



Micron Station Production Well No. 4 Project
Solicitation Number: CO-00247
Job No.: 16-6004

ADDENDUM 1
January 7, 2019

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the bid proposal.

RESPONSES TO QUESTIONS

1. **Question:** In Section 5.18 of General Conditions – In paragraph titled “Working Hours” it implies all work must be performed between 8 am & 5 pm during the week and no work on Saturday and Sunday. Will it be allowable to conduct drilling on a 24 hour basis?
Response: Not without approval as described in General Conditions. See also section 01110.
2. **Question:** In Section 02633, Part 1.01 A 3. – The Contractor will be required to demonstrate that Contractor can provide a drilling rig with a minimum of 200,000-lb hook-load capacity. How will SAWS confirm the rig capability offered by the Contractor?
Response: The Contractor will report this information.
3. **Question:** In Part 3.03 Pilot Hole Specifications, it states in Part B. that at least 40 feet of temporary 12 to 14 inch diameter casing shall be set in the top of pilot hole. If Pilot Hole is drilled with the rotary reverse-circulation technique, the temporary casing will be unnecessary. Can the Contractor omit this requirement if using rotary reverse-circulation drilling techniques?
Response: Yes, the 12- to 14-inch temporary casing may be omitted if reverse-circulation is used.
4. **Question:** In Section 3.13, Well Development and Pre-Test, paragraph B, item #2 states the discharge piping and pump unit be sufficient to conduct water to box culvert along the east side of Micron Drive. During Pre-Bid Meeting, we noticed there are stormwater grates near the proposed well site. Can the Contractor discharge well development water into these grates?
Response: No, they cannot be used.
5. **Question:** In Section 3.15, Well Development, paragraph B , item #2 states the discharge piping and pump unit be sufficient to conduct water to box culvert along the east side of Micron Drive. Can Contractor discharge well development water into these onsite stormwater grates?
Response: No, they cannot be used.
6. **Question:** During the Pre-Bid Meeting, it was discussed that any road base brought in for pad construction may be allowed to stay in place after well completion. Is this a correct assumption?
Response: Yes.
7. **Question:** During the Pre-Bid Meeting, it was implied the entire open area around the proposed wells site would be available for staging and storing equipment. Is this a correct assumption?
Response: Staged and stored equipment and materials should be no less than 30 feet from existing facilities.

8. **Comment:** Reference on page 74; Item 5.8-1, that NSF certified material will be required if water is going to be in contact. The casing that is specified is 30" OD x .500" Wall; Low Carbon Steel (LCS) Casing. Where Low Carbon Steel is not available as NSF approved, High Strength Low Alloy (HSLA) is available with NSF Certifications. High Strength Low Alloy A606, Type-4 is the same material that is being used in the SAWS- Turtle Creek Wells. The material has 9 times the corrosion resistance of Low Carbon, it has 42% more yield strength, and (again) can be provided as a certified NSF material for drinking water. With the increased strength of HSLA versus LCS, the wall thickness for the steel could possibly be changed from .500" (as is the case with LCS) to .437" (on the HSLA). 30" OD x .437" Wall HSLA has a collapse strength of 160.36 psi.
Response: We are aware of this material. Thanks for the information.
9. **Question:** What is the finished elevation on the wellsite?
Response: 822 ft, or existing grade under this contract.
10. **Question:** Can the Contractor cut and balance the padsite?
Response: Yes.
11. **Question:** What are the padsite dimensions?
Response: Please refer to the construction area shown in the drawings.
12. **Question:** Does the padsite location and access road have to be removed after well is complete?
Response: These may remain.
13. **Question:** Does excess spoil from cutting and balancing wellsite have to be hauled off or can it remain onsite?
Response: It may be spread onsite.
14. **Question:** Need additional sound wall as 300 LF is not enough and needs to be 32 ft. tall (Turtle Creek has 800 LF of 32 ft. tall and that is what will be needed here).
Response: Question was submitted late. There is insufficient time to investigate the assumptions behind this question and provide a response.
15. **Question:** Can spiral weld casing be used or will it need to be straight seam?
Response: Yes, spiral well casing will be acceptable, provided it meets the standards in the technical specifications.
16. **Question:** Discharge location for testing water?
Response: Provided in plan sheet C-2.0
17. **Question:** NTP date?
Response: SAWS anticipates a NTP in early March.
18. **Question:** TCEQ Approval?
Response: Plans have been approved by TCEQ.
19. **Question:** EAA Approval?
Response: EAA drilling permit is in process.
20. **Question:** Is there data for another well that we can study in order to prepare our bid?
Response: Reports for wells 1-3 are included in this Addendum.

CHANGES TO THE SPECIFICATIONS

1. **INVITATION TO BIDDERS.** The previous Invitation to Bidders is replaced with the attached revised Invitation to Bidders, noting the following change:
 - a. Sealed Bids Due Date was updated to correctly reflect the new calendar year, 2019.
2. **SUPPLEMENTAL CONDITIONS. ARTICLE V, CONTRACT RESPONSIBILITIES.** Remove Section 5.6.2 in its entirety and replace with the following:

The Contractor shall immediately, and before such discovered conditions and/or structures are disturbed, notify the Owner with a RFI of (1) subsurface or latent physical and/or structural conditions at the site within a depth of 20 feet or less from land surface differing materially from those indicated in the Plans, Specifications, and other Contract Documents or (2) newly discovered, unknown physical conditions at the site within a depth of 20 feet or less from land surface of an unusual nature differing materially from those geophysical conditions typically encountered in the type Work being performed and generally being recognized as not indigenous to the Texas environs and are not indicative of otherwise disclaimed in the plans, Specifications, and Contract Documents. The Owner, or designated representative, shall promptly investigate the reported physical and/or structural conditions, and shall determine whether or not the physical and/or structural conditions do materially so differ and whether they cause an increase or decrease in the Contractor's cost of, and/or the time required for performance of any part of the Work under this Contract. In the event that the Owner in its reasonable determination finds that the physical and/or structural conditions do materially so differ from the provisions of the Contract Documents, a negotiated, equitable, adjustment may be made to either the Contract Time or Contract Sum, or both as in the Owner's determination is reasonable, and a Contract Change Order shall be issued in writing accordingly.

3. **SECTION 02633, WELL DRILLING AND TESTING, GENERAL. PAGE 02633-16, PARAGRAPH F.** ADD the following sentences to the paragraph:

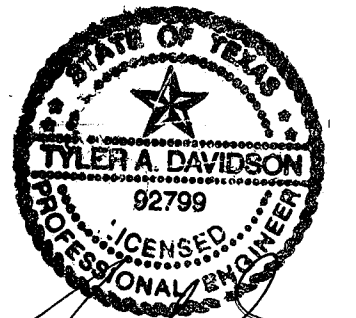
The security guard shall be present during working hours, and whenever site gates are not locked. The guard should be a commissioned guard from SECURITAS (SAWS' approved security contractor). No approved equals. The Guard should have familiarity with SAWS facilities, security policies, communication procedures, emergency response codes, and chemical response protocols. The guard shall have NIMS-certification, first aid/AED certification, and shall meet all SAWS requirements for psychological testing. Provision of the security guard for the duration of the Work is included in mobilization, and no additional payment will be made for the provision of the security guard.

END OF ADDENDUM

This Addendum, including these 3 pages, is 65 pages with attachments in its entirety.

Attachments:

Invitation to Bidders
State well reports and other information for Wells 1-3



2018-01-07

INVITATION TO BIDDERS

Solicitation No. CO-00247

Sealed bids are requested by the San Antonio Water System for the construction of one public water supply well for the **Micron Station Production Well No. 4 Project**, SAWS Job No. 16-6004.

To view additional project information, as well as obtain the plans and specifications for this project, visit our website located at www.saws.org and click on the Business Center. Then select Bidder, Consultant, and Vendor Registration, which is located on the left-hand side of the screen. Select the Register Now button and proceed with registration.

For difficulties downloading plans and specifications, contact the Contracting Department at 210-233-3341.

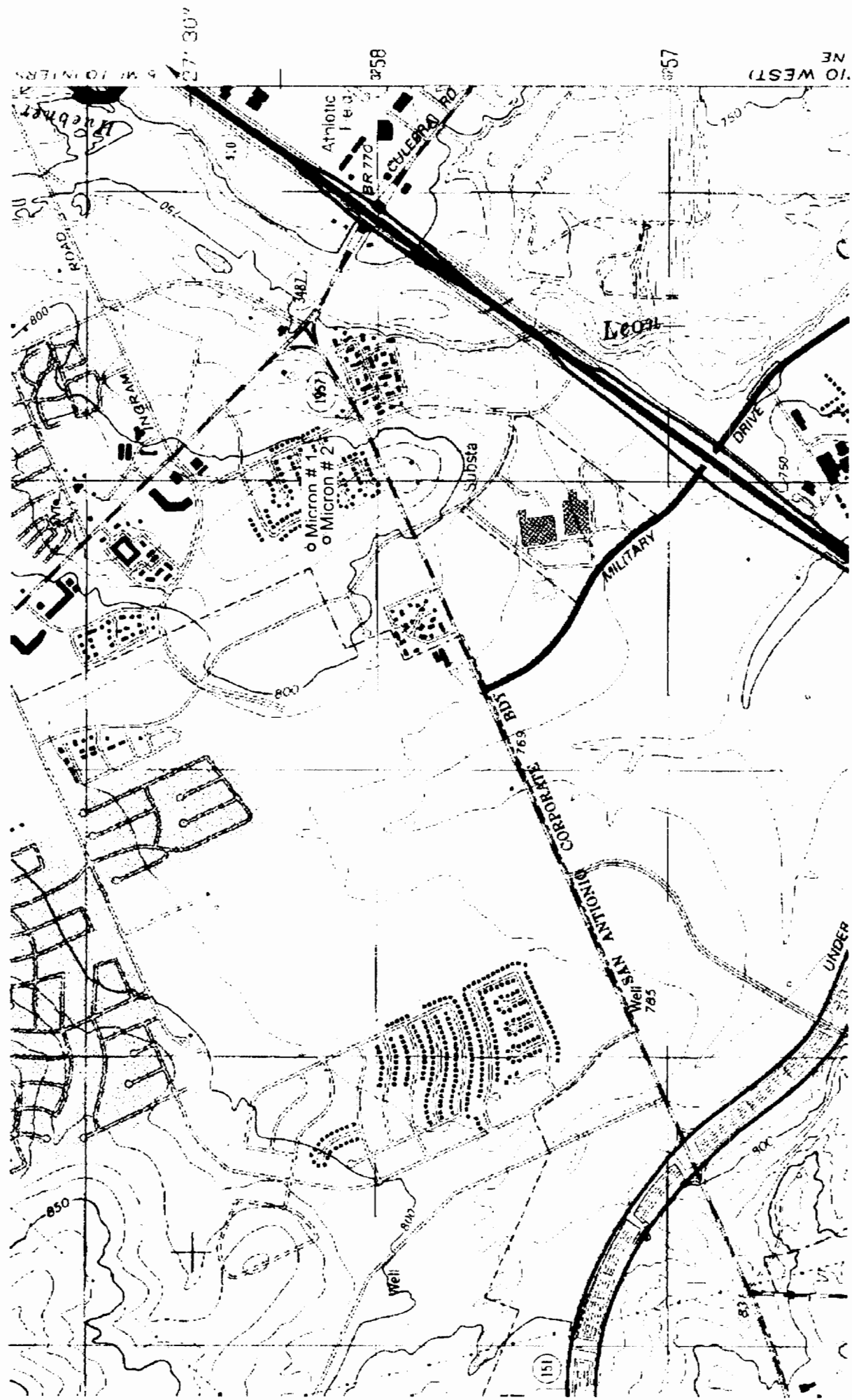
A **non-mandatory** pre-bid meeting and site visit will be held at **10:00 AM (CT)** on **December 18, 2018** at the San Antonio Water System's Micron Pump Station, 7531 Micron Drive, San Antonio, Texas 78251.

For questions regarding this solicitation, technical questions or additional information, please contact **Janie M. Powell, Contract Administrator**, in writing via email to: Janie.Powell@saws.org or by fax to (210) 233-5351 until **4:00 PM (CT)** on **December 20, 2018**. Answers to the questions will be posted to the web site by **5:00 PM (CT)** on **January 7, 2018** as a separate document or included as part of an addendum. Please be advised that Bidders are prohibited from communicating with any other SAWS staff, the Consultant, the Developer, or City of San Antonio officials regarding this IFB up until the contract is awarded as outlined in the Instructions to Bidders.

Sealed bids will be received by Counter Services in the Customer Service office across from the Guard Station, 2800 U.S. Hwy 281 North, Customer Center Building, San Antonio, Texas 78212, **until 10:00 AM (CT), January 14, 2019**. Bids will then be publicly opened and read aloud by Contract Administration in **CR-C145**, Customer Center Building, 2800 U.S. Hwy 281 North, San Antonio, Texas. Each bid must be accompanied by a cashier's check, certified check, or bid bond in an amount not less than five percent of the total bid price.

WELL SCHEDULE

State Well Number:	Ay 68-35-616	Previous Well Number:	
Aquifer:	EDWARDS ▼	River Basin:	San Antonio
County:	Bexar	State:	Texas
Elevation:	817.25	Determined By:	USGS topo
Latitude:	29-27-16	Longitude:	098-38-29
Location:	See Attached Map		
Depth to Top of Aquifer:	Kea 352'		
PWS Number:	G0150018DD	Well Name:	Micron # 1
Owner: San Antonio Water System			
Address: 1001 E. Market St. San Antonio, TX 72298			
Tenant:			
Address:			
Driller: Frank Rosenkranz & Son			
Address: 6839 Leslie Rd., San Antonio, TX 78254			
Well Use:	PUBLIC SUPPLY ▼		
Date Drilled:	6/24/02	Drilling Method:	Mud Rotary
Depth Reported:	855	Measured from:	Land Surface
Bore Hole Completion:	Open Hole	Screen Data:	
Well Completion:	Steel		
Well Diameter:	35" from 0' to 366		
Well Diameter:	24" from 366' to 855'		
Casing Diameter:	30" from 0' to 366'		
Casing Diameter:			
Casing Diameter:			
Cementing Data:	Pressure	Number of Sacks used:	700
Cemented By:	Slumberger		
Type of Pump:		Power Type:	
Well Test Data:	1007 gpm with 9' drawdown after 24 hrs.		
Water Level:	155'	Date:	6/4/2002
Recorded By:	Jim O'Connor SAWS	Source of Data:	Well Report
		Date:	8/5/2003
Comments:	68.35-616		



68-35-616

Attention Owner:
Confidentiality Privilege Notice
on reverse side of owner's copy.

Texas Department of License and Regulation
Water Well Driller/Pump Installer Program
P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616
Toll free (800)803-9202
Email address: water.well@license.state.tx.us

This form must be completed
and filed with the department
and owner within 60 days
upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

1) OWNER

Name <u>San Antonio Water System</u>	Address <u>1001 E. Market St.</u>	City <u>San Antonio</u>	State <u>TX</u>	Zip <u>78208-2445</u>
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2) WELL LOCATION

County <u>Bexar</u>	Physical Address <u>1203 Micron</u>	City <u>San Antonio</u>	State <u>TX</u>	Zip <u></u>
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3) Type of Work

New Well Reconditioning
 Replacement Deepening

Lat. <u>29° 27.290N</u>	Long. <u>098° 38.501W</u>	Grid # <u>68-35-9</u>
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4) Proposed Use (check) Monitor Environmental Soil Boring Domestic
 Industrial Irrigation Injection Public Supply De-watering Testwell
 Rig Supply If Public Supply well, were plans submitted? Yes No

5) NT

6) Drilling Date

Started 10/07/01
Completed 6/24/02

Diameter of Hole		
Dia. (in.)	From (ft)	To (ft)
25"	0'	300'
24"	300'	855'

7) Drilling Method (check) Driven
 Air Rotary Mud Rotary Bored
 Air Hammer Cable Tool Jetted
 Other _____

From (ft)	To (ft)	Description and color of formation material
0'	1'	Topsoil
1'	65'	limestone Caliche White/Yellow
65'	150'	Taylor Blue/Grey
150'	280'	Justin Chalk White
280'	280'	Eagle Shale Black
280'	305'	Buda limestone White
305'	352'	Del Rio clay Blue/Grey
352'	377'	Georgetown limestone Creme
377'	855'	Edwards limestone Creme

8) Borehole Completion Open Hole Straight Wall
 Under-reamed Gravel Packed Other _____
If Gravel Packed give the interval from _____ ft. to _____ ft.

Casing, Blank Pipe, and Well Screen Data					
Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc Screen Mfg. if commercial	Setting (ft)		Gage Casing Screen
			From	To	
30	New	Steel	0'	300'	500'

(Use reverse side of Well Owner's copy, if necessary)

13) Plugged

Well plugged within 48 hours
Casing left in well: Cement/Bentonite placed in well:
From (ft) To (ft) From (ft) To (ft) Sacks used

9) Cementing Data
Cementing from 0 ft. to 300 ft. # of sacks used 700
ft. to _____ ft. # of sacks used _____
Method Used Pressure
Cementing By Subell Stumberger
Distance to septic system field or other concentrated contamination _____ ft.
Method of verification of above distance _____

14) Type Pump

Turbine Jet Submersible Cylinder
 Other _____
Depth to pump bowls, cylinder, jet etc., _____ ft.

15) Water Test

Type test Pump Bailer Jetted Estimated
Yield: 100 gpm with 9 ft. drawdown after 24 hrs.

16) Water Quality

Did you knowingly penetrate a strata which contain undesirable constituents.
 YES NO If yes, did you submit a REPORT OF UNDESIRABLE WATER
Type of water Edwards Depth of Strata 300
Was a chemical analysis made Yes No

10) Surface Completion

Specified Surface Slab Installed
 Specified Surface Sleeve Installed
 Pitless Adapter Used
 Approved Alternative Procedure Used

11) Water Level

Static level 65 ft. below Date 6/4/02
Artesian Flow _____ gpm. Date _____

12) Packers

Type	Depth

Company or individual's Name (type or print) <u>Frank Rosenkranz & Sons</u>	Lic. No. <u>1518 NI</u>
Address <u>10339 Leslie Rd</u>	City <u>San Antonio</u> State <u>TX</u> Zip <u>78254</u>
Signature <u>Charles L. Rosenkranz</u> Date <u>8/15/02</u>	Signature _____

68-35-616



Service Order

14-Jan-02

Customer FRANK ROSENKRANZ & SONS		Person Taking Call Holmes, Jesse		Dowell Location Leming, TX		Order Date 1/14/2002		Job Number 2206335100	
Well Name and Number Micron 1			Legal Location		Field		County Bexar		State/Province Texas
Rig Name		Well Age New	Sales Engineer Holmes, Jesse			Job Type Cem Surface Casing			
Time Well Ready:	Deviation ·	Bit Size 35 in	Well MD 365 ft	Well TVD ft		BHP psi	BHST 85 °F	BHCT °F	
Treat Down Casing	Packer Type	Packer Depth ft	Wellhead Connection 4 1/2" IF DP pin	HWP on Location 500	Max Allowed Pressure		Max Allowed Ann Pressure		
Casing					Services Instructions:				
Depth, ft	Size, in	Weight, lb/ft	Grade	Thread	Cmt 30" Casing with 600 sks 50/50 Poz/H + 2% D20 + 100 sks Class H				
365	30	118.65							
Tubing					Extra Equipment:				
Depth, ft	Size, in	Weight, lb/ft	Grade	Thread	45 F H				
345.5	4.5	16.6							
Perforated Intervals									
Top, ft	Bottom, ft	spf	No. of Shots	Total Interval ft					
				Diameter in					

Contact	Voice	Mobile	FAX	Notes
Frank Rosenkrantz				

Notes:
Mileage 140 RT, Discount 35 New Book

Directions:
Take 281 North to 410 TL go to Sea World Exit TL on Loop 151 go to Pontranca TR go to Micron TL go to rig on right

Other Notes:
Will Get Water From City

68 35 616

Comments:

Work And Drive Safety

Material	Description	Quantity Needed
D020	Bentonite Extender D20	1190 LB
D035-CF	LITEPOZ 3 Extender D35	302 CF
D909	Cement, Class H D909	402 CF

Fluid Systems:

Lead			
600 sks 50/50 Poz/H + 2% D20			
<i>Density:</i>	14.2 lb/gal	<i>Thickening Time:</i>	
<i>Yield:</i>	1.26 ft ³ /sk	<i>Viscosity:</i>	cp
<i>H2O Mix:</i>	5.75 gal/sk	<i>Break Time:</i>	
<i>H2O:</i>	3450 gal	<i>Eq. Sack Weight:</i>	87 lb
Dowell Code	Concl Amount	Total Quantity	
D20	1.74 lbs/sk	1044	
D35	40 lbs/sk	24000	
D909	47 lbs/sk	28200	

Tail			
100 sks Class H			
<i>Density:</i>	15.6 lb/gal	<i>Thickening Time:</i>	
<i>Yield:</i>	1.18 ft ³ /sk	<i>Viscosity:</i>	cp
<i>H2O Mix:</i>	5.2 gal/sk	<i>Break Time:</i>	
<i>H2O:</i>	520 gal	<i>Eq. Sack Weight:</i>	94 lb
Dowell Code	Concl Amount	Total Quantity	
D909	94 lbs/sk	9400	

Schlumberger

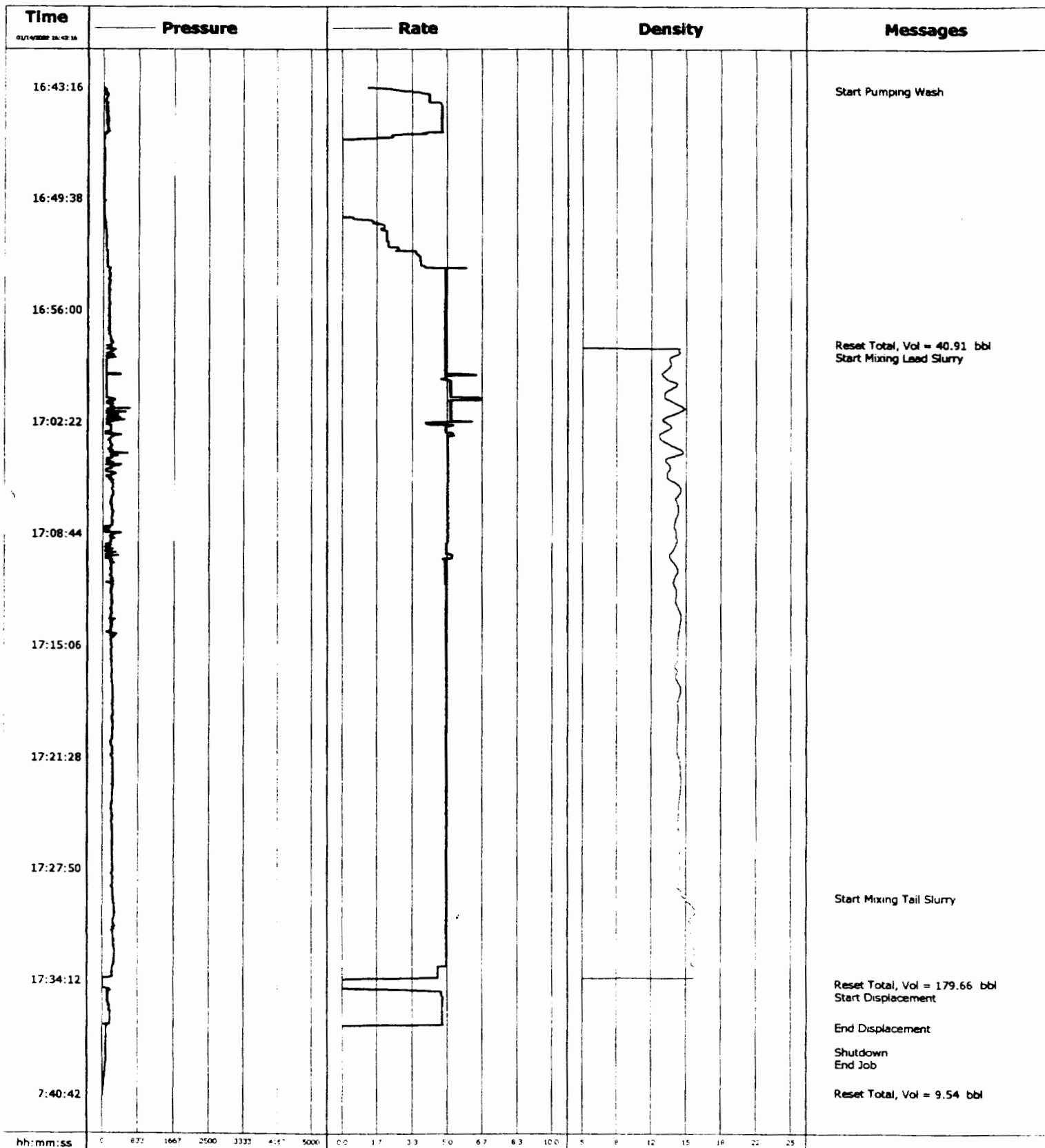
Job Date: 01-14-2002

Customer: Frank Rosenkranz & Sons
District: LEMING
Representative: Frank Rosenkranz
DS Supervisor: Cameron Tollett
Well: Micron 1

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure psi	Flow Rate bbl/min	Density lb/gal
01:14:2002:16:43:16	9	1.1	-6.25
01:14:2002:16:43:26	Start Pumping Wash		
01:14:2002:16:43:26	50	2.7	-6.25
01:14:2002:16:44:06	55	4.2	-6.25
01:14:2002:16:44:57	92	4.8	-6.25
01:14:2002:16:45:47	151	4.8	-6.25
01:14:2002:16:46:37	23	0.0	-6.25
01:14:2002:16:47:27	27	0.0	-6.25
01:14:2002:16:48:17	27	0.0	-6.25
01:14:2002:16:49:07	27	0.0	-6.25
01:14:2002:16:49:57	32	0.0	-6.25
01:14:2002:16:50:47	32	1.0	-6.25
01:14:2002:16:51:37	69	2.1	-6.25
01:14:2002:16:52:27	82	2.7	-6.25
01:14:2002:16:53:17	105	3.7	-6.25
01:14:2002:16:54:07	156	4.9	-6.25
01:14:2002:16:54:57	156	4.9	-6.25
01:14:2002:16:55:48	137	4.9	-6.25
01:14:2002:16:56:38	133	4.9	-6.25
01:14:2002:16:57:28	188	4.9	-6.25
01:14:2002:16:57:52	Reset Total, Vol = 40.91 bbl		
01:14:2002:16:57:52	192	4.9	-6.25
01:14:2002:16:57:56	Start Mixing Lead Slurry		
01:14:2002:16:57:56	179	4.9	-6.25
01:14:2002:16:58:18	220	5.0	14.34
01:14:2002:16:59:08	87	4.9	13.45
01:14:2002:16:59:58	87	5.1	13.53
01:14:2002:17:00:48	82	5.2	12.92
01:14:2002:17:01:38	233	5.2	14.63
01:14:2002:17:02:28	78	4.2	13.43
01:14:2002:17:03:18	165	5.0	12.60
01:14:2002:17:04:08	275	5.0	14.33
01:14:2002:17:04:58	211	5.0	13.41
01:14:2002:17:05:48	229	5.0	14.11
01:14:2002:17:06:38	206	5.0	14.00
01:14:2002:17:07:29	243	5.0	14.21
01:14:2002:17:08:19	55	5.0	13.85
01:14:2002:17:09:09	192	5.0	14.07
01:14:2002:17:09:59	220	5.2	13.43
01:14:2002:17:10:49	206	4.9	14.17
01:14:2002:17:11:39	215	4.9	13.91
01:14:2002:17:12:29	197	4.9	14.01

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure psi	Flow Rate bbl/min	Density lb/gal
01:14:2002:17:14:09	188	4.9	14.33
01:14:2002:17:14:59	215	4.9	14.14
01:14:2002:17:15:49	206	4.9	14.17
01:14:2002:17:16:39	229	4.9	14.04
01:14:2002:17:17:29	243	4.9	14.51
01:14:2002:17:18:19	243	4.9	14.14
01:14:2002:17:19:10	220	4.9	14.22
01:14:2002:17:20:00	243	4.9	14.17
01:14:2002:17:20:50	224	4.9	14.14
01:14:2002:17:21:40	243	4.9	14.40
01:14:2002:17:22:30	256	4.9	14.47
01:14:2002:17:23:20	243	5.0	14.44
01:14:2002:17:24:10	206	4.9	14.30
01:14:2002:17:25:00	233	4.9	14.23
01:14:2002:17:25:50	238	4.9	14.25
01:14:2002:17:26:40	238	4.9	14.34
01:14:2002:17:27:30	247	4.9	14.45
01:14:2002:17:28:20	243	4.9	14.42
01:14:2002:17:29:10	247	4.9	14.52
01:14:2002:17:29:23	Start Mixing Tail Slurry		
01:14:2002:17:29:23	252	4.9	14.88
01:14:2002:17:30:00	279	4.9	15.84
01:14:2002:17:30:51	261	4.9	15.52
01:14:2002:17:31:41	261	4.9	15.48
01:14:2002:17:32:31	279	4.9	15.82
01:14:2002:17:33:21	243	4.5	15.78
01:14:2002:17:34:11	5	0.0	-6.25
01:14:2002:17:34:17	Reset Total, Vol = 179.66 bbl		
01:14:2002:17:34:17	5	0.0	-6.25
01:14:2002:17:34:25	Start Displacement		
01:14:2002:17:34:25	5	0.0	-6.25
01:14:2002:17:35:01	119	4.8	-6.25
01:14:2002:17:35:51	169	4.7	-6.25
01:14:2002:17:36:41	60	0.8	-6.25
01:14:2002:17:36:44	End Displacement		
01:14:2002:17:36:44	96	0.0	-6.25
01:14:2002:17:37:31	92	0.0	-6.25
01:14:2002:17:38:09	Shutdown		
01:14:2002:17:38:09	87	0.0	-6.25
01:14:2002:17:38:21	End Job		
01:14:2002:17:38:21	87	0.0	-6.25
01:14:2002:17:40:32	Reset Total, Vol = 9.54 bbl		
01:14:2002:17:40:37	9	0.0	-6.25

Well	Micron 1	Client	Frank Rosenkranz Sons
Field	Pontranca Micron	SIR No.	2206335100
Engineer	Cameron Tollett	Job Type	Water Well
Country	United States	Job Date	01-14-2002



Cementer: Fill in shaded areas.
Operator: Fill in other items

Form W-15
Cementing Report
Rev. 4/1/83
483-045

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

1. Operator's Name (As shown on Form P-5, Organization Report) Frank Rosenkranz & Sons	2. RRC Operator No.	3. RRC District No.	4. County of Well Site Bexar
5. Field Name (Wildcat or exactly as shown on RRC records)	6. API No. 42-		7. Drilling Permit No.
8. Lease Name Micro	9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No. 1

CASING CEMENTING DATA:		SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
				Single String	Multiple Parallel Strings	Tool	Shoe
Cameron Tallet - SS II							
12. Cementing Date				01/14/2002			
13. ● Drilling hole size							
● Est. % wash or hole enlargement							
14. Size of casing (in. O.D.)							
15. Top of liner (ft.)							
16. Setting depth (ft.)							
17. Number of centralizers used							
18. Hrs. waiting on cement before drill-out							
1st Slurry	19. API cement used: No. of sacks ▶			600			
	Class ▶			50/50 Poz/H			
	Additives ▶			2% D020			
2nd Slurry	No. of sacks ▶			100			
	Class ▶			H			
	Additives ▶						
3rd Slurry	No. of sacks ▶						
	Class ▶						
	Additives ▶						
1st	20. Slurry pumped: Volume (cu. ft.) ▶			756			
	Height (ft.) ▶			426			
2nd	Volume (cu. ft.) ▶			118			
	Height (ft.) ▶			67			
3rd	Volume (cu. ft.) ▶						
	Height (ft.) ▶						
Total	Volume (cu. ft.) ▶			874			
	Height (ft.) ▶			493			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing?				Yes			
22. Remarks							

CEMENTING TO PLUG AND ABANDON	PLUG # 1	PLUG # 2	PLUG # 3	PLUG # 4	PLUG # 5	PLUG # 6	PLUG # 7	PLUG # 8
23. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type cement								

CEMENTER'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Cameron Tollet - SS II

Dowell Schlumberger

Ameron Tollet

Name and title of cementer's representative	Cementing Company	Signature
P.O. Box 379	Leming, Texas 78050	(830)569-2595
Address	City, State, Zip Code	Tel.: Area Code Number
		Date: mo. day yr. 14-Jan-02

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Typed or printed name of operator's representative	Title	Signature
Address	City, State, Zip Code	Tel.: Area Code Number
		Date: mo. day yr.

Instructions to Form W-15, Cementing Report

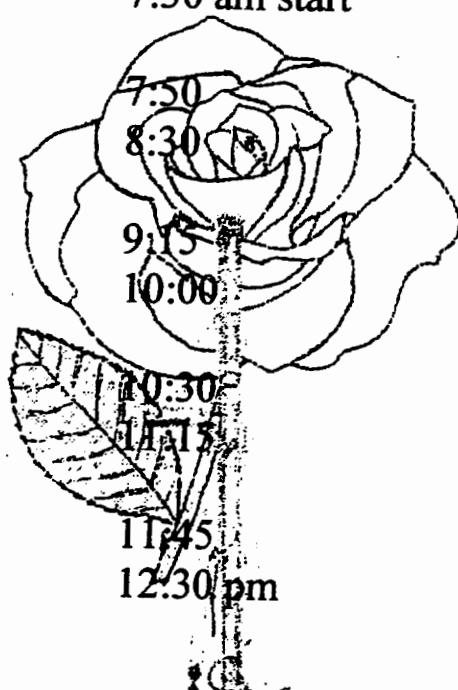
IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's State Rules 8 (Water Protection), 13 (Casing, Cementing, Drilling, and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

- A. **What to file.** An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:
 - An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
 - Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
 - Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to Form W-3, to show any casing cemented in the hole.
- B. **Where to file.** The appropriate Commission District Office for the county in which the well is located.
- C. **Surface casing.** An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by the Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protection depth. Surface casing should not be set deeper than 200 feet below the specified depth without prior approval from the Commission.
- D. **Centralizers.** Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. All centralizers must meet API specifications.
- E. **Exceptions and alternative casing programs.** The District Director may grant an exception to the requirements of Statewide Rule 13. In a written application, an operator must state the reason for the requested exception and outline an alternate program for casing and cementing through the protection depth for strata containing usable-quality water. The District Director may approve, modify, or reject a proposed program. An operator must obtain approval of any exception before beginning casing and cementing operations.
- F. **Intermediate and production casing.** For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (4).
- G. **Plugging and abandoning.** Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot cement plug must be placed in the top of the well, and the casing must be cut off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Micron Well #1 Casing Tally

Length	Time	Date
#1 40'-9 1/2"	7:30 am start	1-14-02
#2 78'-8"	7:50	
#3 78'-8"	8:30	
#4 78'-7"	9:15	
#5 79'-6"	10:00	
	10:30	
	11:15	
	11:45	
	12:30 pm	



Total Casing: 366 g.l. — 30" O.D. 500 wall

Note: 1:00 pm to 4:30 pm made ready for inner-string pressure cement method via float/cementing collar.

4: 45-5:45 cementing completed with positive cement return with negligible settling of cement.

MICRON WELL #1 PUMP TEST RECORD

DATE	TIME	PUMPING LEVEL	PUMPING GPM	ENGINE RPM	PUMP RPM	REMARKS	PUMP SETTING
5-2-02	10:30 AM	212'	4154	1100	1100	5-02: W.L. 152'	305'
	11:00	"	5249	1300	1300	At 7067 gpm draw-	
	11:15	"	5986	1400	1400	down 1564'	
	11:45	214'	6414	1500	1500	Well will be acidized	
	12:15	216'	7007	1600	1600	with 49000 gal. 15'/1 HD	
	12:30	216'	7007	1600	1600		
		↓ Post-Acidization		↓			
5-31-02	3:30 pm	151.0	3552	1000	1000	5-31: W.L. 151'	
	3:55	153.5	4154	1100	1100	Color - cloudy to	
	4:15	154.5	4644	1200	1200	start, but clears up	
	5:00	156.0	5249	1300	1300	Sediment - little	
	6:15	158.5	5986	1400	1400	taste - bitter	
	6:30	160.0	7007	1600	1600		
6-01-02	9:00 AM	151.5	3552	1000	1000	6-01: W.L. 151.5'	
	9:30	154.5	4644	1200	1200	color - cloudy to	
	10:30	156.0	5249	1300	1300	start, but clears up	
	↓ Repair					Sediment - NONE	
	11:00	154.5	4644	1200	1200	taste - bitter	
	11:45	156.0	5249	1300	1300		
	12:45	158.5	5986	1400	1400		
	2:15	158.5	5986	1400	1400		
	3:45	158.5	7007	1600	1600		
	4:00	160.5	7007	1600	1600		
6-02-02	10:00 AM	152.0	3552	1000	1000	6-02: W.L. 152.0'	
	10:15	154.0	4154	1100	1100	Color - cloudy to	
	10:30	155.5	4644	1200	1200	start, but clears up	
	10:45	157.0	5249	1300	1300	Sediment - NONE	
	11:30	159	5986	1400	1400	taste - NOT AS bitter	

FRANK ROSENKRANZ & SONS
 WATERWELL DRILLING & PUMP SERVICE
 6839 LESLIE RD
 SAN ANTONIO, TX 78254
 SINCE 1920

Micron #1

Micron

Brewer State Texas

Platform Express

Array Induction

Gamma Ray

Field: Micron
 Location: Long: 98 Deg 38' 30" W
 Well: Micron #1
 Company: San Antonio Water System

LOCATION		Long: 98 Deg 38' 30" W	Elev.: K.B. 826.85 ft
		Lat: 29 Deg 27' 16" N	G.L. 817.25 ft
			D.F. 825.85 ft
Permanent Datum:	Ground Level	Elev.: 817.25 ft	
Log Measured From:	Kelly Bushing	9.6 ft above Perm. Datum	
Drilling Measured From:	Kelly Bushing		
API Serial No.		Fig: Rosenkranz & Sons	

Logging Date	26-Feb-2002
Run Number	Two
Depth Driller	852 ft
Schlumberger Depth	852 ft
Bottom Log Interval	844 ft
Top Log Interval	370 ft
Casing Driller Size @ Depth	30,000 in @ 366 ft
Casing Schlumberger	370 ft
Bit Size	12,250 in
Type Fluid In Hole	Fresh Mud
Density	8.7 lbm/gal
Viscosity	63 s
Fluid Loss	0 cm3
PH	
Source Of Sample	
FM (a) Measured Temperature	(a)
RMF (a) Measured Temperature	(a)
FMC (a) Measured Temperature	(a)
Source RMF	RMC
RMF (a) MRT	(a) 85
RMF (a) MRT	(a) 85
Maximum Recorded Temperatures	85 degf
85 degf	85
Circulation Stopped	
Time	
Time	
Logger On Bottom	26-Feb-2002
Time	10:00
Unit Number	2185
Location	Victoria
Recorded By	S Shakour
Witnessed By	Wauqh

Logging Date	
Run Number	
Depth Driller	
Schlumberger Depth	
Bottom Log Interval	
Top Log Interval	
Casing Driller Size @ Depth	
Casing Schlumberger	
Bit Size	
Type Fluid In Hole	
Density	
Viscosity	
Fluid Loss	
PH	
Source Of Sample	
FM (a) Measured Temperature	(a)
RMF (a) Measured Temperature	(a)
FMC (a) Measured Temperature	(a)
Source RMF	RMC
RMF (a) MRT	(a)
RMF (a) MRT	(a)
Maximum Recorded Temperatures	
Circulation Stopped	
Time	
Time	
Logger On Bottom	
Time	
Unit Number	
Location	
Recorded By	
Witnessed By	

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES1

OS1: OS2:

OTHER SERVICES2

OS1: OS2:

Input DLIS Files

DEFAULT AIT_SONIC_TLD_MCFL_053PUP FN:50 PRODUCER 26-Feb-2002 13:30 855.5 FT 35.0 FT

Output DLIS Files

DEFAULT AIT_SONIC_TLD_MCFL_092PUP FN:89 PRODUCER 26-Feb-2002 23:43 855.5 FT 39.5 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 424.63 F3
 Cement Volume = 424.63 F3 (assuming 0.00 IN casing O.D.)
 Computed from 852.0 FT to 370.0 FT using data channel(e) HCAL

OP System Version: 10C0-306 MCM

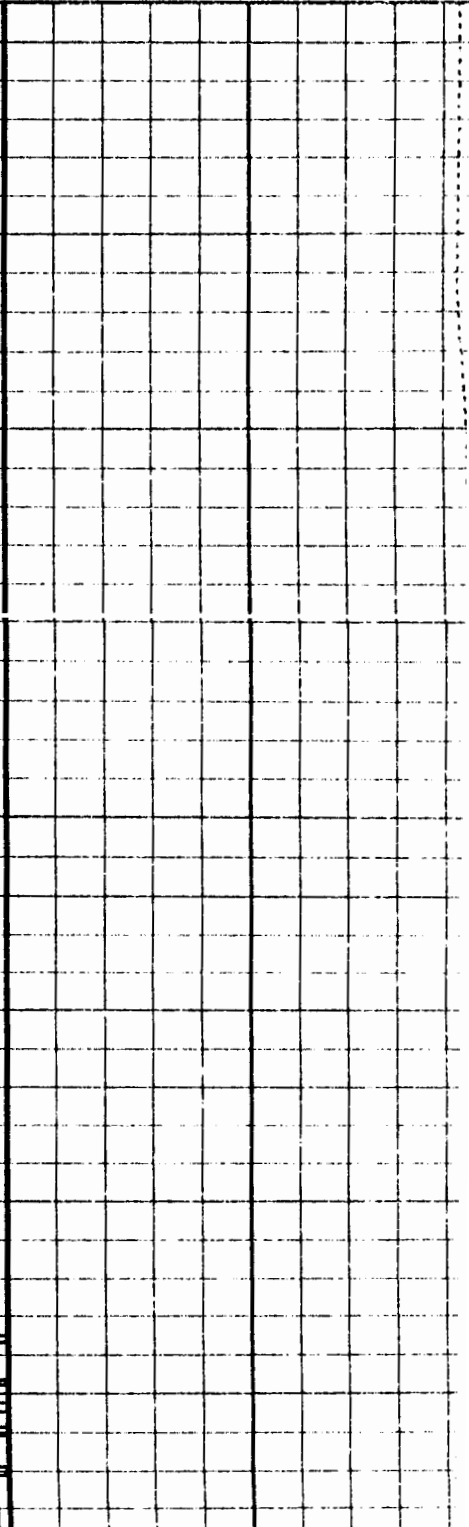
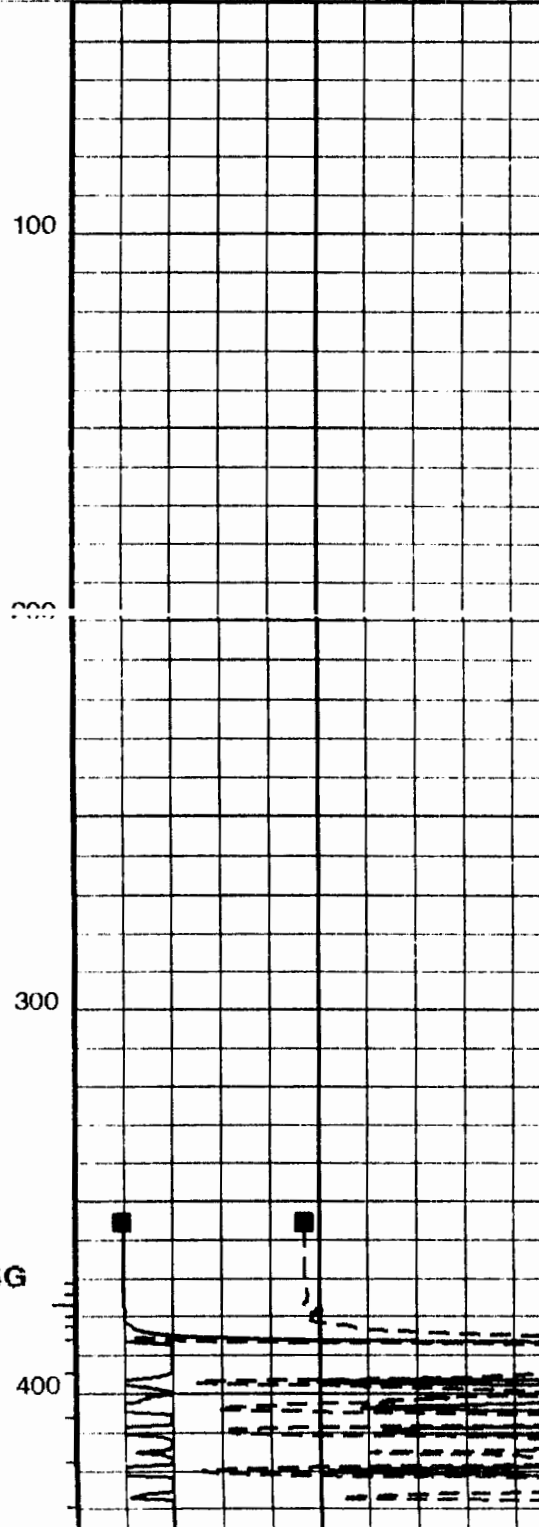
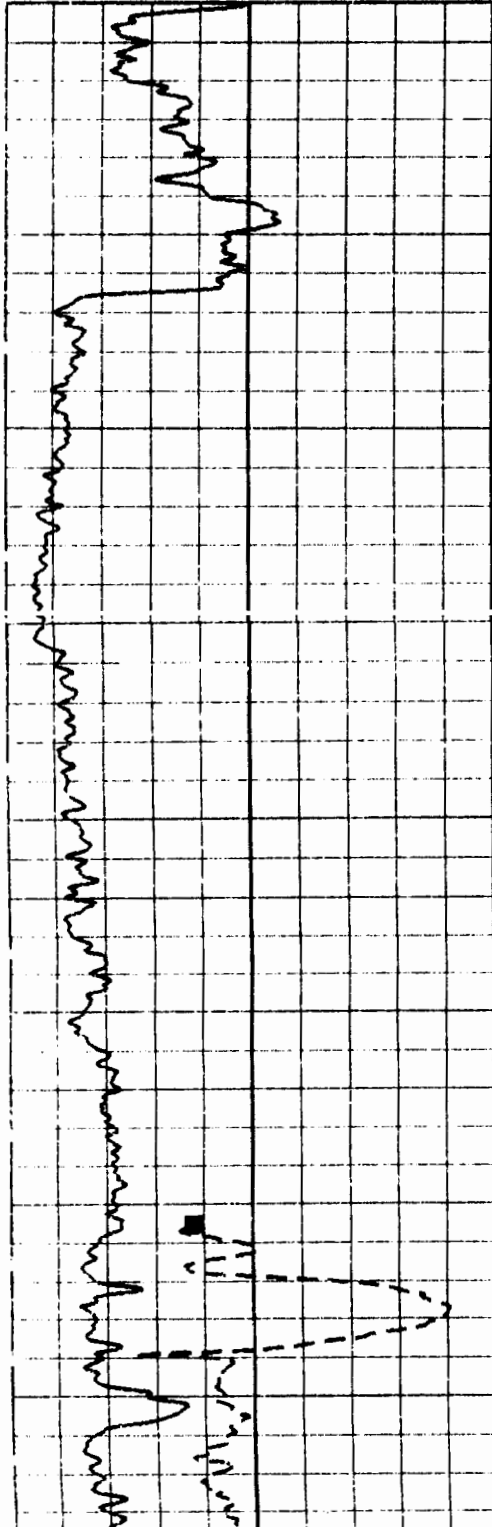
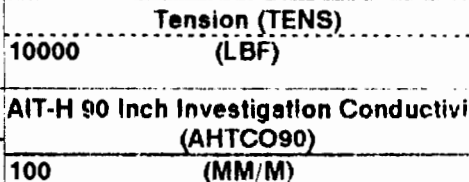
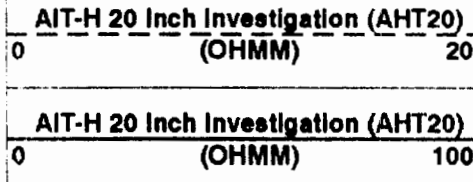
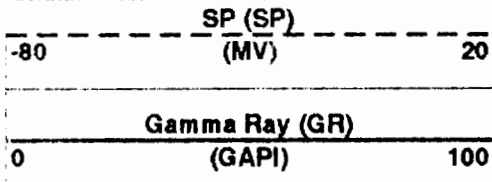
HAIT-H SRPC-2201-HILTH_b DSLT-H 10C0-306
 HILTB-FTB SRPC-2201-HILTH_b DTC-H 10C0-306

PIP SUMMARY

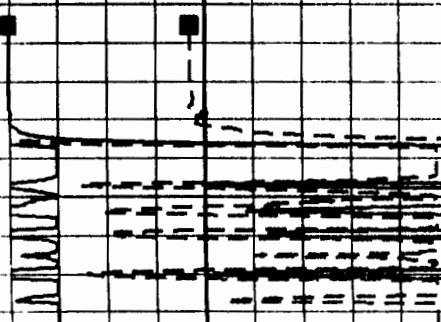
- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
 - Integrated Cement Volume Minor Pip Every 10 F3
 - Integrated Cement Volume Major Pip Every 100 F3

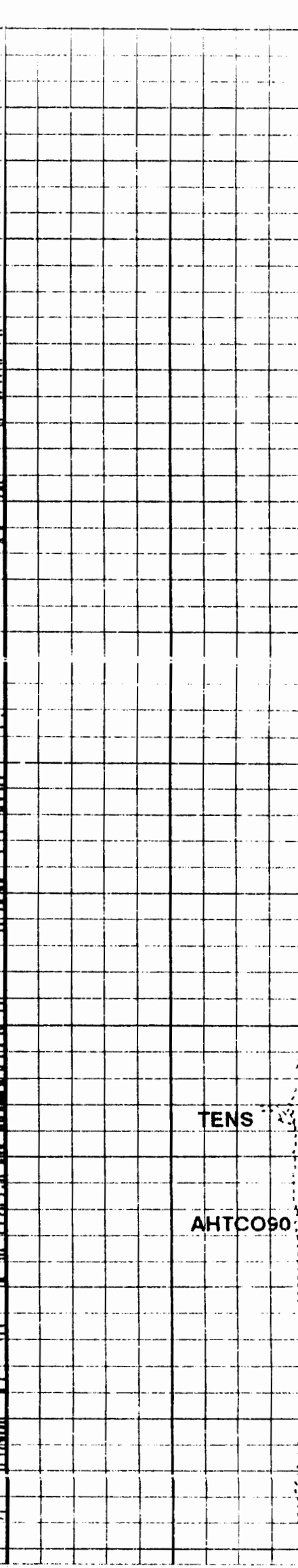
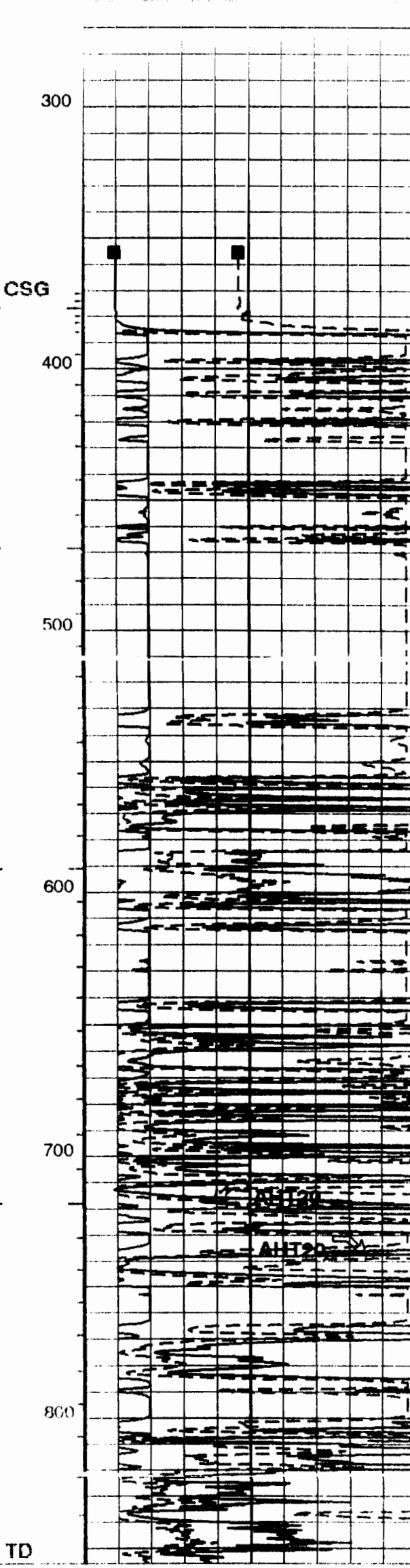
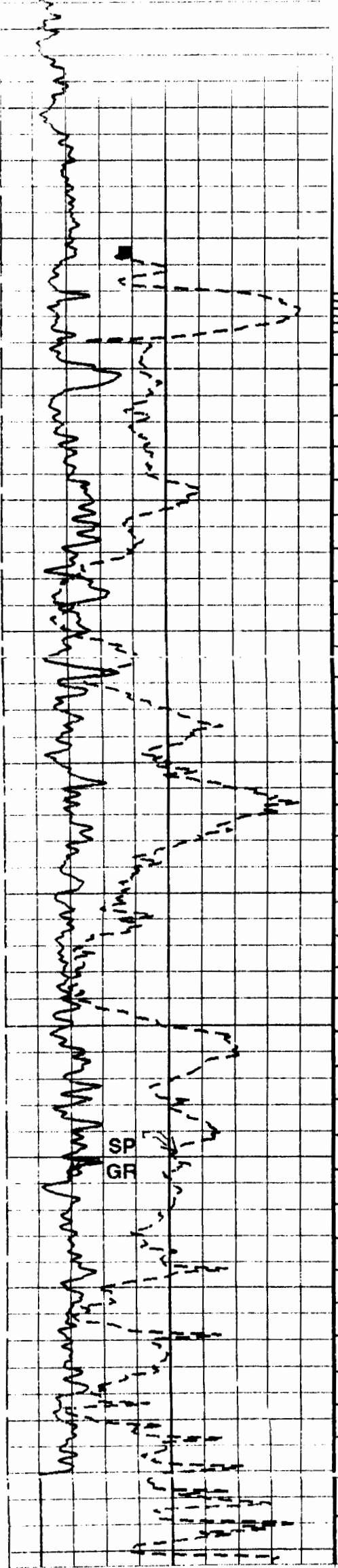
2" CORRELATION LOG

Time Mark Every 60 S



CSG





Gamma Ray (GR)
(GAPI) 0 100

SP (SP)
(MV) 80 20

AIT-H 20 Inch Investigation (AHT20)
(OHMM) 0 1000

AIT-H 20 Inch Investigation (AHT20)
(OHMM) 0 200

AIT-H 90 Inch Investigation Conduc
(AHTCO90) 100 (MM/M)

Tension (TENS)
(LBF) 10000

PIP SUMMARY

- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
- ┆ Integrated Cement Volume Minor Pip Every 10 F3
- ┆ Integrated Cement Volume Major Pip Every 100 F3

2' CORRELATION LOG

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 68 35 617 Previous Well Number - County - Bexar 029
River Basin - San Antonio River - 19 Zone - 1 Latitude - 29 27 15 Longitude - 98 38 28 Source of Coords - 0

Owners Well No. _____ Location _____ 1/4, _____ 1/4, Section _____, Block _____, Survey _____

Owner - Micron Driller -
#2

Address _____ Tenant/Oper. _____

Date Drilled - / /2002 Depth - 850 ft. Source of Depth - R Altitude - 816 ft. Source of Alt. - M

Aquifer - 218EDRDA EDWARDS AND ASSOCIATED LIMESTONES Well Type - W User -

WELL Const. Casing
CONSTRUCTION Method - _____ Material - _____ | Casing or Blank Pipe (C)
Screen _____ | Well Screen or Slotted Zone ()
Completion - _____ Material - _____ | Open Hole (O)
Cemented from _____ to _____

LIFT DATA - Pump Mfr. _____ Type - _____ No. Stages _____ | Diam. Setting(feet)
(in.) From To

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - _____ Horsepower - _____

YIELD Flow- _____ GPM Pump- _____ GPM Meas., Rept., Est- _____ Date- _____

PERFORMANCE TEST Date- _____ Length of Test- _____ Production- _____ GPM

Static Level- _____ ft. Pumping Level- _____ ft. Drawdown- _____ ft. Sp.Cap.- _____ GPM/ft

QUALITY (Remarks- _____

WATER USE Primary- _____ Secondary- _____ Tertiary- _____

OTHER DATA AVAILAIBLE Water Levels- N Quality- N Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

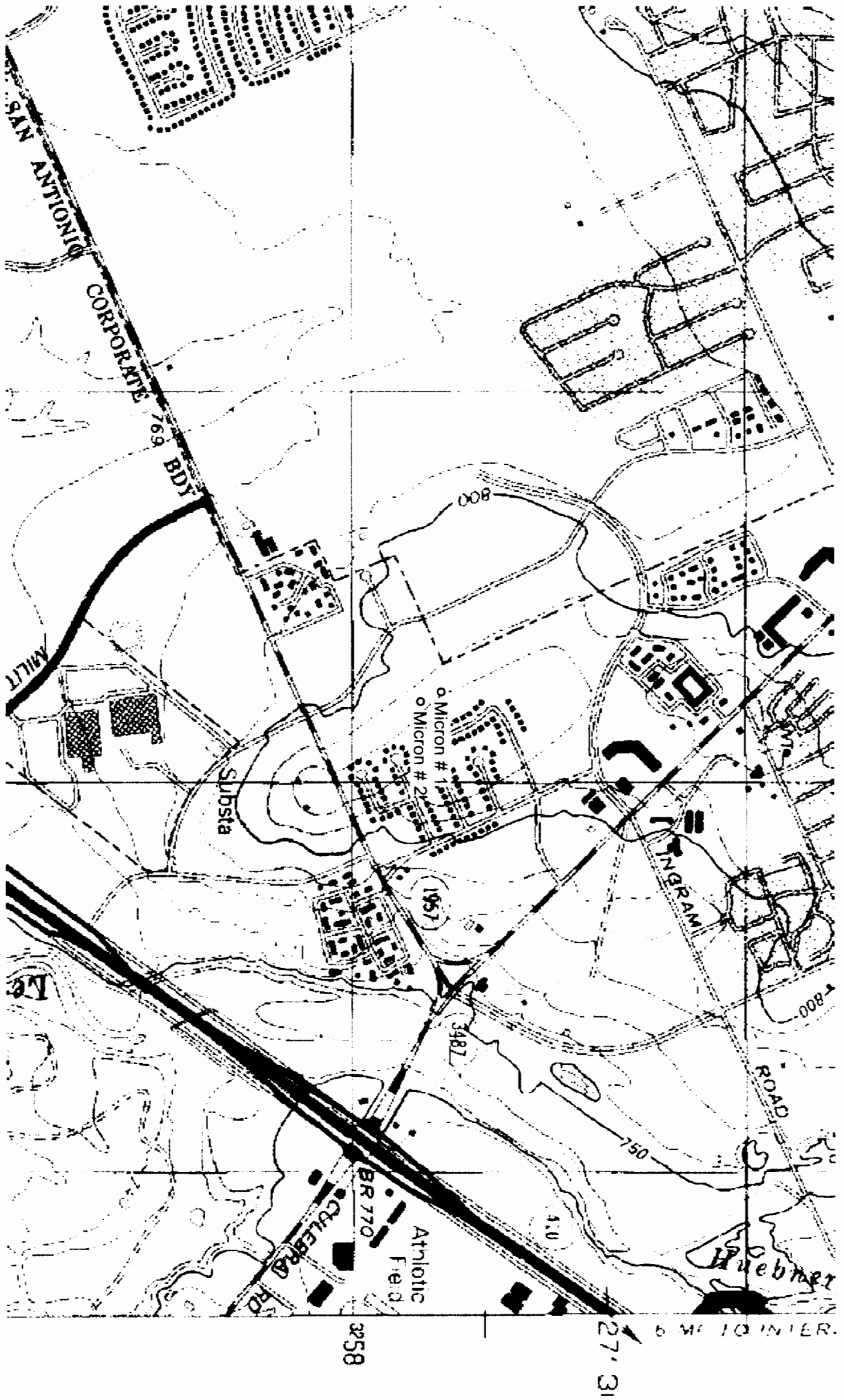
Recorded By Dennis R Jones Date Record Collected or Updated- 03/27/2003

Reporting Agency - CONSULTING COMPANIES OR FIRMS

REMARKS -

WELL SCHEDULE

State Well Number:	Ay 68-35-617	Previous Well Number:	
Aquifer:	EDWARDS ▼	River Basin:	San Antonio
County:	Bexar	State:	Texas
Elevation:	816.17	Determined By:	USGS topo
Latitude:	29-27-14	Longitude:	098-38-28
Location:	See Attached Map		
Depth to Top of Aquifer:	Kea 460'		
PWS Number:	G0150018DE	Well Name:	Micron # 2
Owner: San Antonio Water System			
Address: 1001 E. Market St. San Antonio, TX 72298			
Tenant:			
Address:			
Driller: Frank Rosenkranz & Son			
Address: 6839 Leslie Rd., San Antonio, TX 78254			
Well Use:	PUBLIC SUPPLY ▼		
Date Drilled:	11/12/02	Drilling Method:	Mud Rotary
Depth Reported:	850	Measured from:	Land Surface
Bore Hole Completion:	Open Hole	Screen Data:	
Well Completion:	Steel		
Well Diameter:	35" from 0' to 480		
Well Diameter:	24" form 480' to 850'		
Casing Diameter:	30" form 0' to 480'		
Casing Diameter:			
Casing Diameter:			
Cementing Data:	Pressure	Number of Sacks used:	805
Cemented By:	Slumberger		
Type of Pump:		Power Type:	
Well Test Data:	7007 gpm with 2' drawdown after 24 hrs.		
Water Level:	106'	Date:	11/24/2002
Recorded By:	Jim O'Connor SAWS	Source of Data:	Well Report
		Date:	8/5/2003
Comments:	68-35-617		



Culebra Hill, TX; Scale: 1" = 0.210MI 338M; 1.110Ft, 1 MI = 4.757", 1 cm = 133M

Attention Owner:
Confidentiality Privilege Notice
on reverse side of owner's copy.

Mick... 2

Texas Department of License and Regulation

Water Well Driller/Pump Installer Program

P.O. Box 12157 Austin, Texas 78711 (512)463-7880 FAX (512)463-8616

Toll free (800)803-9202

Email address: water.well@license.state.tx.us

This form must be completed and filed with the department and owner within 60 days upon completion of the well.

WELL REPORT

A. WELL IDENTIFICATION AND LOCATION DATA

Name <u>San Antonio Water System</u>	Address <u>1001 E. Market St.</u>	City <u>San Antonio</u>	State <u>TX</u>	Zip <u>78298-2409</u>
---	--------------------------------------	----------------------------	--------------------	--------------------------

County <u>Bexar</u>	Physical Address <u>7205 Micron</u>	City <u>San Antonio</u>	State <u>TX</u>	Zip <u></u>
------------------------	--	----------------------------	--------------------	----------------

3) Type of Work <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Replacement <input type="checkbox"/> Reconditioning <input type="checkbox"/> Deepening	Lat <u>29° 27.264' N</u> Long <u>98° 38.284' W</u> Grid # <u>68-35-9</u>	4) Proposed Use (check) <input type="checkbox"/> Industrial <input type="checkbox"/> Irrigation <input type="checkbox"/> Injection <input type="checkbox"/> Rig Supply <input checked="" type="checkbox"/> Public Supply <input type="checkbox"/> Monitor <input type="checkbox"/> Environmental Soil Boring <input type="checkbox"/> Domestic <input type="checkbox"/> De-watering <input type="checkbox"/> Testwell If Public Supply well, were plans submitted? <input type="checkbox"/> Yes <input type="checkbox"/> No	5) <u>NT</u>
--	--	--	--------------

6) Drilling Date Started <u>5/8/02</u> Completed <u>11/12/02</u>	Diameter of Hole Dia. (in.) From (ft) To (ft) <u>35"</u> <u>0</u> <u>480'</u> <u>24"</u> <u>480'</u> <u>850'</u>	7) Drilling Method (check) <input type="checkbox"/> Air Rotary <input type="checkbox"/> Air Hammer <input type="checkbox"/> Other <input checked="" type="checkbox"/> Mud Rotary <input type="checkbox"/> Bored <input type="checkbox"/> Cable Tool <input type="checkbox"/> Jetted
--	---	--

8) Borehole Completion <input type="checkbox"/> Open Hole <input type="checkbox"/> Straight Wall <input type="checkbox"/> Under-reamed <input type="checkbox"/> Gravel Packed <input type="checkbox"/> Other If Gravel Packed give the interval from _____ ft. to _____ ft.

From (ft)	To (ft)	Description and color of formation material	Dia. (in.)	New Or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft) From To	Gage Casing Screen
0'	1'	topsoil					
1'	105'	Limestone Caliche, white/yellow					
105'	155'	tauber shale, blue/gray					
155'	326'	Austin chalk, white					
326'	358'	tableford shale, black	30	NEW	Steel	0-480'	500'
358'	412'	bridal limestone, white					
412'	440'	del Rio clay, blue/grey					
440'	485'	Georgeburg limestone, creme					
485'	850'	Edwards limestone, creme					

9) Cementing Data Cementing from <u>0</u> ft. to <u>480</u> ft. # of sacks used <u>805</u> Method Used <u>Pressure</u> Cementing By <u>Shlumberger</u> Distance to septic system field or other concentrated contamination _____ ft. Method of verification of above distance _____
--

13) Plugged <input type="checkbox"/> Well plugged within 48 hours Casing left in well: _____ Cement/Bentonite placed in well: From (ft) To (ft) From (ft) To (ft) Sacks used <u>N/A</u>
--

14) Type Pump <input type="checkbox"/> Turbine <input type="checkbox"/> Jet <input checked="" type="checkbox"/> Submersible <input type="checkbox"/> Cylinder <input type="checkbox"/> Other Depth to pump bowls, cylinder, jet etc. _____ ft.
--

15) Water Test Type <u>est</u> Pump <input type="checkbox"/> Bailor <input type="checkbox"/> Jetted <input type="checkbox"/> Estimated Yield: <u>100</u> gpm with <u>2</u> ft. drawdown after <u>24</u> hrs.
--

16) Water Quality Did you knowingly penetrate a strata which contain undesirable constituents. <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <u>NO</u> If yes, did you submit a REPORT OF UNDESIRABLE WATER Type of water <u>forwards</u> Depth of Strata <u>850</u> Was a chemical analysis made <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

10) Surface Completion <input checked="" type="checkbox"/> Specified Surface Slab Installed <input type="checkbox"/> Specified Surface Sleeve Installed <input type="checkbox"/> Pitless Adapter Used <input type="checkbox"/> Approved Alternative Procedure Used
--

11) Water Level Static level <u>106</u> ft. below Date <u>11/24/02</u> Artesian Flow _____ gpm. Date _____
--

12) Packers Type _____ Depth _____ <u>N/A</u>

Company or individual's Name (type or print) <u>Frank Rosenkranz & Sons</u>	Lic. No. <u>1518 WI</u>
Address <u>6839 Gestler Rd</u>	City <u>San Antonio</u>
State <u>TX</u>	Zip <u>78254</u>
Signature <u>Frank Rosenkranz</u>	Date <u>12/02/02</u>

Customer FRANK ROSENKRANZ & SONS		Person Taking Call Holmes, Jesse		Dowell Location Leming, TX		Order Date 2002-Feb-26		Job Number 2206340287								
Well Name and Number Micron 2			Legal Location		Field		County		State/Province Texas							
Well Master: 0630405115			API / UWI:													
Rig Name			Well Age New		Sales Engineer Lewis, Jerry			Job Type Cem Prod Casing								
Time Well Ready: 8/22/2002 8:00 PM		Deviation *		BIT Size 35 in		Well MD 480 ft		Well TVD ft		BHP psi						
BHST 85 °F		BHCT °F		Treat Down Drill Pipe		Packer Type		Packer Depth ft		WellHead Connection 4 1/2 IF DP						
HHP on Location 250		Max Allowed Pressure		Max Allowed Ann Pressure												
Casing					Services Instructions: Cmt. 30" Prod. Csg. 35" OPEN HOLE System: 705 sks 50/50 Poz/H + 2% D20 + 2% S1 + 100 sks Class H											
Depth, ft		Size, in		Weight, lb/ft								Grade		Thread		
480		30		118.65												
Tubing					Extra Equipment: 4 1/2 IF DP											
Depth,		Size, in		Weight, lb/ft								Grade		Thread		
457		4.5		16.6												
Perforated Intervals																
Top, ft		Bottom, ft		spf		No. of Shots		Total Interval								
								ft								
								Diameter		in						
Expected On Location: 8/22/2002 8:00 PM Ready To Pump: 8/22/2002																

Contact	Voice	Mobile	FAX	Notes
Frank Rosenkranz				

Notes:
140 Mi. R.T.; 35% Discount

Directions:
Take 281 to 410 TL go to FM151 TL go to Potranka TR to Micron TL to rig

Other Notes:
Displacement 440 ft 4 1/8 16.6 ppf + 25 ft 30" casing + 26.67 bbls

Comments:

Drive Safe

Fluid Systems:

Lead			
705 sks 50/50 Poz/H + 2% D20 + 2% S1			
<i>Density:</i>	14.2	lb/gal	<i>Thickening Time:</i>
<i>Yield:</i>	1.34	ft ³ /sk	
<i>H2O Mix:</i>	6.27	gal/sk	
<i>H2O:</i>	4420.35	gal	<i>Eq. Sack Weight:</i> 87 lb
		<i>Total Blend:</i>	705 sacks
Dowell Code	Concl Amount		Total Quantity
S001	1.74	lbs/sk	1228.7
D020	1.74	lbs/sk	1228.7
D035	40	lbs/sk	28200
D909	47	lbs/sk	33135

Tail			
100 sks Class H			
<i>Density:</i>	15.6	lb/gal	<i>Thickening Time:</i>
<i>Yield:</i>	1.18	ft ³ /sk	
<i>H2O Mix:</i>	5.2	gal/sk	
<i>H2O:</i>	520	gal	<i>Eq. Sack Weight:</i> 0 lb
		<i>Total Blend:</i>	100 sacks
Dowell Code	Concl Amount		Total Quantity
D909	94	lbs/sk	9400

Cementing Service Report

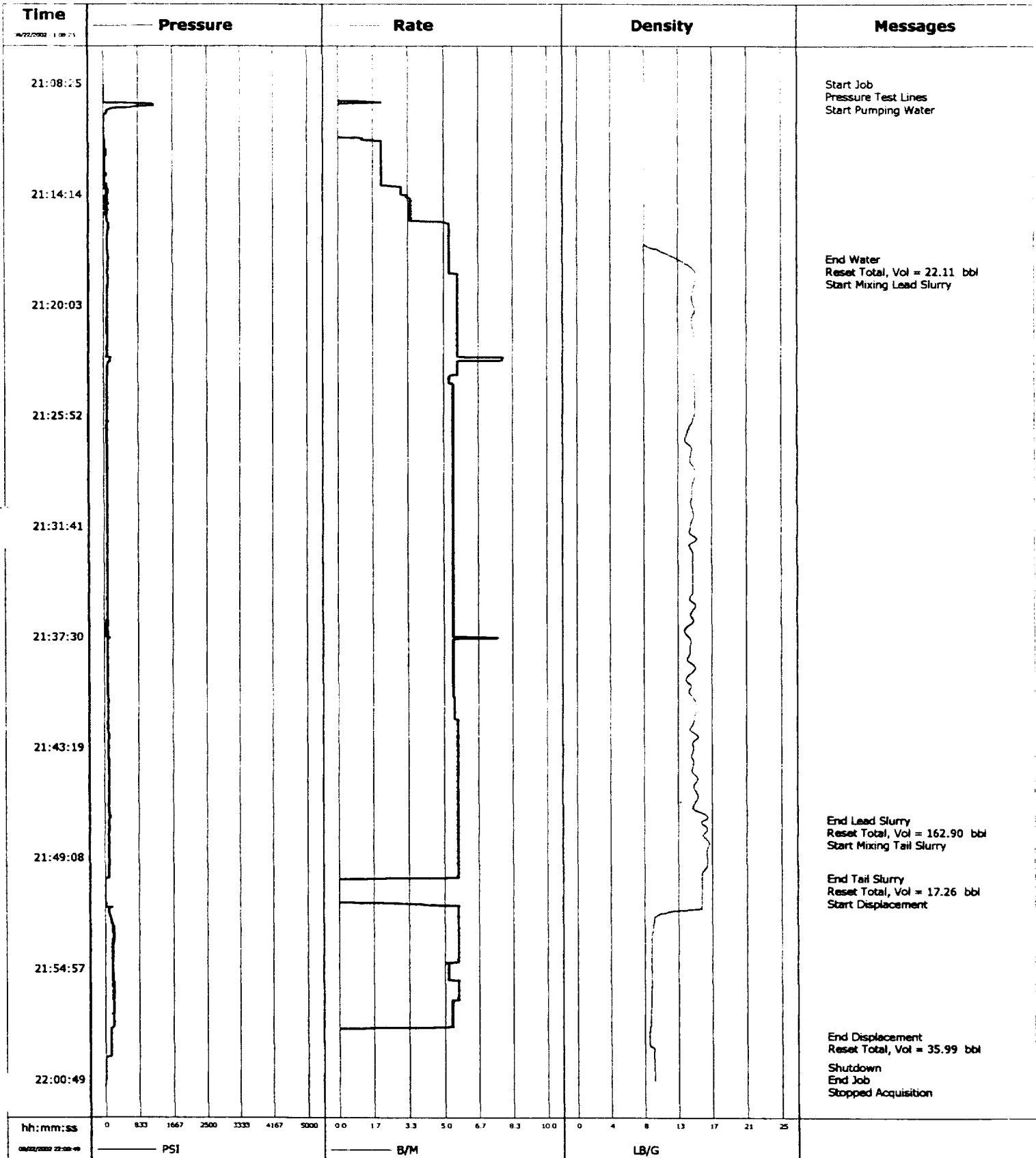
Customer FRANK ROSENKRANZ & SONS		Job Number 2206340287							
Well Micron 2	Location (legal)	Schlumberger Location Lerning, TX	Job Start 2002-Aug-22						
Field	Formation Name/Type	Deviation	Bit Size 35 in						
County	State/Province Texas	BHP psi	Well MD 480 ft						
Well Master: 0630405115	API / UWI:	BHST 85 °F	Well TVD ft						
Rig Name	Drilled For Other	Service Via Land	Casing/Liner						
Offshore Zone	Well Class New	Well Type Development	Depth, ft 480						
Drilling Fluid Type Bentonite	Max. Density lb/gal	Plastic Vt: cp	Size, in 30						
Service Line Cementing	Job Type Cem Prod Casing		Weight, lb/ft 118.65						
Max. Allowed Tubing Pressure psi	Max. Allowed Ann. Pressure psi	Wellhead Connection 4 1/2 IF DP	Grade						
Service Instructions Cmt. 30" Prod. Csg. 35" OPEN HOLE System: 705 sks 50/50 Poz/H + 2% D20 + 2% S1 + 100 sks Class H			Thread						
			Perforations/Open Hole						
			Top, ft						
			Bottom, ft						
			spf						
			No. of Shots						
			Total Interval ft						
			Diameter in						
			Treat Down Drill Pipe						
			Displacement 35 bbl						
			Packer Type						
			Packer Depth ft						
			Tubing Vol. bbl						
			Casing Vol. bbl						
			Annular Vol. bbl						
			Open Hole Vol. bbl						
Casing/Tubing Secured <input checked="" type="checkbox"/>		1 Hole Volume Circulated prior to Cementing <input checked="" type="checkbox"/>							
Lift Pressure: psi		Casing Tools							
Pipe Rotated <input type="checkbox"/>		Squeeze Job							
Pipe Reciprocated <input type="checkbox"/>		Shoe Type:							
No. Centralizers: Top Plugs: Bottom Plugs:		Shoe Depth: ft							
Cement Head Type: Single		Tool Type:							
Job Scheduled For: 8/22/2002 20:00		Stage Tool Type:							
Arrived on Location: 2002-Aug-22 20:00		Stage Tool Depth: ft							
Leave Location: 2002-Aug-22 23:00		Tail Pipe Size: in							
		Collar Type:							
		Collar Depth: ft							
		Tail Pipe Depth: ft							
		Sqr Total Vol: bbl							
Date	Time	CMT TREAT PRES 24 hr clock psi	CMT RATE bbl/min	CMT DENS lb/gal	CMT VOL bbl	0	0	0	Message
2002-Aug-22	21:08	0	0.0	8.34	0.0	0	0	0	
2002-Aug-22	21:08	0	0.0	8.34	0.0	0	0	0	
2002-Aug-22	21:08								Start Job
2002-Aug-22	21:08								Pressure Test Lines
2002-Aug-22	21:08	0	0.0	8.33	0.0	0	0	0	Start Pumping Water
2002-Aug-22	21:08	0	0.0	8.33	0.0	0	0	0	
2002-Aug-22	21:12	9	2.1	8.32	2.9	0	0	0	
2002-Aug-22	21:16	96	5.3	8.25	17.5	0	0	0	
2002-Aug-22	21:17								End Water
2002-Aug-22	21:17	114	5.3	12.53	21.9	0	0	0	Reset Total, Vol = 22.11 bbl
2002-Aug-22	21:17	114	5.3	12.67	22.1	0	0	0	
2002-Aug-22	21:17	110	5.3	13.14	22.7	0	0	0	
2002-Aug-22	21:17								Start Mixing Lead Slurry
2002-Aug-22	21:20	87	5.6	14.14	40.5	0	0	0	
2002-Aug-22	21:25	87	5.4	14.51	64.0	0	0	0	
2002-Aug-22	21:29	87	5.5	14.35	86.7	0	0	0	
2002-Aug-22	21:33	82	5.5	14.29	109.5	0	0	0	
2002-Aug-22	21:37	87	5.5	14.04	132.3	0	0	0	
2002-Aug-22	21:41	96	5.6	14.43	155.1	0	0	0	
2002-Aug-22	21:45	114	5.6	14.75	178.6	0	0	0	

Well		Field			Service Date		Customer		Job Number	
Micron #2					02234-Aug-22		FRANK ROSENKRANZ & SONS		2206340287	
Date	Time	CMT TREAT PRES	CMT RATE	CMT DENS	CMT VOL	0	0	0	Message	
	24 hr clock	psi	bbl/min	lb/gal	bbl	0	0	0		
2002-Aug-22	21:47	114	5.6	15.58	184.8	0	0	0		
2002-Aug-22	21:47								End Lead Slurry	
2002-Aug-22	21:47								Reset Total, Vol = 162.90 bbl	
2002-Aug-22	21:47	110	5.6	15.43	185.0	0	0	0		
2002-Aug-22	21:47	101	5.6	15.30	185.3	0	0	0		
2002-Aug-22	21:47								Start Mixing Tail Slurry	
2002-Aug-22	21:50								End Tail Slurry	
2002-Aug-22	21:50	96	5.0	15.35	202.1	0	0	0		
2002-Aug-22	21:50								Reset Total, Vol = 17.26 bbl	
2002-Aug-22	21:50	-5	0.1	15.35	202.3	0	0	0		
2002-Aug-22	21:50	0	0.0	15.34	202.3	0	0	0		
2002-Aug-22	21:50								Start Displacement	
2002-Aug-22	21:54	183	5.7	9.14	218.2	0	0	0		
2002-Aug-22	21:58	137	0.0	8.86	238.3	0	0	0		
2002-Aug-22	21:58								End Displacement	
2002-Aug-22	21:58	137	0.0	8.86	238.3	0	0	0		
2002-Aug-22	21:58								Reset Total, Vol = 35.99 bbl	
2002-Aug-22	22:00	0	0.0	9.47	238.3	0	0	0		
2002-Aug-22	22:00								Shutdown	
2002-Aug-22	22:00								End Job	
2002-Aug-22	22:00	0	0.0	9.48	238.3	0	0	0		
2002-Aug-22	22:00	0	0.0	9.52	238.3	0	0	0		
2002-Aug-22	22:00								Stopped Acquisition	

Post Job Summary

Average Pump Rates, bpm				Volume of Fluid Injected, bbl			
Slurry	N2	Mud	Maximum Rate	Total Slurry	Mud	Spacer	N2
			6	189		30	
Treating Pressure Summary, psi				Breakdown Fluid			
Maximum	Final	Average	Bump Plug to Breakdown	Volume	Density		
				bbl	lb/gal		
Avg. N2 Percent	Designed Slurry Volume	Displacement	Mix Water Temp	<input checked="" type="checkbox"/> Cement Circulated to Surface?	Volume	20 bbl	
%	189 bbl	35 bbl	°F	<input type="checkbox"/> Washed Thru Perfs	To	ft	
Customer or Authorized Representative			Schlumberger Supervisor		<input type="checkbox"/> Circulation Lost		
Rosenkranz, Frank			Flores, Joe		<input checked="" type="checkbox"/> Job Completed		

Well	MICRON 2	Client	FRANK ROSENKRANZ SONS
Field		SIR No.	2206340287
Engineer	JESSE HOLMES	Job Type	30 " WATER WELL
Country	United States	Job Date	08-22-2002



Schlumberger	Customer: FRANK ROSENKRANZ & SONS
	District: LEMING
Job Date: 08-22-2002	Representative: FRANK ROSENKRANZ
	DS Supervisor: JESSE HOLMES
	Well: MICRON 2

Time mm:dd:yyyy:hh:mm:ss	CMT TREAT PRES psi	CMT RATE bbl/min	CMT DENS lb/gal
08:22:2002:21:08:25	0	0.0	8.34
08:22:2002:21:08:26	Start Job		
08:22:2002:21:08:26	0	0.0	8.34
08:22:2002:21:08:33	Pressure Test Lines		
08:22:2002:21:08:33	0	0.0	8.33
08:22:2002:21:08:35	Start Pumping Water		
08:22:2002:21:08:35	0	0.0	8.33
08:22:2002:21:12:35	9	2.1	8.32
08:22:2002:21:16:45	96	5.3	8.25
08:22:2002:21:17:36	End Water		
08:22:2002:21:17:36	114	5.3	12.53
08:22:2002:21:17:38	Reset Total, Vol = 22.11 bbl		
08:22:2002:21:17:38	114	5.3	12.67
08:22:2002:21:17:45	Start Mixing Lead Slurry		
08:22:2002:21:17:45	110	5.3	13.14
08:22:2002:21:20:56	87	5.6	14.14
08:22:2002:21:25:06	87	5.4	14.51
08:22:2002:21:29:16	87	5.5	14.35
08:22:2002:21:33:27	82	5.5	14.29
08:22:2002:21:37:37	87	5.5	14.04
08:22:2002:21:41:48	96	5.6	14.43
08:22:2002:21:45:58	114	5.6	14.75
08:22:2002:21:47:04	End Lead Slurry		
08:22:2002:21:47:04	114	5.6	15.58
08:22:2002:21:47:06	Reset Total, Vol = 162.90 bbl		
08:22:2002:21:47:06	110	5.6	15.43
08:22:2002:21:47:09	Start Mixing Tail Slurry		
08:22:2002:21:47:09	101	5.6	15.30
08:22:2002:21:50:08	End Tail Slurry		
08:22:2002:21:50:08	96	5.0	15.35
08:22:2002:21:50:12	Reset Total, Vol = 17.26 bbl		
08:22:2002:21:50:12	-5	0.1	15.35
08:22:2002:21:50:16	Start Displacement		
08:22:2002:21:50:16	0	0.0	15.34
08:22:2002:21:54:19	183	5.7	9.14
08:22:2002:21:58:27	End Displacement		
08:22:2002:21:58:27	137	0.0	8.86
08:22:2002:21:58:29	Reset Total, Vol = 35.99 bbl		
08:22:2002:21:58:29	137	0.0	8.86
08:22:2002:22:00:05	Shutdown		
08:22:2002:22:00:05	0	0.0	9.47
08:22:2002:22:00:08	End Job		

Well: MICRON 2

Job Date: 08-22-2002

Time mm:dd:yyyy:hh:mm:ss	CMT TREAT PRES psi	CMT RATE bbl/min	CMT DENS lb/gal
08:22:2002:22:00:49	Stopped Acquisition		
08:22:2002:22:00:49	0	0.0	9.52

Cementer: Fill in shaded areas.
Operator: Fill in other items

Form W-15
Cementing Report
Rev. 4/1/83
483-045

RAILROAD COMMISSION OF TEXAS
Oil and Gas Division

1. Operator's Name (As shown on Form P-5, Organization Report) Frank Rosenkranz & Sons		2. RRC Operator No.	3. RRC District No.	4. County of Well Site
5. Field Name (Wildcat or exactly as shown on RRC records)			6. API No. 42-	7. Drilling Permit No.
8. Lease Name Micron		9. Rule 37 Case No.	10. Oil Lease/Gas ID No.	11. Well No. 2

CASING CEMENTING DATA:		SURFACE CASING	INTER-MEDIATE CASING	PRODUCTION CASING		MULTI-STAGE CEMENTING PROCESS	
				Single String	Multiple Parallel Strings	Tool	Shoe
12. Cementing Date				22-Aug-02			
13. ●Drilling hole size							
●Est. % wash or hole enlargement							
14. Size of casing (in. O.D.)							
15. Top of liner (ft.)							
16. Setting depth (ft.)							
17. Number of centralizers used							
18. Hrs. waiting on cement before drill-out							
1st Slurry	19. API cement used: No. of sacks ▶			705			
	Class ▶			H			
	Additives ▶			REMARK			
2nd Slurry	No. of sacks ▶			100			
	Class ▶			H			
	Additives ▶			NEAT			
3rd Slurry	No. of sacks ▶						
	Class ▶						
	Additives ▶						
1st	20. Slurry pumped: Volume (cu. ft.) ▶			945			
	Height (ft.) ▶			770			
2nd	Volume (cu. ft.) ▶			118			
	Height (ft.) ▶			96			
3rd	Volume (cu. ft.) ▶						
	Height (ft.) ▶						
Total	Volume (cu. ft.) ▶			1063			
	Height (ft.) ▶			866			
21. Was cement circulated to ground surface (or bottom of cellar) outside casing?				YES			
22. Remarks 50/50 POZ / H + .2 % D-20 + 2 % S1							

CEMENTING TO PLUG AND ABANDON	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
1. Cementing date								
24. Size of hole or pipe plugged (in.)								
25. Depth to bottom of tubing or drill pipe (ft.)								
26. Sacks of cement used (each plug)								
27. Slurry volume pumped (cu. ft.)								
28. Calculated top of plug (ft.)								
29. Measured top of plug, if tagged (ft.)								
30. Slurry wt. (lbs/gal)								
31. Type cement								

CEMENTER'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that the cementing of casing and/or the placing of cement plugs in this well as shown in the report was performed by me or under my supervision, and that the cementing data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers cementing data only.

Joe Flores

Dowell Schlumberger

Name and title of cementer's representative

Cementing Company

Signature

P.O. Box 379

Leming, Texas 78050

(830)569-2595

22-Aug-02

Address

City, State, Zip Code

Tel.: Area Code Number

Date: mo. day yr.

OPERATOR'S CERTIFICATE: I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this certification, that I have knowledge of the well data and information presented in this report, and that data and facts presented on both sides of this form are true, correct, and complete, to the best of my knowledge. This certification covers all well data.

Typed or printed name of operator's representative

Title

Signature

Address

City, State, Zip Code

Tel.: Area Code Number

Date: mo. day yr.

Instructions to Form W-15, Cementing Report

IMPORTANT: Operators and cementing companies must comply with the requirements of the Commission's State Rules 8 (Water Protection), 13 (Casing, Cementing, Drilling, and Completion), and 14 (Well Plugging). For offshore operations, see the requirements of Rule 13 (c).

A. What to file. An operator should file an original and one copy of the completed Form W-15 for each cementing company used on a well. The cementing of different casing strings on a well by one cementing company may be reported on one form. Form W-15 should be filed with the following:

- An initial oil or gas completion report, Form W-2 or G-1, as required by Statewide or special field rules;
- Form W-4, Application for Multiple Completion, if the well is a multiple parallel casing completion; and
- Form W-3, Plugging Record, unless the W-3 is signed by the cementing company representative. When reporting dry holes, operators must complete Form W-15, in addition to Form W-3, to show any casing cemented in the hole.

B. Where to file. The appropriate Commission District Office for the county in which the well is located.

C. Surface casing. An operator must set and cement sufficient surface casing to protect all usable-quality water strata, as defined by the Texas Department of Water Resources, Austin. Before drilling a well in any field or area in which no field rules are in effect or in which surface casing requirements are not specified in the applicable rules, an operator must obtain a letter from the Department of Water Resources stating the protection depth. Surface casing should not be set deeper than 200 feet below the specified depth without prior approval from the Commission.

D. Centralizers. Surface casing must be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, a centralizer must be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the collar. All centralizers must meet API specifications.

E. Exceptions and alternative casing programs. The District Director may grant an exception to the requirements of Statewide Rule 13. In a written application, an operator must state the reason for the requested exception and outline an alternate program for casing and cementing through the protection depth for strata containing usable-quality water. The District Director may approve, modify, or reject a proposed program. An operator must obtain approval of any exception before beginning casing and cementing operations.

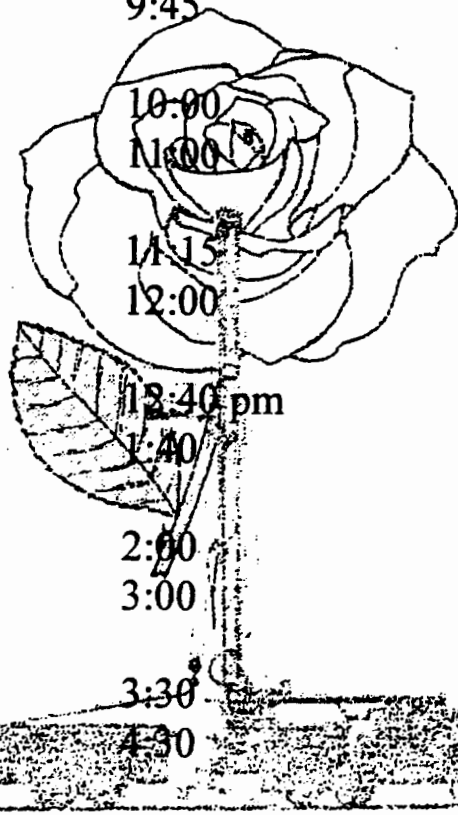
F. Intermediate and production casing. For specific technical requirements, operators should consult Statewide Rule 13 (b) (3) and (4).

G. Plugging and abandonment. Cement plugs must be placed in the wellbore as required by Statewide Rule 14. The District Director may require additional cement plugs. For onshore or inland wells, a 10-foot cement plug must be placed in the top of the well, and the casing must be out off three feet below the ground surface. All cement plugs, except the top plug, must have sufficient slurry volume to fill 100 feet of hole, plus ten percent for each 1,000 feet of depth from the ground surface to the bottom of the plug.

To plug and abandon a well, operators must use only cementers approved by the Director of Field Operations. Cementing companies, service companies, or operators can qualify as approved cementers by demonstrating that they are able to mix and pump cement in compliance with Commission rules and regulations.

Micron Well #2 Casing Tally

Length	Time	Date
#1 40'-9 1/2"	7:55 am start	8-22-02
#2 44'-8 3/4"	8:05 9:45	
#3 81'-5"	10:00 11:00	
#4 81'-4"	11:15 12:00	
#5 81'-5"	12:40 pm 1:40	
#6 81'-5"	2:00 3:00	
#7 80'-6 1/2"	3:30 4:30	



Total Casing: 480' g.l. – 30" O.D. .500 wall

Note: 4:30 pm – 8:00 pm made ready for inner-string pressure cementing method via float/cementing collar.

9:00 pm – 10:00 pm cementing completed with positive cement returns with no settling of cement.

MICRON WELL #2 PUMP TEST RECORD

DATE	TIME	PUMPING LEVEL	PUMPING GPM	ENGINE RPM	PUMP RPM	REMARKS	PUMP SETTING
11-5-02	11:00	106.0	3991	900	900	11-25: W.L. - 106'	215'
	11:30	"	4154	1000	1000	Color - cloudy, Cleared up at 3:30 pm	
	11:45	"	4608	1100	1100		
	1:00	"	5152	1200	1200	Sediment - little	
	2:00	"	5644	1300	1300		
	3:00	"	6204	1400	1400	TASTE - good	
	3:30	107.0	6618	1500	1500		
	4:00	108.5	7377	1600	1600		
	4:30	108.0	7007	1550	1550		
	5:30	106	5644	1300	1300		
	6:00	"	5644	1300	1300		
11-26-02	9:00	106.0	4154	1000	1000	11-26: W.L. 106'	215'
	9:15	"	4608	1100	1100	Color - clear	
	9:30	"	5152	1200	1200	Sediment - NONE	
	3:30	"	5644	1300	1300	TASTE - good	
	4:30	"	6204	1400	1400		
	5:00	108.0	7007	1550	1550		
	5:30	106.0	5644	1300	1300		
	5:45	108.0	7007	1550	1550		
	6:00	"	7007	1550	1550		
11-27-02	9:00	106.0	4154	1000	1000	11-27: W.L. 106'	215'
	9:15	"	4608	1100	1100	Color - clear	
	9:30	"	5152	1200	1200	Sediment - NONE	
	11:00	"	5644	1300	1300	TASTE - good	
	12:30	"	6204	1400	1400		
	3:30	108.0	7007	1550	1550		
	4:30	106.0	6204	1400	1400		
	5:00	"	6204	1400	1400		

FRANK ROSENKRANZ & SONS
 WATERWELL DRILLING AND PUMP SERVICE
 6839 LESLIE RD.
 SAN ANTONIO, TX 78254

SINCE 1920

Micron #2

Micron

Bexar

State: Texas

**PLATFORM EXPRESS/
ARRAY INDUCTION
FINAL COMPOSITE**

County: Bexar
Field: Micron
Location: GPS Coordinates are:
Well: Micron #2
Company: San Antonio Water System

LOCATION

GPS Coordinates are:
29 Deg 27' 15N and 98 Deg 38' 29W
Elev.: K.B. 829.17 ft
G.L. 816.17 ft
D.F. 828.17 ft
Permanent Datum: Ground Level
Log Measured From: Ground Level
Drilling Measured From: Kelly Bushing
Elev.: 816.17 ft
0.0 ft above Perm. Datum
API Serial No. N/A
Rig: Rosenkranz & Sons

Logging Date	Run Number	Depth Driller	Schlumberger Depth	Bottom Log Interval	Top Log Interval	Casing Driller Size @ Depth	Casing Schlumberger	Bit Size	Type Fluid In Hole	Density	Viscosity	PH	Sources Of Sample	RM @ Measured Temperature	RAF @ Measured Temperature	RAMC @ Measured Temperature	Source RAF	RM @ MRT	RAF @ MRT	Maximum Recorded Temperatures	Circulation Stopped	Logger On Bottom	Unit Number	Recorded By	Witnessed By
20-May-2002	One	478 ft	481 ft	481 ft	32 ft	36,000 in	32 ft	12,250 in	Fresh Mud	9.7 lbm/gal		N/A							85 degF	8:00	20-May-2002	2020	Victoria	J. Waugh	
27-Sep-2002	TWO	985 ft	988 ft	980 ft	483 ft	30,000 in	485 ft	12,250 in	Fresh Mud	9.7 lbm/gal		N/A							89 degF	8:00	27-Sep-2002	2180	Victoria	Sherril Shakour	J. Waugh / D. Mathula

RUN 3	RUN 4	RUN 5
-------	-------	-------

DEPTH SUMMARY LISTING

RUN 1

Dimension _____ TOOL ZERO
 MAXIMUM STRING DIAMETER 6.88 IN
 MEASUREMENTS RELATIVE TO TOOL ZERO
 ALL LENGTHS IN FEET

1.5 IN
 Standoff

Schlumberger

2" CORRELATION LOG

MAXIS Field Log

Input DLIS Files

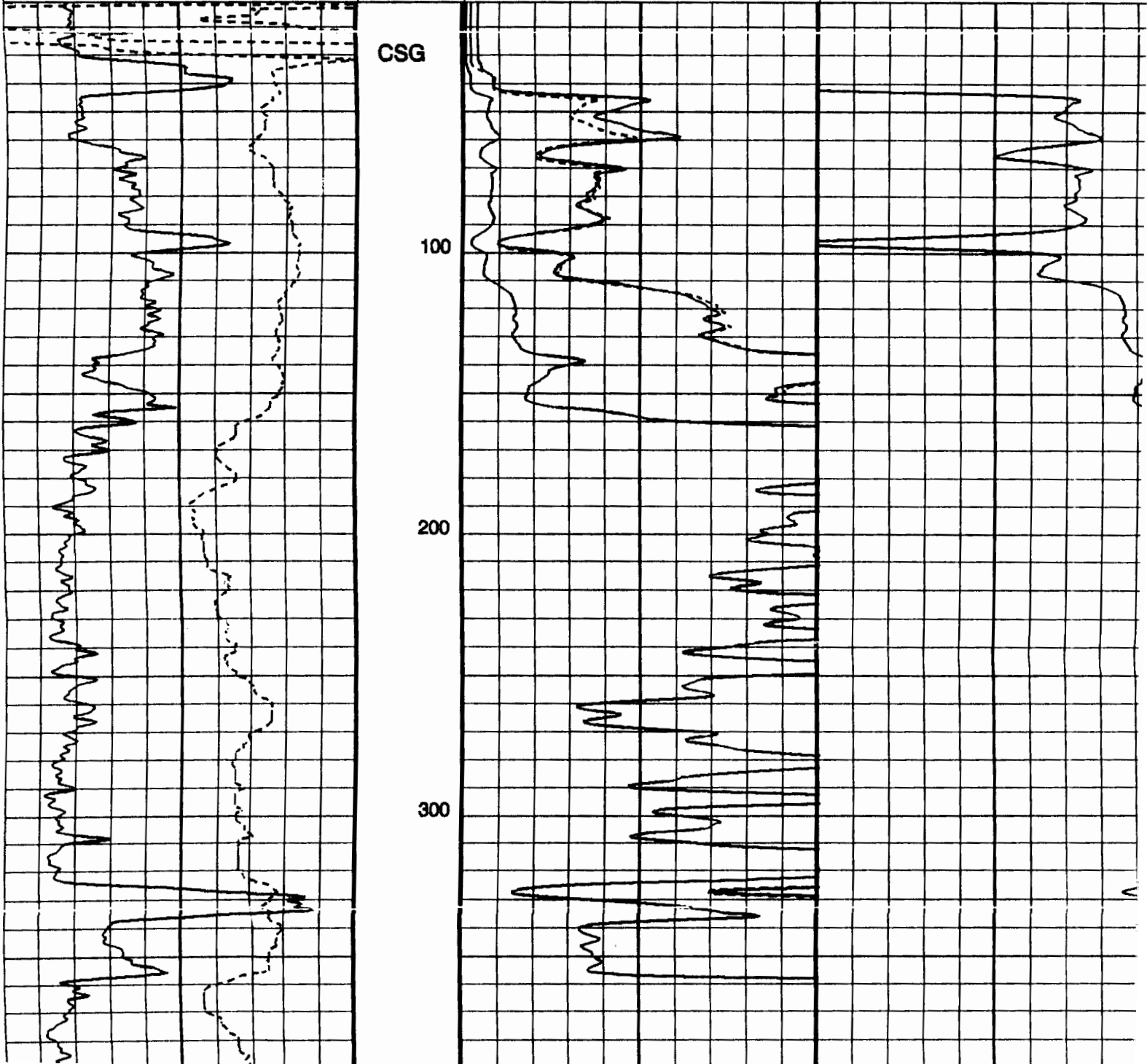
DEFAULT AIT_TLD_MCFL_CNL_014LUP FN:13 PRODUCER 20-May-2002 12:23 498.0 FT 23.2 FT

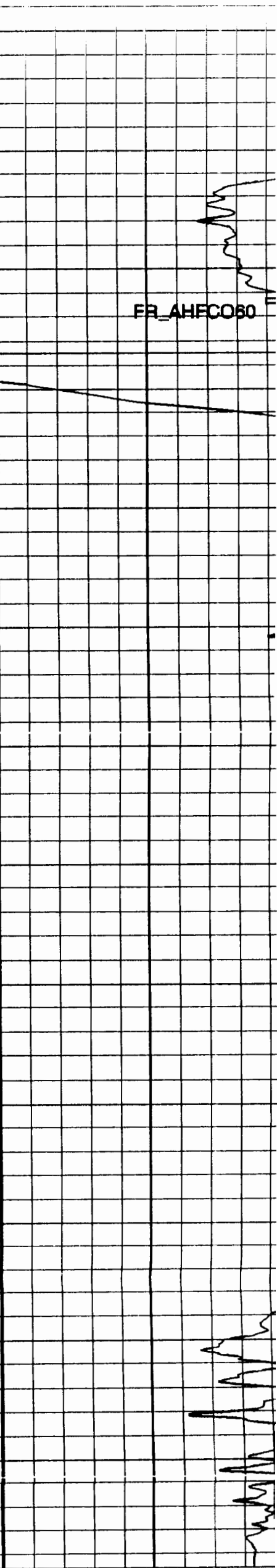
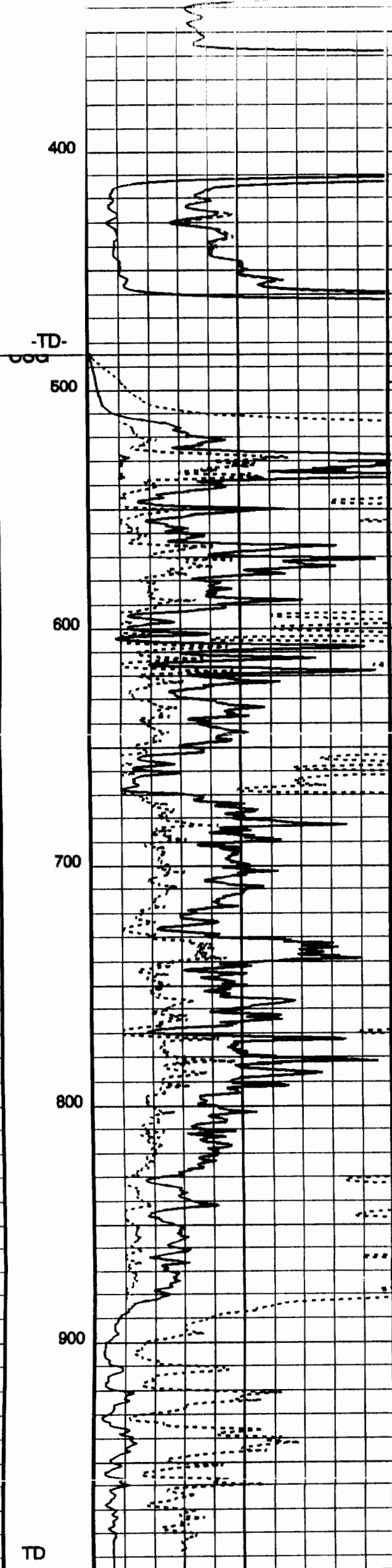
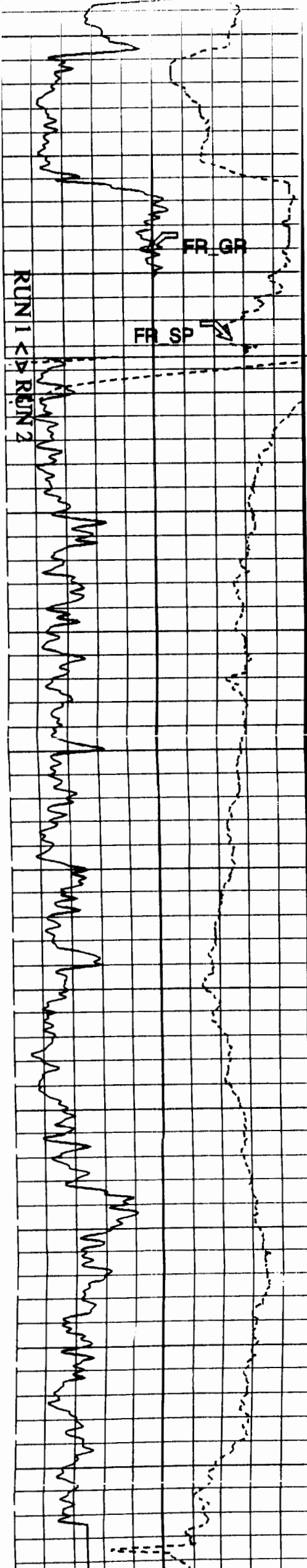
OP System Version: 10C0-306
 MCM

HILTC 10C0-308

	AIT-H 60 Inch Investigation (AHF60) 0 (OHMM) 100	
SP (SP) (MV) -80 20	AIT-H 60 Inch Investigation (AHF60) 0 (OHMM) 20	
Gamma Ray (GR) (GAPI) 0 150	AIT-H 20 Inch Investigation (AHF20) 0 (OHMM) 20	AIT-H 60 Inch Investigation Conductivity (AHFCO60) 500 (MM/M)

RUN 1





Gamma Ray (GR)
(GAPI) 0 100

RUN 2
AIT-H 20 Inch Investigation (AHT20)
(OHMM) 0 1000

AIT-H 90 Inch Investigation Conductivity (AHTCO90)
(MMM) 100

WQ FY09 COOP

TWDB Water Quality Field Data Sheet

SWN: AY-68-35-617

Name: San Antonio Water System

County: Bexar

Address: 2800 U.S. Hwy. 281 North

County Code: 29

San Antonio, Texas 78212

Aquifer Code: 218 EDRDA

Aquifer Id: 11

Attention: David M. Mahula

Well Name or #: Micron #2

Newly Invented Well

ID Number: 4609

Date: 8/19/09

Sampler(s): David M. Mahula

1	2	3	4	5	6	7	8	9	10	11
500 ml filtered	500 ml filtered	250 ml filtered								
Cation	Antons/T. Alk.	Nitrate								
HNO3 by lab	ICE	ICE + H2SO4								

All acidified samples pH < 2.0. (*) if natural pH < 7, then add NaOH until pH is > 7. If natural pH is 27, no NaOH required.

Calibration Verification Readings	
pH	7 = 7.00
	4 or 10 = 4.01
SLP =	99.3
Conductivity	500 = 1009
	1000 = 2000
	2000 = 5000

Time In: 10:15 AM

Time Out: 11:30 AM

Water Level: N/A

W.L. remark:

M.P. = N/A

Pumping time: Start 10:30 End 11:15 (45 Min.)

Sampling Point: Raw Water Sample Port

Well Use: P

FIELD G.P.S. readings

Lift: S

Latitude: N 29° 27' 15.8"

Power: E 600 Horse Power

Longitude: W 98° 38' 29.2"

Casing Type: Steel

Casing Size: 30"

Colorimeter DO (00300): mg/L

Sample Time: 11:15 AM

Filter pressure: hand pump (line/spring)

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	10:55	11:00	11:05	11:10					
pH	7.26	7.24	7.22	7.21					
Celsius Temp.	23.8	23.9	23.9	23.9					
Conductivity	532	533	529	535					

Notes:

Field Data entered into GWDB: Yes / no	
Balanced:	
Phenol Alkalinity (82244):	mg/L
Total Alkalinity (39086):	226 mg/L
Colorimeter DO (00300):	mg/L

Field Alk. Titration (0.0200 N) H2SO4	7.31	Start pH	4.50	End pH
	50	mL Sample Size		
	11.3	mL Acid Phenol (> 8.3)		
		mL Acid Total (to pH 4.5)		
		mL acid added x 20 = Alkalinity		

LCRA Environmental Laboratory Services

Date: 10-Sep-09

CLIENT: Texas Water Development Board
Lab Order: 0908720
Project: TWDB FY2009
Lab ID: 0908720-009

Client Sample ID: 68-35-617
Collection Date: 8/19/2009 11:15:00 AM
Matrix: GROUNDWATER
Tag No: 4609

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS, DISSOLVED		E200.7		Analyst: MV		
Calcium	79.4	0.2		mg/L	1	8/26/2009 3:07:34 PM
Magnesium	16.6	0.2		mg/L	1	8/26/2009 3:07:34 PM
Potassium	1.2	0.2		mg/L	1	8/26/2009 3:07:34 PM
Sodium	10.7	0.5		mg/L	1	8/26/2009 3:07:34 PM
ICP METALS, DISSOLVED		E200.7		Analyst: MV		
Boron	ND	51		µg/L	1	8/26/2009 3:07:34 PM
Iron	ND	51		µg/L	1	8/26/2009 3:07:34 PM
Strontium	483	20		µg/L	1	8/26/2009 3:07:34 PM
ICPMS METALS, DISSOLVED		E200.8		Analyst: SW		
Aluminum	ND	4.1		µg/L	1	8/25/2009 9:08:04 PM
Antimony	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Arsenic	ND	2.0		µg/L	1	8/25/2009 9:08:04 PM
Barium	37.7	1.0		µg/L	1	8/25/2009 9:08:04 PM
Beryllium	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Cadmium	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Chromium	2.8	1.0		µg/L	1	8/25/2009 9:08:04 PM
Cobalt	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Copper	1.2	1.0		µg/L	1	8/25/2009 9:08:04 PM
Lead	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Lithium	4.3	2.0	A	µg/L	1	8/25/2009 9:08:04 PM
Manganese	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Molybdenum	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Selenium	ND	4.1		µg/L	1	8/25/2009 9:08:04 PM
Silver	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Thallium	ND	1.0		µg/L	1	8/25/2009 9:08:04 PM
Uranium	ND	1.0	A	µg/L	1	8/25/2009 9:08:04 PM
Vanadium	3.4	1.0		µg/L	1	8/25/2009 9:08:04 PM
Zinc	ND	4.1		µg/L	1	8/25/2009 9:08:04 PM
MERCURY, TOTAL		SW7470A		Analyst: AE		
Mercury	ND	0.200		µg/L	1	8/27/2009 11:39:00 AM
CATION/ANION BALANCE		CALCULATION		Analyst: AMJ		
Cation/Anion Balance	-3.03	5.0		%	1	9/4/2009
DISSOLVED ANIONS BY ION CHROMATOGRAPH		E300.0		Analyst: WR		
Bromide Dissolved	0.09	0.02		mg/L	1	8/25/2009 7:10:00 PM
Chloride Dissolved	16.0	1.00		mg/L	1	8/25/2009 7:10:00 PM
Fluoride Dissolved	0.21	0.01		mg/L	1	8/25/2009 7:10:00 PM
Sulfate Dissolved	31.3	1.00		mg/L	1	8/25/2009 7:10:00 PM

Qualifiers:
A Not Available for Accreditation
E Value Above Quantitation Range
N Not Accredited
S Spike Recovery Outside Recovery Limits

B Analyte Detected in Method Blank
H Holding Time Exceeded
ND Not Detected at Reporting Limit
X Value Exceeds Maximum Contaminant Level

LCRA Environmental Laboratory Services

Date: 10-Sep-09

CLIENT: Texas Water Development Board	Client Sample ID: 68-35-617
Lab Order: 0908720	Collection Date: 8/19/2009 11:15:00 AM
Project: TWDB FY2009	Matrix: GROUNDWATER
Lab ID: 0908720-009	Tag No: 4609

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY				SM2320 B		Analyst: JB
Alkalinity, Phenolphthalein	ND	0	A	mg/L CaCO3	1	8/28/2009
Alkalinity, Total (As CaCO3)	218	2		mg/L CaCO3	1	8/28/2009
NITRATE AND NITRITE				SM4500-NO3-H/E353.1		Analyst: KK
Nitrogen, Nitrate & Nitrite	1.56	0.020		mg/L	1	8/24/2009
DISSOLVED PHOSPHATE AS P IN WATER				E365.4		Analyst: CM
Phosphorus, Dissolved (As P)	ND	0.020		mg/L	1	8/28/2009
SILICA				SM4500-SIO2-C		Analyst: KK
Silica, Dissolved (as SiO2)	12.5	2.50		mg/L	5	8/25/2009

Qualifiers:	A Not Available for Accreditation	B Analyte Detected in Method Blank
	E Value Above Quantitation Range	H Holding Time Exceeded
	N Not Accredited	ND Not Detected at Reporting Limit
	S Spike Recovery Outside Recovery Limits	X Value Exceeds Maximum Contaminant Level

WQ FY 2010

TWDB Water Quality Field Data Sheet

SWN: AY-68-35-617

County: Bexar

County Code: 29

Aquifer Code: 218 EDRDA

Aquifer Id: 11

Name: San Antonio Water System

Address: 2800 U.S. Hwy. 281 North

San Antonio, Texas 78212

Attention: David M. Mahula

Well Name or #: Micron #2

Newly Invented Well _____

ID Number: 3608

Date: 8/24/10

Sampler(s): David M. Mahula

1	2	3	4	5	6	7	8	9	10	11
500 ml filtered	500 ml filtered	250 ml filtered								
Cation	Antions/T. Alk.	Nitrate								
HNO3 by lab	ICE	ICE + H2SO4								

All acidified samples pH < 2.0. (*) If natural pH < 7, then add NaOH until pH is > 7. If natural pH is ≥ 7, no NaOH required.

Time In: 11:30 AM

Time Out: 12:15 PM

Water Level: N/A

W.L. remark: _____

M.P. = N/A

Pumping time: Pumping upon arrival

Sampling Point: Raw Water Sample Port

Well Use: P

FIELD G.P.S. readings

Lift: S

Latitude: N 29° 27' 15.8"

Power: E 600 Horse Power

Longitude: W 98° 38' 29.2"

Casing Type: Steel

Casing Size: 30 "

Sample Time: 11:55 AM

Filter pressure: hand pump line / spring

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	11:35	11:40	11:45	11:50					
pH	7.04	7.06	7.07	7.07					
Celsius Temp.	23.7	23.6	23.7	23.6					
Conductivity	559	560	556	556					

Revised 12/19/2008

Calibration Verification Readings	
pH	7 = 7.00
	4 or 10 = 4.01
SLP =	100.5
Conductivity	500 = _____
	1000 = 1007
	2000 = _____
	5000 = _____

Field Alk. Titration (0.0200 N) H2SO4	
7.21	Start pH 4.50 End pH 50
	ml Sample Size
11.6	ml Acid Phenol (> 8.3)
	ml Acid Total (to pH 4.5)
	ml acid added x 20 = Alkalinity

Phenol Alkalinity (82244): _____ mg/L

Total Alkalinity (39086): **232** mg/L

Colorimeter DO (00300): _____ mg/L

Notes:

Field Data entered into GWDB: yes / no

Balanced: _____

LCRA Environmental Laboratory Services

Date: 20-Sep-10

CLIENT:	Texas Water Development Board	Client Sample ID:	68-35-617
Lab Order:	1008C99	Collection Date:	8/24/2010 11:55:00 AM
Project:	TWDB FY2010	Matrix:	GROUNDWATER
Lab ID:	1008C99-008	Tag No:	3608

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Calcium	84.3	0.20		mg/L	1	9/13/2010 2:02:47 PM
Magnesium	16.9	0.20		mg/L	1	9/13/2010 2:02:47 PM
Potassium	1.31	0.20		mg/L	1	9/13/2010 2:02:47 PM
Sodium	10.9	0.51		mg/L	1	9/13/2010 2:02:47 PM
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Boron	55	51		µg/L	1	9/13/2010 2:02:47 PM
Iron	< 51	51		µg/L	1	9/13/2010 2:02:47 PM
Strontium	528	20		µg/L	1	9/13/2010 2:02:47 PM
ICPMS METALS, DISSOLVED						
		E200.8				Analyst: SW
Aluminum	< 4.1	4.1		µg/L	1	9/13/2010 3:00:49 PM
Antimony	1.8	1.0		µg/L	1	9/13/2010 3:00:49 PM
Arsenic	< 2.0	2.0		µg/L	1	9/13/2010 3:00:49 PM
Barium	39.4	1.0		µg/L	1	9/13/2010 3:00:49 PM
Beryllium	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Cadmium	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Chromium	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Cobalt	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Copper	1.2	1.0		µg/L	1	9/13/2010 3:00:49 PM
Lead	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Lithium	4.7	2.0	A	µg/L	1	9/13/2010 3:00:49 PM
Manganese	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Molybdenum	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Selenium	< 4.1	4.1		µg/L	1	9/13/2010 3:00:49 PM
Silver	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Thallium	< 1.0	1.0		µg/L	1	9/13/2010 3:00:49 PM
Uranium	< 1.0	1.0	A	µg/L	1	9/13/2010 3:00:49 PM
Vanadium	2.8	1.0		µg/L	1	9/13/2010 3:00:49 PM
Zinc	< 4.1	4.1		µg/L	1	9/13/2010 3:00:49 PM
MERCURY, TOTAL						
		SW7470A				Analyst: AE
Mercury	< 0.200	0.200		µg/L	1	9/3/2010 2:39:00 PM
DISSOLVED ANIONS BY ION CHROMATOGRAPH						
		E300.0				Analyst: WR
Bromide Dissolved	0.10	0.02		mg/L	1	9/3/2010 8:03:00 AM
Chloride Dissolved	16.6	1.00		mg/L	1	9/3/2010 8:03:00 AM
Fluoride Dissolved	0.21	0.01		mg/L	1	9/3/2010 8:03:00 AM
Sulfate Dissolved	33.8	1.00		mg/L	1	9/3/2010 8:03:00 AM
ALKALINITY						
		SM2320 B				Analyst: JB
Alkalinity, Phenolphthalein	< 2	2	A	mg/L CaCO3	1	8/31/2010

Qualifiers:

A Not Available for Accreditation
 E Value Above Quantitation Range
 N Not Accredited
 X Value Exceeds Maximum Contaminant Level (MCL)

B Analyte Detected in Method Blank
 H Holding Time Exceeded
 S Spike Recovery Outside Recovery Limits

PQL: Practical Quantitation Limit

LCRA Environmental Laboratory Services

Date: 20-Sep-10

CLIENT: Texas Water Development Board	Client Sample ID: 68-35-617
Lab Order: 1008C99	Collection Date: 8/24/2010 11:55:00 AM
Project: TWDB FY2010	Matrix: GROUNDWATER
Lab ID: 1008C99-008	Tag No: 3608

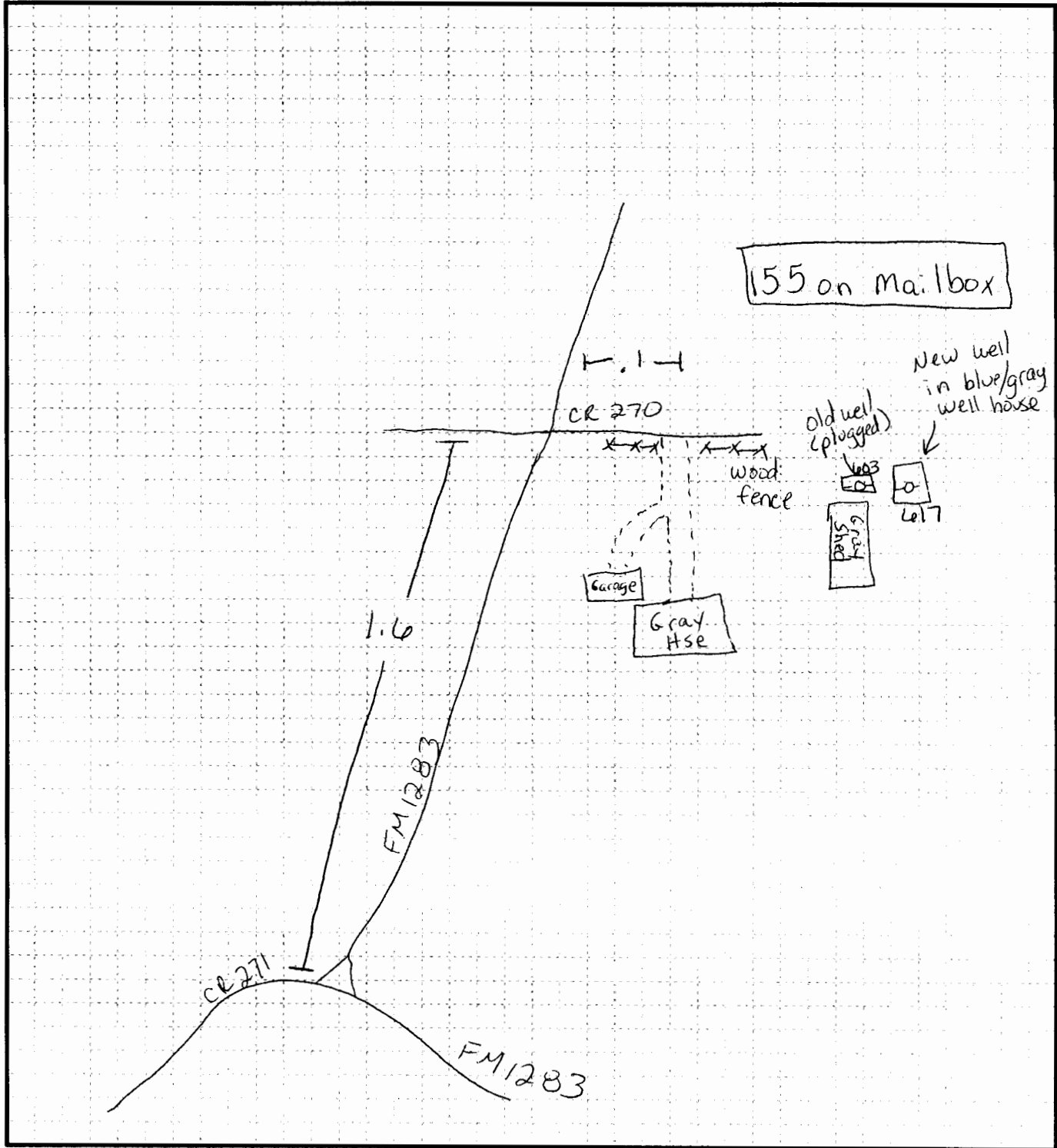
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY						Analyst: JB
Alkalinity, Total (As CaCO3)	227	2		mg/L CaCO3	1	8/31/2010
CATION/ANION BALANCE						Analyst: AMJ
Cation/Anion Balance	-3.11	5.0	^A	%	1	9/20/2010
NITRATE AND NITRITE						Analyst: KK
Nitrogen, Nitrate & Nitrite	1.67	0.020		mg/L	1	9/9/2010
DISSOLVED PHOSPHATE AS P IN WATER						Analyst: CM
Phosphorus, Dissolved (As P)	< 0.020	0.020		mg/L	1	9/14/2010
SILICA						Analyst: KK
Silica, Dissolved (as SiO2)	13.7	2.50		mg/L	5	9/1/2010

Qualifiers:

A Not Available for Accreditation	B Analyte Detected in Method Blank	PQL: Practical Quantitation Limit
E Value Above Quantitation Range	H Holding Time Exceeded	
N Not Accredited	S Spike Recovery Outside Recovery Limits	
X Value Exceeds Maximum Contaminant Level (MCL)		

Texas Water Development Board - Well Location Sketch

By: H. Rein Date: 5/5/11 G.P.S Coordinates: 29°34'34. " 98°53'54. "
County Medina Seppan M.P. = _____ Well Number: 68-25-617



68-25-617

Well Number

WQ FY 2011 - SAWS

TWDB Water Quality Field Data Sheet

Newly Invented Well

SWN: AY-68-35-617 Name: San Antonio Water System
 County: Bexar Address: 2800 U.S. Hwy. 281 North
 County Code: 29 San Antonio, Texas 78212
 Aquifer Code: 218 EDRDA
 Aquifer Id: 11 Attention: David M. Mahula

ID Number: 4606
 Date: 6/28/11
 Sampler(s): David M. Mahula

Well Name or #: Micron # 2

	1	2	3	4	5	6	7	8	9	10	11
500 ml filtered		500 ml filtered	250 ml filtered								
Cation		Anions/T. Alk.	Nitrate								
HNO3 by lab		ICE	ICE + H2SO4								

All acidified samples pH <2.0. (*) If natural pH<7, then add NaOH until pH is >7. If natural pH is >7, no NaOH required.

Calibration Verification Readings	
pH	7 = 7.00
	4 or 10 = 4.01
SLP =	100.5
Conductivity	500 =
	1000 = 990
	2000 =
	5000 =

Time In: 8:00 AM Time Out: 8:55 AM
 Water Level: N/A W.L. remark: _____ M.P. = N/A

Pumping time: Pumping upon arrival
 Well Use: P
 Lift: S
 Power: E 600 Horse Power
 Casing Type: Steel
 Filter pressure: hand pump / line / spring

Field Alk. Titration (0.0200 N) H2SO4	
7.14	Start pH 4.50 End pH
<u>50</u>	mL Sample Size
	mL Acid Phenol (> 8.3)
<u>11.4</u>	mL Acid Total (to pH 4.5)
	mL acid added x 20 = Alkalinity

Phenol Alkalinity (82244): _____ mg/L
 Total Alkalinity (39086): 228 mg/L
 Colorimeter DO (00300): _____ mg/L

Field Data entered into GWDB: yes / no
 Balanced: _____

Notes:

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	8:15	8:20	8:25	8:30		
pH	6.99	7.06	7.06	7.07		
Celsius Temp.	23.5	23.5	23.5	23.5		
Conductivity	543	542	542	542		

LCRA Environmental Laboratory Services

Date: 21-Jul-11

CLIENT: Texas Water Development Board	Client Sample ID: 68-35-617
Lab Order: 1107020	Collection Date: 6/28/2011 8:35:00 AM
Project: TWDB Suite	Matrix: GROUNDWATER
Lab ID: 1107020-006	Tag No: 4606

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Calcium	83.4	0.20		mg/L	1	7/12/2011 2:42:12 PM
Magnesium	17.0	0.20		mg/L	1	7/12/2011 2:42:12 PM
Potassium	1.34	0.20		mg/L	1	7/12/2011 2:42:12 PM
Sodium	10.5	0.50		mg/L	1	7/12/2011 2:42:12 PM
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Boron	< 50	50		µg/L	1	7/12/2011 2:42:12 PM
Iron	< 50	50		µg/L	1	7/12/2011 2:42:12 PM
Strontium	504	20		µg/L	1	7/12/2011 2:42:12 PM
ICPMS METALS, DISSOLVED						
		E200.8				Analyst: SW
Aluminum	< 4.0	4.0		µg/L	1	7/8/2011 4:47:01 PM
Antimony	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Arsenic	< 2.0	2.0		µg/L	1	7/8/2011 4:47:01 PM
Barium	38.9	1.0		µg/L	1	7/8/2011 4:47:01 PM
Beryllium	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Cadmium	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Chromium	4.7	1.0		µg/L	1	7/8/2011 4:47:01 PM
Cobalt	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Copper	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Lead	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Lithium	4.7	2.0	A	µg/L	1	7/8/2011 4:47:01 PM
Manganese	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Molybdenum	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Selenium	< 4.0	4.0		µg/L	1	7/8/2011 4:47:01 PM
Silver	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Thallium	< 1.0	1.0		µg/L	1	7/8/2011 4:47:01 PM
Uranium	< 1.0	1.0	A	µg/L	1	7/8/2011 4:47:01 PM
Vanadium	3.4	1.0		µg/L	1	7/8/2011 4:47:01 PM
Zinc	< 4.0	4.0		µg/L	1	7/8/2011 4:47:01 PM
MERCURY, TOTAL						
		SW7470A				Analyst: AE
Mercury	< 0.200	0.200		µg/L	1	7/6/2011 4:47:00 PM
DISSOLVED ANIONS BY ION CHROMATOGRAPH						
		E300.0				Analyst: JB
Bromide Dissolved	0.09	0.02		mg/L	1	7/11/2011 9:27:00 PM
Chloride Dissolved	16.4	1.00		mg/L	1	7/11/2011 9:27:00 PM
Fluoride Dissolved	0.22	0.01		mg/L	1	7/11/2011 9:27:00 PM
Sulfate Dissolved	35.5	1.00		mg/L	1	7/11/2011 9:27:00 PM
ALKALINITY						
		SM2320 B				Analyst: KH
Alkalinity, Phenolphthalein	< 2	2	A	mg/L CaCO3	1	7/6/2011

Qualifiers:

A Not Available for Accreditation
 E Value Above Quantitation Range
 N Not Accredited
 X Value Exceeds Maximum Contaminant Level (MCL)

B Analyte Detected in Method Blank
 H Holding Time Exceeded
 S Spike Recovery Outside Recovery Limits

PQL: Practical Quantitation Limit

Values Below PQL Considered Estimated

LCRA Environmental Laboratory Services

Date: 21-Jul-11

CLIENT: Texas Water Development Board	Client Sample ID: 68-35-617
Lab Order: 1107020	Collection Date: 6/28/2011 8:35:00 AM
Project: TWDB Suite	Matrix: GROUNDWATER
Lab ID: 1107020-006	Tag No: 4606

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY			SM2320 B			Analyst: KH
Alkalinity, Total (As CaCO3)	232	2		mg/L CaCO3	1	7/6/2011
CATION/ANION BALANCE			CALCULATION			Analyst: JB
Cation/Anion Balance	-1.41	5.0	A	%	1	7/14/2011
NITRATE AND NITRITE			SM4500-NO3-H			Analyst: KH
Nitrogen, Nitrate & Nitrite	1.54	0.020		mg/L	1	7/11/2011
DISSOLVED PHOSPHATE AS P IN WATER			E365.4			Analyst: CM
Phosphorus, Dissolved (As P)	< 0.020	0.020		mg/L	1	7/7/2011
SILICA			SM4500-SIO2-C			Analyst: KH
Silica, Dissolved (as SiO2)	12.3	2.50		mg/L	5	7/6/2011

Qualifiers:

- A Not Available for Accreditation
- E Value Above Quantitation Range
- N Not Accredited
- X Value Exceeds Maximum Contaminant Level (MCL)

- B Analyte Detected in Method Blank
- H Holding Time Exceeded
- S Spike Recovery Outside Recovery Limits

PQL: Practical Quantitation Limit

Values Below PQL Considered Estimated

WQ FY 2012 - SAWS

TWDB Water Quality Field Data Sheet

Newly Invented Well _____

SWN: AY-68-35-617
 County: Bexar
 County Code: 29
 Aquifer Code: 218 EDRDA
 Aquifer Id: 11

Name: San Antonio Water System
 Address: 2800 U.S. Hwy. 281 North
San Antonio, Texas 78212

ID Number: 1206
 Date: 8/7/12
 Sampler(s): David M. Mahula

Attention: David M. Mahula
 Well Name or #: Micron # 2

1	2	3	4	5	6	7	8	9	10	11
500 ml filtered Cation	500 ml filtered Anions/T. Alk.	250 ml filtered Nitrate								
HNO3 by lab	ICE	ICE + H2SO4								

All acidified samples pH <2.0. (*) If natural pH <7, then add NaOH until pH is >7. If natural pH is ≥7, no NaOH required.

Calibration Verification Readings	
pH	7 = <u>7.00</u>
	4 or 10 = <u>4.01</u>
SLP =	<u>98.5</u>
Conductivity	500 = _____
	1000 = <u>1007</u>
	2000 = _____
	5000 = _____

Time In: 8:00 AM
 Water Level: N/A
 Pumping time: Pumping upon arrival
 Well Use: P
 Lift: S
 Power: E 600 Horse Power
 Casing Type: Steel
 Sample Time: 8:35 AM

Time Out: 8:50 AM
 W.L. remark: _____ M.P. = N/A
 Sampling Point: Raw Water Sample Port
FIELD G.P.S. readings
 Latitude: N 29° 27' 15.8"
 Longitude: W 98° 38' 29.2"
 Casing Size: 30 "
 Filter pressure: hand pump (line / spring)

Field Alk. Titration (0.0200 N) H2SO4	
<u>7.20</u>	Start pH <u>4.50</u> End pH <u>4.50</u>
<u>50</u>	mL Sample Size
<u>11.4</u>	mL Acid Phenol (> 8.3)
<u>11.4</u>	mL Acid Total (to pH 4.5)
mL acid added x 20 = Alkalinity	

Phenol Alkalinity (82244): _____ mg/L
 Total Alkalinity (39086): 228 mg/L
 Colorimeter DO (00300): _____ mg/L

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	<u>8:15</u>	<u>8:20</u>	<u>8:25</u>	<u>8:30</u>					
pH	<u>7.08</u>	<u>7.13</u>	<u>7.13</u>	<u>7.13</u>					
Celsius Temp.	<u>23.4</u>	<u>23.4</u>	<u>23.5</u>	<u>23.6</u>					
Conductivity	<u>542</u>	<u>541</u>	<u>541</u>	<u>541</u>					

Notes: _____

Field Data entered into GWDB: yes / no
 Balanced: _____

LCRA Environmental Laboratory Services

Date: 31-Aug-12

CLIENT: Texas Water Development Board
Lab Order: 1208500
Project: TWDB Suite
Lab ID: 1208500-006

Client Sample ID: 68-35-617
Collection Date: 8/7/2012 8:35:00 AM
Matrix: GROUNDWATER
Tag No: 1206

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Calcium	78.7	0.20		mg/L	1	8/28/2012 12:50:20 PM
Magnesium	16.3	0.20		mg/L	1	8/28/2012 12:50:20 PM
Potassium	1.23	0.20		mg/L	1	8/28/2012 12:50:20 PM
Sodium	10.4	0.50		mg/L	1	8/28/2012 12:50:20 PM
ICP METALS, DISSOLVED						
		E200.7				Analyst: MV
Boron	< 50	50		µg/L	1	8/28/2012 12:50:20 PM
Iron	< 50	50		µg/L	1	8/28/2012 12:50:20 PM
Strontium	486	20		µg/L	1	8/28/2012 12:50:20 PM
ICPMS METALS, DISSOLVED						
		E200.8				Analyst: SW
Aluminum	< 4.0	4.0		µg/L	1	8/24/2012 9:21:10 PM
Antimony	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Arsenic	< 2.0	2.0		µg/L	1	8/24/2012 9:21:10 PM
Barium	38.5	1.0		µg/L	1	8/28/2012 3:13:24 PM
Beryllium	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Cadmium	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Chromium	5.4	1.0		µg/L	1	8/24/2012 9:21:10 PM
Cobalt	< 1.0	1.0		µg/L	1	8/24/2012 9:21:10 PM
Copper	1.0	1.0		µg/L	1	8/24/2012 9:21:10 PM
Lead	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Lithium	4.6	2.0	A	µg/L	1	8/24/2012 9:21:10 PM
Manganese	< 1.0	1.0		µg/L	1	8/24/2012 9:21:10 PM
Molybdenum	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Selenium	< 4.0	4.0		µg/L	1	8/24/2012 9:21:10 PM
Silver	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Thallium	< 1.0	1.0		µg/L	1	8/28/2012 3:13:24 PM
Uranium	< 1.0	1.0	A	µg/L	1	8/28/2012 3:13:24 PM
Vanadium	3.7	1.0		µg/L	1	8/24/2012 9:21:10 PM
Zinc	< 4.0	4.0		µg/L	1	8/24/2012 9:21:10 PM
MERCURY, TOTAL						
		SW7470A				Analyst: AE
Mercury	< 0.200	0.200		µg/L	1	8/21/2012 2:02:00 PM
DISSOLVED ANIONS BY ION CHROMATOGRAPH						
		E300.0				Analyst: JB
Bromide Dissolved	0.08	0.02		mg/L	1	8/18/2012 1:38:00 PM
Chloride Dissolved	16.6	1.00		mg/L	1	8/18/2012 1:38:00 PM
Fluoride Dissolved	0.20	0.01		mg/L	1	8/18/2012 1:38:00 PM
Sulfate Dissolved	31.8	1.00		mg/L	1	8/18/2012 1:38:00 PM
ALKALINITY						
		SM2320 B				Analyst: KH
Alkalinity, Phenolphthalein	< 2	2	A	mg/L CaCO3	1	8/16/2012

Qualifiers:

A Not Available for Accreditation
 E Value Above Quantitation Range
 N Not Accredited
 X Value Exceeds Maximum Contaminant Level (MCL)

B Analyte Detected in Method Blank
 H Holding Time Exceeded
 S Spike Recovery Outside Recovery Limits

PQL: Practical Quantitation Limit

Values Below PQL Considered Estimated

68-35-617

LCRA Environmental Laboratory Services

Date: 31-Aug-12

CLIENT: Texas Water Development Board
Lab Order: 1208500
Project: TWDB Suite
Lab ID: 1208500-006

Client Sample ID: 68-35-617
Collection Date: 8/7/2012 8:35:00 AM
Matrix: GROUNDWATER
Tag No: 1206

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY			SM2320 B			Analyst: KH
Alkalinity, Total (As CaCO3)	218	2		mg/L CaCO3	1	8/16/2012
CATION/ANION BALANCE			CALCULATION			Analyst: JB
Cation/Anion Balance	-1.99	5.0	A	%	1	8/30/2012
NITRATE AND NITRITE			SM4500-NO3-H			Analyst: JB
Nitrogen, Nitrate & Nitrite	1.63	0.020		mg/L	1	8/13/2012
DISSOLVED PHOSPHATE AS P IN WATER			E365.4			Analyst: CM
Phosphorus, Dissolved (As P)	< 0.020	0.020		mg/L	1	8/16/2012
SILICA			SM4500-SIO2-C			Analyst: KH
Silica, Dissolved (as SiO2)	13.3	2.50		mg/L	5	8/22/2012

Qualifiers:

- A Not Available for Accreditation
- E Value Above Quantitation Range
- N Not Accredited
- X Value Exceeds Maximum Contaminant Level (MCL)

- B Analyte Detected in Method Blank
- H Holding Time Exceeded
- S Spike Recovery Outside Recovery Limits

PQL: Practical Quantitation Limit

Values Below PQL Considered Estimated

68-35-617

WQ FY 2013 - SAWS

TWDB Water Quality Field Data Sheet

Newly Invented Well _____

SWN: AY-68-35-617
 County: Bexar
 County Code: 29
 Aquifer Code: 218 EDRDA
 Aquifer Id: 11

Name: San Antonio Water System
 Address: 2800 U.S. Hwy. 281 North
San Antonio, Texas 78212

Attention: David M. Mahula

ID Number: 1203
 Date: 6/24/13
 Sampler(s): David M. Mahula

1	2	3	4	5	6	7	8	9	10	11
500 ml filtered	500 ml filtered	250 ml filtered								
Cation	Antons/T. Alk.	Nitrate								
HNO3 by lab	ICE	ICE + H2SO4								

Well Name or #: Micron # 2

Calibration Verification Readings	
pH	7 = <u>7.00</u> 4 or 10 = <u>4.01</u>
SLP =	<u>100.2</u>
Conductivity	500 = _____ 1000 = <u>1002</u> 2000 = _____ 5000 = _____

Time In: 10:05 AM

Time Out: 10:45 AM

Water Level: N/A

W.L. remark: _____

M.P. = N/A

Pumping time: Pumping upon arrival

Sampling Point: Raw Water Sample Port

Well Use: P

FIELD G.P.S. readings

Lift: S

Latitude: N 29° 27' 15.8"

Power: E 600 Horse Power

Longitude: W 98° 38' 29.2"

Casing Type: Steel

Casing Size: 30 "

Sample Time: 10:30 AM

Filter pressure: hand pump (line / spring)

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	10:10	10:15	10:20	10:25					
pH	7.09	7.11	7.12	7.12					
Celsius Temp.	23.5	23.5	23.5	23.5					
Conductivity	545	545	543	542					

Notes:

Field Data entered into GWDB: <u>yes / no</u>
Balanced: _____

Field Alk. Titration (0.0200 N) H2SO4	7.18	Start pH	4.50	End pH
	50	mL Sample Size		
	11.6	mL Acid Phenol (> 8.3)		
		mL Acid Total (to pH 4.5)		
		mL acid added x 20 = Alkalinity		

Phenol Alkalinity (82244): _____ mg/L
 Total Alkalinity (39086): 232 mg/L
 Colorimeter DO (00300): _____ mg/L



Environmental Laboratory Services
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ANALYTICAL RESULTS

Workorder: Q1302936

Lab ID: **Q1302936003** Date Received: 6/28/2013 10:30 Matrix: Aqueous
 Sample ID: **68-35-617 (1203)** Date Collected: 6/24/2013 10:30 Sample Type: SAMPLE
 Project ID: **TWDB CAN**

Parameters	Results Units	LOD	PQL	MCL	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E200.7 Metals, Trace Elements		Preparation Method: E200.7 Prep								
		Analytical Method: E200.7 Metals, Trace Elements								
Boron Dissolved	61.5 ug/L	20.4	51.0		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Calcium Dissolved	79.6 mg/L	0.0714	0.204		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Strontium Dissolved	480 ug/L	4.08	10.2		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Iron Dissolved	<51.0 ug/L	20.4	51.0		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Magnesium Dissolved	17.0 mg/L	0.0714	0.204		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Potassium Dissolved	1.25 mg/L	0.0714	0.204		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Sodium Dissolved	11.5 mg/L	0.204	0.510		1	7/30/2013 00:00	FM	7/31/2013 11:57	CW	
Analysis Desc: E200.8, ICP-MS		Preparation Method: E200.8, ICP-MS Prep								
		Analytical Method: E200.8, ICP-MS								
Aluminum Dissolved	<4.00 ug/L	1.50	4.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Antimony Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Arsenic Dissolved	<2.00 ug/L	0.700	2.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Barium Dissolved	36.6 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Beryllium Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Cadmium Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Chromium Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Cobalt Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Copper Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Lithium Dissolved	4.25 ug/L	0.700	2.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	N
Lead Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Manganese Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Molybdenum Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Selenium Dissolved	<4.00 ug/L	1.50	4.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Silver Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Thallium Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Uranium Dissolved	<1.00 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	N
Vanadium Dissolved	2.48 ug/L	0.400	1.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	
Zinc Dissolved	<4.00 ug/L	1.50	4.00		1	8/6/2013 00:00	FM	8/14/2013 21:12	SLW	

ANIONS by ION CHROMATOGRAPHY

Report ID: 16493 - 281928

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Environmental Laboratory Services
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 Phone: (512)356-6022
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ANALYTICAL RESULTS

Workorder: Q1302936

Lab ID: **Q1302936003** Date Received: 6/28/2013 10:30 Matrix: Aqueous
 Sample ID: **68-35-617 (1203)** Date Collected: 6/24/2013 10:30 Sample Type: SAMPLE
 Project ID: **TWDB CAN**

Parameters	Results Units	LOD	PQL	MCL	DF	Prepared	By	Analyzed	By	Qual
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Bromide	0.102 mg/L	0.00800	0.0200		1	7/10/2013 18:35	WR	7/10/2013 18:35	WR	
Chloride	18.2 mg/L	0.400	1.00		1	7/10/2013 18:35	WR	7/10/2013 18:35	WR	
Fluoride	0.214 mg/L	0.00400	0.0100		1	7/10/2013 18:35	WR	7/10/2013 18:35	WR	
Sulfate	33.1 mg/L	0.400	1.00		1	7/10/2013 18:35	WR	7/10/2013 18:35	WR	

TOTAL PHOSPHATE AS P

Analysis Desc: E365.4 Phosphorus, Total		Preparation Method: E365.4 / E351.2 Water Prep								
		Analytical Method: E365.4 Phosphorus, Total								
Phosphorus, Dissolved (As P)	<0.0200 mg/L	0.00800	0.0200		1	7/18/2013 00:00	ML	7/18/2013 00:00	CM	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	223 mg/L	10.0	10.0		1	7/2/2013 00:00	KH	7/2/2013 00:00	KH	N
Carbonate Alkalinity	<10.0 mg/L	10.0	10.0		1	7/2/2013 00:00	KH	7/2/2013 00:00	KH	N
Hydroxide Alkalinity	<10.0 mg/L	10.0	10.0		1	7/2/2013 00:00	KH	7/2/2013 00:00	KH	N
Phenolphthalein Alkalinity	<10.0 mg/L	10.0	10.0		1	7/2/2013 00:00	KH	7/2/2013 00:00	KH	N
Total Alkalinity	223 mg/L	10.0	10.0		1	7/2/2013 00:00	KH	7/2/2013 00:00	KH	

NITRATE AND NITRITE

Analysis Desc: SM4500-NO3-H, Nitrate/Nitrite		Preparation Method: SM4500-NO3-H, Nitrate/Nitrite								
		Analytical Method: SM4500-NO3-H, Nitrate/Nitrite								
Nitrate/Nitrite	1.72 mg/L	0.00800	0.0200		1	7/22/2013 00:00	ML	7/22/2013 00:00	ML	

SILICA

Analysis Desc: SM4500-SiO2-C, Silica		Preparation Method: SM4500-SiO2-C, Silica								
		Analytical Method: SM4500-SiO2-C, Silica								
Silica	11.9 mg/L	1.00	2.50		5	7/10/2013 00:00	KH	7/10/2013 00:00	KH	

HEAVY METALS

Analysis Desc: E245.1 Mercury Water		Preparation Method: E245.1 Mercury Water								
		Analytical Method: E245.1 Mercury Water								
Mercury Dissolved	<0.200 ug/L	0.0700	0.200		1	7/8/2013 08:00	AE	7/9/2013 10:44	AE	



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ANALYTICAL RESULTS

Workorder: Q1302936

Lab ID: Q1302936003	Date Received: 6/28/2013 10:30	Matrix: Aqueous
Sample ID: 68-35-617 (1203)	Date Collected: 6/24/2013 10:30	Sample Type: SAMPLE
Project ID: TWDB CAN		

Parameters	Results Units	LOD	PQL	MCL	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SM1030B Cation/Anion Balance		Preparation Method: SM1030B Cation/Anion Balance								
		Analytical Method: SM1030B Cation/Anion Balance								
Cation/Anion Balance	-1.81 %				1	8/22/2013 09:14	CW	8/22/2013 09:14	CW	

WQ FY 2014 - SAWS

TWDB Water Quality Field Data Sheet

Newly Invented Well _____

SWN: AY-68-35-617
 County: Bexar
 County Code: 29
 Aquifer Code: 218 EDRDA
 Aquifer Id: 11

Name: San Antonio Water System
 Address: 2800 U.S. Hwy. 281 North
 San Antonio, Texas 78212

ID Number: **1203**
 Date: 8/4/14
 Sampler(s): David M. Mahula

Attention: David M. Mahula
 Well Name or #: Micron # 2

1	2	3	4	5	6	7	8	9	10	11
250 ml filtered	500 ml filtered	250 ml filtered								
Cation	Anions/T. Alk.	Nitrate								
ICE + HNO3	ICE	ICE + H2SO4								

Calibration Verification Readings	
pH	7 = 7.00
	4 or 10 = 4.01
SLP =	99.4
Conductivity	500 = _____
	1000 = 997
	2000 = _____
	5000 = _____

All acidified samples pH < 2.0. (*) If natural pH < 7, then add NaOH until pH is > 7. If natural pH is ≥ 7, no NaOH required.

Time In: 10:50 AM
 Time Out: 11:50 AM
 Water Level: N/A
 W.L. remark: _____
 M.P. = N/A
 Pumping time: Pumping upon arrival
 Sampling Point: Raw Water Sample Port
 Well Use: P
 Lift: S
 FIELD G.P.S. readings
 Latitude: N 29° 27' 15.8"
 Longitude: W 98° 38' 29.2"
 Power: E 600 Horse Power
 Casing Type: Steel
 Casing Size: 30 "
 Sample Time: 11:25 AM
 Filter pressure: hand pump line / spring

Field Alk. Titration (0.0200 N) H2SO4	
7.28	Start pH 4.50 End pH
50	mL Sample Size
11.4	mL Acid Phenol (> 8.3)
	mL Acid Total (to pH 4.5)
	mL acid added x 20 = Alkalinity

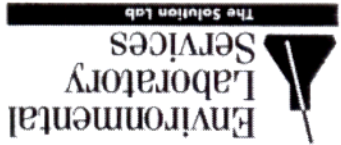
Phenol Alkalinity (82244): _____ mg/L
 Total Alkalinity (39086): **228** mg/L
 Colorimeter DO (00300): _____ mg/L

Water Quality Stabilization Parameters Table (At least 3 readings @ 5 min. intervals)

Time	11:05	11:10	11:15	11:20					
pH	7.11	7.12	7.13	7.13					
Celsius Temp.	23.6	23.6	23.6	23.6					
Conductivity	556	554	550	549					

Notes: _____

Field Data entered into GWDB: yes / no
 Balanced: _____



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
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ANALYTICAL RESULTS

Workorder: Q1434842

Lab ID: Q1434842003
 Sample ID: 68-35-617
 Project ID: TWDB CAN

Date Received: 8/8/2014 11:15
 Matrix: Aqueous
 Date Collected: 8/4/2014 11:25
 Sample Type: SAMPLE

Parameters Results Units LOD PQL MCL DF Prepared By Analyzed By Qual

INORGANICS
 Analysis Desc: E200.7 Metals, Trace Elements
 Preparation Method: E200.7 Prep
 Analytical Method: E200.7 Metals, Trace Elements

Boron Dissolved	63.2 ug/L	20.0	50.0	1	08/14/14	FM	08/18/14 15:22:21 MV
Calcium Dissolved	75.7 mg/L	0.0700	0.200	1	08/14/14	FM	08/18/14 15:22:21 MV
Strontium Dissolved	476 ug/L	4.00	10.0	1	08/14/14	FM	08/18/14 15:22:21 MV
Iron Dissolved	<50.0 ug/L	20.0	50.0	1	08/14/14	FM	08/18/14 15:22:21 MV
Magnesium Dissolved	16.4 mg/L	0.0700	0.200	1	08/14/14	FM	08/18/14 15:22:21 MV
Potassium Dissolved	1.29 mg/L	0.0700	0.200	1	08/14/14	FM	08/18/14 15:22:21 MV
Sodium Dissolved	12.6 mg/L	0.200	0.500	1	08/14/14	FM	08/18/14 15:22:21 MV

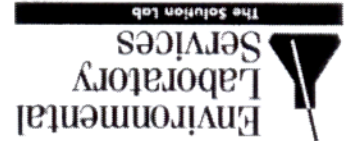
Analysis Desc: E200.8, ICP-MS
 Preparation Method: E200.8, ICP-MS Prep
 Analytical Method: E200.8, ICP-MS

Aluminum Dissolved	<4.00 ug/L	1.50	4.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Antimony Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Arsenic Dissolved	<2.00 ug/L	0.700	2.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Barium Dissolved	39.7 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Beryllium Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Cadmium Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Chromium Dissolved	1.11 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Cobalt Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Copper Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Lithium Dissolved	4.41 ug/L	0.700	2.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Lead Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Manganese Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Molybdenum Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Selenium Dissolved	<4.00 ug/L	1.50	4.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Silver Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Thallium Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Uranium Dissolved	<1.00 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Vanadium Dissolved	3.46 ug/L	0.400	1.00	1	08/14/14	FM	08/18/14 12:05:00 SLW
Zinc Dissolved	<4.00 ug/L	1.50	4.00	1	08/14/14	FM	08/18/14 12:05:00 SLW

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ANALYTICAL RESULTS

Workorder: Q1434842

Lab ID: Q1434842003 Date Received: 8/8/2014 11:15 Matrix: Aqueous
 Sample ID: 68-35-617 Date Collected: 8/4/2014 11:25 Sample Type: SAMPLE
 Project ID: TWDB CAN

Parameters	Results Units	LOD	PQL	MCL	DF	Prepared	By Analyzed	By	Qual
------------	---------------	-----	-----	-----	----	----------	-------------	----	------

Analysis Desc: E300.0, Anions									
Preparation Method: E300.0, Anions									
Analytical Method: E300.0, Anions									
Chloride Dissolved	21.6 mg/L	0.400	1.00		1	08/20/14 20:23:00	WR		
Bromide Dissolved	0.103 mg/L	0.00800	0.0200		1	08/20/14 20:23:00	WR		
Fluoride Dissolved	0.223 mg/L	0.00400	0.0100		1	08/20/14 20:23:00	WR		
Sulfate Dissolved	31.5 mg/L	0.400	1.00		1	08/20/14 20:23:00	WR		

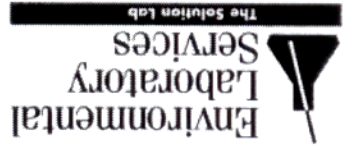
Analysis Desc: E365.4 Phosphorus, Total									
Preparation Method: E365.4 / E351.2 Water Prep									
Analytical Method: E365.4 Phosphorus, Total									
Phosphorus, Dissolved (As P)	<0.0200 mg/L	0.00800	0.0200		1	08/14/14 06:30:00	ML	08/15/14	CM

Analysis Desc: SM2320B, Alkalinity									
Preparation Method: SM2320B, Alkalinity									
Analytical Method: SM2320B, Alkalinity									
Phenolphthalein Alkalinity	<20.0 mg/L	20.0	20.0		1	08/14/14	KH	08/14/14	N
Hydroxide Alkalinity	<20.0 mg/L	20.0	20.0		1	08/14/14	KH	08/14/14	N
Bicarbonate Alkalinity	223 mg/L	20.0	20.0		1	08/14/14	KH	08/14/14	N
Carbonate Alkalinity	<20.0 mg/L	20.0	20.0		1	08/14/14	KH	08/14/14	N
Total Alkalinity	223 mg/L	20.0	20.0		1	08/14/14	KH	08/14/14	N

Analysis Desc: SM4500-NO3-H, Nitrate/Nitrite									
Preparation Method: SM4500-NO3-H, Nitrate/Nitrite									
Analytical Method: SM4500-NO3-H, Nitrate/Nitrite									
Nitrate/Nitrite	1.69 mg/L	0.00800	0.0200		1	08/13/14	ML	08/13/14	ML

Analysis Desc: SM4500-SiO2-C, Silica									
Preparation Method: SM4500-SiO2-C, Silica									
Analytical Method: SM4500-SiO2-C, Silica									
Silica, Dissolved	13.2 mg/L	1.00	2.50		5	08/20/14	ML	08/20/14	ML

Analysis Desc: E245.1 Mercury Water									
Preparation Method: E245.1 Mercury Water									
Analytical Method: E245.1 Mercury Water									
Mercury Dissolved	<0.200 ug/L	0.0700	0.200		1	08/12/14 10:00:00	AE	08/14/14 09:29:00	AE



LCRA Environmental Laboratory Services
 3505 Montopolis Drive
 Austin, TX 78744
 Phone: (512)356-6022
 Fax: (512)356-6021

ANALYTICAL RESULTS

Workorder: Q1434842

Lab ID: Q1434842003 Date Received: 8/8/2014 11:15 Matrix: Aqueous
 Sample ID: 68-35-617 Date Collected: 8/4/2014 11:25 Sample Type: SAMPLE
 Project ID: TWDB CAN

Parameters Results Units LOD PQL MCL DF Prepared By Analyzed By Qual

INORGANICS

Analysis Desc: SM1030B Cation/Anion Balance	Preparation Method: SM1030B Cation/Anion Balance
Cation/Anion Balance	Analytical Method: SM1030B Cation/Anion Balance
0.3900 %	1 08/21/14 20:28:14 CW 08/21/14 20:28:14 CW

Texas Water Development Board
Well Schedule

State Well Number 6835618 Previous Well Number County Bexar 29

River Basin 19 San Antonio River GMA 9 Latitude 292715 Longitude 983834 Source of Coords 2

Owner's Well No. _____ Location _____

Owner
San Antonio Water
System (Micron #3)
Driller

Address _____ Tenant/Oper. _____

Date Drilled 03/28/2006 Depth 880 Source of Depth A Altitude 805 Source of Alt. M
Well Type W User 764200

WELL CONSTRUCTION Const-Method Casing Material
Completion blank Screen Material
Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S) or Open Hole (O)
Cemented from _____ to _____

LIFT DATA - Pump Mfr. - _____ Type - _____ No. Stages _____

Bowls Diam. - _____ in. Setting - _____ ft. Column Diam. - _____ in.

Motor Mfr. - _____ Fuel or Power - ELECTRIC MOTOR Horsepower - _____

YIELD Flow- _____ GPM Pump _____ GPM Meas., Rept., Est. - _____ Date - _____

WATER USE Primary PUBLIC SUPPLY Secondary - Tertiary -

OTHER DATA AVAILABLE Water Levels - N Quality - N Logs - Other Data -

WATER LEVELS

Recorded By D.R. Jones Date Record Collected or Updated - 01/30/2009

Reporting Agency 03

REMARKS -
Owners Micron #3 well.

Aquifer - 218EDRDA ID - 11

EDWARDS AND ASSOCIATED
LIMESTONES

New
Well Number - 6835618

TRACKING# 182927

STATE OF TEXAS WELL REPORT

Date Entered: 6/16/2009

OWNER: San Antonio Water System

OWNER 2800 US Hwy 281 N

ADDRESS: San Antonio, TX 78212

ADDRESS OF WELL'S LOCATION:

7203 Micron San Antonio, TX

COUNTY: Bexar LATITUDE: 292716 LONGITUDE: 983834

Brand/Model of GPS:

Owner's Well Number:

ELEVATION:

Grid Number: 68 - 35 - 6

TYPE OF WORK:

- Checked: New Well
Replacement Well
Deepening
Reconditioning

PROPOSED USE:

- Checked: Public Supply
Other options: Monitor Well, Env. Soil Boring, Domestic, Test Well, Industrial, Irrigation, Injection, Geothermal Heat Loop, De-watering, Rig Supply, Stock or Livestock

If Public Supply well, were plans submitted to the TNRCC? Yes No

WELL LOG:

DIAMETER OF HOLE

DRILLING METHOD:

Table with columns: Date Drilling, Dia. (in), From (ft.), To (ft.)

- Checked: Mud Rotary
Other options: Driven, Air Hammer, Hollow Stem Auger, Bored, Air Rotary, Cable Tool, Reverse Circulation, Jetted, Other

ANNULAR SEAL DATA

Table with columns: From ft. to ft., #Sacks + Material

Method Used Pressure
Cemented By Schlumberger
Distance to Septic System
Distance to Property Line
Method of Verification
Approved by Variance No.

BOREHOLE COMPLETION:

- Options: Open Hole, Underreamed, Other, Straight Wall, Gravel Packed

Gravel Packed Interval from ft. to ft. Size

SURFACE COMPLETION:

- Checked: Surface Slab Installed
Other options: Pitless Adapter Used, Surface Sleeve Installed, Alternative Procedure Used

WATER LEVEL:

Static Level 131.8 ft. below land surface
Artesian Flow gpm. Date 3/28/2006

PLUGGING INFO:

- Options: Well Plugged within 48 hours, Casing left in well, Cement/Bentonite left in well, From (ft.) To (ft.) Cem/Bent Sacks Used

TYPE OF PUMP:

- Checked: Submersible
Other options: Turbine, Jet, Cylinder, Other

Depth to pump bowls, cylinder, jet, etc.

WELL TESTS:

Type of test: Checked Pump
Yield: 7007 gpm with 9.2 ft. drawdown after 36 hrs.

PACKERS:

Type Depth

WATER QUALITY:

Did Driller knowingly penetrate any strata which contained undesirable constituents? Yes No

Type of water: Edwards
Depth of Strata:
Chemical Analysis made? Yes No

COMPANY NAME: Frank Rosenkranz & Sons

WELL DRILLER'S LICENSE NO. 1518

ADDRESS 6839 Leslie Rd San Antonio TX 78254

Name as Signature Charles L. Rosenkranz Registered Driller Apprentice

Driller Comments

Smew

Handwritten note: 68-35-618 update

WELL REPORT CONFIDENTIALITY NOTICE

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner. Please include the report's Tracking number on your written request.

**Texas Department of Licensing Regulation
Water Well Driller/Pump Installer Section
P.O. Box 12157 Austin, TX 78711
Toll free (800)803-9202 (512)463-7880 FAX (512)463-8616
Email address: water.well@license.state.tx.us Web address: www.license.state.tx.us**

DESCRIPTION AND COLOR OF FORMATION MATERIAL		CASING, BLANK PIPE, AND WELL SCREEN DATA				
From (ft.)	To (ft.) Description	Dia.	New/Used	Type	Setting From/To	Gage
0 - 1	Top Soil	30	New	Steel	0 - 372	.500
1 - 67	Limestone / Caliche - White / Yellow					
67 - 90	Anacacho / Limestone - White / Yellow					
90 - 157	Taylor Shale - Blue / Gray					
157 - 316	Austin Chalk - White					
316 - 322	Eagleford Shale - Black					
322 - 330	Buda Limestone - White					
330 - 349	Del Rio Shale - Blue / Gray					
349 - 369	Georgetown Limestone - Orange / Brown					
369 - 880	Edwards Limestone - Creme					

68-35-618