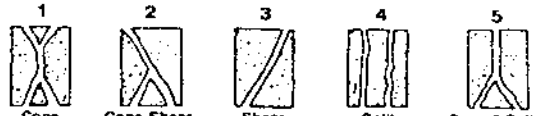
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-22-03	Time Concrete Batched:	Time Concrete Sampled: 20:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 58			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
54 A	7-1	7-21	29	2.02 X 1.98	4.00	10,920	2730		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/22/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

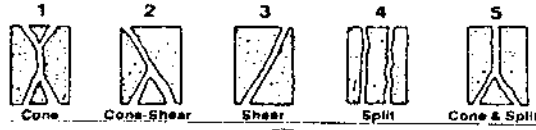
Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-23-03		23:25	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes Gal. To C. Y.		Extra Water Authorized By:
Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
Air Content (% by Vol.):	Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 59

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE DIAMETER (IN)	TEST SPECIMEN SIZE AREA (SQ IN)	TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
55 A	7-1	7-21	28	2.02 X 1.99	4.02	18,940	4710		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/22/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

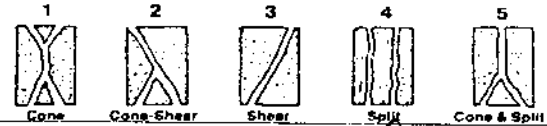
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE ———	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-24-03	Time Concrete Batched:	Time Concrete Sampled: 1:40	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 60			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
56 A	7-1	7-22	28	2.00 X 2.01	4.02	20,480	5090		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



ACRETE

By 7/27/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

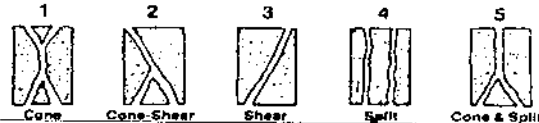
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-24-03	Time Concrete Batched:	Time Concrete Sampled: 6:55	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 61			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
57 A	7-1	7-22	28	1.98 X 1.99	3.94	30,270	7680		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/23/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

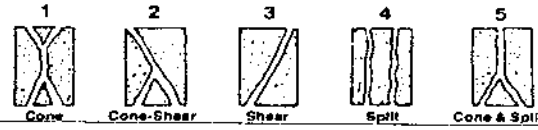
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-24-03	Time Concrete Batched:	Time Concrete Sampled: 17:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 62			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
58 A	7-1	7-22	28	1.98 X 2.01	3.98	15,560	3910		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

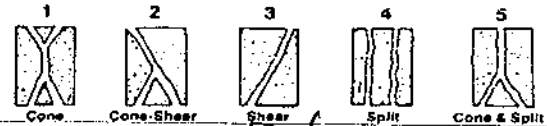
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-24-03	Time Concrete Batched:	Time Concrete Sampled: 23:10	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 63			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
59 A	7-1	7-22	28	2.01 X 2.00	4.02	21,070	5240		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/23/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

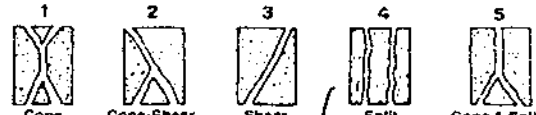
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-25-03	Time Concrete Batched:	Time Concrete Sampled: 1:55	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 64			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
60 A	7-1	7-23	28	1.98 X 2.01	3.98	28,260	7100		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/23/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE: _____

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-25-03		7:30	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

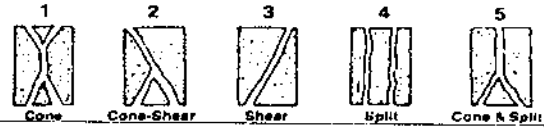
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 65

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
61 A	7-1	7-23	28	1.98 X 2.00	3.96	20,470	5170		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



JHCRETE

By 7/23/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

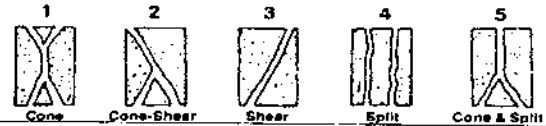
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-25-03	Time Concrete Batched:	Time Concrete Sampled: 12:35	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 66			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
62 A	7-1	7-23	28	2.01 X 2.00	4.02	24,150	6010		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/23/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-26-03	Time Concrete Batched:	Time Concrete Sampled: 0:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 67			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
63 A	7-1	7-24	28	2.01 x 2.00	4.02	21,130	5260		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CONCRETE

By _____ 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

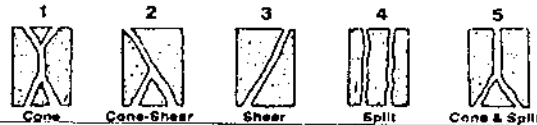
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-26-03	Time Concrete Batched:	Time Concrete Sampled: 7:10	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 68			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
64 A	7-1	7-24	28	2.00 x 2.01	4.02	26,860	6680		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-26-03		10:10	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

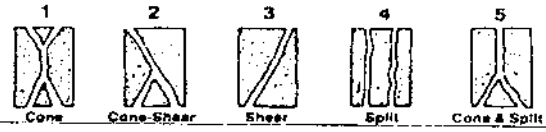
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 69

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
65 A	7-1	7-24	28	1.99 x 2.01	4.18	19,070	4560		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/11/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days

Slump (inches):

Air Content (percent):

MIX CODE: _____

Mix Type:
☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-26-03		10:10	M.B.O.
Concrete Truck No.:	**Ticket No.:**	**Size of Load (C.Y.):**	**Weather Conditions:**

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.

Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable

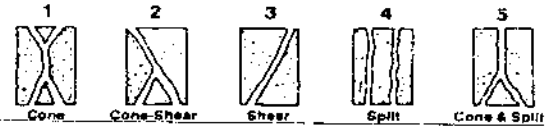
Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 70

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
66 A	7-1	7-24	28	1.98 x 1.99	3.94	23,630	6000		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

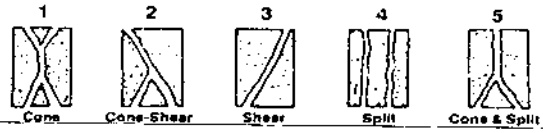
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-26-03	Time Concrete Batched:	Time Concrete Sampled: 18:30	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 71			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
67 A	7-1	7-24	28	2.00 x 2.00	4.00	16,350	4090		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By _____ 1/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-26-03		21:15	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

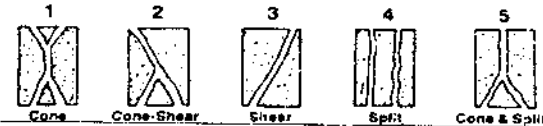
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 72

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
68 A	7-1	7-24	28	2.00 X 2.01	4.02	23,580	5870		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



NCRETE

By

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

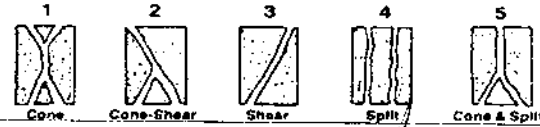
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-27-03	Time Concrete Batched:	Time Concrete Sampled: 1:05	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 73			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
69 A	7-1	7-25	28	2.00 X 1.98	3.96	15,540	3920		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

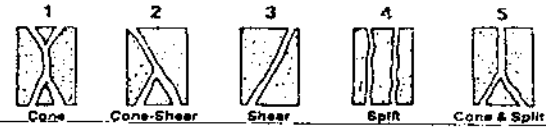
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-27-03	Time Concrete Batched:	Time Concrete Sampled: 7:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 74			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
70 A	7-1	7-25	28	1.99 X 2.01	4.00	26,060	6520		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



ONCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

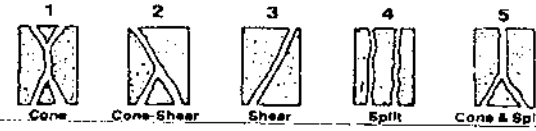
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-27-03	Time Concrete Batched:	Time Concrete Sampled: 9:40	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 75			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE DIAMETER (IN)	TEST SPECIMEN SIZE AREA (SQ IN)	TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
71 A	7-1	7-25	28	2.00 X 2.00	4.00	13,730	3430		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



JHCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
6-27-03		20:20	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

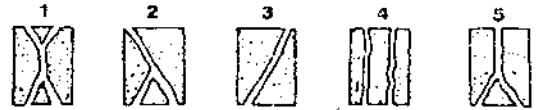
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 76

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
72 A	7-1	7-25	28	2.00 X 1.98	3.96	30,530	7710		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 7/24/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

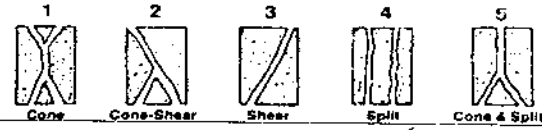
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 22:20	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 77			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
73 A	7-1	7-28	30	2.00 X 1.98	3.96	14,340	3620		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



ONCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

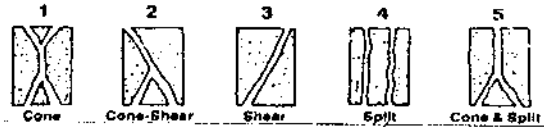
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 6:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 78			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
74 A	7-1	7-28	30	2.02 X 2.01	4.06	20,630	5080		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

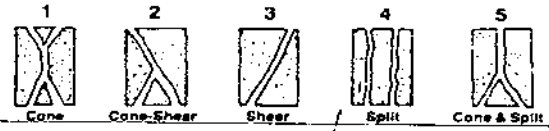
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 9:25	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 79			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
75 A	7-1	7-28	30	2.04 X 2.02	4.12	19,500	4730		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

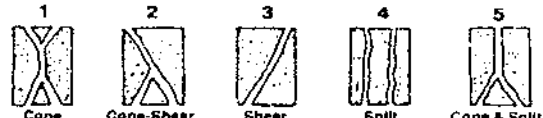
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 11:25	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 80			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
76 A	7-1	7-28	30	2.00 X 1.98	3.96	16,450	4150		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By SC 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 13:45	Sampled By: M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable

Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 81

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
77 A	7-1	7-28	30	2.01 X 1.99	4.00	20,790	5200		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

NCRETE

By SL 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

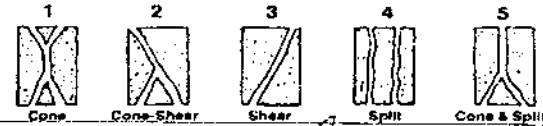
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-28-03	Time Concrete Batched:	Time Concrete Sampled: 16:15	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 82			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
78 A	7-1	7-28	28	1.97 X 1.99	3.92	25,200	6430		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By 7/2/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12% ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 6-30-03	Time Concrete Batched:	Time Concrete Sampled: 8:30	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 83			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
79 A	7-1	7-28	28	2.00 X 1.98	3.96	18,960	4790		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

CONCRETE

By 7/28/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

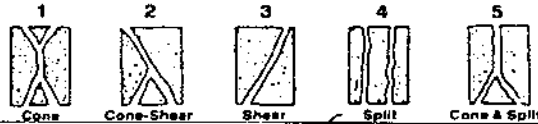
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-6-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 88			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
80 A	7-24	8-4	28	1.99 x 2.00	3.98	10,290	2590		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CRETE

By _____ 8/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

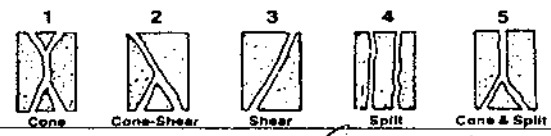
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-6-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 89			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
81 A	7-24	8-4	28	1.98 x 1.99	3.94	9,920	2520		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CRETE

By 8/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

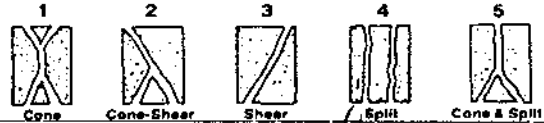
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-7-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 90			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
82 A	7-24	8-4	28	2.00 x 2.00	4.00	16,570	4140		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By _____ 8/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

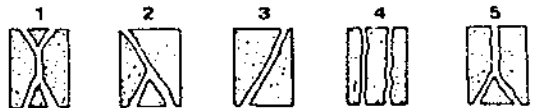
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-7-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 91			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
83 A	7-24	8-4	28	2.01 x 1.98	3.98	12,440	3130		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 2/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

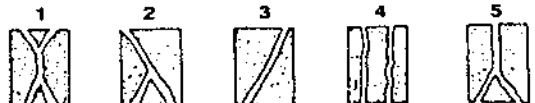
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-7-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 92			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
84 A	7-24	8-4	28	1.95 x 1.98	3.86	14,370	3720		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



CONCRETE

By 8/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

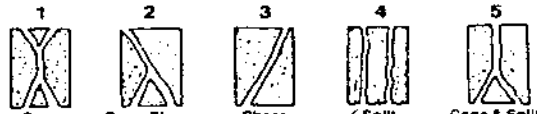
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-7-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 93			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
85 A	7-24	8-4	28	2.02 x 2.00	4.04	12,410	3070		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CONCRETE

By 7/16/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
7-7-03		9:50	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No — If Yes: Gal. To C. Y. — Extra Water Authorized By:

Slump (inches):	Air Temperature (° F)	Concrete Temperature (° F)	Wet Weight (P.C.F.):

Air Content (% by Vol.):

Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable

Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE 94

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
86 A	7-24	8-4	28	1.88 x 1.91	3.59	2,240	620		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS
BAD CUBE SAMPLE.

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CONCRETE

By 8/4/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-8-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 95			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
87 A	7-24	8-5	28	1.99 x 2.07	4.12	2,070	500		

RECEIVED AUG 0 8 2003

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

Note: Corner Cracked Off.

1 Cone 2 Cone-Shear 3 Shear 4 Split 5 Cone & Split

CRETE

By 8/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-8-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 96			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
88 A	7-24	8-5	28	2.01 x 1.85	3.72	2,600	700		

RECEIVED AUG 11 2003

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

CUBE WAS CRACKED.

CONCRETE

By 8/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

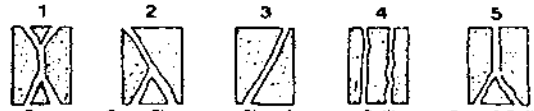
FIELD and LAB DATA	Date: 7-8-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE 97			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
89 A	7-24	8-5	28	2.02 X 1.87	3.78	2,560	680		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

CUBE WAS CRACKED.



CONCRETE

By 8/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

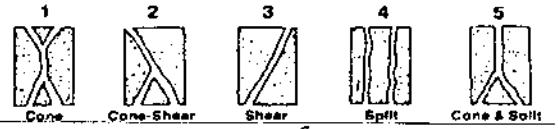
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other CEMENT TYPE: 12%		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 7-9-03	Time Concrete Batched:	Time Concrete Sampled: 9:50	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y.			Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☒ Unknown ☐ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE 98			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
90 A	7-24	8-6	28	1.95 X 2.05	4.00	3,880	970		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



UNCRETE

By 8/7/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

APPENDIX 3.7.2

DZMW SUMMARY

Appendix 3.7.2
Compressive Strength of Concrete Cylinders after 28 Days

Stage	Interval	Footage	Volume (bbls)	Bentonite	Neat
				Test Strength (psi)	Test Strength (psi)
1a	410 to Surface	410	200	830	
1b	410 to Surface	410	400		2110
3* (plug)	870 to 862	8	2.25		x
4	862 to 622	240	129		2060
5	622 to 215	407	152	1430	
6* (basket)	no tag	no tag	0.25		x
7* (basket)	no tag	no tag	1		x
8	1186 to 994.5	191.5	40		3010
9	994.5 to 948.75	45.75	13		3430
10	948.75 to 931.4	17.35	5.5	1180	
11	215 to Surface	215	69	830	

* : Cement cubes not collected.

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
9-4-03		8:50 P.M.	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

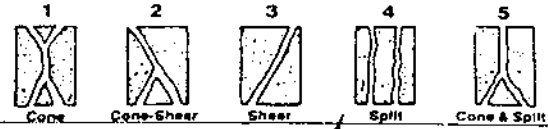
Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE No. 1A (2 x 2 Cubes)

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
94 A	9-18	10-8	34	1.99 x 1.99	3.96	3,290	830		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



AETS

By 10/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☑ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other
☑ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
9-4-03		9:20 P.M.	M.B.O.

Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

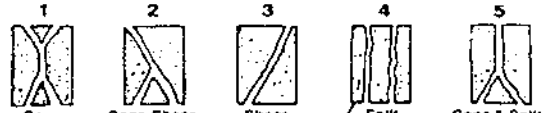
Location of Concrete
STAGE No. 1B (2 x 2 Cubes)

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
95 A	9-18	10-8	34	1.98 x 2.00	3.96	8,350	2110		

RECEIVED OCT 10 2003

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



By _____ 10/9/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

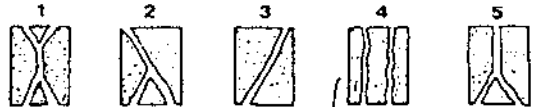
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 8-25-03	Time Concrete Batched:	Time Concrete Sampled: 8:15 A.M.	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete STAGE No. 1 (2 x 2 Cubes)			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
91 A	9-18	9-22	28	1.92 x 1.9	3.65	7,520	2060		

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



ASTM

By 9/17/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

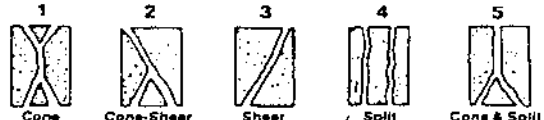
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 8-26-03	Time Concrete Batched:	Time Concrete Sampled: 6:20 P.M.	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE No. 3 (2 x 2 Cubes)			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
98 A	9-18	9-23	28	2.00 x 2.00	4.00	5,730	1430		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CRETE

By 9/27/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

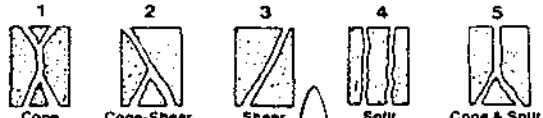
DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other ☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 8-25-03	Time Concrete Batched:	Time Concrete Sampled: 5:07 A.M.	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39: ☒ Yes ☐ No
	Location of Concrete: STAGE No. 2 (2 x 2 Cubes)			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
92 A	9-18	9-22	28	2.00 x 1.98	3.96	11,930	3010		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS



CRETE

By _____ 9/26/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA

Specified Strength: p.s.i. @ 28 days | Slump (inches): | Air Content (percent):

MIX CODE

Mix Type:
☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other
☒ Transit Mixed ☐ Pump Mix ☐ Other

FIELD and LAB DATA

Date:	Time Concrete Batched:	Time Concrete Sampled:	Sampled By:
8-25-03		11:30 P.M.	M.B.O.
Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:

Water Added At Job Site: ☐ Yes ☒ No If Yes Gal. To C. Y. | Extra Water Authorized By:

Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):

Air Content (% by Vol.): | Molded and Cured * to ASTM C-31: ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable | Tested to ASTM C-39: ☒ Yes ☐ No

Location of Concrete
STAGE No. 3 (2 x 2 Cubes)

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
93 A	9-18	9-22	28	2.00 x 1.98	3.96	13,590	3430		

REMARKS: * - Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory

CUBES MOLDED BY OTHERS

By 9/17/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

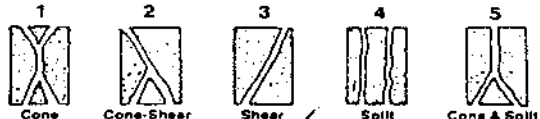
FIELD and LAB DATA	Date: 10-16-03	Time Concrete Batched:	Time Concrete Sampled:	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE No. 5			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
104 A	10-24	11-13	28	1.95 x 1.98	3.86	4.560	1180		

RECEIVED NOV 17 2003

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS



NCRETE

By _____ 11/17/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

Ardaman & Associates, Inc.
9970 Bavaria Road
Fort Myers, Florida 33913
(239) 768-6600
Fax (239) 768-0409

COMPRESSIVE STRENGTH OF CONCRETE CYLINDERS

PROJECT: NCWRF Deep Injection Wells
Goodlette Road
North Naples, Collier County, Florida

FILE NO.: 03-4047

CC. 2-Client

REPORTED TO: YOUNGQUIST BROTHERS, INC.
15465 Pine Ridge Road
Fort Myers, Florida 33908
ATTN: Mr. Ed McCullers

CONCRETE SUPPLIER:

DESIGN DATA	Specified Strength: p.s.i. @ 28 days	Slump (inches):	Air Content (percent):
MIX CODE	Mix Type: ☒ Normal wt. ☐ Lightweight ☐ Mortar Mix ☐ Gunite ☐ Grout ☐ Other		
	☒ Transit Mixed ☐ Pump Mix ☐ Other		

FIELD and LAB DATA	Date: 10-16-03	Time Concrete Batched:	Time Concrete Sampled:	Sampled By: M.B.O.
	Concrete Truck No.:	Ticket No.:	Size of Load (C.Y.):	Weather Conditions:
	Water Added At Job Site: ☐ Yes ☒ No	If Yes	Gal. To C. Y.	Extra Water Authorized By:
	Slump (inches):	Air Temperature (°F)	Concrete Temperature (°F)	Wet Weight (P.C.F.):
	Air Content (% by Vol.):	Molded and Cured * to ASTM C-31 ☐ Yes ☐ No ☐ Unknown ☒ Not Applicable		Tested to ASTM C-39 ☒ Yes ☐ No
	Location of Concrete: STAGE No. 6			

SET NO.	DATE RECEIVED IN LAB	DATE TESTED	AGE (DAYS)	TEST SPECIMEN SIZE		TOTAL LOAD (LBS)	TEST STRENGTH (PSI)	TYPE OF FRAC	SPECIMEN WEIGHT (AIR DRY-LBS)
				DIAMETER (IN)	AREA (SQ IN)				
105 A	10-24	11-13	28	1.96 x 1.99	3.90	3.220	830		

RECEIVED NOV 17 2003

REMARKS: * - **Concrete Test Specimens Cured in Accordance with ASTM C-31 After Being Received in Laboratory**

CUBES MOLDED BY OTHERS

ICRETE

By _____ 11/18/03

GARY A. DREW, P.E. - BRANCH MANAGER
LICENSE NO. 35504

APPENDIX 3.8

WELL CASING MILL CERTIFICATES FOR IW-1

APPENDIX 3.8.1

48-INCH O.D. CASING

Submittal Data

FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Road
Fort Myers, Fl. 33908
(239) 489-4444 Fax (239) 489-4545

Project: **Collier County NCWRF Injection Well Project**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: 1/9/03

Number of Copies: 10

Submittal Number: 4012-01-A

Specification Section Number: 4012

Item Submitted: 48" Mill Certification

New Submittal: X

Resubmittal: _____

Youngquist Brothers, Inc. Representative: Margaret Rios

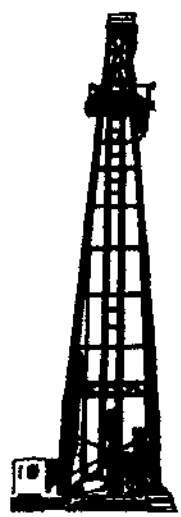
Transmittal Date: _____

- ☐ Approved
- ☐ Approved with Changes
- ☐ Rejected, Revise & Re-submit
- ☐ Not Reviewed

By: _____

Firm: _____

Date: _____



TELEPHONE: (416) 259-1113
FAX: (416) 259-6951

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1045791 ONTARIO LIMITED
259 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Nov. 7/02

CUSTOMER VASS

SPECIFICATION A139B

CUSTOMER'S P.O

DIA. & WALL 4800 X .375

PHOENIX REF.# 02-3825C

HYDROTEST 440 PSI FOR 10 SEC

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
C21991	2	72400	89600	25.4	91900	PM
1005330	4	54700	71300	26.4	79400	PM
C22024	6	54600	71100	25.8	74400	PM
A23173	12	50000	69700	27.3	72900	PM

LADLE ANALYSIS — CHEMICAL COMPOSITION

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
C21991	.21	.52	.005	.022	.23					.038
1005330	.22	1.01	.002	.020	.14					.024
C22024	.22	.90	.007	.012	.01					.024
A23173	.16	1.25	.009	.012	.02					.040

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

YOUNGQUIST BROTHERS, INC.
Has reviewed This Shop Drawing/Submittal
Your Section No. # 4012-01-A
Transmittal No. # ____ Date 11/9/03
Signature

Ship

—

*

Date Shipped 11-15

F.O.B. Point Naples, FL.

Sales Person S

Items 30

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING - PACKING LIST

Ref # 26989

Ref Date 11-12-02

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P. O. #

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
Call 24hrs Ahead
239-560-4502 - Jimmy Brantley

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via | Freight | Miles

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/L or D/L	Size and Type					
803.2	—	16	50·2	48" BPE·375W A139B Spiral Welded					
*	—	(4)	Truck Loads						
				(4) pcs to go on each Truck					

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

APPENDIX 3.8.2

34-INCH O.D. CASING

Submittal Data

FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Road
Fort Myers, Fl. 33908
(239) 489-4444 Fax (239) 489-4545

Project: **Collier County NCWRF Injection Well Project**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: **02/11/03**

Number of Copies: **6**

Submittal Number: **04014-01-A**

Specification Section Number: **04014**

Item Submitted: **34" Mill Certification**

New Submittal: **X**

Resubmittal: _____

Youngquist Brothers, Inc. Representative: Maryann Rios

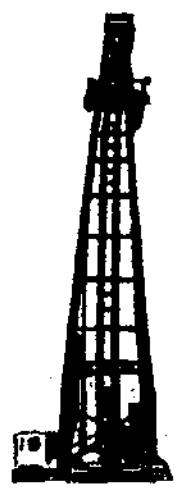
Transmittal Date: _____

- ☐ Approved
- ☐ Approved with Changes
- ☐ Rejected, Revise & Re-submit
- ☐ Not Reviewed

By: _____

Firm: _____

Date: _____



TELEPHONE: (416) 259-1113
FAX: (416) 259-8951

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1046791 ONTARIO LIMITED
289 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4V4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Dec.7/02 CUSTOMER

SPECIFICATION A1398 CUSTOMER'S P.O. 6921

DIA. & WALL 34" O.D. X .375 WT PHOENIX REF.# 02-38258

HYDROTEST 620 PSI FOR 10 Sec.

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
20204	1	57400	71000	26.5	74700	PM
20149	3	55400	71400	25.4	75100	PM
S00512	17	54300	70600	26.2	74200	PM
C09188	20	60400	73100	26.3	77200	PM
81893	22	56300	78200	26.0	81700	PM
81906	25	58300	77600	26.4	81200	PM

LADLE ANALYSIS CHEMICAL COMPOSITION

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
20204	.212	.814	.002	.007	.02					.044
20149	.198	.806	.002	.007	.026					.040
S00512	.05	.82	.006	.007	.020					.030
C09188	.04	1.28	.007	.013	.020					.034
81893	.064	1.05	.003	.012	.078					.033
81906	.095	1.08	.009	.014	.057					.051

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

YOUNGQUIST BROTHERS, INC.
Has Reviewed This Shop Drawing/Submittal
YBI/Section No. 4014-01-A
Transmittal No. Date: 2-11-03
Signature

TELEPHONE: (416) 259-1113
FAX: (416) 259-6961

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1540791 ONTARIO LIMITED
288 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Dec.5/02

CUSTOMER

SPECIFICATION A1398

CUSTOMER'S P.O

DIA. & WALL 34" O.D. X .375 WT

PHOENIX REF.# 02-3796C

HYDROTEST 620 PSI FOR 10 Sec.

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
20204	90	57400	70900	26.5	74300	PM
3699922	94	49300	68700	28.0	72500	PM

LADLE ANALYSIS **CHEMICAL COMPOSITION**

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
20204	.212	.814	.002	.007	.02					.044
3699922	.15	.76	.007	.009	.008					.041

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

VASS PIPE & STEEL CO., INC.

A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET · P.O. BOX 583 · MINEOLA · NY 11501

TOLL FREE PHONE:800-272-8277PHONE:516-741-8398FAX:516-741-8210

DATE: 02/10/03

ATTN.: Mary Beth

FROM: JT

COMPANY: Youngquist

FAX #: 239-489-4545

PIPE TALLY / PACKING SLIP/ MTRs

P.O. #: 218038-01 RELEASE # 27775

TOTAL FOOTAGE	DESCRIPTION	NO. OF PCS			HEAT #
451.8 FT	34" BPE .375 w A134B spiral wld	9 Pcs	x 50.2	FT	

Shipper:

LOAD # 1

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Minneola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING / PACKING LIST

Bol # 27775 PP

Lot Date 2-6-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. # 218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via KaT | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Special Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		6	50.2	34 BPE .375w A139b Spiral	✓				

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 2

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING - PACKING LIST

Ref # 27775 PP

Ref Date 2-6-03

Released by

Freight [X] Prepaid [ ] Collect

Invoice Date | P.O. # 218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length	Size and Type					
		3 4	50.2	34 BPE .375w A139b Spiral	✓				

Special Instructions:

Received in good condition by _____ (PRINT NAME) _____ (SIGNATURE) _____ (DATE)

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

FEB. 10. 2003 4:00PM VASS PIPE NO. 0421 P. 6

Shipper

*

LOAD #

Date Shipped 2-7 | F.O.B. Point Naples, Fl.

Sales Person S | Terms 30

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8177
Fax 516 741 8210

BILL OF LADING PACKING LIST

Bol # 27775

Bol Date 2-6-03

Released by

Freight [X] Prepaid [ ] Collect

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Invoice Date | P.O.#218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via K-T | Freight | Miles

Quantity	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type	B/L #	Ship Name	Specific Instructions	Unit Price	Total
451.8	—	9 ~~10~~	50.2	34' BPE .375W A139B Spiralweld	✓				
*	—	(2)		Truck Loads					
				(6) pcs to go on	} Load# 1				
			3	~~(4)~~ pcs to go on	} Load# 2				
					—				

Special instructions:

Received in good condition by ______ PRINT NAME ______ SIGNATURE ______ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

TELEPHONE: (416) 265-1113
FAX: (416) 265-6961

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1546791 ONTARIO LIMITED
288 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4V4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE June 4/01

CUSTOMER

SPECIFICATION A1398

CUSTOMER'S P.O. 6631

DIA. & WALL 34" O.D. X .375 WT

PHOENIX REF.# 01-3696

HYDROTEST 620 PSI FOR 1 Min.

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
2844T	9	53400	78600	37.5	81900	PM
2605T	11	52600	78300	37.5	81700	PM
2604T	18	51500	75500	37.5	79100	PM
2840T	23	50800	74600	37.5	77900	PM
2842T	29	53100	78700	37.5	81900	PM

LADLE ANALYSIS **CHEMICAL COMPOSITION**

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
2844T	.18	.87	.004	.007	.23	.02	.01	.01	.01	.042
2605T	.17	.86	.005	.011	.23	.01	.01	.01	.01	.035
2604T	.17	.83	.006	.011	.22	.01	.01	.01	.01	.036
2840T	.18	.80	.003	.007	.21	.01	.01	.01	.01	.033
2842T	.18	.86	.004	.006	.23	.02	.01	.01	.01	.035

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

TELEPHONE: (416) 259-1113
FAX: (416) [illegible]

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF [illegible] ONTARIO LIMITED
299 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE July 12/02

CUSTOMER

SPECIFICATION A1398

CUSTOMER'S P.O. 6871

DIA. & WALL 34" O.D. X .375 WT

PHOENIX REF.# 02-3796C

HYDROTEST 620 Psi FOR 10 Sec

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
T033520	41	57700	73900	29.0	73400	PM
T013085	44	49400	69600	29.0	73100	PM
T022957	53	51300	69600	31.0	73300	PM
T013114	56	51600	71300	32.0	74400	PM
T023045	59	55400	73100	31.0	76700	PM

LADLE ANALYSIS **CHEMICAL COMPOSITION**

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
T033620	.20	.68	.029	.012	.22					
T013085	.17	.71	.025	.012	.22					
T022957	.15	.70	.030	.015	.19					
T013114	.17	.74	.029	.013	.25					
T023045	.17	.70	.021	.016	.25					

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

TELEPHONE: (416) 259-1113
FAX: (416) [illegible]

CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF [illegible] ONTARIO LIMITED
269 HORNER AVENUE
ETOBICOKE, ONTARIO,
CANADA
M8Z 4Y4

LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE July 12/02

CUSTOMER [illegible]

SPECIFICATION A139B

CUSTOMER'S P.O 6871

DIA. & WALL 34" O.D. X .375 WT

PHOENIX REF.# 02-3796C

HYDROTEST 620 PSI FOR 10 Sec.

PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST YIELD	TENSILE	% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
T023203	62	49600	72300	31.0	75600	PM
T022945	71	49400	68700	30.0	72100	PM
T033300	75	54200	71600	28.0	74900	PM

LADLE ANALYSIS **CHEMICAL COMPOSITION**

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
T023203	.18	.70	.029	.022	.20					
T022945	.19	.77	.027	.020	.24					
T033300	.17	.77	.025	.014	.20					

The material listed on this report has been tested in accordance with the specification shown above.

Authorized Approval

APPENDIX 3.8.3

24-INCH O.D. CASING

Submittal Data

FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Road
Fort Myers, Fl. 33908
(239) 489-4444 Fax (239) 489-4545

Project: **Collier County NCWRF Injection Well Project**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: 03/12/03

Number of Copies: 5

Submittal Number: 4015-01-A

Specification Section Number: 4015

Item Submitted: 24" Mill Cert.

New Submittal: X

Resubmittal:

Youngquist Brothers, Inc. Representative: Margaret Rios

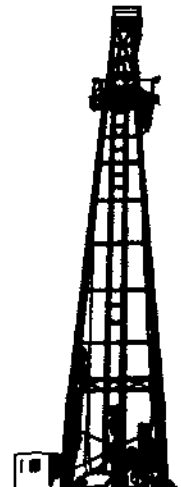
Transmittal Date:

- ☐ Approved
- ☐ Approved with Changes
- ☐ Rejected, Revise & Re-submit
- ☐ Not Reviewed

By:

Firm:

Date:



S H I P P I N G T A L L Y

BOL Number: 52152 Order No: 18142 Ship Date: 03/03/2003 Truck # 13

LF	LF	LF	LF	LF
39.6	40.2	39.4	39.8	38.8
40.5	41.9	41.4	0.0	0.0

YOUNGQUIST BROTHERS, INC.
Reviewed This Shop Drawing/Submittal
Section No. 4015-01-A
Transmittal No. _____ Date: 3/12/03
Signature _____

TOTAL FOOTAGE ---> 321.6 <=== PIECES 8 Pipe I.D. 1

O.D. SIZE 24" X .500W SPEC:
GRADE: x42 MFG: uss
CUSTOMER: VASS PIPE & STEEL CO INC PO#: 1333

S H I P P I N G T A L L Y

BOL Number: 52084 Order No: 18142 Ship Date: 02/28/2003 Truck # 9810

LF	LF	LF	LF	LF
42.0	41.0	38.7	38.6	40.9
40.6	40.6	41.7	41.7	0.0

TOTAL FOOTAGE ===> 365.8 <=== PIECES 9 Pipe ID 1

O.D. SIZE 24" X .500W SPEC:

GRADE: X42 MFG: USS

CUSTOMER: VASS PIPE & STEEL CO INC PO#: 13332

S H I P P I N G T A L L Y

BOL Number: 52086 Order No: 18142 Ship Date: 02/28/2003 Truck # 223

LF	LF	LF	LF	LF
41.2	42.1	38.1	41.9	36.8
38.3	42.7	42.4	43.2	0.0

TOTAL FOOTAGE ===> 366.7 <=== PIECES 9 Pipe ID 1

D. SIZE 24" X .500W

GRADE: x42 MFG: uss SPEC:

CUSTOMER: VASS PIPE & STEEL CO INC

PO#: 13332

S H I P P I N G T A L L Y

BOL Number: 52106 Order No: 18142 Ship Date: 02/28/2003 Truck # 276

LF	LF	LF	LF	LF
41.3	39.7	41.0	42.0	40.4
37.9	40.6	42.1	42.4	0.0

TOTAL FOOTAGE ===> 367.4 <=== PIECES 9 Pipe ID 1

D. SIZE 24" X .500W SPEC:

GRADE: x42 MFG: usa

CUSTOMER: VASS PIPE & STEEL CO INC PO#: 13332

S H I P P I N G T A L L Y

BOL Number: 52108 Order No: 18142 Ship Date: 02/28/2003 Truck # 31

LF	LF	LF	LF	LF
40.5	37.0	41.1	43.3	43.0
40.4	41.7	41.9	42.7	0.0

Seq-No	Memo	Item-no	Tally-date
1	BLASTED ONLY	24000500	02/26/2003

TOTAL FOOTAGE ===> 371.6 <=== PIECES 9 Pipe ID 1

D. SIZE 24" X .500W

GRADE: x42 MFG: uss SPEC:

CUSTOMER: VASS PIPE & STEEL CO INC PO#: 13332

S H I P P I N G T A L L Y

BOL Number: 52074 Order No: 18142 Ship Date: 02/27/2003 Truck # 12

LF	LF	LF	LF	LF
42.7	41.4	42.5	40.1	42.8
41.5	36.2	43.7	41.6	0.0

TOTAL FOOTAGE ===> 372.5 <=== PIECES 9 Pipe ID 1

O.D. SIZE 24" X .500W SPEC.

GRADE: X42 MFG: USS

CUSTOMER: VASS PIPE & STEEL CO INC PO#: 13332

S H I P P I N G T A L L Y

BOL Number: 52066 Order No: 18142 Ship Date: 02/27/2003 Truck # 19055

LF	LF	LF	LF	LF
42.2	41.1	43.1	42.9	43.2
42.4	41.6	42.4	36.6	0.0

TOTAL FOOTAGE ===> 375.5 <=== PIECES 9 Pipe ID 1

.D. SIZE 24" X .500W SPEC:

GRADE: X42 MFG: USS

CUSTOMER: VASS PIPE & STEEL CO INC PO#: 13332

Shipper:

LOAD # 1

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.
158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING - PACKING LIST

Ref # 27926

Ref Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Base | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		9	DR	24 BPE .500w API5lb Smls					

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 2

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.
158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Ref # 27926

Ref Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via Coast | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		9	DR	24 BPE .500w API5lb Smls					

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 3

Date Shipped	F.O.B. Point
Sales Person	Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Ref # 27926

Ref Date 2-21-03

Released by

Freight [X] Prepaid [ ] Collect

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via Somerset | Freight | Miles

Weston Tr.

JESSIE

Quantity	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type	B/L #	Ship Name	Specific Instructions	Unit Price	Total
		9	DR	24 BPE .500w API5lb Smls					

Special Instructions:

Received in good condition by ______ PRINT NAME ______ SIGNATURE ______ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 4

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Ref # 27926

Ref Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via | Freight | Miles

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		9	DR	24 BPE .500w API5lb Smls					

R 4 11 1 OF 2

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 5

Date Shipped | F.O.B. Point

Sales Person | Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Ref # 27926

Ref Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		9	DR	24 BPE .500w API5lb Smls					

TRANS PORTATION SUC,

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 6

Date Shipped

F.O.B. Point

Sales Person

Terms

VASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Ref # **27926**

Ref Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via | Freight | Miles

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Quantity	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type	B/L #	Ship Name	Specific Instructions	Unit Price	Total
		9	DR	24 BPE .500w API5lb Smls					

DESCRIPTION OF PIPE TO BE RELEASED

IN TRANSIT 1 OF 2

Special Instructions:

Received in good condition by ______ PRINT NAME ______ SIGNATURE ______ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

Shipper:

LOAD # 7

Date Shipped | F.O.B. Point

Sales Person | Terms

YASS PIPE & STEEL CO., INC.

158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Bol # 27926

Bol Date 2-21-03

Released by

Freight ☒ Prepaid ☐ Collect

Invoice Date | P.O. #218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via Truck | Freight | Miles

ISSUED FOR ACCOUNT OF YASS PIPE & STEEL AS SPECIFIED

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
		8	DR	24 BPE .500w API5lb Smls					

Special Instructions:

Received in good condition by _____ PRINT NAME _____ SIGNATURE _____ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

TIME: 11:57:16

MILL ORDER/ITEM NO	SHIPPERS NO	P.O. NUMBER	VEHICLE ID
D105781 01			

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
88908	88908	USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	DIAM (SIZE)
	TENSILE		IN	MIN: 42000 MAX: 65000		MIN: 70000 MAX: 110000	MAX:	MIN:	MIN: MAX:		
A43197 2G3045	STRIP/T/B	AR	1.500	48900	.50	76500	0.64	30.0 45.0	MAX: 100.0 B 80.0	1580 1580	5 5
		XX	END OF DATA THIS SHEET			XX					

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO	CE*
																		MAX
A43197	HEAT		.19	.06	.008	.006	.25	.02	.03	.04	.02	.031		.001			.001	.43
A43197 2G3045	PROD		.19	.08	.006	.008	.26	.02	.03	.05	.02	.027		.001			.001	.38
A43197 2G3045	PROD		.19	.07	.006	.007	.24	.02	.03	.05	.02	.029		.001			.001	.39
		XX	END OF DATA THIS SHEET	XX														.38

*CE IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

TIME: 11:57:16

MILL ORDER/ITEM NO.	SHIPPERS NO.	PO NUMBER
DI05781 01		

MATERIAL COND. AS ROLLED

O.D. 24.000(609.600) in (mm) WALL 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A43197 2G3045	OK				T	B	+ 32	FULL	AR	101	95	94	96	70	70	70	70
			XX END OF DATA		THIS SHEET		XX										

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID L X L/T T0.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD OD/ID L L/T
END AREA INSPECTION (PLAIN END)		MPI UT
SPECIAL END AREA (SEA) INSP.		MPI UT
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF S. ANADELL - MANAGER, Q.A.

DATE 07/24/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/24/02
TIME: 11:57:12

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.	
010578101		01P1004633		

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED — OD: 24.000(609.600) in (mm) — WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	SWELL (SEC)
			IN	MIN: 42000 MAX: 65000		MIN: 70000 MAX: 110000	MAX:	MIN: 30.0	MIN: MAX: 100.0	1500	5
A43199 2G3044	STRIP/T/B	AR	1.500	46000	.50	75500	0.61	43.0	B 80.0	1580	5
		**	END OF DATA THIS SHEET **								

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	D	TI	CB	CO				CE*
																					MAX
A43199	HEAT	.19	1.05	.008	.006	.23	.01	.02	.06	.01	.035		.001			.001					.43
A43199 2G3044	PROD	.18	1.07	.006	.007	.22	.01	.01	.07	.02	.033		.002			.001					.38
A43199 2G3044	PROD	.18	1.08	.006	.007	.22	.01	.01	.07	.02	.034		.002			.001					.38
		** END OF DATA THIS SHEET **																			

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): $CE = C + (MN/6) + (CR+MO+V)/5 + (NI+CU)/15$

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/24/02
TIME: 11:57:12

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	
01057811 01		01P1004633	

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP DEG F	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
A43199 2G3044	OK		** END OF DATA THIS SHEET **		T	B	+ 32	FULL	AR	138	115	140	131	100	70	100	90

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X UT ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/24/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE 2 - IN ACCORDANCE WITH ISO 10474/EN10204/BSEN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID
DI05736 01		01PI002873	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN.	MIN:		
				MAX: 65000		MAX: 110000			MAX: 100.0	1500	5
A24071 2A3118	STRIP/T/8	AR	1.500	48900	.50	78500	0.62	43.0	B 83.0	1580	5
		**	END OF DATA THIS	SHEET	**						

LEGEND: L - LONGITUDINAL U - UPSET T - TRANSVERSE N - NORMALIZED QT - QUENCHED & TEMPERED SR - STRESS RELIEVED AR - AS ROLLED B - BODY W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
A24071	HEAT		.20	1.05	.008	.002	.24	.04	.02	.05	.01	.036		.005			.001					MAX .43
A24071 2A3118	PROD		.16	1.06	.007	.005	.22	.04	.02	.05	.01	.033		.001			.001					.39
A24071 2A3118	PROD		.16	1.04	.007	.006	.22	.04	.02	.06	.01	.035		.001			.001					.36
			**	END OF DATA THIS			SHEET	**														.35

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
D105736 01		01PI002873

MATERIAL COND: AS ROLLED

OD: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS				% SHEAR			
										1	2	3	AVG	1	2	3	AVG
							DEG F										
A2407(2A3118	OK		XX END OF DATA THIS SHEE		T	B	+ 32 XX	FULL	AR	118	138	144	133	70	100	100	90

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ___ L X L/T ___ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ___ OD/ID ___ L ___ L/T ___
SPECIAL END AREA (SEA) INSP.		MPI ___ UT ___
FULL LENGTH DRIFT		MPI ___ UT ___
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 08/23/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID.
DI05736 01		01PI002873	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	CHARPY (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN	MIN:		
A24072 2A3119	STRIP/T/B	AR	1.500	MAX: 65000		MAX: 110000		30.0	MAX: 100.0	1580	S
		**	END OF DATA THIS	44800	.50	75000	0.60	41.0	B 82.7	1580	S
			SHEET		**						

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO	C.E.*
A24072	HEAT	18	106	007	002	25	04	06	04	02	030		004			001		MAX
A24072 2A3119	PROD	15	107	005	005	22	04	06	04	02	031		001			001		.43
A24072 2A3119	PROD	15	107	005	005	22	04	06	04	02	031		001			001		.37
		**	END OF DATA THIS SHEET **															.35
																		.35

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
0I05736 01		01PI002873

MATERIAL COND: AS ROLLED

O.D. 24.000(609.600) in (mm) WALL 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	VAN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING												
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A24072 2A3119	OK		XX END OF DATA THIS SHEET XX		T	B	+ 32	FULL	AR	148	125	125	133	100	70	70	80

LEGEND L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 08/23/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE 3 - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPER'S NO.	P.O. NUMBER	VEHICLE ID.
DI05736 01		01PI002873	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	BRINELL/ECD
	TENSILE		IN	MIN: 42000		MIN: 70000	MAX:	MIN	MIN:		
				MAX: 65000		MAX: 110000			MAX: 100.0		
A40261 2A3121	STRIP/T/B	AR	1.500	46400	.50	76000	0.61	30.0		1580	S
		**	END OF DATA THIS SHEET **					47.0	B 83.7	1580	S

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE.*
A40261	HEAT		.19	1.06	.007	.008	.24	.05	.02	.06	.01	.037		.008			.002					MAX .43
A40261 2A3121	PROD		.19	1.10	.006	.009	.22	.05	.02	.06	.01	.036		.001			.001					.38
A40261 2A3121	PROD		.16	1.06	.005	.010	.21	.04	.02	.06	.01	.034		.001			.001					.39
			** END OF DATA THIS SHEET **																			.36

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE 3 - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05736 01		01PI002873

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING													
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS				% SHEAR				
							DEG F			1	2	3	AVG	1	2	3	AVG
A40261 2A3121	OK			xx END OF DATA	T	B	+ 32 xx	FULL	AR	112	112	106	110	70	70	60	66
							THIS SHEET										

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 08/23/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.	
DI05736 01		01PI002873		

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
88908		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED — O.D.: 24.000(609.600) in (mm) — WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % ON 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	SWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN:	MIN:		
A40262 2A3120	STRIP/T/B	AR	1.500	MAX: 65000		MAX: 110000		30.0	MAX: 100.8	1500	5
				45700	.50	75000	0.61	40.0	B 82.3	1500	5
		**	END OF DATA THIS SHEET **								

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				C.E.*
A40262	HEAT		18	1.12	005	007	21	06	03	07	01	037		001			001					MAX
A40262 2A3120	PROD		19	1.10	005	010	22	06	02	07	01	033		001			001					.43
A40262 2A3120	PROD		15	1.08	005	009	21	06	03	06	01	036		001			001					.39
			** END OF DATA THIS SHEET **																			.39
																						.35

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 08/23/02
TIME: 08:37:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05736 01		01PI002873

MATERIAL COND: AS ROLLED

O.D.: 21.000(609.600) in [mm] WALL: 0.500 (12.700) in [mm]

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND	FT-LBS				% SHEAR			
							DEG F			1	2	3	AVG	1	2	3	AVG
A40262 2A3120	OK				T	B	+ 32	FULL	AR	99	78	88	88	50	40	50	46
			** END OF DATA		THIS SHEET		**										

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. AMADELL - MANAGER, Q.A.

DATE 08/23/02

1 = 27 pages
FAX # 2 = 16 pages ✓
Total = 43 pages ✓

VASS PIPE & STEEL CO., INC.

A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET · P.O. BOX 583 · MINEOLA · NY 11501
TOLL FREE PHONE # 800-272-8277 PHONE # 516-741-8398 FAX516-741-8210

TO: Mary Beth	DATE: 03/04/03
Co.: Youngquist Bros.	FROM: JT
PHONE #:	SUBJECT: Mtrs, Tally Sheets & Bill of Lading
FAX #: 239-489-4545	No.OF PAGES: 27+16 = 43 pages

Enclosed please find Mtrs, Tally sheets & Bill of Ladings for your PO # 218038-01 which has our ref. # 27926 WO CI)

Regards

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.
DI057B1 01		—	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API SL-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B
ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG
MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % ON 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN	MIN:		
				MAX: 65000		MAX: 110000			MAX: 100.0	1580	5
A41439 2D3063	STRIP/T/B	AR	1.500	48000	.50	74000	0.66	30.0			
		XX	END OF DATA THIS SHEET XX					43.0	B 84.3	1580	5

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE.*
A41439	HEAT		.19	1.05	.009	.008	.24	.03	.03	.06	.01	.035		.001			.001					MAX .43
A41439 2D3063	PROD		.19	1.07	.008	.011	.22	.03	.03	.07	.02	.032		.001			.001					.38
A41439 2D3063	PROD		.21	1.08	.009	.013	.22	.03	.03	.08	.02	.032		.001			.001					.39
				XX END OF DATA THIS SHEET XX																		.42

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05781 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN. COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A41439 203063	OK		** END OF DATA THIS SHEET **		T	B	+ 32	FULL	AR	91	94	87	90	60	60	60	60

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/24/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/27/02
TIME: 07:06:04

SOLD ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.
0105781 01			

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED

O.D: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI MIN: / MAX:	EXT %	TENSILE PSI MIN: / MAX:	Y/T MAX:	ELONG % (IN 2") MIN:	HARDNESS SCALE: HRB MIN: / MAX:	MIN HYDRO PSI	SWELL (SEC)
	TENSILE		IN	42000 / 65000		70000 / 110000					
A43195 2G3069	STRIP/T/B	AR	1.500	45600	.50	74500	0.61	30.0	- / 100.0	1580	- 5
		**	END OF DATA THIS SHEET			**		44.0	B 83.5	1580	5

LEGEND. L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE.*
A43195	HEAT		.19	1.09	.005	.003	.24	.02	.02	.04	.01	.032		.002			.001					MAX .43
A43195 2G3069	PROD		.19	1.04	.004	.003	.22	.02	.02	.04	.01	.031		.001			.001					.39
A43195 2G3069	PROD		.20	1.04	.004	.003	.23	.02	.02	.04	.01	.031		.001			.001					.38
			** END OF DATA THIS SHEET **																			.39

*CE. IS BASED ON THE FOLLOWING EQUATION(S) $CE = C + (MN/6) + (CR+MO+V)/5 + (NI+CU)/15$

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

DATE: 07/27/02
TIME: 07:06:04

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05781 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					O/R	TEST LOC.	TEMP DEG F	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
A13195 2G3069	OK			** END OF DATA THIS SHEET **	T	B	+ 32	FULL	AR	113	92	102	102	80	40	50	57

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - YIELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X UT ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ UT ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/27/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.
DI05781 01			

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*998 ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED | O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN: 30.0	MIN:	1580	5
				MAX: 65000		MAX: 110000			MAX: 100.0		
A42358 2G3067	STRIP/T/B	AR	1.500	45400	.50	72500	0.63	44.0	B 85.2	1580	5
		**	END OF DATA THIS	SHEET	**						

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				C.E.*
																						MAX
A42358	HEAT		.18	1.07	.008	.008	.24	.03	.02	.04	.01	.040		.001			.001					.43
A42358 2G3067	PROD		.18	1.05	.007	.009	.23	.03	.02	.04	.01	.034		.001			.001					.38
A42358 2G3067	PROD		.18	1.06	.007	.010	.24	.03	.02	.05	.01	.032		.001			.001					.37
			** END OF DATA THIS SHEET **																			.38

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O NUMBER
DI05781 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					ORI	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A42358 2G3067	OK		** END OF DATA THIS SHEET **							*NOTE A							

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ L/T ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
*NOTE A SEE ATTACHED REPORT FOR IMPACT RESULTS.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/30/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.	
DI05781 01				

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED | O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
				MIN: 42000		MIN: 70000	MAX:	MIN:	MIN:		
				MAX: 65000		MAX: 110000		30.0	MAX: 100.0	1580	5
A43196 2G3066	STRIP/T/B	AR	1.500	44700	.50	76000	0.59	43.0	B 83.7	1580	5
		**	END OF DATA THIS	SHEET **							

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				C.E.*
A43196	HEAT		.19	1.06	.009	.003	.24	.02	.02	.04	.01	.027		.001			.001					MAX .43
A43196 2G3066	PROD		.18	1.07	.007	.005	.23	.02	.02	.04	.01	.025		.001			.001					.38
A43196 2G3066	PROD		.19	1.05	.007	.005	.22	.02	.02	.04	.01	.026		.001			.001					.38
			**	END OF DATA THIS			SHEET	**														.38

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARG" 'ERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05781 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A43196 2G3066	OK		** END OF DATA	THIS SHEET **						*NOTE B							

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X UT ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
*NOTE B SEE ATTACHED REPORT FOR IMPACT RESULTS.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/30/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.
DI05781 01			

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B
ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG
MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN:	MIN:		
A43198 2G3068	STRIP/T/B	AR	1.500	MAX: 65000		MAX: 110000		30.0	MAX: 100.0	1580	5
		**	END OF DATA THIS	51000	.50	76000	0.67	40.0	B 83.1	1580	5
				SHEET	**						

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				C.E.*
A43198	HEAT																					MAX
A43198 2G3068	PROD		.18	1.05	.008	.006	.24	.01	.03	.06	.02	.034		.001			.001					.43
A43198 2G3068	PROD		.18	1.05	.006	.010	.23	.01	.03	.06	.02	.032		.001			.001					.38
			.18	1.06	.007	.008	.23	.01	.03	.06	.02	.031		.001			.001					.38
			**	END OF DATA THIS SHEET **																		.38

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EM10204/DIN50049)

DATE: 07/30/02
TIME: 10:37:33

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05781 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS				% SHEAR			
										1	2	3	AVG	1	2	3	AVG
							DEG F										
A43198 2G3068	OK		** END OF DATA		THIS SHEET		**			*NOTE C							

LEGEND: L - LONGITUDINAL T - TRANSVERSE S - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
*NOTE C SEE ATTACHED REPORT FOR IMPACT RESULTS.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/30/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/24/02
TIME: 12:19:44

MILL ORDER/ITEM NO.	SHIPPERS NO	P.O. NUMBER	VEHICLE ID.	
DI05781 01				

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED — O.D.: 24.000(609.600) in (mm) — WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % ON 2"	HARDNESS SCALE: HRB	BHN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN:	MIN:		
				MAX: 65000		MAX: 110000			MAX:		
845662 2G3065	STRIP/T/B	AR	1.500	43300	.50	72000	0.60	30.0 / 47.0	100.0 / B 83.0	1580 / 1580	5 / 5
		**	END OF DATA THIS SHEET **								

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
																						MAX
845662	HEAT		.19	1.04	.009	.009	.22	.01	.03	.07	.02	.031		.001			.001					.43
845662 2G3065	PROD		.17	1.07	.007	.008	.21	.01	.03	.07	.02	.029		.001			.001					.39
845662 2G3065	PROD		.20	1.00	.006	.005	.21	.02	.03	.09	.03	.029		.001			.001					.37
			** END OF DATA THIS SHEET **																			.39

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 07/21/02
TIME: 12:19:44

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	
DI05781 01			

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
845662 2G3065	OK				T	B	+ 32	FULL	AR	76	89	64	76	30	50	20	33
			xx END OF DATA THIS SHEET xx														

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ L/T ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 07/24/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 11/25/02
TIME: 09:02:47

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID.	
DI05807 01		113216		
SOLD TO ADDRESS		MAIL TO ADDRESS		VENDOR
				USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B
ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG
MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED — O.D.: 24.000(609.600) in (mm) — WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN: 30.0	MIN:	1580	5
				MAX: 65000		MAX: 110000			MAX: 99.0		
845661 2L3050	STRIP/T/B	AR	1.500	45800	.50	75500	0.60	41.0	B 82.7	1580	5
		**	END OF DATA THIS	SHEET	**						

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
845661	HEAT		.19	1.06	.010	.009	.24	.01	.04	.07	.02	.038		.001			.001					MAX .43
845661 2L3050	PROD		.20	1.10	.008	.011	.22	.01	.04	.07	.02	.036		.001			.001					.38
845661 2L3050	PROD		.20	1.11	.009	.012	.22	.01	.04	.07	.02	.039		.001			.001					.40
			**	END OF DATA THIS SHEET																		.41

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

[TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049]

DATE: 11/25/02
TIME: 09:02:47

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	
DI05807 01		113216	

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP DEG F	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
B45661 2L3050	OK		** END OF DATA THIS SHEET **		T	B	+ 32	FULL	AR	87	91	89	89	40	60	60	53

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ L/T ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 11/25/02

VASS PIPE & STEEL CO., INC.
158 Third Street
Mineola, NY 11501
Phone 516 741 8398
Toll Free 800 272 8277
Fax 516 741 8210

BILL OF LADING- PACKING LIST

Shipper: REVISED

LOAD #

Date Shipped 3-3	F.O.B. Point Naples, FL.
Sales Person S	Terms 30

Ref # 27926 WO(I)	
Ref Date 2-21-03	
Released by Ricky	
Freight ☒ Prepaid ☐ Collect	

Invoice Date	P.O. # 218038-01

To:
Youngquist Bros.
10500 Goodlette-Frank Rd. (S. Gate)
Naples, Fl.
See Map

Shipped via	Freight	Miles
[illegible]		

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

DESCRIPTION OF PIPE TO BE RELEASED

Quantity	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type	~~B/L #~~ MILL	Ship Name	Specific Instructions	Unit Price	Total
Give close to ~~2888'~~ 2541.1	62	~~62~~	DR	24" BPE .500W API5LB Smls	US STEEL	RAIL CAR	WO# 18142 Blasting	✓	
**	—	Please give bare Pipes from WO# 18142							
	—	7 Truck loads							
				9 pcs each to go on 6 Trucks		} Load #1 to 6			
**			8 ~~9~~	~~8~~ pcs to go on		} Load #7			
**	—	Total 63 pcs							

Special Instructions:

Received in good condition by ______ PRINT NAME ______ SIGNATURE ______ DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

DATE: 02/16/00
TIME: 08:13:09 USX™

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.	
DR06932 02		6599-USS		

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X41ST EDITION DTD 4/1/95 GRADE B AND GRADE X42 ASTM A53-X98 ASTM A106-X97A GRADE B QUAD STENCIL ASME SA53-X1998 EDITION 1999 ADDENDUM ASME SA106-X1998 EDITION 1999 ADDENDUM GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75

MATERIAL COND: AS ROLLED | O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	SHELL (SEC)
				MIN: 42000 MAX:		MIN: 60000 MAX:	MAX:	MIN: 29.5	MIN: MAX: 100.0	1580	5
A83674	STRIP/T/B	AR	1.500	49200	.50	79000	0.62	39.0	B 80.0	1580	5
A83676	STRIP/T/B	AR	1.500	46600	.50	80000	0.58	41.0	B 78.0	1580	5

** END OF DATA THIS SHEET **

LEGEND: L - LONGITUDINAL, U - UPSET, T - TRANSVERSE, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE* MAX .58
A83674 ✓	HEAT		25	88	005	006	24	02	04	08	03	026		003			001					.43
A83674	PROD		23	88	006	006	25	03	04	07	03	032		001			002					.41
A83674 ✓	PROD		24	89	005	008	25	02	03	08	03	032		001			001					.41
A83676 ✓	HEAT		24	88	008	004	24	02	02	07	02	026		003			001					.41
A83676	PROD		27	90	008	004	26	02	02	07	02	032		002			002					.44
A83676	PROD		26	89	008	010	26	02	02	06	02	033		001			002					.43

** END OF DATA THIS SHEET **

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/3.1B)

DATE: 03/13/00
TIME: 10:45:43 USX™

USX, USS, USS are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPER NO.	P.O. NUMBER
DR66951 01		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	HEAT COND.	FT-LBS				% SHEAR			
										1	2	3	AVG	1	2	3	AVG
							DEG F										
A93674	OK																
A93675	OK																
					>>< END OF DATA THIS SHEET >><												

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ___ L X L/T ___ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ___ OD/ID ___ L ___ L/T ___
END AREA INSPECTION (PLAIN END)		MPI ___ UT ___
SPECIAL END AREA (SEA) INSP.		MPI ___ UT ___
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

ALL MELTING AND MANUFACTURING TOOK PLACE IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: J. MASSIMINO MGR. MET. & Q.A. USS TUBULAR PRODUCTS

DATE 03/13/00

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 03/[illegible]3/00
TIME: 10:45:43

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID
0R00851 01			

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-×41ST EDITION DTD 4/1/95 GRADE B AND GRADE X42 ASTM A53-×998 ASTM A106-×99 GRADE B QUAD STENCIL ASME SA53-×1998 EDITION 1999 ADDENDUM ASME SA106-×1998 EDITION 1999 ADDENDUM GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75

MATERIAL COND: AS ROLLED — OD: 24.000(609.600) in (mm) — WALL: 0.500 (12.700) in (mm)

TENSILE

PRODUCT IDENTIFICATION	TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % (in 2")	HARDNESS SCALE HRB	MIN HYDRO PSI	DWELL REQ
				MIN: 42000 MAX:		MIN: 60000 MAX:	MAX:	MIN: 29.5	MIN: MAX: 100.0	1500	5
A03676	STRIP/T/B	AR	1.500	46600	.50	80000	0.58	41.0	B 78.0	1500	5
A03680	STRIP/T/B	AR	1.500	48900	.50	78500	0.62	41.0	B 77.7	1500	5

** END OF DATA THIS SHEET **

LEGEND: L - LONGITUDINAL, U - UPSET, T - TRANSVERSE, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE* MAX .50
A03676 ✓	HEAT		24	88	008	004	24	02	02	07	02	026		003			001					.41
A03676	PROD		26	89	008	010	26	02	02	06	02	033		001			002					.43
A03676	PROD		27	90	008	004	26	02	02	07	02	032		002			002					.44
A03680 ✓	HEAT		23	88	006	007	24	02	03	05	02	027		003			001					.40
A03680	PROD		23	87	006	007	25	02	02	05	02	033		001			001					.39
A03680	PROD		23	89	006	009	25	02	02	05	02	032		001			001					.40

** END OF DATA THIS SHEET **

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 02/16/00
TIME: 08:13:09 USX™

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DR06932 02		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING: DIR	TEST LOC	TEMP	SIZE	TEST COND.	FT-LBS 1	2	3	AVE	% SHEAR 1	2	3	AVG
							DEG F										
A83674	OK																
A83676	OK																

** END OF DATA THIS SHEET **

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ___ L X L/T ___ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ___ OD/ID ___ L ___ L/T ___
END AREA INSPECTION (PLAIN END)		MPI ___ UT ___
SPECIAL END AREA (SEA) INSP.		MPI ___ UT ___
FULL LENGTH DRIFT		DRIFT MANDREL SIZE

ADDITIONAL NOTES/COMMENTS

ALL MELTING AND MANUFACTURING TOOK PLACE IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: F.J. MIKULSKI MGR. MET. & Q.A. USS TUBULAR PRODUCTS

DATE 02/16/00

Commodity: SEAMLESS CARBON STEEL PIPE

MILL TEST REPORTS

EN 10204/3.1.B.

Certificate No.: 2000097B5

Standard: ASTM A53/ASME SA53/ ASTM A106/ASME SA106/API 5L

Grade: B

Date: FEB.15.2001

Pangang Group Chengdu Seamless Steel Tube Co., Ltd.

LOT2

Total: 45 Pcs., 511.48 m, 25615 Kgs

Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)								
		Pcs.	Length(m)	Weight(Kg)		Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	Si	Mn	S	P	Cr	Ni	Mo	Cu	V
✓ 0083305	24"x0.500"xDRL	16	180.47	33739	611010264 A	350	480	41	G			G		0.19	0.22	0.44	0.020	0.015	0.02	0.04	0.01	0.08	0.01
					611010264 B	345	475	42															
✓ 0083315	24"x0.500"xDRL	15	170.58	31888	611010263 A	340	470	41	G			G		0.19	0.23	0.50	0.026	0.014	0.02	0.04	0.01	0.07	0.01
					611010263 B	340	475	42															
✓ 0083323	24"x0.500"xDRL	14	160.43	29988	631020029 A	365	485	43	G			G		0.18	0.24	0.50	0.007	0.013	0.01	0.02	0.01	0.05	0.01
					631020029 B	380	495	43															

Notes:

1. Flattening test
2. Bending test
3. Pipe flaring test
4. Hydrostatic test
5. Non-destructive test

Remarks:

1. Condition of supply: hot rolled
2. Tubes delivered in theoretical weight
3. NACE MR01-75(1995) with HRC Max 22.
4. G————Good
5. The weight is net weight

Inspector: Cheng Yu

WE CONFIRM THAT MATERIAL AND TOLERANCES ARE FULLY IN COMPLIANCE WITH ABOVE.

攀钢集团成都无缝钢管有限责任公司
PANGANG GROUP CHENGDU SEAMLESS STEEL TUBE CO.,LTD.

Submittal Data

FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Road
Fort Myers, Fl. 33908
(239) 489-4444 Fax (239) 489-4545

Project: **NCWRF Collier County Injection Well Project**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: **5/15/03**

Number of Copies: **6**

Submittal Number: **04015-01-B**

Specification Section Number: **04015**

Item Submitted: **Additional 24" Mill Certification**

New Submittal: **X**

Resubmittal:

Youngquist Brothers, Inc. Representative: Mary Beth Rios

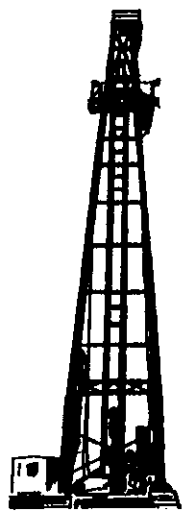
Transmittal Date:

- ☐ Approved
- ☐ Approved with Changes
- ☐ Rejected, Revise & Re-submit
- ☐ Not Reviewed

By:

Firm:

Date:



U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 02/16/00
TIME: 08:13:09 USX

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID.
DR06932 02		6599-USS	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API SL-X41ST EDITION DTD 4/1/95 GRADE B AND GRADE X42 ASTM A53-X98 ASTM A106-X97A GRADE B QUAD STENCIL ASME SA53-X1998 EDITION 1999 ADDENDUM ASME SA106-X1998 EDITION 1999 ADDENDUM GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75

MATERIAL COND: AS ROLLED

OD: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD PSI .50 MIN: 42000 MAX:	EXT %	TENSILE PSI MIN: 60000 MAX:	Y/T MAX:	ELONG % (IN 2") MIN: 29.5	HARDNESS SCALE: HRB MIN: MAX: 100.0	MIN HYDRO PSI 1580	SHELL SEC
A83674	STRIP/T/B	AR	1.500	49200	.50	79000	0.62	39.0	B 80.0	1580	5
A83676	STRIP/T/B	AR	1.500	46600	.50	80000	0.58	41.0	B 78.0	1580	5
		**	END OF DATA THIS SHEET **								

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
																						MAX .50
A83674 ✓	HEAT		.25	.88	.005	.006	.24	.02	.04	.08	.03	.026		.003			.001					
A83674	PROD		.23	.88	.006	.006	.25	.03	.04	.07	.03	.032		.001			.002					.43
A83674	PROD		.24	.89	.005	.008	.25	.02	.03	.08	.03	.032		.001			.001					.41
A83676 ✓	HEAT		.24	.88	.008	.004	.24	.02	.02	.07	.02	.026		.003			.001					.41
A83676	PROD		.27	.90	.008	.004	.26	.02	.02	.07	.02	.032		.002			.002					.41
A83676	PROD		.26	.89	.008	.010	.26	.02	.02	.06	.02	.033		.001			.002					.44
				** END OF DATA THIS SHEET **																		.43

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 03/13/00
TIME: 10:45:43

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	
DR08851 01			

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS				% SHEAR			
										1	2	3	AVG	1	2	3	AVG
							DEG F										
A83674	OK																
A83675	OK																
			xx END OF DATA THIS SHEET xx														

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ L/T ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

ALL MELTING AND MANUFACTURING TOOK PLACE IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: J. MASSIMINO MGR. MET. & Q.A. USS TUBULAR PRODUCTS

DATE 03/13/00

J.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR ODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 03/13/00
TIME: 10:45:4

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE I.D.	
0R088S1 01				

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X41ST EDITION DTD 4/1/95 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X1998 EDITION 1999 ADDENDUM ASME SA106-X1998 EDITION 1999 ADDENDUM GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-7S

MATERIAL COND: AS ROLLED | O.D.: 24.000(609.600) in (mm) | WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	DWELL (SEC)
			IN	MIN: 42000 MAX:		MIN: 60000 MAX:	MAX:	MIN: 29.5	MIN: MAX: 100.0	1580	5
A83676	STRIP/T/B	AR	1.500	46600	.50	80000	0.58	41.0	B 79.0	1580	5
A83680	STRIP/T/B	AR	1.500	48900	.50	78500	0.62	41.0	B 77.7	1580	5
		XX	END OF DATA THIS SHEET			XX					

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE* MAX .50
A83676 ✓	HEAT		.24	.88	.008	.004	.24	.02	.02	.07	.02	.026		.003			.001					.41
A83676	PROD		.26	.89	.008	.010	.26	.02	.02	.06	.02	.033		.001			.002					.43
A83676	PROD		.27	.90	.008	.004	.26	.02	.02	.07	.02	.032		.002			.002					.44
A83680 ✓	HEAT		.23	.88	.006	.007	.24	.02	.03	.05	.02	.027		.003			.001					.40
A83680	PROD		.23	.87	.006	.007	.25	.02	.02	.05	.02	.033		.001			.001					.39
A83680	PROD		.23	.89	.006	.009	.25	.02	.02	.05	.02	.032		.001			.001					.40
			XX	END OF DATA THIS SHEET																		

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): $CE = C + (MN/6) + (CR+MO+V)/5 + (NI+CU)/15$

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

U.S. STEEL GROUP
A DIVISION OF USX CORPORATION

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 02/16/00
TIME: 08:13:09 USX™

USS, USX, USX are trademarks of USX Corporation

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DR06932 02		

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm)

WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT-LBS				% SHEAR			
										1	2	3	AVG	1	2	3	AVG
							DEG. F										
A83674	OK																
A83676	OK																
			** END OF DATA THIS SHEET **														

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	OD X OD/ID ____ L X UT ____ 10.0% NOTCH
FULL LENGTH MPI		
FULL LENGTH UT		OD ____ OD/ID ____ L ____ UT ____
END AREA INSPECTION (PLAIN END)		MPI ____ UT ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

ALL MELTING AND MANUFACTURING TOOK PLACE IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: F.J. MIKULSKI MGR. MET. & Q.A. USS TUBULAR PRODUCTS

DATE 02/16/00

ED STATES STEEL

TUBULAR PR JCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO [redacted])

DATE: 11/22/02
TIME: 14:11:04

MILL ORDER/ITEM NO	SHIPPER'S NO	P.O. NUMBER	VEHICLE ID	
DI05807 01		113216		

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE
PIPE CARBON SMLS STD PIPE API SL-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH IN	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	SWELL REQ
				MIN: 42000		MIN: 70000		MIN: 30.0	MIN:	1500	S
A24375 2L3052	STRIP/T/B	AR	1.500	MAX: 65000		MAX: 110000	MAX:	MAX: 39.0	MAX:		
		**	END OF DATA THIS	45100	.50	75000	0.60	43.0	@ 82.0	1500	S
				SHEET **							

LEGEND: L - LONGITUDINAL; T - TRANSVERSE; U - UPSET; N - NORMALIZED; QT - QUENCHED & TEMPERED; SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
A24375	HEAT		.18	.05	.009	.007	.23	.04	.02	.05	.01	.035		.004			.001					MAX
A24375 2L3052	PROD		.19	.07	.006	.009	.21	.04	.02	.06	.01	.035		.001			.001					.43
A24375 2L3052	PROD		.19	.09	.007	.010	.22	.04	.02	.06	.01	.037		.001			.001					.38
			** END OF DATA THIS SHEET **																			.39

*CE IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

- DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

ITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/SEN10474)

DATE: 11/22/02
TIME: 14:11:04

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
0105807 01		113216

MATERIAL COND. AS ROLLED

OD: 24.000(609.600) in [mm] WALL: 0.500 (12.700) in [mm]

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP DEG F	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
A24375 2L3052	OK		** END OF DATA THIS SHEET **		T	B	+ 32	FULL	AR	93	94	87	88	50	60	50	53

LEGEND L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ UT 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. AMADELL - MANAGER, Q.A.

DATE 11/22/02

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474 / EN10204 / DIN50049)

DATE: 11/22/02
TIME: 14:11:04

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID.	
0105807 01		113216		

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE
PIPE CARBON SMLS STD PIPE API 5L-*42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-*99B
ASTM A106-*99 GRADE B QUAD STENCIL ASME SA53-*2001 EDITION ASME SA106-*2001 EDITION GRADE B BLK REG
MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 *2000

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND	GAUGE WIDTH	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE: HRB	MIN HYDRO PSI	OMIT REJ CT
			IN	MIN: 42000		MIN: 70000					
				MAX: 65000		MAX: 110000	MAX:	MIN	MIN		
A41440 2L3051	STRIP/T/B	AR	1.500	44400	.50	74000	0.60	30.0	MAX: 99.0	1500	5
		**	END OF DATA THIS SHEET			**		45.0	0 83.7	1500	5

LEGEND: L - LONGITUDINAL, U - UPSET; T - TRANSVERSE, N - NORMALIZED; QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED; AR - AS ROLLED; B - BODY; W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE*
A41440	HEAT		10	106	008	007	23	04	03	05	01	032		001			001					MAX
A41440 2L3051	PROD		21	109	007	012	22	04	02	05	02	031		001			001					.43
A41440 2L3051	PROD		21	108	007	011	21	04	02	05	02	030		001			001					.38
				** END OF DATA THIS SHEET **																		.41
																						.40

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

ITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/3M68043)

DATE: 11/22/02
TIME: 14:11:04

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
0I05007 01		113216

MATERIAL COND: AS ROLLED

O.D. 24.000(609.600) in (mm) | WALL 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING										
					DIR	TEST LOC	TEMP	SIZE	TEST COND.	FT LBS 1	FT LBS 2	FT LBS 3	FT LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG F										
A91440 2L3051	OK				T	B	+ 32	FULL	AR	100	95	96	97	60	50	50	53
					THIS SHEET		MIN										

*** END OF DATA

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ___ L X UT ___ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ___ OD/ID ___ L ___ UT ___
SPECIAL END AREA (SEA) INSP.		MPI ___ UT ___
FULL LENGTH DRIFT		MPI ___ UT ___
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 11/22/02

USS

UNITED STATES STEEL

TUBULAR P[illegible]CTS
CERTIFIED TE[illegible] REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 11/25/0
TIME: 09:02:47

SALES ORDER/ITEM NO	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID
0105807 01		113216	

SOLD TO ADDRESS

MAIL TO ADDRESS

VENDOR
USS TUBULAR PRODUCTS
2199 EAST 28TH ST.
LORAIN, OH 44055

SPECIFICATION AND GRADE
PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B
ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG
MILL COAT PE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED

OD: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT %	TENSILE PSI	Y/T	ELONG % (IN 2")	HARDNESS SCALE: HRB	BRINELL HYDRO PSI	CHARPY (SET)
			IN	MIN 42000	.50	MIN 70000	MAX:	MIN	MIN		
				MAX 65000		MAX 110000		30.0	MAX 99.0	1580	5
A45276 2L3049	STRIP/T/B	AR	1.500	48900	.50	78500	0.62	42.0	B 82.0	1580	5
		**	END OF DATA THIS	SHEET	**						

LEGEND: L - LONGITUDINAL T - TRANSVERSE
U - UPSET N - NORMALIZED
QT - QUENCHED & TEMPERED AR - AS ROLLED B - BODY
SR - STRESS RELIEVED W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	N	V	B	TI	CB	CO				CE.*
A45276	HEAT		.19	1.00	.010	.006	.23	.02	.05	.09	.02	.033										MAX
A45276 2L3049	PROD		.19	1.11	.009	.010	.22	.02	.05	.09	.02	.034		.001			.001					.43
A45276 2L3049	PROD		.20	1.12	.009	.008	.22	.02	.05	.09	.02	.034		.002			.001					.39
																	.001					.41
			**	END OF	DATA	THIS	SHEET	**						.002								.41

*C.E. IS BASED ON THE FOLLOWING EQUATION(S) CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

"ED STATES STEEL

TUBULAR PR CTS
CERTIFIED TEST REPORT
(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 11/25/02
TIME: 09:02:17

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05807 01		113216

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	CRACK SIZE	MIN COLLAPSE	CHARPY V-NOTCH IMPACT TESTING											
					DIR	TEST LOC.	TEMP	SIZE	TEST COND.	FT LBS				% SHEAR			
							DEG F			1	2	3	AVG	1	2	3	AVG
A15276 ZL3049	OK				T	B	+ 32	FULL	AR	106	116	113	111	60	70	70	66

** END OF DATA THIS SHEET **

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ___ L X L/T ___ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ___ OD/ID ___ L ___ L/T ___
SPECIAL END AREA (SEA) INSP.		MPI ___ UT ___
FULL LENGTH DRIFT		MPI ___ UT ___
		DRIFT MANDREL SIZE:

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.
PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS.

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 11/25/02

USS

UNITED STATES STEEL

TUBULAR PRODUCTS
CERTIFIED TEST REPORT

(TYPE B - IN ACCORDANCE WITH ISO 10474/EN10204/DIN50049)

DATE: 11/21/
TIME: 13:11:21

MILL ORDER/ITEM NO	SHIPPERS NO.	P.O. NUMBER	VEHICLE ID.	
D105007 01		113216		

SOLD TO ADDRESS	MAIL TO ADDRESS	VENDOR
		USS TUBULAR PRODUCTS 2199 EAST 28TH ST. LORAIN, OH 44055

SPECIFICATION AND GRADE

PIPE CARBON SMLS STD PIPE API 5L-X42ND EDITION DATED 1/00 PSL-2 GRADE B AND GRADE X42 ASTM A53-X99B ASTM A106-X99 GRADE B QUAD STENCIL ASME SA53-X2001 EDITION ASME SA106-X2001 EDITION GRADE B BLK REG MILL COAT FE BEV 30 DEG MEETING ALL THE APPLICABLE REQUIREMENTS OF NACE STANDARD MR-01-75 X2000

MATERIAL COND: AS ROLLED OD: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	TENSILE TEST TYPE/ ORIENTATION	TEST COND.	GAUGE WIDTH	YIELD PSI	EXT % .50	TENSILE PSI	Y/T	ELONG % IN 2"	HARDNESS SCALE HRB	MIN IMPACT PSI	IMPACT (SEC)
			IN	MIN: 42000		MIN: 70000	MAX:	MIN:	MIN:	MIN:	
				MAX: 65000		MAX: 110000		30.0	MAX: 99.0	1500	5
045660 2L3048	STRIP/T/B	AR	1.500	44700	.50	76500	0.58	46.0	B 83.3	1580	5
		**	END OF DATA THIS SHEET **								

LEGEND: L - LONGITUDINAL, T - TRANSVERSE, U - UPSET, N - NORMALIZED, QT - QUENCHED & TEMPERED, SR - STRESS RELIEVED, AR - AS ROLLED, B - BODY, W - WELD

PRODUCT IDENTIFICATION	TYPE		C	MN	P	S	SI	CU	NI	CR	MO	AL	NB	V	B	TI	CB	CO				CE.*
045660	HEAT		.19	1.05	.007	.005	.24	.01	.02	.06	.01	.030		.001			.001					MAX .43
045660 2L3048	PROD		.20	1.09	.006	.008	.22	.02	.02	.06	.01	.030		.001			.001					.38
045660 2L3048	PROD		.20	1.10	.006	.008	.22	.01	.02	.06	.01	.030		.001			.001					.40
			**	END OF DATA THIS SHEET **																		.40

*C.E. IS BASED ON THE FOLLOWING EQUATION(S): CE=C+(MN/6)+(CR+MO+V)/5+ (NI+CU)/15

DECIMAL POSITIONS FOR ELEMENTS ARE INDICATED BY THE LEFT MARGIN, VERTICAL DOTTED LINE OR DECIMAL POINT.

ITED STATES STEEL

TUBULAR JCTS
CERTIFIED TE T REPORT
[TYPE 3 - OF ACCORDANCE WITH ISO 10474/EN10204/DIN50049]

DATE: 11/21/0
TIME: 13:11:21

MILL ORDER/ITEM NO.	SHIPPERS NO.	P.O. NUMBER
DI05007 01		113216

MATERIAL COND: AS ROLLED

O.D.: 24.000(609.600) in (mm) WALL: 0.500 (12.700) in (mm)

PRODUCT IDENTIFICATION	FLAT	BEND	GRAIN SIZE	HIH COLLAPSE	DIR	TEST LOC	TEMP	SIZE	TEST COND.	FT-LBS 1	FT-LBS 2	FT-LBS 3	FT-LBS AVG	% SHEAR 1	% SHEAR 2	% SHEAR 3	% SHEAR AVG
							DEG. F										
045560 ZL3048	OK				T	B	+ 32	FULL	AR	94	97	92	94	50	50	50	50

** END OF DATA THIS SHEET **

LEGEND: L - LONGITUDINAL T - TRANSVERSE B - BODY W - WELD HAZ - HEAT AFFECTED ZONE

TESTING / INSPECTION INFORMATION

TEST / INSPECTION	YES	RESULTS / COMMENTS
FULL LENGTH VISUAL	X	
FULL LENGTH EMI	X	
FULL LENGTH MPI		OD X OD/ID ____ L X L/T ____ 10.0% NOTCH
FULL LENGTH UT		
END AREA INSPECTION (PLAIN END)		OD ____ OD/ID ____ L ____ L/T ____
SPECIAL END AREA (SEA) INSP.		MPI ____ UT ____
FULL LENGTH DRIFT		MPI ____ UT ____
		DRIFT MANDREL SIZE

ADDITIONAL NOTES/COMMENTS

MELTED AND MANUFACTURED IN THE USA. NO REPAIRS BY WELDING. NO MERCURY OR MERCURY COMPOUNDS ARE ADDED TO THE STEEL AND ALL MERCURY BEARING EQUIPMENT IS PROTECTED BY A DOUBLE BOUNDARY OF CONTAINMENT.

PIPE ALSO MEET THE REQUIREMENTS OF ASTM A106 GRADE C & ASME SA106 GRADE C

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED HEREIN WAS MANUFACTURED, SAMPLED, TESTED AND/OR INSPECTED IN ACCORDANCE WITH THE SPECIFICATION AND FULFILLS THE REQUIREMENTS IN SUCH RESPECTS

PREPARED BY THE OFFICE OF: S. ANADELL - MANAGER, Q.A.

DATE 11/21/02

APPENDIX 3.9

WELL CASING MILL CERTIFICATES FOR DZMW

APPENDIX 3.9.1

24-INCH O.D. CASING

Submittal Data
FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Rd.
Ft. Myers, FL. 33908
239-489-4444 Fax: 239-489-4545

Project

Collier County NCWRF Injection Wells Project

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: July 22, 2003 Number of Copies: 8

Submittal Number: 4017-01-A

Specification Section Number: 4017

Item Submitted: 24" x .375" Mill Certificate

New Submittal: X Resubmitted: _____

Youngquist Brothers, Inc. Representative:

Marybeth Rios

Marybeth Rios

Transmittal Date: _____

☐	Approved
☐	Approved with changes
☐	Rejected, Revise & Resubmit
☐	Not Reviewed

By: _____

Firm: _____

Date: _____

MANUFACTURER : PETROTUB SA
SOSEAUA ROMAN - IASI KM 331
5550 ROMAN - ROMANIA

MILL CERTIFICATE
to EN 10204/3.1.B/1991

NO. D 446

Date: 29.05.2002

Electromagnetical examination on automatic equipament - satisfactory		Wet M.P.I. - satisfactory	
Heat no.	Pcs.	Heat no.	Pcs.
P220676	1	P220676	-
P220681	31	P220681	13
P220675	25	P220675	3
P220677	16	P220677	-

GAUGE TRANSVERSAL

HEAT NO.	STANDARD	LENGTH INCH	WIDTH INCH	THICKNESS INCH
P220676	API 5L	2	1.500	0.472
	ASTM / ASME	2	1.496	0.525
P220681	API 5L	2	1.503	0.512
	ASTM / ASME	2	1.503	0.492
P220675	API 5L	2	1.496	0.519
	ASTM / ASME	2	1.499	0.512
P220677	API 5L	2	1.496	0.511
	ASTM / ASME	2	1.503	0.477

HEAT NO.	CHEMICAL ANALYSIS BULLETIN NO.	MECHANICAL TEST BULLETIN NO.	HARDNESS TEST HRC BULLETIN NO.	HARDNESS TEST HB BULLETIN NO.	FLATTENING TEST BULLETIN NO.
P220676	728	399; 150B	216	84	94
P220681	776	416; 158B	245	84	98
P220675	776	416; 158B	245	84	98
P220677	776	416; 158B	245	84	98

We certify on our sole responsibility that the materials, which this certificate relates to, are in conformity with specification requirements

GENERAL MANAGER
Dr. Eng. Birsan Romeo Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Moroianu M.

M.P.

MANUFACTURER : PETROTUB SA
SOSEAUA ROMAN – IASI KM 333
5550 ROMAN - ROMANIA

MILL CERTIFICATE
to EN 10204/3.1.B/1991

NO. D 446

Date: 29.05.2002

BUYER:

Description of goods:

90.657 MT (2'769.751 FEET) OF SEAMLESS BLACK CARBON STEEL PIPE WITH MILL LAQUER, ACCORDING TO ASTM A53B AND A106B / ASME SA53B AND SA106B / API 5L B/X42, PSL 1, NACE MR0175
LENGTH: 80PCT FIXED LENGTH OF 40 FT (+/-8")
20PCT RANDOM LENGTH OF 36 FT – 42 FT
END FINISH: PLAIN ENDS BEV.
END PROTECTORS: PROTECTED BY PLASTIC END CAPS

Total weight:
90.657 MT
99.932 NT

Total Length:
844.220 METERS
2769.751 FEET

Contract No.
LOT 3)

Standard
API 5L /2000; ASTM A106/99; ASTM A53/99;
ASME SA106/2001; ASME SA53/2001; NACE MR 01-75/2000

69 PCS

Item	Dimensions (inches) (mm)	Steel	Heat	Pcs	Length (m)	Weight (kg)	Hydro Test (PSI)	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100
0	1	2	3	4	5	6	7	8	9	10	11	12	13
14	14" XS	Gr. B/	P220676	1			2550	21	65	21	21	13	2
	14.000" x 0.500"	X42						20	64	21	20	13	2
	ϕ 355.6x12.70 mm	PSL1	P220681 ✓	24				19	58	20	23	11	1
								20	60	21	23	12	1
	LENGTH: DRL:	✓	P220675	28				18	63	20	24	10	3
	80PCT FIXED							18	64	19	24	11	3
	LENGTH OF 40FT	✓	P220677	16				20	65	22	27	13	2
	(+/-8")	✓						20	64	21	26	12	2
	20PCT RANDOM LENGTH OF 36FT – 42FT												

Item	Ni x100	Cu x100	Mo x100	V x1000	Nb x100	Ti x100	B x100	CEQ max 0.43	Rp (PSI) :1000	Rm (PSI) :1000	A %	HRC max 22	HB max 236	Flattening Test
0	14	15	16	17	18	19	20	21	22	23	24	25	26	27
14	2	2	0.0	0.0	0.0	0.0	0.04	0.33	58.4	80.8	32.38	7; 6	187;185	OK
	2	2	0.0	0.0	0.0	0.0	0.03	0.32	52.7	72.8	35.12	7, 7	186;186	
	3	2	0.0	0.0	0.0	0.1	0.03	0.29	50.0	75.9	37.81	6, 7	184;182	OK
	3	2	0.0	0.0	0.0	0.2	0.03	0.31	51.7	76.1	38.73	7; 6	182;181	
	9	2	0.0	0.0	0.0	0.2	0.03	0.30	49.9	75.7	36.56	8; 9	171;170	OK
	9	2	0.0	0.0	0.0	0.2	0.02	0.30	49.2	73.3	36.57	9; 8	170;171	
	3	2	0.0	0.0	0.0	0.2	0.05	0.32	50.7	76.9	35.06	8; 7	176;174	OK
	3	2	0.0	0.0	0.0	0.2	0.05	0.31	52.7	78.4	35.43	9; 9	177;175	

COPY
IN CONFORMANCE WITH THE ORIGINAL

Hydrostatic test hold for 5 sec. No leakage noticed.

We certify on our sole responsibility that the materials, which this certificate relates to, are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Românu Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Mironiuc M.

PETROTUB S.A. ROMAN

M.R.

BROTHERS INC

008

검 사 증 명 서 (A)

MILL INSPECTION CERTIFICATE

HYUNDAI
HYSCO

본사 · 공장 : 울산광역시 북구 염포동 265번지 [illegible]
HEAD OFFICE & ULSAN PLANT: #265, Yeompo-dong, Buk-gu, Ulsan, Korea
TEL (052)280-[illegible] FAX (052)[illegible]

서울사무소 : 서울특별시 중구 [illegible]
SEOUL OFFICE: [illegible], Chungmu-ro, Jung-gu, Seoul, Korea
TEL (02) [illegible] FAX (02) [illegible]

증명서번호 CERTIFICATE NO: E27136 페이지 PAGE: 1
발행일자 DATE OF ISSUE: JUL. 9. 2012. 84226302
계약번호 CONTRACT (NO) NO:
품명 COMMODITY: E.R.W. STEEL PIPE
규격 SPECIFICATION: API 5L X42/API 5LB PSL1/ASTM A53B/ASME SA53B
수요자 CUSTOMER:

관끝형태 TYPE OF PIPE END	치수 DIMENSION 외경 × 두께 × 길이 (OUTDIA. × THICK. × LENGTH)	수량 QUANTITY (PCS)	중량 WEIGHT (KG)	수압시험 HYDROSTATIC TEST PSI	용해번호 HEAT NO.	항복강도 YIELD STRENGTH PSI	인장강도 TENSILE STRENGTH		연신율 ELONGATION %	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V
BVBE	24" × .375" × 42.000'	216	369.007	83	A37853	32.2	43.8	51.6	37	18	1	81	15	7	2	2	1	3	Tr
	(610.0mm × 9.53mm × 12.80M)			1180		45800	59400	73400											
					A37287	31.6	41.3	51.0	37	18	1	75	15	9	2	3	1	3	Tr
						45200	58700	72500											
					A39109	35.3	50.9	53.8	39	17	1	76	16	8	2	3	1	3	Tr
						50300	72400	76500											
					A39711	31.3	47.4	50.2	36	18	2	75	14	10	2	2	1	3	Tr
						44500	67400	71400											
					A39713	33.8	49.6	52.4	35	17	1	76	16	10	2	1	1	3	Tr
						48100	70500	74700											
					A35622	36.6	49.4	52.2	37	17	2	76	16	8	2	3	1	3	Tr
						52100	70300	74300											
BVBE	24" × .500" × 42.000'	126	301.757	111	A39162	30.8	46.7	49.3	33	18	1	73	16	7	2	3	1	3	Tr
	(610.0mm × 12.70mm × 12.80M)			1580		43800	66400	70100											
	RESIDUAL MAGNETISM TEST : GOOD				A77243	34.8	49.6	52.9	34	19	3	72	19	8	3	2	1	3	Tr

Flattening, bend, ductility, NDT, hydrostatic and visual/dimensional tests: G

비고 REMARK

주 NOTES

(※1) Type of pipe end 관끝

X: B : Black; G : Galvanized; E : Enameled

X: V : Varnish; R : Removal Varnish; O : Oiling Coating; F : PE Coating; C : Civilian Coating; A : Asphalt Coating

XX: PE : Plain End; BE : Bevel End; TE : Thread End; TC : Thread Coupling; BL : Bell End; SE : Swaging End; VT : Victaulic Joint

SURVEYOR

본 제품은 검사규격에 합격되었음을 보증합니다.
WE CERTIFY THAT THE DESCRIBED MATERIAL HAS BEEN ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER

H. G. Lee
QUALITY ASSURANCE TEAM GENERAL MGR

HPS-B-301 [illegible]

(353×264)

검 사 증 명 서(A)

MILL INSPECTION CERTIFICATE

HYUNDAI HYSCO
• 본사·공장 : 울산광역시 북구 염포동 265번지
HEAD OFFICE (ULSAN PLANT) : 265, Yeompo-dong, Buk-gu, Ulsan, Korea
TEL : (052)280-0114 FAX : (052)287-8916
• 서울사무소 : 서울특별시
SEOUL OFFICE : Kye-dong, Chongno-gu, Seoul, Korea

CERTIFICATE NO : E27136 PAGE : 2
DATE OF ISSUE : JUL. 9, 2002. E4226302
CONTRACT (P.O) NO :
COMMODITY : E.R.W. STEEL PIPE
SPECIFICATION : API 5L X42/API 5L B PSL1/ASTM A53B/ASME SA53B
CUSTOMER :

G3000

TYPE OF PIPE END	DIMENSION (OUTDIA. x THICK. x LENGTH)	QUANTITY (PCS)	WEIGHT (KG)	HYDROSTATIC TEST (PSI)	HEAT NO.	YIELD STRENGTH	TENSILE STRENGTH		ELONGATION %	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V
	610.0mm x 12.70mm x 12,800M			1580		49700	70500	74700											
					G9395	29.8	45.4	45.2	36	17	2	78	18	8	2	3	1	4	Tr
						42400	54500	68600											
					A39704	32.8	46.0	48.8	35	19	2	74	16	8	1	3	1	3	Tr
						46700	65400	69400											
					A39703	35.3	50.9	53.6	39	27	1	76	18	8	2	3	1	3	Tr
						50300	72400	76600											
	TOTAL ->	342	690,757																

* RESIDUAL MAGNETISM TEST : GOOD

REMARK

NOTES

Type of pipe End
X: B : Black, G : Galvanized, E : Enameled
X: V : Varnish, R : Removal Varnish, O : Oiling Coating, F : PE Coating, C : Coaltar Coating, A : Asphalt Coating
XX: PE : Plain End, BE : Bevel End, TE : Thread End, TC : Thread Coupling, BL : Bell End, SC : Swaging End, VJ : Victaulic Joint

본 제품은 귀하의 규격에 합격되었음을 보증합니다.
WE CERTIFY THAT THE DESCRIBED MATERIAL HAS HEREIN BEEN ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER

SURVEYOR :

H. G. Lee
QUALITY ASSURANCE TEAM GENERAL MGR

HPS-B-305-631-0-CLT HYUNDAI HYSCO (350 x 280)

APPENDIX 3.9.2

14-INCH O.D. CASING

Submittal Data
FROM
Youngquist Brothers, Inc.

15465 Pine Ridge Rd.
Ft. Myers, FL. 33908
239-489-4444 Fax: 239-489-4545

Project

Collier County NCWRF Injection Wells Project

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: July 22, 2003 Number of Copies: 8

Submittal Number: 4018-01-A

Specification Section Number: 4018

Item Submitted: 14" x .5" Mill Certificate

New Submittal: X Resubmitted: _____

Youngquist Brothers, Inc. Representative:

Marybeth Rios

Marybeth Rios

Transmittal Date:

☐	Approved
☐	Approved with changes
☐	Rejected, Revise & Resubmit
☐	Not Reviewed

By: _____

Firm: _____

Date: _____

MANUFACTURER : PETROTUB SA
SOSEAUA ROMAN – IASI KM 333
5500 ROMAN - ROMANIA

MILL CERTIFICATE
to EN 10204/3.1.B/1991

NO. D 446

Date: 29.05.2002

BUYER:

Description of goods:

90.657 MT (2'769.751 FEET) OF SEAMLESS BLACK CARBON STEEL PIPE WITH MILL LAQUER, ACCORDING TO ASTM A53B AND A106B / ASME SA53B AND SA106B / API 5L B/X42, PSL 1, NACE MR0175
LENGTH: 80PCT FIXED LENGTH OF 40 FT (+/-8")
20PCT RANDOM LENGTH OF 36 FT – 42 FT
END FINISH: PLAIN ENDS BEV.
END PROTECTORS: PROTECTED BY PLASTIC END CAPS

Total weight:
90.657 MT
99.932 NT

Total Length:
844.220 METERS
2769.751 FEET

Contract No.
LOT 3)

Standard
API 5L /2000, ASTM A106/99, ASTM A53/99,
ASME SA106/2001, ASME SA53/2001; NACE MR 01-75/2000

69 PCS

Item	Dimension (inches) (mm)	Steel	Heat	Pcs	Length (m)	Weight (kg)	Hydro Test [PSI]	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max 0.43	Rp [PSI] :1000	Rm [PSI] :1000	A %	HRC max 22	HB max 236	Flattening Test
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
14	14" XS (14.000" x 0.500") ϕ 355.6x12.70 mm	Gr.B/ X42 PSL1	P220676	1			2550	21	65	21	21	11	2	2	2	0.0	0.0	0.0	0.0	0.04	0.33	38.4	80.8	32.38	7; 6	187;185	OK
								20	64	21	20	13	2	2	2	0.0	0.0	0.0	0.0	0.03	0.32	52.7	72.8	35.12	7; 7	186;186	
			P220681	24				19	58	20	23	11	[illegible]	3	2	0.0	0.0	0.0	0.1	0.03	0.29	50.0	75.9	37.81	6; 7	184;182	OK
	LENGTH: DRL 80PCT FIXED LENGTH OF 40FT (+/-8")							20	60	21	23	12	1	3	2	0.0	0.0	0.0	0.2	0.03	0.31	51.1	76.1	38.73	7; 6	182;181	
			P220675	28				18	63	20	24	10	3	9	2	0.0	0.0	0.0	0.2	0.03	0.30	49.9	75.7	36.56	8; 9	171;170	OK
								18	64	19	24	11	3	9	2	0.0	0.0	0.0	0.2	0.02	0.30	49.2	73.3	36.57	9; 8	170;171	
			P220677	16				20	65	22	27	13	2	3	2	0.0	0.0	0.0	0.2	0.05	0.32	50.7	76.9	35.96	8; 7	176;174	OK
	20PCT RANDOM LENGTH OF 36FT – 42FT							20	64	21	26	12	2	3	2	0.0	0.0	0.0	0.2	0.05	0.31	52.7	78.4	35.43	9; 9	177;175	

Hydrostatic test hold for 5 sec. No leakage noticed.

COPY

We certify on our sole responsibility that the materials, which this certificate relates to, are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Romulus Ionel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Moroianu M.

E 003989

MANUFACTURER : PETROTUB SA
SOSEAUA ROMAN - IASI KM 333
5550 ROMAN - ROMANIA

MILL CERTIFICATE
to EN 10204/3.1.B/1991

NO. D 446

Date: 29.05.2002

Electromagnetical examination on automatic equipment - satisfactory

Heat no.	Pcs.
P220676	1
P220681	11
P220675	25
P220677	16

Wet M.P.I. - satisfactory

Heat no.	Pcs.
P220676	-
P220681	13
P220675	3
P220677	-

GAUGE TRANSVERSAL

HEAT NO.	STANDARD	LENGTH INCH	WIDTH INCH	THICKNESS INCH
P220676	API 5L	2	1.500	0.472
	ASTM / ASME	2	1.496	0.525
P220681	API 5L	2	1.503	0.512
	ASTM / ASME	2	1.503	0.492
P220675	API 5L	2	1.496	0.519
	ASTM / ASME	2	1.499	0.512
P220677	API 5L	2	1.496	0.511
	ASTM / ASME	2	1.503	0.477

HEAT NO.	CHEMICAL ANALYSIS BULLETIN NO.	MECHANICAL TEST BULLETIN NO.	HARDNESS TEST HRC BULLETIN NO.	HARDNESS TEST HB BULLETIN NO.	FLATTENING TEST BULLETIN NO.
P220676	728	390; 150B	216	84	94
P220681	776	416; 158B	245	84	98
P220675	776	416; 158B	245	84	98
P220677	776	416; 158B	245	84	98

We certify on our sole responsibility that the materials, which this certificate relates to, are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Romano Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Moroianu M.

M.R.

Manufacturer:
S.C. PETROTUB S.A.
AV. ROMAN – IASI KM. 333
Z.I.P. 5550 - ROMAN
ROMANIA

MILL TEST REPORT
acc. to E.N. 10204/3.1.B/91

NO. B 1618

Date: 14.06.2002

GAUGE LONGITUDINAL

HEAT NO.	STANDARD	LENGTH INCH	WIDTH INCH	THICKNESS INCH
682542	API 5L	2	0.996	0.599
	ASTM/ASME	2	0.754	0.572
682559	API 5L	2	1.000	0.527
	ASTM/ASME	2	0.752	0.561
682545	API 5L	2	0.996	0.567
	ASTM/ASME	2	0.753	0.592
682555	API 5L	2	0.996	0.547
	ASTM/ASME	2	0.752	0.576
682546	API 5L	2	1.004	0.567
	ASTM/ASME	2	0.752	0.571
682541	API 5L	2	1.004	0.551
	ASTM/ASME	2	0.752	0.583
682570	API 5L	2	1.000	0.575
	ASTM/ASME	2	0.748	0 507
682571	API 5L	2	1.000	0.583
	ASTM/ASME	2	0.749	0.499
682544	API 5L	2	0.996	0.555
	ASTM/ASME	2	0.754	0 586
682540	API 5L	2	1.004	0.575
	ASTM/ASME	2	0.752	0.579
682543	API 5L	2	0.996	0.551
	ASTM/ASME	2	0.752	0.568
682557	API 5L	2	1.000	0.539
	ASTM/ASME	2	0.752	0.551

We certify our sole responsibility that the materials which this certificate relates to are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Romano Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Mo[illegible]

SM

Manufacturer:
S.C. PETROTUB S.A.
AV. ROMAN - IASI KM. 333
Z.I.P. 5550 - ROMAN
ROMANIA

MILL TEST REPORT
acc. to E.N. 10204/3.1.B/91

NO. B 1618

Date: 8.06.2001

CAUGE LONGITUDINAL

HEAT NO.	STANDARD	LENGTH INCH	WIDTH INCH	THICKNESS INCH
682547	API 5L	2	0.996	0.575
	ASTM/ASME	2	0.752	0.563
682553	API 5L	2	0.996	0.583
	ASTM/ASME	2	0.753	0.581
682556	API 5L	2	1.004	0.543
	ASTM/ASME	2	0.752	0.559
682576	API 5L	2	1.004	0.563
	ASTM/ASME	2	0.752	0.567
682558	API 5L	2	0.996	0.571
	ASTM/ASME	2	0.753	0.590
682568	API 5L	2	1.000	0.551
	ASTM/ASME	2	0.748	0.511
682539	API 5L	2	1.000	0.535
	ASTM/ASME	2	0.752	0.559

HEAT NO.	CHEMICAL ANALYSIS BULLETIN NO.	MECHANICAL TEST BULLETIN NO	HARDNESS TEST HB BULLETIN NO.	HARDNESS TEST HRC BULLETIN NO	FLATTENING TEST BULLETIN NO.
682542	1259	691;302B	129	395	280
682559	1259	691;302B	129	395	280
682545	1259	691;302B	130	395	280
682555	1259	691;302B	129	395	280
682546	1252	690;301B	134	401	281
682541	1252	690;301B	134	401	281
682570	1559	846;391B	185	473	263
682571	1559	846;391B	185	473	263
682544	1259	691;302B	130	396	280

We certify our sole responsibility that the materials which this certificate relates to are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Romano Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Officer
Eng. M[illegible] M.

S.M.

APPENDIX 3.9.3

6.625-INCH O.D. CASING

Submittal Data
FROM

Youngquist Brothers, Inc.

15465 Pine Ridge Rd.
Ft. Myers, FL. 33908
239-489-4444 Fax: 239-489-4545

Project

Collier County NCWRF Injection Wells Project

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: July 22, 2003 Number of Copies: 8

Submittal Number: 4019-01-A

Specification Section Number: 4019

Item Submitted: 6.625" x .562" Mill Certificate

New Submittal: X Resubmitted: _____

Youngquist Brothers, Inc. Representative:

Marybeth Rios

Transmittal Date: _____

☐	Approved
☐	Approved with changes
☐	Rejected, Revise & Resubmit
☐	Not Reviewed

By: _____

Firm: _____

Date: _____

Manufacturer:
S.C. PETROTUB S.A.
AV. ROMAN – IASI KM. 333
Z.I.P. 5550 - ROMAN
ROMANIA

MILL TEST REPORT
acc. to E.N. 10204/3.1.B/91

NO.
B 1618

Date:
14.06.2002

Item	Size [inches]	Steel	Heat	Pcs	Length [m]	Weight [kg]	Hydro Test [PSI]	Chemical Composition %, on the product													Mechanical Properties						
								C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max 0.43%	Rp [PSI] x1000	Rm [PSI] x1000	A %	HB max 235	HRC max 22	Fa si T
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	2
	6" SCH 120 (Φ 168.3x 14.27 mm) Lg: DRL (min 80% = 40'±8" max 20% = 36'-42')	Gr.B/ X42 PSL 1	682571	1			3000	18	73	28	10	20	1	3	5	2	0.0	0.0	0.1	0.04	0.31	50.4	67.6	36.38	154,151	7,8	C
			682544	13				17	73	28	10	19	1	2	4	2	0.0	0.0	0.1	0.05	0.30	45.5	69.6	38.04	151,152	8;8	
		✓	682540	19				14	68	27	11	20	1	1	3	1	0.0	0.1	0.1	0.05	0.26	55.7	71.3	34.82	158;159	9;10	C
			682543	21				15	68	25	10	19	1	1	3	1	0.0	0.1	0.1	0.05	0.27	55.6	69.2	34.52	163,162	9;10	
			682557	13				16	68	24	12	18	1	1	4	0.0	0.0	0.0	0.2	0.04	0.25	53.3	68.3	37.01	156;158	10,10	C
			682547	49				15	68	24	12	20	1	1	5	0.0	0.0	0.0	0.2	0.04	0.27	52.6	68.5	37.73	160;162	11;10	
		✓	682533	16				16	68	23	10	18	1	1	2	0.0	0.0	0.0	0.1	0.03	0.26	56.0	71.8	32.07	178;172	8,8	C
			682556	21				16	68	24	10	19	1	1	2	0.0	0.0	0.0	0.1	0.04	0.28	57.3	71.4	37.99	175;169	9;10	
		✓	682576	20				18	65	26	10	21	1	2	3	0.0	0.0	0.0	0.2	0.03	0.29	57.1	73.1	31.60	159;158	7;7	C
			682558	24				17	64	26	10	22	1	2	3	0.0	0.0	0.0	0.2	0.03	0.28	55.2	71.9	36.14	162;162	9;10	
			682539	16				16	70	22	8	18	1	1	3	0.0	0.0	0.0	0.0	0.05	0.28	57.4	73.4	31.04	160;161	8;8	C
			682588	1				15	71	22	8	19	1	1	4	0.0	0.0	0.0	0.0	0.05	0.27	54.0	70.4	34.99	162;160	7;9	
								14	59	28	10	14	1	1	3	0.0	0.0	0.0	0.1	0.03	0.24	53.0	67.9	32.33	170;172	9;11	C
								14	59	29	11	15	1	1	3	0.0	0.0	0.0	0.1	0.03	0.24	56.0	69.8	37.60	174;171	10;9	
								19	73	28	11	17	1	1	5	0.0	0.0	0.0	0.1	0.06	0.32	56.4	72.3	34.39	166;167	8;8	C
								19	73	27	11	18	2	1	5	0.0	0.0	0.0	0.1	0.06	0.32	54.4	70.9	34.69	161;170	9;9	
								14	74	20	8	16	1	3	3	0.0	0.0	0.0	0.0	0.02	0.27	54.5	69.8	35.01	160,162	9,9	C
								15	73	21	8	17	1	3	4	0.0	0.0	0.0	0.0	0.02	0.28	53.7	69.9	36.45	169;169	8;8	
								17	67	29	11	18	1	1	3	1	0.0	0.0	0.1	0.04	0.29	54.1	69.3	35.45	168,168	11;12	C
								17	67	30	11	19	1	1	3	1	0.0	0.0	0.1	0.04	0.29	55.2	68.8	38.93	170;172	11;11	
								15	71	23	9	19	1	1	3	0.0	0.0	0.0	0.2	0.02	0.27	58.9	75.2	31.47	153,152	9;10	C
								15	72	24	8	20	2	2	3	0.0	0.0	0.0	0.1	0.03	0.28	57.7	70.7	35.74	156;154	9;9	
								15	67	31	11	18	1	1	3	3	0.0	0.0	0.1	0.06	0.27	53.2	71.5	34.74	163,164	8,9	C
								16	67	31	11	19	1	1	3	3	0.0	0.0	0.1	0.05	0.28	44.5	68.0	40.00	162;164	8;9	

We certify our sole responsibility that the materials which this certificate relates to are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Bârsan Romano Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Morariu M.

S.M.

Manufacturer:
S.C. PETROTUB S.A.
AV. ROMAN – IASI KM. 3,5
Z.I.P. 5550 - ROMAN
ROMANIA

MILL TEST REPORT
acc. to E.N. 10204/3.1.B/91

NO.
B 1618

Date:
14.06.2002

BUYER:

Goods Description:
PRIME QUALITY NEWLY PRODUCED SEAMLESS STEEL PIPES IN STRICT CONFORMITY WITH PURCHASE ORDER NBR. SP 2063

Quantity:
262000 KGS

Total Length:
4833.95 MTRS
15859.43 FT
394 PCS /
79 BDLS

Contract No.
SP 2063

Standard
API 5L /2000; ASTM A106/99; ASTM A53/99
ASME SA 106/2001;ASME SA 53/2001; NACE MR 01-75/2000

Item	Size [inches]	Steel	Heat	Pcs	Length [m]	Weight [kg]	Hydro Test [PSI]	Chemical Composition %, on the product														Mechanical Properties						
								C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max 0.43%	Rp [PSI] x1000	Rm [PSI] x1000	A %	HB max 236	HRC max 22	F
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	2
	6" SCH 120 (Φ 168.3x 14.27 mm) Lg: DRL (min 80% = 40'-48" max.20% = 36'-42')	Gr.B/ X42 PSL.1	682542 ✓	42			3000	14	65	25	11	19	1	1	4	1	0.0	0.0	0.1	0.05	0.26	55.3	70.8	34.09	165;166	7;8	O
			682559 ✓	15				14	65	24	9	20	1	1	4	1	0.0	0.0	0.1	0.05	0.26	57.7	70.9	34.21	168;168	7;8	
		✓	682545	33				15	62	23	10	14	1	1	2	2	0.0	0.0	0.1	0.03	0.26	58.3	74.7	32.23	178;176	9;9	O
								15	62	22	9	15	1	1	2	2	0.0	0.0	0.1	0.03	0.26	55.9	70.9	36.84	178;178	8;8	
			682555	19				16	64	24	11	18	1	2	3	1	0.0	0.0	0.2	0.05	0.27	53.0	67.9	34.63	169;168	8;8	O
		✓						15	64	25	10	19	1	2	3	1	0.0	0.0	0.2	0.05	0.26	56.0	69.8	39.64	163;167	9;9	
			682546	17				16	61	24	10	18	1	1	3	0.0	0.0	0.1	0.2	0.02	0.27	56.5	72.3	32.82	172;174	9;10	O
								16	61	25	11	19	1	1	3	0.0	0.0	0.1	0.2	0.02	0.27	56.6	70.5	35.76	170;171	10;11	
		✓	682541	45				16	69	22	9	22	1	2	3	0.0	0.0	0.0	0.2	0.02	0.27	54.1	69.3	35.32	179;179	8;8	O
								17	70	22	10	22	1	2	3	0.0	0.0	0.0	0.2	0.06	0.28	53.3	69.4	36.33	174;172	9;9	
			682570	9				18	77	29	11	21	1	1	2	0.0	0.0	0.0	0.1	0.05	0.31	55.6	71.2	33.79	170;171	7;7	O
								18	76	28	11	20	1	1	2	0.0	0.0	0.0	0.1	0.04	0.31	52.2	68.0	38.41	170;172	8;8	
								16	66	25	11	19	1	1	5	2	0.0	0.0	0.1	0.07	0.28	51.1	68.6	37.56	160;158	9;8	O
								17	66	26	11	18	1	1	5	2	0.0	0.0	0.1	0.06	0.29	44.8	68.5	38.99	161;161	8;9	

REMARKS: Hydrostatic test held for 5 sec. No leakage noticed.
Electromagnetical examination on automatic equipment - satisfactory

We certify our sole responsibility that the materials which this certificate relates to are in conformity with specification requirements.

GENERAL MANAGER
Dr. Eng. Birsan Romano Dorel

Chief Inspection Dept.
Eng. Nicolau Constantin

QA Office
Eng. Obreanu M.

APPENDIX 3.10

LETTERS REQUESTING CASING SETTING DEPTH APPROVAL

APPENDIX 3.10.1

IW-1 LETTERS

Water Resource Solutions
428 Pine Island Road SW • Cape Coral, Florida 33991 239 574-1919 Fax: 239 574-8106

February 14, 2003

Jack Myers, P.G.
UIC Group
Florida Department of Environmental Protection
2295 Victoria Ave, Suite 364
Ft Myers, Florida 33901

RE: Intermediate Casing Setting Depth – Collier County, NCWRF IW-1 Injection Well

Dear Mr. Myers:

The drillers are currently reaming the pilot hole for the NCWRF deep injection well IW-1 in preparation for setting the 34-inch OD intermediate steel casing. In the approved construction permit, the intermediate casing depth was selected to be 1300 feet. We are currently proposing that the intermediate casing setting depth remain at +/- 1300 feet.

The portion of the provided caliper log shows the section of hole between 1200 feet and 1350 feet (Attachment 1) is slightly larger than gage. The sonic log indicates that the porosity of the limestone formation between 1200 and 1350 feet ranges near 50% (Attachment 2).

The deep resistivity curve in the region between 1200 and 1300 feet bls reads approximately 1.5 ohm-meters (Attachment 3). The use of a sonic porosity of 50% (considered high due to hole size) and a formation resistivity of 1.5 ohm-meters, yields, using Archie's equation, a resistivity of 0.375 ohm-meters. A water resistivity of 0.375 ohm-meters at 87° F (Attachment 4) correlates with a NaCl salinity of 14,000 TDS.

Water was collected between the depth of 1200 and 1357 feet using a packer. The water had a preliminary specific conductance of 43000 umhos/cm, which correlates to a resistivity of 0.23 ohm-meters, and a NaCl concentration of 25,000 mg/l . These data

indicate that the currently selected casing setting depth lies below the base of the USDW.

In addition, the Youngquist Brothers Geophysical Services Group has provided a continuous log interpretation of formation TDS, based on South Florida water quality. This log (Attachment 5) places the base of the USDW between 960 and 1040 feet below land surface. In conjunction with the Dual Induction log, the base of the USDW is conservatively placed at 1050 feet bls.

Based on the above interpretation and attached data, it is requested that the casing setting depth for the intermediate casing remain at 1300 feet bls.

Please advise me as soon as possible concerning this matter.

Sincerely,

Lloyd E. Horvath, P.E.
Licensed Professional Engineer # 25260
Date: 2-14-03

c. Mr. Joe Haberfeld, P.G.
Ms. Nancy Marsh
Mr. Steve Anderson P.G.
Mr. Ron Reese. P.G.
Mohan Thampi, P.E.

FDEP
U.S.E.P.A.
SFWMD
USGS
Collier County

ATTACHMENT 1

CALIPER LOG

YOUNGQUIST BROTHERS, Inc

GEOPHYSICAL LOGGING DIVISION

X-Y CALIPER GAMMA RAY LOG

Company WATER RESOURCE SOLUTIONS, INC

Well IW #1

Field NCWRF

County COLLIER State FLORIDA

Location

SE 1/4 S27 T48S R25E

Other Services

SEE COMMENTS

Well IW #1
Field NCWRF
County COLLIER
State FL

Permanent Datum	PAD	Elevation	15'
Log Measured From	GROUND LEVEL		
Drilling Measured From	PAD		

Elevation
K.B. N/A
D.F. 20.5'
G.L. 15'

lumber	10-FEB-2003		
Driller	THREE		
Logger	1450'		
m Logged Interval	1456'		
og Interval	1456'		
Hole Size	CASING		
Fluid	12.25"		
ty / Viscosity	WATER		
Recorded Temp.	N/A		
ated Cement Top	N/A		
Well Ready	N/A		
Logger on Bottom	1200		
ment Number	1245		
on	103		
ded By	FT MYERS		
ssed By	DENISON/BARRETT		
	N. KUGLER		

Borehole Record

Number	Bit	From	To
ONE	59.5"	SURFACE	415'
WO	12.25"	CASING	1450'

Tubing Record

Size	Weight	From	To

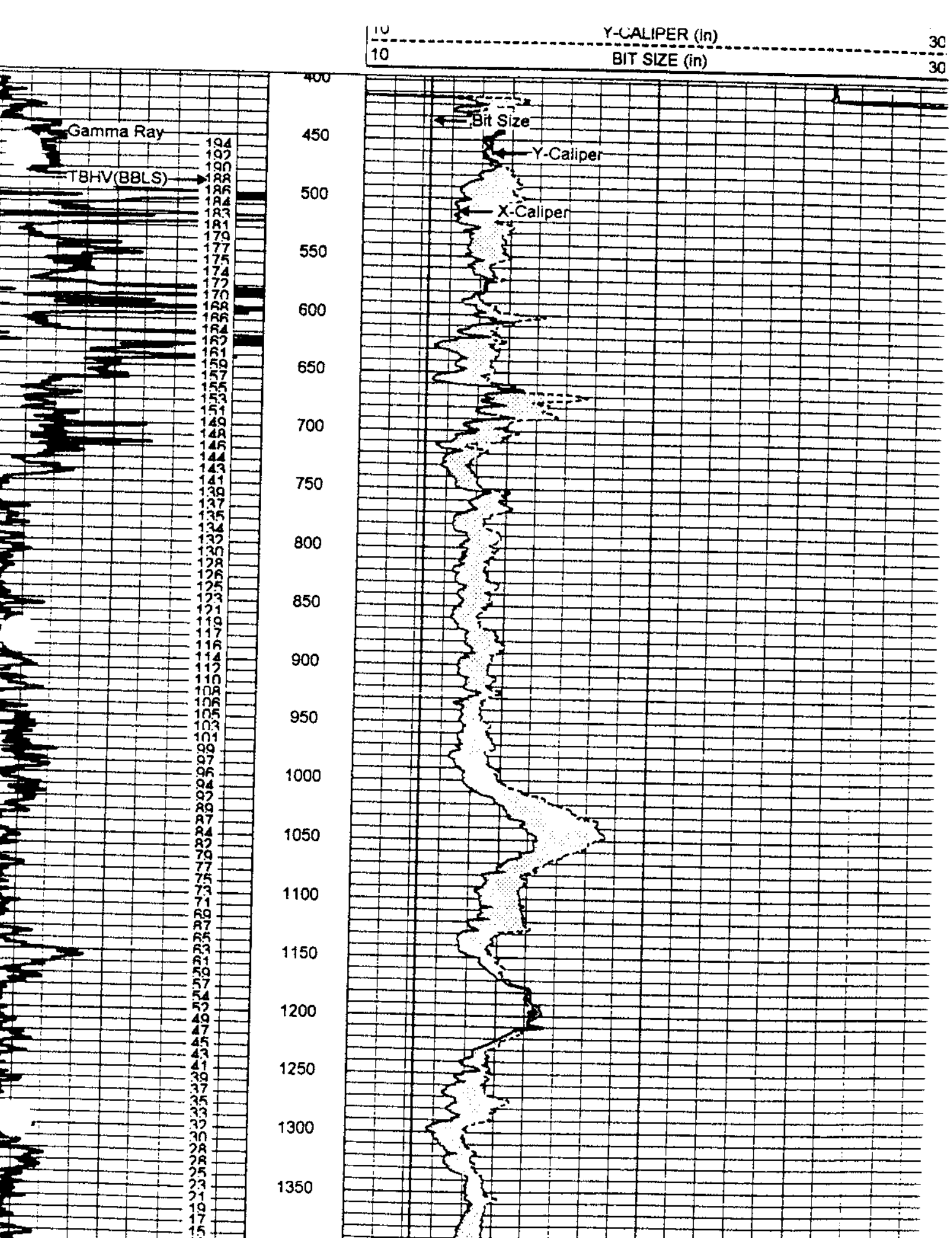
Record	Size	Wgt/Ft	Top	Bottom
String	60"	.375 W.T.	SURFACE	8'
ring	48"	.375 W.T	SURFACE	41(
ion String				

Fold Here >>>

Comments

NOTE: DRILL PIPE SET AT 414'

OTHER SERVICES:
DIL/LL3/SP
TEMPERATURE
FLOWMETER
SONIC


Y-CALIPER (in)
10
30
BIT SIZE (in)
10
30
Gamma Ray
TBHV(BBLS)
Bit Size
Y-Caliper
X-Caliper
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350

ATTACHMENT 2

BOREHOLE COMPENSATED SONIC LOG

GQUIST
ERS, Inc
C G DIVISION

BOREHOLE COMPENSATED SONIC W/ VDL LOG

Company WATER RESOURCE SOLUTIONS, INC.
Well IW #1
Field NCWRF
County COLLIER State FLORIDA

Location
SE 1/4 S27 T48S R25E

Other Services
SEE COMMENTS

Elevation
K.B. N/A
D.F. 20.5'
G.L. 15'

manent Datum PAD Elevation 15'
Measured From GROUND LEVEL
ing Measured From PAD

	10-FEB-2003
	THREE
	1450'
	1456'
	1456'
	CASING
	12.25"
	WATER
	N/A
	N/A
	N/A
	1130
	1500
	103
	FT MYERS
	DENISON/BARRETT
	N. KUGLER

e Record

From	To
SURFACE	415'
CASING	1450'

Tubing Record

Size	Weight	From	To

Size	Wgt/Ft	Top	Bottom
60"	.375 W.T.	SURFACE	8'
48"	.375 W.T	SURFACE	410'

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

NOTE: DRILL PIPE SET AT 414'

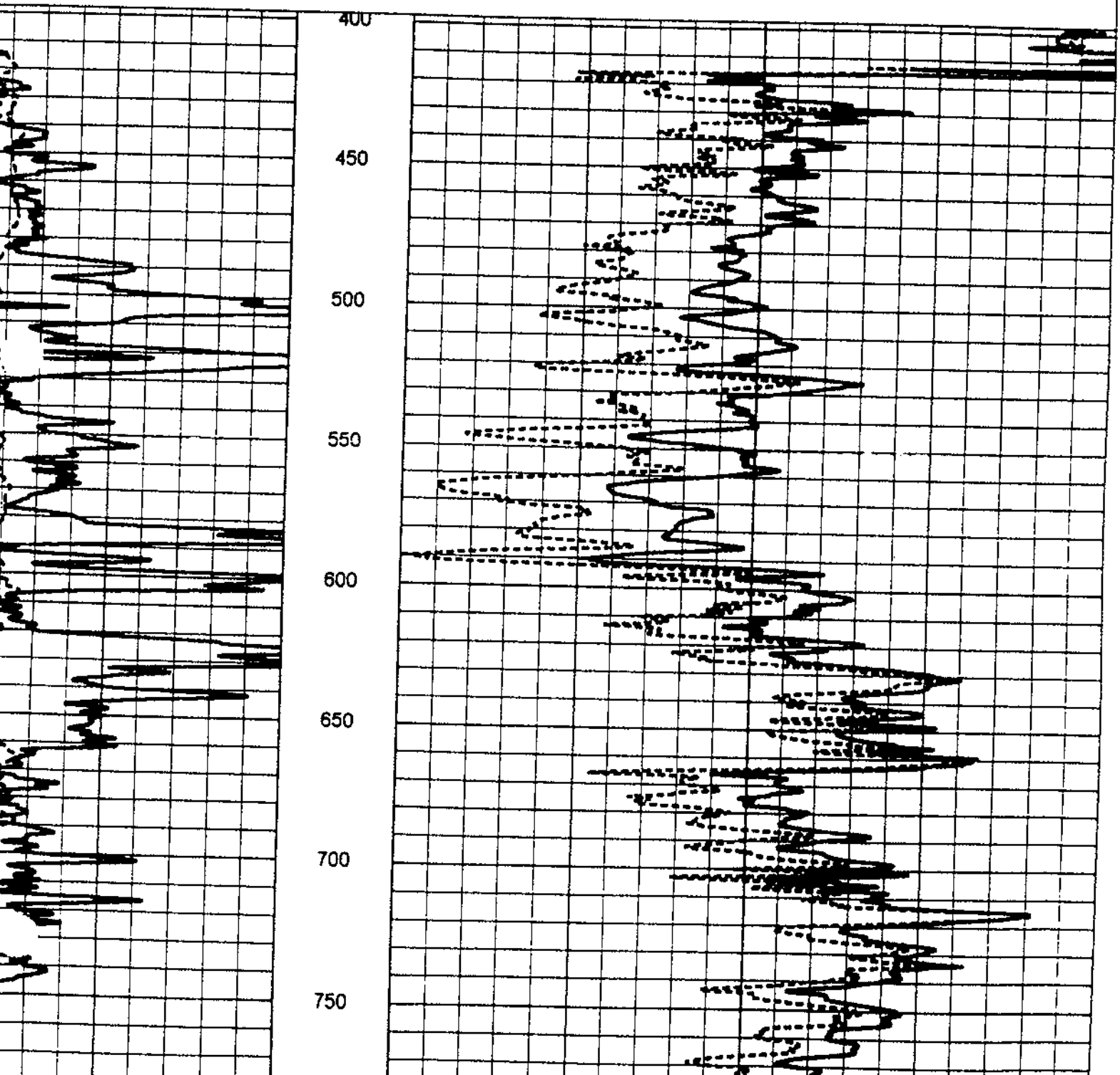
OTHER SERVICES:
X-Y CALIPER
TEMPERATURE
FLOW METER
DIL/LL3

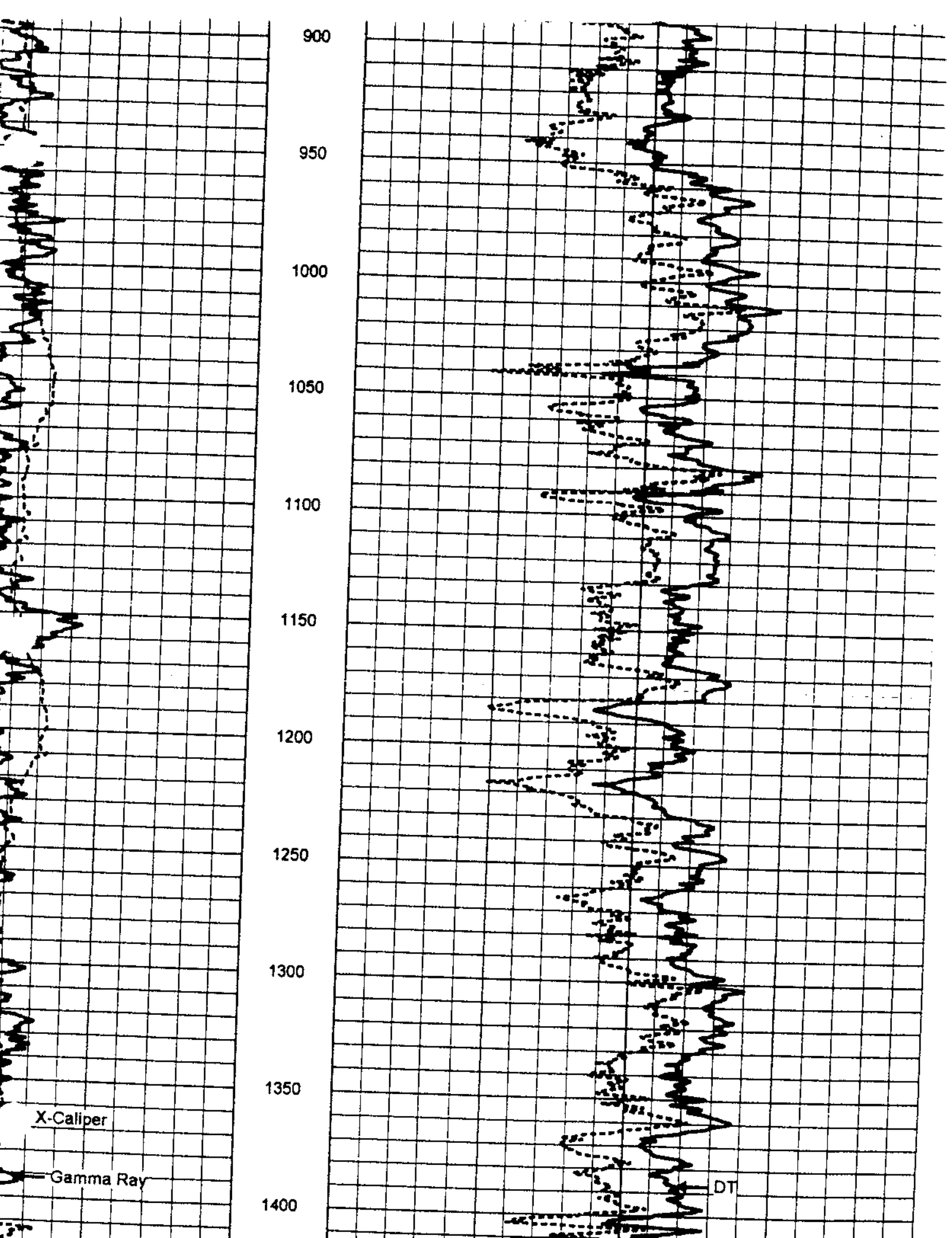
YOUNGQUIST
BROTHERS, Inc
GEOPHYSICAL LOGGING DIVISION

MAIN PASS

abase File:	ncolliw1.db
aset Pathname:	run3/pass12
sentation Format:	son_por
aset Creation:	Mon Feb 10 14:52:52 2003 by Log 6.2_B4
rted by:	Depth in Feet scaled 1:600

GAMMA RAY (GAPI)	100	240	DT (usec/ft)	40
X-CALIPER (in)	30	100	SONIC POROSITY (DTMA=47.6) (pu)	0




900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
X-Caliper
Gamma Ray
DT

ATTACHMENT 3

DUAL INDUCTION LOG

YOUNGQUIST BROTHERS, Inc

GEOPHYSICAL LOGGING DIVISION

DUAL INDUCTION LL3/SP LOG

Company WATER RESOURCE SOLUTIONS, INC.

Well IW #1

Field NCWRF

County COLLIER State FLORIDA

Location

SE 1/4 S27 T48S R25E

Other Services

SEE COMMENTS

Permanent Datum PAD Elevation 15'

Log Measured From GROUND LEVEL

Drilling Measured From PAD

Elevation

K.B. N/A

D.F. 20.5'

G.L. 15'

Well IW #1
Field NCWRF
County COLLIER
State FL

Number	10-FEB-2003
Driller	THREE
Logger	1450'
Logged Interval	1456'
Log Interval	1456'
Hole Size	CASING
Fluid	12.25"
Density / Viscosity	WATER
Recorded Temp.	N/A
Max Recorded Temp.	N/A
Estimated Cement Top	N/A
Time Well Ready	1130
Time Logger on Bottom	1145
Equipment Number	103
Location	FT MYERS
Recorded By	DENISON/BARRETT
Witnessed By	N. KUGLER

Borehole Record

Number	Bit	From	To
ONE	59.5"	SURFACE	415'
TWO	12.25"	CASING	1450'

Tubing Record

Size	Weight	From	To

Record	Size	Wgt/Ft	Top	Bottom
String	60"	.375 W.T.	SURFACE	6'
ing	48"	.375 W.T	SURFACE	410'
on String				

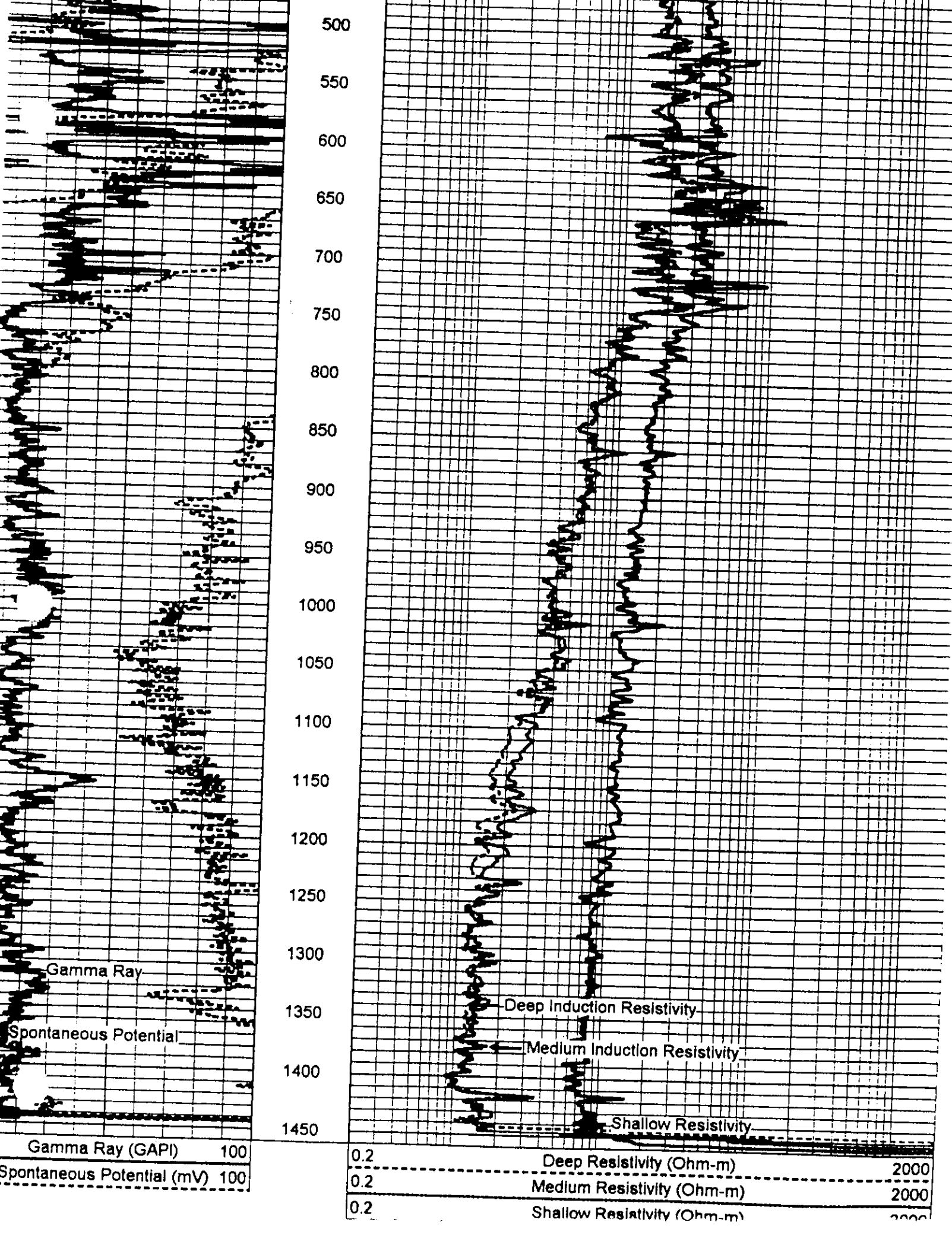
Fold Here >>>

Interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

NOTE: DRILL PIPE SET AT 414'

OTHER SERVICES:
X-Y CALIPER
TEMPERATURE
FLOW METER
SONIC


500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
Gamma Ray
Spontaneous Potential
Deep Induction Resistivity
Medium Induction Resistivity
Shallow Resistivity
Gamma Ray (GAPI) 100
Spontaneous Potential (mV) 100
0.2
Deep Resistivity (Ohm-m) 2000
0.2
Medium Resistivity (Ohm-m) 2000
0.2
Shallow Resistivity (Ohm-m)

ATTACHMENT 4

TEMPERATURE LOG

YOUNGQUIST BROTHERS, Inc

GEOPHYSICAL LOGGING DIVISION

TEMPERATURE LOG

Company WATER RESOURCE SLTS.
Well IW #1
Field NCWRF
County COLLIER
State FL

Company WATER RESOURCE SOLUTIONS, INC
Well IW #1
Field NCWRF
County COLLIER State FLORIDA

Location: SE 1/4 S27 T48S R25E

Other Services: SEE COMMENTS

Permanent Datum: PAD Elevation 15'
Log Measured From: GROUND LEVEL
Drilling Measured From:

Elevation
K.B. N/A
D.F. 20.5'
G.L. 15'

Date	10-FEB-2003		
Run Number	THREE		
Depth Driller	1450'		
Depth Logger	1456'		
Bottom Logged Interval	1456'		
Top Log Interval	CASING		
Open Hole Size	12.25"		
Type Fluid	WATER		
Density / Viscosity	N/A		
Max. Recorded Temp.	87 DEG F		
Estimated Cement Top	N/A		
Time Well Ready	1200		
Time Logger on Bottom	1245		
Equipment Number	103		
Location	FT MYERS		
Recorded By	DENISON/BARRETT		
Witnessed By	N. KUGLER		

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	58.5"	SURFACE	415'				
TWO	12.25"	CASING	1450'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	60"	375 W.T.	SURFACE	8'
Prot. String	48"	375 W.T.	SURFACE	410'
Production String				
Liner				

<<< Fold Here >>>

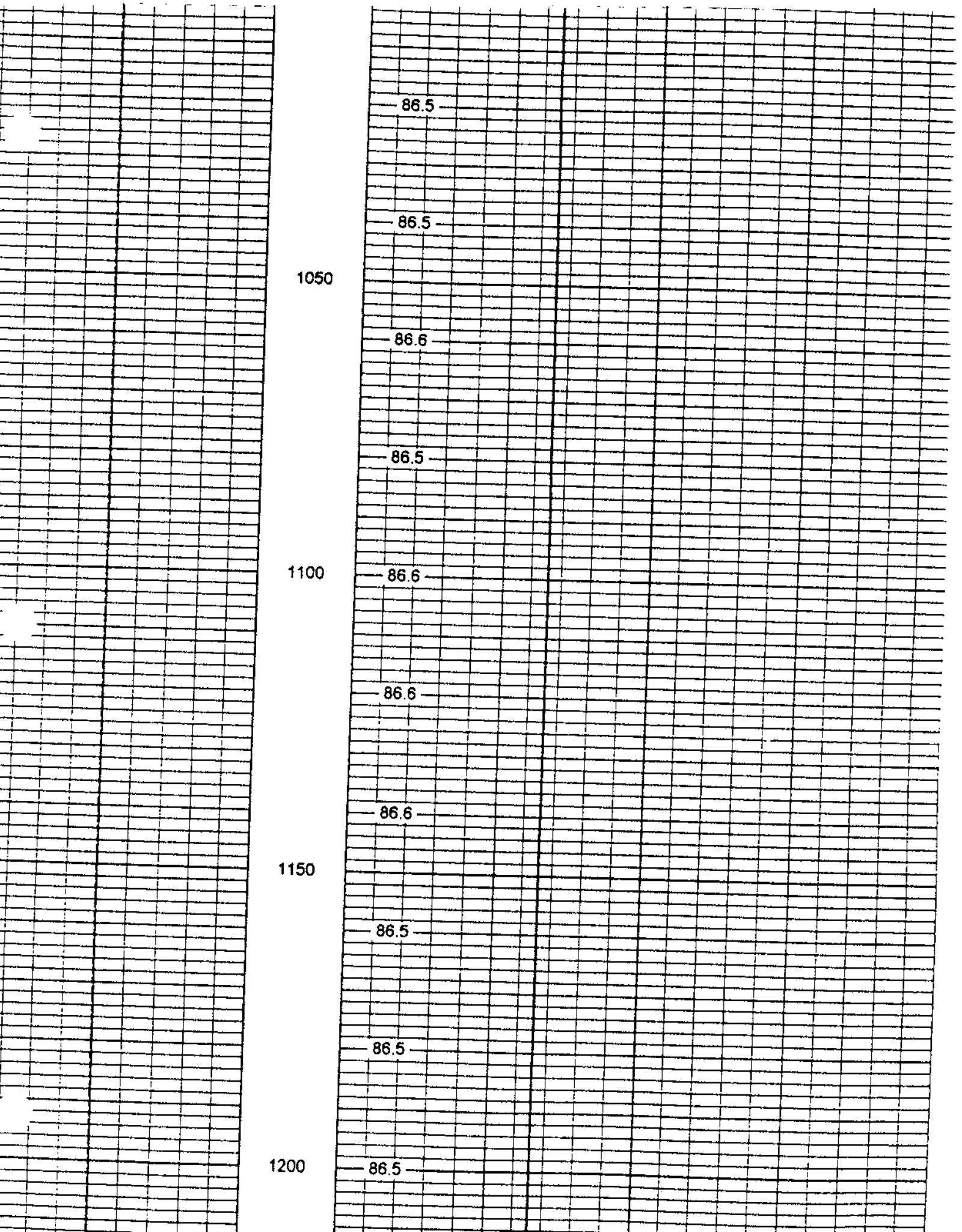
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

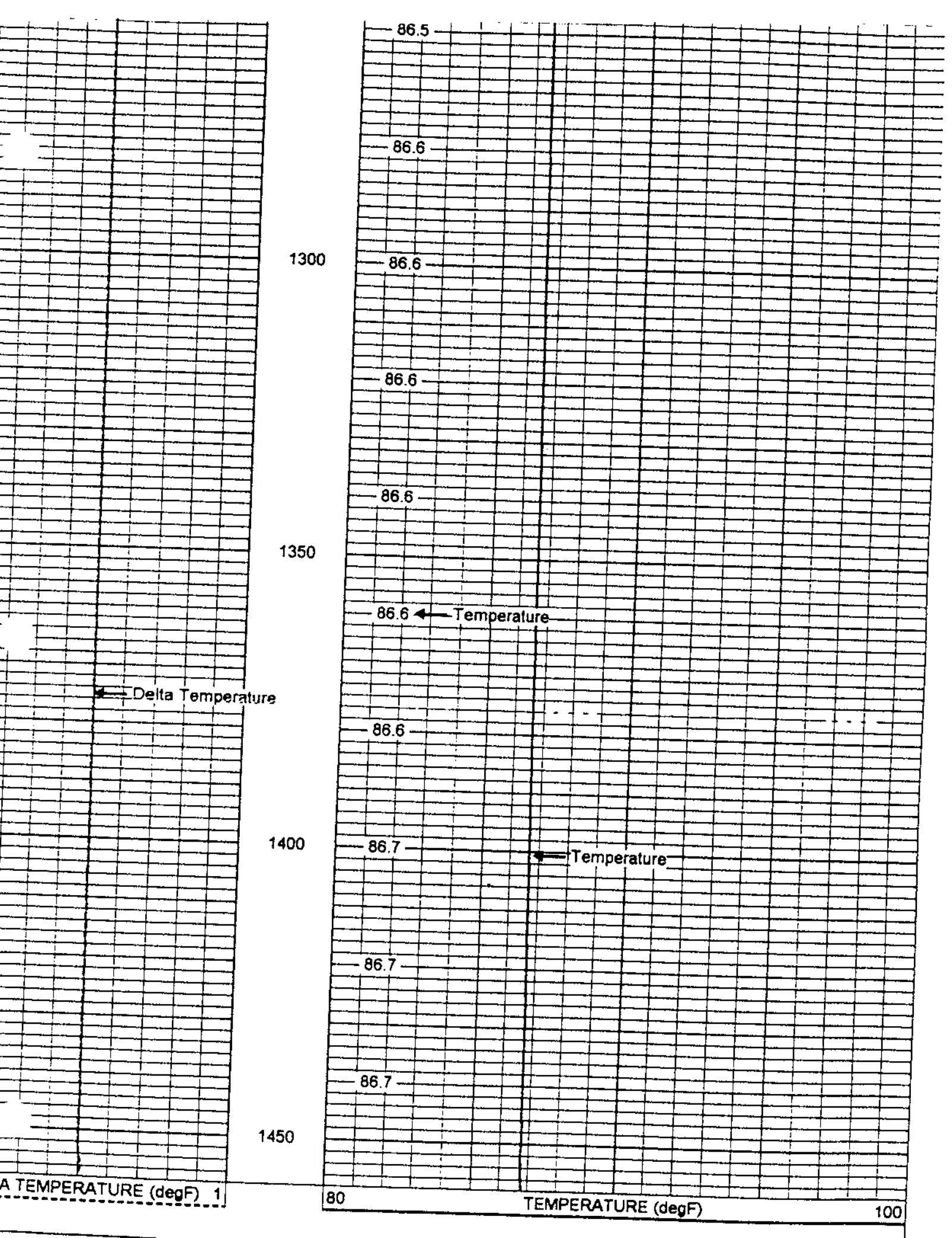
Comments

OTHER SERVICES:
SONIC
DIL/LL3/SP
X-Y CALIPER
FLOWMETER

YOUNGQUIST BROTHERS, Inc

TEMPERATURE


86.5
86.5
1050
86.6
86.5
1100
86.6
86.6
86.6
1150
86.5
86.5
1200
86.5


86.5
86.6
86.6
86.6
86.6
86.6 Temperature
86.6
86.7 Temperature
86.7
86.7
1300
1350
1400
1450
Delta Temperature
A TEMPERATURE (degF) 1
80
TEMPERATURE (degF)
100

ATTACHMENT 5

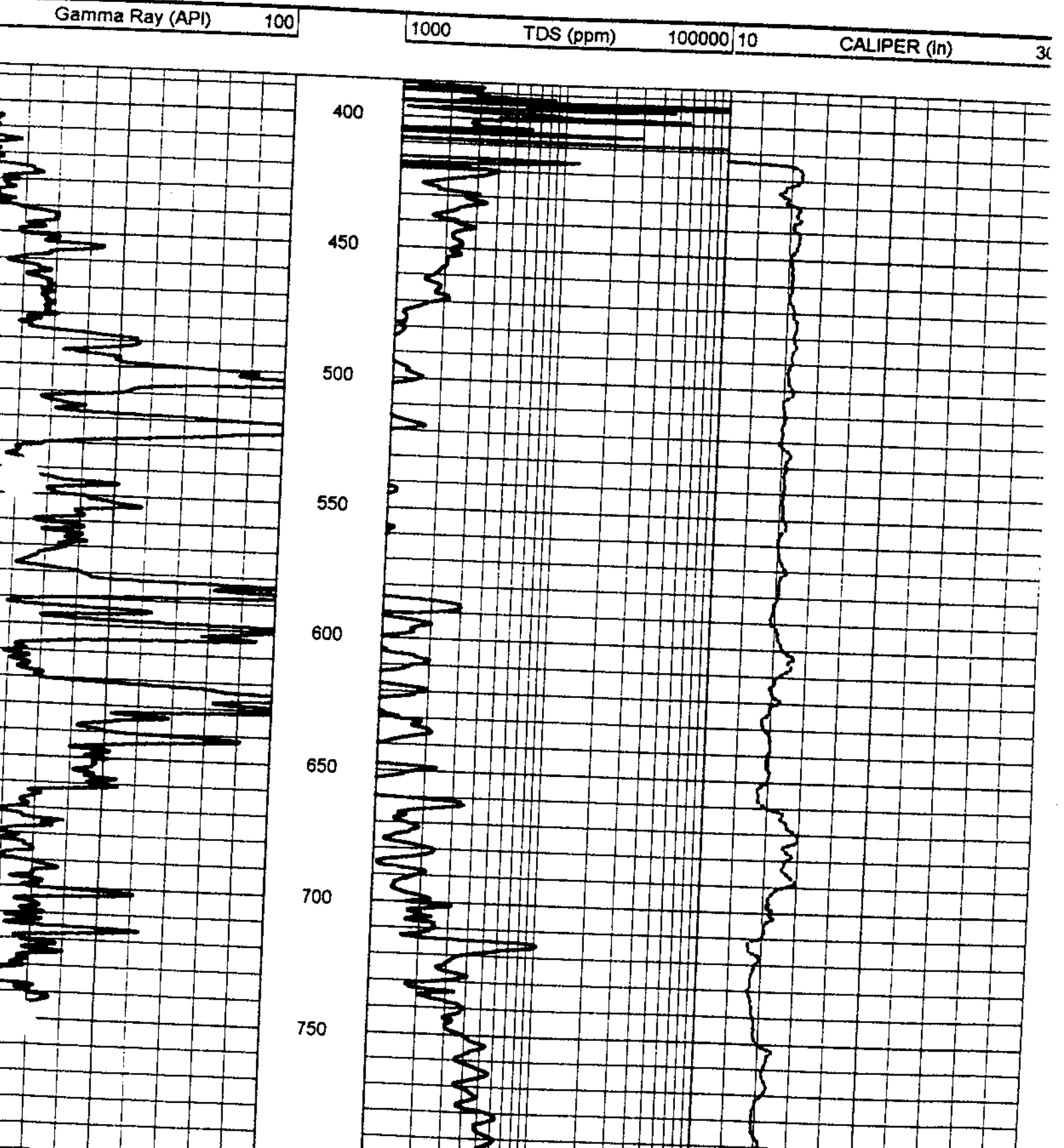
LOG DERIVED TDS

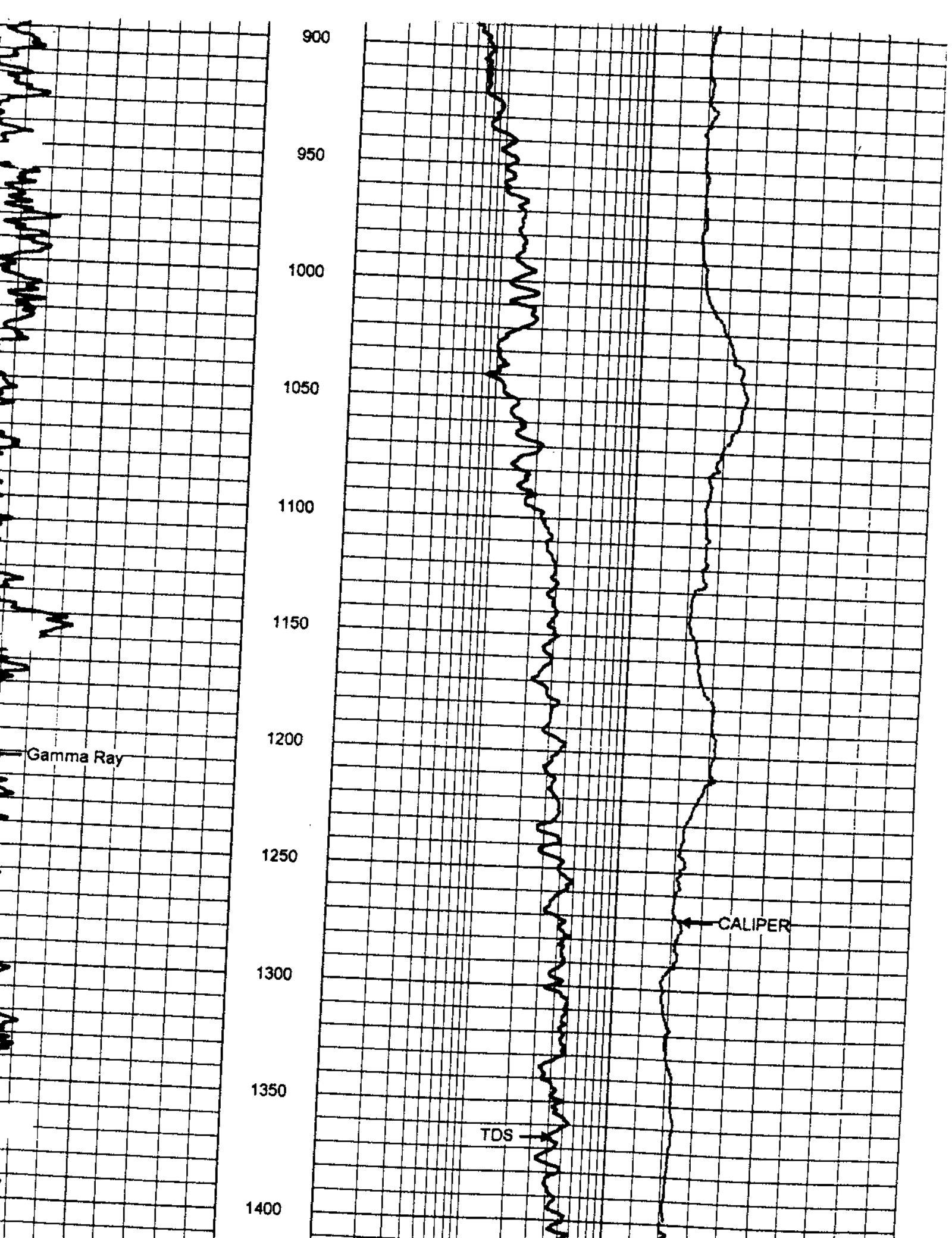
BROTHERS, Inc

GEOPHYSICAL LOGGING DIVISION

LOG DERIVED TDS

Database File: ncolliw1.db
Dataset Pathname: run3/TDS
Presentation Format: tds
Dataset Creation: Mon Feb 10 15:35:17 2003
Charted by: Depth in Feet scaled 1:600




900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
Gamma Ray
CALIPER
TDS

IW-1 34

Subj: **Fw: ncc wrf IW-1 intermediate casing depth**
Date: 2/19/2003 3:14:35 PM Eastern Standard Time
From: mpearce@wrsolutions.com (Mark Pearce)
Reply-to: mpearce@wrsolutions.com (Mark Pearce)
To: scrwtpiw@aol.com

Noah,

E-mail back that you received this.

Mark

----- Original Message -----
From: "Myers, Jack" <Jack.Myers@dep.state.fl.us>
To: <mpearce@wrsolutions.com>
Cc: "Haberfeld, Joe" <Joe.Haberfeld@dep.state.fl.us>
Sent: Wednesday, February 19, 2003 2:43 PM
Subject: ncc wrf IW-1 intermediate casing depth

Mark, The Department staff has reviewed the 2/14/03 submittal and 2/19/03
FAX and concurs with the recommendation to set the intermediate casing at approximately 1300 feet bls. If you have any questions please call me at 332-6975, ext 120. Jack

---------- Headers ----------
Return-Path: <mpearce@wrsolutions.com>
Received: from rly-xi02.mx.aol.com (rly-xi02.mail.aol.com [172.20.116.7]) by air-xi01.mail.aol.com (v90_r2.5) with ESMTP id MAILINXI12-0219151435; Wed, 19 Feb 2003 15:14:35 -0500
Received: from MAIL03.toast.net (mail.toast.net [206.244.185.10]) by rly-xi02.mx.aol.com (v90_r2.6) with ESMTP id MAILRELAYINXI24-0219151416; Wed, 19 Feb 2003 15:14:16 -0500
Received: from wrstoast (unverified [206.148.164.77]) by MAIL03.toast.net (Vircom SMTPRS 1.4.232) with ESMTP id <B0034875206@MAIL03.toast.net> for <scrwtpiw@aol.com>; Wed, 19 Feb 2003 15:13:57 -0500
Message-ID: <001d01c2d853$b0e0c180$3200a8c0@wrstoast>
Reply-To: "Mark Pearce" <mpearce@wrsolutions.com>
From: "Mark Pearce" <mpearce@wrsolutions.com>
To: <scrwtpiw@aol.com>
Subject: Fw: ncc wrf IW-1 intermediate casing depth
Date: Wed, 19 Feb 2003 15:03:47 -0500
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit
X-Priority: 3
X-MSMail-Priority: Normal
X-Mailer: Microsoft Outlook Express 6.00.2600.0000
X-MIMEOLE: Produced By Microsoft MimeOLE V6.00.2600.0000

Water Resource Solutions
428 Pine Island Road SW, Cape Coral, Florida 941 574 1919 Fax 941 574 8102

April 3, 2003

Jack Myers, P.G.
UIC Group
Florida Department of Environmental Protection
2295 Victoria Ave, Suite 364
Ft Myers, Florida 33901

RE: Injection Casing Setting Depth – Collier County Injection Well
FDEP # 187941-001-UC

Dear Mr. Myers:

The drillers are currently preparing to back plug the well from 2590 feet to stabilize the hole in preparation for reaming the hole and setting casing to a depth of 2580 feet. We are currently proposing that the injection casing setting depth be adjusted from the original proposed depth of 2525 feet to 2580 feet.

The following information from the pilot hole are provided for your review:

The caliper log shows the section of hole is nearly gage between the depths of 2270 and 2590 feet (Attachment 1). The sonic log indicates that the porosity of the dolomite in the depth region between 2530 and 2590 is low, and ranges below 5 % in some places. (Attachment 2). Additional low porosity units are observed in the depth range below 2300 feet. A core sample retrieved from the depth interval between 2477.5 and 2484 feet appears to be extremely dense, stratified dolomite. This material has very low porosity and is anticipated to have a vertical permeability in the microdarcy range.

A core sample retrieved from 1600 to 1611 feet consisting of limestone and dolomitic limestone also appears to have a low porosity and is anticipated to have a moderately low (millidarcy to microdarcy) permeability. The lithologic log is also provided for your use (Attachment 3).

WATER QUALITY PROFILE

Reverse Air Drilling

Water quality results for samples taken during reverse air drilling are provided in Table 1. The data provided in this table indicates that water quality is near sea water quality in all intervals tested. The induction log (Attachment 4) is provided also for your review.

Base Of The USDW

As indicated in the letter dated February 14, 2003, the base of the USDW is placed 1050 feet below land surface. The currently proposed base of the is over 1500 feet below the base of the USDW.

The current plan is to grout and gravel up the pilot hole, and to stabilize this hole as much as possible. A nominal 34-inch hole will then be reamed to a depth of approximately 2580 feet. Prior to running the casing, the hole conditions will be examined to make sure that the casing can be run without trouble and that the hole can be grouted back to the surface except in the sections where gravel may be required to fill the larger voids.

Please call me at as soon as possible concerning this matter.

Sincerely,

Mark S. Pearce, Ph.D.
Senior Scientist

c. Mr. Joe Haberfeld, P.G. — FDEP
Ms. Nancy Marsh — U.S.E.P.A.
Mr. Steve Anderson — SFWMD
Mr. Ron Reese — USGS

Info

From: "Myers, Jack" <Jack.Myers@dep.state.fl.us>
To: "Mark Pearce" <mpearce@wrsolutions.com>
Cc: "Haberfeld, Joe" <Joe.Haberfeld@dep.state.fl.us>
Sent: Tuesday, April 29, 2003 10:28 AM
Subject: RE: Error in NCWRF Casing Setting Depth Request

Mark, The casing depth request for the 24-inch injection casing to be set at approximately 2580 feet bls is satisfactory. Jack

-----Original Message-----
From: Mark Pearce [mailto:mpearce@wrsolutions.com]
Sent: Tuesday, April 29, 2003 8:54 AM
To: Myers, Jack
Cc: Haberfeld, Joe; mohanthampi@colliergov.net
Subject: Error in NCWRF Casing Setting Depth Request

Mr. Myers:

The problem with e-mail is I don't proof read as well as I should. The transmission I just sent indicated a casing setting depth of 2480 feet which is not correct. I am requesting a casing setting depth of 2580 feet for the 24-inch injection casing at the North County Water Reclamation Facility.

Mark Pearce

APPENDIX 3.10.2

DZMW LETTERS

June 18, 2003

Mr. Jack Myers, P.G.
Florida Department of Environmental Protection
Underground Injection Program
2295 Victoria Avenue, Suite 364
Ft. Myers, Florida 33901

Re: North Collier Deep Injection Well –Dual Zone Monitoring Well Design

Dear Mr. Myers:

At the present time I am asking formal approval to modify the design of the dual zone monitoring well at this location. As indicated in my March 19, 2003 letter, which requested a review of various completion options for the injection well, the actual base of the USDW was located at 1050 feet below land surface rather than 1300 feet. Therefore, it is desired to bring the monitoring zones closer to the location of the USDW. After review, it is requested that the lower most monitoring zone be located within the subsurface region between 1200 and 1300 feet. The upper interval is requested to be identified as the first flow interval above 1050 feet with a minimum specific capacity of 3 gpm/ft at a flow rate near 30 gpm. It is anticipated that such a flow interval can be found between 950 and 1050 feet. Clearly, authorization for the exact interval selection would need to be approved by the FDEP prior to setting casing. I believe that you had indicated previously that the proposed modification was acceptable in a verbal response to the March 19th letter.

If you have any questions, or need additional information, please call me at you earliest convenience.

Sincerely,

Mark S. Pearce, Ph.D.
Senior Scientist

c. Joe Haberfeld, P.G.
Mohan Thampi, P.E.

Info

From: "Myers, Jack" <Jack.Myers@dep.state.fl.us>
To: "Mark Pearce" <mpearce@wrsolutions.com>
Cc: "Haberfeld, Joe" <Joe.Haberfeld@dep.state.fl.us>
Sent: Monday, July 07, 2003 7:50 AM
Subject: RE: Collier NCWRF - Modification To Dual Zone Monitoring Well

Mark, Yes, you remember correctly. The lower zone selection is satisfactory. Because of the long transition zone, the upper zone should be as thin as possible (perhaps 50' more or less) and to avoid the potential upconing of saline waters, we suggest that the interval be no deeper than 1000 feet bls. Jack

-----Original Message-----
From: Mark Pearce [mailto:mpearce@wrsolutions.com]
Sent: Thursday, July 03, 2003 4:45 PM
To: Myers, Jack
Subject: Fw: Collier NCWRF - Modification To Dual Zone Monitoring Well

Mr. Myers:

Have you responded to this by e-mail?
I haven't seen a response. I know you indicated lower depth ok, but may need to get above transition zone from base of usdw to prevent ambiguous data. Do I remeber correctly?

Mark Pearce

—— Original Message ——
From: Mark Pearce
To: Myers, Jack
Cc: Haberfeld, Joe ; thampi_m
Sent: Wednesday, June 18, 2003 9:03 AM
Subject: Collier NCWRF - Modification To Dual Zone Monitoring Well

Mr. Myers:

I have attached a request to adjust the depths of the monitoring intervals based on the location of the USDW at this site. I believe that we discussed this issue and that you indicated that both Mr. Haberfeld and Mr. Deuerling had considered this change acceptable.

Mark Pearce

Info

From: "Mark Pearce" <mpearce@wrsolutions.com>
To: "Myers, Jack" <Jack.Myers@dep.state.fl.us>
Cc: "thampi_m" <MohanThampi@colliergov.net>; "Haberfeld, Joe" <Joe.Haberfeld@dep.state.fl.us>
Sent: Tuesday, June 17, 2003 3:44 PM
Subject: Use of Cement and Gravel

Mr. Myers:

As I discussed with you today, we will likely have the hole between 2140 and 2050 graveled by the end of today. We are currently putting a cement cap on the gravel at 2050 and plan to develop a 6 to 8 foot cement plug up to 2040 or higher. We will keep cementing until we do not have fill with two consecutive stages of cement. Gravel will be added to fill no more than 10 foot increments at a time between 2050 and 1760 feet. The regions between 2044 and 2028 and 1990 feet and 1960 feet may be filled with gravel if two stages of cement do not bring the level up in this region.

Once we reach 1780 to 1760 feet, and cement no longer will raise the grout level in the well, we will go back to using gravel. We will add approximately 10 to 20 barrels of cement each morning or after the addition of 2000 ft3 of gravel. Cement during this phase will not be completely hardened before going back to gravel so that we can generate a mixed zone of gravel and cement. Once we reach a depth between 1690 and 1670 feet, we will complete the hole using cement only.

If you have any questions, please call me at your earliest convenience.

Info

From: "Myers, Jack" <Jack.Myers@dep.state.fl.us>
To: "Mark Pearce" <mpearce@wrsolutions.com>
Cc: "Haberfeld, Joe" <Joe.Haberfeld@dep.state.fl.us>
Sent: Monday, August 25, 2003 1:50 PM
Subject: RE: NCWRF - Packer Test

Mark, Your request for the upper monitoring zone to be from 875 feet to approximately 930 feet is hereby approved. Jack

From: Mark Pearce [mailto:mpearce@wrsolutions.com]
Sent: Monday, August 25, 2003 9:20 AM
To: Myers, Jack
Cc: Haberfeld, Joe
Subject: NCWRF - Packer Test

Mr. Myers:

We performed the packer test from 930 feet to 875 feet for selection of the base of the upper monitoring zone Sunday Morning at approximately 1:00 a.m.. The well flowed at a steady rate of 75 gpm under artesian pressure. This rate is more that satisfactory for seeting the base of the upper zone. Therefore, I am requesting that the base of the upper monitoring interval be set in the range of 935 to 925 feet with a target top of cement depth of 930 feet. The lasr stage of cementing to reach this depth will likely take place sometime this evening.

Mark Pearce

APPENDIX 3.11

CEMENT BOND LOG LETTER FOR THE 24-INCH O.D. CASING AT IW-1

Youngquist Brothers, Inc.
15465 Pine Ridge Road
Ft. Myers, FL 33908
941-489-4444 office
941-489-4545 fax

September 18, 2003

Mark Pearce, PhD.
Water Resource Solutions, Inc.
428 Pine Island Road, SW
Cape Coral, FL 33991

RE: Cement Bond Log Interpretation of 24" casing.

Dear Mark,

Cement Bond Log (CBL) interpretation is never an exact science. All factors involved with the cementing operation including; type of cement (neat, 4%,etc.), time between stages, the formation the casing is being set in and well conditions at time of logging can influence the CBL signal. Standard CBL tools have a single transmitter and two receivers, usually set at 3 foot and 5 foot from the transmitter. In "normal" cementing operations (i.e. small casing) the 3' transmitter is used for the amplitude measurement and the 5' transmitter is used for the Variable Density Log (VDL). This is because the shorter spacing (3') results in a more accurate amplitude measurement, while the VDL requires a longer spacing (5'). The longer spacing for the VDL is needed to provide a clear picture of the slower traveling formation signals. Optimally, the casing signal will have arrived and died away before the formation signal arrives and a recording of the formation signal can be made without interference from the casing signal. However, sound from the transmitter will always take the path of least resistance to the receiver. On progressively larger diameter pipe (12" to 24"), Youngquist Brothers, Inc.(YBI) only uses the 5' receiver for both amplitude and VDL signals to minimize potential problems from fluid travel time. This allows YBI to receive an accurate amplitude measurement and a good to fair VDL measurement depending on casing size. On a 24" casing VDL presentation, we see the pipe signal ranging from approximately 750 to 900 microseconds (ms) travel time. Next, we will see a blank spot in the VDL with no signal since the slower formation signal has not had time to return to the receiver. The signal waves that come in on the VDL at approximately 1050ms are fluid waves and are not formation. VDL signals between 900 and 1050ms that do appear on the log are usually from Dolomite which has a faster travel time than steel (40-44ms versus 57ms for steel).

I hope that this information is helpful in interpreting the Cement Bond Log that we ran for you at N. Collier IW #1 on July 30, 2003. If you need any additional help or information, please feel free to contact me at any time.

Sincerely,

Clay Ferguson
Manager, Geophysical Logging Division

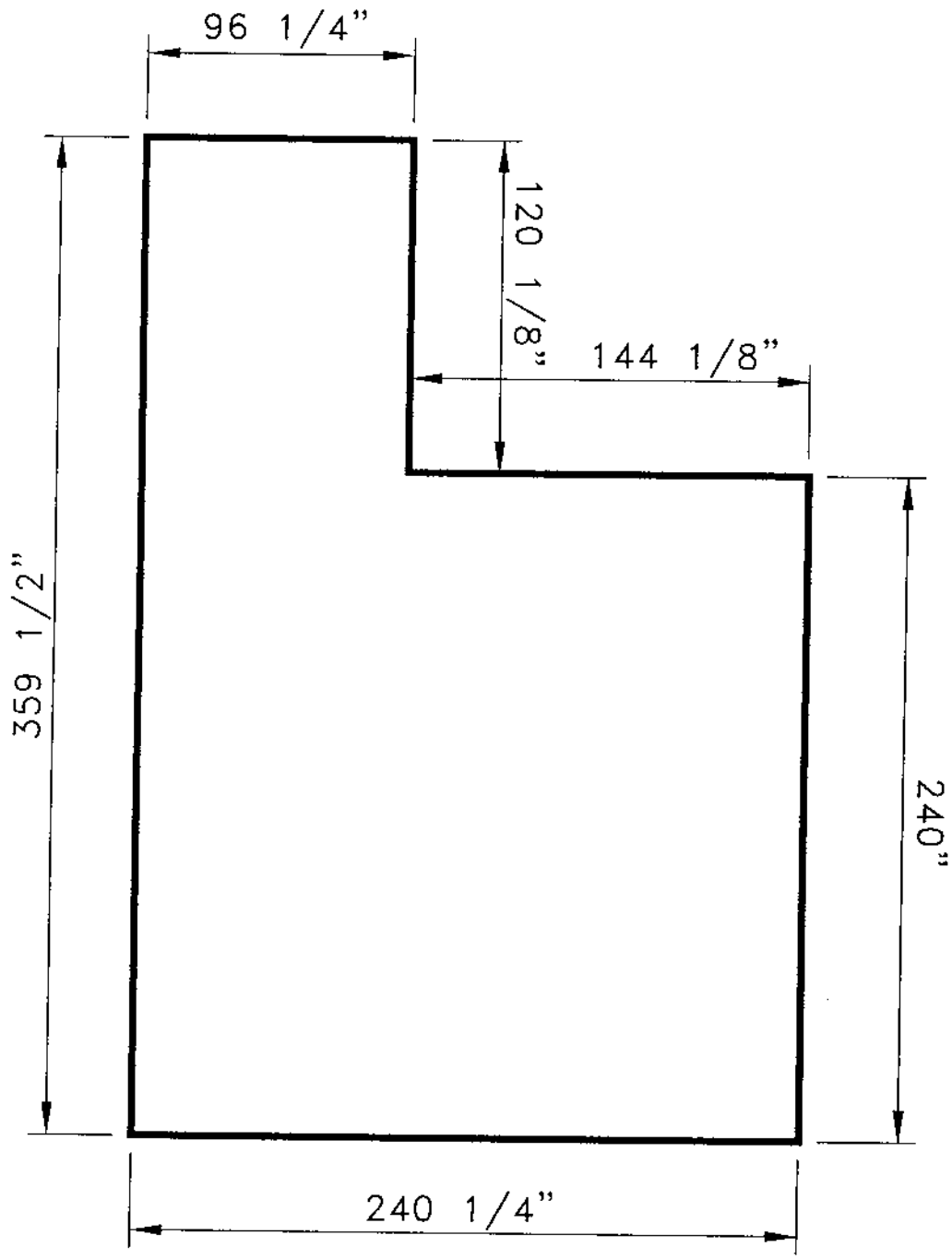
APPENDIX 3.12

FINAL WELL PAD

APPENDIX 3.12.1

IW-1 WELL PAD

IW-1 CEMENT PAD



NOT TO SCALE

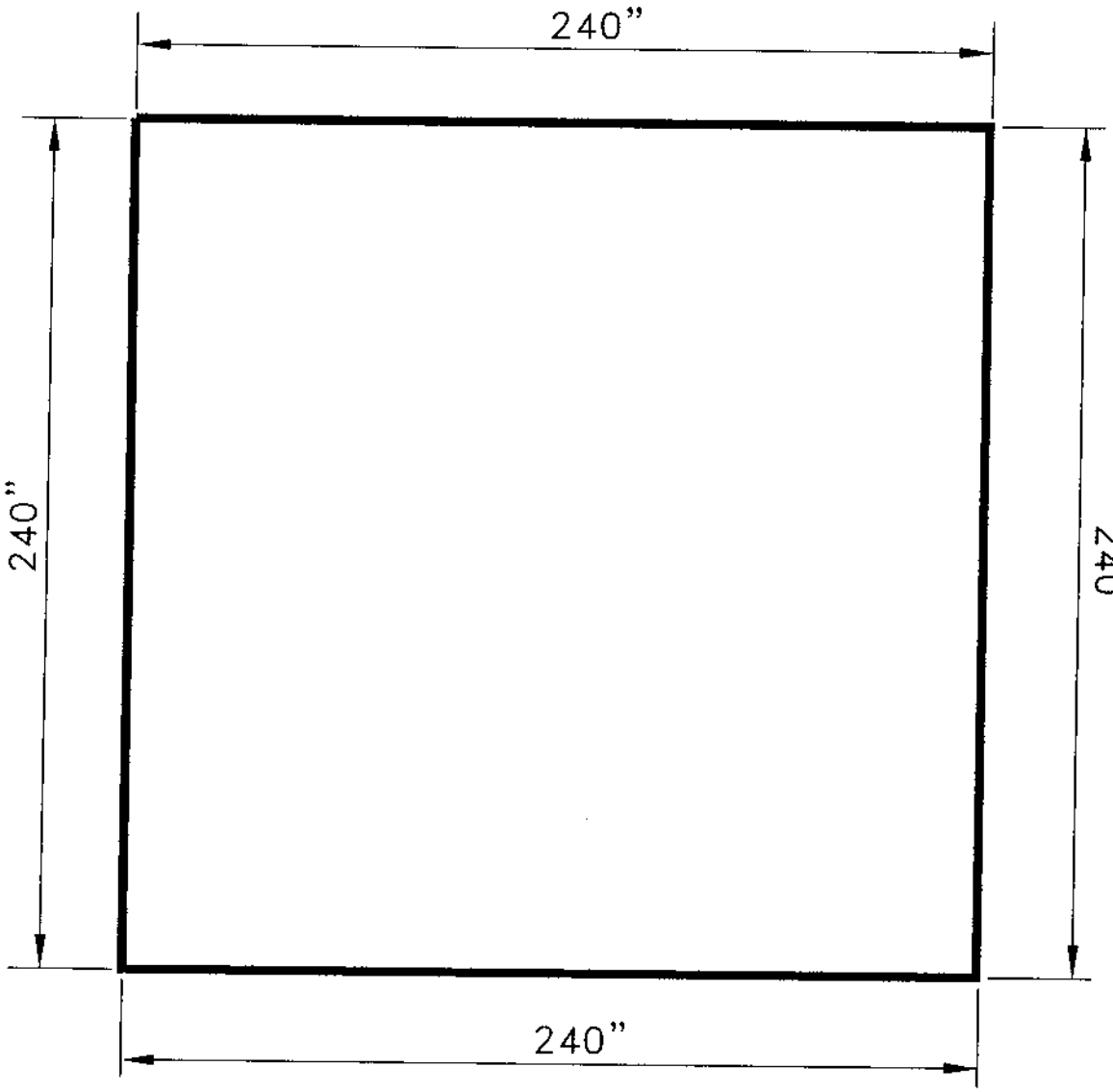
Water Resource Solutions	PROJECT NAME: NCWRF	DWG. NUMBER: A-014254N9-1
	PROJECT NUMBER: 01-04254.A6	DATE: 01/09/04

APPENDIX 3.12.1 IW-1 FINAL WELL PAD.

APPENDIX 3.12.2

DZMW WELL PAD

DZMW CEMENT PAD



NOT TO SCALE

Water Resource Solutions	PROJECT NAME: NCWRF	DWG. NUMBER: A-014254N9-1
	PROJECT NUMBER: 01-04254.A6	DATE: 01/09/04

APPENDIX 3.12.2 DZMW FINAL WELL PAD.

APPENDIX 4.1

CERTIFIED CASING PRESSURE TEST DATA

7/11/03 — EW-1 — 12

9:52 Rich Orth arrives on-site

10:00 Begin pressuring up 24-inch casing

10:02 Start test

Time	Test Duration (minutes)	Casing Pressure (psi)
10:02	0	200
10:07	5	200
10:12	10	200
10:17	15	200
10:22	20	199
10:27	25	199
10:32	30	198.5
10:37	35	198.5
10:42	40	198
10:47	45	198
10:52	50	197.5
10:57	55	197
11:02	60	197

11:02 End 60 minute test. Results: 3 psi loss over 60 minutes or 1.5 % loss.

Richard W. Orth, P.E.

POST TEST PROCEDURE:

Cumulative Gallons Released	Casing Press. (psi)
5	175
10	155 →
15	137
20	117
25	100 →
30	80
35	62
40	45

EW-1 — 12 — ZAP

11:02 Begin Post Test Procedure

11:25 End Post Test Procedure Results: Released 57 gallons to bring casing pressure to 0 psi.

NOTE: There are 74.4 ft^3 or 55,398 gallons of water in casing at start of test.

CONTINUED from Pg 1

Cumulative Gallons	Casing Press. (psi)
45	27
50	14
55	5
57	0

APPENDIX 4.2

RADIOACTIVE SOURCE INVOICE

IW-1
RTS source invoice

MEDTECH DIAGNOSTIC SERVICES
1860 BOY SCOUT DRIVE, SUITE 201
FT. MYERS, FL 33907

HOSPITAL YOUNGQUIST BROTHERS, INC.

ORDER# 286649
DATE 08-28-2003
DOCTOR FERGUSON
PT SOURCE
ETA

PROCEDURE MISCELLANEOUS
DRUG Sodium Iodide Liq / CIS
LOT NO 14311/32-4 ASSAY 1.00 mCi/ml
EXP TIME 12:00 CAL TIME 08-28@12:00 DOSE REQUESTED 10.00mCi
EXP DATE 09-07-03 VOL 10.00ml ACT DISP 10.04 mCi ±10%
SPECIAL COLOR BLUE:NA THIOSUL,
INSTRUCTIONS

CAUTION To be used under the direct supervision of physician
WARNING: The U.S. Nuclear Regulatory Commission has approved this radiopharmaceutical for distribution pursuant to 35.14 and 35.100 Group IV

BY GMB

of 10 CFR Part 35, or under equivalent licenses of Agreement States

CAUTION
RADIOACTIVE MATERIAL

MEDTECH DIAGNOSTIC SERVICES
1860 BOY SCOUT DRIVE, SUITE 201
FT. MYERS, FL 33907

HOSPITAL YOUNGQUIST BROTHERS, INC.

ORDER# 286649
DATE 08-28-2003
DOCTOR FERGUSON
PT SOURCE
ETA

PROCEDURE MISCELLANEOUS
DRUG Sodium Iodide Liq / CIS
LOT NO 14311/32-4 ASSAY 1.00 mCi/ml
EXP TIME 12:00 CAL TIME 08-28@12:00 DOSE REQUESTED 10.00mCi
EXP DATE 09-07-03 VOL 10.00ml ACT DISP 10.04 mCi ±10%
SPECIAL COLOR BLUE:NA THIOSUL,
INSTRUCTIONS

CAUTION To be used under the direct supervision of physician
WARNING: The U.S. Nuclear Regulatory Commission has approved this radiopharmaceutical for distribution pursuant to 35.14 and 35.100 Group IV

BY GMB

of 10 CFR Part 35, or under equivalent licenses of Agreement States

CAUTION
RADIOACTIVE MATERIAL

Sodium Iodide Liq-MISCELLANEOUS
10.00mCi @ 12:00@08-28-03
Study #: 286649 - SOURCE
Sodium Iodide Liq-MISCELLANEOUS
10.00mCi @ 12:00@08-28-03
Study #: 286649 - SOURCE

APPENDIX 4.3

CERTIFICATE OF CALIBRATION

KELI

Kimball Electronic Laboratory, Inc.

Precision Measurement Equipment Specialists

Certificate of Calibration # 124063

YOUNGQUIST BROTHERS, INC.
15465 PINE RIDGE ROAD
FORT MYERS, FL 33908

Customer P.O.# N/A
Manufacturer: MCDANIEL
Model Number: 300 PSI
Nomenclature: PRESSURE GAUGE
SN/ID/Asset # IC119
Bar Code # N/A
Specifications: +/-.25%
Cal. Procedure: MP16/G2
KELI Control # YOU-93158

The accuracy and calibration of this instrument is traceable to the National Institute of Standards and Technology through certified standards maintained in the laboratories of KELI Labs., Inc. or derived by the ratio of self-calibration techniques and is guaranteed to meet published specifications. The metrology procedures utilized satisfy the requirements set forth in ANSI/NCSL 540-1.

In Tolerance When Received? Y Cal. Tech:098 Relative Humidity: 50% Temperature: 74 Deg. F

In-House [Y] Cal. Cycle: 12 Mos. Calibration Date: 07/10/2003 Calibration Due: 07/10/2004

Remarks: PERFORMED ROUTINE CALIBRATION/CERTIFICATION

Standards Used

I.D. #		Cal. Date	Cal. Due
391	EATON UPS 3000BAA PRESSURE INDICATOR	12/06/2001	12/06/2003

Quality Assurance

Kimball Electronic Laboratory, Inc.

Precision Measurement Equipment Specialists

Certificate of Test # 124063

Customer: YOUNGQUIST BROTHERS, INC.
15465 PINE RIDGE ROAD
FORT MYERS, FL 33908

Manufacturer/Model: MCDANIEL 300 PSI
Nomenclature: PRESSURE GAUGE
S.N./I.D. IC119
W.O. # 271582

KELI # YOU-93158
Customer P.O.# N/A

Range	Nominal	Pre-Cal	Post-Cal	Low Limit	High Limit
300 PSI	50	49.9	49.9	49.25	50.75
	100	99.9	99.9	99.25	100.75
	150	149.8	149.8	149.25	150.75
	200	199.8	199.8	199.25	200.75
	300	299.8	299.8	299.25	300.75

The accuracy and calibration of this instrument is traceable to the National Institute of Standards and Technology through certified standards maintained in the laboratories of KELI Labs., Inc. or derived by the ratio of self-calibration techniques and is guaranteed to meet published specifications. The metrology procedures utilized satisfy the requirements set forth in ANSI/NCSL 540-1.

Cal. Procedure: MP16/G2
Specifications: +/-.25%
Rcvd. in tol. Y
In-House: Y
Tech: 098
Cal. Date: 07/10/2003
Temp. (F): 74 R.H.% 50
Cal. Due: 07/10/2004
Remarks: PERFORMED ROUTINE CALIBRATION/CERTIFICATION

I.D. #	Standards Used	Cal. Date	Cal. Due
391	EATON UPS 3000BAA PRESSURE INDICATOR	12/06/2001	12/06/2003

Quality Assurance

APPENDIX 5.1

INJECTION TEST DATA (ELECTRONIC FORMAT)

HERMIT DATA - Background						
In-Situ Inc.	Hermit 3000					
Report generated	11/6/2003	8:57:49				
Report from file:	C:\WIN-SITU\Data\SN45853 2003-11-04 082207 Test #1.bin					
DataMgr Version	3.69					
Serial number:	45853					
Firmware Version	7.1					
Unit name:	HERMIT 3000					
Test name:		Test #1				
Test defined on:	11/3/2003	10:05:36				
Test started on:	11/4/2003	8:22:07				
Test stopped on:	11/5/2003	8:58:19				
Test extracted on	11/6/2003	8:51:49				
Data gathered using Logarithmic testing						
Maximum time	Minutes.					
Number of data	1546					
TOTAL DATA SA	1546					
Channel number [1]						
Measurement ty	Pressure					
Channel name:	IW#1					
Linearity:	0.3649					
Scale:		99.4224				
Offset:		0.0374				
Warmup:		50				
Channel number [2]						
Measurement ty	Pressure					
Channel name:	UPPER MW					
Linearity:	0.2939					
Scale:		29.6429				
Offset:		-0.1453				
Warmup:		50				
Channel number [3]						
Measurement ty	Pressure					
Channel name:	LOWER MW					
Linearity:	0.2967					
Scale:		29.6033				
Offset:		-0.2002				
Warmup:		50				
Channel number [0]						
Measurement ty	Barometric Pressure					
Channel name:	Barometric					
Linearity:	0					
Scale:		0				
Offset:		0				
Warmup:		50				

		Chan[1]	Chan[2]	Chan[3]	Chan[0]	
Date Time	ET (min)	PSI	PSI	PSI	Inches Hg	
11/4/2003 8:22	0	20.758	7.401	20.945	30.057	
11/4/2003 8:22	0.0218	20.727	7.39	20.923	30.06	
11/4/2003 8:22	0.0437	20.758	7.414	20.934	30.057	
11/4/2003 8:22	0.0655	20.758	7.422	20.93	30.055	
11/4/2003 8:22	0.0873	20.777	7.381	20.953	30.057	
11/4/2003 8:22	0.1092	20.752	7.405	20.915	30.057	
11/4/2003 8:22	0.131	20.758	7.382	20.992	30.06	
11/4/2003 8:22	0.1528	20.783	7.382	20.893	30.055	
11/4/2003 8:22	0.1747	20.721	7.41	20.951	30.06	
11/4/2003 8:22	0.1965	20.727	7.423	20.921	30.057	
11/4/2003 8:22	0.2183	20.646	7.427	20.943	30.055	
11/4/2003 8:22	0.2402	20.714	7.418	20.971	30.055	
11/4/2003 8:22	0.262	20.727	7.396	20.94	30.057	
11/4/2003 8:22	0.2838	20.721	7.396	20.895	30.057	
11/4/2003 8:22	0.3057	20.727	7.392	20.936	30.055	
11/4/2003 8:22	0.3275	20.783	7.401	20.932	30.057	
11/4/2003 8:22	0.3493	20.752	7.407	20.941	30.055	
11/4/2003 8:22	0.3712	20.758	7.418	20.941	30.057	
11/4/2003 8:22	0.393	20.745	7.403	20.936	30.057	
11/4/2003 8:22	0.4148	20.752	7.416	20.962	30.055	
11/4/2003 8:22	0.4367	20.764	7.397	20.923	30.053	
11/4/2003 8:22	0.4588	20.758	7.401	20.945	30.055	
11/4/2003 8:22	0.4823	20.745	7.379	20.958	30.053	
11/4/2003 8:22	0.5072	20.739	7.397	20.949	30.053	
11/4/2003 8:22	0.5335	20.758	7.405	20.925	30.053	
11/4/2003 8:22	0.5615	20.752	7.409	20.971	30.053	
11/4/2003 8:22	0.5912	20.733	7.407	20.938	30.055	
11/4/2003 8:22	0.6225	20.752	7.394	20.945	30.053	
11/4/2003 8:22	0.6557	20.752	7.397	20.913	30.053	
11/4/2003 8:22	0.6908	20.752	7.399	20.923	30.051	
11/4/2003 8:22	0.7282	20.745	7.396	20.941	30.051	
11/4/2003 8:22	0.7677	20.714	7.396	20.928	30.053	
11/4/2003 8:22	0.8095	20.739	7.407	20.93	30.053	
11/4/2003 8:22	0.8538	20.739	7.401	20.923	30.051	
11/4/2003 8:23	0.9008	20.764	7.399	20.938	30.051	
11/4/2003 8:23	0.9507	20.739	7.401	20.936	30.053	
11/4/2003 8:23	1.0033	20.758	7.397	20.923	30.049	
11/4/2003 8:23	1.0592	20.764	7.392	20.943	30.051	
11/4/2003 8:23	1.1183	20.745	7.405	20.947	30.049	
11/4/2003 8:23	1.181	20.745	7.396	20.936	30.051	
11/4/2003 8:23	1.2473	20.752	7.407	20.94	30.049	
11/4/2003 8:23	1.3177	20.752	7.405	20.938	30.049	
11/4/2003 8:23	1.3922	20.752	7.399	20.934	30.049	
11/4/2003 8:23	1.4712	20.752	7.397	20.936	30.049	
11/4/2003 8:23	1.5548	20.752	7.405	20.938	30.049	
11/4/2003 8:23	1.6433	20.758	7.403	20.934	30.049	
11/4/2003 8:23	1.7372	20.752	7.401	20.932	30.039	
11/4/2003 8:23	1.8365	20.752	7.403	20.934	30.045	
11/4/2003 8:24	1.9418	20.752	7.399	20.938	30.047	
11/4/2003 8:24	2.0533	20.758	7.399	20.936	30.045	
11/4/2003 8:24	2.1715	20.758	7.403	20.94	30.045	
11/4/2003 8:24	2.2967	20.752	7.401	20.938	30.047	
11/4/2003 8:24	2.4292	20.752	7.401	20.94	30.043	
11/4/2003 8:24	2.5697	20.752	7.399	20.938	30.045	
11/4/2003 8:24	2.7185	20.752	7.403	20.938	30.043	
11/4/2003 8:24	2.876	20.758	7.401	20.938	30.045	

11/4/2003 8:25	3.0428	20.764	7.401	20.94	30.041	
11/4/2003 8:25	3.2197	20.764	7.401	20.932	30.045	
11/4/2003 8:25	3.407	20.764	7.405	20.938	30.041	
11/4/2003 8:25	3.6053	20.752	7.401	20.938	30.049	
11/4/2003 8:25	3.8155	20.758	7.401	20.94	30.053	
11/4/2003 8:26	4.0382	20.764	7.403	20.94	30.057	
11/4/2003 8:26	4.274	20.758	7.401	20.938	30.057	
11/4/2003 8:26	4.5238	20.758	7.403	20.936	30.064	
11/4/2003 8:26	4.7885	20.758	7.407	20.94	30.064	
11/4/2003 8:27	5.0688	20.764	7.403	20.94	30.064	
11/4/2003 8:27	5.3657	20.758	7.405	20.943	30.066	
11/4/2003 8:27	5.6802	20.752	7.407	20.938	30.068	
11/4/2003 8:28	6.0133	20.758	7.403	20.945	30.068	
11/4/2003 8:28	6.3662	20.758	7.403	20.941	30.07	
11/4/2003 8:28	6.74	20.758	7.401	20.941	30.07	
11/4/2003 8:29	7.136	20.758	7.403	20.941	30.072	
11/4/2003 8:29	7.5553	20.752	7.403	20.941	30.07	
11/4/2003 8:30	7.9997	20.752	7.403	20.941	30.072	
11/4/2003 8:30	8.4703	20.752	7.401	20.94	30.072	
11/4/2003 8:31	8.9688	20.752	7.405	20.943	30.076	
11/4/2003 8:31	9.4968	20.752	7.399	20.941	30.076	
11/4/2003 8:32	10.0562	20.752	7.399	20.941	30.074	
11/4/2003 8:32	10.6487	20.752	7.403	20.941	30.076	
11/4/2003 8:33	11.2762	20.752	7.403	20.94	30.076	
11/4/2003 8:34	11.941	20.752	7.401	20.941	30.078	
11/4/2003 8:34	12.6452	20.752	7.403	20.943	30.076	
11/4/2003 8:35	13.391	20.752	7.405	20.945	30.078	
11/4/2003 8:36	14.181	20.758	7.399	20.941	30.08	
11/4/2003 8:37	15.0178	20.752	7.401	20.943	30.08	
11/4/2003 8:38	15.9043	20.752	7.403	20.941	30.08	
11/4/2003 8:38	16.8433	20.752	7.399	20.936	30.082	
11/4/2003 8:39	17.838	20.752	7.399	20.943	30.084	
11/4/2003 8:40	18.838	20.752	7.401	20.94	30.084	
11/4/2003 8:41	19.838	20.758	7.397	20.943	30.086	
11/4/2003 8:42	20.838	20.752	7.401	20.94	30.086	
11/4/2003 8:43	21.838	20.752	7.405	20.941	30.086	
11/4/2003 8:44	22.838	20.752	7.403	20.943	30.088	
11/4/2003 8:45	23.838	20.752	7.403	20.941	30.09	
11/4/2003 8:46	24.838	20.752	7.403	20.934	30.09	
11/4/2003 8:47	25.838	20.752	7.403	20.94	30.092	
11/4/2003 8:48	26.838	20.745	7.401	20.936	30.092	
11/4/2003 8:49	27.838	20.752	7.401	20.934	30.092	
11/4/2003 8:50	28.838	20.752	7.399	20.94	30.096	
11/4/2003 8:51	29.838	20.752	7.401	20.94	30.096	
11/4/2003 8:52	30.838	20.752	7.399	20.934	30.096	
11/4/2003 8:53	31.838	20.752	7.401	20.936	30.096	
11/4/2003 8:54	32.838	20.752	7.401	20.938	30.098	
11/4/2003 8:55	33.838	20.752	7.401	20.938	30.098	
11/4/2003 8:56	34.838	20.745	7.401	20.94	30.1	
11/4/2003 8:57	35.838	20.745	7.401	20.938	30.096	
11/4/2003 8:58	36.838	20.745	7.403	20.936	30.098	
11/4/2003 8:59	37.838	20.745	7.401	20.934	30.098	
11/4/2003 9:00	38.838	20.745	7.401	20.93	30.102	
11/4/2003 9:01	39.838	20.752	7.399	20.94	30.1	
11/4/2003 9:02	40.838	20.745	7.403	20.938	30.1	
11/4/2003 9:03	41.838	20.745	7.403	20.936	30.098	
11/4/2003 9:04	42.838	20.739	7.403	20.94	30.1	
11/4/2003 9:05	43.838	20.745	7.401	20.932	30.098	
11/4/2003 9:06	44.838	20.745	7.403	20.941	30.1	

11/4/2003 9:07	45.838	20.745	7.403	20.94	30.096	
11/4/2003 9:08	46.838	20.745	7.399	20.934	30.098	
11/4/2003 9:09	47.838	20.745	7.401	20.934	30.098	
11/4/2003 9:10	48.838	20.739	7.405	20.938	30.1	
11/4/2003 9:11	49.838	20.745	7.405	20.928	30.1	
11/4/2003 9:12	50.838	20.739	7.405	20.934	30.1	
11/4/2003 9:13	51.838	20.745	7.401	20.932	30.102	
11/4/2003 9:14	52.838	20.739	7.401	20.932	30.102	
11/4/2003 9:15	53.838	20.739	7.397	20.925	30.104	
11/4/2003 9:16	54.838	20.745	7.399	20.93	30.104	
11/4/2003 9:17	55.838	20.739	7.401	20.928	30.104	
11/4/2003 9:18	56.838	20.739	7.401	20.934	30.108	
11/4/2003 9:19	57.838	20.739	7.401	20.93	30.108	
11/4/2003 9:20	58.838	20.739	7.401	20.938	30.106	
11/4/2003 9:21	59.838	20.733	7.403	20.932	30.104	
11/4/2003 9:22	60.838	20.745	7.397	20.932	30.106	
11/4/2003 9:23	61.838	20.739	7.397	20.936	30.106	
11/4/2003 9:24	62.838	20.739	7.405	20.93	30.106	
11/4/2003 9:25	63.838	20.745	7.403	20.936	30.104	
11/4/2003 9:26	64.838	20.739	7.401	20.936	30.104	
11/4/2003 9:27	65.838	20.733	7.403	20.93	30.104	
11/4/2003 9:28	66.838	20.733	7.405	20.93	30.104	
11/4/2003 9:29	67.838	20.739	7.405	20.934	30.104	
11/4/2003 9:30	68.838	20.733	7.405	20.938	30.106	
11/4/2003 9:31	69.838	20.739	7.403	20.928	30.106	
11/4/2003 9:32	70.838	20.745	7.399	20.928	30.108	
11/4/2003 9:33	71.838	20.745	7.401	20.934	30.106	
11/4/2003 9:34	72.838	20.739	7.401	20.93	30.106	
11/4/2003 9:35	73.838	20.739	7.403	20.938	30.108	
11/4/2003 9:36	74.838	20.739	7.401	20.93	30.106	
11/4/2003 9:37	75.838	20.733	7.401	20.934	30.106	
11/4/2003 9:38	76.838	20.733	7.401	20.934	30.106	
11/4/2003 9:39	77.838	20.733	7.403	20.932	30.11	
11/4/2003 9:40	78.838	20.733	7.401	20.932	30.112	
11/4/2003 9:41	79.838	20.733	7.401	20.932	30.114	
11/4/2003 9:42	80.838	20.733	7.401	20.926	30.11	
11/4/2003 9:43	81.838	20.733	7.401	20.915	30.112	
11/4/2003 9:44	82.838	20.733	7.403	20.936	30.114	
11/4/2003 9:45	83.838	20.727	7.403	20.932	30.114	
11/4/2003 9:46	84.838	20.733	7.401	20.93	30.112	
11/4/2003 9:47	85.838	20.733	7.399	20.934	30.114	
11/4/2003 9:48	86.838	20.727	7.403	20.932	30.11	
11/4/2003 9:49	87.838	20.727	7.401	20.928	30.11	
11/4/2003 9:50	88.838	20.739	7.397	20.934	30.11	
11/4/2003 9:51	89.838	20.733	7.407	20.93	30.112	
11/4/2003 9:52	90.838	20.727	7.405	20.936	30.108	
11/4/2003 9:53	91.838	20.733	7.403	20.936	30.108	
11/4/2003 9:54	92.838	20.739	7.405	20.941	30.11	
11/4/2003 9:55	93.838	20.733	7.403	20.936	30.11	
11/4/2003 9:56	94.838	20.739	7.401	20.932	30.121	
11/4/2003 9:57	95.838	20.727	7.403	20.934	30.108	
11/4/2003 9:58	96.838	20.727	7.403	20.934	30.11	
11/4/2003 9:59	97.838	20.727	7.401	20.932	30.11	
11/4/2003 10:00	98.838	20.727	7.403	20.936	30.11	
11/4/2003 10:01	99.838	20.733	7.405	20.94	30.108	
11/4/2003 10:02	100.838	20.733	7.405	20.934	30.108	
11/4/2003 10:03	101.838	20.733	7.403	20.936	30.112	
11/4/2003 10:04	102.838	20.727	7.401	20.938	30.11	
11/4/2003 10:05	103.838	20.733	7.403	20.936	30.114	

11/4/2003 10:06	104.838	20.733	7.403	20.928	30.121	
11/4/2003 10:07	105.838	20.727	7.401	20.93	30.121	
11/4/2003 10:08	106.838	20.727	7.403	20.93	30.119	
11/4/2003 10:09	107.838	20.733	7.403	20.93	30.121	
11/4/2003 10:10	108.838	20.721	7.401	20.93	30.125	
11/4/2003 10:11	109.838	20.727	7.403	20.926	30.127	
11/4/2003 10:12	110.838	20.721	7.403	20.932	30.127	
11/4/2003 10:13	111.838	20.727	7.399	20.93	30.127	
11/4/2003 10:14	112.838	20.721	7.401	20.932	30.121	
11/4/2003 10:15	113.838	20.721	7.401	20.928	30.119	
11/4/2003 10:16	114.838	20.721	7.401	20.934	30.121	
11/4/2003 10:17	115.838	20.721	7.403	20.93	30.121	
11/4/2003 10:18	116.838	20.721	7.401	20.934	30.117	
11/4/2003 10:19	117.838	20.721	7.403	20.934	30.121	
11/4/2003 10:20	118.838	20.721	7.403	20.934	30.121	
11/4/2003 10:21	119.838	20.727	7.401	20.93	30.119	
11/4/2003 10:22	120.838	20.727	7.403	20.934	30.119	
11/4/2003 10:23	121.838	20.727	7.403	20.932	30.117	
11/4/2003 10:24	122.838	20.721	7.405	20.93	30.117	
11/4/2003 10:25	123.838	20.721	7.403	20.93	30.119	
11/4/2003 10:26	124.838	20.721	7.401	20.925	30.117	
11/4/2003 10:27	125.838	20.727	7.407	20.928	30.112	
11/4/2003 10:28	126.838	20.727	7.409	20.925	30.114	
11/4/2003 10:29	127.838	20.727	7.409	20.928	30.114	
11/4/2003 10:30	128.838	20.721	7.407	20.93	30.106	
11/4/2003 10:31	129.838	20.721	7.405	20.925	30.112	
11/4/2003 10:32	130.838	20.708	7.407	20.926	30.112	
11/4/2003 10:33	131.838	20.727	7.403	20.925	30.11	
11/4/2003 10:34	132.838	20.727	7.405	20.928	30.11	
11/4/2003 10:35	133.838	20.721	7.409	20.93	30.108	
11/4/2003 10:36	134.838	20.721	7.41	20.93	30.108	
11/4/2003 10:37	135.838	20.721	7.409	20.934	30.106	
11/4/2003 10:38	136.838	20.727	7.407	20.926	30.104	
11/4/2003 10:39	137.838	20.721	7.409	20.926	30.106	
11/4/2003 10:40	138.838	20.727	7.41	20.932	30.106	
11/4/2003 10:41	139.838	20.727	7.41	20.932	30.106	
11/4/2003 10:42	140.838	20.721	7.412	20.932	30.102	
11/4/2003 10:43	141.838	20.727	7.414	20.934	30.098	
11/4/2003 10:44	142.838	20.727	7.41	20.934	30.098	
11/4/2003 10:45	143.838	20.727	7.41	20.936	30.1	
11/4/2003 10:46	144.838	20.721	7.412	20.934	30.098	
11/4/2003 10:47	145.838	20.727	7.412	20.934	30.096	
11/4/2003 10:48	146.838	20.733	7.412	20.93	30.096	
11/4/2003 10:49	147.838	20.733	7.412	20.936	30.092	
11/4/2003 10:50	148.838	20.727	7.414	20.934	30.092	
11/4/2003 10:51	149.838	20.727	7.414	20.94	30.09	
11/4/2003 10:52	150.838	20.727	7.414	20.936	30.09	
11/4/2003 10:53	151.838	20.733	7.416	20.934	30.092	
11/4/2003 10:54	152.838	20.727	7.414	20.936	30.092	
11/4/2003 10:55	153.838	20.733	7.414	20.938	30.088	
11/4/2003 10:56	154.838	20.733	7.416	20.94	30.09	
11/4/2003 10:57	155.838	20.733	7.414	20.938	30.088	
11/4/2003 10:58	156.838	20.727	7.416	20.938	30.086	
11/4/2003 10:59	157.838	20.727	7.416	20.941	30.088	
11/4/2003 11:00	158.838	20.733	7.42	20.938	30.086	
11/4/2003 11:01	159.838	20.721	7.418	20.94	30.088	
11/4/2003 11:02	160.838	20.727	7.418	20.938	30.086	
11/4/2003 11:03	161.838	20.721	7.418	20.94	30.082	
11/4/2003 11:04	162.838	20.721	7.42	20.94	30.08	

11/4/2003 11:05	163.838	20.727	7.418	20.941	30.082	
11/4/2003 11:06	164.838	20.727	7.42	20.941	30.078	
11/4/2003 11:07	165.838	20.727	7.42	20.943	30.08	
11/4/2003 11:08	166.838	20.727	7.422	20.947	30.078	
11/4/2003 11:09	167.838	20.727	7.416	20.94	30.08	
11/4/2003 11:10	168.838	20.733	7.423	20.945	30.082	
11/4/2003 11:11	169.838	20.727	7.416	20.93	30.08	
11/4/2003 11:12	170.838	20.727	7.425	20.945	30.08	
11/4/2003 11:13	171.838	20.727	7.422	20.943	30.076	
11/4/2003 11:14	172.838	20.733	7.418	20.941	30.074	
11/4/2003 11:15	173.838	20.739	7.422	20.949	30.072	
11/4/2003 11:16	174.838	20.733	7.423	20.951	30.07	
11/4/2003 11:17	175.838	20.727	7.42	20.94	30.068	
11/4/2003 11:18	176.838	20.733	7.423	20.947	30.066	
11/4/2003 11:19	177.838	20.727	7.423	20.945	30.062	
11/4/2003 11:20	178.838	20.727	7.423	20.955	30.06	
11/4/2003 11:21	179.838	20.727	7.423	20.949	30.06	
11/4/2003 11:22	180.838	20.739	7.425	20.945	30.06	
11/4/2003 11:23	181.838	20.733	7.427	20.951	30.057	
11/4/2003 11:24	182.838	20.745	7.425	20.947	30.055	
11/4/2003 11:25	183.838	20.739	7.425	20.947	30.051	
11/4/2003 11:26	184.838	20.733	7.425	20.949	30.053	
11/4/2003 11:27	185.838	20.733	7.429	20.951	30.055	
11/4/2003 11:28	186.838	20.739	7.427	20.955	30.053	
11/4/2003 11:29	187.838	20.733	7.425	20.947	30.055	
11/4/2003 11:30	188.838	20.739	7.427	20.951	30.053	
11/4/2003 11:31	189.838	20.739	7.425	20.962	30.053	
11/4/2003 11:32	190.838	20.733	7.427	20.953	30.055	
11/4/2003 11:33	191.838	20.727	7.429	20.949	30.053	
11/4/2003 11:34	192.838	20.733	7.429	20.951	30.06	
11/4/2003 11:35	193.838	20.727	7.427	20.945	30.057	
11/4/2003 11:36	194.838	20.727	7.427	20.951	30.057	
11/4/2003 11:37	195.838	20.721	7.425	20.949	30.055	
11/4/2003 11:38	196.838	20.727	7.429	20.949	30.055	
11/4/2003 11:39	197.838	20.727	7.429	20.947	30.051	
11/4/2003 11:40	198.838	20.733	7.429	20.949	30.049	
11/4/2003 11:41	199.838	20.727	7.429	20.951	30.049	
11/4/2003 11:42	200.838	20.727	7.431	20.949	30.049	
11/4/2003 11:43	201.838	20.727	7.429	20.949	30.049	
11/4/2003 11:44	202.838	20.733	7.429	20.951	30.049	
11/4/2003 11:45	203.838	20.733	7.431	20.951	30.047	
11/4/2003 11:46	204.838	20.733	7.433	20.947	30.049	
11/4/2003 11:47	205.838	20.727	7.431	20.945	30.047	
11/4/2003 11:48	206.838	20.733	7.431	20.951	30.049	
11/4/2003 11:49	207.838	20.727	7.431	20.949	30.045	
11/4/2003 11:50	208.838	20.733	7.435	20.956	30.045	
11/4/2003 11:51	209.838	20.727	7.429	20.947	30.043	
11/4/2003 11:52	210.838	20.727	7.431	20.953	30.043	
11/4/2003 11:53	211.838	20.727	7.427	20.945	30.045	
11/4/2003 11:54	212.838	20.739	7.435	20.947	30.043	
11/4/2003 11:55	213.838	20.727	7.436	20.947	30.045	
11/4/2003 11:56	214.838	20.733	7.431	20.949	30.043	
11/4/2003 11:57	215.838	20.727	7.435	20.949	30.039	
11/4/2003 11:58	216.838	20.727	7.44	20.943	30.041	
11/4/2003 11:59	217.838	20.721	7.433	20.947	30.041	
11/4/2003 12:00	218.838	20.727	7.433	20.945	30.041	
11/4/2003 12:01	219.838	20.714	7.431	20.947	30.043	
11/4/2003 12:02	220.838	20.721	7.433	20.947	30.043	
11/4/2003 12:03	221.838	20.721	7.435	20.941	30.043	

11/4/2003 12:04	222.838	20.721	7.431	20.947	30.043	
11/4/2003 12:05	223.838	20.721	7.431	20.945	30.045	
11/4/2003 12:06	224.838	20.714	7.433	20.945	30.045	
11/4/2003 12:07	225.838	20.721	7.431	20.94	30.041	
11/4/2003 12:08	226.838	20.727	7.436	20.968	30.043	
11/4/2003 12:09	227.838	20.708	7.431	20.943	30.043	
11/4/2003 12:10	228.838	20.708	7.431	20.938	30.045	
11/4/2003 12:11	229.838	20.721	7.429	20.936	30.045	
11/4/2003 12:12	230.838	20.714	7.431	20.94	30.045	
11/4/2003 12:13	231.838	20.721	7.431	20.938	30.043	
11/4/2003 12:14	232.838	20.708	7.429	20.936	30.045	
11/4/2003 12:15	233.838	20.714	7.431	20.936	30.043	
11/4/2003 12:16	234.838	20.721	7.429	20.938	30.045	
11/4/2003 12:17	235.838	20.714	7.429	20.938	30.047	
11/4/2003 12:18	236.838	20.708	7.427	20.934	30.045	
11/4/2003 12:19	237.838	20.708	7.429	20.938	30.047	
11/4/2003 12:20	238.838	20.708	7.429	20.932	30.047	
11/4/2003 12:21	239.838	20.708	7.427	20.93	30.049	
11/4/2003 12:22	240.838	20.708	7.427	20.938	30.045	
11/4/2003 12:23	241.838	20.708	7.427	20.934	30.049	
11/4/2003 12:24	242.838	20.708	7.427	20.938	30.049	
11/4/2003 12:25	243.838	20.702	7.427	20.941	30.047	
11/4/2003 12:26	244.838	20.696	7.423	20.93	30.049	
11/4/2003 12:27	245.838	20.708	7.425	20.934	30.051	
11/4/2003 12:28	246.838	20.689	7.431	20.941	30.051	
11/4/2003 12:29	247.838	20.696	7.431	20.941	30.051	
11/4/2003 12:30	248.838	20.702	7.431	20.928	30.049	
11/4/2003 12:31	249.838	20.696	7.429	20.928	30.049	
11/4/2003 12:32	250.838	20.696	7.429	20.928	30.053	
11/4/2003 12:33	251.838	20.702	7.431	20.934	30.051	
11/4/2003 12:34	252.838	20.702	7.429	20.932	30.047	
11/4/2003 12:35	253.838	20.689	7.429	20.932	30.047	
11/4/2003 12:36	254.838	20.696	7.431	20.932	30.049	
11/4/2003 12:37	255.838	20.696	7.427	20.928	30.049	
11/4/2003 12:38	256.838	20.708	7.425	20.93	30.049	
11/4/2003 12:39	257.838	20.702	7.429	20.93	30.047	
11/4/2003 12:40	258.838	20.696	7.429	20.93	30.047	
11/4/2003 12:41	259.838	20.689	7.427	20.926	30.049	
11/4/2003 12:42	260.838	20.696	7.429	20.928	30.047	
11/4/2003 12:43	261.838	20.696	7.427	20.928	30.047	
11/4/2003 12:44	262.838	20.696	7.429	20.932	30.047	
11/4/2003 12:45	263.838	20.696	7.427	20.93	30.047	
11/4/2003 12:46	264.838	20.696	7.425	20.928	30.047	
11/4/2003 12:47	265.838	20.696	7.429	20.926	30.045	
11/4/2003 12:48	266.838	20.696	7.429	20.93	30.049	
11/4/2003 12:49	267.838	20.696	7.425	20.928	30.047	
11/4/2003 12:50	268.838	20.689	7.429	20.925	30.047	
11/4/2003 12:51	269.838	20.689	7.422	20.925	30.047	
11/4/2003 12:52	270.838	20.689	7.422	20.93	30.045	
11/4/2003 12:53	271.838	20.683	7.425	20.93	30.045	
11/4/2003 12:54	272.838	20.689	7.425	20.926	30.045	
11/4/2003 12:55	273.838	20.683	7.422	20.923	30.045	
11/4/2003 12:56	274.838	20.683	7.423	20.923	30.043	
11/4/2003 12:57	275.838	20.689	7.425	20.921	30.045	
11/4/2003 12:58	276.838	20.683	7.423	20.923	30.043	
11/4/2003 12:59	277.838	20.683	7.425	20.923	30.041	
11/4/2003 13:00	278.838	20.683	7.429	20.921	30.041	
11/4/2003 13:01	279.838	20.671	7.423	20.919	30.041	
11/4/2003 13:02	280.838	20.677	7.427	20.925	30.041	

11/4/2003 13:03	281.838	20.689	7.425	20.921	30.039	
11/4/2003 13:04	282.838	20.689	7.425	20.923	30.041	
11/4/2003 13:05	283.838	20.683	7.425	20.919	30.043	
11/4/2003 13:06	284.838	20.683	7.423	20.923	30.043	
11/4/2003 13:07	285.838	20.677	7.425	20.919	30.043	
11/4/2003 13:08	286.838	20.683	7.423	20.915	30.043	
11/4/2003 13:09	287.838	20.689	7.42	20.917	30.043	
11/4/2003 13:10	288.838	20.677	7.431	20.923	30.045	
11/4/2003 13:11	289.838	20.683	7.423	20.919	30.045	
11/4/2003 13:12	290.838	20.671	7.423	20.915	30.045	
11/4/2003 13:13	291.838	20.677	7.422	20.913	30.045	
11/4/2003 13:14	292.838	20.671	7.423	20.915	30.043	
11/4/2003 13:15	293.838	20.677	7.423	20.915	30.045	
11/4/2003 13:16	294.838	20.671	7.422	20.911	30.045	
11/4/2003 13:17	295.838	20.665	7.422	20.911	30.045	
11/4/2003 13:18	296.838	20.671	7.422	20.91	30.043	
11/4/2003 13:19	297.838	20.665	7.423	20.915	30.045	
11/4/2003 13:20	298.838	20.665	7.422	20.911	30.045	
11/4/2003 13:21	299.838	20.671	7.422	20.913	30.043	
11/4/2003 13:22	300.838	20.671	7.42	20.915	30.045	
11/4/2003 13:23	301.838	20.671	7.422	20.91	30.045	
11/4/2003 13:24	302.838	20.665	7.418	20.913	30.047	
11/4/2003 13:25	303.838	20.665	7.42	20.911	30.045	
11/4/2003 13:26	304.838	20.671	7.418	20.906	30.045	
11/4/2003 13:27	305.838	20.665	7.42	20.911	30.043	
11/4/2003 13:28	306.838	20.665	7.42	20.911	30.047	
11/4/2003 13:29	307.838	20.671	7.416	20.91	30.045	
11/4/2003 13:30	308.838	20.665	7.418	20.91	30.045	
11/4/2003 13:31	309.838	20.665	7.416	20.91	30.045	
11/4/2003 13:32	310.838	20.665	7.42	20.915	30.045	
11/4/2003 13:33	311.838	20.671	7.416	20.906	30.043	
11/4/2003 13:34	312.838	20.665	7.416	20.911	30.043	
11/4/2003 13:35	313.838	20.665	7.416	20.908	30.043	
11/4/2003 13:36	314.838	20.671	7.414	20.908	30.043	
11/4/2003 13:37	315.838	20.658	7.416	20.906	30.041	
11/4/2003 13:38	316.838	20.671	7.42	20.9	30.043	
11/4/2003 13:39	317.838	20.665	7.414	20.904	30.041	
11/4/2003 13:40	318.838	20.652	7.418	20.9	30.043	
11/4/2003 13:41	319.838	20.658	7.414	20.902	30.043	
11/4/2003 13:42	320.838	20.658	7.414	20.898	30.043	
11/4/2003 13:43	321.838	20.658	7.416	20.902	30.043	
11/4/2003 13:44	322.838	20.658	7.414	20.908	30.041	
11/4/2003 13:45	323.838	20.658	7.416	20.904	30.041	
11/4/2003 13:46	324.838	20.665	7.414	20.902	30.039	
11/4/2003 13:47	325.838	20.652	7.416	20.9	30.041	
11/4/2003 13:48	326.838	20.658	7.414	20.898	30.039	
11/4/2003 13:49	327.838	20.658	7.41	20.898	30.041	
11/4/2003 13:50	328.838	20.665	7.416	20.902	30.039	
11/4/2003 13:51	329.838	20.652	7.418	20.902	30.037	
11/4/2003 13:52	330.838	20.652	7.414	20.9	30.037	
11/4/2003 13:53	331.838	20.652	7.414	20.898	30.037	
11/4/2003 13:54	332.838	20.652	7.416	20.898	30.037	
11/4/2003 13:55	333.838	20.652	7.412	20.898	30.037	
11/4/2003 13:56	334.838	20.646	7.414	20.898	30.035	
11/4/2003 13:57	335.838	20.646	7.414	20.898	30.035	
11/4/2003 13:58	336.838	20.646	7.412	20.902	30.033	
11/4/2003 13:59	337.838	20.652	7.412	20.898	30.033	
11/4/2003 14:00	338.838	20.652	7.414	20.895	30.035	
11/4/2003 14:01	339.838	20.646	7.412	20.891	30.035	

11/4/2003 14:02	340.838	20.646	7.414	20.893	30.031	
11/4/2003 14:03	341.838	20.646	7.414	20.895	30.031	
11/4/2003 14:04	342.838	20.646	7.414	20.895	30.031	
11/4/2003 14:05	343.838	20.646	7.414	20.895	30.031	
11/4/2003 14:06	344.838	20.646	7.414	20.896	30.029	
11/4/2003 14:07	345.838	20.646	7.414	20.898	30.031	
11/4/2003 14:08	346.838	20.64	7.412	20.898	30.031	
11/4/2003 14:09	347.838	20.64	7.414	20.898	30.029	
11/4/2003 14:10	348.838	20.64	7.412	20.898	30.029	
11/4/2003 14:11	349.838	20.64	7.41	20.891	30.027	
11/4/2003 14:12	350.838	20.633	7.412	20.896	30.031	
11/4/2003 14:13	351.838	20.646	7.412	20.893	30.031	
11/4/2003 14:14	352.838	20.646	7.41	20.887	30.031	
11/4/2003 14:15	353.838	20.633	7.41	20.893	30.033	
11/4/2003 14:16	354.838	20.633	7.41	20.891	30.031	
11/4/2003 14:17	355.838	20.633	7.407	20.891	30.035	
11/4/2003 14:18	356.838	20.646	7.409	20.893	30.031	
11/4/2003 14:19	357.838	20.646	7.409	20.883	30.031	
11/4/2003 14:20	358.838	20.646	7.409	20.887	30.031	
11/4/2003 14:21	359.838	20.646	7.409	20.891	30.033	
11/4/2003 14:22	360.838	20.646	7.409	20.893	30.033	
11/4/2003 14:23	361.838	20.633	7.407	20.885	30.033	
11/4/2003 14:24	362.838	20.627	7.405	20.881	30.031	
11/4/2003 14:25	363.838	20.627	7.409	20.887	30.035	
11/4/2003 14:26	364.838	20.64	7.407	20.887	30.033	
11/4/2003 14:27	365.838	20.64	7.409	20.887	30.031	
11/4/2003 14:28	366.838	20.64	7.407	20.885	30.033	
11/4/2003 14:29	367.838	20.64	7.407	20.885	30.033	
11/4/2003 14:30	368.838	20.633	7.405	20.88	30.033	
11/4/2003 14:31	369.838	20.633	7.405	20.885	30.035	
11/4/2003 14:32	370.838	20.633	7.407	20.881	30.035	
11/4/2003 14:33	371.838	20.633	7.403	20.881	30.035	
11/4/2003 14:34	372.838	20.627	7.403	20.881	30.035	
11/4/2003 14:35	373.838	20.633	7.403	20.889	30.035	
11/4/2003 14:36	374.838	20.621	7.403	20.878	30.035	
11/4/2003 14:37	375.838	20.627	7.403	20.878	30.035	
11/4/2003 14:38	376.838	20.633	7.403	20.88	30.037	
11/4/2003 14:39	377.838	20.633	7.403	20.878	30.037	
11/4/2003 14:40	378.838	20.633	7.403	20.88	30.037	
11/4/2003 14:41	379.838	20.646	7.401	20.881	30.037	
11/4/2003 14:42	380.838	20.646	7.401	20.883	30.039	
11/4/2003 14:43	381.838	20.633	7.401	20.88	30.037	
11/4/2003 14:44	382.838	20.64	7.401	20.88	30.037	
11/4/2003 14:45	383.838	20.627	7.399	20.878	30.037	
11/4/2003 14:46	384.838	20.615	7.399	20.878	30.037	
11/4/2003 14:47	385.838	20.615	7.403	20.881	30.039	
11/4/2003 14:48	386.838	20.621	7.399	20.876	30.037	
11/4/2003 14:49	387.838	20.633	7.397	20.88	30.039	
11/4/2003 14:50	388.838	20.633	7.399	20.878	30.037	
11/4/2003 14:51	389.838	20.627	7.399	20.878	30.035	
11/4/2003 14:52	390.838	20.621	7.399	20.88	30.035	
11/4/2003 14:53	391.838	20.627	7.397	20.876	30.035	
11/4/2003 14:54	392.838	20.627	7.397	20.878	30.035	
11/4/2003 14:55	393.838	20.621	7.397	20.878	30.035	
11/4/2003 14:56	394.838	20.621	7.397	20.878	30.035	
11/4/2003 14:57	395.838	20.627	7.396	20.881	30.033	
11/4/2003 14:58	396.838	20.621	7.397	20.88	30.033	
11/4/2003 14:59	397.838	20.627	7.399	20.876	30.033	
11/4/2003 15:00	398.838	20.621	7.396	20.883	30.031	

11/4/2003 15:01	399.838	20.621	7.396	20.883	30.033	
11/4/2003 15:02	400.838	20.621	7.397	20.883	30.031	
11/4/2003 15:03	401.838	20.627	7.397	20.878	30.031	
11/4/2003 15:04	402.838	20.621	7.397	20.883	30.031	
11/4/2003 15:05	403.838	20.633	7.399	20.881	30.035	
11/4/2003 15:06	404.838	20.64	7.397	20.878	30.031	
11/4/2003 15:07	405.838	20.627	7.397	20.88	30.031	
11/4/2003 15:08	406.838	20.627	7.399	20.878	30.031	
11/4/2003 15:09	407.838	20.621	7.396	20.88	30.031	
11/4/2003 15:10	408.838	20.633	7.397	20.88	30.031	
11/4/2003 15:11	409.838	20.627	7.397	20.878	30.031	
11/4/2003 15:12	410.838	20.633	7.397	20.88	30.033	
11/4/2003 15:13	411.838	20.615	7.397	20.878	30.031	
11/4/2003 15:14	412.838	20.621	7.399	20.88	30.029	
11/4/2003 15:15	413.838	20.627	7.401	20.878	30.029	
11/4/2003 15:16	414.838	20.546	7.397	20.885	30.029	
11/4/2003 15:17	415.838	20.609	7.397	20.876	30.027	
11/4/2003 15:18	416.838	20.615	7.399	20.881	30.029	
11/4/2003 15:19	417.838	20.914	7.397	20.876	30.031	
11/4/2003 15:20	418.838	20.652	7.397	20.88	30.029	
11/4/2003 15:21	419.838	20.409	7.397	20.88	30.029	
11/4/2003 15:22	420.838	20.584	7.397	20.88	30.031	
11/4/2003 15:23	421.838	20.596	7.392	20.872	30.029	
11/4/2003 15:24	422.838	20.59	7.397	20.881	30.029	
11/4/2003 15:25	423.838	20.59	7.396	20.874	30.031	
11/4/2003 15:26	424.838	20.565	7.396	20.872	30.033	
11/4/2003 15:27	425.838	20.559	7.397	20.878	30.031	
11/4/2003 15:28	426.838	20.54	7.397	20.874	30.031	
11/4/2003 15:29	427.838	20.615	7.397	20.876	30.031	
11/4/2003 15:30	428.838	20.621	7.397	20.876	30.029	
11/4/2003 15:31	429.838	20.621	7.394	20.878	30.031	
11/4/2003 15:32	430.838	20.621	7.397	20.876	30.029	
11/4/2003 15:33	431.838	20.615	7.394	20.876	30.031	
11/4/2003 15:34	432.838	23.229	7.392	20.881	30.031	
11/4/2003 15:35	433.838	22.357	7.394	20.885	30.029	
11/4/2003 15:36	434.838	24.953	7.399	20.887	30.031	
11/4/2003 15:37	435.838	26.541	7.396	20.887	30.031	
11/4/2003 15:38	436.838	24.262	7.396	20.885	30.029	
11/4/2003 15:39	437.838	24.586	7.397	20.891	30.031	
11/4/2003 15:40	438.838	32.625	7.397	20.896	30.031	
11/4/2003 15:41	439.838	34.12	7.401	20.904	30.029	
11/4/2003 15:42	440.838	33.254	7.403	20.913	30.029	
11/4/2003 15:43	441.838	33.84	7.401	20.923	30.027	
11/4/2003 15:44	442.838	26.821	7.401	20.921	30.029	
11/4/2003 15:45	443.838	25.04	7.401	20.902	30.031	
11/4/2003 15:46	444.838	23.988	7.399	20.896	30.031	
11/4/2003 15:47	445.838	24.212	7.399	20.895	30.029	
11/4/2003 15:48	446.838	24.256	7.397	20.887	30.031	
11/4/2003 15:49	447.838	24.225	7.397	20.883	30.031	
11/4/2003 15:50	448.838	24.237	7.396	20.885	30.033	
11/4/2003 15:51	449.838	24.231	7.394	20.885	30.031	
11/4/2003 15:52	450.838	24.237	7.396	20.885	30.029	
11/4/2003 15:53	451.838	24.237	7.397	20.881	30.029	
11/4/2003 15:54	452.838	24.237	7.397	20.881	30.031	
11/4/2003 15:55	453.838	24.237	7.394	20.883	30.029	
11/4/2003 15:56	454.838	24.237	7.396	20.887	30.029	
11/4/2003 15:57	455.838	24.243	7.396	20.88	30.029	
11/4/2003 15:58	456.838	24.25	7.394	20.881	30.031	
11/4/2003 15:59	457.838	24.243	7.394	20.88	30.029	

11/4/2003 16:00	458.838	24.243	7.394	20.88	30.029	
11/4/2003 16:01	459.838	24.25	7.394	20.883	30.029	
11/4/2003 16:02	460.838	24.243	7.394	20.878	30.029	
11/4/2003 16:03	461.838	24.243	7.394	20.878	30.029	
11/4/2003 16:04	462.838	24.243	7.394	20.878	30.031	
11/4/2003 16:05	463.838	24.25	7.392	20.88	30.033	
11/4/2003 16:06	464.838	24.25	7.396	20.881	30.031	
11/4/2003 16:07	465.838	24.25	7.394	20.876	30.031	
11/4/2003 16:08	466.838	24.256	7.394	20.878	30.031	
11/4/2003 16:09	467.838	24.256	7.394	20.878	30.031	
11/4/2003 16:10	468.838	24.243	7.394	20.876	30.009	
11/4/2003 16:11	469.838	24.268	7.392	20.88	30.023	
11/4/2003 16:12	470.838	24.262	7.392	20.881	30.027	
11/4/2003 16:13	471.838	24.256	7.394	20.883	30.029	
11/4/2003 16:14	472.838	24.262	7.39	20.878	30.029	
11/4/2003 16:15	473.838	24.275	7.392	20.874	30.029	
11/4/2003 16:16	474.838	24.268	7.39	20.878	30.033	
11/4/2003 16:17	475.838	24.268	7.39	20.878	30.031	
11/4/2003 16:18	476.838	24.275	7.392	20.88	30.033	
11/4/2003 16:19	477.838	24.281	7.392	20.887	30.033	
11/4/2003 16:20	478.838	24.275	7.392	20.876	30.031	
11/4/2003 16:21	479.838	24.287	7.392	20.88	30.033	
11/4/2003 16:22	480.838	24.281	7.392	20.878	30.033	
11/4/2003 16:23	481.838	24.287	7.392	20.88	30.035	
11/4/2003 16:24	482.838	24.287	7.392	20.876	30.035	
11/4/2003 16:25	483.838	24.287	7.388	20.872	30.035	
11/4/2003 16:26	484.838	24.293	7.392	20.876	30.035	
11/4/2003 16:27	485.838	24.281	7.39	20.88	30.035	
11/4/2003 16:28	486.838	24.3	7.39	20.881	30.037	
11/4/2003 16:29	487.838	24.287	7.392	20.88	30.037	
11/4/2003 16:30	488.838	24.287	7.39	20.881	30.035	
11/4/2003 16:31	489.838	24.293	7.39	20.881	30.037	
11/4/2003 16:32	490.838	24.3	7.388	20.881	30.037	
11/4/2003 16:33	491.838	24.293	7.39	20.88	30.035	
11/4/2003 16:34	492.838	24.293	7.388	20.881	30.035	
11/4/2003 16:35	493.838	24.293	7.388	20.876	30.033	
11/4/2003 16:36	494.838	24.3	7.388	20.883	30.029	
11/4/2003 16:37	495.838	24.3	7.388	20.883	30.033	
11/4/2003 16:38	496.838	24.312	7.392	20.887	30.031	
11/4/2003 16:39	497.838	24.312	7.39	20.878	30.035	
11/4/2003 16:40	498.838	24.312	7.39	20.883	30.033	
11/4/2003 16:41	499.838	24.312	7.39	20.88	30.025	
11/4/2003 16:42	500.838	24.312	7.392	20.883	30.031	
11/4/2003 16:43	501.838	24.324	7.394	20.885	30.033	
11/4/2003 16:44	502.838	24.306	7.394	20.878	30.033	
11/4/2003 16:45	503.838	24.318	7.392	20.883	30.033	
11/4/2003 16:46	504.838	24.318	7.392	20.881	30.033	
11/4/2003 16:47	505.838	24.324	7.39	20.883	30.035	
11/4/2003 16:48	506.838	24.318	7.39	20.88	30.035	
11/4/2003 16:49	507.838	24.324	7.39	20.88	30.035	
11/4/2003 16:50	508.838	24.324	7.388	20.881	30.035	
11/4/2003 16:51	509.838	24.331	7.39	20.883	30.035	
11/4/2003 16:52	510.838	24.331	7.392	20.88	30.033	
11/4/2003 16:53	511.838	24.331	7.388	20.883	30.035	
11/4/2003 16:54	512.838	24.337	7.39	20.883	30.035	
11/4/2003 16:55	513.838	24.337	7.392	20.883	30.033	
11/4/2003 16:56	514.838	24.337	7.386	20.885	30.033	
11/4/2003 16:57	515.838	24.337	7.388	20.883	30.035	
11/4/2003 16:58	516.838	24.343	7.39	20.881	30.035	

11/4/2003 16:59	517.838	24.337	7.388	20.883	30.033	
11/4/2003 17:00	518.838	24.343	7.39	20.885	30.037	
11/4/2003 17:01	519.838	24.343	7.39	20.881	30.033	
11/4/2003 17:02	520.838	24.343	7.392	20.883	30.035	
11/4/2003 17:03	521.838	24.343	7.386	20.889	30.035	
11/4/2003 17:04	522.838	24.343	7.392	20.889	30.037	
11/4/2003 17:05	523.838	24.349	7.386	20.883	30.037	
11/4/2003 17:06	524.838	24.356	7.386	20.887	30.037	
11/4/2003 17:07	525.838	24.362	7.386	20.885	30.039	
11/4/2003 17:08	526.838	24.356	7.394	20.887	30.037	
11/4/2003 17:09	527.838	24.368	7.388	20.889	30.039	
11/4/2003 17:10	528.838	24.356	7.39	20.881	30.037	
11/4/2003 17:11	529.838	24.349	7.388	20.887	30.039	
11/4/2003 17:12	530.838	24.368	7.386	20.885	30.039	
11/4/2003 17:13	531.838	24.362	7.388	20.891	30.039	
11/4/2003 17:14	532.838	24.362	7.384	20.885	30.037	
11/4/2003 17:15	533.838	24.374	7.388	20.881	30.037	
11/4/2003 17:16	534.838	24.374	7.388	20.885	30.037	
11/4/2003 17:17	535.838	24.38	7.384	20.887	30.035	
11/4/2003 17:18	536.838	24.374	7.384	20.889	30.037	
11/4/2003 17:19	537.838	24.38	7.386	20.889	30.035	
11/4/2003 17:20	538.838	24.38	7.388	20.889	30.037	
11/4/2003 17:21	539.838	24.38	7.39	20.893	30.037	
11/4/2003 17:22	540.838	24.387	7.388	20.889	30.035	
11/4/2003 17:23	541.838	24.38	7.384	20.889	30.037	
11/4/2003 17:24	542.838	24.38	7.39	20.889	30.037	
11/4/2003 17:25	543.838	24.393	7.386	20.895	30.039	
11/4/2003 17:26	544.838	24.393	7.388	20.889	30.039	
11/4/2003 17:27	545.838	24.387	7.392	20.893	30.037	
11/4/2003 17:28	546.838	24.387	7.386	20.889	30.035	
11/4/2003 17:29	547.838	24.387	7.388	20.891	30.037	
11/4/2003 17:30	548.838	24.399	7.39	20.891	30.035	
11/4/2003 17:31	549.838	24.399	7.388	20.893	30.037	
11/4/2003 17:32	550.838	24.387	7.386	20.893	30.035	
11/4/2003 17:33	551.838	24.399	7.388	20.891	30.039	
11/4/2003 17:34	552.838	24.393	7.388	20.893	30.037	
11/4/2003 17:35	553.838	24.387	7.386	20.891	30.035	
11/4/2003 17:36	554.838	24.393	7.388	20.891	30.039	
11/4/2003 17:37	555.838	24.399	7.388	20.893	30.037	
11/4/2003 17:38	556.838	24.399	7.388	20.891	30.039	
11/4/2003 17:39	557.838	24.405	7.39	20.896	30.039	
11/4/2003 17:40	558.838	24.393	7.388	20.895	30.041	
11/4/2003 17:41	559.838	24.405	7.386	20.893	30.041	
11/4/2003 17:42	560.838	24.405	7.388	20.895	30.041	
11/4/2003 17:43	561.838	24.405	7.388	20.896	30.041	
11/4/2003 17:44	562.838	24.399	7.386	20.893	30.041	
11/4/2003 17:45	563.838	24.412	7.388	20.896	30.041	
11/4/2003 17:46	564.838	24.412	7.388	20.896	30.041	
11/4/2003 17:47	565.838	24.412	7.386	20.895	30.039	
11/4/2003 17:48	566.838	24.412	7.388	20.895	30.041	
11/4/2003 17:49	567.838	24.412	7.388	20.895	30.041	
11/4/2003 17:50	568.838	24.418	7.39	20.896	30.041	
11/4/2003 17:51	569.838	24.418	7.39	20.895	30.043	
11/4/2003 17:52	570.838	24.412	7.388	20.895	30.041	
11/4/2003 17:53	571.838	24.412	7.386	20.885	30.043	
11/4/2003 17:54	572.838	24.424	7.386	20.893	30.041	
11/4/2003 17:55	573.838	24.424	7.388	20.895	30.045	
11/4/2003 17:56	574.838	24.424	7.388	20.896	30.045	
11/4/2003 17:57	575.838	24.424	7.388	20.896	30.045	

11/4/2003 17:58	576.838	24.424	7.384	20.893	30.043	
11/4/2003 17:59	577.838	24.424	7.386	20.891	30.045	
11/4/2003 18:00	578.838	24.43	7.386	20.896	30.045	
11/4/2003 18:01	579.838	24.424	7.386	20.895	30.043	
11/4/2003 18:02	580.838	24.43	7.386	20.896	30.045	
11/4/2003 18:03	581.838	24.43	7.386	20.895	30.043	
11/4/2003 18:04	582.838	24.43	7.386	20.893	30.045	
11/4/2003 18:05	583.838	24.443	7.388	20.896	30.045	
11/4/2003 18:06	584.838	24.436	7.386	20.891	30.045	
11/4/2003 18:07	585.838	24.436	7.386	20.896	30.045	
11/4/2003 18:08	586.838	24.436	7.386	20.895	30.045	
11/4/2003 18:09	587.838	24.436	7.384	20.898	30.047	
11/4/2003 18:10	588.838	24.443	7.386	20.898	30.047	
11/4/2003 18:11	589.838	24.443	7.384	20.898	30.049	
11/4/2003 18:12	590.838	24.443	7.384	20.896	30.047	
11/4/2003 18:13	591.838	24.443	7.384	20.898	30.047	
11/4/2003 18:14	592.838	24.443	7.384	20.896	30.047	
11/4/2003 18:15	593.838	24.449	7.386	20.902	30.049	
11/4/2003 18:16	594.838	24.455	7.384	20.902	30.049	
11/4/2003 18:17	595.838	24.449	7.384	20.898	30.051	
11/4/2003 18:18	596.838	24.449	7.384	20.896	30.053	
11/4/2003 18:19	597.838	24.455	7.384	20.896	30.053	
11/4/2003 18:20	598.838	24.461	7.384	20.896	30.053	
11/4/2003 18:21	599.838	24.455	7.382	20.896	30.053	
11/4/2003 18:22	600.838	24.455	7.384	20.895	30.055	
11/4/2003 18:23	601.838	24.455	7.384	20.9	30.053	
11/4/2003 18:24	602.838	24.455	7.381	20.9	30.053	
11/4/2003 18:25	603.838	24.461	7.388	20.898	30.051	
11/4/2003 18:26	604.838	24.461	7.386	20.896	30.055	
11/4/2003 18:27	605.838	24.461	7.384	20.902	30.051	
11/4/2003 18:28	606.838	24.468	7.388	20.9	30.055	
11/4/2003 18:29	607.838	24.461	7.384	20.9	30.051	
11/4/2003 18:30	608.838	24.468	7.384	20.9	30.051	
11/4/2003 18:31	609.838	24.474	7.386	20.898	30.051	
11/4/2003 18:32	610.838	24.468	7.384	20.898	30.053	
11/4/2003 18:33	611.838	24.468	7.384	20.896	30.051	
11/4/2003 18:34	612.838	24.474	7.384	20.9	30.053	
11/4/2003 18:35	613.838	24.474	7.388	20.906	30.051	
11/4/2003 18:36	614.838	24.474	7.388	20.902	30.053	
11/4/2003 18:37	615.838	24.474	7.386	20.908	30.053	
11/4/2003 18:38	616.838	24.48	7.386	20.904	30.051	
11/4/2003 18:39	617.838	24.48	7.386	20.91	30.051	
11/4/2003 18:40	618.838	24.474	7.39	20.908	30.049	
11/4/2003 18:41	619.838	24.486	7.386	20.911	30.051	
11/4/2003 18:42	620.838	24.474	7.388	20.904	30.049	
11/4/2003 18:43	621.838	24.486	7.388	20.911	30.051	
11/4/2003 18:44	622.838	24.486	7.386	20.91	30.053	
11/4/2003 18:45	623.838	24.486	7.388	20.908	30.055	
11/4/2003 18:46	624.838	24.486	7.386	20.908	30.055	
11/4/2003 18:47	625.838	24.486	7.386	20.906	30.055	
11/4/2003 18:48	626.838	24.486	7.386	20.908	30.057	
11/4/2003 18:49	627.838	24.486	7.384	20.904	30.06	
11/4/2003 18:50	628.838	24.48	7.384	20.902	30.06	
11/4/2003 18:51	629.838	24.492	7.384	20.906	30.062	
11/4/2003 18:52	630.838	24.492	7.384	20.902	30.06	
11/4/2003 18:53	631.838	24.492	7.384	20.906	30.062	
11/4/2003 18:54	632.838	24.499	7.384	20.906	30.062	
11/4/2003 18:55	633.838	24.492	7.386	20.906	30.057	
11/4/2003 18:56	634.838	24.499	7.386	20.904	30.062	

11/4/2003 18:57	635.838	24.499	7.386	20.904	30.064	
11/4/2003 18:58	636.838	24.499	7.384	20.906	30.064	
11/4/2003 18:59	637.838	24.492	7.384	20.896	30.066	
11/4/2003 19:00	638.838	24.499	7.384	20.895	30.062	
11/4/2003 19:01	639.838	24.499	7.381	20.895	30.068	
11/4/2003 19:02	640.838	24.499	7.381	20.893	30.066	
11/4/2003 19:03	641.838	24.505	7.381	20.895	30.07	
11/4/2003 19:04	642.838	24.499	7.381	20.893	30.07	
11/4/2003 19:05	643.838	24.505	7.379	20.893	30.07	
11/4/2003 19:06	644.838	24.505	7.381	20.893	30.072	
11/4/2003 19:07	645.838	24.505	7.381	20.893	30.068	
11/4/2003 19:08	646.838	24.505	7.381	20.893	30.07	
11/4/2003 19:09	647.838	24.505	7.381	20.893	30.07	
11/4/2003 19:10	648.838	24.511	7.379	20.893	30.068	
11/4/2003 19:11	649.838	24.511	7.381	20.893	30.07	
11/4/2003 19:12	650.838	24.517	7.379	20.893	30.07	
11/4/2003 19:13	651.838	24.511	7.379	20.893	30.07	
11/4/2003 19:14	652.838	24.511	7.379	20.891	30.072	
11/4/2003 19:15	653.838	24.517	7.379	20.891	30.074	
11/4/2003 19:16	654.838	24.505	7.381	20.891	30.074	
11/4/2003 19:17	655.838	24.524	7.379	20.902	30.076	
11/4/2003 19:18	656.838	24.517	7.379	20.904	30.078	
11/4/2003 19:19	657.838	24.511	7.377	20.904	30.076	
11/4/2003 19:20	658.838	24.511	7.377	20.9	30.076	
11/4/2003 19:21	659.838	24.511	7.381	20.904	30.076	
11/4/2003 19:22	660.838	24.524	7.379	20.9	30.074	
11/4/2003 19:23	661.838	24.517	7.382	20.9	30.072	
11/4/2003 19:24	662.838	24.517	7.381	20.904	30.072	
11/4/2003 19:25	663.838	24.517	7.381	20.906	30.07	
11/4/2003 19:26	664.838	24.517	7.381	20.9	30.07	
11/4/2003 19:27	665.838	24.524	7.382	20.908	30.07	
11/4/2003 19:28	666.838	24.536	7.382	20.906	30.072	
11/4/2003 19:29	667.838	24.524	7.382	20.908	30.072	
11/4/2003 19:30	668.838	24.524	7.381	20.91	30.072	
11/4/2003 19:31	669.838	24.524	7.384	20.908	30.072	
11/4/2003 19:32	670.838	24.524	7.381	20.91	30.068	
11/4/2003 19:33	671.838	24.542	7.382	20.906	30.066	
11/4/2003 19:34	672.838	24.53	7.384	20.91	30.068	
11/4/2003 19:35	673.838	24.53	7.382	20.908	30.07	
11/4/2003 19:36	674.838	24.536	7.382	20.908	30.07	
11/4/2003 19:37	675.838	24.536	7.384	20.91	30.066	
11/4/2003 19:38	676.838	24.536	7.382	20.91	30.068	
11/4/2003 19:39	677.838	24.555	7.386	20.911	30.068	
11/4/2003 19:40	678.838	24.542	7.384	20.913	30.068	
11/4/2003 19:41	679.838	24.542	7.382	20.911	30.068	
11/4/2003 19:42	680.838	24.542	7.386	20.913	30.068	
11/4/2003 19:43	681.838	24.549	7.382	20.913	30.068	
11/4/2003 19:44	682.838	24.549	7.388	20.913	30.068	
11/4/2003 19:45	683.838	24.561	7.384	20.917	30.066	
11/4/2003 19:46	684.838	24.561	7.386	20.917	30.068	
11/4/2003 19:47	685.838	24.549	7.386	20.917	30.064	
11/4/2003 19:48	686.838	24.567	7.386	20.915	30.064	
11/4/2003 19:49	687.838	24.567	7.386	20.919	30.062	
11/4/2003 19:50	688.838	24.573	7.386	20.917	30.064	
11/4/2003 19:51	689.838	24.573	7.388	20.919	30.062	
11/4/2003 19:52	690.838	24.573	7.388	20.923	30.062	
11/4/2003 19:53	691.838	24.561	7.388	20.921	30.06	
11/4/2003 19:54	692.838	24.561	7.388	20.925	30.057	
11/4/2003 19:55	693.838	24.567	7.388	20.923	30.06	

11/4/2003 19:56	694.838	24.567	7.39	20.923	30.06	
11/4/2003 19:57	695.838	24.58	7.388	20.925	30.06	
11/4/2003 19:58	696.838	24.567	7.388	20.921	30.06	
11/4/2003 19:59	697.838	24.573	7.39	20.923	30.06	
11/4/2003 20:00	698.838	24.586	7.39	20.921	30.062	
11/4/2003 20:01	699.838	24.573	7.388	20.925	30.062	
11/4/2003 20:02	700.838	24.58	7.39	20.928	30.062	
11/4/2003 20:03	701.838	24.592	7.39	20.925	30.064	
11/4/2003 20:04	702.838	24.58	7.39	20.925	30.06	
11/4/2003 20:05	703.838	24.58	7.39	20.928	30.06	
11/4/2003 20:06	704.838	24.586	7.394	20.925	30.062	
11/4/2003 20:07	705.838	24.586	7.39	20.928	30.062	
11/4/2003 20:08	706.838	24.58	7.392	20.926	30.06	
11/4/2003 20:09	707.838	24.586	7.392	20.926	30.06	
11/4/2003 20:10	708.838	24.586	7.392	20.93	30.06	
11/4/2003 20:11	709.838	24.586	7.394	20.926	30.06	
11/4/2003 20:12	710.838	24.605	7.394	20.93	30.057	
11/4/2003 20:13	711.838	24.605	7.392	20.93	30.06	
11/4/2003 20:14	712.838	24.592	7.394	20.932	30.057	
11/4/2003 20:15	713.838	24.592	7.394	20.93	30.057	
11/4/2003 20:16	714.838	24.592	7.394	20.936	30.057	
11/4/2003 20:17	715.838	24.605	7.394	20.932	30.06	
11/4/2003 20:18	716.838	24.605	7.394	20.932	30.057	
11/4/2003 20:19	717.838	24.605	7.394	20.934	30.057	
11/4/2003 20:20	718.838	24.617	7.396	20.932	30.057	
11/4/2003 20:21	719.838	24.605	7.396	20.932	30.06	
11/4/2003 20:22	720.838	24.605	7.394	20.936	30.06	
11/4/2003 20:23	721.838	24.611	7.396	20.928	30.062	
11/4/2003 20:24	722.838	24.605	7.394	20.93	30.064	
11/4/2003 20:25	723.838	24.611	7.394	20.936	30.064	
11/4/2003 20:26	724.838	24.611	7.394	20.938	30.066	
11/4/2003 20:27	725.838	24.611	7.392	20.934	30.064	
11/4/2003 20:28	726.838	24.611	7.392	20.936	30.068	
11/4/2003 20:29	727.838	24.617	7.396	20.932	30.07	
11/4/2003 20:30	728.838	24.611	7.394	20.936	30.07	
11/4/2003 20:31	729.838	24.617	7.394	20.934	30.07	
11/4/2003 20:32	730.838	24.623	7.39	20.941	30.07	
11/4/2003 20:33	731.838	24.617	7.394	20.932	30.07	
11/4/2003 20:34	732.838	24.623	7.394	20.938	30.07	
11/4/2003 20:35	733.838	24.623	7.396	20.932	30.07	
11/4/2003 20:36	734.838	24.629	7.394	20.936	30.07	
11/4/2003 20:37	735.838	24.617	7.396	20.934	30.07	
11/4/2003 20:38	736.838	24.617	7.396	20.936	30.068	
11/4/2003 20:39	737.838	24.623	7.396	20.938	30.07	
11/4/2003 20:40	738.838	24.623	7.396	20.94	30.072	
11/4/2003 20:41	739.838	24.623	7.396	20.938	30.072	
11/4/2003 20:42	740.838	24.623	7.396	20.936	30.074	
11/4/2003 20:43	741.838	24.623	7.396	20.938	30.074	
11/4/2003 20:44	742.838	24.629	7.396	20.934	30.074	
11/4/2003 20:45	743.838	24.636	7.394	20.94	30.076	
11/4/2003 20:46	744.838	24.629	7.397	20.94	30.076	
11/4/2003 20:47	745.838	24.636	7.396	20.94	30.078	
11/4/2003 20:48	746.838	24.636	7.394	20.934	30.076	
11/4/2003 20:49	747.838	24.636	7.394	20.934	30.078	
11/4/2003 20:50	748.838	24.636	7.396	20.936	30.076	
11/4/2003 20:51	749.838	24.636	7.396	20.938	30.076	
11/4/2003 20:52	750.838	24.642	7.396	20.936	30.078	
11/4/2003 20:53	751.838	24.636	7.396	20.936	30.08	
11/4/2003 20:54	752.838	24.636	7.394	20.934	30.08	

11/4/2003 20:55	753.838	24.642	7.394	20.934	30.08	
11/4/2003 20:56	754.838	24.642	7.394	20.938	30.082	
11/4/2003 20:57	755.838	24.642	7.394	20.938	30.082	
11/4/2003 20:58	756.838	24.648	7.394	20.94	30.084	
11/4/2003 20:59	757.838	24.642	7.394	20.94	30.084	
11/4/2003 21:00	758.838	24.648	7.394	20.936	30.086	
11/4/2003 21:01	759.838	24.654	7.396	20.938	30.086	
11/4/2003 21:02	760.838	24.648	7.394	20.938	30.086	
11/4/2003 21:03	761.838	24.648	7.394	20.938	30.086	
11/4/2003 21:04	762.838	24.648	7.396	20.936	30.086	
11/4/2003 21:05	763.838	24.654	7.394	20.938	30.086	
11/4/2003 21:06	764.838	24.654	7.396	20.94	30.084	
11/4/2003 21:07	765.838	24.661	7.396	20.938	30.086	
11/4/2003 21:08	766.838	24.654	7.396	20.94	30.084	
11/4/2003 21:09	767.838	24.661	7.397	20.94	30.084	
11/4/2003 21:10	768.838	24.661	7.397	20.941	30.082	
11/4/2003 21:11	769.838	24.661	7.396	20.94	30.084	
11/4/2003 21:12	770.838	24.661	7.397	20.94	30.082	
11/4/2003 21:13	771.838	24.654	7.397	20.941	30.084	
11/4/2003 21:14	772.838	24.667	7.399	20.94	30.082	
11/4/2003 21:15	773.838	24.667	7.397	20.949	30.08	
11/4/2003 21:16	774.838	24.667	7.396	20.943	30.084	
11/4/2003 21:17	775.838	24.667	7.397	20.943	30.08	
11/4/2003 21:18	776.838	24.667	7.397	20.945	30.082	
11/4/2003 21:19	777.838	24.667	7.401	20.945	30.082	
11/4/2003 21:20	778.838	24.667	7.401	20.943	30.078	
11/4/2003 21:21	779.838	24.673	7.399	20.947	30.08	
11/4/2003 21:22	780.838	24.673	7.401	20.947	30.078	
11/4/2003 21:23	781.838	24.673	7.399	20.947	30.08	
11/4/2003 21:24	782.838	24.679	7.401	20.945	30.08	
11/4/2003 21:25	783.838	24.679	7.403	20.947	30.08	
11/4/2003 21:26	784.838	24.679	7.401	20.949	30.08	
11/4/2003 21:27	785.838	24.679	7.403	20.945	30.078	
11/4/2003 21:28	786.838	24.679	7.401	20.947	30.078	
11/4/2003 21:29	787.838	24.679	7.403	20.949	30.08	
11/4/2003 21:30	788.838	24.679	7.403	20.947	30.078	
11/4/2003 21:31	789.838	24.685	7.403	20.949	30.076	
11/4/2003 21:32	790.838	24.685	7.405	20.951	30.076	
11/4/2003 21:33	791.838	24.685	7.405	20.947	30.076	
11/4/2003 21:34	792.838	24.685	7.405	20.951	30.076	
11/4/2003 21:35	793.838	24.698	7.405	20.949	30.076	
11/4/2003 21:36	794.838	24.698	7.405	20.949	30.072	
11/4/2003 21:37	795.838	24.698	7.405	20.949	30.076	
11/4/2003 21:38	796.838	24.698	7.407	20.951	30.072	
11/4/2003 21:39	797.838	24.704	7.407	20.951	30.076	
11/4/2003 21:40	798.838	24.698	7.405	20.953	30.076	
11/4/2003 21:41	799.838	24.698	7.407	20.951	30.078	
11/4/2003 21:42	800.838	24.704	7.405	20.949	30.076	
11/4/2003 21:43	801.838	24.698	7.407	20.951	30.078	
11/4/2003 21:44	802.838	24.685	7.407	20.947	30.078	
11/4/2003 21:45	803.838	24.704	7.407	20.945	30.08	
11/4/2003 21:46	804.838	24.704	7.405	20.953	30.08	
11/4/2003 21:47	805.838	24.704	7.405	20.947	30.08	
11/4/2003 21:48	806.838	24.704	7.405	20.953	30.08	
11/4/2003 21:49	807.838	24.71	7.403	20.947	30.082	
11/4/2003 21:50	808.838	24.692	7.405	20.951	30.082	
11/4/2003 21:51	809.838	24.704	7.405	20.949	30.084	
11/4/2003 21:52	810.838	24.692	7.407	20.949	30.082	
11/4/2003 21:53	811.838	24.692	7.407	20.951	30.08	

11/4/2003 21:54	812.838	24.704	7.409	20.947	30.078	
11/4/2003 21:55	813.838	24.71	7.409	20.945	30.074	
11/4/2003 21:56	814.838	24.704	7.409	20.951	30.076	
11/4/2003 21:57	815.838	24.71	7.409	20.951	30.074	
11/4/2003 21:58	816.838	24.71	7.41	20.949	30.076	
11/4/2003 21:59	817.838	24.71	7.409	20.951	30.076	
11/4/2003 22:00	818.838	24.717	7.409	20.947	30.074	
11/4/2003 22:01	819.838	24.71	7.409	20.953	30.074	
11/4/2003 22:02	820.838	24.71	7.409	20.949	30.074	
11/4/2003 22:03	821.838	24.71	7.409	20.949	30.072	
11/4/2003 22:04	822.838	24.71	7.412	20.951	30.07	
11/4/2003 22:05	823.838	24.717	7.414	20.955	30.068	
11/4/2003 22:06	824.838	24.717	7.412	20.951	30.064	
11/4/2003 22:07	825.838	24.717	7.412	20.953	30.066	
11/4/2003 22:08	826.838	24.717	7.412	20.955	30.068	
11/4/2003 22:09	827.838	24.717	7.414	20.949	30.064	
11/4/2003 22:10	828.838	24.729	7.412	20.953	30.064	
11/4/2003 22:11	829.838	24.717	7.412	20.951	30.066	
11/4/2003 22:12	830.838	24.723	7.414	20.949	30.064	
11/4/2003 22:13	831.838	24.723	7.416	20.953	30.064	
11/4/2003 22:14	832.838	24.723	7.414	20.955	30.068	
11/4/2003 22:15	833.838	24.723	7.414	20.953	30.068	
11/4/2003 22:16	834.838	24.723	7.414	20.951	30.068	
11/4/2003 22:17	835.838	24.723	7.414	20.951	30.064	
11/4/2003 22:18	836.838	24.729	7.414	20.951	30.066	
11/4/2003 22:19	837.838	24.723	7.414	20.951	30.064	
11/4/2003 22:20	838.838	24.729	7.414	20.951	30.064	
11/4/2003 22:21	839.838	24.723	7.414	20.951	30.062	
11/4/2003 22:22	840.838	24.729	7.414	20.953	30.062	
11/4/2003 22:23	841.838	24.729	7.416	20.949	30.062	
11/4/2003 22:24	842.838	24.729	7.416	20.951	30.062	
11/4/2003 22:25	843.838	24.729	7.418	20.955	30.064	
11/4/2003 22:26	844.838	24.729	7.416	20.951	30.066	
11/4/2003 22:27	845.838	24.729	7.416	20.949	30.064	
11/4/2003 22:28	846.838	24.735	7.416	20.951	30.066	
11/4/2003 22:29	847.838	24.729	7.416	20.943	30.064	
11/4/2003 22:30	848.838	24.735	7.416	20.953	30.062	
11/4/2003 22:31	849.838	24.735	7.414	20.951	30.062	
11/4/2003 22:32	850.838	24.735	7.416	20.953	30.062	
11/4/2003 22:33	851.838	24.735	7.416	20.953	30.064	
11/4/2003 22:34	852.838	24.735	7.416	20.949	30.064	
11/4/2003 22:35	853.838	24.729	7.416	20.953	30.062	
11/4/2003 22:36	854.838	24.735	7.418	20.949	30.062	
11/4/2003 22:37	855.838	24.735	7.414	20.949	30.062	
11/4/2003 22:38	856.838	24.741	7.416	20.953	30.062	
11/4/2003 22:39	857.838	24.735	7.42	20.953	30.06	
11/4/2003 22:40	858.838	24.741	7.418	20.958	30.06	
11/4/2003 22:41	859.838	24.735	7.418	20.951	30.06	
11/4/2003 22:42	860.838	24.741	7.418	20.949	30.062	
11/4/2003 22:43	861.838	24.741	7.418	20.951	30.06	
11/4/2003 22:44	862.838	24.729	7.418	20.945	30.06	
11/4/2003 22:45	863.838	24.741	7.418	20.947	30.06	
11/4/2003 22:46	864.838	24.735	7.418	20.947	30.057	
11/4/2003 22:47	865.838	24.735	7.418	20.947	30.057	
11/4/2003 22:48	866.838	24.748	7.42	20.953	30.057	
11/4/2003 22:49	867.838	24.741	7.418	20.949	30.057	
11/4/2003 22:50	868.838	24.741	7.418	20.945	30.057	
11/4/2003 22:51	869.838	24.741	7.418	20.949	30.06	
11/4/2003 22:52	870.838	24.741	7.418	20.947	30.057	

11/4/2003 22:53	871.838	24.748	7.422	20.951	30.057	
11/4/2003 22:54	872.838	24.748	7.42	20.947	30.057	
11/4/2003 22:55	873.838	24.741	7.42	20.947	30.057	
11/4/2003 22:56	874.838	24.741	7.42	20.947	30.057	
11/4/2003 22:57	875.838	24.748	7.42	20.945	30.055	
11/4/2003 22:58	876.838	24.741	7.418	20.945	30.057	
11/4/2003 22:59	877.838	24.741	7.418	20.949	30.053	
11/4/2003 23:00	878.838	24.748	7.42	20.943	30.057	
11/4/2003 23:01	879.838	24.748	7.42	20.943	30.057	
11/4/2003 23:02	880.838	24.741	7.42	20.941	30.057	
11/4/2003 23:03	881.838	24.741	7.42	20.945	30.06	
11/4/2003 23:04	882.838	24.741	7.418	20.943	30.057	
11/4/2003 23:05	883.838	24.741	7.42	20.941	30.055	
11/4/2003 23:06	884.838	24.748	7.418	20.945	30.057	
11/4/2003 23:07	885.838	24.748	7.42	20.941	30.057	
11/4/2003 23:08	886.838	24.741	7.42	20.941	30.057	
11/4/2003 23:09	887.838	24.748	7.42	20.945	30.057	
11/4/2003 23:10	888.838	24.754	7.42	20.943	30.055	
11/4/2003 23:11	889.838	24.735	7.42	20.941	30.055	
11/4/2003 23:12	890.838	24.748	7.423	20.945	30.053	
11/4/2003 23:13	891.838	24.748	7.422	20.943	30.051	
11/4/2003 23:14	892.838	24.748	7.422	20.947	30.053	
11/4/2003 23:15	893.838	24.741	7.425	20.943	30.049	
11/4/2003 23:16	894.838	24.729	7.422	20.943	30.049	
11/4/2003 23:17	895.838	24.735	7.423	20.941	30.049	
11/4/2003 23:18	896.838	24.741	7.422	20.94	30.047	
11/4/2003 23:19	897.838	24.748	7.423	20.947	30.047	
11/4/2003 23:20	898.838	24.741	7.416	20.947	30.049	
11/4/2003 23:21	899.838	24.748	7.422	20.941	30.049	
11/4/2003 23:22	900.838	24.741	7.423	20.94	30.047	
11/4/2003 23:23	901.838	24.741	7.422	20.938	30.049	
11/4/2003 23:24	902.838	24.741	7.423	20.94	30.049	
11/4/2003 23:25	903.838	24.741	7.423	20.941	30.047	
11/4/2003 23:26	904.838	24.748	7.425	20.938	30.043	
11/4/2003 23:27	905.838	24.748	7.423	20.941	30.047	
11/4/2003 23:28	906.838	24.754	7.422	20.943	30.045	
11/4/2003 23:29	907.838	24.748	7.422	20.938	30.047	
11/4/2003 23:30	908.838	24.748	7.423	20.943	30.047	
11/4/2003 23:31	909.838	24.748	7.423	20.94	30.047	
11/4/2003 23:32	910.838	24.741	7.423	20.941	30.049	
11/4/2003 23:33	911.838	24.741	7.423	20.94	30.047	
11/4/2003 23:34	912.838	24.741	7.42	20.938	30.051	
11/4/2003 23:35	913.838	24.741	7.423	20.936	30.049	
11/4/2003 23:36	914.838	24.748	7.422	20.938	30.049	
11/4/2003 23:37	915.838	24.748	7.423	20.936	30.051	
11/4/2003 23:38	916.838	24.754	7.423	20.941	30.049	
11/4/2003 23:39	917.838	24.754	7.423	20.938	30.049	
11/4/2003 23:40	918.838	24.754	7.423	20.938	30.051	
11/4/2003 23:41	919.838	24.748	7.425	20.938	30.049	
11/4/2003 23:42	920.838	24.748	7.423	20.938	30.049	
11/4/2003 23:43	921.838	24.754	7.422	20.936	30.049	
11/4/2003 23:44	922.838	24.754	7.423	20.938	30.049	
11/4/2003 23:45	923.838	24.754	7.423	20.94	30.051	
11/4/2003 23:46	924.838	24.748	7.423	20.936	30.047	
11/4/2003 23:47	925.838	24.754	7.423	20.94	30.049	
11/4/2003 23:48	926.838	24.754	7.422	20.934	30.053	
11/4/2003 23:49	927.838	24.748	7.422	20.932	30.053	
11/4/2003 23:50	928.838	24.754	7.422	20.936	30.051	
11/4/2003 23:51	929.838	24.748	7.423	20.934	30.049	

11/4/2003 23:52	930.838	24.748	7.422	20.93	30.049	
11/4/2003 23:53	931.838	24.76	7.423	20.932	30.049	
11/4/2003 23:54	932.838	24.748	7.423	20.934	30.049	
11/4/2003 23:55	933.838	24.748	7.42	20.934	30.051	
11/4/2003 23:56	934.838	24.754	7.42	20.93	30.049	
11/4/2003 23:57	935.838	24.754	7.42	20.934	30.049	
11/4/2003 23:58	936.838	24.754	7.422	20.934	30.049	
11/4/2003 23:59	937.838	24.754	7.42	20.934	30.049	
11/5/2003 0:00	938.838	24.754	7.418	20.926	30.047	
11/5/2003 0:01	939.838	24.754	7.422	20.934	30.049	
11/5/2003 0:02	940.838	24.748	7.422	20.932	30.047	
11/5/2003 0:03	941.838	24.76	7.422	20.932	30.047	
11/5/2003 0:04	942.838	24.76	7.42	20.932	30.049	
11/5/2003 0:05	943.838	24.754	7.42	20.932	30.049	
11/5/2003 0:06	944.838	24.754	7.422	20.928	30.049	
11/5/2003 0:07	945.838	24.76	7.42	20.926	30.047	
11/5/2003 0:08	946.838	24.76	7.422	20.928	30.051	
11/5/2003 0:09	947.838	24.76	7.42	20.93	30.051	
11/5/2003 0:10	948.838	24.76	7.418	20.923	30.049	
11/5/2003 0:11	949.838	24.754	7.418	20.919	30.051	
11/5/2003 0:12	950.838	24.76	7.418	20.919	30.053	
11/5/2003 0:13	951.838	24.76	7.416	20.917	30.053	
11/5/2003 0:14	952.838	24.76	7.416	20.917	30.051	
11/5/2003 0:15	953.838	24.76	7.416	20.915	30.053	
11/5/2003 0:16	954.838	24.76	7.416	20.915	30.053	
11/5/2003 0:17	955.838	24.754	7.416	20.915	30.053	
11/5/2003 0:18	956.838	24.76	7.416	20.915	30.053	
11/5/2003 0:19	957.838	24.76	7.416	20.915	30.053	
11/5/2003 0:20	958.838	24.76	7.414	20.915	30.057	
11/5/2003 0:21	959.838	24.754	7.416	20.913	30.057	
11/5/2003 0:22	960.838	24.754	7.414	20.913	30.055	
11/5/2003 0:23	961.838	24.76	7.414	20.913	30.055	
11/5/2003 0:24	962.838	24.76	7.414	20.911	30.055	
11/5/2003 0:25	963.838	24.76	7.414	20.911	30.055	
11/5/2003 0:26	964.838	24.76	7.414	20.911	30.057	
11/5/2003 0:27	965.838	24.76	7.414	20.913	30.057	
11/5/2003 0:28	966.838	24.76	7.412	20.91	30.055	
11/5/2003 0:29	967.838	24.76	7.414	20.911	30.055	
11/5/2003 0:30	968.838	24.76	7.414	20.911	30.055	
11/5/2003 0:31	969.838	24.76	7.412	20.911	30.055	
11/5/2003 0:32	970.838	24.76	7.412	20.91	30.057	
11/5/2003 0:33	971.838	24.76	7.414	20.91	30.057	
11/5/2003 0:34	972.838	24.76	7.414	20.911	30.051	
11/5/2003 0:35	973.838	24.766	7.414	20.908	30.055	
11/5/2003 0:36	974.838	24.766	7.414	20.911	30.053	
11/5/2003 0:37	975.838	24.76	7.412	20.913	30.055	
11/5/2003 0:38	976.838	24.773	7.416	20.921	30.053	
11/5/2003 0:39	977.838	24.766	7.414	20.928	30.055	
11/5/2003 0:40	978.838	24.773	7.416	20.932	30.055	
11/5/2003 0:41	979.838	24.773	7.416	20.925	30.057	
11/5/2003 0:42	980.838	24.766	7.418	20.923	30.053	
11/5/2003 0:43	981.838	24.766	7.416	20.923	30.053	
11/5/2003 0:44	982.838	24.766	7.416	20.923	30.051	
11/5/2003 0:45	983.838	24.76	7.416	20.925	30.051	
11/5/2003 0:46	984.838	24.773	7.416	20.919	30.053	
11/5/2003 0:47	985.838	24.773	7.416	20.925	30.053	
11/5/2003 0:48	986.838	24.773	7.416	20.921	30.051	
11/5/2003 0:49	987.838	24.766	7.416	20.923	30.051	
11/5/2003 0:50	988.838	24.766	7.42	20.921	30.049	

11/5/2003 0:51	989.838	24.773	7.414	20.915	30.047	
11/5/2003 0:52	990.838	24.773	7.416	20.919	30.047	
11/5/2003 0:53	991.838	24.766	7.418	20.921	30.049	
11/5/2003 0:54	992.838	24.766	7.416	20.921	30.049	
11/5/2003 0:55	993.838	24.766	7.416	20.921	30.047	
11/5/2003 0:56	994.838	24.766	7.416	20.921	30.045	
11/5/2003 0:57	995.838	24.779	7.418	20.921	30.045	
11/5/2003 0:58	996.838	24.766	7.42	20.921	30.045	
11/5/2003 0:59	997.838	24.773	7.418	20.919	30.045	
11/5/2003 1:00	998.838	24.779	7.418	20.919	30.045	
11/5/2003 1:01	999.838	24.773	7.418	20.923	30.043	
11/5/2003 1:02	1000.838	24.766	7.418	20.919	30.043	
11/5/2003 1:03	1001.838	24.779	7.418	20.919	30.045	
11/5/2003 1:04	1002.838	24.773	7.418	20.923	30.045	
11/5/2003 1:05	1003.838	24.779	7.42	20.917	30.045	
11/5/2003 1:06	1004.838	24.773	7.42	20.917	30.043	
11/5/2003 1:07	1005.838	24.779	7.416	20.921	30.043	
11/5/2003 1:08	1006.838	24.773	7.418	20.917	30.043	
11/5/2003 1:09	1007.838	24.779	7.418	20.917	30.045	
11/5/2003 1:10	1008.838	24.773	7.418	20.917	30.043	
11/5/2003 1:11	1009.838	24.766	7.416	20.919	30.043	
11/5/2003 1:12	1010.838	24.779	7.416	20.919	30.047	
11/5/2003 1:13	1011.838	24.773	7.416	20.919	30.047	
11/5/2003 1:14	1012.838	24.766	7.414	20.919	30.043	
11/5/2003 1:15	1013.838	24.773	7.416	20.919	30.045	
11/5/2003 1:16	1014.838	24.779	7.416	20.917	30.045	
11/5/2003 1:17	1015.838	24.773	7.416	20.917	30.047	
11/5/2003 1:18	1016.838	24.773	7.416	20.915	30.051	
11/5/2003 1:19	1017.838	24.773	7.414	20.915	30.051	
11/5/2003 1:20	1018.838	24.766	7.414	20.911	30.051	
11/5/2003 1:21	1019.838	24.779	7.412	20.913	30.051	
11/5/2003 1:22	1020.838	24.773	7.412	20.908	30.049	
11/5/2003 1:23	1021.838	24.773	7.414	20.913	30.049	
11/5/2003 1:24	1022.838	24.773	7.412	20.911	30.049	
11/5/2003 1:25	1023.838	24.773	7.414	20.913	30.049	
11/5/2003 1:26	1024.838	24.773	7.414	20.91	30.049	
11/5/2003 1:27	1025.838	24.773	7.414	20.91	30.049	
11/5/2003 1:28	1026.838	24.773	7.414	20.915	30.049	
11/5/2003 1:29	1027.838	24.773	7.412	20.91	30.047	
11/5/2003 1:30	1028.838	24.779	7.412	20.911	30.049	
11/5/2003 1:31	1029.838	24.773	7.412	20.91	30.051	
11/5/2003 1:32	1030.838	24.773	7.414	20.911	30.051	
11/5/2003 1:33	1031.838	24.773	7.414	20.908	30.049	
11/5/2003 1:34	1032.838	24.779	7.412	20.908	30.049	
11/5/2003 1:35	1033.838	24.773	7.412	20.906	30.047	
11/5/2003 1:36	1034.838	24.779	7.41	20.91	30.051	
11/5/2003 1:37	1035.838	24.766	7.412	20.908	30.049	
11/5/2003 1:38	1036.838	24.773	7.412	20.906	30.049	
11/5/2003 1:39	1037.838	24.773	7.41	20.908	30.049	
11/5/2003 1:40	1038.838	24.773	7.41	20.908	30.051	
11/5/2003 1:41	1039.838	24.773	7.41	20.91	30.051	
11/5/2003 1:42	1040.838	24.773	7.41	20.904	30.051	
11/5/2003 1:43	1041.838	24.773	7.412	20.902	30.051	
11/5/2003 1:44	1042.838	24.773	7.41	20.902	30.051	
11/5/2003 1:45	1043.838	24.773	7.41	20.902	30.049	
11/5/2003 1:46	1044.838	24.779	7.41	20.9	30.049	
11/5/2003 1:47	1045.838	24.785	7.412	20.908	30.049	
11/5/2003 1:48	1046.838	24.773	7.412	20.908	30.049	
11/5/2003 1:49	1047.838	24.773	7.41	20.902	30.049	

11/5/2003 1:50	1048.838	24.779	7.41	20.902	30.047	
11/5/2003 1:51	1049.838	24.779	7.41	20.902	30.045	
11/5/2003 1:52	1050.838	24.773	7.41	20.904	30.045	
11/5/2003 1:53	1051.838	24.779	7.41	20.902	30.043	
11/5/2003 1:54	1052.838	24.779	7.412	20.904	30.045	
11/5/2003 1:55	1053.838	24.779	7.41	20.902	30.045	
11/5/2003 1:56	1054.838	24.779	7.409	20.902	30.045	
11/5/2003 1:57	1055.838	24.773	7.41	20.902	30.043	
11/5/2003 1:58	1056.838	24.779	7.41	20.902	30.043	
11/5/2003 1:59	1057.838	24.773	7.41	20.898	30.043	
11/5/2003 2:00	1058.838	24.779	7.41	20.902	30.043	
11/5/2003 2:01	1059.838	24.773	7.409	20.898	30.043	
11/5/2003 2:02	1060.838	24.773	7.409	20.896	30.045	
11/5/2003 2:03	1061.838	24.773	7.41	20.898	30.045	
11/5/2003 2:04	1062.838	24.773	7.41	20.896	30.045	
11/5/2003 2:05	1063.838	24.779	7.409	20.896	30.043	
11/5/2003 2:06	1064.838	24.773	7.409	20.898	30.043	
11/5/2003 2:07	1065.838	24.779	7.407	20.898	30.043	
11/5/2003 2:08	1066.838	24.785	7.409	20.896	30.045	
11/5/2003 2:09	1067.838	24.773	7.41	20.896	30.043	
11/5/2003 2:10	1068.838	24.773	7.407	20.896	30.043	
11/5/2003 2:11	1069.838	24.773	7.409	20.895	30.043	
11/5/2003 2:12	1070.838	24.766	7.409	20.896	30.043	
11/5/2003 2:13	1071.838	24.773	7.407	20.895	30.043	
11/5/2003 2:14	1072.838	24.773	7.407	20.896	30.045	
11/5/2003 2:15	1073.838	24.773	7.407	20.895	30.045	
11/5/2003 2:16	1074.838	24.779	7.407	20.893	30.045	
11/5/2003 2:17	1075.838	24.779	7.407	20.896	30.045	
11/5/2003 2:18	1076.838	24.773	7.405	20.895	30.045	
11/5/2003 2:19	1077.838	24.779	7.407	20.895	30.043	
11/5/2003 2:20	1078.838	24.779	7.405	20.893	30.041	
11/5/2003 2:21	1079.838	24.779	7.407	20.895	30.045	
11/5/2003 2:22	1080.838	24.779	7.405	20.895	30.041	
11/5/2003 2:23	1081.838	24.779	7.407	20.896	30.043	
11/5/2003 2:24	1082.838	24.779	7.405	20.896	30.041	
11/5/2003 2:25	1083.838	24.779	7.405	20.895	30.041	
11/5/2003 2:26	1084.838	24.779	7.407	20.895	30.041	
11/5/2003 2:27	1085.838	24.773	7.407	20.893	30.041	
11/5/2003 2:28	1086.838	24.785	7.407	20.893	30.041	
11/5/2003 2:29	1087.838	24.779	7.407	20.893	30.041	
11/5/2003 2:30	1088.838	24.779	7.405	20.887	30.039	
11/5/2003 2:31	1089.838	24.779	7.405	20.889	30.039	
11/5/2003 2:32	1090.838	24.785	7.405	20.891	30.039	
11/5/2003 2:33	1091.838	24.779	7.409	20.889	30.039	
11/5/2003 2:34	1092.838	24.779	7.405	20.889	30.037	
11/5/2003 2:35	1093.838	24.779	7.405	20.891	30.037	
11/5/2003 2:36	1094.838	24.779	7.405	20.889	30.035	
11/5/2003 2:37	1095.838	24.779	7.403	20.891	30.035	
11/5/2003 2:38	1096.838	24.785	7.401	20.891	30.035	
11/5/2003 2:39	1097.838	24.785	7.407	20.887	30.033	
11/5/2003 2:40	1098.838	24.773	7.407	20.895	30.033	
11/5/2003 2:41	1099.838	24.779	7.403	20.883	30.033	
11/5/2003 2:42	1100.838	24.785	7.403	20.887	30.033	
11/5/2003 2:43	1101.838	24.785	7.405	20.887	30.033	
11/5/2003 2:44	1102.838	24.779	7.405	20.887	30.031	
11/5/2003 2:45	1103.838	24.779	7.403	20.887	30.031	
11/5/2003 2:46	1104.838	24.779	7.405	20.881	30.033	
11/5/2003 2:47	1105.838	24.791	7.403	20.885	30.031	
11/5/2003 2:48	1106.838	24.785	7.403	20.887	30.031	

11/5/2003 2:49	1107.838	24.779	7.403	20.885	30.031	
11/5/2003 2:50	1108.838	24.779	7.403	20.887	30.031	
11/5/2003 2:51	1109.838	24.779	7.401	20.883	30.033	
11/5/2003 2:52	1110.838	24.779	7.401	20.885	30.033	
11/5/2003 2:53	1111.838	24.785	7.403	20.883	30.033	
11/5/2003 2:54	1112.838	24.779	7.403	20.887	30.033	
11/5/2003 2:55	1113.838	24.785	7.403	20.883	30.031	
11/5/2003 2:56	1114.838	24.785	7.401	20.883	30.033	
11/5/2003 2:57	1115.838	24.779	7.401	20.883	30.033	
11/5/2003 2:58	1116.838	24.785	7.399	20.881	30.033	
11/5/2003 2:59	1117.838	24.785	7.397	20.883	30.033	
11/5/2003 3:00	1118.838	24.779	7.399	20.881	30.031	
11/5/2003 3:01	1119.838	24.785	7.403	20.881	30.033	
11/5/2003 3:02	1120.838	24.779	7.399	20.881	30.035	
11/5/2003 3:03	1121.838	24.779	7.397	20.881	30.035	
11/5/2003 3:04	1122.838	24.785	7.397	20.883	30.033	
11/5/2003 3:05	1123.838	24.779	7.397	20.881	30.035	
11/5/2003 3:06	1124.838	24.773	7.397	20.883	30.035	
11/5/2003 3:07	1125.838	24.779	7.397	20.88	30.033	
11/5/2003 3:08	1126.838	24.785	7.394	20.883	30.033	
11/5/2003 3:09	1127.838	24.785	7.397	20.878	30.033	
11/5/2003 3:10	1128.838	24.785	7.397	20.881	30.031	
11/5/2003 3:11	1129.838	24.785	7.397	20.878	30.031	
11/5/2003 3:12	1130.838	24.779	7.396	20.88	30.031	
11/5/2003 3:13	1131.838	24.785	7.396	20.88	30.031	
11/5/2003 3:14	1132.838	24.779	7.397	20.878	30.031	
11/5/2003 3:15	1133.838	24.785	7.396	20.883	30.031	
11/5/2003 3:16	1134.838	24.785	7.396	20.878	30.031	
11/5/2003 3:17	1135.838	24.785	7.396	20.88	30.031	
11/5/2003 3:18	1136.838	24.785	7.397	20.878	30.031	
11/5/2003 3:19	1137.838	24.785	7.394	20.88	30.031	
11/5/2003 3:20	1138.838	24.785	7.396	20.876	30.031	
11/5/2003 3:21	1139.838	24.785	7.396	20.878	30.033	
11/5/2003 3:22	1140.838	24.791	7.394	20.876	30.029	
11/5/2003 3:23	1141.838	24.779	7.394	20.874	30.029	
11/5/2003 3:24	1142.838	24.785	7.394	20.878	30.029	
11/5/2003 3:25	1143.838	24.785	7.394	20.88	30.029	
11/5/2003 3:26	1144.838	24.785	7.394	20.876	30.029	
11/5/2003 3:27	1145.838	24.791	7.392	20.874	30.031	
11/5/2003 3:28	1146.838	24.785	7.394	20.874	30.029	
11/5/2003 3:29	1147.838	24.785	7.392	20.868	30.031	
11/5/2003 3:30	1148.838	24.785	7.392	20.866	30.031	
11/5/2003 3:31	1149.838	24.785	7.392	20.865	30.035	
11/5/2003 3:32	1150.838	24.785	7.39	20.865	30.037	
11/5/2003 3:33	1151.838	24.785	7.39	20.865	30.035	
11/5/2003 3:34	1152.838	24.785	7.39	20.861	30.033	
11/5/2003 3:35	1153.838	24.785	7.388	20.859	30.035	
11/5/2003 3:36	1154.838	24.779	7.386	20.859	30.037	
11/5/2003 3:37	1155.838	24.785	7.386	20.865	30.037	
11/5/2003 3:38	1156.838	24.785	7.386	20.857	30.035	
11/5/2003 3:39	1157.838	24.785	7.388	20.857	30.037	
11/5/2003 3:40	1158.838	24.785	7.386	20.857	30.037	
11/5/2003 3:41	1159.838	24.785	7.388	20.859	30.037	
11/5/2003 3:42	1160.838	24.785	7.388	20.859	30.035	
11/5/2003 3:43	1161.838	24.785	7.386	20.857	30.035	
11/5/2003 3:44	1162.838	24.785	7.384	20.857	30.035	
11/5/2003 3:45	1163.838	24.791	7.386	20.857	30.039	
11/5/2003 3:46	1164.838	24.791	7.386	20.857	30.037	
11/5/2003 3:47	1165.838	24.785	7.384	20.857	30.037	

11/5/2003 3:48	1166.838	24.785	7.384	20.857	30.037	
11/5/2003 3:49	1167.838	24.791	7.384	20.855	30.035	
11/5/2003 3:50	1168.838	24.791	7.384	20.857	30.037	
11/5/2003 3:51	1169.838	24.791	7.384	20.855	30.037	
11/5/2003 3:52	1170.838	24.791	7.382	20.855	30.041	
11/5/2003 3:53	1171.838	24.791	7.382	20.855	30.041	
11/5/2003 3:54	1172.838	24.785	7.382	20.855	30.041	
11/5/2003 3:55	1173.838	24.791	7.382	20.853	30.041	
11/5/2003 3:56	1174.838	24.785	7.382	20.853	30.041	
11/5/2003 3:57	1175.838	24.791	7.381	20.853	30.041	
11/5/2003 3:58	1176.838	24.791	7.381	20.855	30.043	
11/5/2003 3:59	1177.838	24.791	7.381	20.853	30.041	
11/5/2003 4:00	1178.838	24.785	7.381	20.853	30.041	
11/5/2003 4:01	1179.838	24.791	7.381	20.853	30.041	
11/5/2003 4:02	1180.838	24.791	7.381	20.853	30.043	
11/5/2003 4:03	1181.838	24.791	7.379	20.855	30.041	
11/5/2003 4:04	1182.838	24.791	7.379	20.853	30.041	
11/5/2003 4:05	1183.838	24.791	7.379	20.853	30.041	
11/5/2003 4:06	1184.838	24.798	7.379	20.855	30.041	
11/5/2003 4:07	1185.838	24.791	7.379	20.855	30.039	
11/5/2003 4:08	1186.838	24.791	7.381	20.855	30.039	
11/5/2003 4:09	1187.838	24.798	7.379	20.855	30.037	
11/5/2003 4:10	1188.838	24.798	7.379	20.855	30.039	
11/5/2003 4:11	1189.838	24.791	7.381	20.855	30.039	
11/5/2003 4:12	1190.838	24.791	7.379	20.855	30.039	
11/5/2003 4:13	1191.838	24.791	7.379	20.855	30.037	
11/5/2003 4:14	1192.838	24.798	7.379	20.855	30.037	
11/5/2003 4:15	1193.838	24.798	7.379	20.857	30.037	
11/5/2003 4:16	1194.838	24.798	7.379	20.855	30.037	
11/5/2003 4:17	1195.838	24.798	7.379	20.857	30.037	
11/5/2003 4:18	1196.838	24.804	7.381	20.857	30.035	
11/5/2003 4:19	1197.838	24.798	7.379	20.857	30.037	
11/5/2003 4:20	1198.838	24.804	7.379	20.857	30.037	
11/5/2003 4:21	1199.838	24.804	7.379	20.857	30.037	
11/5/2003 4:22	1200.838	24.798	7.381	20.857	30.037	
11/5/2003 4:23	1201.838	24.804	7.381	20.857	30.037	
11/5/2003 4:24	1202.838	24.804	7.379	20.857	30.039	
11/5/2003 4:25	1203.838	24.804	7.379	20.857	30.037	
11/5/2003 4:26	1204.838	24.804	7.377	20.857	30.037	
11/5/2003 4:27	1205.838	24.804	7.379	20.857	30.039	
11/5/2003 4:28	1206.838	24.81	7.377	20.857	30.039	
11/5/2003 4:29	1207.838	24.804	7.379	20.857	30.039	
11/5/2003 4:30	1208.838	24.804	7.379	20.859	30.039	
11/5/2003 4:31	1209.838	24.81	7.377	20.857	30.039	
11/5/2003 4:32	1210.838	24.804	7.377	20.855	30.039	
11/5/2003 4:33	1211.838	24.81	7.377	20.857	30.041	
11/5/2003 4:34	1212.838	24.81	7.379	20.857	30.043	
11/5/2003 4:35	1213.838	24.81	7.375	20.857	30.041	
11/5/2003 4:36	1214.838	24.81	7.377	20.855	30.043	
11/5/2003 4:37	1215.838	24.81	7.377	20.857	30.043	
11/5/2003 4:38	1216.838	24.81	7.375	20.857	30.041	
11/5/2003 4:39	1217.838	24.81	7.377	20.857	30.039	
11/5/2003 4:40	1218.838	24.816	7.377	20.857	30.043	
11/5/2003 4:41	1219.838	24.81	7.375	20.859	30.041	
11/5/2003 4:42	1220.838	24.816	7.375	20.857	30.043	
11/5/2003 4:43	1221.838	24.816	7.375	20.859	30.045	
11/5/2003 4:44	1222.838	24.816	7.375	20.857	30.043	
11/5/2003 4:45	1223.838	24.816	7.375	20.859	30.043	
11/5/2003 4:46	1224.838	24.816	7.375	20.859	30.043	

11/5/2003 4:47	1225.838	24.816	7.377	20.861	30.043	
11/5/2003 4:48	1226.838	24.816	7.375	20.859	30.043	
11/5/2003 4:49	1227.838	24.816	7.375	20.859	30.043	
11/5/2003 4:50	1228.838	24.816	7.375	20.861	30.043	
11/5/2003 4:51	1229.838	24.816	7.375	20.859	30.047	
11/5/2003 4:52	1230.838	24.822	7.375	20.861	30.047	
11/5/2003 4:53	1231.838	24.822	7.375	20.859	30.043	
11/5/2003 4:54	1232.838	24.822	7.373	20.861	30.047	
11/5/2003 4:55	1233.838	24.816	7.375	20.859	30.047	
11/5/2003 4:56	1234.838	24.822	7.373	20.861	30.045	
11/5/2003 4:57	1235.838	24.822	7.375	20.861	30.047	
11/5/2003 4:58	1236.838	24.822	7.373	20.861	30.047	
11/5/2003 4:59	1237.838	24.829	7.373	20.865	30.047	
11/5/2003 5:00	1238.838	24.829	7.373	20.874	30.047	
11/5/2003 5:01	1239.838	24.822	7.377	20.863	30.047	
11/5/2003 5:02	1240.838	24.822	7.373	20.863	30.047	
11/5/2003 5:03	1241.838	24.829	7.373	20.874	30.047	
11/5/2003 5:04	1242.838	24.829	7.373	20.87	30.049	
11/5/2003 5:05	1243.838	24.822	7.375	20.866	30.051	
11/5/2003 5:06	1244.838	24.829	7.375	20.872	30.051	
11/5/2003 5:07	1245.838	24.829	7.373	20.872	30.049	
11/5/2003 5:08	1246.838	24.829	7.375	20.866	30.051	
11/5/2003 5:09	1247.838	24.835	7.373	20.872	30.053	
11/5/2003 5:10	1248.838	24.835	7.375	20.872	30.053	
11/5/2003 5:11	1249.838	24.829	7.373	20.874	30.053	
11/5/2003 5:12	1250.838	24.829	7.373	20.872	30.053	
11/5/2003 5:13	1251.838	24.841	7.373	20.874	30.055	
11/5/2003 5:14	1252.838	24.835	7.375	20.87	30.055	
11/5/2003 5:15	1253.838	24.835	7.373	20.872	30.053	
11/5/2003 5:16	1254.838	24.835	7.373	20.872	30.057	
11/5/2003 5:17	1255.838	24.841	7.371	20.874	30.06	
11/5/2003 5:18	1256.838	24.835	7.375	20.872	30.06	
11/5/2003 5:19	1257.838	24.841	7.373	20.872	30.06	
11/5/2003 5:20	1258.838	24.835	7.371	20.872	30.06	
11/5/2003 5:21	1259.838	24.829	7.371	20.866	30.062	
11/5/2003 5:22	1260.838	24.835	7.371	20.874	30.06	
11/5/2003 5:23	1261.838	24.835	7.371	20.876	30.064	
11/5/2003 5:24	1262.838	24.841	7.369	20.876	30.064	
11/5/2003 5:25	1263.838	24.841	7.371	20.874	30.064	
11/5/2003 5:26	1264.838	24.835	7.371	20.874	30.064	
11/5/2003 5:27	1265.838	24.841	7.369	20.874	30.064	
11/5/2003 5:28	1266.838	24.847	7.371	20.878	30.066	
11/5/2003 5:29	1267.838	24.841	7.369	20.876	30.064	
11/5/2003 5:30	1268.838	24.841	7.369	20.876	30.066	
11/5/2003 5:31	1269.838	24.841	7.369	20.874	30.068	
11/5/2003 5:32	1270.838	24.841	7.371	20.874	30.064	
11/5/2003 5:33	1271.838	24.847	7.371	20.874	30.064	
11/5/2003 5:34	1272.838	24.841	7.371	20.874	30.07	
11/5/2003 5:35	1273.838	24.854	7.371	20.878	30.068	
11/5/2003 5:36	1274.838	24.847	7.368	20.876	30.068	
11/5/2003 5:37	1275.838	24.841	7.371	20.876	30.07	
11/5/2003 5:38	1276.838	24.847	7.369	20.874	30.07	
11/5/2003 5:39	1277.838	24.847	7.371	20.876	30.07	
11/5/2003 5:40	1278.838	24.854	7.369	20.876	30.07	
11/5/2003 5:41	1279.838	24.847	7.371	20.878	30.07	
11/5/2003 5:42	1280.838	24.847	7.369	20.878	30.072	
11/5/2003 5:43	1281.838	24.847	7.371	20.874	30.07	
11/5/2003 5:44	1282.838	24.847	7.371	20.876	30.074	
11/5/2003 5:45	1283.838	24.854	7.369	20.874	30.074	

11/5/2003 5:46	1284.838	24.847	7.371	20.876	30.076	
11/5/2003 5:47	1285.838	24.847	7.369	20.874	30.076	
11/5/2003 5:48	1286.838	24.847	7.371	20.878	30.076	
11/5/2003 5:49	1287.838	24.847	7.371	20.88	30.076	
11/5/2003 5:50	1288.838	24.847	7.369	20.878	30.076	
11/5/2003 5:51	1289.838	24.86	7.368	20.88	30.076	
11/5/2003 5:52	1290.838	24.854	7.369	20.878	30.076	
11/5/2003 5:53	1291.838	24.854	7.368	20.878	30.076	
11/5/2003 5:54	1292.838	24.86	7.368	20.88	30.078	
11/5/2003 5:55	1293.838	24.854	7.369	20.88	30.078	
11/5/2003 5:56	1294.838	24.86	7.369	20.878	30.08	
11/5/2003 5:57	1295.838	24.854	7.368	20.88	30.078	
11/5/2003 5:58	1296.838	24.854	7.368	20.878	30.078	
11/5/2003 5:59	1297.838	24.86	7.368	20.88	30.08	
11/5/2003 6:00	1298.838	24.86	7.368	20.88	30.08	
11/5/2003 6:01	1299.838	24.86	7.369	20.88	30.08	
11/5/2003 6:02	1300.838	24.854	7.366	20.878	30.08	
11/5/2003 6:03	1301.838	24.86	7.368	20.878	30.084	
11/5/2003 6:04	1302.838	24.86	7.368	20.878	30.082	
11/5/2003 6:05	1303.838	24.86	7.368	20.88	30.084	
11/5/2003 6:06	1304.838	24.866	7.368	20.876	30.08	
11/5/2003 6:07	1305.838	24.86	7.368	20.88	30.082	
11/5/2003 6:08	1306.838	24.86	7.368	20.881	30.084	
11/5/2003 6:09	1307.838	24.86	7.368	20.88	30.084	
11/5/2003 6:10	1308.838	24.86	7.369	20.881	30.084	
11/5/2003 6:11	1309.838	24.872	7.368	20.883	30.084	
11/5/2003 6:12	1310.838	24.866	7.368	20.883	30.082	
11/5/2003 6:13	1311.838	24.866	7.369	20.885	30.084	
11/5/2003 6:14	1312.838	24.872	7.368	20.887	30.084	
11/5/2003 6:15	1313.838	24.866	7.368	20.876	30.084	
11/5/2003 6:16	1314.838	24.866	7.366	20.881	30.08	
11/5/2003 6:17	1315.838	24.872	7.368	20.883	30.084	
11/5/2003 6:18	1316.838	24.872	7.368	20.881	30.084	
11/5/2003 6:19	1317.838	24.872	7.368	20.885	30.084	
11/5/2003 6:20	1318.838	24.872	7.368	20.885	30.086	
11/5/2003 6:21	1319.838	24.872	7.368	20.885	30.084	
11/5/2003 6:22	1320.838	24.872	7.368	20.885	30.084	
11/5/2003 6:23	1321.838	24.872	7.368	20.887	30.084	
11/5/2003 6:24	1322.838	24.878	7.368	20.88	30.084	
11/5/2003 6:25	1323.838	24.878	7.368	20.885	30.086	
11/5/2003 6:26	1324.838	24.885	7.368	20.889	30.086	
11/5/2003 6:27	1325.838	24.878	7.369	20.887	30.088	
11/5/2003 6:28	1326.838	24.885	7.369	20.887	30.088	
11/5/2003 6:29	1327.838	24.878	7.368	20.887	30.086	
11/5/2003 6:30	1328.838	24.878	7.369	20.887	30.09	
11/5/2003 6:31	1329.838	24.885	7.368	20.887	30.086	
11/5/2003 6:32	1330.838	24.885	7.369	20.885	30.088	
11/5/2003 6:33	1331.838	24.885	7.368	20.883	30.09	
11/5/2003 6:34	1332.838	24.885	7.368	20.889	30.092	
11/5/2003 6:35	1333.838	24.885	7.369	20.887	30.09	
11/5/2003 6:36	1334.838	24.885	7.369	20.889	30.092	
11/5/2003 6:37	1335.838	24.885	7.366	20.889	30.092	
11/5/2003 6:38	1336.838	24.891	7.366	20.887	30.092	
11/5/2003 6:39	1337.838	24.891	7.369	20.887	30.092	
11/5/2003 6:40	1338.838	24.891	7.368	20.889	30.092	
11/5/2003 6:41	1339.838	24.891	7.366	20.891	30.092	
11/5/2003 6:42	1340.838	24.891	7.368	20.891	30.096	
11/5/2003 6:43	1341.838	24.897	7.368	20.893	30.094	
11/5/2003 6:44	1342.838	24.891	7.368	20.893	30.09	

11/5/2003 6:45	1343.838	24.897	7.368	20.891	30.092	
11/5/2003 6:46	1344.838	24.897	7.369	20.889	30.094	
11/5/2003 6:47	1345.838	24.897	7.368	20.895	30.094	
11/5/2003 6:48	1346.838	24.897	7.368	20.895	30.094	
11/5/2003 6:49	1347.838	24.897	7.368	20.893	30.096	
11/5/2003 6:50	1348.838	24.903	7.368	20.893	30.096	
11/5/2003 6:51	1349.838	24.897	7.369	20.893	30.096	
11/5/2003 6:52	1350.838	24.897	7.369	20.895	30.094	
11/5/2003 6:53	1351.838	24.897	7.369	20.895	30.096	
11/5/2003 6:54	1352.838	24.903	7.369	20.893	30.096	
11/5/2003 6:55	1353.838	24.897	7.368	20.895	30.094	
11/5/2003 6:56	1354.838	24.903	7.369	20.895	30.096	
11/5/2003 6:57	1355.838	24.897	7.369	20.895	30.1	
11/5/2003 6:58	1356.838	24.903	7.369	20.895	30.1	
11/5/2003 6:59	1357.838	24.903	7.369	20.895	30.1	
11/5/2003 7:00	1358.838	24.91	7.369	20.895	30.098	
11/5/2003 7:01	1359.838	24.903	7.369	20.896	30.098	
11/5/2003 7:02	1360.838	24.903	7.368	20.896	30.098	
11/5/2003 7:03	1361.838	24.91	7.369	20.9	30.098	
11/5/2003 7:04	1362.838	24.903	7.369	20.896	30.1	
11/5/2003 7:05	1363.838	24.91	7.369	20.896	30.102	
11/5/2003 7:06	1364.838	24.91	7.369	20.896	30.102	
11/5/2003 7:07	1365.838	24.91	7.371	20.9	30.102	
11/5/2003 7:08	1366.838	24.91	7.369	20.895	30.102	
11/5/2003 7:09	1367.838	24.903	7.369	20.898	30.104	
11/5/2003 7:10	1368.838	24.903	7.373	20.9	30.102	
11/5/2003 7:11	1369.838	24.903	7.369	20.895	30.104	
11/5/2003 7:12	1370.838	24.91	7.368	20.895	30.104	
11/5/2003 7:13	1371.838	24.91	7.369	20.898	30.104	
11/5/2003 7:14	1372.838	24.91	7.369	20.898	30.102	
11/5/2003 7:15	1373.838	24.91	7.369	20.896	30.102	
11/5/2003 7:16	1374.838	24.91	7.369	20.889	30.106	
11/5/2003 7:17	1375.838	24.916	7.368	20.887	30.106	
11/5/2003 7:18	1376.838	24.916	7.368	20.891	30.106	
11/5/2003 7:19	1377.838	24.916	7.369	20.889	30.106	
11/5/2003 7:20	1378.838	24.916	7.368	20.887	30.104	
11/5/2003 7:21	1379.838	24.91	7.371	20.891	30.102	
11/5/2003 7:22	1380.838	24.928	7.369	20.887	30.104	
11/5/2003 7:23	1381.838	24.916	7.368	20.889	30.106	
11/5/2003 7:24	1382.838	24.922	7.369	20.889	30.106	
11/5/2003 7:25	1383.838	24.91	7.366	20.891	30.106	
11/5/2003 7:26	1384.838	24.928	7.368	20.887	30.108	
11/5/2003 7:27	1385.838	24.922	7.368	20.891	30.104	
11/5/2003 7:28	1386.838	24.922	7.368	20.889	30.108	
11/5/2003 7:29	1387.838	24.922	7.368	20.891	30.106	
11/5/2003 7:30	1388.838	24.922	7.369	20.887	30.108	
11/5/2003 7:31	1389.838	24.928	7.369	20.887	30.11	
11/5/2003 7:32	1390.838	24.934	7.368	20.887	30.11	
11/5/2003 7:33	1391.838	24.916	7.369	20.887	30.11	
11/5/2003 7:34	1392.838	24.947	7.368	20.893	30.112	
11/5/2003 7:35	1393.838	24.928	7.366	20.893	30.11	
11/5/2003 7:36	1394.838	24.934	7.366	20.889	30.114	
11/5/2003 7:37	1395.838	24.928	7.368	20.891	30.114	
11/5/2003 7:38	1396.838	24.922	7.369	20.889	30.114	
11/5/2003 7:39	1397.838	24.928	7.368	20.891	30.117	
11/5/2003 7:40	1398.838	24.947	7.368	20.889	30.114	
11/5/2003 7:41	1399.838	24.934	7.366	20.891	30.114	
11/5/2003 7:42	1400.838	24.934	7.368	20.893	30.114	
11/5/2003 7:43	1401.838	24.934	7.368	20.893	30.114	

11/5/2003 7:44	1402.838	24.934	7.369	20.893	30.112	
11/5/2003 7:45	1403.838	24.928	7.369	20.893	30.112	
11/5/2003 7:46	1404.838	24.934	7.368	20.893	30.114	
11/5/2003 7:47	1405.838	24.934	7.368	20.893	30.114	
11/5/2003 7:48	1406.838	24.934	7.369	20.893	30.114	
11/5/2003 7:49	1407.838	24.941	7.368	20.893	30.114	
11/5/2003 7:50	1408.838	24.941	7.368	20.893	30.114	
11/5/2003 7:51	1409.838	24.928	7.368	20.898	30.112	
11/5/2003 7:52	1410.838	24.934	7.368	20.896	30.112	
11/5/2003 7:53	1411.838	24.941	7.368	20.898	30.112	
11/5/2003 7:54	1412.838	24.934	7.369	20.895	30.112	
11/5/2003 7:55	1413.838	24.941	7.369	20.896	30.117	
11/5/2003 7:56	1414.838	24.941	7.366	20.898	30.117	
11/5/2003 7:57	1415.838	24.941	7.369	20.898	30.117	
11/5/2003 7:58	1416.838	24.934	7.368	20.896	30.114	
11/5/2003 7:59	1417.838	24.941	7.368	20.896	30.119	
11/5/2003 8:00	1418.838	24.941	7.369	20.9	30.119	
11/5/2003 8:01	1419.838	24.959	7.366	20.9	30.121	
11/5/2003 8:02	1420.838	24.941	7.369	20.896	30.117	
11/5/2003 8:03	1421.838	24.941	7.368	20.898	30.119	
11/5/2003 8:04	1422.838	24.947	7.369	20.898	30.119	
11/5/2003 8:05	1423.838	24.947	7.368	20.898	30.117	
11/5/2003 8:06	1424.838	24.947	7.371	20.9	30.119	
11/5/2003 8:07	1425.838	24.947	7.368	20.9	30.119	
11/5/2003 8:08	1426.838	24.947	7.369	20.9	30.121	
11/5/2003 8:09	1427.838	24.947	7.369	20.902	30.123	
11/5/2003 8:10	1428.838	24.947	7.368	20.9	30.121	
11/5/2003 8:11	1429.838	24.941	7.369	20.902	30.121	
11/5/2003 8:12	1430.838	24.959	7.369	20.904	30.121	
11/5/2003 8:13	1431.838	24.959	7.368	20.915	30.123	
11/5/2003 8:14	1432.838	24.947	7.369	20.904	30.123	
11/5/2003 8:15	1433.838	24.953	7.371	20.906	30.125	
11/5/2003 8:16	1434.838	24.959	7.371	20.91	30.125	
11/5/2003 8:17	1435.838	24.953	7.371	20.902	30.123	
11/5/2003 8:18	1436.838	24.959	7.373	20.913	30.123	
11/5/2003 8:19	1437.838	24.966	7.371	20.911	30.127	
11/5/2003 8:20	1438.838	24.959	7.366	20.915	30.127	
11/5/2003 8:21	1439.838	24.959	7.371	20.911	30.127	
11/5/2003 8:22	1440.838	24.966	7.369	20.911	30.129	
11/5/2003 8:23	1441.838	24.972	7.373	20.898	30.127	
11/5/2003 8:24	1442.838	24.966	7.368	20.913	30.129	
11/5/2003 8:25	1443.838	24.966	7.375	20.911	30.129	
11/5/2003 8:26	1444.838	24.959	7.368	20.913	30.131	
11/5/2003 8:27	1445.838	24.966	7.371	20.908	30.129	
11/5/2003 8:28	1446.838	24.959	7.369	20.917	30.129	
11/5/2003 8:29	1447.838	24.966	7.371	20.906	30.131	
11/5/2003 8:30	1448.838	24.959	7.373	20.908	30.131	
11/5/2003 8:31	1449.838	24.966	7.371	20.917	30.129	
11/5/2003 8:32	1450.838	24.966	7.379	20.919	30.133	
11/5/2003 8:33	1451.838	24.966	7.371	20.913	30.133	
11/5/2003 8:34	1452.838	24.966	7.371	20.917	30.133	
11/5/2003 8:35	1453.838	24.972	7.373	20.919	30.133	
11/5/2003 8:36	1454.838	24.972	7.371	20.913	30.133	
11/5/2003 8:37	1455.838	24.972	7.373	20.915	30.133	
11/5/2003 8:38	1456.838	24.966	7.371	20.917	30.135	
11/5/2003 8:39	1457.838	24.966	7.375	20.919	30.135	
11/5/2003 8:40	1458.838	24.966	7.373	20.921	30.137	
11/5/2003 8:41	1459.838	24.978	7.371	20.921	30.137	
11/5/2003 8:42	1460.838	24.972	7.377	20.923	30.137	

11/5/2003 8:43	1461.838	24.972	7.373	20.917	30.137	
11/5/2003 8:44	1462.838	24.966	7.375	20.925	30.139	
11/5/2003 8:45	1463.838	24.972	7.373	20.921	30.139	
11/5/2003 8:46	1464.838	24.953	7.377	20.915	30.137	
11/5/2003 8:47	1465.838	24.978	7.373	20.919	30.139	
11/5/2003 8:48	1466.838	24.978	7.381	20.921	30.141	
11/5/2003 8:49	1467.838	24.978	7.375	20.923	30.141	
11/5/2003 8:50	1468.838	24.978	7.371	20.917	30.143	
11/5/2003 8:51	1469.838	24.978	7.375	20.919	30.141	
11/5/2003 8:52	1470.838	24.966	7.375	20.917	30.131	
11/5/2003 8:53	1471.838	24.978	7.373	20.925	30.137	
11/5/2003 8:54	1472.838	26.864	7.373	20.919	30.141	
11/5/2003 8:55	1473.838	25.457	7.377	20.921	30.141	
11/5/2003 8:56	1474.838	25.071	7.373	20.921	30.143	
11/5/2003 8:57	1475.838	24.984	7.381	20.915	30.145	

HERMIT DATA - Pump						
In-Situ Inc.	Hermit 3000					
Report generated	11/6/2003	9:00:02				
Report from file:	C:\WIN-SITU\Data\SN45853 2003-11-05 085819 Test #2.bin					
DataMgr Version	3.69					
Serial number:	45853					
Firmware Version	7.1					
Unit name:	HERMIT 3000					
Test name:		Test #2				
Test defined on:	11/3/2003	10:06:32				
Test started on:	11/5/2003	8:58:19				
Test stopped on:	11/5/2003	20:56:31				
Test extracted on	11/6/2003	8:53:58				
Data gathered using Logarithmic testing						
Maximum time I	Minutes.					
Number of data	788					
TOTAL DATA SA	788					
Channel number [1]						
Measurement ty	Pressure					
Channel name:	IW#1					
Linearity:	0.3649					
Scale:		99.4224				
Offset:		0.0374				
Warmup:		50				
Channel number [2]						
Measurement ty	Pressure					
Channel name:	UPPER MW					
Linearity:	0.2939					
Scale:		29.6429				
Offset:		-0.1453				
Warmup:		50				
Channel number [3]						
Measurement ty	Pressure					
Channel name:	LOWER MW					
Linearity:	0.2967					
Scale:		29.6033				
Offset:		-0.2002				
Warmup:		50				
Channel number [0]						
Measurement ty	Barometric Pressure					
Channel name:	Barometric					
Linearity:	0					
Scale:		0				
Offset:		0				
Warmup:		50				

		Chan[1]	Chan[2]	Chan[3]	Chan[0]	
Date Time	ET (min)	PSI	PSI	PSI	Inches Hg	
11/5/2003 8:58	0	24.934	7.377	20.921	30.147	
11/5/2003 8:58	0.022	24.959	7.373	20.923	30.147	
11/5/2003 8:58	0.044	24.972	7.371	20.919	30.147	
11/5/2003 8:58	0.066	25.003	7.375	20.921	30.147	
11/5/2003 8:58	0.088	24.991	7.377	20.919	30.147	
11/5/2003 8:58	0.11	24.978	7.375	20.917	30.147	
11/5/2003 8:58	0.132	24.972	7.371	20.923	30.145	
11/5/2003 8:58	0.154	24.953	7.375	20.917	30.143	
11/5/2003 8:58	0.176	24.947	7.373	20.923	30.141	
11/5/2003 8:58	0.198	24.947	7.379	20.917	30.143	
11/5/2003 8:58	0.22	24.972	7.373	20.923	30.143	
11/5/2003 8:58	0.242	24.991	7.375	20.919	30.143	
11/5/2003 8:58	0.264	24.978	7.375	20.921	30.141	
11/5/2003 8:58	0.286	25.009	7.371	20.923	30.141	
11/5/2003 8:58	0.308	24.966	7.375	20.919	30.141	
11/5/2003 8:58	0.33	24.972	7.375	20.919	30.139	
11/5/2003 8:58	0.352	24.966	7.377	20.913	30.139	
11/5/2003 8:58	0.374	24.966	7.373	20.923	30.139	
11/5/2003 8:58	0.396	24.959	7.375	20.926	30.139	
11/5/2003 8:58	0.418	24.972	7.375	20.923	30.139	
11/5/2003 8:58	0.44	24.978	7.373	20.915	30.139	
11/5/2003 8:58	0.4622	24.972	7.375	20.923	30.139	
11/5/2003 8:58	0.4857	24.972	7.377	20.923	30.139	
11/5/2003 8:58	0.5105	24.978	7.373	20.923	30.137	
11/5/2003 8:58	0.5368	24.972	7.375	20.921	30.137	
11/5/2003 8:58	0.5648	24.953	7.373	20.915	30.137	
11/5/2003 8:58	0.5945	24.966	7.373	20.919	30.135	
11/5/2003 8:58	0.6258	24.972	7.375	20.917	30.133	
11/5/2003 8:58	0.659	24.991	7.375	20.913	30.131	
11/5/2003 8:59	0.6942	25.003	7.375	20.917	30.133	
11/5/2003 8:59	0.7315	24.997	7.375	20.923	30.133	
11/5/2003 8:59	0.771	24.984	7.375	20.915	30.131	
11/5/2003 8:59	0.8128	26.528	7.375	20.921	30.133	
11/5/2003 8:59	0.8572	32.961	7.377	20.917	30.131	
11/5/2003 8:59	0.9042	29.48	7.375	20.913	30.129	
11/5/2003 8:59	0.954	27.493	7.379	20.923	30.129	
11/5/2003 8:59	1.0067	28.259	7.371	20.908	30.129	
11/5/2003 8:59	1.0625	27.967	7.375	20.911	30.127	
11/5/2003 8:59	1.1217	27.493	7.373	20.919	30.127	
11/5/2003 8:59	1.1843	27.176	7.368	20.913	30.127	
11/5/2003 8:59	1.2507	27.008	7.364	20.919	30.125	
11/5/2003 8:59	1.321	26.628	7.379	20.91	30.123	
11/5/2003 8:59	1.3955	26.261	7.375	20.919	30.125	
11/5/2003 8:59	1.4745	26.236	7.373	20.913	30.125	
11/5/2003 8:59	1.5582	26.13	7.379	20.91	30.123	
11/5/2003 8:59	1.6467	26.036	7.388	20.93	30.123	
11/5/2003 9:00	1.7405	26.049	7.375	20.926	30.121	
11/5/2003 9:00	1.8398	26.005	7.368	20.93	30.123	
11/5/2003 9:00	1.9452	25.787	7.371	20.917	30.119	
11/5/2003 9:00	2.0567	26.279	7.371	20.925	30.121	
11/5/2003 9:00	2.1748	26.099	7.375	20.917	30.119	
11/5/2003 9:00	2.3	25.7	7.371	20.919	30.119	
11/5/2003 9:00	2.4325	26.447	7.381	20.915	30.119	
11/5/2003 9:00	2.573	26.086	7.373	20.921	30.117	
11/5/2003 9:01	2.7218	26.049	7.369	20.921	30.119	

11/5/2003 9:01	2.8793	25.912	7.375	20.923	30.117	
11/5/2003 9:01	3.0462	26.217	7.371	20.921	30.114	
11/5/2003 9:01	3.223	26.254	7.373	20.923	30.11	
11/5/2003 9:01	3.4103	25.98	7.377	20.923	30.117	
11/5/2003 9:01	3.6087	27.145	7.373	20.923	30.125	
11/5/2003 9:02	3.8188	25.943	7.375	20.925	30.129	
11/5/2003 9:02	4.0415	27.076	7.373	20.928	30.135	
11/5/2003 9:02	4.2773	26.46	7.375	20.926	30.135	
11/5/2003 9:02	4.5272	26.217	7.375	20.926	30.137	
11/5/2003 9:03	4.7918	26.285	7.375	20.926	30.139	
11/5/2003 9:03	5.0722	31.722	7.377	20.926	30.141	
11/5/2003 9:03	5.369	28.216	7.373	20.93	30.141	
11/5/2003 9:04	5.6835	28.652	7.379	20.932	30.141	
11/5/2003 9:04	6.0167	29.586	7.375	20.932	30.141	
11/5/2003 9:04	6.3695	29.181	7.375	20.934	30.143	
11/5/2003 9:05	6.7433	29.804	7.379	20.936	30.145	
11/5/2003 9:05	7.1393	29.866	7.373	20.936	30.143	
11/5/2003 9:05	7.5587	29.903	7.379	20.936	30.147	
11/5/2003 9:06	8.003	29.885	7.379	20.941	30.143	
11/5/2003 9:06	8.4737	29.909	7.379	20.941	30.145	
11/5/2003 9:07	8.9722	29.797	7.379	20.941	30.145	
11/5/2003 9:07	9.5002	32.102	7.381	20.945	30.145	
11/5/2003 9:08	10.0595	31.429	7.379	20.945	30.147	
11/5/2003 9:08	10.652	32.015	7.381	20.943	30.145	
11/5/2003 9:09	11.2795	32.762	7.381	20.945	30.147	
11/5/2003 9:10	11.9443	40.226	7.382	20.949	30.147	
11/5/2003 9:10	12.6485	36.911	7.381	20.955	30.147	
11/5/2003 9:11	13.3943	36.076	7.381	20.956	30.147	
11/5/2003 9:12	14.1843	37.877	7.382	20.96	30.147	
11/5/2003 9:13	15.0212	37.609	7.384	20.962	30.149	
11/5/2003 9:14	15.9077	37.945	7.384	20.966	30.149	
11/5/2003 9:15	16.8467	37.696	7.384	20.964	30.151	
11/5/2003 9:16	17.8413	37.727	7.384	20.968	30.151	
11/5/2003 9:17	18.8413	37.746	7.386	20.968	30.151	
11/5/2003 9:18	19.8413	37.366	7.384	20.97	30.153	
11/5/2003 9:19	20.8413	37.528	7.386	20.97	30.151	
11/5/2003 9:20	21.8413	36.849	7.386	20.971	30.149	
11/5/2003 9:21	22.8413	36.033	7.386	20.973	30.149	
11/5/2003 9:22	23.8413	35.16	7.386	20.97	30.149	
11/5/2003 9:23	24.8413	33.572	7.388	20.97	30.151	
11/5/2003 9:24	25.8413	33.067	7.388	20.968	30.151	
11/5/2003 9:25	26.8413	33.347	7.39	20.964	30.151	
11/5/2003 9:26	27.8413	33.235	7.39	20.964	30.153	
11/5/2003 9:27	28.8413	33.129	7.388	20.96	30.153	
11/5/2003 9:28	29.8413	33.267	7.388	20.968	30.129	
11/5/2003 9:29	30.8413	33.428	7.392	20.981	30.145	
11/5/2003 9:30	31.8413	33.304	7.392	20.971	30.149	
11/5/2003 9:31	32.8413	33.354	7.39	20.971	30.149	
11/5/2003 9:32	33.8413	33.167	7.392	20.973	30.149	
11/5/2003 9:33	34.8413	33.204	7.392	20.973	30.151	
11/5/2003 9:34	35.8413	33.26	7.388	20.977	30.149	
11/5/2003 9:35	36.8413	33.123	7.394	20.977	30.151	
11/5/2003 9:36	37.8413	33.347	7.394	20.979	30.151	
11/5/2003 9:37	38.8413	33.129	7.394	20.973	30.151	
11/5/2003 9:38	39.8413	34.936	7.388	20.971	30.151	
11/5/2003 9:39	40.8413	36.332	7.392	20.979	30.153	
11/5/2003 9:40	41.8413	36.244	7.394	20.979	30.153	
11/5/2003 9:41	42.8413	37.397	7.396	20.985	30.153	
11/5/2003 9:42	43.8413	37.067	7.397	20.99	30.155	

11/5/2003 9:43	44.8413	37.223	7.394	20.994	30.153	
11/5/2003 9:44	45.8413	37.322	7.397	20.992	30.153	
11/5/2003 9:45	46.8413	37.16	7.396	20.988	30.155	
11/5/2003 9:46	47.8413	37.441	7.401	20.994	30.155	
11/5/2003 9:47	48.8413	37.447	7.397	20.994	30.153	
11/5/2003 9:48	49.8413	37.615	7.399	20.988	30.155	
11/5/2003 9:49	50.8413	37.185	7.403	20.992	30.155	
11/5/2003 9:50	51.8413	37.385	7.399	20.996	30.155	
11/5/2003 9:51	52.8413	37.416	7.397	20.99	30.157	
11/5/2003 9:52	53.8413	37.528	7.401	20.994	30.157	
11/5/2003 9:53	54.8413	37.634	7.401	20.996	30.159	
11/5/2003 9:54	55.8413	37.185	7.401	20.992	30.159	
11/5/2003 9:55	56.8413	37.397	7.401	20.996	30.157	
11/5/2003 9:56	57.8413	37.322	7.403	20.994	30.159	
11/5/2003 9:57	58.8413	37.166	7.401	20.994	30.155	
11/5/2003 9:58	59.8413	37.335	7.397	20.998	30.157	
11/5/2003 9:59	60.8413	37.441	7.403	20.994	30.159	
11/5/2003 10:00	61.8413	37.609	7.401	20.992	30.159	
11/5/2003 10:01	62.8413	37.709	7.407	21.001	30.159	
11/5/2003 10:02	63.8413	37.403	7.403	20.998	30.157	
11/5/2003 10:03	64.8413	37.653	7.401	21	30.161	
11/5/2003 10:04	65.8413	37.54	7.401	21.001	30.159	
11/5/2003 10:05	66.8413	37.466	7.407	21	30.161	
11/5/2003 10:06	67.8413	37.584	7.403	20.996	30.153	
11/5/2003 10:07	68.8413	37.64	7.401	21	30.157	
11/5/2003 10:08	69.8413	37.54	7.403	20.996	30.157	
11/5/2003 10:09	70.8413	37.316	7.403	20.985	30.159	
11/5/2003 10:10	71.8413	37.266	7.397	21.003	30.157	
11/5/2003 10:11	72.8413	37.559	7.405	20.998	30.157	
11/5/2003 10:12	73.8413	37.353	7.407	21.011	30.155	
11/5/2003 10:13	74.8413	37.547	7.407	20.985	30.157	
11/5/2003 10:14	75.8413	37.702	7.409	20.985	30.157	
11/5/2003 10:15	76.8413	37.802	7.407	20.996	30.155	
11/5/2003 10:16	77.8413	37.515	7.405	21.018	30.157	
11/5/2003 10:17	78.8413	36.992	7.41	20.99	30.155	
11/5/2003 10:18	79.8413	37.466	7.409	20.99	30.153	
11/5/2003 10:19	80.8413	37.453	7.409	21.001	30.153	
11/5/2003 10:20	81.8413	37.596	7.407	21.001	30.155	
11/5/2003 10:21	82.8413	37.378	7.407	21.003	30.155	
11/5/2003 10:22	83.8413	37.553	7.407	20.996	30.153	
11/5/2003 10:23	84.8413	37.372	7.412	21.009	30.155	
11/5/2003 10:24	85.8413	37.534	7.407	21.001	30.155	
11/5/2003 10:25	86.8413	37.497	7.407	21.003	30.155	
11/5/2003 10:26	87.8413	37.609	7.412	21.003	30.155	
11/5/2003 10:27	88.8413	37.74	7.409	21.003	30.153	
11/5/2003 10:28	89.8413	37.117	7.41	21.005	30.153	
11/5/2003 10:29	90.8413	37.659	7.41	21.003	30.155	
11/5/2003 10:30	91.8413	37.16	7.41	21.003	30.153	
11/5/2003 10:31	92.8413	37.584	7.412	21.009	30.153	
11/5/2003 10:32	93.8413	37.621	7.412	21.009	30.149	
11/5/2003 10:33	94.8413	37.752	7.41	21.003	30.151	
11/5/2003 10:34	95.8413	37.397	7.414	21.005	30.153	
11/5/2003 10:35	96.8413	37.328	7.41	21.007	30.151	
11/5/2003 10:36	97.8413	37.484	7.41	21.005	30.151	
11/5/2003 10:37	98.8413	37.578	7.412	21.009	30.151	
11/5/2003 10:38	99.8413	37.609	7.41	21.005	30.153	
11/5/2003 10:39	100.8413	37.634	7.414	21.005	30.151	
11/5/2003 10:40	101.8413	37.459	7.412	21.005	30.153	
11/5/2003 10:41	102.8413	37.229	7.412	21.003	30.153	

11/5/2003 10:42	103.8413	37.634	7.41	21.005	30.153	
11/5/2003 10:43	104.8413	37.441	7.41	21.005	30.151	
11/5/2003 10:44	105.8413	37.821	7.412	21.009	30.151	
11/5/2003 10:45	106.8413	37.584	7.412	21.007	30.151	
11/5/2003 10:46	107.8413	36.986	7.414	21.007	30.149	
11/5/2003 10:47	108.8413	37.677	7.414	21.009	30.151	
11/5/2003 10:48	109.8413	37.609	7.414	21.009	30.151	
11/5/2003 10:49	110.8413	37.646	7.412	21.011	30.151	
11/5/2003 10:50	111.8413	37.441	7.416	21.007	30.151	
11/5/2003 10:51	112.8413	37.229	7.414	21.003	30.151	
11/5/2003 10:52	113.8413	36.892	7.42	21.007	30.151	
11/5/2003 10:53	114.8413	37.758	7.418	21.011	30.149	
11/5/2003 10:54	115.8413	37.347	7.423	21.009	30.149	
11/5/2003 10:55	116.8413	37.522	7.418	21.013	30.147	
11/5/2003 10:56	117.8413	37.347	7.422	21.011	30.147	
11/5/2003 10:57	118.8413	37.403	7.422	21.011	30.147	
11/5/2003 10:58	119.8413	37.447	7.422	21.013	30.145	
11/5/2003 10:59	120.8413	37.603	7.423	21.009	30.147	
11/5/2003 11:00	121.8413	37.478	7.423	21.017	30.145	
11/5/2003 11:01	122.8413	37.353	7.423	21.009	30.145	
11/5/2003 11:02	123.8413	37.871	7.427	21.011	30.133	
11/5/2003 11:03	124.8413	37.466	7.423	21.011	30.119	
11/5/2003 11:04	125.8413	37.914	7.427	21.017	30.133	
11/5/2003 11:05	126.8413	37.621	7.427	21.017	30.139	
11/5/2003 11:06	127.8413	37.709	7.425	21.011	30.139	
11/5/2003 11:07	128.8413	37.503	7.423	21.013	30.139	
11/5/2003 11:08	129.8413	37.385	7.423	21.018	30.141	
11/5/2003 11:09	130.8413	37.229	7.427	21.007	30.139	
11/5/2003 11:10	131.8413	37.26	7.423	21.011	30.139	
11/5/2003 11:11	132.8413	37.528	7.425	21.013	30.137	
11/5/2003 11:12	133.8413	37.565	7.425	21.015	30.137	
11/5/2003 11:13	134.8413	37.291	7.425	21.017	30.135	
11/5/2003 11:14	135.8413	37.553	7.425	21.017	30.135	
11/5/2003 11:15	136.8413	37.31	7.422	21.013	30.137	
11/5/2003 11:16	137.8413	37.702	7.427	21.017	30.135	
11/5/2003 11:17	138.8413	37.434	7.429	21.015	30.135	
11/5/2003 11:18	139.8413	37.684	7.427	21.02	30.135	
11/5/2003 11:19	140.8413	37.584	7.425	21.013	30.135	
11/5/2003 11:20	141.8413	37.559	7.427	21.018	30.137	
11/5/2003 11:21	142.8413	37.584	7.431	21.022	30.133	
11/5/2003 11:22	143.8413	37.677	7.429	21.013	30.135	
11/5/2003 11:23	144.8413	37.709	7.427	21.017	30.133	
11/5/2003 11:24	145.8413	37.846	7.433	21.024	30.135	
11/5/2003 11:25	146.8413	37.902	7.433	21.017	30.131	
11/5/2003 11:26	147.8413	37.74	7.433	21.011	30.131	
11/5/2003 11:27	148.8413	37.696	7.431	21.018	30.131	
11/5/2003 11:28	149.8413	37.671	7.435	21.018	30.129	
11/5/2003 11:29	150.8413	37.553	7.429	21.018	30.131	
11/5/2003 11:30	151.8413	37.914	7.435	21.02	30.131	
11/5/2003 11:31	152.8413	37.491	7.435	21.024	30.127	
11/5/2003 11:32	153.8413	37.328	7.438	21.02	30.125	
11/5/2003 11:33	154.8413	37.609	7.436	21.013	30.125	
11/5/2003 11:34	155.8413	37.441	7.435	21.02	30.125	
11/5/2003 11:35	156.8413	37.179	7.436	21.022	30.127	
11/5/2003 11:36	157.8413	37.665	7.44	21.013	30.125	
11/5/2003 11:37	158.8413	37.659	7.435	21.022	30.125	
11/5/2003 11:38	159.8413	37.378	7.435	21.028	30.125	
11/5/2003 11:39	160.8413	37.553	7.436	21.02	30.123	
11/5/2003 11:40	161.8413	37.378	7.436	21.024	30.123	

11/5/2003 11:41	162.8413	37.347	7.438	21.02	30.125	
11/5/2003 11:42	163.8413	37.534	7.438	21.028	30.123	
11/5/2003 11:43	164.8413	37.553	7.438	21.02	30.123	
11/5/2003 11:44	165.8413	37.584	7.436	21.022	30.121	
11/5/2003 11:45	166.8413	37.721	7.44	21.026	30.121	
11/5/2003 11:46	167.8413	37.572	7.444	21.026	30.121	
11/5/2003 11:47	168.8413	37.54	7.44	21.032	30.121	
11/5/2003 11:48	169.8413	37.466	7.431	21.03	30.117	
11/5/2003 11:49	170.8413	37.547	7.442	21.03	30.119	
11/5/2003 11:50	171.8413	37.515	7.44	21.028	30.117	
11/5/2003 11:51	172.8413	36.986	7.444	21.054	30.119	
11/5/2003 11:52	173.8413	37.727	7.438	21.022	30.119	
11/5/2003 11:53	174.8413	37.522	7.436	21.02	30.121	
11/5/2003 11:54	175.8413	37.596	7.442	21.022	30.121	
11/5/2003 11:55	176.8413	37.609	7.442	21.018	30.098	
11/5/2003 11:56	177.8413	37.54	7.436	21.03	30.11	
11/5/2003 11:57	178.8413	37.646	7.436	21.026	30.117	
11/5/2003 11:58	179.8413	37.74	7.436	21.013	30.117	
11/5/2003 11:59	180.8413	37.416	7.438	21.03	30.121	
11/5/2003 12:00	181.8413	37.142	7.435	21.013	30.119	
11/5/2003 12:01	182.8413	37.453	7.446	21.02	30.119	
11/5/2003 12:02	183.8413	37.061	7.444	21.017	30.119	
11/5/2003 12:03	184.8413	37.721	7.448	21.02	30.119	
11/5/2003 12:04	185.8413	37.815	7.44	21.015	30.119	
11/5/2003 12:05	186.8413	37.783	7.448	21.026	30.117	
11/5/2003 12:06	187.8413	37.41	7.448	21.02	30.117	
11/5/2003 12:07	188.8413	37.472	7.444	21.02	30.117	
11/5/2003 12:08	189.8413	37.665	7.44	21.02	30.117	
11/5/2003 12:09	190.8413	37.659	7.444	21.039	30.117	
11/5/2003 12:10	191.8413	37.403	7.448	21.035	30.114	
11/5/2003 12:11	192.8413	37.503	7.448	21.024	30.117	
11/5/2003 12:12	193.8413	37.191	7.448	21.028	30.114	
11/5/2003 12:13	194.8413	37.478	7.444	21.026	30.114	
11/5/2003 12:14	195.8413	37.877	7.448	21.024	30.114	
11/5/2003 12:15	196.8413	37.709	7.448	21.028	30.112	
11/5/2003 12:16	197.8413	37.815	7.446	21.022	30.11	
11/5/2003 12:17	198.8413	37.653	7.448	21.024	30.112	
11/5/2003 12:18	199.8413	37.596	7.448	21.03	30.112	
11/5/2003 12:19	200.8413	37.671	7.448	21.028	30.112	
11/5/2003 12:20	201.8413	37.528	7.45	21.035	30.11	
11/5/2003 12:21	202.8413	37.385	7.448	21.028	30.112	
11/5/2003 12:22	203.8413	37.572	7.451	21.022	30.11	
11/5/2003 12:23	204.8413	37.54	7.45	21.02	30.112	
11/5/2003 12:24	205.8413	37.665	7.442	21.017	30.112	
11/5/2003 12:25	206.8413	37.515	7.446	21.032	30.11	
11/5/2003 12:26	207.8413	37.522	7.444	21.03	30.11	
11/5/2003 12:27	208.8413	37.092	7.459	21.03	30.108	
11/5/2003 12:28	209.8413	37.453	7.453	21.03	30.106	
11/5/2003 12:29	210.8413	37.628	7.453	21.024	30.106	
11/5/2003 12:30	211.8413	37.758	7.455	21.026	30.106	
11/5/2003 12:31	212.8413	37.864	7.457	21.028	30.104	
11/5/2003 12:32	213.8413	37.466	7.457	21.028	30.104	
11/5/2003 12:33	214.8413	37.503	7.453	21.028	30.102	
11/5/2003 12:34	215.8413	37.746	7.451	21.026	30.106	
11/5/2003 12:35	216.8413	37.484	7.459	21.028	30.106	
11/5/2003 12:36	217.8413	37.64	7.457	21.022	30.104	
11/5/2003 12:37	218.8413	37.322	7.457	21.026	30.106	
11/5/2003 12:38	219.8413	37.896	7.459	21.026	30.106	
11/5/2003 12:39	220.8413	37.36	7.459	21.026	30.104	

11/5/2003 12:40	221.8413	37.434	7.461	21.022	30.102	
11/5/2003 12:41	222.8413	37.696	7.466	21.026	30.104	
11/5/2003 12:42	223.8413	37.553	7.461	21.028	30.104	
11/5/2003 12:43	224.8413	37.964	7.457	21.024	30.104	
11/5/2003 12:44	225.8413	37.603	7.459	21.018	30.104	
11/5/2003 12:45	226.8413	37.69	7.455	21.02	30.11	
11/5/2003 12:46	227.8413	37.677	7.461	21.017	30.11	
11/5/2003 12:47	228.8413	37.491	7.463	21.022	30.11	
11/5/2003 12:48	229.8413	37.833	7.461	21.024	30.114	
11/5/2003 12:49	230.8413	37.858	7.464	21.026	30.112	
11/5/2003 12:50	231.8413	37.734	7.463	21.02	30.112	
11/5/2003 12:51	232.8413	38.064	7.463	21.02	30.114	
11/5/2003 12:52	233.8413	37.696	7.463	21.018	30.114	
11/5/2003 12:53	234.8413	37.709	7.466	21.026	30.112	
11/5/2003 12:54	235.8413	37.466	7.466	21.026	30.11	
11/5/2003 12:55	236.8413	37.341	7.464	21.022	30.11	
11/5/2003 12:56	237.8413	37.204	7.468	21.026	30.11	
11/5/2003 12:57	238.8413	37.547	7.466	21.022	30.106	
11/5/2003 12:58	239.8413	37.702	7.47	21.018	30.106	
11/5/2003 12:59	240.8413	37.758	7.468	21.024	30.106	
11/5/2003 13:00	241.8413	37.179	7.468	21.017	30.108	
11/5/2003 13:01	242.8413	36.861	7.468	21.013	30.108	
11/5/2003 13:02	243.8413	34.045	7.468	21.018	30.108	
11/5/2003 13:03	244.8413	32.65	7.468	21.017	30.108	
11/5/2003 13:04	245.8413	30.943	7.464	21.003	30.106	
11/5/2003 13:05	246.8413	30.725	7.468	21.007	30.108	
11/5/2003 13:06	247.8413	30.707	7.464	20.998	30.106	
11/5/2003 13:07	248.8413	32.992	7.468	21	30.104	
11/5/2003 13:08	249.8413	28.652	7.466	21.001	30.102	
11/5/2003 13:09	250.8413	27.331	7.464	20.99	30.098	
11/5/2003 13:10	251.8413	26.043	7.464	20.983	30.1	
11/5/2003 13:11	252.8413	25.638	7.466	20.981	30.098	
11/5/2003 13:12	253.8413	25.613	7.466	20.986	30.096	
11/5/2003 13:13	254.8413	35.322	7.466	20.979	30.096	
11/5/2003 13:14	255.8413	28.178	7.463	20.979	30.096	
11/5/2003 13:15	256.8413	27.456	7.461	20.977	30.092	
11/5/2003 13:16	257.8413	37.758	7.463	20.992	30.094	
11/5/2003 13:17	258.8413	37.509	7.464	20.998	30.092	
11/5/2003 13:18	259.8413	29.835	7.463	21.011	30.094	
11/5/2003 13:19	260.8413	28.178	7.464	20.994	30.092	
11/5/2003 13:20	261.8413	27.674	7.466	20.994	30.092	
11/5/2003 13:21	262.8413	27.244	7.464	20.99	30.092	
11/5/2003 13:22	263.8413	27.213	7.464	20.985	30.092	
11/5/2003 13:23	264.8413	27.269	7.463	20.983	30.094	
11/5/2003 13:24	265.8413	27.587	7.459	20.968	30.092	
11/5/2003 13:25	266.8413	27.101	7.461	20.977	30.094	
11/5/2003 13:26	267.8413	27.699	7.461	20.973	30.092	
11/5/2003 13:27	268.8413	27.935	7.461	20.986	30.092	
11/5/2003 13:28	269.8413	27.96	7.459	20.979	30.092	
11/5/2003 13:29	270.8413	28.135	7.463	20.981	30.096	
11/5/2003 13:30	271.8413	28.11	7.461	20.99	30.094	
11/5/2003 13:31	272.8413	28.047	7.453	20.99	30.096	
11/5/2003 13:32	273.8413	28.066	7.461	20.968	30.096	
11/5/2003 13:33	274.8413	28.06	7.459	20.977	30.096	
11/5/2003 13:34	275.8413	28.041	7.459	20.975	30.098	
11/5/2003 13:35	276.8413	27.942	7.461	20.975	30.098	
11/5/2003 13:36	277.8413	28.116	7.455	20.981	30.098	
11/5/2003 13:37	278.8413	27.3	7.461	20.981	30.098	
11/5/2003 13:38	279.8413	28.153	7.457	20.975	30.098	

11/5/2003 13:39	280.8413	28.122	7.459	20.983	30.098	
11/5/2003 13:40	281.8413	28.141	7.457	20.97	30.096	
11/5/2003 13:41	282.8413	28.016	7.461	20.977	30.086	
11/5/2003 13:42	283.8413	28.041	7.451	20.968	30.098	
11/5/2003 13:43	284.8413	27.973	7.459	20.975	30.096	
11/5/2003 13:44	285.8413	27.967	7.453	20.968	30.1	
11/5/2003 13:45	286.8413	28.06	7.453	20.971	30.1	
11/5/2003 13:46	287.8413	27.991	7.453	20.966	30.1	
11/5/2003 13:47	288.8413	28.029	7.453	20.97	30.1	
11/5/2003 13:48	289.8413	27.973	7.457	20.973	30.1	
11/5/2003 13:49	290.8413	28.004	7.453	20.97	30.102	
11/5/2003 13:50	291.8413	28.091	7.455	20.975	30.1	
11/5/2003 13:51	292.8413	28.11	7.455	20.97	30.102	
11/5/2003 13:52	293.8413	28.06	7.455	20.971	30.102	
11/5/2003 13:53	294.8413	27.973	7.451	20.971	30.102	
11/5/2003 13:54	295.8413	27.954	7.453	20.977	30.102	
11/5/2003 13:55	296.8413	27.998	7.451	20.97	30.1	
11/5/2003 13:56	297.8413	27.911	7.453	20.973	30.102	
11/5/2003 13:57	298.8413	28.116	7.461	20.983	30.1	
11/5/2003 13:58	299.8413	27.923	7.451	20.971	30.1	
11/5/2003 13:59	300.8413	28.104	7.453	20.966	30.098	
11/5/2003 14:00	301.8413	28.091	7.453	20.962	30.098	
11/5/2003 14:01	302.8413	28.072	7.455	20.975	30.096	
11/5/2003 14:02	303.8413	27.935	7.45	20.977	30.094	
11/5/2003 14:03	304.8413	28.11	7.453	20.971	30.094	
11/5/2003 14:04	305.8413	28.066	7.457	20.97	30.092	
11/5/2003 14:05	306.8413	28.01	7.455	20.97	30.09	
11/5/2003 14:06	307.8413	27.923	7.451	20.964	30.09	
11/5/2003 14:07	308.8413	27.892	7.451	20.966	30.086	
11/5/2003 14:08	309.8413	28.066	7.453	20.971	30.086	
11/5/2003 14:09	310.8413	27.811	7.455	20.97	30.086	
11/5/2003 14:10	311.8413	28.035	7.455	20.979	30.084	
11/5/2003 14:11	312.8413	27.991	7.451	20.981	30.084	
11/5/2003 14:12	313.8413	28.023	7.451	20.966	30.084	
11/5/2003 14:13	314.8413	28.047	7.455	20.968	30.084	
11/5/2003 14:14	315.8413	28.122	7.453	20.97	30.084	
11/5/2003 14:15	316.8413	28.128	7.451	20.966	30.086	
11/5/2003 14:16	317.8413	28.079	7.448	20.968	30.086	
11/5/2003 14:17	318.8413	27.979	7.453	20.966	30.084	
11/5/2003 14:18	319.8413	28.16	7.448	20.968	30.086	
11/5/2003 14:19	320.8413	28.34	7.448	20.968	30.086	
11/5/2003 14:20	321.8413	28.141	7.453	20.97	30.086	
11/5/2003 14:21	322.8413	27.935	7.453	20.964	30.088	
11/5/2003 14:22	323.8413	28.091	7.45	20.971	30.088	
11/5/2003 14:23	324.8413	27.998	7.451	20.958	30.088	
11/5/2003 14:24	325.8413	28.104	7.45	20.966	30.09	
11/5/2003 14:25	326.8413	28.135	7.444	20.968	30.088	
11/5/2003 14:26	327.8413	27.898	7.446	20.958	30.09	
11/5/2003 14:27	328.8413	28.041	7.446	20.968	30.094	
11/5/2003 14:28	329.8413	28.054	7.448	20.962	30.094	
11/5/2003 14:29	330.8413	28.06	7.448	20.964	30.094	
11/5/2003 14:30	331.8413	27.96	7.446	20.958	30.096	
11/5/2003 14:31	332.8413	28.029	7.45	20.96	30.098	
11/5/2003 14:32	333.8413	28.06	7.448	20.968	30.098	
11/5/2003 14:33	334.8413	27.973	7.446	20.96	30.096	
11/5/2003 14:34	335.8413	28.047	7.444	20.96	30.098	
11/5/2003 14:35	336.8413	28.054	7.444	20.962	30.1	
11/5/2003 14:36	337.8413	27.83	7.45	20.955	30.1	
11/5/2003 14:37	338.8413	27.991	7.442	20.958	30.1	

11/5/2003 14:38	339.8413	28.054	7.442	20.96	30.1	
11/5/2003 14:39	340.8413	27.96	7.442	20.96	30.1	
11/5/2003 14:40	341.8413	28.203	7.444	20.96	30.098	
11/5/2003 14:41	342.8413	28.172	7.442	20.958	30.098	
11/5/2003 14:42	343.8413	28.11	7.44	20.96	30.098	
11/5/2003 14:43	344.8413	27.973	7.444	20.96	30.096	
11/5/2003 14:44	345.8413	28.029	7.436	20.983	30.092	
11/5/2003 14:45	346.8413	28.172	7.444	20.96	30.094	
11/5/2003 14:46	347.8413	28.035	7.446	20.97	30.094	
11/5/2003 14:47	348.8413	28.153	7.442	20.936	30.094	
11/5/2003 14:48	349.8413	28.11	7.442	20.947	30.096	
11/5/2003 14:49	350.8413	28.072	7.444	20.958	30.096	
11/5/2003 14:50	351.8413	28.253	7.442	20.956	30.102	
11/5/2003 14:51	352.8413	27.954	7.436	20.988	30.1	
11/5/2003 14:52	353.8413	28.016	7.453	20.915	30.1	
11/5/2003 14:53	354.8413	27.979	7.446	20.932	30.1	
11/5/2003 14:54	355.8413	27.942	7.444	20.934	30.102	
11/5/2003 14:55	356.8413	28.047	7.442	20.955	30.1	
11/5/2003 14:56	357.8413	28.122	7.435	20.943	30.1	
11/5/2003 14:57	358.8413	27.998	7.451	20.99	30.1	
11/5/2003 14:58	359.8413	28.172	7.446	20.953	30.102	
11/5/2003 14:59	360.8413	27.898	7.446	20.958	30.102	
11/5/2003 15:00	361.8413	28.066	7.442	20.956	30.104	
11/5/2003 15:01	362.8413	28.01	7.446	20.953	30.104	
11/5/2003 15:02	363.8413	28.023	7.442	20.949	30.104	
11/5/2003 15:03	364.8413	27.892	7.442	20.955	30.106	
11/5/2003 15:04	365.8413	27.967	7.442	20.953	30.108	
11/5/2003 15:05	366.8413	27.848	7.442	20.947	30.108	
11/5/2003 15:06	367.8413	27.861	7.446	20.953	30.11	
11/5/2003 15:07	368.8413	28.016	7.442	20.945	30.11	
11/5/2003 15:08	369.8413	28.023	7.442	20.949	30.11	
11/5/2003 15:09	370.8413	28.035	7.44	20.947	30.108	
11/5/2003 15:10	371.8413	27.892	7.444	20.951	30.106	
11/5/2003 15:11	372.8413	27.991	7.442	20.953	30.108	
11/5/2003 15:12	373.8413	27.854	7.442	20.947	30.106	
11/5/2003 15:13	374.8413	27.979	7.444	20.951	30.108	
11/5/2003 15:14	375.8413	28.06	7.436	20.951	30.108	
11/5/2003 15:15	376.8413	28.01	7.438	20.938	30.106	
11/5/2003 15:16	377.8413	28.079	7.435	20.953	30.108	
11/5/2003 15:17	378.8413	28.147	7.438	20.934	30.11	
11/5/2003 15:18	379.8413	27.917	7.44	20.955	30.108	
11/5/2003 15:19	380.8413	28.11	7.44	20.951	30.108	
11/5/2003 15:20	381.8413	28.209	7.435	20.921	30.108	
11/5/2003 15:21	382.8413	28.116	7.436	20.936	30.108	
11/5/2003 15:22	383.8413	28.016	7.435	20.953	30.108	
11/5/2003 15:23	384.8413	28.072	7.433	20.947	30.11	
11/5/2003 15:24	385.8413	28.06	7.435	20.941	30.11	
11/5/2003 15:25	386.8413	28.016	7.438	20.943	30.112	
11/5/2003 15:26	387.8413	27.935	7.436	20.941	30.114	
11/5/2003 15:27	388.8413	27.96	7.433	20.94	30.114	
11/5/2003 15:28	389.8413	28.004	7.435	20.941	30.114	
11/5/2003 15:29	390.8413	27.911	7.431	20.949	30.114	
11/5/2003 15:30	391.8413	27.979	7.433	20.941	30.114	
11/5/2003 15:31	392.8413	27.954	7.435	20.949	30.114	
11/5/2003 15:32	393.8413	27.879	7.433	20.941	30.117	
11/5/2003 15:33	394.8413	27.886	7.433	20.94	30.119	
11/5/2003 15:34	395.8413	27.861	7.435	20.94	30.119	
11/5/2003 15:35	396.8413	27.973	7.431	20.936	30.121	
11/5/2003 15:36	397.8413	27.948	7.433	20.94	30.117	

11/5/2003 15:37	398.8413	27.879	7.433	20.94	30.119	
11/5/2003 15:38	399.8413	27.811	7.435	20.941	30.119	
11/5/2003 15:39	400.8413	27.985	7.436	20.934	30.117	
11/5/2003 15:40	401.8413	27.898	7.433	20.941	30.114	
11/5/2003 15:41	402.8413	27.83	7.436	20.936	30.112	
11/5/2003 15:42	403.8413	27.967	7.436	20.936	30.11	
11/5/2003 15:43	404.8413	29.517	7.446	20.938	30.108	
11/5/2003 15:44	405.8413	29.349	7.446	20.951	30.108	
11/5/2003 15:45	406.8413	29.237	7.44	20.941	30.106	
11/5/2003 15:46	407.8413	29.405	7.444	20.945	30.106	
11/5/2003 15:47	408.8413	29.299	7.442	20.947	30.108	
11/5/2003 15:48	409.8413	29.424	7.436	20.945	30.108	
11/5/2003 15:49	410.8413	29.417	7.438	20.947	30.11	
11/5/2003 15:50	411.8413	29.405	7.438	20.951	30.108	
11/5/2003 15:51	412.8413	29.449	7.433	20.94	30.11	
11/5/2003 15:52	413.8413	29.511	7.429	20.938	30.108	
11/5/2003 15:53	414.8413	29.586	7.438	20.943	30.11	
11/5/2003 15:54	415.8413	29.53	7.438	20.943	30.11	
11/5/2003 15:55	416.8413	29.642	7.438	20.947	30.11	
11/5/2003 15:56	417.8413	29.399	7.438	20.943	30.106	
11/5/2003 15:57	418.8413	29.505	7.436	20.941	30.108	
11/5/2003 15:58	419.8413	29.417	7.438	20.943	30.11	
11/5/2003 15:59	420.8413	29.679	7.436	20.94	30.108	
11/5/2003 16:00	421.8413	29.53	7.435	20.945	30.106	
11/5/2003 16:01	422.8413	29.467	7.438	20.945	30.108	
11/5/2003 16:02	423.8413	29.28	7.44	20.951	30.108	
11/5/2003 16:03	424.8413	29.43	7.435	20.941	30.108	
11/5/2003 16:04	425.8413	29.691	7.438	20.943	30.108	
11/5/2003 16:05	426.8413	29.492	7.438	20.945	30.108	
11/5/2003 16:06	427.8413	29.374	7.436	20.943	30.106	
11/5/2003 16:07	428.8413	29.604	7.436	20.945	30.108	
11/5/2003 16:08	429.8413	29.324	7.436	20.945	30.11	
11/5/2003 16:09	430.8413	29.71	7.433	20.943	30.11	
11/5/2003 16:10	431.8413	29.43	7.435	20.938	30.112	
11/5/2003 16:11	432.8413	29.579	7.435	20.94	30.11	
11/5/2003 16:12	433.8413	29.61	7.435	20.941	30.108	
11/5/2003 16:13	434.8413	29.804	7.436	20.943	30.108	
11/5/2003 16:14	435.8413	29.567	7.438	20.945	30.106	
11/5/2003 16:15	436.8413	29.511	7.436	20.941	30.11	
11/5/2003 16:16	437.8413	29.511	7.436	20.945	30.108	
11/5/2003 16:17	438.8413	29.449	7.435	20.945	30.108	
11/5/2003 16:18	439.8413	29.766	7.435	20.947	30.11	
11/5/2003 16:19	440.8413	29.747	7.433	20.945	30.11	
11/5/2003 16:20	441.8413	29.635	7.435	20.943	30.114	
11/5/2003 16:21	442.8413	29.741	7.433	20.941	30.114	
11/5/2003 16:22	443.8413	29.399	7.431	20.947	30.117	
11/5/2003 16:23	444.8413	29.885	7.431	20.945	30.114	
11/5/2003 16:24	445.8413	29.785	7.429	20.941	30.119	
11/5/2003 16:25	446.8413	29.953	7.431	20.947	30.119	
11/5/2003 16:26	447.8413	29.617	7.429	20.947	30.117	
11/5/2003 16:27	448.8413	29.604	7.431	20.941	30.117	
11/5/2003 16:28	449.8413	29.374	7.433	20.943	30.114	
11/5/2003 16:29	450.8413	29.548	7.436	20.949	30.114	
11/5/2003 16:30	451.8413	29.53	7.427	20.947	30.112	
11/5/2003 16:31	452.8413	29.411	7.429	20.945	30.114	
11/5/2003 16:32	453.8413	29.43	7.429	20.945	30.112	
11/5/2003 16:33	454.8413	29.816	7.429	20.945	30.11	
11/5/2003 16:34	455.8413	29.772	7.433	20.947	30.112	
11/5/2003 16:35	456.8413	29.349	7.431	20.949	30.112	

11/5/2003 16:36	457.8413	29.598	7.429	20.947	30.114	
11/5/2003 16:37	458.8413	29.822	7.427	20.945	30.112	
11/5/2003 16:38	459.8413	29.922	7.423	20.941	30.114	
11/5/2003 16:39	460.8413	29.791	7.431	20.943	30.114	
11/5/2003 16:40	461.8413	29.324	7.431	20.945	30.114	
11/5/2003 16:41	462.8413	29.511	7.429	20.943	30.112	
11/5/2003 16:42	463.8413	29.38	7.429	20.945	30.112	
11/5/2003 16:43	464.8413	29.517	7.429	20.943	30.112	
11/5/2003 16:44	465.8413	29.461	7.429	20.947	30.114	
11/5/2003 16:45	466.8413	29.393	7.431	20.943	30.114	
11/5/2003 16:46	467.8413	29.274	7.427	20.943	30.114	
11/5/2003 16:47	468.8413	28.845	7.427	20.943	30.117	
11/5/2003 16:48	469.8413	29.685	7.425	20.947	30.117	
11/5/2003 16:49	470.8413	29.256	7.425	20.945	30.117	
11/5/2003 16:50	471.8413	29.343	7.425	20.945	30.117	
11/5/2003 16:51	472.8413	29.629	7.425	20.94	30.114	
11/5/2003 16:52	473.8413	29.885	7.427	20.943	30.117	
11/5/2003 16:53	474.8413	29.828	7.427	20.945	30.117	
11/5/2003 16:54	475.8413	29.909	7.425	20.941	30.112	
11/5/2003 16:55	476.8413	29.654	7.427	20.949	30.114	
11/5/2003 16:56	477.8413	29.71	7.425	20.943	30.114	
11/5/2003 16:57	478.8413	29.554	7.427	20.947	30.117	
11/5/2003 16:58	479.8413	30.015	7.427	20.943	30.114	
11/5/2003 16:59	480.8413	29.685	7.425	20.945	30.117	
11/5/2003 17:00	481.8413	29.61	7.425	20.945	30.114	
11/5/2003 17:01	482.8413	29.449	7.425	20.945	30.117	
11/5/2003 17:02	483.8413	29.523	7.425	20.947	30.119	
11/5/2003 17:03	484.8413	29.411	7.425	20.947	30.117	
11/5/2003 17:04	485.8413	29.685	7.425	20.947	30.117	
11/5/2003 17:05	486.8413	29.86	7.425	20.949	30.114	
11/5/2003 17:06	487.8413	29.741	7.422	20.949	30.112	
11/5/2003 17:07	488.8413	29.355	7.429	20.953	30.112	
11/5/2003 17:08	489.8413	29.424	7.425	20.947	30.114	
11/5/2003 17:09	490.8413	29.604	7.425	20.949	30.108	
11/5/2003 17:10	491.8413	29.293	7.423	20.945	30.112	
11/5/2003 17:11	492.8413	29.498	7.425	20.951	30.112	
11/5/2003 17:12	493.8413	29.866	7.425	20.947	30.114	
11/5/2003 17:13	494.8413	29.511	7.425	20.947	30.114	
11/5/2003 17:14	495.8413	29.629	7.425	20.943	30.117	
11/5/2003 17:15	496.8413	29.617	7.423	20.945	30.114	
11/5/2003 17:16	497.8413	29.828	7.422	20.947	30.117	
11/5/2003 17:17	498.8413	29.679	7.423	20.947	30.119	
11/5/2003 17:18	499.8413	29.486	7.422	20.953	30.114	
11/5/2003 17:19	500.8413	29.698	7.423	20.949	30.119	
11/5/2003 17:20	501.8413	29.586	7.425	20.947	30.117	
11/5/2003 17:21	502.8413	29.579	7.422	20.951	30.117	
11/5/2003 17:22	503.8413	29.828	7.422	20.943	30.121	
11/5/2003 17:23	504.8413	29.947	7.423	20.951	30.123	
11/5/2003 17:24	505.8413	29.828	7.414	20.949	30.123	
11/5/2003 17:25	506.8413	29.461	7.42	20.945	30.119	
11/5/2003 17:26	507.8413	29.816	7.422	20.951	30.123	
11/5/2003 17:27	508.8413	29.635	7.422	20.949	30.125	
11/5/2003 17:28	509.8413	29.43	7.422	20.947	30.125	
11/5/2003 17:29	510.8413	29.897	7.42	20.947	30.123	
11/5/2003 17:30	511.8413	29.878	7.423	20.951	30.123	
11/5/2003 17:31	512.8413	29.473	7.422	20.949	30.125	
11/5/2003 17:32	513.8413	29.467	7.422	20.949	30.123	
11/5/2003 17:33	514.8413	29.393	7.422	20.951	30.121	
11/5/2003 17:34	515.8413	29.523	7.422	20.953	30.121	

11/5/2003 17:35	516.8413	29.442	7.418	20.949	30.121	
11/5/2003 17:36	517.8413	29.648	7.42	20.955	30.123	
11/5/2003 17:37	518.8413	29.623	7.422	20.951	30.123	
11/5/2003 17:38	519.8413	29.461	7.423	20.951	30.121	
11/5/2003 17:39	520.8413	29.623	7.422	20.951	30.123	
11/5/2003 17:40	521.8413	29.673	7.42	20.955	30.123	
11/5/2003 17:41	522.8413	29.816	7.423	20.955	30.123	
11/5/2003 17:42	523.8413	29.461	7.422	20.953	30.125	
11/5/2003 17:43	524.8413	29.075	7.422	20.953	30.123	
11/5/2003 17:44	525.8413	29.604	7.422	20.953	30.121	
11/5/2003 17:45	526.8413	29.561	7.422	20.953	30.121	
11/5/2003 17:46	527.8413	29.847	7.42	20.953	30.121	
11/5/2003 17:47	528.8413	29.592	7.423	20.977	30.121	
11/5/2003 17:48	529.8413	29.66	7.422	20.96	30.121	
11/5/2003 17:49	530.8413	29.168	7.418	20.953	30.123	
11/5/2003 17:50	531.8413	29.66	7.42	20.951	30.123	
11/5/2003 17:51	532.8413	29.71	7.42	20.953	30.123	
11/5/2003 17:52	533.8413	29.299	7.42	20.955	30.123	
11/5/2003 17:53	534.8413	29.735	7.416	20.951	30.123	
11/5/2003 17:54	535.8413	29.816	7.42	20.955	30.121	
11/5/2003 17:55	536.8413	29.691	7.422	20.964	30.119	
11/5/2003 17:56	537.8413	29.417	7.422	20.955	30.119	
11/5/2003 17:57	538.8413	29.878	7.422	20.955	30.117	
11/5/2003 17:58	539.8413	29.642	7.422	20.966	30.112	
11/5/2003 17:59	540.8413	29.866	7.425	20.96	30.11	
11/5/2003 18:00	541.8413	29.424	7.423	20.96	30.112	
11/5/2003 18:01	542.8413	29.797	7.423	20.966	30.11	
11/5/2003 18:02	543.8413	29.617	7.423	20.966	30.112	
11/5/2003 18:03	544.8413	29.548	7.425	20.962	30.114	
11/5/2003 18:04	545.8413	29.816	7.425	20.968	30.117	
11/5/2003 18:05	546.8413	29.972	7.423	20.964	30.117	
11/5/2003 18:06	547.8413	29.828	7.423	20.964	30.117	
11/5/2003 18:07	548.8413	29.648	7.42	20.964	30.117	
11/5/2003 18:08	549.8413	29.511	7.422	20.962	30.114	
11/5/2003 18:09	550.8413	29.835	7.427	20.962	30.117	
11/5/2003 18:10	551.8413	29.473	7.42	20.962	30.117	
11/5/2003 18:11	552.8413	29.629	7.423	20.968	30.117	
11/5/2003 18:12	553.8413	29.959	7.423	20.968	30.114	
11/5/2003 18:13	554.8413	30.239	7.42	20.966	30.119	
11/5/2003 18:14	555.8413	29.723	7.423	20.966	30.117	
11/5/2003 18:15	556.8413	29.978	7.422	20.968	30.119	
11/5/2003 18:16	557.8413	29.654	7.422	20.968	30.119	
11/5/2003 18:17	558.8413	29.909	7.425	20.97	30.117	
11/5/2003 18:18	559.8413	29.691	7.422	20.968	30.114	
11/5/2003 18:19	560.8413	29.704	7.422	20.968	30.112	
11/5/2003 18:20	561.8413	29.772	7.422	20.968	30.114	
11/5/2003 18:21	562.8413	30.015	7.422	20.968	30.117	
11/5/2003 18:22	563.8413	29.816	7.422	20.968	30.117	
11/5/2003 18:23	564.8413	29.679	7.422	20.97	30.119	
11/5/2003 18:24	565.8413	30.358	7.422	20.97	30.117	
11/5/2003 18:25	566.8413	29.436	7.422	20.973	30.117	
11/5/2003 18:26	567.8413	30.04	7.425	20.966	30.119	
11/5/2003 18:27	568.8413	29.642	7.422	20.973	30.117	
11/5/2003 18:28	569.8413	29.486	7.418	20.97	30.119	
11/5/2003 18:29	570.8413	29.629	7.422	20.97	30.117	
11/5/2003 18:30	571.8413	29.804	7.427	20.977	30.114	
11/5/2003 18:31	572.8413	29.797	7.423	20.975	30.112	
11/5/2003 18:32	573.8413	29.635	7.422	20.975	30.114	
11/5/2003 18:33	574.8413	29.891	7.42	20.966	30.112	

11/5/2003 18:34	575.8413	29.598	7.423	20.973	30.117	
11/5/2003 18:35	576.8413	29.86	7.422	20.968	30.114	
11/5/2003 18:36	577.8413	29.779	7.422	20.973	30.114	
11/5/2003 18:37	578.8413	29.779	7.425	20.968	30.117	
11/5/2003 18:38	579.8413	30.059	7.422	20.975	30.117	
11/5/2003 18:39	580.8413	29.816	7.422	20.975	30.117	
11/5/2003 18:40	581.8413	29.654	7.423	20.968	30.119	
11/5/2003 18:41	582.8413	29.586	7.418	20.968	30.117	
11/5/2003 18:42	583.8413	29.698	7.423	20.977	30.119	
11/5/2003 18:43	584.8413	29.816	7.422	20.971	30.119	
11/5/2003 18:44	585.8413	29.654	7.42	20.975	30.119	
11/5/2003 18:45	586.8413	29.629	7.422	20.97	30.117	
11/5/2003 18:46	587.8413	29.822	7.42	20.96	30.117	
11/5/2003 18:47	588.8413	29.791	7.418	20.96	30.119	
11/5/2003 18:48	589.8413	29.81	7.423	20.975	30.117	
11/5/2003 18:49	590.8413	29.704	7.42	20.979	30.117	
11/5/2003 18:50	591.8413	29.592	7.42	20.975	30.119	
11/5/2003 18:51	592.8413	29.959	7.423	20.979	30.121	
11/5/2003 18:52	593.8413	29.922	7.423	20.975	30.119	
11/5/2003 18:53	594.8413	29.623	7.422	20.977	30.123	
11/5/2003 18:54	595.8413	29.648	7.42	20.975	30.123	
11/5/2003 18:55	596.8413	29.704	7.423	20.977	30.123	
11/5/2003 18:56	597.8413	29.841	7.42	20.977	30.121	
11/5/2003 18:57	598.8413	29.841	7.422	20.975	30.121	
11/5/2003 18:58	599.8413	29.866	7.422	20.975	30.121	
11/5/2003 18:59	600.8413	29.629	7.422	20.977	30.119	
11/5/2003 19:00	601.8413	29.698	7.422	20.981	30.119	
11/5/2003 19:01	602.8413	30.084	7.422	20.977	30.121	
11/5/2003 19:02	603.8413	29.629	7.423	20.981	30.119	
11/5/2003 19:03	604.8413	29.685	7.422	20.979	30.117	
11/5/2003 19:04	605.8413	29.598	7.423	20.979	30.114	
11/5/2003 19:05	606.8413	29.66	7.422	20.979	30.114	
11/5/2003 19:06	607.8413	29.61	7.423	20.983	30.112	
11/5/2003 19:07	608.8413	29.785	7.423	20.981	30.11	
11/5/2003 19:08	609.8413	29.835	7.425	20.981	30.11	
11/5/2003 19:09	610.8413	29.735	7.423	20.983	30.11	
11/5/2003 19:10	611.8413	29.754	7.423	20.983	30.11	
11/5/2003 19:11	612.8413	30.04	7.423	20.981	30.112	
11/5/2003 19:12	613.8413	29.517	7.423	20.981	30.114	
11/5/2003 19:13	614.8413	29.972	7.425	20.983	30.114	
11/5/2003 19:14	615.8413	29.716	7.423	20.979	30.119	
11/5/2003 19:15	616.8413	29.897	7.422	20.97	30.123	
11/5/2003 19:16	617.8413	30.339	7.422	20.971	30.123	
11/5/2003 19:17	618.8413	30.065	7.422	20.971	30.125	
11/5/2003 19:18	619.8413	30.04	7.42	20.971	30.123	
11/5/2003 19:19	620.8413	29.754	7.418	20.97	30.127	
11/5/2003 19:20	621.8413	29.716	7.42	20.973	30.123	
11/5/2003 19:21	622.8413	29.841	7.42	20.968	30.123	
11/5/2003 19:22	623.8413	29.997	7.42	20.975	30.125	
11/5/2003 19:23	624.8413	29.536	7.42	20.975	30.123	
11/5/2003 19:24	625.8413	29.866	7.422	20.985	30.121	
11/5/2003 19:25	626.8413	29.791	7.425	20.99	30.121	
11/5/2003 19:26	627.8413	30.208	7.422	20.986	30.121	
11/5/2003 19:27	628.8413	29.822	7.423	20.996	30.121	
11/5/2003 19:28	629.8413	29.766	7.422	20.983	30.121	
11/5/2003 19:29	630.8413	29.81	7.423	20.99	30.123	
11/5/2003 19:30	631.8413	29.903	7.423	20.981	30.123	
11/5/2003 19:31	632.8413	29.66	7.422	20.985	30.125	
11/5/2003 19:32	633.8413	29.891	7.422	20.986	30.127	

11/5/2003 19:33	634.8413	29.76	7.42	20.986	30.125	
11/5/2003 19:34	635.8413	29.623	7.42	20.985	30.127	
11/5/2003 19:35	636.8413	29.928	7.42	20.986	30.129	
11/5/2003 19:36	637.8413	29.872	7.422	20.983	30.127	
11/5/2003 19:37	638.8413	29.586	7.422	20.986	30.127	
11/5/2003 19:38	639.8413	29.835	7.423	20.985	30.127	
11/5/2003 19:39	640.8413	29.754	7.423	20.988	30.129	
11/5/2003 19:40	641.8413	29.573	7.423	20.985	30.129	
11/5/2003 19:41	642.8413	29.791	7.423	20.99	30.129	
11/5/2003 19:42	643.8413	29.617	7.423	20.992	30.127	
11/5/2003 19:43	644.8413	29.922	7.423	20.985	30.127	
11/5/2003 19:44	645.8413	30.034	7.423	20.994	30.125	
11/5/2003 19:45	646.8413	29.586	7.422	20.99	30.129	
11/5/2003 19:46	647.8413	29.723	7.427	20.994	30.129	
11/5/2003 19:47	648.8413	29.947	7.422	20.99	30.131	
11/5/2003 19:48	649.8413	29.791	7.422	20.996	30.127	
11/5/2003 19:49	650.8413	29.822	7.423	20.992	30.129	
11/5/2003 19:50	651.8413	29.698	7.429	20.996	30.127	
11/5/2003 19:51	652.8413	29.903	7.425	20.988	30.129	
11/5/2003 19:52	653.8413	29.847	7.42	20.99	30.131	
11/5/2003 19:53	654.8413	29.741	7.418	20.994	30.131	
11/5/2003 19:54	655.8413	29.953	7.423	20.994	30.133	
11/5/2003 19:55	656.8413	30.015	7.422	20.994	30.129	
11/5/2003 19:56	657.8413	29.654	7.422	20.992	30.133	
11/5/2003 19:57	658.8413	29.99	7.425	20.996	30.135	
11/5/2003 19:58	659.8413	29.785	7.422	20.992	30.135	
11/5/2003 19:59	660.8413	29.617	7.42	20.996	30.133	
11/5/2003 20:00	661.8413	29.691	7.42	20.996	30.135	
11/5/2003 20:01	662.8413	29.959	7.429	21	30.133	
11/5/2003 20:02	663.8413	29.897	7.425	20.99	30.135	
11/5/2003 20:03	664.8413	29.76	7.423	21	30.137	
11/5/2003 20:04	665.8413	29.872	7.422	20.99	30.139	
11/5/2003 20:05	666.8413	29.916	7.423	20.994	30.135	
11/5/2003 20:06	667.8413	29.76	7.425	20.996	30.137	
11/5/2003 20:07	668.8413	29.729	7.42	20.994	30.137	
11/5/2003 20:08	669.8413	29.797	7.423	20.996	30.135	
11/5/2003 20:09	670.8413	29.511	7.425	20.996	30.137	
11/5/2003 20:10	671.8413	29.828	7.425	20.996	30.137	
11/5/2003 20:11	672.8413	30.14	7.422	20.998	30.135	
11/5/2003 20:12	673.8413	29.318	7.425	21	30.133	
11/5/2003 20:13	674.8413	29.909	7.423	21	30.133	
11/5/2003 20:14	675.8413	29.891	7.425	21	30.133	
11/5/2003 20:15	676.8413	29.76	7.425	20.998	30.131	
11/5/2003 20:16	677.8413	29.704	7.427	21.001	30.131	
11/5/2003 20:17	678.8413	29.648	7.427	21	30.131	
11/5/2003 20:18	679.8413	29.99	7.425	20.998	30.131	
11/5/2003 20:19	680.8413	29.804	7.425	21.001	30.131	
11/5/2003 20:20	681.8413	29.704	7.425	21.005	30.133	
11/5/2003 20:21	682.8413	29.648	7.425	21	30.135	
11/5/2003 20:22	683.8413	29.835	7.423	21.003	30.135	
11/5/2003 20:23	684.8413	29.934	7.429	21.005	30.135	
11/5/2003 20:24	685.8413	29.822	7.427	21.003	30.133	
11/5/2003 20:25	686.8413	30.003	7.423	21.005	30.135	
11/5/2003 20:26	687.8413	29.735	7.422	21	30.137	
11/5/2003 20:27	688.8413	30.109	7.427	21.001	30.137	
11/5/2003 20:28	689.8413	29.723	7.42	20.994	30.139	
11/5/2003 20:29	690.8413	29.909	7.425	20.998	30.139	
11/5/2003 20:30	691.8413	30.003	7.425	20.998	30.141	
11/5/2003 20:31	692.8413	29.916	7.423	21	30.139	

11/5/2003 20:32	693.8413	29.853	7.422	21.001	30.137	
11/5/2003 20:33	694.8413	29.586	7.422	21.003	30.137	
11/5/2003 20:34	695.8413	29.816	7.423	21.003	30.137	
11/5/2003 20:35	696.8413	30.003	7.425	21.011	30.137	
11/5/2003 20:36	697.8413	30.09	7.429	21.005	30.135	
11/5/2003 20:37	698.8413	29.486	7.429	21.011	30.137	
11/5/2003 20:38	699.8413	29.903	7.427	21.007	30.135	
11/5/2003 20:39	700.8413	29.716	7.427	21.005	30.139	
11/5/2003 20:40	701.8413	30.196	7.431	21.005	30.137	
11/5/2003 20:41	702.8413	30.183	7.425	21.001	30.135	
11/5/2003 20:42	703.8413	29.567	7.425	21.003	30.133	
11/5/2003 20:43	704.8413	30.09	7.427	21.005	30.139	
11/5/2003 20:44	705.8413	29.984	7.429	21.005	30.139	
11/5/2003 20:45	706.8413	29.66	7.425	21.007	30.141	
11/5/2003 20:46	707.8413	29.691	7.427	21.005	30.141	
11/5/2003 20:47	708.8413	29.847	7.427	21.005	30.145	
11/5/2003 20:48	709.8413	29.635	7.425	21.005	30.147	
11/5/2003 20:49	710.8413	29.878	7.429	21.009	30.141	
11/5/2003 20:50	711.8413	29.928	7.427	21.003	30.145	
11/5/2003 20:51	712.8413	29.797	7.425	21.007	30.143	
11/5/2003 20:52	713.8413	29.828	7.427	21.007	30.143	
11/5/2003 20:53	714.8413	29.928	7.427	21.009	30.141	
11/5/2003 20:54	715.8413	30.271	7.427	21.011	30.141	
11/5/2003 20:55	716.8413	30.04	7.431	21.009	30.141	
11/5/2003 20:56	717.8413	30.046	7.427	21.009	30.151	

HERMIT DATA - 24 Hours						
In-Situ Inc.	Hermit 3000					
Report generated	11/7/2003	13:48:18				
Report from file:	C:\WIN-SITU\Data\SN45853 2003-11-05 205631 Test #3.bin					
DataMgr Version	3.69					
Serial number:	45853					
Firmware Version	7.1					
Unit name:	HERMIT 3000					
Test name:		Test #3				
Test defined on:	11/3/2003	10:24:27				
Test started on:	11/5/2003	20:56:31				
Test stopped on:	N/A	N/A				
Test extracted on	11/6/2003	8:57:50				
Data gathered using Logarithmic testing						
Maximum time I	Minutes.					
Number of data	1556					
TOTAL DATA SA	1556					
Channel number [1]						
Measurement ty	Pressure					
Channel name:	IW#1					
Linearity:	0.3649					
Scale:		99.4224				
Offset:		0.0374				
Warmup:		50				
Channel number [2]						
Measurement ty	Pressure					
Channel name:	UPPER MW					
Linearity:	0.2939					
Scale:		29.6429				
Offset:		-0.1453				
Warmup:		50				
Channel number [3]						
Measurement ty	Pressure					
Channel name:	LOWER MW					
Linearity:	0.2967					
Scale:		29.6033				
Offset:		-0.2002				
Warmup:		50				
Channel number [0]						
Measurement ty	Barometric Pressure					
Channel name:	Barometric					
Linearity:	0					
Scale:		0				
Offset:		0				
Warmup:		50				

		Chan[1]	Chan[2]	Chan[3]	Chan[0]	
Date Time	ET (min)	PSI	PSI	PSI	Inches Hg	
11/5/2003 20:56	0	30.115	7.427	21.009	30.145	
11/5/2003 20:56	0.0218	29.71	7.429	21.009	30.143	
11/5/2003 20:56	0.0437	29.797	7.427	21.009	30.141	
11/5/2003 20:56	0.0655	29.891	7.429	21.011	30.143	
11/5/2003 20:56	0.0873	29.934	7.429	21.009	30.143	
11/5/2003 20:56	0.1092	29.86	7.427	21.013	30.145	
11/5/2003 20:56	0.131	29.505	7.433	21.013	30.143	
11/5/2003 20:56	0.1528	29.984	7.429	21.011	30.141	
11/5/2003 20:56	0.1747	29.928	7.427	21.005	30.143	
11/5/2003 20:56	0.1965	29.586	7.431	21.011	30.141	
11/5/2003 20:56	0.2183	29.872	7.429	21.013	30.141	
11/5/2003 20:56	0.2402	29.754	7.427	21.011	30.141	
11/5/2003 20:56	0.262	29.679	7.429	21.013	30.141	
11/5/2003 20:56	0.2838	30.09	7.427	21.007	30.139	
11/5/2003 20:56	0.3057	30.109	7.429	21.011	30.141	
11/5/2003 20:56	0.3275	29.648	7.429	21.007	30.139	
11/5/2003 20:56	0.3493	29.772	7.427	21.003	30.137	
11/5/2003 20:56	0.3712	30.078	7.427	21.009	30.139	
11/5/2003 20:56	0.393	29.972	7.427	21.009	30.139	
11/5/2003 20:56	0.4148	29.592	7.433	21.007	30.137	
11/5/2003 20:56	0.4367	30.109	7.429	21.009	30.137	
11/5/2003 20:56	0.4588	29.523	7.425	21.009	30.141	
11/5/2003 20:56	0.4823	30.109	7.429	21.011	30.137	
11/5/2003 20:57	0.5072	30.003	7.431	21.018	30.141	
11/5/2003 20:57	0.5335	30.445	7.427	21.007	30.137	
11/5/2003 20:57	0.5615	29.741	7.429	21.015	30.139	
11/5/2003 20:57	0.5912	29.704	7.429	21.009	30.139	
11/5/2003 20:57	0.6225	29.53	7.429	21.013	30.137	
11/5/2003 20:57	0.6557	29.934	7.429	21.013	30.135	
11/5/2003 20:57	0.6908	29.866	7.427	21.015	30.135	
11/5/2003 20:57	0.7282	29.691	7.427	21.007	30.137	
11/5/2003 20:57	0.7677	29.193	7.425	21.005	30.137	
11/5/2003 20:57	0.8095	27.935	7.429	21.005	30.137	
11/5/2003 20:57	0.8538	27.73	7.425	21.001	30.137	
11/5/2003 20:57	0.9008	27.431	7.425	21.005	30.135	
11/5/2003 20:57	0.9507	27.699	7.429	21.005	30.137	
11/5/2003 20:57	1.0033	27.674	7.427	21.007	30.135	
11/5/2003 20:57	1.0592	27.213	7.425	21.007	30.135	
11/5/2003 20:57	1.1183	26.298	7.423	21.013	30.135	
11/5/2003 20:57	1.181	25.258	7.427	21.001	30.133	
11/5/2003 20:57	1.2473	23.994	7.423	21.011	30.133	
11/5/2003 20:57	1.3177	25.85	7.427	21.005	30.133	
11/5/2003 20:57	1.3922	23.702	7.425	21.003	30.135	
11/5/2003 20:57	1.4712	21.113	7.425	21.001	30.133	
11/5/2003 20:58	1.5548	20.31	7.427	21	30.133	
11/5/2003 20:58	1.6433	18.095	7.425	21.001	30.131	
11/5/2003 20:58	1.7372	25.283	7.427	21.003	30.131	
11/5/2003 20:58	1.8365	24.878	7.425	21.001	30.133	
11/5/2003 20:58	1.9418	24.785	7.423	21	30.131	
11/5/2003 20:58	2.0533	24.723	7.425	21	30.131	
11/5/2003 20:58	2.1715	24.891	7.425	21	30.129	
11/5/2003 20:58	2.2967	24.897	7.425	20.992	30.129	
11/5/2003 20:58	2.4292	24.847	7.422	20.99	30.131	

11/5/2003 20:59	2.5697	24.741	7.425	20.99	30.131	
11/5/2003 20:59	2.7185	24.866	7.422	20.996	30.129	
11/5/2003 20:59	2.876	24.785	7.425	20.994	30.129	
11/5/2003 20:59	3.0428	24.779	7.427	20.996	30.129	
11/5/2003 20:59	3.2197	24.835	7.427	20.992	30.125	
11/5/2003 20:59	3.407	24.86	7.429	20.996	30.125	
11/5/2003 21:00	3.6053	24.847	7.425	20.99	30.131	
11/5/2003 21:00	3.8155	24.854	7.422	20.992	30.133	
11/5/2003 21:00	4.0382	24.86	7.425	20.988	30.137	
11/5/2003 21:00	4.274	24.847	7.429	20.994	30.137	
11/5/2003 21:01	4.5238	24.847	7.429	20.994	30.139	
11/5/2003 21:01	4.7885	24.841	7.425	20.986	30.139	
11/5/2003 21:01	5.0688	24.847	7.427	20.998	30.139	
11/5/2003 21:01	5.3657	24.841	7.423	20.992	30.139	
11/5/2003 21:02	5.6802	24.841	7.425	20.996	30.139	
11/5/2003 21:02	6.0133	24.847	7.422	20.986	30.139	
11/5/2003 21:02	6.3662	24.829	7.427	20.988	30.139	
11/5/2003 21:03	6.74	24.854	7.425	20.994	30.141	
11/5/2003 21:03	7.136	24.854	7.433	20.988	30.137	
11/5/2003 21:04	7.5553	24.822	7.423	20.992	30.139	
11/5/2003 21:04	7.9997	24.835	7.427	20.988	30.141	
11/5/2003 21:04	8.4703	24.822	7.427	21	30.141	
11/5/2003 21:05	8.9688	24.816	7.427	20.983	30.139	
11/5/2003 21:06	9.4968	24.816	7.429	20.983	30.141	
11/5/2003 21:06	10.0562	24.816	7.423	20.996	30.141	
11/5/2003 21:07	10.6487	24.829	7.427	20.981	30.141	
11/5/2003 21:07	11.2762	24.829	7.431	20.97	30.141	
11/5/2003 21:08	11.941	24.81	7.425	20.988	30.139	
11/5/2003 21:09	12.6452	24.829	7.425	20.99	30.141	
11/5/2003 21:09	13.391	24.785	7.423	20.998	30.143	
11/5/2003 21:10	14.181	24.822	7.429	20.977	30.141	
11/5/2003 21:11	15.0178	24.816	7.423	20.988	30.141	
11/5/2003 21:12	15.9043	24.798	7.427	20.99	30.141	
11/5/2003 21:13	16.8433	24.816	7.425	20.981	30.143	
11/5/2003 21:14	17.838	24.76	7.422	20.975	30.143	
11/5/2003 21:15	18.838	24.766	7.425	20.988	30.135	
11/5/2003 21:16	19.838	24.81	7.425	20.988	30.137	
11/5/2003 21:17	20.838	24.81	7.427	20.99	30.139	
11/5/2003 21:18	21.838	24.804	7.425	20.986	30.139	
11/5/2003 21:19	22.838	24.804	7.423	20.975	30.141	
11/5/2003 21:20	23.838	24.804	7.425	20.986	30.141	
11/5/2003 21:21	24.838	24.804	7.425	20.985	30.141	
11/5/2003 21:22	25.838	24.81	7.427	20.986	30.141	
11/5/2003 21:23	26.838	24.804	7.427	20.99	30.141	
11/5/2003 21:24	27.838	24.798	7.425	20.986	30.141	
11/5/2003 21:25	28.838	24.804	7.427	20.985	30.141	
11/5/2003 21:26	29.838	24.798	7.425	20.988	30.139	
11/5/2003 21:27	30.838	24.798	7.427	20.99	30.139	
11/5/2003 21:28	31.838	24.798	7.427	20.986	30.139	
11/5/2003 21:29	32.838	24.791	7.425	20.988	30.137	
11/5/2003 21:30	33.838	24.798	7.429	20.986	30.135	
11/5/2003 21:31	34.838	24.798	7.427	20.986	30.135	
11/5/2003 21:32	35.838	24.798	7.429	20.988	30.137	
11/5/2003 21:33	36.838	24.798	7.429	20.988	30.137	
11/5/2003 21:34	37.838	24.798	7.427	20.988	30.135	
11/5/2003 21:35	38.838	24.791	7.427	20.988	30.135	
11/5/2003 21:36	39.838	24.798	7.429	20.992	30.137	

11/5/2003 21:37	40.838	24.791	7.427	20.99	30.135	
11/5/2003 21:38	41.838	24.798	7.431	20.992	30.137	
11/5/2003 21:39	42.838	24.798	7.429	20.988	30.139	
11/5/2003 21:40	43.838	24.798	7.427	20.992	30.139	
11/5/2003 21:41	44.838	24.798	7.427	20.992	30.139	
11/5/2003 21:42	45.838	24.791	7.431	20.988	30.139	
11/5/2003 21:43	46.838	24.785	7.427	20.988	30.141	
11/5/2003 21:44	47.838	24.785	7.427	20.988	30.143	
11/5/2003 21:45	48.838	24.791	7.429	20.992	30.139	
11/5/2003 21:46	49.838	24.791	7.425	20.983	30.143	
11/5/2003 21:47	50.838	24.779	7.427	20.988	30.143	
11/5/2003 21:48	51.838	24.791	7.427	20.994	30.143	
11/5/2003 21:49	52.838	24.785	7.431	20.985	30.137	
11/5/2003 21:50	53.838	24.785	7.427	20.99	30.141	
11/5/2003 21:51	54.838	24.785	7.429	20.992	30.139	
11/5/2003 21:52	55.838	24.798	7.423	21	30.141	
11/5/2003 21:53	56.838	24.76	7.422	20.994	30.139	
11/5/2003 21:54	57.838	24.754	7.427	20.996	30.141	
11/5/2003 21:55	58.838	24.791	7.427	20.996	30.139	
11/5/2003 21:56	59.838	24.773	7.427	20.988	30.141	
11/5/2003 21:57	60.838	24.785	7.431	20.99	30.141	
11/5/2003 21:58	61.838	24.773	7.429	20.99	30.141	
11/5/2003 21:59	62.838	24.766	7.431	20.99	30.141	
11/5/2003 22:00	63.838	24.773	7.429	20.992	30.143	
11/5/2003 22:01	64.838	24.773	7.429	20.992	30.141	
11/5/2003 22:02	65.838	24.773	7.429	20.992	30.139	
11/5/2003 22:03	66.838	24.766	7.429	20.99	30.143	
11/5/2003 22:04	67.838	24.766	7.427	20.99	30.139	
11/5/2003 22:05	68.838	24.76	7.431	20.988	30.141	
11/5/2003 22:06	69.838	24.773	7.425	20.994	30.137	
11/5/2003 22:07	70.838	24.773	7.427	20.992	30.139	
11/5/2003 22:08	71.838	24.779	7.431	20.99	30.137	
11/5/2003 22:09	72.838	24.766	7.429	20.988	30.137	
11/5/2003 22:10	73.838	24.773	7.433	21.001	30.135	
11/5/2003 22:11	74.838	24.773	7.436	20.992	30.135	
11/5/2003 22:12	75.838	24.779	7.431	20.996	30.133	
11/5/2003 22:13	76.838	24.773	7.433	20.996	30.131	
11/5/2003 22:14	77.838	24.773	7.435	20.996	30.133	
11/5/2003 22:15	78.838	24.779	7.435	20.998	30.133	
11/5/2003 22:16	79.838	24.766	7.433	20.996	30.131	
11/5/2003 22:17	80.838	24.773	7.433	20.996	30.133	
11/5/2003 22:18	81.838	24.773	7.433	21.001	30.133	
11/5/2003 22:19	82.838	24.773	7.433	21	30.131	
11/5/2003 22:20	83.838	24.766	7.433	20.996	30.133	
11/5/2003 22:21	84.838	24.766	7.433	20.996	30.131	
11/5/2003 22:22	85.838	24.773	7.435	21	30.131	
11/5/2003 22:23	86.838	24.773	7.435	20.994	30.131	
11/5/2003 22:24	87.838	24.766	7.431	21	30.131	
11/5/2003 22:25	88.838	24.766	7.435	20.998	30.129	
11/5/2003 22:26	89.838	24.766	7.435	20.998	30.129	
11/5/2003 22:27	90.838	24.766	7.435	21.003	30.127	
11/5/2003 22:28	91.838	24.779	7.436	21	30.127	
11/5/2003 22:29	92.838	24.76	7.433	21	30.127	
11/5/2003 22:30	93.838	24.76	7.435	21	30.127	
11/5/2003 22:31	94.838	24.76	7.433	21.003	30.129	
11/5/2003 22:32	95.838	24.773	7.435	20.992	30.129	
11/5/2003 22:33	96.838	24.76	7.436	20.998	30.131	

11/5/2003 22:34	97.838	24.773	7.435	20.996	30.131	
11/5/2003 22:35	98.838	24.773	7.435	20.998	30.131	
11/5/2003 22:36	99.838	24.779	7.436	21	30.131	
11/5/2003 22:37	100.838	24.773	7.433	20.998	30.131	
11/5/2003 22:38	101.838	24.773	7.44	21.001	30.133	
11/5/2003 22:39	102.838	24.754	7.438	21	30.131	
11/5/2003 22:40	103.838	24.766	7.436	21	30.131	
11/5/2003 22:41	104.838	24.773	7.438	21.003	30.129	
11/5/2003 22:42	105.838	24.766	7.438	21.005	30.129	
11/5/2003 22:43	106.838	24.766	7.436	20.996	30.127	
11/5/2003 22:44	107.838	24.76	7.438	21	30.125	
11/5/2003 22:45	108.838	24.773	7.436	21.001	30.123	
11/5/2003 22:46	109.838	24.766	7.442	21.001	30.123	
11/5/2003 22:47	110.838	24.773	7.436	20.998	30.123	
11/5/2003 22:48	111.838	24.754	7.438	20.998	30.125	
11/5/2003 22:49	112.838	24.773	7.44	20.998	30.121	
11/5/2003 22:50	113.838	24.766	7.438	21.003	30.121	
11/5/2003 22:51	114.838	24.779	7.442	21.003	30.123	
11/5/2003 22:52	115.838	24.773	7.442	21.007	30.123	
11/5/2003 22:53	116.838	24.76	7.44	21.003	30.123	
11/5/2003 22:54	117.838	24.76	7.44	21.005	30.121	
11/5/2003 22:55	118.838	24.766	7.438	21	30.121	
11/5/2003 22:56	119.838	24.766	7.442	21.001	30.119	
11/5/2003 22:57	120.838	24.766	7.44	21.005	30.119	
11/5/2003 22:58	121.838	24.773	7.44	21.005	30.119	
11/5/2003 22:59	122.838	24.766	7.442	21.001	30.121	
11/5/2003 23:00	123.838	24.773	7.442	21.001	30.121	
11/5/2003 23:01	124.838	24.766	7.442	21.005	30.119	
11/5/2003 23:02	125.838	24.766	7.444	21.005	30.119	
11/5/2003 23:03	126.838	24.773	7.442	21.007	30.117	
11/5/2003 23:04	127.838	24.76	7.442	21	30.117	
11/5/2003 23:05	128.838	24.76	7.442	21.007	30.117	
11/5/2003 23:06	129.838	24.76	7.442	21.003	30.117	
11/5/2003 23:07	130.838	24.766	7.444	21.001	30.117	
11/5/2003 23:08	131.838	24.766	7.444	21.003	30.117	
11/5/2003 23:09	132.838	24.76	7.444	21.001	30.117	
11/5/2003 23:10	133.838	24.76	7.442	21.003	30.117	
11/5/2003 23:11	134.838	24.754	7.442	20.998	30.121	
11/5/2003 23:12	135.838	24.754	7.446	21	30.119	
11/5/2003 23:13	136.838	24.754	7.442	21.003	30.119	
11/5/2003 23:14	137.838	24.76	7.444	21.003	30.121	
11/5/2003 23:15	138.838	24.76	7.444	21.001	30.121	
11/5/2003 23:16	139.838	24.754	7.442	20.998	30.121	
11/5/2003 23:17	140.838	24.754	7.444	21	30.121	
11/5/2003 23:18	141.838	24.76	7.438	20.998	30.119	
11/5/2003 23:19	142.838	24.754	7.438	21.001	30.119	
11/5/2003 23:20	143.838	24.754	7.442	20.998	30.121	
11/5/2003 23:21	144.838	24.754	7.45	21	30.119	
11/5/2003 23:22	145.838	24.754	7.438	21.001	30.123	
11/5/2003 23:23	146.838	24.766	7.438	20.996	30.121	
11/5/2003 23:24	147.838	24.754	7.442	21	30.123	
11/5/2003 23:25	148.838	24.76	7.444	20.996	30.121	
11/5/2003 23:26	149.838	24.754	7.444	20.998	30.119	
11/5/2003 23:27	150.838	24.76	7.444	21.003	30.121	
11/5/2003 23:28	151.838	24.76	7.444	21.001	30.121	
11/5/2003 23:29	152.838	24.766	7.446	20.998	30.123	
11/5/2003 23:30	153.838	24.766	7.446	20.998	30.123	

11/5/2003 23:31	154.838	24.76	7.444	21.003	30.121	
11/5/2003 23:32	155.838	24.754	7.444	20.998	30.119	
11/5/2003 23:33	156.838	24.76	7.442	21	30.121	
11/5/2003 23:34	157.838	24.754	7.446	21	30.123	
11/5/2003 23:35	158.838	24.754	7.444	20.998	30.123	
11/5/2003 23:36	159.838	24.754	7.442	21.003	30.123	
11/5/2003 23:37	160.838	24.76	7.446	21	30.119	
11/5/2003 23:38	161.838	24.754	7.444	20.998	30.121	
11/5/2003 23:39	162.838	24.754	7.446	20.996	30.121	
11/5/2003 23:40	163.838	24.754	7.442	20.996	30.121	
11/5/2003 23:41	164.838	24.754	7.446	20.998	30.121	
11/5/2003 23:42	165.838	24.754	7.444	20.996	30.119	
11/5/2003 23:43	166.838	24.754	7.446	20.998	30.119	
11/5/2003 23:44	167.838	24.754	7.446	20.998	30.119	
11/5/2003 23:45	168.838	24.766	7.446	21.001	30.117	
11/5/2003 23:46	169.838	24.754	7.444	20.998	30.117	
11/5/2003 23:47	170.838	24.754	7.444	21	30.117	
11/5/2003 23:48	171.838	24.76	7.448	21	30.119	
11/5/2003 23:49	172.838	24.76	7.444	21.001	30.117	
11/5/2003 23:50	173.838	24.754	7.446	20.998	30.119	
11/5/2003 23:51	174.838	24.748	7.446	20.998	30.117	
11/5/2003 23:52	175.838	24.748	7.446	20.998	30.117	
11/5/2003 23:53	176.838	24.766	7.448	20.998	30.119	
11/5/2003 23:54	177.838	24.76	7.446	20.996	30.117	
11/5/2003 23:55	178.838	24.754	7.446	21	30.117	
11/5/2003 23:56	179.838	24.754	7.448	20.996	30.117	
11/5/2003 23:57	180.838	24.754	7.446	20.998	30.117	
11/5/2003 23:58	181.838	24.76	7.444	20.994	30.121	
11/5/2003 23:59	182.838	24.748	7.446	20.994	30.119	
11/6/2003 0:00	183.838	24.748	7.446	20.996	30.119	
11/6/2003 0:01	184.838	24.748	7.446	20.996	30.121	
11/6/2003 0:02	185.838	24.748	7.446	20.994	30.121	
11/6/2003 0:03	186.838	24.748	7.448	20.998	30.123	
11/6/2003 0:04	187.838	24.748	7.446	20.992	30.119	
11/6/2003 0:05	188.838	24.748	7.444	20.994	30.121	
11/6/2003 0:06	189.838	24.741	7.446	20.992	30.119	
11/6/2003 0:07	190.838	24.754	7.446	20.998	30.119	
11/6/2003 0:08	191.838	24.754	7.448	20.998	30.117	
11/6/2003 0:09	192.838	24.754	7.446	20.996	30.117	
11/6/2003 0:10	193.838	24.748	7.446	20.994	30.114	
11/6/2003 0:11	194.838	24.754	7.446	20.99	30.117	
11/6/2003 0:12	195.838	24.748	7.446	20.994	30.117	
11/6/2003 0:13	196.838	24.741	7.446	20.99	30.119	
11/6/2003 0:14	197.838	24.748	7.45	20.998	30.121	
11/6/2003 0:15	198.838	24.741	7.446	20.994	30.119	
11/6/2003 0:16	199.838	24.748	7.448	20.992	30.119	
11/6/2003 0:17	200.838	24.748	7.446	20.99	30.119	
11/6/2003 0:18	201.838	24.741	7.446	20.99	30.119	
11/6/2003 0:19	202.838	24.741	7.444	20.99	30.117	
11/6/2003 0:20	203.838	24.748	7.444	20.986	30.117	
11/6/2003 0:21	204.838	24.741	7.446	20.994	30.117	
11/6/2003 0:22	205.838	24.735	7.45	20.99	30.117	
11/6/2003 0:23	206.838	24.735	7.446	20.992	30.117	
11/6/2003 0:24	207.838	24.748	7.446	20.988	30.114	
11/6/2003 0:25	208.838	24.735	7.446	20.986	30.114	
11/6/2003 0:26	209.838	24.729	7.446	20.985	30.114	
11/6/2003 0:27	210.838	24.741	7.448	20.988	30.114	

11/6/2003 0:28	211.838	24.735	7.444	20.986	30.112	
11/6/2003 0:29	212.838	24.741	7.446	20.988	30.112	
11/6/2003 0:30	213.838	24.748	7.446	20.99	30.114	
11/6/2003 0:31	214.838	24.741	7.444	20.985	30.117	
11/6/2003 0:32	215.838	24.748	7.446	20.985	30.117	
11/6/2003 0:33	216.838	24.735	7.446	20.986	30.117	
11/6/2003 0:34	217.838	24.735	7.444	20.985	30.117	
11/6/2003 0:35	218.838	24.735	7.446	20.983	30.117	
11/6/2003 0:36	219.838	24.748	7.444	20.985	30.117	
11/6/2003 0:37	220.838	24.741	7.446	20.986	30.117	
11/6/2003 0:38	221.838	24.735	7.444	20.986	30.117	
11/6/2003 0:39	222.838	24.735	7.446	20.985	30.117	
11/6/2003 0:40	223.838	24.741	7.448	20.988	30.114	
11/6/2003 0:41	224.838	24.741	7.446	20.985	30.114	
11/6/2003 0:42	225.838	24.741	7.446	20.985	30.114	
11/6/2003 0:43	226.838	24.741	7.446	20.986	30.11	
11/6/2003 0:44	227.838	24.741	7.446	20.986	30.112	
11/6/2003 0:45	228.838	24.741	7.446	20.981	30.112	
11/6/2003 0:46	229.838	24.741	7.446	20.986	30.11	
11/6/2003 0:47	230.838	24.741	7.448	20.985	30.112	
11/6/2003 0:48	231.838	24.741	7.446	20.986	30.112	
11/6/2003 0:49	232.838	24.741	7.446	20.992	30.11	
11/6/2003 0:50	233.838	24.741	7.444	20.985	30.114	
11/6/2003 0:51	234.838	24.748	7.448	20.985	30.11	
11/6/2003 0:52	235.838	24.741	7.444	20.983	30.114	
11/6/2003 0:53	236.838	24.735	7.444	20.981	30.117	
11/6/2003 0:54	237.838	24.741	7.446	20.985	30.117	
11/6/2003 0:55	238.838	24.723	7.442	20.981	30.114	
11/6/2003 0:56	239.838	24.735	7.444	20.979	30.114	
11/6/2003 0:57	240.838	24.735	7.446	20.977	30.114	
11/6/2003 0:58	241.838	24.735	7.444	20.981	30.114	
11/6/2003 0:59	242.838	24.723	7.444	20.981	30.112	
11/6/2003 1:00	243.838	24.748	7.446	20.981	30.11	
11/6/2003 1:01	244.838	24.735	7.442	20.979	30.11	
11/6/2003 1:02	245.838	24.748	7.446	20.977	30.11	
11/6/2003 1:03	246.838	24.735	7.442	20.983	30.11	
11/6/2003 1:04	247.838	24.741	7.444	20.979	30.11	
11/6/2003 1:05	248.838	24.735	7.446	20.979	30.108	
11/6/2003 1:06	249.838	24.735	7.446	20.977	30.108	
11/6/2003 1:07	250.838	24.729	7.444	20.977	30.108	
11/6/2003 1:08	251.838	24.741	7.446	20.977	30.108	
11/6/2003 1:09	252.838	24.735	7.442	20.979	30.11	
11/6/2003 1:10	253.838	24.735	7.442	20.971	30.108	
11/6/2003 1:11	254.838	24.735	7.444	20.975	30.11	
11/6/2003 1:12	255.838	24.741	7.444	20.975	30.11	
11/6/2003 1:13	256.838	24.735	7.442	20.971	30.108	
11/6/2003 1:14	257.838	24.723	7.444	20.973	30.11	
11/6/2003 1:15	258.838	24.735	7.444	20.975	30.11	
11/6/2003 1:16	259.838	24.729	7.442	20.973	30.11	
11/6/2003 1:17	260.838	24.729	7.444	20.975	30.11	
11/6/2003 1:18	261.838	24.729	7.446	20.973	30.112	
11/6/2003 1:19	262.838	24.729	7.44	20.97	30.11	
11/6/2003 1:20	263.838	24.729	7.442	20.975	30.114	
11/6/2003 1:21	264.838	24.729	7.442	20.971	30.114	
11/6/2003 1:22	265.838	24.735	7.44	20.971	30.114	
11/6/2003 1:23	266.838	24.729	7.44	20.97	30.114	
11/6/2003 1:24	267.838	24.723	7.442	20.97	30.117	

11/6/2003 1:25	268.838	24.729	7.44	20.97	30.114	
11/6/2003 1:26	269.838	24.723	7.44	20.968	30.114	
11/6/2003 1:27	270.838	24.723	7.44	20.968	30.119	
11/6/2003 1:28	271.838	24.723	7.44	20.966	30.117	
11/6/2003 1:29	272.838	24.723	7.44	20.966	30.114	
11/6/2003 1:30	273.838	24.723	7.44	20.968	30.114	
11/6/2003 1:31	274.838	24.723	7.436	20.966	30.114	
11/6/2003 1:32	275.838	24.723	7.44	20.966	30.112	
11/6/2003 1:33	276.838	24.729	7.44	20.966	30.11	
11/6/2003 1:34	277.838	24.723	7.44	20.966	30.108	
11/6/2003 1:35	278.838	24.729	7.44	20.966	30.108	
11/6/2003 1:36	279.838	24.729	7.44	20.968	30.108	
11/6/2003 1:37	280.838	24.729	7.442	20.968	30.106	
11/6/2003 1:38	281.838	24.729	7.44	20.97	30.104	
11/6/2003 1:39	282.838	24.723	7.442	20.968	30.108	
11/6/2003 1:40	283.838	24.729	7.442	20.966	30.104	
11/6/2003 1:41	284.838	24.717	7.442	20.964	30.106	
11/6/2003 1:42	285.838	24.723	7.44	20.966	30.108	
11/6/2003 1:43	286.838	24.723	7.442	20.962	30.106	
11/6/2003 1:44	287.838	24.723	7.44	20.964	30.106	
11/6/2003 1:45	288.838	24.729	7.444	20.962	30.104	
11/6/2003 1:46	289.838	24.729	7.442	20.968	30.106	
11/6/2003 1:47	290.838	24.717	7.442	20.966	30.102	
11/6/2003 1:48	291.838	24.729	7.44	20.96	30.104	
11/6/2003 1:49	292.838	24.723	7.44	20.962	30.106	
11/6/2003 1:50	293.838	24.723	7.44	20.962	30.106	
11/6/2003 1:51	294.838	24.729	7.44	20.962	30.106	
11/6/2003 1:52	295.838	24.729	7.44	20.962	30.104	
11/6/2003 1:53	296.838	24.723	7.436	20.964	30.104	
11/6/2003 1:54	297.838	24.723	7.44	20.964	30.104	
11/6/2003 1:55	298.838	24.729	7.44	20.962	30.1	
11/6/2003 1:56	299.838	24.729	7.442	20.964	30.1	
11/6/2003 1:57	300.838	24.729	7.44	20.964	30.102	
11/6/2003 1:58	301.838	24.723	7.436	20.962	30.1	
11/6/2003 1:59	302.838	24.729	7.44	20.964	30.1	
11/6/2003 2:00	303.838	24.723	7.436	20.962	30.102	
11/6/2003 2:01	304.838	24.723	7.44	20.958	30.098	
11/6/2003 2:02	305.838	24.729	7.44	20.96	30.102	
11/6/2003 2:03	306.838	24.729	7.44	20.958	30.1	
11/6/2003 2:04	307.838	24.723	7.44	20.958	30.1	
11/6/2003 2:05	308.838	24.729	7.44	20.962	30.102	
11/6/2003 2:06	309.838	24.717	7.435	20.956	30.102	
11/6/2003 2:07	310.838	24.735	7.436	20.955	30.102	
11/6/2003 2:08	311.838	24.729	7.436	20.956	30.102	
11/6/2003 2:09	312.838	24.729	7.44	20.958	30.104	
11/6/2003 2:10	313.838	24.723	7.435	20.955	30.104	
11/6/2003 2:11	314.838	24.723	7.435	20.955	30.106	
11/6/2003 2:12	315.838	24.723	7.436	20.956	30.104	
11/6/2003 2:13	316.838	24.723	7.433	20.955	30.102	
11/6/2003 2:14	317.838	24.723	7.436	20.958	30.106	
11/6/2003 2:15	318.838	24.717	7.431	20.953	30.104	
11/6/2003 2:16	319.838	24.717	7.433	20.955	30.108	
11/6/2003 2:17	320.838	24.723	7.431	20.958	30.104	
11/6/2003 2:18	321.838	24.729	7.433	20.949	30.106	
11/6/2003 2:19	322.838	24.723	7.433	20.953	30.104	
11/6/2003 2:20	323.838	24.723	7.433	20.953	30.104	
11/6/2003 2:21	324.838	24.729	7.435	20.955	30.106	

11/6/2003 2:22	325.838	24.723	7.433	20.951	30.102	
11/6/2003 2:23	326.838	24.729	7.433	20.955	30.102	
11/6/2003 2:24	327.838	24.729	7.435	20.949	30.1	
11/6/2003 2:25	328.838	24.723	7.433	20.955	30.104	
11/6/2003 2:26	329.838	24.723	7.431	20.951	30.102	
11/6/2003 2:27	330.838	24.717	7.433	20.949	30.098	
11/6/2003 2:28	331.838	24.717	7.435	20.953	30.1	
11/6/2003 2:29	332.838	24.729	7.435	20.951	30.1	
11/6/2003 2:30	333.838	24.723	7.433	20.951	30.098	
11/6/2003 2:31	334.838	24.71	7.431	20.955	30.098	
11/6/2003 2:32	335.838	24.717	7.433	20.955	30.094	
11/6/2003 2:33	336.838	24.729	7.433	20.951	30.098	
11/6/2003 2:34	337.838	24.71	7.431	20.955	30.098	
11/6/2003 2:35	338.838	24.723	7.433	20.953	30.096	
11/6/2003 2:36	339.838	24.729	7.431	20.947	30.096	
11/6/2003 2:37	340.838	24.729	7.433	20.951	30.096	
11/6/2003 2:38	341.838	24.735	7.435	20.956	30.098	
11/6/2003 2:39	342.838	24.729	7.427	20.947	30.098	
11/6/2003 2:40	343.838	24.717	7.433	20.945	30.1	
11/6/2003 2:41	344.838	24.723	7.433	20.949	30.102	
11/6/2003 2:42	345.838	24.729	7.431	20.945	30.102	
11/6/2003 2:43	346.838	24.729	7.425	20.943	30.104	
11/6/2003 2:44	347.838	24.71	7.427	20.941	30.104	
11/6/2003 2:45	348.838	24.723	7.429	20.943	30.104	
11/6/2003 2:46	349.838	24.723	7.427	20.941	30.104	
11/6/2003 2:47	350.838	24.717	7.427	20.941	30.106	
11/6/2003 2:48	351.838	24.723	7.427	20.94	30.106	
11/6/2003 2:49	352.838	24.717	7.427	20.941	30.106	
11/6/2003 2:50	353.838	24.717	7.425	20.941	30.108	
11/6/2003 2:51	354.838	24.717	7.425	20.941	30.106	
11/6/2003 2:52	355.838	24.729	7.425	20.945	30.104	
11/6/2003 2:53	356.838	24.723	7.425	20.945	30.102	
11/6/2003 2:54	357.838	24.723	7.425	20.943	30.104	
11/6/2003 2:55	358.838	24.71	7.425	20.94	30.1	
11/6/2003 2:56	359.838	24.723	7.429	20.938	30.102	
11/6/2003 2:57	360.838	24.71	7.427	20.938	30.102	
11/6/2003 2:58	361.838	24.723	7.423	20.941	30.104	
11/6/2003 2:59	362.838	24.723	7.425	20.941	30.1	
11/6/2003 3:00	363.838	24.71	7.427	20.94	30.104	
11/6/2003 3:01	364.838	24.71	7.425	20.936	30.102	
11/6/2003 3:02	365.838	24.717	7.425	20.94	30.104	
11/6/2003 3:03	366.838	24.71	7.425	20.938	30.104	
11/6/2003 3:04	367.838	24.71	7.429	20.94	30.102	
11/6/2003 3:05	368.838	24.723	7.422	20.94	30.104	
11/6/2003 3:06	369.838	24.717	7.423	20.934	30.102	
11/6/2003 3:07	370.838	24.717	7.422	20.936	30.104	
11/6/2003 3:08	371.838	24.704	7.423	20.936	30.102	
11/6/2003 3:09	372.838	24.71	7.425	20.932	30.102	
11/6/2003 3:10	373.838	24.71	7.42	20.93	30.104	
11/6/2003 3:11	374.838	24.717	7.42	20.93	30.106	
11/6/2003 3:12	375.838	24.723	7.425	20.932	30.106	
11/6/2003 3:13	376.838	24.717	7.42	20.932	30.106	
11/6/2003 3:14	377.838	24.71	7.423	20.93	30.108	
11/6/2003 3:15	378.838	24.71	7.42	20.93	30.106	
11/6/2003 3:16	379.838	24.71	7.423	20.932	30.104	
11/6/2003 3:17	380.838	24.71	7.422	20.932	30.104	
11/6/2003 3:18	381.838	24.71	7.422	20.928	30.104	

11/6/2003 3:19	382.838	24.71	7.422	20.93	30.104	
11/6/2003 3:20	383.838	24.704	7.418	20.925	30.104	
11/6/2003 3:21	384.838	24.717	7.422	20.925	30.104	
11/6/2003 3:22	385.838	24.71	7.42	20.926	30.104	
11/6/2003 3:23	386.838	24.723	7.418	20.93	30.102	
11/6/2003 3:24	387.838	24.704	7.418	20.925	30.104	
11/6/2003 3:25	388.838	24.71	7.42	20.926	30.102	
11/6/2003 3:26	389.838	24.698	7.418	20.928	30.102	
11/6/2003 3:27	390.838	24.729	7.418	20.925	30.1	
11/6/2003 3:28	391.838	24.71	7.418	20.926	30.1	
11/6/2003 3:29	392.838	24.717	7.418	20.926	30.1	
11/6/2003 3:30	393.838	24.71	7.42	20.926	30.102	
11/6/2003 3:31	394.838	24.723	7.416	20.923	30.102	
11/6/2003 3:32	395.838	24.71	7.416	20.923	30.104	
11/6/2003 3:33	396.838	24.71	7.418	20.921	30.104	
11/6/2003 3:34	397.838	24.704	7.416	20.926	30.102	
11/6/2003 3:35	398.838	24.704	7.416	20.923	30.104	
11/6/2003 3:36	399.838	24.71	7.416	20.921	30.106	
11/6/2003 3:37	400.838	24.704	7.414	20.917	30.106	
11/6/2003 3:38	401.838	24.717	7.414	20.919	30.104	
11/6/2003 3:39	402.838	24.71	7.414	20.919	30.106	
11/6/2003 3:40	403.838	24.704	7.414	20.921	30.108	
11/6/2003 3:41	404.838	24.71	7.412	20.917	30.106	
11/6/2003 3:42	405.838	24.704	7.41	20.919	30.108	
11/6/2003 3:43	406.838	24.704	7.414	20.921	30.106	
11/6/2003 3:44	407.838	24.71	7.414	20.919	30.106	
11/6/2003 3:45	408.838	24.698	7.412	20.917	30.106	
11/6/2003 3:46	409.838	24.71	7.412	20.919	30.102	
11/6/2003 3:47	410.838	24.71	7.412	20.915	30.102	
11/6/2003 3:48	411.838	24.71	7.412	20.917	30.104	
11/6/2003 3:49	412.838	24.704	7.41	20.915	30.102	
11/6/2003 3:50	413.838	24.717	7.416	20.919	30.102	
11/6/2003 3:51	414.838	24.704	7.412	20.915	30.102	
11/6/2003 3:52	415.838	24.704	7.412	20.917	30.102	
11/6/2003 3:53	416.838	24.71	7.409	20.915	30.102	
11/6/2003 3:54	417.838	24.704	7.412	20.915	30.104	
11/6/2003 3:55	418.838	24.698	7.41	20.915	30.104	
11/6/2003 3:56	419.838	24.723	7.41	20.915	30.104	
11/6/2003 3:57	420.838	24.71	7.409	20.911	30.104	
11/6/2003 3:58	421.838	24.704	7.405	20.911	30.102	
11/6/2003 3:59	422.838	24.704	7.409	20.913	30.104	
11/6/2003 4:00	423.838	24.704	7.409	20.911	30.102	
11/6/2003 4:01	424.838	24.704	7.409	20.913	30.102	
11/6/2003 4:02	425.838	24.71	7.405	20.911	30.102	
11/6/2003 4:03	426.838	24.71	7.409	20.911	30.104	
11/6/2003 4:04	427.838	24.692	7.409	20.91	30.104	
11/6/2003 4:05	428.838	24.704	7.407	20.913	30.104	
11/6/2003 4:06	429.838	24.704	7.407	20.908	30.104	
11/6/2003 4:07	430.838	24.698	7.407	20.911	30.102	
11/6/2003 4:08	431.838	24.704	7.407	20.911	30.104	
11/6/2003 4:09	432.838	24.71	7.405	20.91	30.102	
11/6/2003 4:10	433.838	24.692	7.401	20.911	30.106	
11/6/2003 4:11	434.838	24.729	7.41	20.9	30.104	
11/6/2003 4:12	435.838	24.679	7.399	20.913	30.104	
11/6/2003 4:13	436.838	24.704	7.405	20.913	30.106	
11/6/2003 4:14	437.838	24.717	7.403	20.908	30.108	
11/6/2003 4:15	438.838	24.704	7.401	20.906	30.108	

11/6/2003 4:16	439.838	24.704	7.403	20.908	30.106	
11/6/2003 4:17	440.838	24.71	7.403	20.91	30.106	
11/6/2003 4:18	441.838	24.71	7.405	20.908	30.11	
11/6/2003 4:19	442.838	24.704	7.403	20.908	30.108	
11/6/2003 4:20	443.838	24.71	7.403	20.906	30.11	
11/6/2003 4:21	444.838	24.704	7.401	20.906	30.112	
11/6/2003 4:22	445.838	24.704	7.399	20.906	30.112	
11/6/2003 4:23	446.838	24.704	7.399	20.904	30.117	
11/6/2003 4:24	447.838	24.704	7.397	20.904	30.117	
11/6/2003 4:25	448.838	24.698	7.397	20.906	30.117	
11/6/2003 4:26	449.838	24.704	7.396	20.9	30.117	
11/6/2003 4:27	450.838	24.698	7.397	20.902	30.117	
11/6/2003 4:28	451.838	24.698	7.399	20.902	30.117	
11/6/2003 4:29	452.838	24.704	7.397	20.902	30.117	
11/6/2003 4:30	453.838	24.704	7.396	20.9	30.117	
11/6/2003 4:31	454.838	24.704	7.397	20.902	30.117	
11/6/2003 4:32	455.838	24.704	7.396	20.902	30.114	
11/6/2003 4:33	456.838	24.704	7.396	20.904	30.112	
11/6/2003 4:34	457.838	24.704	7.396	20.906	30.114	
11/6/2003 4:35	458.838	24.71	7.397	20.902	30.112	
11/6/2003 4:36	459.838	24.704	7.397	20.9	30.114	
11/6/2003 4:37	460.838	24.71	7.396	20.904	30.114	
11/6/2003 4:38	461.838	24.704	7.392	20.902	30.117	
11/6/2003 4:39	462.838	24.704	7.396	20.904	30.114	
11/6/2003 4:40	463.838	24.71	7.396	20.902	30.117	
11/6/2003 4:41	464.838	24.704	7.396	20.898	30.117	
11/6/2003 4:42	465.838	24.704	7.394	20.9	30.119	
11/6/2003 4:43	466.838	24.704	7.394	20.9	30.117	
11/6/2003 4:44	467.838	24.704	7.394	20.896	30.119	
11/6/2003 4:45	468.838	24.71	7.392	20.9	30.117	
11/6/2003 4:46	469.838	24.704	7.394	20.898	30.117	
11/6/2003 4:47	470.838	24.71	7.392	20.9	30.117	
11/6/2003 4:48	471.838	24.704	7.392	20.898	30.117	
11/6/2003 4:49	472.838	24.71	7.392	20.9	30.117	
11/6/2003 4:50	473.838	24.71	7.392	20.898	30.121	
11/6/2003 4:51	474.838	24.71	7.392	20.9	30.121	
11/6/2003 4:52	475.838	24.71	7.392	20.9	30.121	
11/6/2003 4:53	476.838	24.71	7.39	20.896	30.121	
11/6/2003 4:54	477.838	24.704	7.39	20.898	30.123	
11/6/2003 4:55	478.838	24.704	7.39	20.9	30.123	
11/6/2003 4:56	479.838	24.71	7.39	20.898	30.123	
11/6/2003 4:57	480.838	24.71	7.39	20.9	30.125	
11/6/2003 4:58	481.838	24.71	7.39	20.896	30.125	
11/6/2003 4:59	482.838	24.71	7.392	20.9	30.125	
11/6/2003 5:00	483.838	24.704	7.39	20.896	30.125	
11/6/2003 5:01	484.838	24.71	7.39	20.896	30.123	
11/6/2003 5:02	485.838	24.71	7.388	20.898	30.123	
11/6/2003 5:03	486.838	24.704	7.39	20.896	30.125	
11/6/2003 5:04	487.838	24.71	7.388	20.895	30.121	
11/6/2003 5:05	488.838	24.71	7.388	20.895	30.123	
11/6/2003 5:06	489.838	24.71	7.388	20.895	30.125	
11/6/2003 5:07	490.838	24.717	7.388	20.891	30.125	
11/6/2003 5:08	491.838	24.71	7.386	20.891	30.123	
11/6/2003 5:09	492.838	24.71	7.386	20.898	30.123	
11/6/2003 5:10	493.838	24.71	7.386	20.895	30.121	
11/6/2003 5:11	494.838	24.71	7.386	20.893	30.119	
11/6/2003 5:12	495.838	24.71	7.386	20.896	30.117	

11/6/2003 5:13	496.838	24.717	7.386	20.896	30.117	
11/6/2003 5:14	497.838	24.723	7.388	20.896	30.117	
11/6/2003 5:15	498.838	24.717	7.388	20.896	30.117	
11/6/2003 5:16	499.838	24.717	7.388	20.898	30.119	
11/6/2003 5:17	500.838	24.717	7.388	20.896	30.117	
11/6/2003 5:18	501.838	24.717	7.386	20.891	30.119	
11/6/2003 5:19	502.838	24.717	7.386	20.889	30.119	
11/6/2003 5:20	503.838	24.723	7.386	20.887	30.119	
11/6/2003 5:21	504.838	24.717	7.384	20.887	30.117	
11/6/2003 5:22	505.838	24.717	7.384	20.883	30.117	
11/6/2003 5:23	506.838	24.717	7.384	20.887	30.117	
11/6/2003 5:24	507.838	24.723	7.384	20.881	30.119	
11/6/2003 5:25	508.838	24.717	7.384	20.881	30.114	
11/6/2003 5:26	509.838	24.723	7.382	20.881	30.117	
11/6/2003 5:27	510.838	24.723	7.384	20.881	30.117	
11/6/2003 5:28	511.838	24.723	7.382	20.881	30.117	
11/6/2003 5:29	512.838	24.723	7.382	20.883	30.119	
11/6/2003 5:30	513.838	24.723	7.382	20.881	30.119	
11/6/2003 5:31	514.838	24.723	7.382	20.881	30.119	
11/6/2003 5:32	515.838	24.723	7.382	20.881	30.117	
11/6/2003 5:33	516.838	24.723	7.382	20.885	30.117	
11/6/2003 5:34	517.838	24.723	7.381	20.881	30.117	
11/6/2003 5:35	518.838	24.723	7.381	20.881	30.119	
11/6/2003 5:36	519.838	24.723	7.381	20.881	30.119	
11/6/2003 5:37	520.838	24.723	7.381	20.881	30.119	
11/6/2003 5:38	521.838	24.723	7.379	20.881	30.119	
11/6/2003 5:39	522.838	24.729	7.379	20.881	30.121	
11/6/2003 5:40	523.838	24.729	7.382	20.881	30.121	
11/6/2003 5:41	524.838	24.729	7.379	20.881	30.123	
11/6/2003 5:42	525.838	24.729	7.379	20.885	30.119	
11/6/2003 5:43	526.838	24.729	7.379	20.881	30.123	
11/6/2003 5:44	527.838	24.729	7.379	20.885	30.121	
11/6/2003 5:45	528.838	24.729	7.379	20.88	30.119	
11/6/2003 5:46	529.838	24.729	7.379	20.885	30.123	
11/6/2003 5:47	530.838	24.735	7.379	20.885	30.121	
11/6/2003 5:48	531.838	24.729	7.379	20.88	30.123	
11/6/2003 5:49	532.838	24.723	7.377	20.889	30.123	
11/6/2003 5:50	533.838	24.735	7.377	20.885	30.127	
11/6/2003 5:51	534.838	24.729	7.377	20.881	30.123	
11/6/2003 5:52	535.838	24.735	7.377	20.885	30.125	
11/6/2003 5:53	536.838	24.735	7.377	20.887	30.125	
11/6/2003 5:54	537.838	24.735	7.377	20.885	30.127	
11/6/2003 5:55	538.838	24.729	7.377	20.887	30.127	
11/6/2003 5:56	539.838	24.729	7.373	20.887	30.127	
11/6/2003 5:57	540.838	24.735	7.373	20.881	30.127	
11/6/2003 5:58	541.838	24.735	7.373	20.887	30.127	
11/6/2003 5:59	542.838	24.735	7.373	20.885	30.129	
11/6/2003 6:00	543.838	24.735	7.373	20.885	30.129	
11/6/2003 6:01	544.838	24.741	7.373	20.885	30.127	
11/6/2003 6:02	545.838	24.741	7.371	20.885	30.129	
11/6/2003 6:03	546.838	24.741	7.373	20.889	30.127	
11/6/2003 6:04	547.838	24.741	7.373	20.885	30.129	
11/6/2003 6:05	548.838	24.741	7.371	20.887	30.127	
11/6/2003 6:06	549.838	24.748	7.371	20.891	30.129	
11/6/2003 6:07	550.838	24.735	7.371	20.889	30.131	
11/6/2003 6:08	551.838	24.741	7.371	20.889	30.129	
11/6/2003 6:09	552.838	24.741	7.373	20.889	30.131	

11/6/2003 6:10	553.838	24.741	7.373	20.889	30.129	
11/6/2003 6:11	554.838	24.741	7.373	20.889	30.131	
11/6/2003 6:12	555.838	24.741	7.371	20.891	30.129	
11/6/2003 6:13	556.838	24.741	7.371	20.889	30.129	
11/6/2003 6:14	557.838	24.741	7.373	20.889	30.129	
11/6/2003 6:15	558.838	24.741	7.371	20.891	30.131	
11/6/2003 6:16	559.838	24.748	7.371	20.891	30.131	
11/6/2003 6:17	560.838	24.754	7.371	20.893	30.131	
11/6/2003 6:18	561.838	24.748	7.371	20.893	30.131	
11/6/2003 6:19	562.838	24.754	7.371	20.893	30.131	
11/6/2003 6:20	563.838	24.748	7.371	20.891	30.135	
11/6/2003 6:21	564.838	24.748	7.371	20.891	30.135	
11/6/2003 6:22	565.838	24.748	7.369	20.891	30.135	
11/6/2003 6:23	566.838	24.754	7.369	20.893	30.135	
11/6/2003 6:24	567.838	24.754	7.369	20.891	30.135	
11/6/2003 6:25	568.838	24.754	7.369	20.891	30.135	
11/6/2003 6:26	569.838	24.754	7.369	20.893	30.135	
11/6/2003 6:27	570.838	24.754	7.369	20.893	30.137	
11/6/2003 6:28	571.838	24.754	7.369	20.893	30.135	
11/6/2003 6:29	572.838	24.754	7.369	20.893	30.135	
11/6/2003 6:30	573.838	24.76	7.369	20.893	30.137	
11/6/2003 6:31	574.838	24.76	7.371	20.895	30.137	
11/6/2003 6:32	575.838	24.76	7.368	20.895	30.137	
11/6/2003 6:33	576.838	24.76	7.369	20.896	30.137	
11/6/2003 6:34	577.838	24.76	7.369	20.895	30.137	
11/6/2003 6:35	578.838	24.76	7.369	20.896	30.137	
11/6/2003 6:36	579.838	24.766	7.369	20.895	30.137	
11/6/2003 6:37	580.838	24.766	7.369	20.896	30.137	
11/6/2003 6:38	581.838	24.76	7.369	20.895	30.139	
11/6/2003 6:39	582.838	24.766	7.369	20.898	30.137	
11/6/2003 6:40	583.838	24.76	7.368	20.904	30.141	
11/6/2003 6:41	584.838	24.766	7.369	20.9	30.141	
11/6/2003 6:42	585.838	24.766	7.369	20.896	30.141	
11/6/2003 6:43	586.838	24.773	7.368	20.898	30.139	
11/6/2003 6:44	587.838	24.773	7.369	20.895	30.139	
11/6/2003 6:45	588.838	24.773	7.369	20.898	30.141	
11/6/2003 6:46	589.838	24.766	7.368	20.898	30.141	
11/6/2003 6:47	590.838	24.773	7.369	20.898	30.141	
11/6/2003 6:48	591.838	24.779	7.369	20.904	30.141	
11/6/2003 6:49	592.838	24.773	7.369	20.904	30.141	
11/6/2003 6:50	593.838	24.773	7.369	20.904	30.141	
11/6/2003 6:51	594.838	24.773	7.369	20.904	30.139	
11/6/2003 6:52	595.838	24.773	7.373	20.904	30.141	
11/6/2003 6:53	596.838	24.779	7.369	20.902	30.143	
11/6/2003 6:54	597.838	24.779	7.369	20.904	30.143	
11/6/2003 6:55	598.838	24.779	7.369	20.904	30.143	
11/6/2003 6:56	599.838	24.779	7.369	20.906	30.139	
11/6/2003 6:57	600.838	24.785	7.369	20.904	30.139	
11/6/2003 6:58	601.838	24.785	7.369	20.906	30.139	
11/6/2003 6:59	602.838	24.785	7.369	20.906	30.139	
11/6/2003 7:00	603.838	24.779	7.369	20.904	30.139	
11/6/2003 7:01	604.838	24.785	7.373	20.908	30.139	
11/6/2003 7:02	605.838	24.785	7.369	20.906	30.139	
11/6/2003 7:03	606.838	24.785	7.373	20.91	30.137	
11/6/2003 7:04	607.838	24.785	7.373	20.91	30.137	
11/6/2003 7:05	608.838	24.791	7.373	20.908	30.137	
11/6/2003 7:06	609.838	24.785	7.369	20.908	30.137	

11/6/2003 7:07	610.838	24.791	7.368	20.906	30.139	
11/6/2003 7:08	611.838	24.791	7.369	20.906	30.143	
11/6/2003 7:09	612.838	24.785	7.369	20.904	30.141	
11/6/2003 7:10	613.838	24.785	7.371	20.906	30.139	
11/6/2003 7:11	614.838	24.791	7.368	20.906	30.143	
11/6/2003 7:12	615.838	24.791	7.373	20.904	30.141	
11/6/2003 7:13	616.838	24.798	7.371	20.908	30.141	
11/6/2003 7:14	617.838	24.798	7.368	20.906	30.141	
11/6/2003 7:15	618.838	24.791	7.368	20.906	30.145	
11/6/2003 7:16	619.838	24.798	7.371	20.906	30.143	
11/6/2003 7:17	620.838	24.798	7.371	20.906	30.143	
11/6/2003 7:18	621.838	24.798	7.371	20.906	30.143	
11/6/2003 7:19	622.838	24.798	7.368	20.906	30.143	
11/6/2003 7:20	623.838	24.798	7.371	20.904	30.145	
11/6/2003 7:21	624.838	24.804	7.368	20.908	30.143	
11/6/2003 7:22	625.838	24.791	7.368	20.906	30.145	
11/6/2003 7:23	626.838	24.798	7.36	20.91	30.145	
11/6/2003 7:24	627.838	24.804	7.368	20.91	30.147	
11/6/2003 7:25	628.838	24.804	7.368	20.908	30.147	
11/6/2003 7:26	629.838	24.81	7.362	20.911	30.147	
11/6/2003 7:27	630.838	24.804	7.369	20.908	30.147	
11/6/2003 7:28	631.838	24.798	7.369	20.908	30.149	
11/6/2003 7:29	632.838	24.798	7.371	20.91	30.149	
11/6/2003 7:30	633.838	24.804	7.366	20.908	30.149	
11/6/2003 7:31	634.838	24.804	7.369	20.91	30.149	
11/6/2003 7:32	635.838	24.816	7.369	20.908	30.149	
11/6/2003 7:33	636.838	24.816	7.371	20.91	30.151	
11/6/2003 7:34	637.838	24.822	7.369	20.91	30.149	
11/6/2003 7:35	638.838	24.804	7.366	20.908	30.149	
11/6/2003 7:36	639.838	24.816	7.368	20.91	30.149	
11/6/2003 7:37	640.838	24.816	7.371	20.911	30.147	
11/6/2003 7:38	641.838	24.816	7.368	20.91	30.151	
11/6/2003 7:39	642.838	24.816	7.369	20.911	30.151	
11/6/2003 7:40	643.838	24.816	7.371	20.913	30.151	
11/6/2003 7:41	644.838	24.816	7.369	20.911	30.151	
11/6/2003 7:42	645.838	24.816	7.371	20.91	30.151	
11/6/2003 7:43	646.838	24.822	7.371	20.915	30.153	
11/6/2003 7:44	647.838	24.822	7.369	20.915	30.155	
11/6/2003 7:45	648.838	24.822	7.371	20.915	30.151	
11/6/2003 7:46	649.838	24.816	7.369	20.911	30.153	
11/6/2003 7:47	650.838	24.822	7.369	20.913	30.153	
11/6/2003 7:48	651.838	24.822	7.368	20.915	30.157	
11/6/2003 7:49	652.838	24.822	7.369	20.913	30.157	
11/6/2003 7:50	653.838	24.816	7.369	20.913	30.155	
11/6/2003 7:51	654.838	24.822	7.369	20.915	30.155	
11/6/2003 7:52	655.838	24.822	7.369	20.913	30.155	
11/6/2003 7:53	656.838	24.822	7.369	20.917	30.155	
11/6/2003 7:54	657.838	24.829	7.369	20.915	30.155	
11/6/2003 7:55	658.838	24.829	7.369	20.913	30.155	
11/6/2003 7:56	659.838	24.822	7.369	20.917	30.155	
11/6/2003 7:57	660.838	24.829	7.371	20.913	30.153	
11/6/2003 7:58	661.838	24.829	7.371	20.917	30.153	
11/6/2003 7:59	662.838	24.829	7.368	20.913	30.155	
11/6/2003 8:00	663.838	24.822	7.371	20.917	30.151	
11/6/2003 8:01	664.838	24.829	7.371	20.921	30.155	
11/6/2003 8:02	665.838	24.829	7.369	20.919	30.151	
11/6/2003 8:03	666.838	24.835	7.371	20.923	30.149	

11/6/2003 8:04	667.838	24.835	7.371	20.923	30.149	
11/6/2003 8:05	668.838	24.835	7.373	20.923	30.151	
11/6/2003 8:06	669.838	24.835	7.373	20.923	30.151	
11/6/2003 8:07	670.838	24.835	7.371	20.923	30.153	
11/6/2003 8:08	671.838	24.835	7.371	20.923	30.155	
11/6/2003 8:09	672.838	24.835	7.371	20.923	30.155	
11/6/2003 8:10	673.838	24.835	7.373	20.925	30.155	
11/6/2003 8:11	674.838	24.841	7.371	20.923	30.157	
11/6/2003 8:12	675.838	24.835	7.371	20.923	30.159	
11/6/2003 8:13	676.838	24.835	7.371	20.923	30.159	
11/6/2003 8:14	677.838	24.841	7.371	20.925	30.159	
11/6/2003 8:15	678.838	24.841	7.371	20.923	30.159	
11/6/2003 8:16	679.838	24.835	7.371	20.923	30.159	
11/6/2003 8:17	680.838	24.835	7.371	20.923	30.159	
11/6/2003 8:18	681.838	24.841	7.371	20.925	30.159	
11/6/2003 8:19	682.838	24.847	7.371	20.925	30.157	
11/6/2003 8:20	683.838	24.841	7.373	20.925	30.159	
11/6/2003 8:21	684.838	24.847	7.373	20.925	30.159	
11/6/2003 8:22	685.838	24.847	7.373	20.926	30.161	
11/6/2003 8:23	686.838	24.841	7.371	20.925	30.165	
11/6/2003 8:24	687.838	24.847	7.371	20.923	30.163	
11/6/2003 8:25	688.838	24.847	7.371	20.925	30.163	
11/6/2003 8:26	689.838	24.847	7.373	20.925	30.163	
11/6/2003 8:27	690.838	24.847	7.371	20.925	30.163	
11/6/2003 8:28	691.838	24.847	7.373	20.925	30.163	
11/6/2003 8:29	692.838	24.847	7.373	20.928	30.163	
11/6/2003 8:30	693.838	24.847	7.373	20.928	30.161	
11/6/2003 8:31	694.838	24.841	7.371	20.926	30.161	
11/6/2003 8:32	695.838	24.847	7.373	20.926	30.161	
11/6/2003 8:33	696.838	24.847	7.373	20.928	30.161	
11/6/2003 8:34	697.838	24.854	7.373	20.926	30.163	
11/6/2003 8:35	698.838	24.847	7.373	20.928	30.163	
11/6/2003 8:36	699.838	24.847	7.373	20.928	30.163	
11/6/2003 8:37	700.838	24.847	7.371	20.925	30.155	
11/6/2003 8:38	701.838	24.854	7.373	20.926	30.157	
11/6/2003 8:39	702.838	24.854	7.373	20.928	30.159	
11/6/2003 8:40	703.838	24.841	7.375	20.928	30.159	
11/6/2003 8:41	704.838	24.854	7.377	20.928	30.155	
11/6/2003 8:42	705.838	24.854	7.377	20.93	30.157	
11/6/2003 8:43	706.838	24.854	7.377	20.932	30.157	
11/6/2003 8:44	707.838	24.86	7.373	20.936	30.157	
11/6/2003 8:45	708.838	24.847	7.375	20.938	30.159	
11/6/2003 8:46	709.838	24.854	7.377	20.934	30.159	
11/6/2003 8:47	710.838	24.86	7.377	20.932	30.159	
11/6/2003 8:48	711.838	24.866	7.375	20.934	30.159	
11/6/2003 8:49	712.838	24.847	7.377	20.934	30.151	
11/6/2003 8:50	713.838	24.866	7.371	20.936	30.153	
11/6/2003 8:51	714.838	24.847	7.375	20.938	30.143	
11/6/2003 8:52	715.838	24.878	7.379	20.936	30.131	
11/6/2003 8:53	716.838	24.872	7.381	20.938	30.141	
11/6/2003 8:54	717.838	24.866	7.379	20.934	30.143	
11/6/2003 8:55	718.838	24.872	7.381	20.938	30.147	
11/6/2003 8:56	719.838	24.866	7.381	20.94	30.151	
11/6/2003 8:57	720.838	24.878	7.379	20.938	30.161	
11/6/2003 8:58	721.838	24.866	7.377	20.936	30.135	
11/6/2003 8:59	722.838	24.866	7.381	20.941	30.153	
11/6/2003 9:00	723.838	24.878	7.375	20.936	30.165	

11/6/2003 9:01	724.838	24.86	7.375	20.917	30.147	
11/6/2003 9:02	725.838	24.835	7.375	20.93	30.141	
11/6/2003 9:03	726.838	24.866	7.377	20.934	30.157	
11/6/2003 9:04	727.838	24.86	7.379	20.936	30.161	
11/6/2003 9:05	728.838	24.872	7.381	20.94	30.163	
11/6/2003 9:06	729.838	24.866	7.381	20.94	30.163	
11/6/2003 9:07	730.838	24.872	7.379	20.94	30.165	
11/6/2003 9:08	731.838	24.872	7.381	20.94	30.167	
11/6/2003 9:09	732.838	24.878	7.381	20.94	30.167	
11/6/2003 9:10	733.838	24.872	7.379	20.94	30.167	
11/6/2003 9:11	734.838	24.872	7.381	20.945	30.167	
11/6/2003 9:12	735.838	24.878	7.379	20.94	30.165	
11/6/2003 9:13	736.838	24.878	7.381	20.943	30.165	
11/6/2003 9:14	737.838	24.878	7.382	20.945	30.165	
11/6/2003 9:15	738.838	24.878	7.381	20.943	30.165	
11/6/2003 9:16	739.838	24.878	7.381	20.945	30.165	
11/6/2003 9:17	740.838	24.878	7.382	20.945	30.163	
11/6/2003 9:18	741.838	24.878	7.382	20.945	30.165	
11/6/2003 9:19	742.838	24.878	7.382	20.945	30.165	
11/6/2003 9:20	743.838	24.878	7.382	20.947	30.165	
11/6/2003 9:21	744.838	24.885	7.382	20.947	30.165	
11/6/2003 9:22	745.838	24.872	7.382	20.943	30.165	
11/6/2003 9:23	746.838	24.941	7.384	20.949	30.165	
11/6/2003 9:24	747.838	24.934	7.384	20.951	30.161	
11/6/2003 9:25	748.838	24.916	7.386	20.949	30.163	
11/6/2003 9:26	749.838	24.916	7.386	20.951	30.163	
11/6/2003 9:27	750.838	24.91	7.386	20.951	30.163	
11/6/2003 9:28	751.838	24.903	7.384	20.945	30.163	
11/6/2003 9:29	752.838	24.903	7.384	20.949	30.165	
11/6/2003 9:30	753.838	24.91	7.382	20.949	30.165	
11/6/2003 9:31	754.838	24.872	7.384	20.953	30.167	
11/6/2003 9:32	755.838	24.891	7.386	20.951	30.165	
11/6/2003 9:33	756.838	24.878	7.384	20.949	30.167	
11/6/2003 9:34	757.838	24.86	7.386	20.951	30.167	
11/6/2003 9:35	758.838	24.885	7.384	20.951	30.165	
11/6/2003 9:36	759.838	24.878	7.382	20.951	30.165	
11/6/2003 9:37	760.838	24.891	7.382	20.951	30.165	
11/6/2003 9:38	761.838	24.885	7.384	20.953	30.165	
11/6/2003 9:39	762.838	24.885	7.388	20.955	30.163	
11/6/2003 9:40	763.838	24.885	7.386	20.953	30.163	
11/6/2003 9:41	764.838	24.872	7.384	20.955	30.163	
11/6/2003 9:42	765.838	24.891	7.388	20.955	30.167	
11/6/2003 9:43	766.838	24.885	7.388	20.955	30.165	
11/6/2003 9:44	767.838	24.878	7.388	20.955	30.167	
11/6/2003 9:45	768.838	24.878	7.388	20.953	30.167	
11/6/2003 9:46	769.838	24.872	7.384	20.951	30.167	
11/6/2003 9:47	770.838	24.878	7.386	20.953	30.169	
11/6/2003 9:48	771.838	24.885	7.386	20.951	30.169	
11/6/2003 9:49	772.838	24.885	7.386	20.953	30.171	
11/6/2003 9:50	773.838	24.885	7.382	20.953	30.171	
11/6/2003 9:51	774.838	24.878	7.382	20.949	30.169	
11/6/2003 9:52	775.838	24.891	7.384	20.951	30.171	
11/6/2003 9:53	776.838	24.891	7.386	20.955	30.171	
11/6/2003 9:54	777.838	24.885	7.384	20.955	30.171	
11/6/2003 9:55	778.838	24.897	7.384	20.956	30.174	
11/6/2003 9:56	779.838	24.891	7.384	20.953	30.174	
11/6/2003 9:57	780.838	24.891	7.381	20.953	30.176	

11/6/2003 9:58	781.838	24.885	7.384	20.955	30.174	
11/6/2003 9:59	782.838	24.897	7.382	20.953	30.176	
11/6/2003 10:00	783.838	24.891	7.382	20.953	30.174	
11/6/2003 10:01	784.838	24.885	7.384	20.96	30.171	
11/6/2003 10:02	785.838	24.891	7.382	20.956	30.171	
11/6/2003 10:03	786.838	24.897	7.382	20.958	30.174	
11/6/2003 10:04	787.838	24.897	7.382	20.956	30.171	
11/6/2003 10:05	788.838	24.897	7.382	20.956	30.171	
11/6/2003 10:06	789.838	24.897	7.386	20.96	30.174	
11/6/2003 10:07	790.838	24.903	7.384	20.96	30.174	
11/6/2003 10:08	791.838	24.903	7.384	20.956	30.171	
11/6/2003 10:09	792.838	24.903	7.386	20.962	30.171	
11/6/2003 10:10	793.838	24.897	7.384	20.958	30.171	
11/6/2003 10:11	794.838	24.903	7.384	20.958	30.171	
11/6/2003 10:12	795.838	24.897	7.388	20.962	30.171	
11/6/2003 10:13	796.838	24.897	7.386	20.958	30.174	
11/6/2003 10:14	797.838	24.897	7.388	20.964	30.176	
11/6/2003 10:15	798.838	24.91	7.388	20.958	30.174	
11/6/2003 10:16	799.838	24.903	7.39	20.962	30.176	
11/6/2003 10:17	800.838	24.91	7.388	20.962	30.174	
11/6/2003 10:18	801.838	24.91	7.386	20.96	30.176	
11/6/2003 10:19	802.838	24.91	7.39	20.96	30.176	
11/6/2003 10:20	803.838	24.91	7.39	20.96	30.178	
11/6/2003 10:21	804.838	24.916	7.392	20.964	30.176	
11/6/2003 10:22	805.838	24.91	7.392	20.964	30.178	
11/6/2003 10:23	806.838	24.916	7.39	20.962	30.178	
11/6/2003 10:24	807.838	24.91	7.388	20.964	30.176	
11/6/2003 10:25	808.838	24.903	7.39	20.968	30.178	
11/6/2003 10:26	809.838	24.916	7.392	20.964	30.176	
11/6/2003 10:27	810.838	24.922	7.392	20.968	30.178	
11/6/2003 10:28	811.838	24.916	7.392	20.966	30.176	
11/6/2003 10:29	812.838	24.916	7.39	20.966	30.176	
11/6/2003 10:30	813.838	24.916	7.39	20.968	30.178	
11/6/2003 10:31	814.838	24.91	7.39	20.966	30.176	
11/6/2003 10:32	815.838	24.903	7.388	20.966	30.176	
11/6/2003 10:33	816.838	24.916	7.392	20.968	30.174	
11/6/2003 10:34	817.838	24.916	7.39	20.968	30.174	
11/6/2003 10:35	818.838	24.916	7.39	20.966	30.176	
11/6/2003 10:36	819.838	24.916	7.39	20.966	30.178	
11/6/2003 10:37	820.838	24.922	7.39	20.964	30.176	
11/6/2003 10:38	821.838	24.922	7.39	20.964	30.174	
11/6/2003 10:39	822.838	24.922	7.386	20.962	30.176	
11/6/2003 10:40	823.838	24.916	7.392	20.964	30.176	
11/6/2003 10:41	824.838	24.928	7.39	20.951	30.176	
11/6/2003 10:42	825.838	24.928	7.39	20.968	30.178	
11/6/2003 10:43	826.838	24.916	7.388	20.971	30.178	
11/6/2003 10:44	827.838	24.916	7.392	20.97	30.176	
11/6/2003 10:45	828.838	24.916	7.392	20.966	30.176	
11/6/2003 10:46	829.838	24.928	7.39	20.968	30.176	
11/6/2003 10:47	830.838	24.934	7.39	20.97	30.174	
11/6/2003 10:48	831.838	24.934	7.392	20.964	30.174	
11/6/2003 10:49	832.838	24.934	7.396	20.968	30.174	
11/6/2003 10:50	833.838	24.934	7.396	20.97	30.174	
11/6/2003 10:51	834.838	24.916	7.396	20.971	30.176	
11/6/2003 10:52	835.838	24.941	7.397	20.973	30.176	
11/6/2003 10:53	836.838	24.928	7.399	20.973	30.174	
11/6/2003 10:54	837.838	24.934	7.399	20.973	30.174	

11/6/2003 10:55	838.838	24.934	7.397	20.973	30.174	
11/6/2003 10:56	839.838	24.928	7.396	20.973	30.174	
11/6/2003 10:57	840.838	24.928	7.399	20.975	30.171	
11/6/2003 10:58	841.838	24.941	7.397	20.973	30.174	
11/6/2003 10:59	842.838	24.928	7.396	20.977	30.171	
11/6/2003 11:00	843.838	24.934	7.397	20.973	30.174	
11/6/2003 11:01	844.838	24.941	7.397	20.973	30.171	
11/6/2003 11:02	845.838	24.928	7.397	20.973	30.171	
11/6/2003 11:03	846.838	24.928	7.397	20.975	30.174	
11/6/2003 11:04	847.838	24.941	7.399	20.966	30.171	
11/6/2003 11:05	848.838	24.947	7.397	20.973	30.171	
11/6/2003 11:06	849.838	24.941	7.399	20.977	30.174	
11/6/2003 11:07	850.838	24.928	7.399	20.975	30.174	
11/6/2003 11:08	851.838	24.934	7.399	20.973	30.174	
11/6/2003 11:09	852.838	24.934	7.401	20.979	30.174	
11/6/2003 11:10	853.838	24.941	7.401	20.979	30.174	
11/6/2003 11:11	854.838	24.934	7.399	20.977	30.174	
11/6/2003 11:12	855.838	24.953	7.401	20.977	30.171	
11/6/2003 11:13	856.838	24.947	7.401	20.975	30.174	
11/6/2003 11:14	857.838	24.941	7.401	20.977	30.174	
11/6/2003 11:15	858.838	24.959	7.407	20.981	30.176	
11/6/2003 11:16	859.838	24.941	7.401	20.975	30.176	
11/6/2003 11:17	860.838	24.947	7.405	20.971	30.178	
11/6/2003 11:18	861.838	24.941	7.403	20.975	30.178	
11/6/2003 11:19	862.838	24.941	7.405	20.977	30.178	
11/6/2003 11:20	863.838	24.941	7.405	20.975	30.178	
11/6/2003 11:21	864.838	24.947	7.409	20.979	30.178	
11/6/2003 11:22	865.838	24.941	7.405	20.977	30.176	
11/6/2003 11:23	866.838	24.941	7.409	20.977	30.174	
11/6/2003 11:24	867.838	24.953	7.405	20.975	30.176	
11/6/2003 11:25	868.838	24.947	7.407	20.977	30.174	
11/6/2003 11:26	869.838	24.947	7.407	20.977	30.174	
11/6/2003 11:27	870.838	24.941	7.409	20.977	30.171	
11/6/2003 11:28	871.838	24.941	7.399	20.975	30.171	
11/6/2003 11:29	872.838	24.947	7.407	20.979	30.171	
11/6/2003 11:30	873.838	24.947	7.409	20.979	30.169	
11/6/2003 11:31	874.838	24.947	7.409	20.979	30.171	
11/6/2003 11:32	875.838	24.947	7.41	20.981	30.169	
11/6/2003 11:33	876.838	24.947	7.409	20.981	30.169	
11/6/2003 11:34	877.838	24.941	7.409	20.979	30.169	
11/6/2003 11:35	878.838	24.947	7.412	20.979	30.169	
11/6/2003 11:36	879.838	24.947	7.409	20.979	30.169	
11/6/2003 11:37	880.838	24.947	7.414	20.981	30.167	
11/6/2003 11:38	881.838	24.947	7.409	20.983	30.165	
11/6/2003 11:39	882.838	24.953	7.41	20.981	30.169	
11/6/2003 11:40	883.838	24.947	7.41	20.979	30.169	
11/6/2003 11:41	884.838	24.953	7.414	20.983	30.167	
11/6/2003 11:42	885.838	24.941	7.412	20.981	30.167	
11/6/2003 11:43	886.838	24.947	7.414	20.983	30.167	
11/6/2003 11:44	887.838	24.947	7.412	20.981	30.167	
11/6/2003 11:45	888.838	24.947	7.41	20.981	30.167	
11/6/2003 11:46	889.838	24.941	7.414	20.977	30.165	
11/6/2003 11:47	890.838	24.953	7.414	20.979	30.165	
11/6/2003 11:48	891.838	24.947	7.412	20.983	30.163	
11/6/2003 11:49	892.838	24.947	7.414	20.983	30.163	
11/6/2003 11:50	893.838	24.953	7.412	20.983	30.161	
11/6/2003 11:51	894.838	24.947	7.418	20.983	30.161	

11/6/2003 11:52	895.838	24.947	7.414	20.983	30.159	
11/6/2003 11:53	896.838	24.953	7.414	20.983	30.159	
11/6/2003 11:54	897.838	24.959	7.412	20.983	30.159	
11/6/2003 11:55	898.838	24.959	7.412	20.985	30.159	
11/6/2003 11:56	899.838	24.953	7.416	20.983	30.159	
11/6/2003 11:57	900.838	24.953	7.414	20.983	30.159	
11/6/2003 11:58	901.838	24.953	7.414	20.983	30.161	
11/6/2003 11:59	902.838	24.947	7.414	20.981	30.161	
11/6/2003 12:00	903.838	24.953	7.414	20.981	30.161	
11/6/2003 12:01	904.838	24.953	7.418	20.986	30.161	
11/6/2003 12:02	905.838	24.959	7.418	20.986	30.161	
11/6/2003 12:03	906.838	24.947	7.416	20.986	30.161	
11/6/2003 12:04	907.838	24.953	7.418	20.986	30.161	
11/6/2003 12:05	908.838	24.966	7.416	20.986	30.159	
11/6/2003 12:06	909.838	24.941	7.418	20.986	30.159	
11/6/2003 12:07	910.838	24.947	7.418	20.986	30.157	
11/6/2003 12:08	911.838	24.966	7.416	20.985	30.157	
11/6/2003 12:09	912.838	24.959	7.416	20.986	30.155	
11/6/2003 12:10	913.838	24.947	7.418	20.985	30.155	
11/6/2003 12:11	914.838	24.953	7.416	20.986	30.155	
11/6/2003 12:12	915.838	24.953	7.418	20.985	30.153	
11/6/2003 12:13	916.838	24.953	7.418	20.985	30.153	
11/6/2003 12:14	917.838	24.947	7.414	20.985	30.153	
11/6/2003 12:15	918.838	24.959	7.42	20.988	30.153	
11/6/2003 12:16	919.838	24.959	7.416	20.988	30.155	
11/6/2003 12:17	920.838	24.959	7.418	20.988	30.153	
11/6/2003 12:18	921.838	24.953	7.418	20.985	30.153	
11/6/2003 12:19	922.838	24.959	7.416	20.985	30.153	
11/6/2003 12:20	923.838	24.953	7.418	20.986	30.151	
11/6/2003 12:21	924.838	24.959	7.418	20.985	30.153	
11/6/2003 12:22	925.838	24.959	7.42	20.986	30.153	
11/6/2003 12:23	926.838	24.953	7.418	20.985	30.153	
11/6/2003 12:24	927.838	24.953	7.418	20.985	30.153	
11/6/2003 12:25	928.838	24.959	7.423	20.986	30.151	
11/6/2003 12:26	929.838	24.953	7.423	20.986	30.149	
11/6/2003 12:27	930.838	24.959	7.425	20.986	30.149	
11/6/2003 12:28	931.838	24.959	7.422	20.986	30.151	
11/6/2003 12:29	932.838	24.959	7.423	20.986	30.149	
11/6/2003 12:30	933.838	24.959	7.423	20.988	30.149	
11/6/2003 12:31	934.838	24.959	7.422	20.985	30.149	
11/6/2003 12:32	935.838	24.966	7.422	20.988	30.149	
11/6/2003 12:33	936.838	24.966	7.425	20.988	30.145	
11/6/2003 12:34	937.838	24.966	7.423	20.985	30.145	
11/6/2003 12:35	938.838	24.966	7.423	20.985	30.147	
11/6/2003 12:36	939.838	24.966	7.423	20.986	30.145	
11/6/2003 12:37	940.838	24.959	7.427	20.988	30.145	
11/6/2003 12:38	941.838	24.959	7.423	20.986	30.143	
11/6/2003 12:39	942.838	24.966	7.423	20.986	30.143	
11/6/2003 12:40	943.838	24.966	7.429	20.986	30.145	
11/6/2003 12:41	944.838	24.972	7.427	20.988	30.143	
11/6/2003 12:42	945.838	24.966	7.423	20.986	30.141	
11/6/2003 12:43	946.838	24.966	7.425	20.985	30.143	
11/6/2003 12:44	947.838	24.966	7.427	20.986	30.143	
11/6/2003 12:45	948.838	24.966	7.423	20.986	30.143	
11/6/2003 12:46	949.838	24.972	7.425	20.985	30.143	
11/6/2003 12:47	950.838	24.966	7.427	20.985	30.143	
11/6/2003 12:48	951.838	24.966	7.425	20.985	30.143	

11/6/2003 12:49	952.838	24.959	7.427	20.985	30.143	
11/6/2003 12:50	953.838	24.966	7.427	20.986	30.139	
11/6/2003 12:51	954.838	24.966	7.431	20.985	30.139	
11/6/2003 12:52	955.838	24.953	7.429	20.988	30.139	
11/6/2003 12:53	956.838	24.959	7.429	20.988	30.139	
11/6/2003 12:54	957.838	24.959	7.427	20.986	30.139	
11/6/2003 12:55	958.838	24.953	7.431	20.99	30.137	
11/6/2003 12:56	959.838	24.959	7.431	20.986	30.135	
11/6/2003 12:57	960.838	24.953	7.429	20.988	30.135	
11/6/2003 12:58	961.838	24.966	7.427	20.985	30.135	
11/6/2003 12:59	962.838	24.966	7.433	20.988	30.135	
11/6/2003 13:00	963.838	24.966	7.427	20.988	30.133	
11/6/2003 13:01	964.838	24.966	7.431	20.988	30.133	
11/6/2003 13:02	965.838	24.966	7.431	20.99	30.133	
11/6/2003 13:03	966.838	24.966	7.427	20.988	30.131	
11/6/2003 13:04	967.838	24.972	7.431	20.988	30.133	
11/6/2003 13:05	968.838	24.966	7.431	20.988	30.131	
11/6/2003 13:06	969.838	24.966	7.433	20.99	30.129	
11/6/2003 13:07	970.838	24.959	7.431	20.986	30.131	
11/6/2003 13:08	971.838	24.966	7.433	20.99	30.127	
11/6/2003 13:09	972.838	24.972	7.431	20.988	30.127	
11/6/2003 13:10	973.838	24.966	7.431	20.988	30.127	
11/6/2003 13:11	974.838	24.972	7.431	20.986	30.127	
11/6/2003 13:12	975.838	24.947	7.433	20.99	30.127	
11/6/2003 13:13	976.838	24.972	7.435	20.986	30.127	
11/6/2003 13:14	977.838	24.966	7.431	20.986	30.125	
11/6/2003 13:15	978.838	24.972	7.431	20.988	30.125	
11/6/2003 13:16	979.838	24.966	7.433	20.986	30.125	
11/6/2003 13:17	980.838	24.966	7.433	20.985	30.127	
11/6/2003 13:18	981.838	24.966	7.433	20.985	30.125	
11/6/2003 13:19	982.838	24.966	7.435	20.985	30.123	
11/6/2003 13:20	983.838	24.953	7.438	20.99	30.121	
11/6/2003 13:21	984.838	24.972	7.436	20.988	30.121	
11/6/2003 13:22	985.838	24.966	7.436	20.988	30.119	
11/6/2003 13:23	986.838	24.966	7.438	20.988	30.119	
11/6/2003 13:24	987.838	24.966	7.436	20.988	30.119	
11/6/2003 13:25	988.838	24.972	7.438	20.988	30.119	
11/6/2003 13:26	989.838	24.966	7.436	20.986	30.119	
11/6/2003 13:27	990.838	24.966	7.44	20.988	30.117	
11/6/2003 13:28	991.838	24.959	7.438	20.986	30.119	
11/6/2003 13:29	992.838	24.959	7.436	20.985	30.117	
11/6/2003 13:30	993.838	24.959	7.44	20.985	30.117	
11/6/2003 13:31	994.838	24.953	7.438	20.986	30.117	
11/6/2003 13:32	995.838	24.959	7.436	20.985	30.117	
11/6/2003 13:33	996.838	24.966	7.438	20.985	30.114	
11/6/2003 13:34	997.838	24.966	7.44	20.986	30.114	
11/6/2003 13:35	998.838	24.959	7.442	20.986	30.114	
11/6/2003 13:36	999.838	24.966	7.44	20.988	30.112	
11/6/2003 13:37	1000.838	24.972	7.44	20.986	30.112	
11/6/2003 13:38	1001.838	24.966	7.44	20.985	30.112	
11/6/2003 13:39	1002.838	24.959	7.442	20.988	30.11	
11/6/2003 13:40	1003.838	24.966	7.44	20.985	30.11	
11/6/2003 13:41	1004.838	24.959	7.442	20.986	30.11	
11/6/2003 13:42	1005.838	24.922	7.433	20.996	30.108	
11/6/2003 13:43	1006.838	24.972	7.446	20.988	30.108	
11/6/2003 13:44	1007.838	24.959	7.44	20.985	30.11	
11/6/2003 13:45	1008.838	24.966	7.44	20.986	30.106	

11/6/2003 13:46	1009.838	24.966	7.442	20.99	30.108	
11/6/2003 13:47	1010.838	24.966	7.442	20.988	30.108	
11/6/2003 13:48	1011.838	24.959	7.436	20.985	30.108	
11/6/2003 13:49	1012.838	24.959	7.44	20.986	30.108	
11/6/2003 13:50	1013.838	24.959	7.44	20.988	30.108	
11/6/2003 13:51	1014.838	24.959	7.438	20.983	30.09	
11/6/2003 13:52	1015.838	24.959	7.438	20.979	30.098	
11/6/2003 13:53	1016.838	24.959	7.438	20.985	30.102	
11/6/2003 13:54	1017.838	24.959	7.44	20.983	30.1	
11/6/2003 13:55	1018.838	24.966	7.442	20.986	30.104	
11/6/2003 13:56	1019.838	24.966	7.44	20.986	30.104	
11/6/2003 13:57	1020.838	24.959	7.442	20.985	30.104	
11/6/2003 13:58	1021.838	24.959	7.442	20.985	30.104	
11/6/2003 13:59	1022.838	24.966	7.44	20.986	30.102	
11/6/2003 14:00	1023.838	24.966	7.442	20.981	30.104	
11/6/2003 14:01	1024.838	24.966	7.442	20.983	30.102	
11/6/2003 14:02	1025.838	24.966	7.442	20.985	30.102	
11/6/2003 14:03	1026.838	24.966	7.442	20.983	30.102	
11/6/2003 14:04	1027.838	24.959	7.438	20.983	30.104	
11/6/2003 14:05	1028.838	24.959	7.438	20.981	30.104	
11/6/2003 14:06	1029.838	24.959	7.442	20.985	30.104	
11/6/2003 14:07	1030.838	24.966	7.44	20.979	30.102	
11/6/2003 14:08	1031.838	24.959	7.44	20.983	30.104	
11/6/2003 14:09	1032.838	24.966	7.44	20.981	30.104	
11/6/2003 14:10	1033.838	24.972	7.442	20.975	30.106	
11/6/2003 14:11	1034.838	24.947	7.442	20.981	30.104	
11/6/2003 14:12	1035.838	24.959	7.44	20.983	30.106	
11/6/2003 14:13	1036.838	24.953	7.44	20.981	30.106	
11/6/2003 14:14	1037.838	24.953	7.44	20.981	30.106	
11/6/2003 14:15	1038.838	24.966	7.44	20.981	30.106	
11/6/2003 14:16	1039.838	24.966	7.44	20.985	30.106	
11/6/2003 14:17	1040.838	24.966	7.44	20.979	30.106	
11/6/2003 14:18	1041.838	24.966	7.44	20.979	30.106	
11/6/2003 14:19	1042.838	24.959	7.44	20.979	30.108	
11/6/2003 14:20	1043.838	24.966	7.442	20.981	30.106	
11/6/2003 14:21	1044.838	24.959	7.44	20.979	30.106	
11/6/2003 14:22	1045.838	24.953	7.436	20.979	30.106	
11/6/2003 14:23	1046.838	24.953	7.44	20.977	30.106	
11/6/2003 14:24	1047.838	24.947	7.438	20.975	30.104	
11/6/2003 14:25	1048.838	24.953	7.438	20.977	30.104	
11/6/2003 14:26	1049.838	24.947	7.436	20.981	30.104	
11/6/2003 14:27	1050.838	24.953	7.436	20.979	30.1	
11/6/2003 14:28	1051.838	24.947	7.44	20.983	30.102	
11/6/2003 14:29	1052.838	24.959	7.442	20.983	30.102	
11/6/2003 14:30	1053.838	24.966	7.438	20.975	30.102	
11/6/2003 14:31	1054.838	24.959	7.438	20.981	30.102	
11/6/2003 14:32	1055.838	24.953	7.436	20.979	30.1	
11/6/2003 14:33	1056.838	24.959	7.438	20.977	30.102	
11/6/2003 14:34	1057.838	24.953	7.438	20.981	30.102	
11/6/2003 14:35	1058.838	24.978	7.436	20.979	30.102	
11/6/2003 14:36	1059.838	25.003	7.436	20.988	30.102	
11/6/2003 14:37	1060.838	24.947	7.435	20.977	30.1	
11/6/2003 14:38	1061.838	24.972	7.438	20.981	30.102	
11/6/2003 14:39	1062.838	24.966	7.433	20.975	30.104	
11/6/2003 14:40	1063.838	24.966	7.438	20.975	30.104	
11/6/2003 14:41	1064.838	24.959	7.44	20.977	30.102	
11/6/2003 14:42	1065.838	24.972	7.436	20.975	30.104	

11/6/2003 14:43	1066.838	24.966	7.435	20.975	30.102	
11/6/2003 14:44	1067.838	24.966	7.44	20.975	30.104	
11/6/2003 14:45	1068.838	24.953	7.436	20.979	30.104	
11/6/2003 14:46	1069.838	24.972	7.44	20.977	30.104	
11/6/2003 14:47	1070.838	24.959	7.44	20.979	30.102	
11/6/2003 14:48	1071.838	24.966	7.44	20.977	30.102	
11/6/2003 14:49	1072.838	24.972	7.44	20.975	30.102	
11/6/2003 14:50	1073.838	24.959	7.436	20.979	30.102	
11/6/2003 14:51	1074.838	24.959	7.442	20.975	30.102	
11/6/2003 14:52	1075.838	24.966	7.442	20.979	30.102	
11/6/2003 14:53	1076.838	24.972	7.44	20.975	30.1	
11/6/2003 14:54	1077.838	24.966	7.438	20.977	30.1	
11/6/2003 14:55	1078.838	24.978	7.44	20.971	30.1	
11/6/2003 14:56	1079.838	24.972	7.44	20.979	30.104	
11/6/2003 14:57	1080.838	24.966	7.44	20.977	30.104	
11/6/2003 14:58	1081.838	24.959	7.442	20.975	30.104	
11/6/2003 14:59	1082.838	24.941	7.436	20.97	30.104	
11/6/2003 15:00	1083.838	24.978	7.435	20.983	30.106	
11/6/2003 15:01	1084.838	24.978	7.438	20.949	30.106	
11/6/2003 15:02	1085.838	24.978	7.438	20.968	30.108	
11/6/2003 15:03	1086.838	25.015	7.438	20.973	30.108	
11/6/2003 15:04	1087.838	24.972	7.433	20.966	30.11	
11/6/2003 15:05	1088.838	24.897	7.438	20.975	30.108	
11/6/2003 15:06	1089.838	24.922	7.436	20.97	30.112	
11/6/2003 15:07	1090.838	24.966	7.438	20.973	30.11	
11/6/2003 15:08	1091.838	24.959	7.44	20.971	30.108	
11/6/2003 15:09	1092.838	24.947	7.444	20.977	30.11	
11/6/2003 15:10	1093.838	24.934	7.44	20.97	30.112	
11/6/2003 15:11	1094.838	24.966	7.438	20.966	30.112	
11/6/2003 15:12	1095.838	24.903	7.44	20.977	30.114	
11/6/2003 15:13	1096.838	24.997	7.438	20.975	30.114	
11/6/2003 15:14	1097.838	24.953	7.44	20.971	30.114	
11/6/2003 15:15	1098.838	24.959	7.442	20.971	30.117	
11/6/2003 15:16	1099.838	24.959	7.438	20.97	30.117	
11/6/2003 15:17	1100.838	24.953	7.44	20.971	30.117	
11/6/2003 15:18	1101.838	24.959	7.44	20.971	30.119	
11/6/2003 15:19	1102.838	24.959	7.442	20.971	30.119	
11/6/2003 15:20	1103.838	24.953	7.438	20.97	30.117	
11/6/2003 15:21	1104.838	24.953	7.438	20.97	30.119	
11/6/2003 15:22	1105.838	24.953	7.436	20.966	30.119	
11/6/2003 15:23	1106.838	24.959	7.442	20.968	30.119	
11/6/2003 15:24	1107.838	24.953	7.435	20.964	30.123	
11/6/2003 15:25	1108.838	24.953	7.442	20.966	30.123	
11/6/2003 15:26	1109.838	24.953	7.433	20.964	30.125	
11/6/2003 15:27	1110.838	24.953	7.435	20.966	30.125	
11/6/2003 15:28	1111.838	24.953	7.435	20.964	30.125	
11/6/2003 15:29	1112.838	24.953	7.435	20.964	30.127	
11/6/2003 15:30	1113.838	24.953	7.433	20.962	30.129	
11/6/2003 15:31	1114.838	24.947	7.431	20.962	30.129	
11/6/2003 15:32	1115.838	24.953	7.436	20.964	30.131	
11/6/2003 15:33	1116.838	24.953	7.436	20.964	30.129	
11/6/2003 15:34	1117.838	24.953	7.433	20.962	30.131	
11/6/2003 15:35	1118.838	24.959	7.433	20.966	30.131	
11/6/2003 15:36	1119.838	24.947	7.435	20.962	30.133	
11/6/2003 15:37	1120.838	24.947	7.431	20.956	30.135	
11/6/2003 15:38	1121.838	24.947	7.431	20.958	30.135	
11/6/2003 15:39	1122.838	24.953	7.431	20.96	30.135	

11/6/2003 15:40	1123.838	24.953	7.433	20.962	30.137	
11/6/2003 15:41	1124.838	24.941	7.433	20.956	30.137	
11/6/2003 15:42	1125.838	24.947	7.431	20.96	30.135	
11/6/2003 15:43	1126.838	24.947	7.436	20.96	30.137	
11/6/2003 15:44	1127.838	24.947	7.433	20.958	30.135	
11/6/2003 15:45	1128.838	24.947	7.433	20.96	30.137	
11/6/2003 15:46	1129.838	24.947	7.431	20.958	30.137	
11/6/2003 15:47	1130.838	24.947	7.431	20.958	30.137	
11/6/2003 15:48	1131.838	24.947	7.431	20.955	30.139	
11/6/2003 15:49	1132.838	24.947	7.433	20.96	30.141	
11/6/2003 15:50	1133.838	24.947	7.431	20.958	30.139	
11/6/2003 15:51	1134.838	24.947	7.433	20.96	30.139	
11/6/2003 15:52	1135.838	24.947	7.433	20.958	30.137	
11/6/2003 15:53	1136.838	24.953	7.435	20.956	30.137	
11/6/2003 15:54	1137.838	24.953	7.431	20.956	30.137	
11/6/2003 15:55	1138.838	24.947	7.431	20.958	30.137	
11/6/2003 15:56	1139.838	24.941	7.435	20.958	30.139	
11/6/2003 15:57	1140.838	24.947	7.436	20.958	30.135	
11/6/2003 15:58	1141.838	24.947	7.433	20.958	30.135	
11/6/2003 15:59	1142.838	24.947	7.433	20.956	30.133	
11/6/2003 16:00	1143.838	24.947	7.433	20.958	30.135	
11/6/2003 16:01	1144.838	24.947	7.435	20.956	30.133	
11/6/2003 16:02	1145.838	24.941	7.435	20.958	30.135	
11/6/2003 16:03	1146.838	24.947	7.433	20.956	30.135	
11/6/2003 16:04	1147.838	24.941	7.435	20.956	30.131	
11/6/2003 16:05	1148.838	24.947	7.431	20.958	30.133	
11/6/2003 16:06	1149.838	24.947	7.433	20.958	30.129	
11/6/2003 16:07	1150.838	24.953	7.433	20.958	30.127	
11/6/2003 16:08	1151.838	24.947	7.431	20.956	30.127	
11/6/2003 16:09	1152.838	24.947	7.435	20.96	30.127	
11/6/2003 16:10	1153.838	24.947	7.433	20.955	30.127	
11/6/2003 16:11	1154.838	24.953	7.435	20.958	30.129	
11/6/2003 16:12	1155.838	24.934	7.435	20.951	30.127	
11/6/2003 16:13	1156.838	24.947	7.435	20.958	30.127	
11/6/2003 16:14	1157.838	24.947	7.431	20.956	30.127	
11/6/2003 16:15	1158.838	24.947	7.435	20.955	30.127	
11/6/2003 16:16	1159.838	24.947	7.431	20.955	30.127	
11/6/2003 16:17	1160.838	24.953	7.433	20.956	30.127	
11/6/2003 16:18	1161.838	24.947	7.433	20.955	30.127	
11/6/2003 16:19	1162.838	24.947	7.433	20.955	30.127	
11/6/2003 16:20	1163.838	24.941	7.433	20.955	30.125	
11/6/2003 16:21	1164.838	24.941	7.431	20.953	30.125	
11/6/2003 16:22	1165.838	24.947	7.431	20.955	30.125	
11/6/2003 16:23	1166.838	24.947	7.431	20.955	30.121	
11/6/2003 16:24	1167.838	24.941	7.433	20.955	30.123	
11/6/2003 16:25	1168.838	24.947	7.433	20.955	30.119	
11/6/2003 16:26	1169.838	24.947	7.435	20.955	30.119	
11/6/2003 16:27	1170.838	24.947	7.431	20.955	30.121	
11/6/2003 16:28	1171.838	24.947	7.433	20.955	30.117	
11/6/2003 16:29	1172.838	24.947	7.431	20.955	30.114	
11/6/2003 16:30	1173.838	24.947	7.435	20.96	30.117	
11/6/2003 16:31	1174.838	24.947	7.435	20.96	30.119	
11/6/2003 16:32	1175.838	24.953	7.435	20.96	30.117	
11/6/2003 16:33	1176.838	24.947	7.435	20.96	30.117	
11/6/2003 16:34	1177.838	24.947	7.435	20.96	30.117	
11/6/2003 16:35	1178.838	24.947	7.433	20.956	30.117	
11/6/2003 16:36	1179.838	24.941	7.433	20.956	30.114	

11/6/2003 16:37	1180.838	24.947	7.435	20.956	30.117	
11/6/2003 16:38	1181.838	24.947	7.429	20.955	30.117	
11/6/2003 16:39	1182.838	24.947	7.429	20.955	30.119	
11/6/2003 16:40	1183.838	24.941	7.429	20.955	30.119	
11/6/2003 16:41	1184.838	24.947	7.429	20.955	30.119	
11/6/2003 16:42	1185.838	24.947	7.429	20.955	30.119	
11/6/2003 16:43	1186.838	24.947	7.431	20.956	30.117	
11/6/2003 16:44	1187.838	24.953	7.431	20.955	30.117	
11/6/2003 16:45	1188.838	24.947	7.429	20.953	30.119	
11/6/2003 16:46	1189.838	24.947	7.427	20.953	30.119	
11/6/2003 16:47	1190.838	24.947	7.429	20.955	30.117	
11/6/2003 16:48	1191.838	24.947	7.431	20.955	30.119	
11/6/2003 16:49	1192.838	24.947	7.427	20.953	30.114	
11/6/2003 16:50	1193.838	24.953	7.429	20.955	30.117	
11/6/2003 16:51	1194.838	24.947	7.429	20.955	30.117	
11/6/2003 16:52	1195.838	24.953	7.429	20.955	30.114	
11/6/2003 16:53	1196.838	24.953	7.427	20.953	30.117	
11/6/2003 16:54	1197.838	24.953	7.429	20.955	30.114	
11/6/2003 16:55	1198.838	24.947	7.429	20.955	30.114	
11/6/2003 16:56	1199.838	24.947	7.427	20.953	30.112	
11/6/2003 16:57	1200.838	24.953	7.429	20.955	30.112	
11/6/2003 16:58	1201.838	24.953	7.429	20.955	30.112	
11/6/2003 16:59	1202.838	24.953	7.427	20.953	30.11	
11/6/2003 17:00	1203.838	24.953	7.429	20.955	30.11	
11/6/2003 17:01	1204.838	24.953	7.427	20.951	30.112	
11/6/2003 17:02	1205.838	24.953	7.427	20.953	30.108	
11/6/2003 17:03	1206.838	24.953	7.429	20.955	30.112	
11/6/2003 17:04	1207.838	24.953	7.427	20.953	30.114	
11/6/2003 17:05	1208.838	24.953	7.427	20.953	30.117	
11/6/2003 17:06	1209.838	24.953	7.429	20.955	30.112	
11/6/2003 17:07	1210.838	24.953	7.429	20.955	30.114	
11/6/2003 17:08	1211.838	24.953	7.429	20.955	30.112	
11/6/2003 17:09	1212.838	24.953	7.427	20.955	30.112	
11/6/2003 17:10	1213.838	24.953	7.425	20.956	30.114	
11/6/2003 17:11	1214.838	24.959	7.429	20.953	30.112	
11/6/2003 17:12	1215.838	24.953	7.425	20.951	30.112	
11/6/2003 17:13	1216.838	24.959	7.427	20.956	30.11	
11/6/2003 17:14	1217.838	24.959	7.429	20.956	30.11	
11/6/2003 17:15	1218.838	24.959	7.427	20.958	30.11	
11/6/2003 17:16	1219.838	24.966	7.427	20.956	30.112	
11/6/2003 17:17	1220.838	24.959	7.427	20.953	30.108	
11/6/2003 17:18	1221.838	24.947	7.427	20.958	30.112	
11/6/2003 17:19	1222.838	24.959	7.429	20.956	30.108	
11/6/2003 17:20	1223.838	24.953	7.425	20.951	30.11	
11/6/2003 17:21	1224.838	24.947	7.425	20.955	30.108	
11/6/2003 17:22	1225.838	24.953	7.427	20.958	30.108	
11/6/2003 17:23	1226.838	24.953	7.427	20.958	30.108	
11/6/2003 17:24	1227.838	24.953	7.425	20.956	30.108	
11/6/2003 17:25	1228.838	24.947	7.427	20.958	30.108	
11/6/2003 17:26	1229.838	24.953	7.429	20.955	30.112	
11/6/2003 17:27	1230.838	24.953	7.425	20.955	30.11	
11/6/2003 17:28	1231.838	24.959	7.427	20.955	30.11	
11/6/2003 17:29	1232.838	24.959	7.423	20.955	30.11	
11/6/2003 17:30	1233.838	24.959	7.427	20.956	30.108	
11/6/2003 17:31	1234.838	24.959	7.425	20.956	30.108	
11/6/2003 17:32	1235.838	24.953	7.427	20.956	30.11	
11/6/2003 17:33	1236.838	24.953	7.427	20.955	30.108	

11/6/2003 17:34	1237.838	24.959	7.425	20.956	30.108	
11/6/2003 17:35	1238.838	24.959	7.425	20.956	30.106	
11/6/2003 17:36	1239.838	24.959	7.427	20.956	30.106	
11/6/2003 17:37	1240.838	24.959	7.427	20.956	30.108	
11/6/2003 17:38	1241.838	24.959	7.425	20.956	30.106	
11/6/2003 17:39	1242.838	24.959	7.423	20.958	30.108	
11/6/2003 17:40	1243.838	24.959	7.425	20.956	30.108	
11/6/2003 17:41	1244.838	24.959	7.425	20.956	30.11	
11/6/2003 17:42	1245.838	24.959	7.425	20.956	30.11	
11/6/2003 17:43	1246.838	24.959	7.422	20.955	30.11	
11/6/2003 17:44	1247.838	24.966	7.425	20.956	30.11	
11/6/2003 17:45	1248.838	24.959	7.422	20.956	30.11	
11/6/2003 17:46	1249.838	24.959	7.423	20.958	30.11	
11/6/2003 17:47	1250.838	24.959	7.422	20.956	30.11	
11/6/2003 17:48	1251.838	24.959	7.422	20.958	30.11	
11/6/2003 17:49	1252.838	24.959	7.423	20.958	30.114	
11/6/2003 17:50	1253.838	24.966	7.423	20.956	30.112	
11/6/2003 17:51	1254.838	24.959	7.42	20.955	30.114	
11/6/2003 17:52	1255.838	24.959	7.42	20.956	30.114	
11/6/2003 17:53	1256.838	24.959	7.42	20.955	30.114	
11/6/2003 17:54	1257.838	24.959	7.422	20.956	30.117	
11/6/2003 17:55	1258.838	24.966	7.422	20.956	30.119	
11/6/2003 17:56	1259.838	24.959	7.42	20.956	30.119	
11/6/2003 17:57	1260.838	24.966	7.422	20.955	30.119	
11/6/2003 17:58	1261.838	24.959	7.418	20.953	30.119	
11/6/2003 17:59	1262.838	24.959	7.418	20.956	30.119	
11/6/2003 18:00	1263.838	24.966	7.418	20.953	30.119	
11/6/2003 18:01	1264.838	24.959	7.418	20.955	30.119	
11/6/2003 18:02	1265.838	24.966	7.418	20.955	30.123	
11/6/2003 18:03	1266.838	24.966	7.418	20.956	30.121	
11/6/2003 18:04	1267.838	24.966	7.42	20.955	30.121	
11/6/2003 18:05	1268.838	24.966	7.416	20.953	30.121	
11/6/2003 18:06	1269.838	24.966	7.418	20.956	30.121	
11/6/2003 18:07	1270.838	24.966	7.418	20.955	30.121	
11/6/2003 18:08	1271.838	24.966	7.416	20.953	30.123	
11/6/2003 18:09	1272.838	24.966	7.416	20.953	30.121	
11/6/2003 18:10	1273.838	24.959	7.416	20.953	30.121	
11/6/2003 18:11	1274.838	24.966	7.414	20.953	30.121	
11/6/2003 18:12	1275.838	24.966	7.418	20.955	30.119	
11/6/2003 18:13	1276.838	24.972	7.416	20.951	30.121	
11/6/2003 18:14	1277.838	24.966	7.416	20.953	30.121	
11/6/2003 18:15	1278.838	24.966	7.416	20.955	30.121	
11/6/2003 18:16	1279.838	24.966	7.416	20.953	30.121	
11/6/2003 18:17	1280.838	24.972	7.416	20.953	30.119	
11/6/2003 18:18	1281.838	24.972	7.416	20.953	30.119	
11/6/2003 18:19	1282.838	24.972	7.414	20.953	30.121	
11/6/2003 18:20	1283.838	24.966	7.416	20.953	30.121	
11/6/2003 18:21	1284.838	24.972	7.412	20.955	30.119	
11/6/2003 18:22	1285.838	24.972	7.416	20.955	30.123	
11/6/2003 18:23	1286.838	24.972	7.412	20.953	30.123	
11/6/2003 18:24	1287.838	24.972	7.416	20.955	30.123	
11/6/2003 18:25	1288.838	24.972	7.412	20.951	30.123	
11/6/2003 18:26	1289.838	24.972	7.414	20.955	30.123	
11/6/2003 18:27	1290.838	24.972	7.414	20.953	30.125	
11/6/2003 18:28	1291.838	24.972	7.412	20.953	30.125	
11/6/2003 18:29	1292.838	24.978	7.414	20.955	30.125	
11/6/2003 18:30	1293.838	24.972	7.412	20.955	30.127	

11/6/2003 18:31	1294.838	24.978	7.412	20.953	30.123	
11/6/2003 18:32	1295.838	24.978	7.414	20.955	30.125	
11/6/2003 18:33	1296.838	24.978	7.41	20.953	30.125	
11/6/2003 18:34	1297.838	24.978	7.414	20.956	30.127	
11/6/2003 18:35	1298.838	24.978	7.412	20.956	30.123	
11/6/2003 18:36	1299.838	24.978	7.412	20.956	30.127	
11/6/2003 18:37	1300.838	24.978	7.41	20.955	30.125	
11/6/2003 18:38	1301.838	24.978	7.412	20.955	30.123	
11/6/2003 18:39	1302.838	24.978	7.41	20.956	30.123	
11/6/2003 18:40	1303.838	24.978	7.414	20.958	30.123	
11/6/2003 18:41	1304.838	24.978	7.412	20.956	30.125	
11/6/2003 18:42	1305.838	24.984	7.414	20.96	30.123	
11/6/2003 18:43	1306.838	24.984	7.414	20.96	30.125	
11/6/2003 18:44	1307.838	24.984	7.412	20.958	30.123	
11/6/2003 18:45	1308.838	24.984	7.414	20.96	30.123	
11/6/2003 18:46	1309.838	24.984	7.414	20.956	30.125	
11/6/2003 18:47	1310.838	24.984	7.41	20.96	30.125	
11/6/2003 18:48	1311.838	24.984	7.41	20.96	30.123	
11/6/2003 18:49	1312.838	24.984	7.41	20.958	30.123	
11/6/2003 18:50	1313.838	24.984	7.41	20.96	30.125	
11/6/2003 18:51	1314.838	24.984	7.412	20.962	30.127	
11/6/2003 18:52	1315.838	24.991	7.41	20.96	30.125	
11/6/2003 18:53	1316.838	24.991	7.412	20.96	30.125	
11/6/2003 18:54	1317.838	24.991	7.412	20.962	30.127	
11/6/2003 18:55	1318.838	24.991	7.412	20.962	30.125	
11/6/2003 18:56	1319.838	24.991	7.412	20.962	30.123	
11/6/2003 18:57	1320.838	24.997	7.412	20.964	30.127	
11/6/2003 18:58	1321.838	24.991	7.41	20.962	30.123	
11/6/2003 18:59	1322.838	24.991	7.412	20.964	30.125	
11/6/2003 19:00	1323.838	24.997	7.41	20.962	30.127	
11/6/2003 19:01	1324.838	24.997	7.41	20.962	30.127	
11/6/2003 19:02	1325.838	24.997	7.412	20.964	30.127	
11/6/2003 19:03	1326.838	24.997	7.412	20.964	30.125	
11/6/2003 19:04	1327.838	24.997	7.414	20.966	30.127	
11/6/2003 19:05	1328.838	24.997	7.412	20.966	30.127	
11/6/2003 19:06	1329.838	24.997	7.41	20.964	30.127	
11/6/2003 19:07	1330.838	24.997	7.41	20.968	30.129	
11/6/2003 19:08	1331.838	24.997	7.412	20.968	30.127	
11/6/2003 19:09	1332.838	24.997	7.41	20.966	30.131	
11/6/2003 19:10	1333.838	24.997	7.412	20.968	30.131	
11/6/2003 19:11	1334.838	25.003	7.41	20.968	30.129	
11/6/2003 19:12	1335.838	24.997	7.412	20.968	30.131	
11/6/2003 19:13	1336.838	25.003	7.41	20.966	30.131	
11/6/2003 19:14	1337.838	25.003	7.41	20.966	30.133	
11/6/2003 19:15	1338.838	24.997	7.41	20.968	30.131	
11/6/2003 19:16	1339.838	25.003	7.41	20.966	30.135	
11/6/2003 19:17	1340.838	24.997	7.41	20.968	30.133	
11/6/2003 19:18	1341.838	25.003	7.409	20.966	30.135	
11/6/2003 19:19	1342.838	25.003	7.41	20.968	30.135	
11/6/2003 19:20	1343.838	25.003	7.41	20.966	30.133	
11/6/2003 19:21	1344.838	25.003	7.409	20.968	30.133	
11/6/2003 19:22	1345.838	25.003	7.41	20.968	30.133	
11/6/2003 19:23	1346.838	25.003	7.41	20.968	30.133	
11/6/2003 19:24	1347.838	25.003	7.409	20.968	30.135	
11/6/2003 19:25	1348.838	25.009	7.41	20.97	30.135	
11/6/2003 19:26	1349.838	25.009	7.41	20.97	30.135	
11/6/2003 19:27	1350.838	25.009	7.41	20.97	30.133	

11/6/2003 19:28	1351.838	25.009	7.41	20.97	30.135	
11/6/2003 19:29	1352.838	25.009	7.412	20.971	30.131	
11/6/2003 19:30	1353.838	25.009	7.41	20.97	30.133	
11/6/2003 19:31	1354.838	25.009	7.41	20.971	30.135	
11/6/2003 19:32	1355.838	25.009	7.41	20.971	30.133	
11/6/2003 19:33	1356.838	25.009	7.412	20.971	30.133	
11/6/2003 19:34	1357.838	25.015	7.412	20.971	30.133	
11/6/2003 19:35	1358.838	25.009	7.412	20.971	30.135	
11/6/2003 19:36	1359.838	25.015	7.412	20.971	30.133	
11/6/2003 19:37	1360.838	25.015	7.41	20.971	30.133	
11/6/2003 19:38	1361.838	25.015	7.412	20.975	30.133	
11/6/2003 19:39	1362.838	25.015	7.41	20.975	30.133	
11/6/2003 19:40	1363.838	25.015	7.41	20.973	30.133	
11/6/2003 19:41	1364.838	25.015	7.412	20.973	30.131	
11/6/2003 19:42	1365.838	25.015	7.41	20.973	30.133	
11/6/2003 19:43	1366.838	25.015	7.412	20.975	30.133	
11/6/2003 19:44	1367.838	25.015	7.412	20.975	30.133	
11/6/2003 19:45	1368.838	25.015	7.409	20.975	30.135	
11/6/2003 19:46	1369.838	25.015	7.412	20.975	30.133	
11/6/2003 19:47	1370.838	25.015	7.409	20.977	30.133	
11/6/2003 19:48	1371.838	25.022	7.409	20.975	30.135	
11/6/2003 19:49	1372.838	25.022	7.409	20.975	30.135	
11/6/2003 19:50	1373.838	25.022	7.409	20.973	30.135	
11/6/2003 19:51	1374.838	25.022	7.409	20.975	30.137	
11/6/2003 19:52	1375.838	25.015	7.41	20.975	30.135	
11/6/2003 19:53	1376.838	25.022	7.41	20.977	30.135	
11/6/2003 19:54	1377.838	25.022	7.409	20.975	30.135	
11/6/2003 19:55	1378.838	25.022	7.41	20.977	30.135	
11/6/2003 19:56	1379.838	25.022	7.41	20.979	30.133	
11/6/2003 19:57	1380.838	25.028	7.41	20.979	30.135	
11/6/2003 19:58	1381.838	25.022	7.41	20.981	30.137	
11/6/2003 19:59	1382.838	25.028	7.409	20.977	30.139	
11/6/2003 20:00	1383.838	25.028	7.412	20.979	30.137	
11/6/2003 20:01	1384.838	25.028	7.412	20.981	30.135	
11/6/2003 20:02	1385.838	25.028	7.41	20.981	30.137	
11/6/2003 20:03	1386.838	25.028	7.41	20.981	30.137	
11/6/2003 20:04	1387.838	25.028	7.41	20.981	30.139	
11/6/2003 20:05	1388.838	25.028	7.41	20.979	30.139	
11/6/2003 20:06	1389.838	25.028	7.41	20.983	30.139	
11/6/2003 20:07	1390.838	25.028	7.412	20.981	30.139	
11/6/2003 20:08	1391.838	25.028	7.41	20.981	30.139	
11/6/2003 20:09	1392.838	25.028	7.41	20.981	30.139	
11/6/2003 20:10	1393.838	25.028	7.41	20.981	30.139	
11/6/2003 20:11	1394.838	25.028	7.412	20.983	30.137	
11/6/2003 20:12	1395.838	25.028	7.41	20.983	30.139	
11/6/2003 20:13	1396.838	25.028	7.409	20.981	30.139	
11/6/2003 20:14	1397.838	25.034	7.41	20.981	30.139	
11/6/2003 20:15	1398.838	25.034	7.412	20.985	30.139	
11/6/2003 20:16	1399.838	25.034	7.41	20.983	30.139	
11/6/2003 20:17	1400.838	25.034	7.412	20.983	30.137	
11/6/2003 20:18	1401.838	25.034	7.412	20.986	30.137	
11/6/2003 20:19	1402.838	25.034	7.412	20.983	30.139	
11/6/2003 20:20	1403.838	25.034	7.412	20.985	30.137	
11/6/2003 20:21	1404.838	25.034	7.412	20.983	30.137	
11/6/2003 20:22	1405.838	25.034	7.412	20.986	30.139	
11/6/2003 20:23	1406.838	25.034	7.41	20.986	30.137	
11/6/2003 20:24	1407.838	25.04	7.412	20.986	30.139	

11/6/2003 20:25	1408.838	25.04	7.412	20.986	30.135	
11/6/2003 20:26	1409.838	25.04	7.412	20.986	30.139	
11/6/2003 20:27	1410.838	25.034	7.412	20.986	30.135	
11/6/2003 20:28	1411.838	25.04	7.414	20.985	30.137	
11/6/2003 20:29	1412.838	25.04	7.412	20.988	30.137	
11/6/2003 20:30	1413.838	25.04	7.414	20.986	30.137	
11/6/2003 20:31	1414.838	25.04	7.412	20.988	30.139	
11/6/2003 20:32	1415.838	25.047	7.414	20.988	30.137	
11/6/2003 20:33	1416.838	25.04	7.412	20.986	30.137	
11/6/2003 20:34	1417.838	25.047	7.414	20.99	30.139	
11/6/2003 20:35	1418.838	25.047	7.412	20.99	30.137	
11/6/2003 20:36	1419.838	25.04	7.414	20.99	30.137	
11/6/2003 20:37	1420.838	25.04	7.416	20.99	30.137	
11/6/2003 20:38	1421.838	25.047	7.414	20.988	30.137	
11/6/2003 20:39	1422.838	25.04	7.414	20.99	30.137	
11/6/2003 20:40	1423.838	25.047	7.416	20.992	30.137	
11/6/2003 20:41	1424.838	25.047	7.414	20.992	30.135	
11/6/2003 20:42	1425.838	25.053	7.416	20.994	30.135	
11/6/2003 20:43	1426.838	25.047	7.416	20.992	30.135	
11/6/2003 20:44	1427.838	25.053	7.414	20.994	30.135	
11/6/2003 20:45	1428.838	25.053	7.416	20.994	30.133	
11/6/2003 20:46	1429.838	25.047	7.414	20.994	30.133	
11/6/2003 20:47	1430.838	25.053	7.416	20.994	30.133	
11/6/2003 20:48	1431.838	25.053	7.418	20.996	30.133	
11/6/2003 20:49	1432.838	25.053	7.416	20.996	30.133	
11/6/2003 20:50	1433.838	25.053	7.416	20.996	30.135	
11/6/2003 20:51	1434.838	25.053	7.418	20.996	30.135	
11/6/2003 20:52	1435.838	25.053	7.416	20.996	30.133	
11/6/2003 20:53	1436.838	25.053	7.418	20.998	30.131	
11/6/2003 20:54	1437.838	25.053	7.416	20.998	30.131	
11/6/2003 20:55	1438.838	25.059	7.418	20.998	30.133	
11/6/2003 20:56	1439.838	25.053	7.418	21	30.135	
11/6/2003 20:57	1440.838	25.059	7.418	20.998	30.133	
11/6/2003 20:58	1441.838	25.053	7.418	20.998	30.131	
11/6/2003 20:59	1442.838	25.059	7.42	20.998	30.131	
11/6/2003 21:00	1443.838	25.053	7.418	20.998	30.131	
11/6/2003 21:01	1444.838	25.059	7.42	21	30.129	
11/6/2003 21:02	1445.838	25.059	7.42	21.001	30.129	
11/6/2003 21:03	1446.838	25.059	7.418	21.001	30.131	
11/6/2003 21:04	1447.838	25.065	7.42	21.003	30.131	
11/6/2003 21:05	1448.838	25.059	7.42	21.003	30.129	
11/6/2003 21:06	1449.838	25.059	7.422	21.001	30.129	
11/6/2003 21:07	1450.838	25.059	7.422	21.005	30.127	
11/6/2003 21:08	1451.838	25.065	7.422	21.005	30.129	
11/6/2003 21:09	1452.838	25.065	7.422	21.005	30.129	
11/6/2003 21:10	1453.838	25.065	7.42	21.001	30.131	
11/6/2003 21:11	1454.838	25.065	7.422	21.003	30.131	
11/6/2003 21:12	1455.838	25.065	7.42	21.001	30.127	
11/6/2003 21:13	1456.838	25.065	7.42	21.005	30.129	
11/6/2003 21:14	1457.838	25.059	7.42	18.903	30.131	
11/6/2003 21:15	1458.838	25.065	7.422	14.519	30.129	
11/6/2003 21:16	1459.838	25.065	7.422	14.526	30.127	
11/6/2003 21:17	1460.838	25.065	7.423	14.528	30.129	
11/6/2003 21:18	1461.838	25.065	7.42	8.862	30.129	
11/6/2003 21:19	1462.838	25.065	7.42	8.047	30.129	
11/6/2003 21:20	1463.838	25.071	7.42	8.056	30.129	
11/6/2003 21:21	1464.838	25.071	7.423	8.054	30.129	

11/6/2003 21:22	1465.838	25.071	7.422	8.056	30.127	
11/6/2003 21:23	1466.838	25.071	7.425	7.928	30.129	
11/6/2003 21:24	1467.838	25.071	7.42	1.521	30.127	
11/6/2003 21:25	1468.838	25.071	7.425	1.527	30.129	
11/6/2003 21:26	1469.838	25.071	7.422	1.527	30.131	
11/6/2003 21:27	1470.838	25.071	7.423	1.527	30.129	
11/6/2003 21:28	1471.838	25.071	7.423	1.527	30.131	
11/6/2003 21:29	1472.838	25.071	7.425	0.088	30.129	
11/6/2003 21:30	1473.838	25.078	7.423	0.064	30.131	
11/6/2003 21:31	1474.838	25.071	7.422	0.051	30.131	
11/6/2003 21:32	1475.838	25.071	7.425	0.04	30.131	
11/6/2003 21:33	1476.838	25.071	7.423	0.024	30.131	
11/6/2003 21:34	1477.838	25.071	7.423	0.014	30.131	
11/6/2003 21:35	1478.838	25.078	7.425	0.007	30.131	
11/6/2003 21:36	1479.838	25.078	7.425	0.001	30.133	
11/6/2003 21:37	1480.838	25.078	7.425	-0.002	30.129	
11/6/2003 21:38	1481.838	25.078	7.423	-0.006	30.131	
11/6/2003 21:39	1482.838	25.078	7.427	-0.01	30.129	
11/6/2003 21:40	1483.838	25.084	7.425	-0.011	30.139	
11/6/2003 21:41	1484.838	25.078	7.427	-0.013	30.125	
11/6/2003 21:42	1485.838	25.078	7.425	-0.015	30.117	

APPENDIX 5.2

FLOW METER CALIBRATION CERTIFICATE

Isco, Inc.

UniMag CALIBRATION CERTIFICATE

Purchaser		AMJ EQUIPMENT CORPORATION
Purchase Order Number		366203
Serial Number		F03I1781 and C03I1781 (Converter)
UniMag Work Order Number		001964
UniMag Sensor Type		UM24FTA1R
Sensor Calibration Factor		C = 88541
Converter Type		UED121
Converter Range Factor		R = 510
Full Scale Flow		0 - 25 Mil. Gal./Day
Tag		
Output Signals	- Analog	4 - 20 mA
	- Digital	1 pulse /1000 Gal.
Calibration Media		Water at 77 °F

Flow Rate Reference	Flow Rate Production	Analog Output Production mA	Allowable Error in %
4.53	4.52	6.89	+/- 0.5
5.68	5.66	7.62	+/- 0.5
6.55	6.55	8.19	+/- 0.5
8.22	8.24	9.27	+/- 0.5
0	0		+/- 0.5

Production Meter Electrical Test Zero 4 mA

Production Meter Electrical Test Span 20 mA

We hereby certify that the above magnetic flowmeter has been tested at the Isco flow calibration facility, documented and traceable to the U.S.A. National Institute of Standards and Technology.

Date: 10/16/03

ned: _____

Certified Calibration Technician

Michael Boyd

Quality Control Manager

Isco, Inc.
4700 Superior St.
PO Box 82531
Lincoln, NE 68501-2531 USA

Phone: (402) 464-0231
Fax: (402) 464-0318
E-mail: info.@isco.com
URL: http://www.isco.com