

**RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION**

**Form H-1**  
05/2004

**APPLICATION TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS**

1. Operator name Trueblood Resources, Inc. 2. Operator P-5 No. 871506  
(as shown on P-5, Organization Report)

3. Operator Address 1720 S. Bellaire St. Ste. 908 Denver, CO 80222

4. County Anderson 5. RRC District No. 06

6. Field Name Slocum 7. Field No. 84144001

8. Lease Name Fitzgerald 9. Lease/Gas ID No. 06-15772

10. Check the Appropriate Boxes:    New Project     Amendment

If amendment, Fluid Injection Project No. F- \_\_\_\_\_

Reason for Amendment:    Add wells     Add or change types of fluids     Change pressure

Change volume     Change interval     Other (explain) \_\_\_\_\_

**RESERVOIR DATA FOR A NEW PROJECT**

11. Name of Formation Carrizo 12. Lithology Sand  
(e.g., dolomite, limestone, sand, etc.)

13. Type of Trap Anticline 14. Type of Drive during Primary Production Depletion Drive  
(anticline, fault trap, stratigraphic trap, etc.)

15. Average Pay Thickness 40 16. Lse/Unit Acreage 66.62 17. Current Bottom Hole Pressure (psig) 190

18. Average Horizontal Permeability (mds) 1500 19. Average Porosity (%) 36

**INJECTION PROJECT DATA**

20. No. of Injection Wells in this application 1

21. Type of Injection Project:    Waterflood     Pressure Maintenance     Miscible Displacement     Natural Gas Storage

Steam     Thermal Recovery     Disposal     Other \_\_\_\_\_

22. If disposal, are fluids from leases other than the lease identified in Item 9?    Yes     No

23. Is this application for a Commercial Disposal Well?    Yes     No

24. If for commercial disposal, will non-hazardous oil and gas waste other than produced water be disposed?    Yes     No

25. Type(s) of Injection Fluid:

Salt Water     Brackish Water     Fresh Water     CO<sub>2</sub>     N<sub>2</sub>     Air     H<sub>2</sub>S     LPG     NORM

Natural Gas     Polymer     Other (explain) Produced Carrizo Formation Water and Polymer

26. If water other than produced salt water will be injected, identify the source of each type of injection water by formation, or by aquifer and depths, or by name of surface water source:

Produced Carrizo formation water from Fitzgerald lease will be reinjected back into Carrizo formation on Fitzgerald lease.

**CERTIFICATE**  
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that the data and facts stated therein are true, correct, and complete, to the best of my knowledge.

  
Signature \_\_\_\_\_ Date 4/8/21

Name of Person (type or print)  
John Trueblood

Phone 303-782-0542 Fax 303-782-0567

<b>For Office Use Only</b>	<b>Register No.</b> <u>6180197</u>	<b>Amount \$</b> <u>500.00</u>
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RAILROAD COMMISSION OF TEXAS -- OIL AND GAS DIVISION

Form H-1A

INJECTION WELL DATA (attach to Form H-1)

1. Operator Name (as shown on P-5) Trueblood Resources, Inc.						2. Operator P-5 No. 871506		
3. Field Name Slocum						4. Field No. 84144001		
5. Current Lease Name Fitzgerald						6. Lease/Gas ID No. 06-15772		
7. Lease is 2.3 miles in a Northwest direction from Slocum (center of nearest town).								
8. Well No. P1	9. API No. 42-00132795	10. UIC No.	11. Total Depth 650	12. Date Drilled 3/11/2020	13. Base of Usable Quality Water (ft) 1,750			
14. (a) Legal description of well location, including distance and direction from survey lines: J Crawford Sur, A-189 2453 FWL 498 FNL NAD 27								
(b) Latitude and Longitude of well location, if known (optional) Lat. 31°.39'22.716" Long. 95°29'13.025"								
15. New Injection Well <input checked="" type="checkbox"/> or Injection Well Amendment <input type="checkbox"/>				Reason for Amendment: Pressure <input type="checkbox"/> Volume <input type="checkbox"/> Interval <input type="checkbox"/> Fluid Type <input type="checkbox"/>				
Other (explain) _____								
Casing	Size	Setting Depth	Hole Size	Casing Weight	Cement Class	# Sacks of Cement	Top of Cement	Top Determined by
16. Surface	5 1/2	603	8 3/4	15.50	A	241	Surface	Circulated
17. Intermediate								
18. Long string								
19. Liner								
20. Tubing size 2 3/8	21. Tubing depth 550		22. Injection tubing packer depth 550		23. Injection interval 601 to 650			
24. Cement Squeeze Operations (List all)			Squeeze Interval (ft)		No. of Sacks		Top of Cement (ft)	
25. Multiple Completion? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			26. Downhole Water Separation? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		NOTE: If the answer is "Yes" to Item 25 or 26, provide a Wellbore Sketch			
27. Fluid Type Upper Carrizo Water/Polymer			28. Maximum daily injection volume for each fluid type (rate in bpd or mcf/d) 2000		29. Estimated average daily injection volume for each fluid type (rate in bpd or mcf/d) 1250			
30. Maximum Surface Injection Pressure: for Liquid 285 psig for Gas _____ psig.								
8. Well No.	9. API No.	10. UIC No.	11. Total Depth	12. Date Drilled	13. Base of Usable Quality Water (ft)			
14. (a) Legal description of well location, including distance and direction from survey lines:								
(b) Latitude and Longitude of well location, if known (optional) Lat. _____ Long. _____								
15. New Injection Well <input type="checkbox"/> or Injection Well Amendment <input type="checkbox"/>				Reason for Amendment: Pressure <input type="checkbox"/> Volume <input type="checkbox"/> Interval <input type="checkbox"/> Fluid Type <input type="checkbox"/>				
Other (explain) _____								
Casing	Size	Setting Depth	Hole Siz	Casing Weight	Cement Class	# Sacks of Cement	Top of Cement	Top Determined by
16. Surface								
17. Intermediate								
18. Long string								
19. Liner								
20. Tubing size	21. Tubing depth		22. Injection tubing packer depth		23. Injection interval _____ to _____			
24. Cement Squeeze Operations (List all)			Squeeze Interval (ft)		No. of Sacks		Top of Cement (ft)	
25. Multiple Completion? Yes <input type="checkbox"/> No <input type="checkbox"/>			26. Downhole Water Separation? Yes <input type="checkbox"/> No <input type="checkbox"/>		NOTE: If the answer is "Yes" to Item 25 or 26, provide a Wellbore Sketch			
27. Fluid Type			28. Maximum daily injection volume for each fluid type (rate in bpd or mcf/d)		29. Estimated average daily injection volume for each fluid type (rate in bpd or mcf/d)			
30. Maximum Surface Injection Pressure: for Liquid _____ psig for Gas _____ psig.								

# TRUEBLOOD RESOURCES, INC.

1720 S. Bellaire Street, Suite 908

Denver, Colorado 80222

Phone 303-782-0542 - Fax 303-782-0567

John B. Trueblood – President

April 22, 2021

UIC Department  
Texas Railroad Commission  
1701 N. Congress  
Austin, TX 78701  
Attn: Sean Avitt

Re: Area Application to Inject Fluid into a Reservoir Productive for Oil and Gas Slocum Field #84144001  
Anderson County, Texas

Ladies and Gentlemen:

Attached is the H-1 and H-1A application of Trueblood Resources, Inc to inject produced Carrizo formation water into the Carrizo oil sand in the Slocum oil field to increase oil production by water and polymer flooding in a 36 acre area of the field. The RRC has previously approved injection of produced Carrizo water back into the Carrizo formation. We include in our application copies of several permits granted by the RRC to BASA Resources in the Slocum Field to reinject produced Carrizo water back into the Carrizo formation with an allowed surface injection pressure of 285 psi. We are requesting the same maximum surface pressure. The RRC recently approved a polymer flood in the Corsicana oil field using the same polymer in a reservoir sand with similar properties. Many other operators have also used the same type of polymer in polymer floods in Texas over the past several decades.

We have obtained approval from the two surface owners affected by our planned operation and they have been furnished a copy of our application. We have also filed public notice and completed the appropriate search for the status of all wells within a ¼ mile perimeter of our permit area including all producing wells/leases within ½ mile of the permit area. There are no producing wells within ½ mile of our permit area. TRI has thus far drilled one well named the Fitzgerald P1. Details about this well are included in our application. Additional injection and production wells will need to be drilled in the Fitzgerald Lease 06-15772 to conduct the planned enhanced oil recovery flood using five-spot well patterns, hence our request for an area injection permit. With the exception of the new Fitzgerald P1 well, all other wells within the survey area have been plugged and abandoned. All new wells will be cased and cemented in accordance with Rule 13.

We look forward to your favorable consideration. Thank you for your review.

Very truly yours,



John B. Trueblood

March 25, 2021

UIC Department  
Texas Railroad Commission  
1701 N. Congress  
Austin, TX 78701  
Attn: Sean Avitt, Paul Dubois

Re: Application of Trueblood Resources, Inc to Inject Fluid into the Carrizo under the Fitzgerald Lease Anderson County, Texas

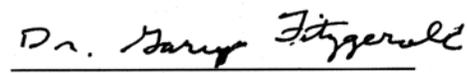
To Whom It May Concern:

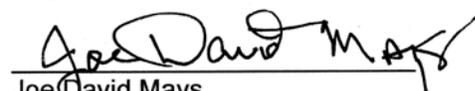
We express our support for the Enhanced Oil Recovery project planned by Trueblood Resources, Inc. on our land in Anderson County, Texas. Our family has been on this land for over a hundred years. Trueblood Resources has included us from the beginning in the details regarding their plans on our property and continues to communicate with us on a regular basis, regarding our family as a valuable part of the success of the project. From what we have learned and investigated ourselves, they have a world-class team with the expertise to develop the heavy oil found in the Shallow Carrizo under our land using very sophisticated polymer technologies for fast and effective oil recovery. Trueblood is partnered with Dr. Gary Pope, recently retired Professor and Director of the Center for Petroleum and Geosystems Engineering at the University of Texas Austin.

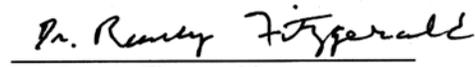
They have explained their polymer injection process, have shown us the product they plan to inject and described in detail its benign nature. We understand their team has been involved in the design and implementation of numerous EOR projects using polymer in many applications and we have confidence they will respect our property as well as our needs.

We would like to see these oil reserves developed and we believe that Trueblood Resources will do so in a safe and thoughtful manner. We sincerely hope the Railroad Commission will grant Trueblood Resources its requested area injection permit so they might begin to develop our reserves of oil. We would be happy to speak with you should you believe it would be helpful. The primary contact email address is listed below. Thank you.

Sincerely,

  
Dr. Gary Fitzgerald

  
Joe David Mays

  
Dr. Randy Fitzgerald

  
Jenny Mays Spear Cunningham  
jenny\_mc48@gmail.com

## GROUNDWATER PROTECTION DETERMINATION

Form GW-2



## Groundwater Advisory Unit

<b>Date Issued:</b>	29 January 2020	<b>GAU Number:</b>	267335
<b>Attention:</b>	TRUEBLOOD RESOURCES, 1720 S. BELLAIRE STREET DENVER, CO 80222	<b>API Number:</b>	00132795
<b>Operator No.:</b>	871506	<b>County:</b>	ANDERSON
		<b>Lease Name:</b>	FITZGERALD
		<b>Lease Number:</b>	
		<b>Well Number:</b>	P 1
		<b>Total Vertical Depth:</b>	647
		<b>Latitude:</b>	31.656309
		<b>Longitude:</b>	-95.486953
		<b>Datum:</b>	NAD27

**Purpose:** New Production Well  
**Location:** Survey-CRAWFORD, J; Abstract-189

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

TAC Title 16 Chapter 3 (a)(2)(C) Protection depth--Depth to which usable-quality water must be protected, as determined by the Groundwater Advisory Unit of the Oil and Gas Division, which may include zones that contain brackish or saltwater if such zones are correlative and/or hydrologically connected to zones that contain usable-quality water.

The GAU has very little shallow data in this area and requests your assistance in obtaining more complete data. Having more complete information would result in more accurate groundwater protection determinations. Therefore, GAU requests that you consider logging the shallow portion of this well from the surface to a depth of 3,000 feet and provide this log to the RRC. Further, to obtain valuable information from the shallow logged section, drill the well in a manner that does not result in extensive drilling fluid infiltration. Infiltration of about 60 inches results in the water quality calculations being equivalent to the resistivity of the drilling fluid and degrades GAU's ability to assess formation water.

Protect to the Base of the Wilcox, which is estimated to occur at 3000 feet for protection of usable-quality water.

The base of usable-quality water that must be protected is estimated to occur at a depth of 2700 feet below the land surface. Moreover, the interval from the land surface to a depth of 775 feet and the fresh water contained in the Zone from a depth of 1275 feet to 1750 feet must be isolated from water in overlying and underlying beds.

This recommendation is applicable to all wells within a radius of 200 feet of this location.

U.S. Geological Survey - Earthquake Hazards Program

# Search Earthquake Catalog

Search results are limited to 20,000 events. To get URL for a search, click the search button, then copy the URL from the browser address bar.

- [Help](#)
- [ANSS Comprehensive Earthquake Catalog \(ComCat\) Documentation](#)
- [Developer's Corner - Library of functions and wrapper scripts for accessing and using tools for the NEIC's ComCat data](#)
- [Significant Earthquakes Archive](#)

## Basic Options

### Magnitude

- 2.5+
- 4.5+
- Custom

Minimum

Maximum

### Date & Time

- Past 7 Days
- Past 30 Days
- Custom

Start (UTC)

End (UTC)

### Geographic Region

- World
- Conterminous U.S.<sup>1</sup>
- Custom

Draw Rectangle on Map

- [World](#)
- [Conterminous U.S.](#)
- [Custom](#)

Draw Rectangle on Map

## Advanced Options

### Geographic Region

Use the drop-down boxes to limit your search to a geographic region.

North

⌵

West
East

⌵

⌵

South

⌵

### Depth (km)

Minimum Maximum

⌵

⌵

### Azimuthal Gap

Minimum Maximum

⌵

⌵

### Review Status

- Any
- Automatic
- Reviewed

### Circle

Center Latitude Center Longitude

31.6564847
⌵

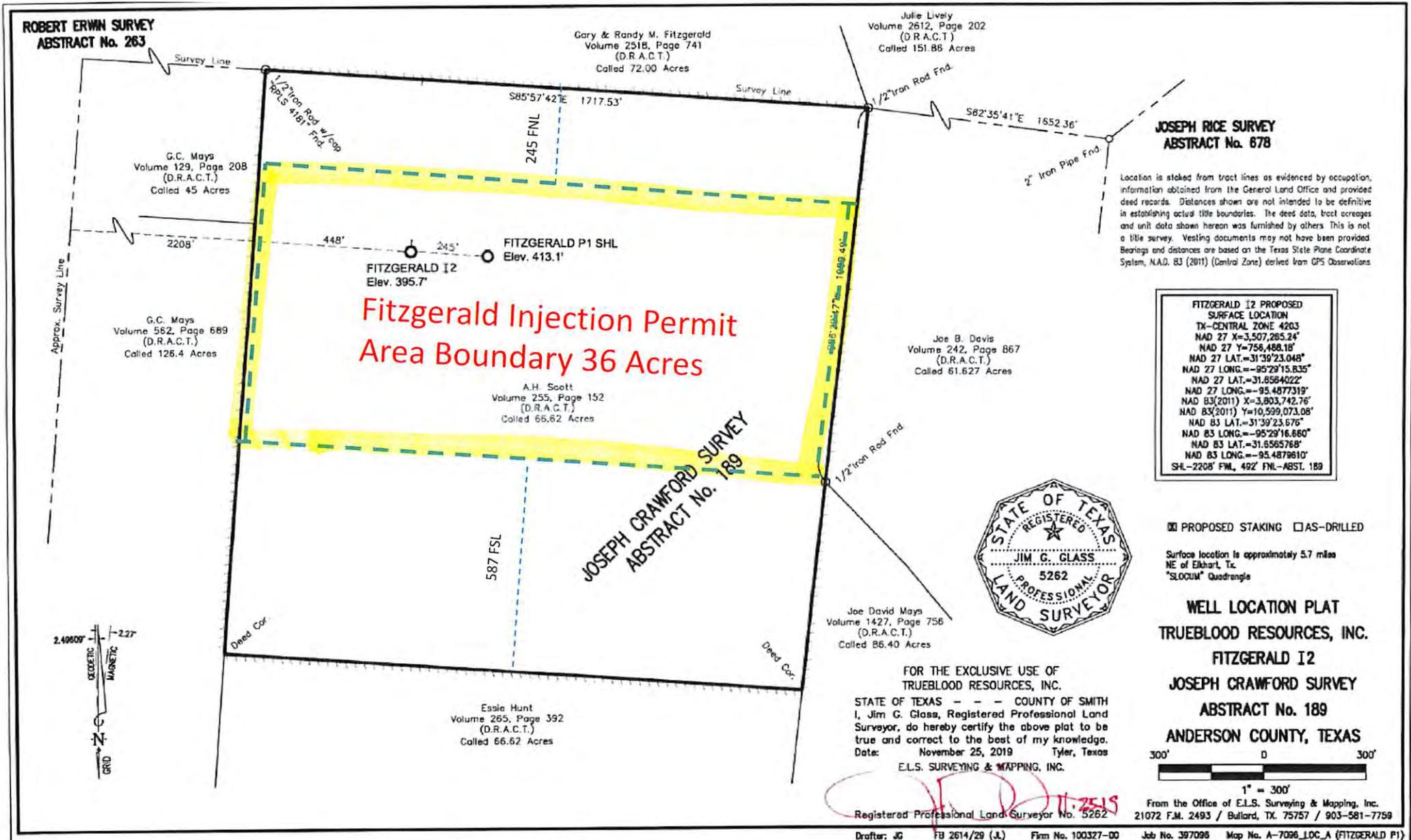
-95.4871806
⌵

### Outer Radius (km)

9.08
⌵

- Event Type**
- Impact**
- Catalog**
- Contributor**
- Product Type**

# Fitzgerald Lease Area 66.62 Acres



**JOSEPH RICE SURVEY**  
ABSTRACT No. 678

Location is staked from tract lines as evidenced by occupation, information obtained from the General Land Office and provided deed records. Distances shown are not intended to be definitive in establishing actual title boundaries. The deed data, tract acreages and unit data shown hereon was furnished by others. This is not a title survey. Vesting documents may not have been provided. Bearings and distances are based on the Texas State Plane Coordinate System, N.A.D. 83 (2011) (Central Zone) derived from GPS Observations

**FITZGERALD I2 PROPOSED SURFACE LOCATION**  
TX-CENTRAL ZONE 4203  
NAD 27 X=3,507,265.24'  
NAD 27 Y=756,488.18'  
NAD 27 LAT.=31°39'23.048"  
NAD 27 LONG.= -95°29'15.835"  
NAD 27 LAT.=31.6564022°  
NAD 27 LONG.= -95.4877319°  
NAD 83(2011) X=3,803,742.76'  
NAD 83(2011) Y=10,599,073.08'  
NAD 83 LAT.=31°39'23.676"  
NAD 83 LONG.= -95°29'16.660"  
NAD 83 LAT.=31.6565768°  
NAD 83 LONG.= -95.4879610°  
SHL-2208' FWL, 492' FNL-ABST. 189



FOR THE EXCLUSIVE USE OF  
TRUEBLOOD RESOURCES, INC.

STATE OF TEXAS - - - COUNTY OF SMITH  
I, Jim G. Glass, Registered Professional Land Surveyor, do hereby certify the above plat to be true and correct to the best of my knowledge.  
Date: November 25, 2019 Tyler, Texas  
E.L.S. SURVEYING & MAPPING, INC.

*Jim G. Glass*  
Registered Professional Land Surveyor No. 5262

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. Unless stated otherwise, this recommendation is for normal drilling, production, and plugging operations only.

This determination is based on information provided when the application was submitted on 01/14/2020. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or [gau@rrc.texas.gov](mailto:gau@rrc.texas.gov).

Form GW-2      P.O. Box 12967 Austin, Texas 78771-2967      512-463-2741      Internet address: [www.rrc.texas.gov](http://www.rrc.texas.gov)  
Rev. 02/2014

# Map of Wells within ¼ Mile of Fitzgerald Lease Permit Area; J. Crawford Survey A-189

¼ Mile area of review  
Around Injection Area

Injection Permit Area  
36 acres



**WELLS WITHIN 1/4 MILE OF THE TRUEBLOOD RESOURCES, INC - FITZGERALD LEASE AREA PERMIT**

**API # 42-001-32795**

**ANDERSON COUNTY, TEXAS**

MAP #	API NUMBER	OPERATOR	LEASE NAME	WELL NUMBER	DATE DRILLED	TOTAL DEPTH	CURRENT STATUS	PLUGGING DATE		
W1	4200132173	DGE / Slocum	G.C. Mays -A-	1	11/25/1992	650'	P&A	8/2/2010	W-3 Attached	
W2	4200102122	Douglas & Grelling	G.C. Mays	1	9/29/1955	5860'	P&A	10/18/1955	Form 4 Attached	
W3	4200102120	Byrd Frost	F. B. Scott/Alice Scott	1	3/7/1934	5552'	P&A	8/10/1934	Form 4 Attached	
W4	4200132795	Trueblood Resources, Inc	Fitzgerald	I2	Permit					
W5	4200132802	Trueblood Resources, Inc	Fitzgerald	P1	12/10/2019	650'	Shut In			
W6	4200102128	HL Hunt/Sun Oil	Alice Scott	1	4/10/1935	5485'	P & A	3/21/1935	Form 4 Attached	Sometimes referred to as #1 & 2 Wells
			<b>Core Holes</b>							
C1		Shell Oil Company	Pearl Carter Core Hole	CH-1	5/16/1968	654'	P&A	8/6/1980	W-3 Attached	
C2		Shell Oil Company	Henry H Lawton Core Hole	CH-2	5/20/1968	672'	P&A	8/5/1980	W-3 Attached	
C3		Shell Oil Company	Henry H Lawton Core Hole	RF3/CH-3	5/12/1968	732'	P&A	8/4/1980	W-3 Attached	
C4		Shell Oil Company	GC Mays Core Hole	CH-1	5/8/1968	711	P&A	7/31/1980	W-3 Attached	
C5		Shell Oil Company	Frank M Chambers Core Hole	CH-1	5/14/1968	747'	P&A	81/80	W-3 Attached	

# Plugging Reports

Wells Within  $\frac{1}{4}$  Mile of Permit Area  
Application For Area Injection Permit  
Trueblood Resources, Inc.

Plan B

Plugging Record

RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

FORM W-3  
Rev. 12-92 1991

API No. (if available) **42-001-32173** / 1 RRC District **06**

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING

4 RRC Lease or ID Number **13332**

2 FIELD NAME (as per RRC records) **DAYS CHAPEL (CARRIZO)** / 1 Lease Name **Mays, G.C. - A -** / 5 Well Number **1**

6 OPERATOR **BASA RESOURCES, Inc. Ste. 400** / 6a Original Form W-1 filed in name of **DG & E Slocum Limited P.** / 10 County **Anderson**

7 ADDRESS **14875 LANDMARK Blvd 4th Fl Dallas, Tx 75254** / 6b Any subsequent W-1's filed in name of / 11 Date Drilling Permit Issued **N/A** ✓

8 Location of well, relative to nearest lease boundaries of lease on which this well is located: **767** feet from **N** line and **467** feet from **W** line of the **G.C. Mays - A -** lease / 12 Permit Number **404955** ✓

9a SECTION, BLOCK and SURVEY **J. CRAWFORD Survey A-189** / 9b Distance and direction from nearest town in this county **5 miles N 1/4 of Slocum, Tx** / 13 Date Drilling Commenced **11-25-92** ✓

16 Type Well (oil, gas, or dry) **Oil** / Total Depth **650'** / If multiple completion list all field names and oil lease or gas id no.'s / Gas/Dry Oil Lease / Oil - G / Gas - G / Well # / 14 Date Drilling Completed **12-31-92** ✓

18 If gas, amt. of cord on hand at time of plugging / 15 Date Well Plugged **8-2-10** ✓

RECEIVED

CEMENTING TO PLUG AND ABANDON DATE		PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	PLUG #8
*19. Cementing Date		08/02/2010	08/02/2010						
*20. Size of Hole or Pipe in which Plug Placed (inches)		5 1/2							
*21. Depth to Bottom of Tubing or Drill Pipe (ft)		522'	482'						
*22. Sacks of Cement Used (each plug)		50							
*23. Slurry Volume Pumped (cu. ft)		84	53						
*24. Calculated Top of Plug (ft)		496	0						
*25. Measured Top of Plug (if tagged) (ft)									
*26. Slurry Wt. x Gal		16.4	16.4						
*27. Type Cement		H	H						

29 CASING AND TUBING RECORD AFTER PLUGGING

29 Was any non-drillable material (other than casing) left in this well?  Yes  No

30 If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use reverse side of form if more space is needed)

SIZE	WT. # / FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
4 1/2"	9.5 #	646'	646'	6 3/4"

N/A

30 LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS

FROM	TO	FROM	TO

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information

\* Designates items to be completed by Cementing Company. Items not so designated shall be completed by operator

*Steve Perry* / Signature of Cementer or Authorized Representative

**Acid & Cementing Service, Inc.** / Name of Cementing Company

CERTIFICATE  
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge

**Don Albridge** / REPRESENTATIVE OF COMPANY

**Regulatory Coord** / TITLE

8-10-10 / DATE RECEIVED

219 / NO

580-5256 / NUMBER

RC OF TEXAS

**Don Albridge** / SIGNATURE REPRESENTATIVE OF RAILROAD COMMISSION

**Mike O'Don** / 9/10/10

NOV 25 2010

OIL & GAS DIVISION  
KILGORE, TX

(Handwritten initials)

31. Was well filled with mud-laden fluid, according to the regulations of the Railroad Commission? <span style="float:right">M/A <input type="checkbox"/> Yes <input type="checkbox"/> No</span>	32. How was mud applied? <span style="float:right">M/A</span>	33. Mud Weight _____ LBS GAL						
34. Total Depth: <u>650'</u> Depth of Deeper: Fresh Water: <u>650'</u>	Other Fresh Water Zones by T.D.W.R. <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align:center;">TOP</td> <td style="width:50%; text-align:center;">BOTTOM</td> </tr> <tr> <td style="border-top: 1px solid black; height: 15px;"></td> <td style="border-top: 1px solid black; height: 15px;"></td> </tr> <tr> <td style="border-top: 1px solid black; height: 15px;"></td> <td style="border-top: 1px solid black; height: 15px;"></td> </tr> </table>	TOP	BOTTOM					35. Have all abandoned wells on this lease been plugged according to R.R.C. Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 36. If No, Explain _____
TOP	BOTTOM							
37. Name and address of cementing or service company who mixed and pumped cement plugs in this well: <b>Acid &amp; Cementing Service, Inc. PO Box 1258 Palestine, TX 75802-1258</b>		Date R.R.C. District Office notified of plugging: <b>7-30-10</b>						
38. Name(s) and address(es) of surface owners of well site: <u>Harold &amp; Melody Holloway</u> <u>5702 FM 1817</u> <u>PALESTINE, TX 75801</u>								
39. Was notice given before plugging to the above? <b>YES</b>								
FILL IN BELOW FOR DRY HOLES ONLY								
40. For dry holes, this form must be accompanied by either a driller's, electric, radioactivity, or acoustical sonic log or such log must be released to a commercial log service.								
<input type="checkbox"/> Log Attached	<input type="checkbox"/> Log released to _____	Date _____						
Type Log: <input type="checkbox"/> Driller's	<input type="checkbox"/> Electric	<input type="checkbox"/> Radioactivity						
<input type="checkbox"/> Acoustical / Sonic								
41. Date FORM P-8 (Special Clearance) filed: _____								
42. Amount of oil produced prior to plugging _____ bbls* File FORM P-1 (Oil Production Report) for month this oil was produced								
<b>R.R.C. USE ONLY</b> Nearest field _____								

**REMARKS**

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Please Refer to  
File No. \_\_\_\_\_

RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

Form 4  
Plugging Record

FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED  
1018 Milam Building

Company L. A. Douglas Address San Antonio, Texas  
Sec. No. \_\_\_\_\_ Block No. \_\_\_\_\_ Survey Robert Erwin County Anderson  
Well No. 1 Name of Lease G. C. Mays No. of Acres 48  
Name of Field in which well is located Day's Chapel Date well was plugged 10-18-55, 19\_\_  
Form 1 (Notice of Intention to Drill) Was Filed in Name of L. A. Douglas  
Character of Well at the time of completion: Oil \_\_\_\_\_ bbls; Gas \_\_\_\_\_ Cu. Ft.; Dry X  
(Initial Production) (Initial Production)  
Amount well producing when plugged: Oil \_\_\_\_\_ bbls; Gas \_\_\_\_\_ Cu. Ft.; Water \_\_\_\_\_ bbls.  
Has this well ever produced oil or gas? No  
Total Depth 5862 feet. Top of each producing sand \_\_\_\_\_ feet.  
Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? Yes  
How was mud applied? Pump

Were plugs used? Yes If so, show all shoulders left for casing, depth of each, and size of casing, size and kind of plugs used, and depth placed. Also amount of cement and rock. Was well shot? No

Plug No. 1 at bottom of hole w/ 25 sacks cement. Plug No. 2 at top of hole w/ 5 sacks cement.

SIZE PIPE	PUT IN WELL		PULLED OUT		LEFT IN WELL		PACKERS AND SHOES
	Fl.	In.	Fl.	In.	Fl.	In.	
<u>10-3/4"</u>	<u>512</u>				<u>512</u>		<u>None</u>
<u>5-1/2"</u>	<u>5557</u>		<u>2006</u>		<u>3551</u>		<u>1 guide Shoe &amp; float collar</u>

Show depth found and thickness of all water, oil and gas formations \_\_\_\_\_

Have all abandoned wells on this lease been plugged according to Commissions rules? Yes

Manner of confining all oil, gas or water to strata: \_\_\_\_\_

The names of adjacent lease, royalty and landowners with their addresses in each instance as follows: \_\_\_\_\_

Was notice given before plugging to all available adjacent lease owners as required by Rule 10? Yes

I, L. A. Douglas, being first duly sworn on oath, state that I have knowledge of the facts and the matter herein set forth and that the same are true and correct.

Name L. A. Douglas Title \_\_\_\_\_

Subscribed and sworn to before me this 17th day of November, 1955

Naida H. Martyn,

Notary Public Bexar County, Texas

Correspondence regarding this well should be addressed to:

Name L. A. Douglas Address San Antonio, Texas

# RAILROAD COMMISSION OF TEXAS

NOV 1 1934

**RULE 10. Plugging Dry and Abandoned Wells.**—(a) All abandoned or dry wells shall immediately be plugged according to the following rules:  
 (b) Manner of Plugging.—All dry or abandoned wells must be plugged by confining all oil, gas or water to the strata in which they occur by the use of mud-laden fluid filling the top as directed by the Commission or by some other method approved by the Commission. The casing or cable drilling, in addition to mud-laden fluid, cement and grout may be used when so directed.  
 (c) Notice of Abandonment to Plug.—Before plugging dry and abandoned wells, notice shall be given to the Railroad Commission of Texas by the conservation agent in the field, and to all available adjoining lease and property owners, and representatives of such lease and property owners may, in addition to the oil and gas conservation agent of the Commission, be present to witness the plugging of these wells if they so desire, but plugging shall not be delayed because of inability to deliver notices to adjoining lease or property owners. (Rule 10 amended November 12, 1911).  
 Rule 11. Log and Plugging Record to be Filed with Commission.—The owner or operator shall, upon the completion of any well file with the Railroad Commission of Texas a complete record or log of the well. Only one set and owner in open blanks to be furnished to the Commission upon application, and upon plugging any well for any cause whatsoever, a complete record of the plugging thereof shall be made out and duly verified to blanks to be furnished by the Commission.

## PLUGGING RECORD

Company Byrd-Frost L&O Address 1108 Tower Pet Bldg, Dallas, Tex

Sec. No. \_\_\_\_\_ Blk. No. \_\_\_\_\_ Survey Joseph Crawford County Anderson

Well No. 1 Name of Lease Alice Scott No. of Acres 318.4

Date well was plugged August 10th, 1934

Character of Well (Whether it was Oil or Gas or Dry) Dry with show oil in Woodbine sand

Total depth 5560 feet. Top of each producing sand \_\_\_\_\_ feet

Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? Yes

How was mud applied? By pump

Were plugs used? No If so, show all shoulders left for casing, depth of each, and size of casing, size and kind of plugs used, and depths placed. Also amount of cement and rock.

Was well shot? No

RECEIVED  
 AUSTIN  
 NOV 1 0 1934  
 OIL & GAS DIVISION

Show depth found and thickness of all water, oil and gas formations

Top of Woodbine at 4555' drilled to total depth of 5560'.  
 Show of oil bit after washing and running swab half water came in.

The names of adjacent lease, royalty and landowners with their addresses in each instance as follow:

Puro Oil Company Ltd. 1108 Tower Pet Bldg Dallas, Tex  
Large Oils Co. 1108 Tower Pet Bldg Dallas, Tex

Was notice given before plugging \_\_\_\_\_ as required by subdivision (c) of Rule 10?

\_\_\_\_\_ being first \_\_\_\_\_ with \_\_\_\_\_ that I have knowledge of the \_\_\_\_\_ are true and correct.

Name \_\_\_\_\_ Address \_\_\_\_\_

RAILROAD COMMISSION OF TEXAS

RULE 10. Plugging Dry and Abandoned Wells. (a) All abandoned or dry wells shall immediately be plugged according to the following rules:

(b) Manner of Plugging.—All dry or abandoned wells must be plugged by confining all oil, gas or water to the strata in which they occur by the use of mud-laden fluid filling well to the top as directed by the commission or by some other method approved by the Commission. In case of cable drilling, in addition to mud-laden fluid, cement and plugs may be used when so directed.

(c) Notice of Intention to Plug.—Before plugging dry and abandoned wells, notice shall be given to the Railroad Commission of Texas or its conservation agent in the field, and to all available adjoining lease and property owners, and representatives of such lease and property owners may, in addition to the oil and gas conservation agent of the Commission, be present to witness the plugging of these wells if they so desire, but plugging shall not be delayed because of inability to deliver notices to adjoining lease or property owners. (Rule 10 amended November 12, 1921.)

Rule 11. Log and Plugging Record to be Filed with Commission.—The owner or operator shall, upon the completion of any well, file with the Railroad Commission of Texas a complete record or log of the same, duly signed and sworn to, upon blanks to be furnished by the Commission upon application; and upon plugging any well for any cause whatsoever, a complete record of the plugging thereof shall be made out and duly verified on blanks to be furnished by the Commission.

PLUGGING RECORD

Company Gen'l Plugging Service Co Address Tyler, Tex

Sec. No. \_\_\_\_\_ Blk No. \_\_\_\_\_ Survey Joe Crawford County Anderson

Well No. 1 Name of Les Blair, P. Co. No. of Acres 2.50

Date well was plugged 5/21/1935

Character of Well (Whether it was Oil or Gas or Dry) Dry

Total depth 5185 feet. Top of each producing sand 5475 feet

Was the well filled with mud-laden fluid, according to regulations of the Railroad Commission? yes

How was mud applied? with pump

Were plugs used? yes If so, show all shoulders left for casing, depth of each, and size of casing, also and kind of plugs used, and depths placed. Also amount of cement and rock.

Was well shot? no

Show depth found and thickness of water, oil and gas formations 5.15' TR 531'

5.475' to 5.485' water sand

The names of adjacent lease, royalty and landowners with their addresses in each instance as follow:

RECEIVED  
OIL & GAS

J.H. [Signature]

# Plugging Reports

Core Holes Within  $\frac{1}{4}$  Mile of Permit Area

Application For Area Injection Permit

Trueblood Resources, Inc.

RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING		API NO. (if available) NA	1. RRC District <b>6</b>
2. FIELD NAME (as per RRC Records) <b>Slocum</b>		3. Lease Name <b>Pearl Carter</b>	4. RRC Lease or Id. Number <b>NA</b>
6. OPERATOR <b>Shell Oil Company</b>		6a. Original Form W-1 Filed in Name of: <b>Shell Oil Company</b>	5. Well Number <b>CH-1</b>
7. ADDRESS <b>P.O. Box 61555, New Orleans, LA 70161</b>		6b. Any Subsequent W-1's Filed in Name of:	10. County <b>Anderson</b>
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located		<b>600 Feet From East Line and 1200 Feet From SE Line of the Pearl Carter Lease</b>	11. Date Drilling Permit Issued <b>3/7/68</b>
9a. SECTION, BLOCK, AND SURVEY <b>Joseph Crawford A-189</b>		9b. Distance and Direction From Nearest Town in this County <b>2 1/2 miles NW of Slocum, Texas</b>	12. Permit Number <b>NA</b>
16. Type Well (Oil, Gas, Dry) <b>CH *</b>	Total Depth <b>654'</b>	17. If Multiple Completion List All Fluid Names and Oil Lease or Gas ID No.'s <b>* Core Hole</b>	
18. If Gas, Amt. of Cond. on Hand at time of Plugging		GAS ID of OIL LEASE #	13. Date Drilling Commenced <b>5/16/68</b>
		OIL-G	14. Date Drilling Completed <b>5/19/68</b>
		WELL #	15. Date Well Plugged <b>8/7/80</b>
CEMENTING TO PLUG AND ABANDON DATA:		PLUG #1	PLUG #2
*19. Cementing Date		<b>8/7/80</b>	
20. Size of Hole or Pipe in which Plug Placed (inches)		<b>2 3/8</b>	
21. Depth to Bottom of Tubing or Drill Pipe (ft.)		<b>650</b>	
*22. Sacks of Cement Used (each plug)		<b>12</b>	
*23. Slurry Volume Pumped (cu. ft.)		<b>15</b>	
*24. Calculated Top of Plug (ft.)		<b>0</b>	
25. Measured Top of Plug (if tagged) (ft.)		<b>0</b>	
*26. Slurry Wt. #/Gal.		<b>15.6</b>	
*27. Type Cement		<b>Std. B</b>	
28. CASING AND TUBING RECORD AFTER PLUGGING		29. Was any Non-Drillable Material (Other than Casing) Left in This Well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
SIZE	WT. #/FT. PUT IN WELL (ft.)	LEFT IN WELL (ft.)	HOLE SIZE (in.)
<b>2 3/8" &amp; 7/8"</b>	<b>653'</b>	<b>653'</b>	<b>8 3/4"</b>
30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS			
FROM	None	TO	
FROM		TO	

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.  
 \* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

*S. J. Fox*  
 Signature of Cementer or Authorized Representative

Fox Well Service  
 Name of Cementing Company

CERTIFICATE:

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

*E.A. Kruebbe* **E.A. Kruebbe** Sr. Eng. Tech  
 REPRESENTATIVE OF COMPANY TITLE

August 26, 1980 **August 26, 1980** Phone 504 **588-7594**  
 DATE A/C NUMBER

*David Young*  
 SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

AUG 28 1980

*[Handwritten initials/signature]*

17

31. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		32. How was Mud Applied? <b>Cement Filled</b>	33. Mud Weight LBS/GAL
34. Total Depth <b>654'</b>	Other Fresh Water Zones by T.D.W.R. TOP _____ BOTTOM _____	35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	36. If NO, Explain
Depth of Deepest Fresh Water <b>NA</b>	_____	_____	
37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well <b>Fox Well Service, 2208 Crockett, Palestine, Texas, 75801</b>		Date RRC District Office notified of plugging <b>8/6/80</b>	
38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases _____ _____ _____			
39. Was Notice Given Before Plugging to Each of the Above?			
<b>FILL IN BELOW FOR DRY HOLES ONLY</b>			
40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.			
<input type="checkbox"/> Log Attached <input type="checkbox"/> Log released to _____ Date _____			
Type Logs:			
<input type="checkbox"/> Driller's <input type="checkbox"/> Electric <input type="checkbox"/> Radioactivity <input type="checkbox"/> Acoustical/Sonic			
41. Date FORM P-8 (Special Clearance) Filled?			
42. Amount of Oil produced prior to Plugging _____ bbls*			
* File FORM P-1 (Oil Production Report) for month this oil was produced			
<b>RRC USE ONLY</b>			
Nearest Field _____			

REMARKS Cut casing 3' below ground level and welded steel plate on top,

\_\_\_\_\_

\_\_\_\_\_

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31. Was Well filled with Mud - Laden Fluid, according to the regulations of the Railroad Commission		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	32. How was Mud Applied? <b>Cement filled</b>	33. Mud Weight LBS/GAL
34. Total Depth <b>672'</b>	Other Fresh Water Zones by T.D.W.R. TOP _____ BOTTOM _____		35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	36. If NO, Explain
Depth of Deepest Fresh Water <b>NA</b>				
37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well <b>Fox Well Service, 2208 Crockett, Palestine, Texas, 75801</b>			Date RRC District Office notified of plugging <b>8/5/80</b>	
38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases _____ _____ _____				
39. Was Notice Given Before Plugging to Each of the Above?				
<b>FILL IN BELOW FOR DRY HOLES ONLY</b>				
40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.				
<input type="checkbox"/> Log Attached		<input type="checkbox"/> Log released to _____		Date _____
Type Logs:				
<input type="checkbox"/> Driller's		<input type="checkbox"/> Electric		<input type="checkbox"/> Radioactivity
<input type="checkbox"/> Acoustical/Sonic				
41. Date FORM P-8 (Special Clearance) Filed?				
42. Amount of Oil produced prior to Plugging _____ bbls*				
* File FORM P-1 (Oil Production Report) for month this oil was produced				
<b>RRC USE ONLY</b>				
Nearest Field _____				

REMARKS Cut casing 3' below ground level and welded steel plate on top.

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RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

API NO. (if available) NA		1. RRC District 6
FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING		4. RRC Lease or Id. Number NA
2. FIELD NAME (as per RRC Records) Slocum	3. Lease Name Henry H. Lawton	5. Well Number CH-3
6. OPERATOR Shell Oil Company	6a. Original Form W-1 Filed in Name of Shell Oil Company	10. County Anderson
7. ADDRESS P.O. Box 61555, New Orleans, LA 70161	6b. Any Subsequent W-1's Filed in Name of:	11. Date Drilling Permit Issued 3/7/68
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located	700 Feet From North Line and 700 Feet From West Line of the Henry H. Lawton Lease	12. Permit Number NA
9a. SECTION, BLOCK, AND SURVEY Joseph Crawford, Sect 189, Block A	9b. Distance and Direction From Nearest Town in this County 1 3/4 miles NW of Slocum, Texas	13. Date Drilling Commenced 5/12/68
16. Type Well (Oil, Gas, Dry) CH*	Total Depth 732'	14. Date Drilling Completed 5/14/68
17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s * Core Hole	GAS ID or OIL LEASE #	15. Date Well Plugged 8/4/80
18. If Gas, Amt. of Cond. on Hand at time of Plugging	Oil-G Gas-G	
CEMENTING TO PLUG AND ABANDON DATA:		
*19. Cementing Date	PLUG #1	PLUG #2
20. Size of Hole or Pipe in which Plug Placed (inches)	PLUG #3	PLUG #4
21. Depth to Bottom of Tubing or Drill Pipe (ft.)	PLUG #5	PLUG #6
*22. Sacks of Cement Used (each plug)	PLUG #7	PLUG #8
*23. Slurry Volume Pumped (cu. ft.)		
*24. Calculated Top of Plug (ft.)		
25. Measured Top of Plug (if tagged) (ft.)		
*26. Slurry Wt. #/Gal.		
*27. Type Cement		
28. CASING AND TUBING RECORD AFTER PLUGGING	29. Was any Non-Drillable Material (Other than Casing) Left in This Well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
SIZE WT. #/FT. PUT IN WELL (ft.) LEFT IN WELL (ft.) HOLE SIZE (in.)	29a. If answer to above is "Yes" state depth to top of "junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)	
2 3/8 6.5# 6 726' 726' 7 7/8"		
30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS		
FROM None TO	FROM	TO
FROM TO	FROM	TO
FROM TO	FROM	TO
FROM TO	FROM	TO
FROM TO	FROM	TO

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information. Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

S. J. [Signature]  
Signature of Cementor or Authorized Representative

Fox Well Service  
Name of Cementing Company

CERTIFICATE:  
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

E. A. Kruebbe Sr. Eng. Tech. August 13, 1980 DATE, 1980 Phone 504 588-7594  
REPRESENTATIVE OF COMPANY FILE DATE A/C NUMBER  
[Signature]  
SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

[Handwritten initials]



31. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		32. How was Mud Applied? <b>Cement Filled</b>	33. Mud Weight LBS/GAL
34. Total Depth <u>732'</u>  Depth of Deepest Fresh Water <u>NA</u>	Oil or Fresh Water Zones by T.D.W.R. TOP _____ BOTTOM _____		35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	36. If NO, Explain		
37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well <b>Fox Well Service, 2208 Crockett, Palestine, Texas, 75801</b>			Date RRC-District Office notified of plugging <b>8/3/80</b>
38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases _____ _____ _____			
39. Was Notice Given Before Plugging to Each of the Above?			
<b>FILL IN BELOW FOR DRY HOLES ONLY</b>			
40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.  <input type="checkbox"/> Log Attached <input type="checkbox"/> Log released to _____ Date _____  Type Logs: <input type="checkbox"/> Driller's <input type="checkbox"/> Electric <input type="checkbox"/> Radioactivity <input type="checkbox"/> Acoustical/Sonic			
41. Date FORM P-8 (Special Clearance) Filed?			
42. Amount of Oil produced prior to Plugging _____ bbls* * File FORM P-1 (Oil Production Report) for month this oil was produced			
<b>RRC USE ONLY</b> Nearest Field _____			

REMARKS Cut casing 3' below ground level and welded steel plate on top.

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\_\_\_\_\_

RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

API NO. (if available) NA		1. RRC District 6	
FILE IN DUPLICATE WITH DISTRICT OFFICE OF DISTRICT IN WHICH WELL IS LOCATED WITHIN THIRTY DAYS AFTER PLUGGING		4. RRC Lease or Id. Number 05556 NA	
2. FIELD NAME (as per RRC Records) Slocum		3. Lease Name G.C. Mays	
6. OPERATOR Shell Oil Company		5. Well Number CH-1	
7. ADDRESS P.O. Box 61555, New Orleans, LA 70267		6a. Original Form W-1 Filed in Name of Shell Oil Company	
8. Location of Well, Relative to Nearest Lease Boundaries of Lease on which this Well is Located 200 Feet From NE Line and 200 Feet From South Line of the G.C. Mays Lease		6b. Any Subsequent W-1's Filed in Name of:	
9a. SECTION, BLOCK, AND SURVEY W.R. Wilson		9b. Distance and Direction From Nearest Town in this County 2 1/2 miles from Slocum, Texas	
16. Type Well (Oil, Gas, Dry) CH*		17. If Multiple Completion List All Field Names and Oil Lease or Gas ID No.'s * Core Hole	
Total Depth 711'		13. Date Drilling Commenced 5/8/68	
18. If Gas, Amt. of Cond. on Hand at time of Plugging		14. Date Drilling Complete 5/9/68	
15. Date Well Plugged 7/31/80			
CEMENTING TO PLUG AND ABANDON DATA:			
*19. Cementing Date 7/31/80			
20. Size of Hole or Pipe in which Plug Placed (inches) 2 3/8			
21. Depth to Bottom of Tubing or Drill Pipe (ft.) 690			
*22. Sacks of Cement Used (each plug) 13			
*23. Slurry Volume Pumped (cu. ft.) 16			
*24. Calculated Top of Plug (ft.) 0			
25. Measured Top of Plug (if tagged) (ft.) 0			
*26. Slurry Wt. #/Gal. 15.6			
*27. Type Cement Std H			
28. CASING AND TUBING RECORD AFTER PLUGGING			
SIZE	WT. #/FT.	PUT IN WELL (ft.)	LEFT IN WELL (ft.)
2 3/8	6.5#	711'	711'
		HOLE SIZE (In.) 7 7/8"	
29. Was any Non-Drillable Material (Other than Casing) Left in This Well <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
29a. If answer to above is "Yes" state depth to top of "Junk" left in hole and briefly describe non-drillable material. (Use Reverse Side of Form if more space is needed.)			
30. LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS			
FROM	TO	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO
FROM	TO	FROM	TO

I have knowledge that the cementing operations, as reflected by the information found on this form, were performed as indicated by such information.  
\* Designates items to be completed by Cementing Company. Items not so designated shall be completed by Operator.

*[Signature]*  
Signature of Cementor or Authorized Representative

Fox Well Service  
Name of Cementing Company

CERTIFICATE:  
I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

*E.A. Kruebbe* E.A. Kruebbe Sr. Eng. Tech August 13, 1980 Phone 504 588-7594  
REPRESENTATIVE OF COMPANY TITLE DATE A/C NUMBER

*David Younger*  
SIGNATURE: REPRESENTATIVE OF RAILROAD COMMISSION

*[Handwritten initials]*



31. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	32. How was Mud Applied? <p style="text-align: center;"><b>Cement Filled</b></p>	33. Mud Weight _____ LBS/GAL
34. Total Depth <u>711'</u>  Depth of Deepest Fresh Water <u>NA</u>	Other Fresh Water Zones by T.D.W.R. TOP _____ BOTTOM _____ _____ _____	35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  36. If NO, Explain _____ _____ _____
37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well <p style="text-align: center;"><b>Fox Well Service, 2208 Crockett, Palestine, Texas, 75801</b></p>		Date RRC District Office notified of plugging <u>7/30/80</u>
38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases _____ _____ _____ _____		
39. Was Notice Given Before Plugging to Each of the Above? _____		
<b>FILL IN BELOW FOR DRY HOLES ONLY</b>		
40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.  <input type="checkbox"/> Log Attached <input type="checkbox"/> Log released to _____ Date _____  Type Logs: <input type="checkbox"/> Driller's <input type="checkbox"/> Electric <input type="checkbox"/> Radioactivity <input type="checkbox"/> Acoustical/Sonic		
41. Date FORM P-8 (Special Clearance) Filed? _____		
42. Amount of Oil produced prior to Plugging _____ bbls* <small>* File FORM P-1 (Oil Production Report) for month this oil was produced</small>		
<b>RRC USE ONLY</b>		
Nearest Field _____		

REMARKS Cut casing 3' below ground level and welded steel plate on top.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





31. Was Well filled with Mud-Laden Fluid, according to the regulations of the Railroad Commission		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	32. How was Mud Applied? <b>Cement Filled</b>	33. Mud Weight LBS/GAL
34. Total Depth <b>747'</b>	Other Fresh Water Zones by T.D.W.R. TOP _____ BOTTOM _____		35. Have all Abandoned Wells on this Lease been Plugged according to RRC Rules? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	36. If NO, Explain
Depth of Deepest Fresh Water <b>NA</b>				
37. Name and Address of Cementing or Service company who mixed and pumped cement plugs in this well <b>Rox Well Service, 2208 Crockett, Palestine, Texas, 75801</b>			Date RRC District Office notified of plugging <b>7/31/80</b>	
38. Names and Addresses of Surface Owner of Well Site and Operators of Offset Producing Leases				
39. Was Notice Given Before Plugging to Each of the Above?				
<b>FILL IN BELOW FOR DRY HOLES ONLY</b>				
40. For Dry Holes, this Form must be accompanied by either a Driller's, Electric, Radioactivity or Acoustical/Sonic Log or such Log must be released to a Commercial Log Service.				
<input type="checkbox"/> Log Attached <input type="checkbox"/> Log released to _____ Date _____				
Type Logs: <input type="checkbox"/> Driller's <input type="checkbox"/> Electric <input type="checkbox"/> Radioactivity <input type="checkbox"/> Acoustical/Sonic				
41. Date FORM P-8 (Special Clearance) Filed?				
42. Amount of Oil produced prior to Plugging _____ bbls* * File FORM P-1 (Oil Production Report) for month this oil was produced				
<b>RRC USE ONLY</b>				
Nearest Field _____				

REMARKS Cut casing 3' below ground level and welded steel plate on top.

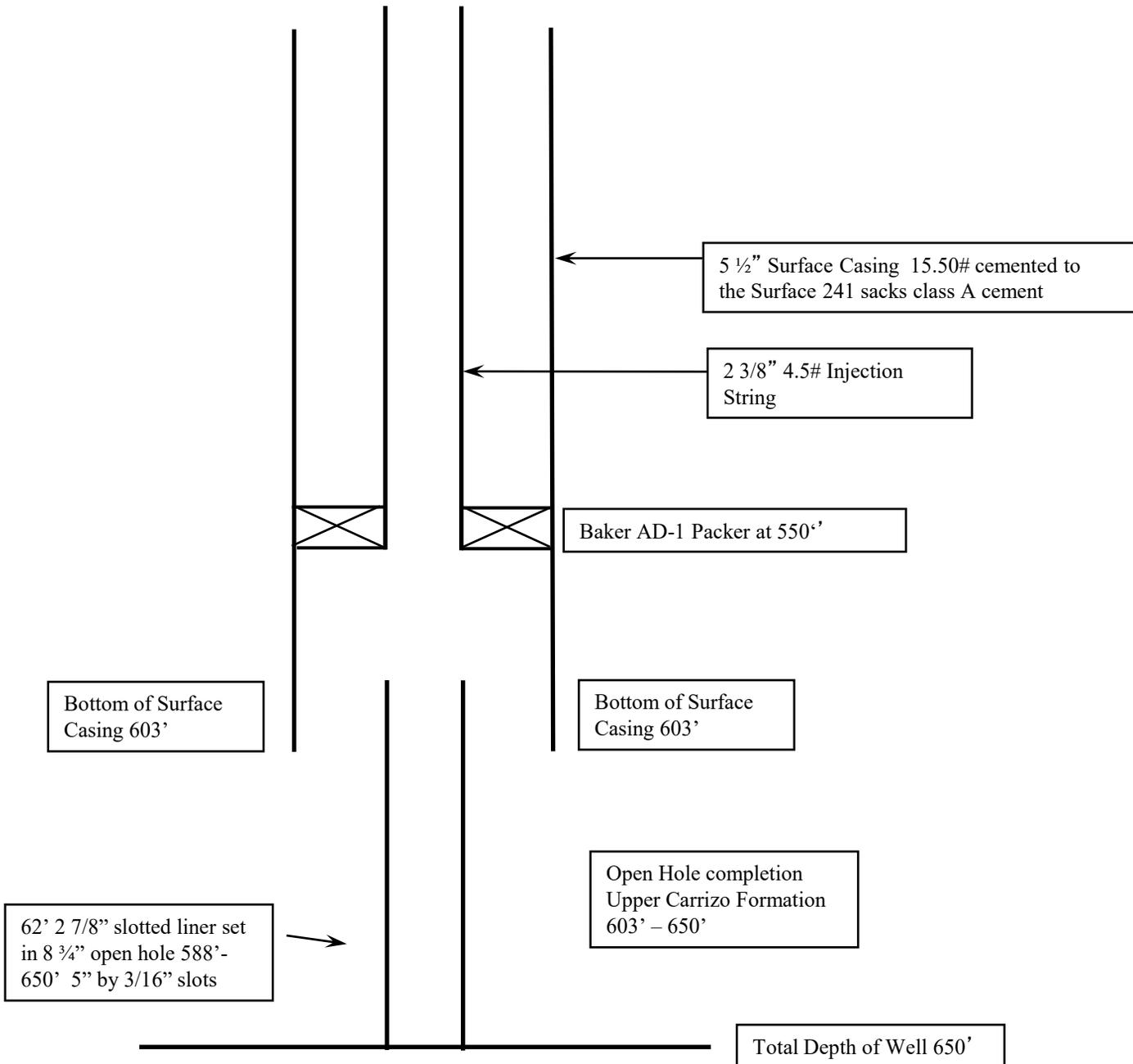
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\_\_\_\_\_

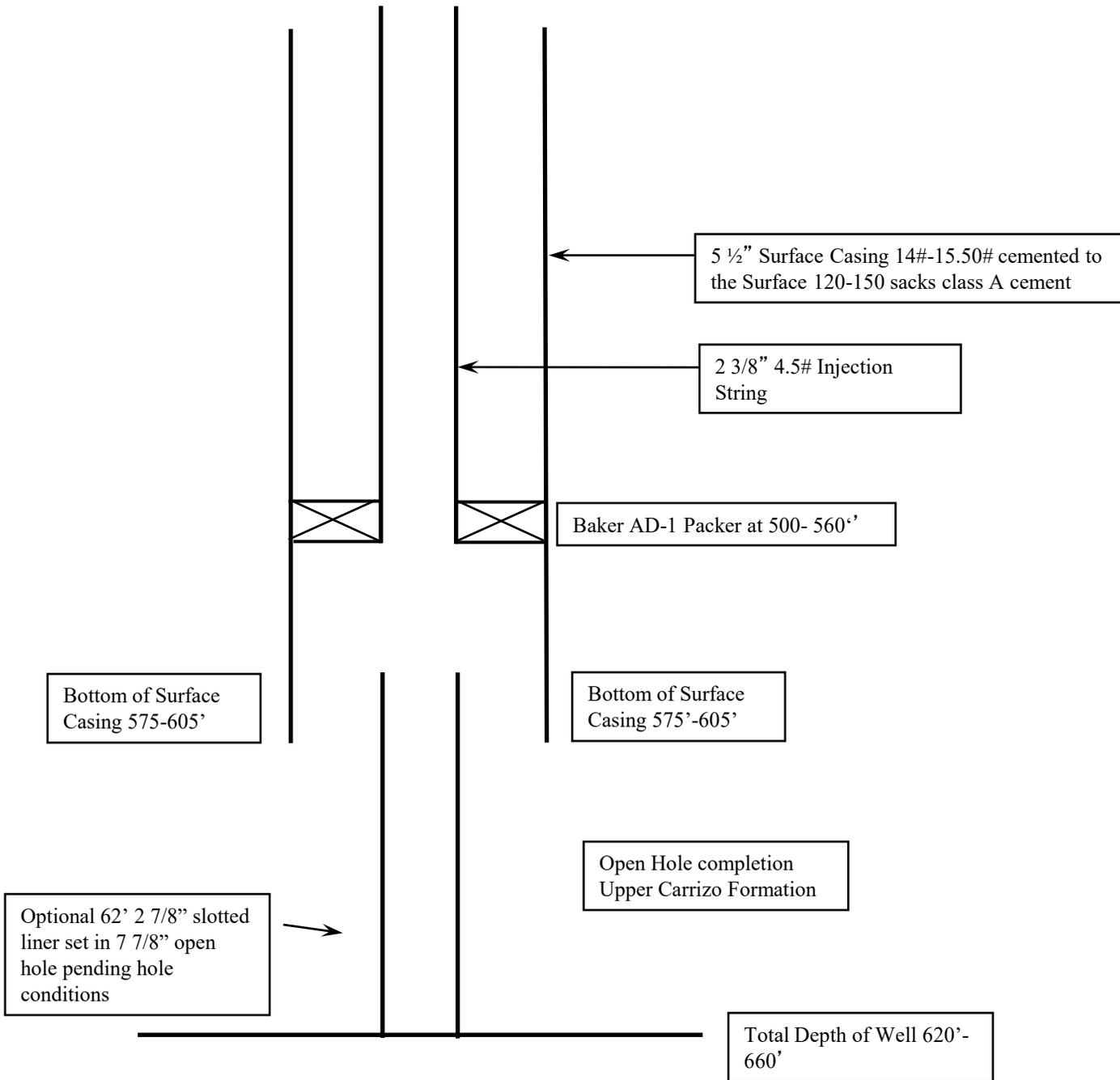
\_\_\_\_\_

\_\_\_\_\_

Proposed Wellbore Configuration  
Fitzgerald – P1  
API 42-00132795  
J Crawford Survey Abstract 189  
Anderson County, TX  
April 1, 2021



Proposed Wellbore Configuration  
Future Well  
API  
J Crawford Survey Abstract 189  
Anderson County, TX  
Date





# RAILROAD COMMISSION OF TEXAS

1701 N. Congress  
P.O. Box 12967  
Austin, Texas 78701-2967

Form W-15

Rev. 08/2014

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

## CEMENTING REPORT

### OPERATOR INFORMATION

Operator Name: TRUE BLOOD RESOURCES	Operator P-5 No.: 871506
Cementer Name: Acid & Cementing Service, Inc.	Cementer P-5 No.: 003571

### WELL INFORMATION

District No.: 06	County: ANDERSON
Well No.: P1	API No.: 42-001-32795
Lease Name: FITZGERALD	Drilling Permit No.: 859415
Field Name: Slacum	Lease No.:
	Field No.:

### I. CASING CEMENTING DATA

Type of casing: <input type="checkbox"/> Conductor <input type="checkbox"/> Surface <input type="checkbox"/> Intermediate <input type="checkbox"/> Liner <input checked="" type="checkbox"/> Production		
Drilled hole size (in.): 8 3/4	Depth of drilled hole (ft.): 650	Est. % wash-out or hole enlargement:
Size of casing in O.D. (in.): 5 1/2	Casing weight (lbs/ft) and grade:	No. of centralizers used: 4
Was cement circulated to ground surface (or bottom of cellar) outside casing? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no for surface casing, explain in Remarks.	Setting depth shoe (ft.): 603	Top of liner (ft.):
		Setting depth liner (ft.):
Hrs. waiting on cement before drill-out: 24	Calculated top of cement (ft.): Surface	Cementing date: 3-11-2020

### SLURRY

Slurry No.	No. of Sacks	Class	Additives	Volume (cu. ft.)	Height (ft.)
1	241	A	2% CaCl <sub>2</sub> / 1/4 KS	284.38	1124.44
2					
3					
Total					

### II. CASING CEMENTING DATA

Type of casing: <input type="checkbox"/> Surface <input type="checkbox"/> Intermediate <input type="checkbox"/> Production <input type="checkbox"/> Tapered production <input type="checkbox"/> Multi-stage cement shoe <input type="checkbox"/> Multiple parallel strings		
Drilled hole size (in.):	Depth of drilled hole (ft.):	Est. % wash-out or hole enlargement:
Size of casing in O.D. (in.):	Casing weight (lbs/ft) and grade:	No. of centralizers used:
Tapered string drilled hole size (in.)	Tapered string depth of drilled hole (ft.)	
Upper: Lower:	Upper: Lower:	
Tapered string size of casing in O.D. (in.)	Tapered string casing weight(lbs/ft) and grade	Tapered string no. of centralizers used
Upper: Lower:	Upper: Lower:	Upper: Lower:
Was cement circulated to ground surface (or bottom of cellar) outside casing? <input type="checkbox"/> YES <input type="checkbox"/> NO	Setting depth shoe (ft.):	
Hrs. waiting on cement before drill-out:	Calculated top of cement (ft.):	Cementing date:

### SLURRY

Slurry No.	No. of Sacks	Class	Additives	Volume (cu. ft.)	Height (ft.)
1					
2					
3					
Total					

### III. CASING CEMENTING DATA

Type of casing: <input type="checkbox"/> Surface <input type="checkbox"/> Intermediate <input type="checkbox"/> Production <input type="checkbox"/> Tapered production <input type="checkbox"/> Multi-stage cement/DV tool <input type="checkbox"/> Multiple parallel strings		
Drilled hole size (in.):	Depth of drilled hole (ft.):	Est. % wash-out or hole enlargement:
Size of casing in O.D. (in.):	Casing weight (lbs/ft) and grade:	No. of centralizers used:
Tapered string drilled hole size (in.)	Tapered string depth of drilled hole (ft.)	
Upper: Lower:	Upper: Lower:	
Tapered string size of casing in O.D. (in.)	Tapered string casing weight(lbs/ft) and grade	Tapered string no. of centralizers used
Upper: Lower:	Upper: Lower:	Upper: Lower:
Was cement circulated to ground surface (or bottom of cellar) outside casing? <input type="checkbox"/> YES <input type="checkbox"/> NO	Setting depth tool (ft.):	
Hrs. waiting on cement before drill-out:	Calculated top of cement (ft.):	Cementing date:

### SLURRY

Slurry No.	No. of Sacks	Class	Additives	Volume (cu. ft.)	Height (ft.)
1					
2					
3					
Total					





# RAILROAD COMMISSION OF TEXAS

## OIL AND GAS DIVISION

### PERMIT TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS

PROJECT NO. F-08112

BASA RESOURCES, INC.  
14875 LANDMARK BLVD STE 400  
DALLAS TX 75254

Authority is granted to inject into the wells identified herein in accordance with Statewide Rule 46 of the Railroad Commission of Texas and based on the information contained in the application (Forms H-1 and H-1A) dated May 20, 2011 for the permitted interval of the CARRIZO Formation and subject to the following terms and special conditions:

CARRIZO SAND UNIT (05463) LEASE  
SLOCUM FIELD  
ANDERSON COUNTY  
DISTRICT 06

#### WELL IDENTIFICATION AND PERMIT PARAMETERS:

Well No.	API No.	UIC Number	Permitted Fluids	Top Interval (feet)	Bottom Interval (feet)	Maximum Liquid Daily Injection Volume (BBL/day)	Maximum Gas Daily Injection Volume (MCF/day)	Average Fresh Water Daily Injection Volume (BBL/day)	Maximum Surface Injection Pressure for Liquid (PSIG)	Maximum Surface Injection Pressure for Gas (PSIG)
58I	00131019	000045186	Fresh Water	592	606	750			285	
7004	00130946	000006105	Fresh Water	580	598	750			285	
302I	00131056	000044838	Fresh Water	571	585	750			285	

#### SPECIAL CONDITIONS:

Well No.	API No.	Special Conditions
58I	00131019	<ol style="list-style-type: none"><li>1. An annual annulus pressure test must be performed and the results submitted in accordance with the instructions of Form H-5.</li><li>2. Injection fluids are limited to those produced on the Carrizo Sand Unit lease (05463) from the Carrizo formation.</li></ol>

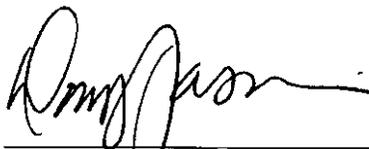
7004	00130946	<ol style="list-style-type: none"> <li>1. An annual annulus pressure test must be performed and the results submitted in accordance with the instructions of Form H-5.</li> <li>2. Injection fluids are limited to those produced on the Carrizo Sand Unit lease (05463) from the Carrizo formation.</li> </ol>
3021	00131056	<ol style="list-style-type: none"> <li>1. An annual annulus pressure test must be performed and the results submitted in accordance with the instructions of Form H-5.</li> <li>2. Injection fluids are limited to those produced on the Carrizo Sand Unit lease (05463) from the Carrizo formation.</li> </ol>

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.
2. The District Office must be notified 48 hours prior to :
  - a. running tubing and setting packer;
  - b. beginning any work over or remedial operation;
  - c. conducting any required pressure tests or surveys.
3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.
4. Prior to beginning injection and subsequently after any work over, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed and the results submitted in accordance with the instructions of Form H-5.
5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.
6. Within 30 days after completion, conversion to disposal, or any work over which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit and the permit number must be included on the new Form W-2 or G-1.
7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.
8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.
9. Unless otherwise required by conditions of the permit, completion and operations of the well shall be in accordance with the information represented on the application (Forms H-1 and H-1A).
10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

Provided further that, should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

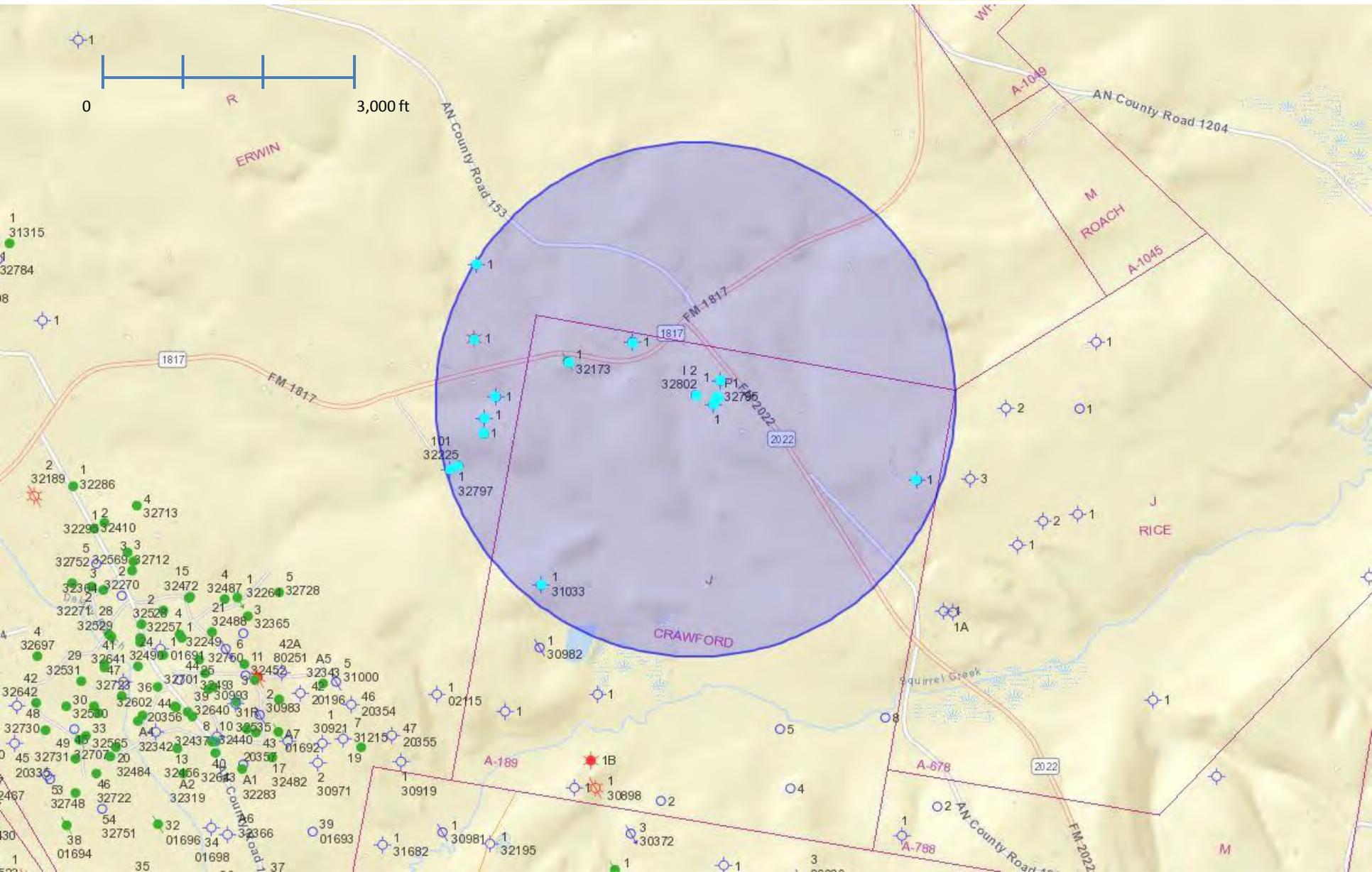
APPROVED AND ISSUED ON August 22, 2011



---

Doug O. Johnson, PE  
Manager for Injection-Storage  
Permits and Support

There are no operators within .5 miles of permit area



# TRUEBLOOD RESOURCES, INC.

1720 S. Bellaire Street, Suite 908

Denver, Colorado 80222

Phone 303-782-0542 - Fax 303-782-0567

**John B. Trueblood – President**

April 8, 2021

To: UIC Department Texas Railroad Commission

From: Trueblood Resources Inc.

Re: Notice of Area Application to Inject Fluid into a Reservoir Productive for Oil and Gas Slocum Field  
#84144001 Anderson County, Texas

This letter will confirm a copy of the referenced application, front and back, has been mailed on April 8, 2021 to:

**Landowner:**

Randy and Gary Fitzgerald  
479 ACR 1515  
Palestine, TX 75801

**Landowner:**

David Mays  
470 FM 2022  
Elkhart, TX 75839

**Anderson County Clerk and Records Office**

500 North Church St. Room 10  
Palestine, TX 75801

There are no operators within ½ mile of the area permit application

Very truly yours,



John B. Trueblood

**PUBLISHER'S AFFIDAVIT**

STATE OF TEXAS

COUNTY OF Houston

(Insert County)

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY

APPEARED Kelly Nicol WHO BEING BY ME DULY  
(Insert Publisher's Name/Publisher's Representative)

SWORN, DEPOSES AND SAYS THAT HE/SHE IS THE PUBLISHER OF THE

The Messenger, THAT SAID NEWSPAPER IS  
(Insert Newspaper's Name)

REGULARLY PUBLISHED IN Houston COUNTY  
(Insert County/Counties Name)

(COUNTIES), TEXAS, AND GENERALLY CIRCULATED IN

Houston and Anderson Counties  
(Insert ALL Counties of General Distribution)

COUNTY (COUNTIES), TEXAS; AND THAT THE NOTICE, A COPY OF WHICH IS

HERETO ATTACHED, WAS PUBLISHED IN SAID NEWSPAPER ON THE FOLLOWING

DAYS: March 28, 2021  
(Insert Date(s))

[Signature]  
PUBLISHER/PUBLISHER'S REPRESENTATIVE

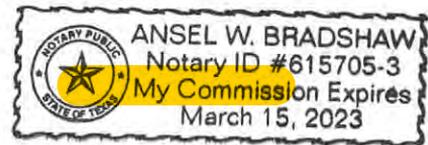
SWORN AND SUBSCRIBED TO ME ON THIS THE 8 DAY OF

April 2021 TO CERTIFY WHICH WITNESS MY HAND

AND SEAL OF OFFICE.

[Signature]  
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

Ansel W. Bradshaw  
PRINT OR TYPE NAME OF NOTARY PUBLIC  
MY COMMISSION EXPIRES 03-15-2023



(Affix Notary Seal Above)

OBITUARIES

William Hilliard



William Hilliard

William Hilliard was born May 1, 1965 in Dallas, TX to Rita Prater Hilliard and Donald Wayne Hilliard. He graduated from Slocum High School, and was a member of Mace Missionary Baptist Church. William loved his uncle John and thought he did no wrong. Uncle John would help him say his ABC's; but he liked to never get him to say them correctly. When William started to school, on the first day the teacher called him Bill, he told her that was not his name, his name was William. William was picking peas and dragging around so his mom picked up a few pea vines and spunked him with them. This tickled Uncle John so much that he gave him the name "Peavine". The Hilliard family moved to Slocum in 1974, he was so happy to be in the country. That is when his love for horses started. He started driving

off his back. He was also quick tempered. The softer side of William was his special nephew, Corbin. He loved him dearly. For Christmas, he gave him a Shetland pony named Shotgun. You better not let Corbin hear you call Shotgun a pony because Corbin would let you know he was a horse. And then came Jojo Bowman. William always had something for his special friend to eat or drink when he was around. William leaves mom Rita Hilliard, brother Scott Hilliard (Jennifer), Slocum, TX; sister LaDonna Powell, Bedford, TX; aunts Jean Wildman, Ruby Lawrence, Wanda Block, Irene Leggett, uncles Charles Abernathy, Smith Lawrence. Graveside services for William were held March 27, 2021 at Strong Memorial Cemetery, Slocum, under the direction of Walker & Walker Funeral Home.

trucks after graduation, and thought there was no greater truck than "Peterbilt." He also did farm, pipeline, and construction work. If he ever met you he never would forget you. We would go to Waco for doctor's appointments and I don't think we passed a place that he didn't know who it belonged to. He was very tender hearted, he would give you the shirt

COVID-19 Numbers Continue Decline

By Will Johnson
Houston County - Just over a month ago, Dr. Rochelle Walensky, director of the Centers for Disease Control and Prevention, reported the daily number of new cases of COVID-19 was at its lowest rate since October of 2020. She cautioned, however, that it was not time to relax the protocols established to help mitigate the disease.

As the rollout of the vaccine continues to gain traction, the numbers of newly reported cases are starting to show a downward trend across the nation. Even though it appears the health care industry has turned the corner on the disease, new variants of the virus are continually being found which indicate COVID-19 is unfortunately - not going away any time soon.

Closer to home, the Texas Department of Health Services (TxDSHS) reported another 132 fatalities in the State of Texas related to the virus on Thursday, March 25. In addition, the TxDSHS indicated on March 25, there were 31 estimated, active cases in Houston County with approximately 1,486 people who have recovered. There have also been 49 reported deaths. Last week, there were 60 active cases and 47 deaths.

The first cases of COVID-19 were reported in Houston County on April 17 of last year, when it was learned three individuals had tested positive for the virus. Meanwhile, in Anderson County, it was announced on Thursday, March 25, the county had a total of 165 active cases. There have also been 5,003 recoveries and 76 reported deaths. Last week, there were 130 active cases and 75 deaths. On Tuesday, March 31, 2020, it was reported Anderson County had its first confirmed case of the virus. The number of active cases

and fatalities per county - for those counties surrounding Houston and Anderson Counties - as of March 4 showed: Angelina - 202 active cases and 268 fatalities, last week there were 128 active cases with 267 fatalities; Cherokee - 0 active cases and 133 fatalities, last week there were no active cases with 130 fatalities; Freestone - 23 active cases and 48 fatalities, last week there were 28 active cases with 47 fatalities; Henderson - 402 active cases and 176 fatalities, last week there were 368 active cases with 172 fatalities; Leon - 25 active cases and 41 fatalities, last week there were 31 active cases with 41 fatalities; Madison - 23 active cases and 28 fatalities, last week there were 43 active cases with 27 fatalities; Trinity - 71 active cases and 23 fatalities, last week there were 71 active cases with 23 fatalities; and Walker - 36 active cases and 122 fatalities, last week there were 35 active cases with 122 fatalities.

The Messenger first started tracking the spread of the virus in the East-Texas area on Wednesday, March 25 of last year. At that time, TxDSHS reported 974 confirmed cases of the Coronavirus Disease and 12 deaths in the Lone Star State.

Also, on that Wednesday, the TxDSHS indicated 82 out of 234 counties in the state of Texas had at least one confirmed case of COVID-19. Of those counties - as of March 25, 2020 - the only county with a confirmed case of the Coronavirus bordering Houston or Anderson County was Walker County.

By March 25, 2021, approximately 2.38 million confirmed cases of COVID-19 had been reported in Texas while 46,868 Texans have suffered a COVID-19 related death. Furthermore, 254 out of 254 - or 100% of counties in the state of Texas - now have or

have had at least one active case of COVID-19.

The March 25 update showed a total of 25,120,308 Coronavirus tests had been administered with 3,410 current hospitalizations, down from 3,816 last week. The TxDSHS also reported 2,607,587 recoveries.

Another metric touted by state officials has been the positivity rate. The positivity rate is found by dividing the number of new cases (previous 7 days) by the number of new test results (previous 7 days).

On March 25, the positivity rate was 5.68%, a decrease from last week when the rate stood at 6.47%.

Moving to the national stage, according to the Centers for Disease Control and Prevention (CDC), along with the World Health Organization (WHO) and the Johns Hopkins Center for Systems Science and Engineering (CSSE), as of March 26, across the US there were 30,083,238 confirmed cases of COVID-19 - an increase of 409,140 from a week ago.

The CSSE also reported there were 446,880 US residents had suffered a COVID-19 related death as of March 26 - an increase of 7,045 deaths from a week ago.

Worldwide, on March 26, as of 9:27 am, there were 125,650,992 (last week - 121,958,304) confirmed cases of COVID-19 with 2,757,710 (last week - 2,693,889) deaths attributed to the virus. The CDC, WHO and the CSSE are also reporting 71,208,092 (last week - 69,081,888) patients have recovered from the disease.

Will Johnson may be contacted via e-mail at willjohnson@messenger-news.com.

Nursing Home Visitation Guidelines Revised

By Will Johnson
Messenger Reporter

EAST TEXAS - Earlier this month, the Centers for Medicare and Medicaid Services (CMS), in collaboration with the Centers for Disease Control and Prevention (CDC), issued updated guidance for nursing homes to safely expand visitation options during the COVID-19 pandemic public health emergency (PHE).

According to a press release, "This latest guidance comes as more than three million doses of vaccines have been administered within nursing homes, thanks in part to the CDC's Pharmacy Partnership for Long-Term Care Program, following the U.S. Food and Drug Administration's (FDA) authorization for emergency use of COVID-19 vaccines."

The updated guidance stated "...facilities should allow responsible indoor visitation at all times and for all residents, regardless of vaccination status of the resident, or visitor, unless certain scenarios arise that would limit visitation for:

Unvaccinated residents, if the COVID-19 county positivity rate is greater than 10 percent and less than 70 percent of residents in the facility are fully vaccinated;

Residents with confirmed COVID-19 infection, whether vaccinated or unvaccinated, until they have met the criteria to discontinue transmission-based precautions; or

Residents in quarantine, whether vaccinated or unvaccinated, until they have met criteria for release from quarantine."

In addition, the guidance also emphasizes "compassionate care" visits should be allowed at all times, regardless of a resident's vaccination status, the county's COVID-19 positivity rate, or an outbreak. Compassionate care visits include visits to a resident whose health has sharply

declined or is experiencing a significant change in circumstances.

CMS continues to recommend facilities, residents, and families adhere to the core principles of COVID-19 infection control, including maintaining physical distancing and conducting visits outdoors whenever possible. This continues to be the safest way to prevent the spread of COVID-19, particularly if either party has not been fully vaccinated.

Dr. Lee Fleisher, MD, CMS Chief Medical Officer and Director of CMS' Center for Clinical Standards and Quality stated, "CMS recognizes the psychological, emotional and physical toll that prolonged isolation and separation from family have taken on nursing home residents, and their families. That is why, now that millions of vaccines have been administered to nursing home residents and staff, and the number of COVID cases in nursing homes has dropped significantly, CMS is updating its visitation guidance to bring more families together safely. This is an important step that we are taking, as we continue to emphasize the importance of maintaining infection prevention practices, given the continued risk of transmission of COVID-19."

High vaccination rates among nursing home residents, and the diligence of committed nursing home staff to adhere to infection control protocols, which are enforced by CMS, have helped significantly reduce COVID-19 positivity rates and the risk of transmission in nursing homes.

Although outbreaks increase the risk of COVID-19 transmission, as long as there is evidence that the outbreak is contained to a single unit or separate area of the facility, visitation can still occur.

Will Johnson may be contacted via e-mail at willjohnson@messenger-news.com.

Weekly Bible Commentary

By Wes Woodard
1 Samuel 4 - "The Philistine Defeat Israel and Capture the Ark of the Covenant"

This was a sad day for the Hebrews. Thirty thousand Jewish soldiers were killed in this battle as well as the High Priest's two sons!

When Eli, the High Priest heard of this, he fell over backwards in his chair and his neck was broken and he died about

He was 98 years old and had been the High Priest of Israel 40 years.



POLITICAL CALENDAR

MAY 1 ELECTION
CITY OF CROCKETT, CITY COUNCIL PCT. 1
Butch Calvert
Gene Caldwell
The above individuals have authorized The Messenger to list them as candidates. The political ads were paid for by the candidates. For placement, contact The Messenger at 936-687-2424. \*Political ad paid for by those named above.



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Notice of Application for Fluid Injection Well Permit

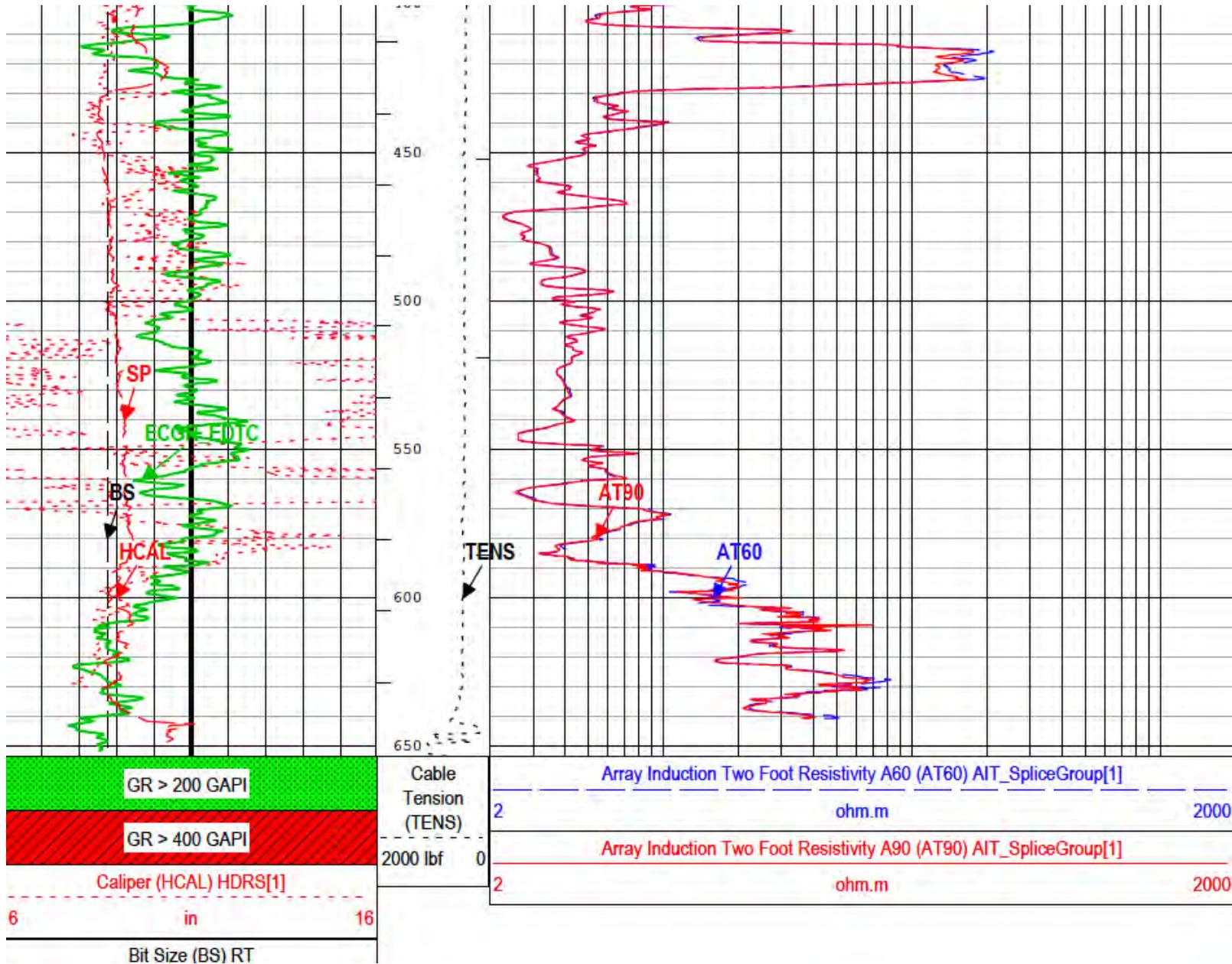
Trueblood Resources, Inc. is applying to the Railroad Commission of Texas for an area permit to inject fluid into a formation which is productive of oil and gas. The applicant proposes to inject fluid into the Carrizo formation, Fitzgerald Lease, Well Number P1. The proposed Fitzgerald injection well is located 2.3 miles north-west of Slocum, Texas in the Slocum Field, in Anderson County. Fluid will be injected into strata in the subsurface depth interval from 601 to 650 feet. LEGAL AUTHORITY: Chapter 27 of the Texas Water Code, as amended, Title 3 of the Texas Natural Resources Code, as amended, and the Statewide Rules of the Oil and Gas Division of the Railroad Commission of Texas. Requests for a public hearing from persons who can show they are adversely affected or requests for further information concerning any aspect of the application should be submitted in writing, within fifteen days of publication, to the Environmental Services Section, Oil and Gas Division, Railroad Commission of Texas, P.O. Box 12967, Austin, Texas 78711 (Telephone 512/463-6792).

Houston County Senior Citizens Center Menu

March 29-April 2, 2021
Meal Prices: 60 years and older, \$4; Under 60, \$7
MONDAY: Vegetable beef soup, salad, fruit salad, cornbread.
TUESDAY: Chicken & dumplings, boiled cabbage, pudding, cornbread.
WEDNESDAY (GOSPEL SINGING 10 a.m.): Spaghetti, green beans, salad, peaches.
THURSDAY (EXERCISE 10:30 a.m.): Chicken fried steak with gravy, mashed potatoes, spinach and cake.
FRIDAY: Closed for meals.
Call 544-7507 to order



# Fitzgerald P1 Well API #42-001-32795



Queen City (Arp Sand):  
top 412'

Reklaw Shale:  
top 430'  
base 590'  
160' Thick

Upper Carrizo:  
top 601'  
Base 650'+

Main Shale (Timmin)  
top 650'+



Company: Trueblood Resources Inc.

Well: Fitzgerald P1

Field: SLOCUM

County: Anderson State: TEXAS

County: Anderson Field: SLOCUM Location: 2 miles NW direction from SLOCUM Well: Fitzgerald P1 Company: Trueblood Resources Inc.	PLATFORM EXPRESS			
	ARRAY INDUCTION TOOL			
	RESISTIVITY / GAMMA RAY / CALIPER			
	Location:		2 miles NW direction from SLOCUM	
			Elev.: K.B. 418.10 ft	
			Distance to Survey Lines 2453 ft W & 498 ft N	
			G.L. 413.10 ft	
			Survey: Crawford, J ABS: 189	
			D.F. 418.10 ft	
	Permanent Datum:		Ground Level	
Log Measured From:		Kelly Bushing		
Drilling Measured From:		Kelly Bushing		
API Serial No.		Max.Hole Deviation		
42-001-32795		0 deg		
Longitude:		Latitude:		
-95.485952 degrees		31.656331 degrees		

Logging Date	08-Jan-2020	08-Jan-2020			
Run Number	1C	1D			
Depth Driller	650.00 ft	650.00 ft			
Schlumberger Depth	651.00 ft	651.00 ft			
Bottom Log Interval	645.00 ft	645.00 ft			
Top Log Interval	10.00 ft	10.00 ft			
Casing Driller Size @ Depth	10.75 in @ 12.00 ft	10.75 in			
Casing Schlumberger	12 ft	12 ft			
Bit Size	8.75 in	8.75 in			
Type Fluid In Hole	Water	Water			
MUD	Density	Viscosity	10 lbm/gal		10 lbm/gal
	Fluid Loss	PH			
	Source of Sample	Active Tank		Active Tank	
RM @ Meas Temp	0.2 ohm.m @ 68 degF			0.2 ohm.m	
RMF @ Meas Temp	0.15 ohm.m @ 68 degF			0.15 ohm.m	
RMC @ Meas Temp					
Source RMF	RMC		Pressed		
RM @ BHT	RMF @ BHT	0.19 @ 72.66	0.14 @ 72.66	0.19 @	
Max Recorded Temperatures	72.66 degF		72.66 degF		
Circulation Stopped Time	08-Jan-2020	09:15:00	08-Jan-2020		
Logger on Bottom Time	08-Jan-2020	12:40:00	08-Jan-2020		
Unit Number	Location:	3035	TYLER	3035	
Recorded By	Julio Martinez		Julio Martinez		
Witnessed By	John Dobrinski		John Dobrinski		

Logging Date	08-Jan-2020		08-Jan-2020		
Run Number	1A		1B		
Depth Driller	650.00 ft		650.00 ft		
Schlumberger Depth	651.00 ft		651.00 ft		
Bottom Log Interval	645.00 ft		645.00 ft		
Top Log Interval	10.00 ft		10.00 ft		
Casing Driller Size @ Depth	10.75 in @ 12.00 ft		10.75 in @ 12.00 ft		
Casing Schlumberger	12 ft		12 ft		
Bit Size	8.75 in		8.75 in		
Type Fluid In Hole	Water		Water		
MUD	Density	Viscosity	10 lbm/gal		10 lbm/gal
	Fluid Loss	PH			
	Source of Sample	Active Tank		Active Tank	
RM @ Meas Temp	0.2 ohm.m @ 68 degF			0.2 ohm.m @ 68 degF	
RMF @ Meas Temp	0.15 ohm.m @ 68 degF			0.15 ohm.m @ 68 degF	
RMC @ Meas Temp					
Source RMF	RMC		Pressed		Pressed
RM @ BHT	RMF @ BHT	0.19 @ 72.66	0.14 @ 72.66	0.19 @ 72.66	0.14 @ 72.6
Max Recorded Temperatures	72.66 degF		72.66 degF		
Circulation Stopped Time	08-Jan-2020	09:15:00	08-Jan-2020	09:15:00	
Logger on Bottom Time	08-Jan-2020	11:24:00	08-Jan-2020	11:40:00	
Unit Number	Location:	3035	TYLER	3035	TYLER
Recorded By	Julio Martinez		Julio Martinez		
Witnessed By	John Dobrinski		John Dobrinski		

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					
MUD	Density	Viscosity			
	Fluid Loss	PH			
	Source of Sample				
RM @ Meas Temp					
RMF @ Meas Temp					
RMC @ Meas Temp					
Source RMF	RMC				
RM @ BHT	RMF @ BHT				
Max Recorded Temperatures					
Circulation Stopped Time					
Logger on Bottom Time					
Unit Number	Location:				
Recorded By					
Witnessed By					



650.00 ft

Open Hole 8.75in

### Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	12.25	8.75				
Top Driller ( ft )	0	12				
Top Logger ( ft )	0	12				
Bottom Driller ( ft )	12	650				
Bottom Logger ( ft )	12	651				
Casing						
Size ( in )	10.75					

Weight ( lbm/ft )	45.5				
Inner Diameter ( in )	9.95				
Grade	N/A				
Top Driller ( ft )	0				
Top Logger ( ft )	0				
Bottom Driller ( ft )	12				
Bottom Logger ( ft )	12				

## Remarks and Equipment Summary

Thank you for choosing Schlumberger!

Our Crew Today: SL, Baldwin and Julio

Tools Run as per Toolsketch.

Sandstone Matriz used as per client request with 2.65 g/cc

1A: Remarks	1B: Remarks	1C: Remarks
-------------	-------------	-------------

<b>1A: Toolstring</b>	<b>1B: Toolstring</b>	<b>1C: Toolstring</b>
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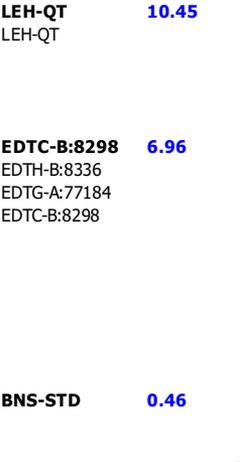
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Equip name	Length	MP name	Offset
LEH-QT LEH-QT	10.45		

EDTC-B:8298 EDTH-B:8336 EDTG-A:77184 EDTC-B:8298	6.96		
		CTEM	3.46
		ACCZ	0.00
		HV	0.00
		Gamma Ray	1.59
		TelStatus Head Tension	0.46
		TOOL_ZERO	

BNS-STD	0.46		
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Lengths are in ft  
Maximum Outer Diameter = 3.625 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO



		Power Supply	7.91
		Induction Temperature	7.91
		SP	0.08
		Mud Resistivity	0.00
		Head Tension	
		TOOL_ZERO	

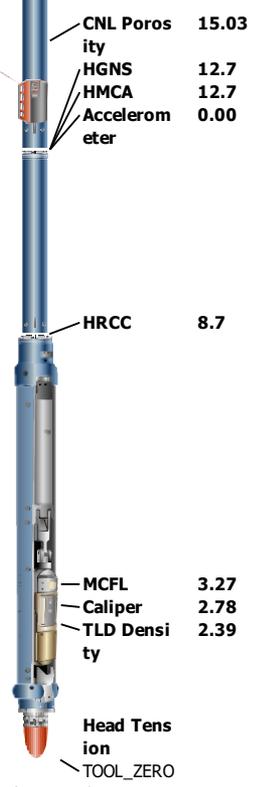
Lengths are in ft  
Maximum Outer Diameter = 9.000 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO



HDRS-H	12.7		
ECH-MEB			
HRCC-H			
HRMS-H			
Short Spacing			
GPV-Q			
HRGD-H:3965			
Backscatter			
GSR-J:5356			
Long Spacing			
:28696			

BNS-STD	0.46		
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Lengths are in ft  
Maximum Outer Diameter = 4.770 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO



1D: Remarks

1D: Toolstring

Equip name	Length	MP name	Offset
LEH-QT LEH-QT	19.86		

EDTC-B:8298 EDTH-B:8336 EDTG-A:77184 EDTC-B:8298	16.37		
		CTEM	12.87
		ACCZ	0.00
		HV	0.00
		Gamma Ray	11.00
		TelStatus	9.87
		Temperature	9.84
		GR	9.12

HGNS-H HGNS-H NPV-N NSR-F:5129 HGNS-H HMCA-H HACCZ-H:7712	9.87		
---	------	--	--

		CNL Porosity	2.79
		HMCA	0.46
		HGNS	0.46
		Accelerometer	0.00

BNS-STD	0.46		
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Lengths are in ft  
Maximum Outer Diameter = 4.700 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO



Depth Summary			
	1A	1B	1C
<b>Depth Measuring Device</b>			
Type	IDW-B	IDW-B	IDW-B
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0	0	0
Wheel Correction 2	0	0	0
<b>Tension Device</b>			
Type	CMTD-B/A	CMTD-B/A	CMTD-B/A
Serial Number	2204	2204	2204
Calibration Date	30-OCT-2019	30-Oct-2019	30-OCT-2019
Calibrator Serial Number	107896	107896	107896
Number of Calibration Points	10	10	10
Calibration Root Mean Square Error	71	71	71
Calibration Peak Error	153	153	153
<b>Logging Cable</b>			
Type	7-39AI-XXS	7-39AI-XXS	7-39AI-XXS
Serial Number			
Length	13000.00 ft	13000.00 ft	13000.00 ft
Conveyance Type	Wireline	Wireline	Wireline
Rig Type	LAND	LAND	LAND
	1D		
<b>Depth Measuring Device</b>			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
<b>Tension Device</b>			
Type	CMTD-B/A		
Serial Number	2204		
Calibration Date	30-OCT-2019		
Calibrator Serial Number	107896		
Number of Calibration Points	10		
Calibration Root Mean Square Error	71		
Calibration Peak Error	153		
<b>Logging Cable</b>			
Type	7-39AI-XXS		

Serial Number			
Length	13000.00 ft		
Conveyance Type	Wireline		
Rig Type	LAND		
<b>1A:Depth Control Parameters</b>		<b>Depth Control Remarks</b>	
Log Sequence	First Log In the Well	Schlumberger Depth Control Procedures Followed	
Rig Up Length At Surface		IDW Used as a First Depth Control Device	
Rig Up Length At Bottom		Z-Chart Used as a Second Depth Control	
Rig Up Length Correction		Main Log Correlated to GR from DownLog.	
Stretch Correction			
Tool Zero Check At Surface			
<b>1B:Depth Control Parameters</b>		<b>Depth Control Remarks</b>	
Log Sequence	Subsequent Log In the Well	Schlumberger Depth Control Procedures Followed	
Reference Log Name	PEX	IDW Used as a First Depth Control Device	
Reference Log Run Number	1A	Z-Chart Used as a Second Depth Control	
Reference Log Date	08-Jan-2020	Main Log Correlated to GR from previous Run.	
<b>1C:Depth Control Parameters</b>		<b>Depth Control Remarks</b>	
Log Sequence	Subsequent Log In the Well	Schlumberger Depth Control Procedures Followed	
Reference Log Name	PEX	IDW Used as a First Depth Control Device	
Reference Log Run Number	1B	Z-Chart Used as a Second Depth Control	
Reference Log Date	08-Jan-2020	Main Log Correlated to GR from previous Run.	
<b>1D:Depth Control Parameters</b>		<b>Depth Control Remarks</b>	
Log Sequence	Subsequent Log In the Well	Schlumberger Depth Control Procedures Followed	
Reference Log Name	PEX	IDW Used as a First Depth Control Device	
Reference Log Run Number	1C	Z-Chart Used as a Second Depth Control	
Reference Log Date	08-Jan-2020	Main Log Correlated to GR from previous Run.	
<b>Composite 1</b>			
<b>MAIN PASS 2"=100'</b>			
<b>Integration Summary</b>			
Output Channel(s)	Output Description	Input Parameter	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1D, GCSE_UP_PASS, GCSE_DOWN_PASS:1C, GCSE_UP_PASS, GCSE_DOWN_PASS:1B, GCSE_UP_PASS, GCSE_DOWN_PASS:1A	280.68 ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1D, GCSE_UP_PASS, GCSE_DOWN_PASS:1C, GCSE_UP_PASS, GCSE_DOWN_PASS:1B, GCSE_UP_PASS, GCSE_DOWN_PASS:1A, FCD	109.57 ft3
<b>Software Version</b>			
<b>Acquisition System</b>		<b>Version</b>	
Maxwell 2020.0		10.0.202864.3100	
<b>Composite Summary</b>			

# Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	2.02 ft	653.16 ft	08-Jan-2020 11:38:26 AM	08-Jan-2020 11:52:08 AM	ON	1.46 ft	Yes
1B	Log[3]:Up	Up	16.81 ft	653.37 ft	08-Jan-2020 12:44:08 PM	08-Jan-2020 1:00:32 PM	ON	1.22 ft	Yes
1C	Main[2]:Up	Up	-3.12 ft	648.38 ft	08-Jan-2020 1:50:14 PM	08-Jan-2020 2:19:54 PM	ON	1.45 ft	Yes
1D	Log[4]:Up	Up	71.63 ft	645.30 ft	08-Jan-2020 2:34:32 PM	08-Jan-2020 2:44:23 PM	ON	2.54 ft	Yes

All depths are referenced to toolstring zero

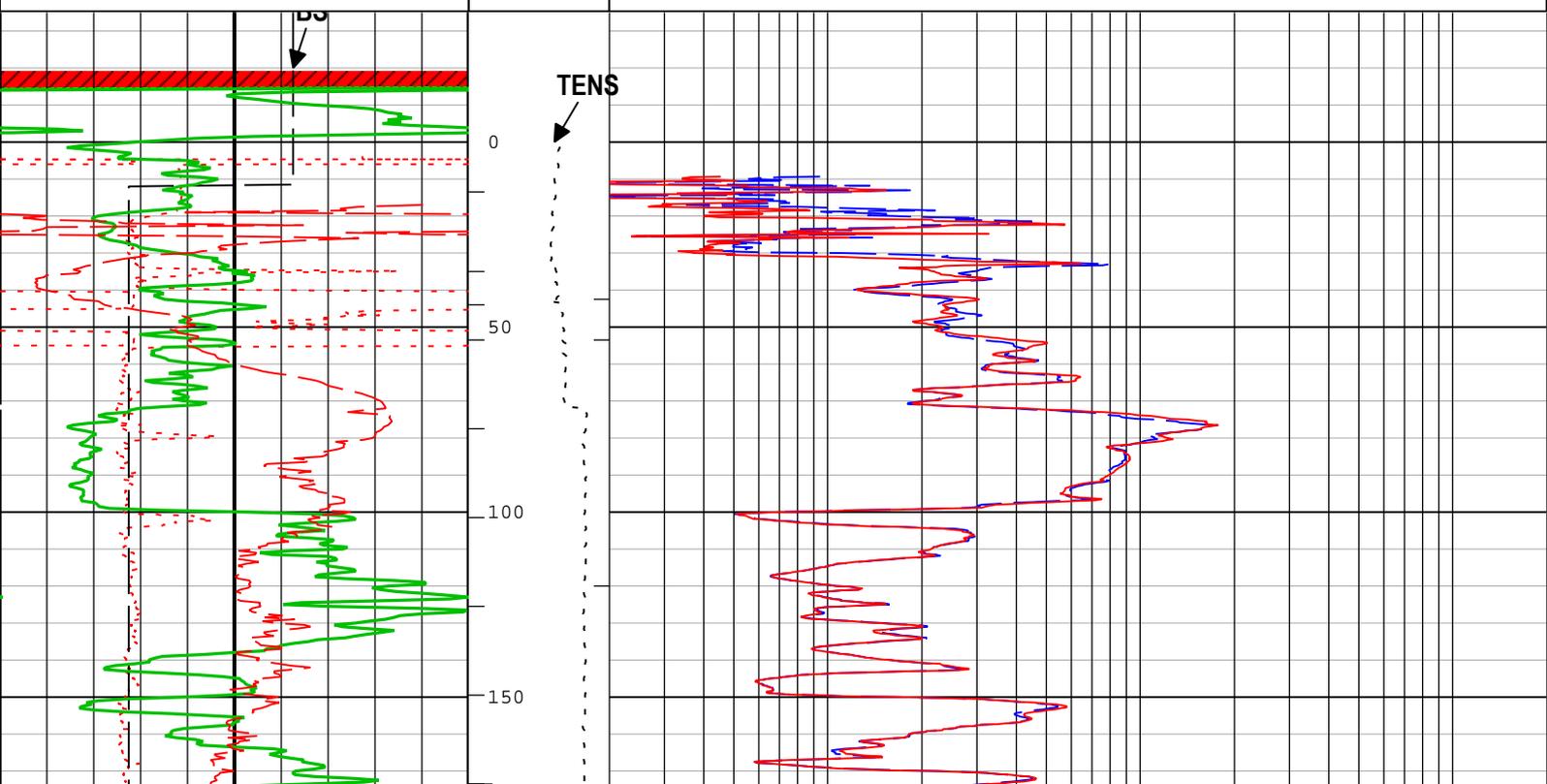
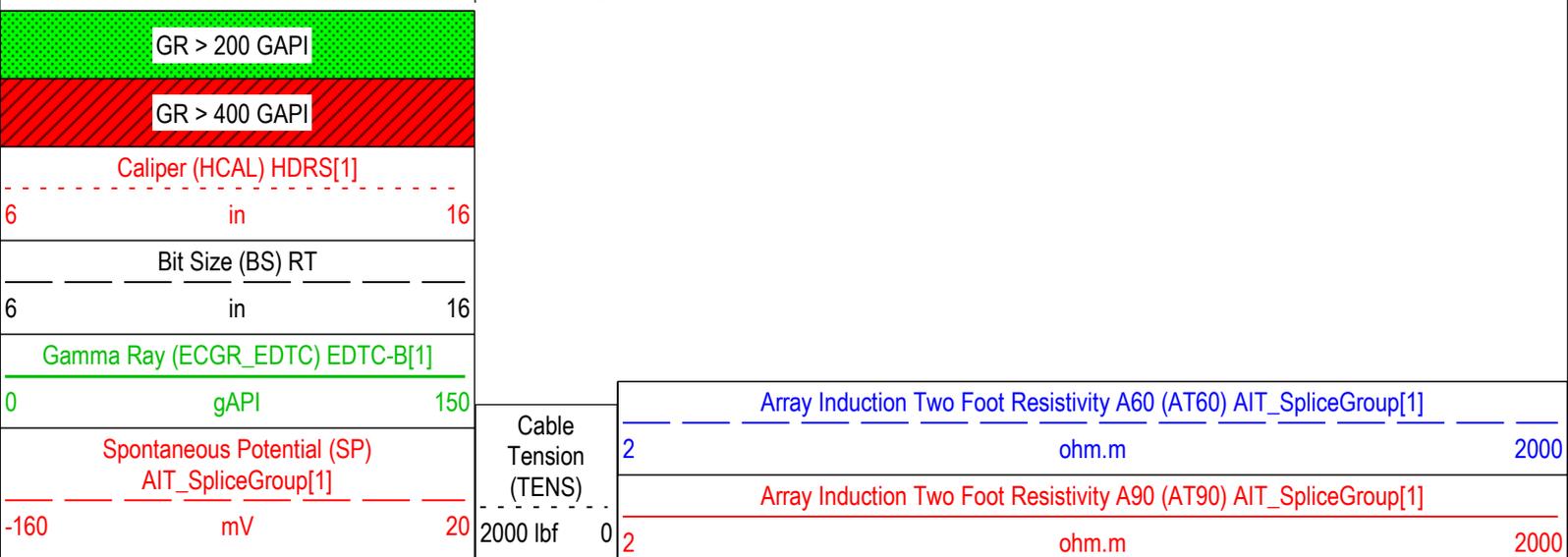
**Log** Company: Trueblood Resources Inc. Well: Fitzgerald P1  
Composite 1:S031

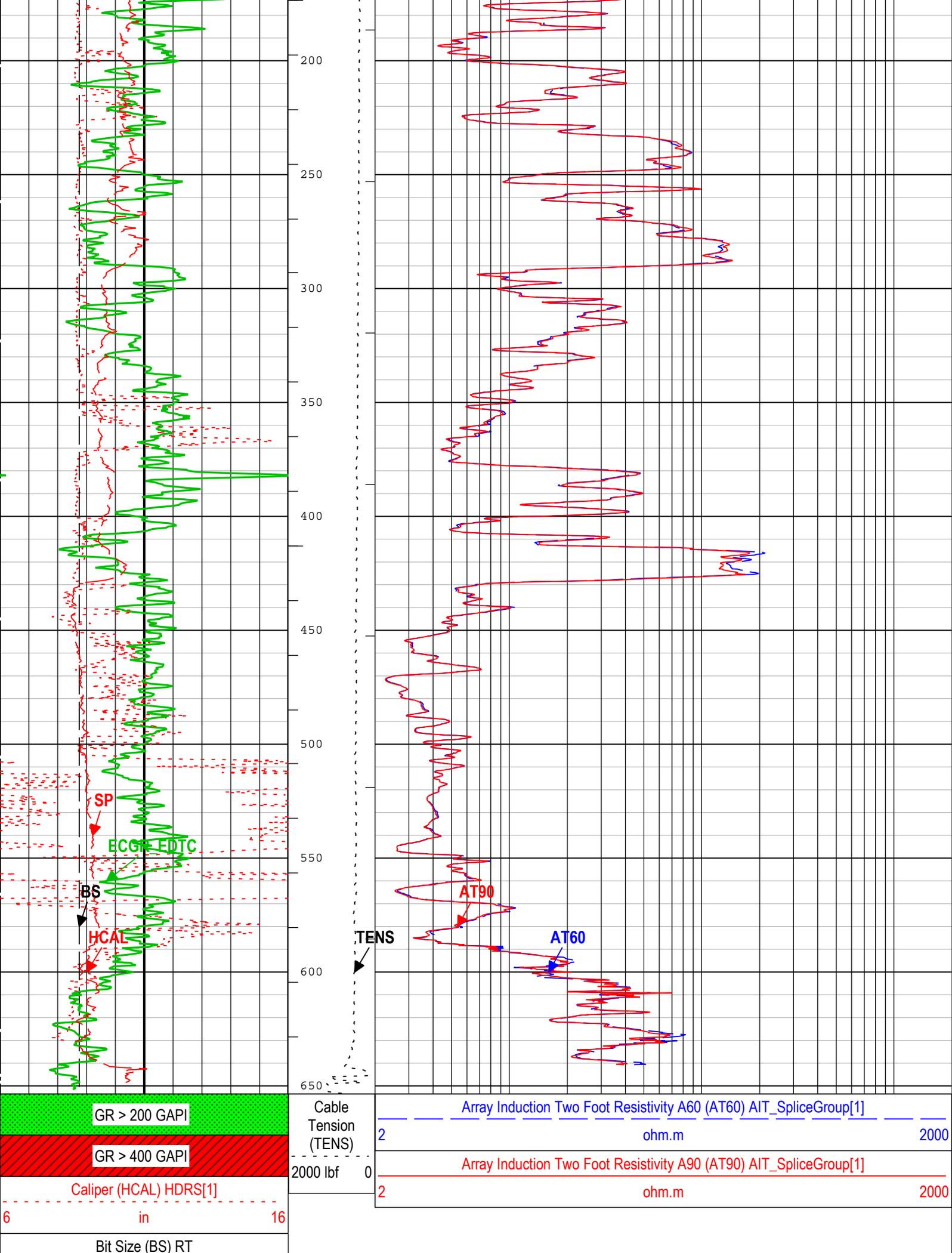
Description: Triple Combo standard resolution template for Platform Express Format: Log ( BRADFORD AIT ) Index Scale: 2 in per 100 ft Index Unit: ft  
Index Type: Measured Depth Creation Date: 02-Jan-2020 15:37:48

-|ICV - Integrated Cement Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

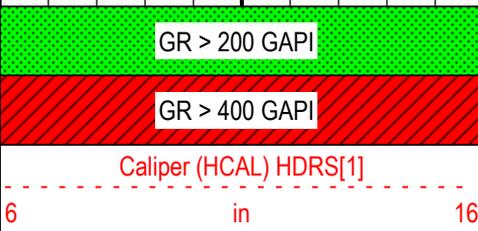
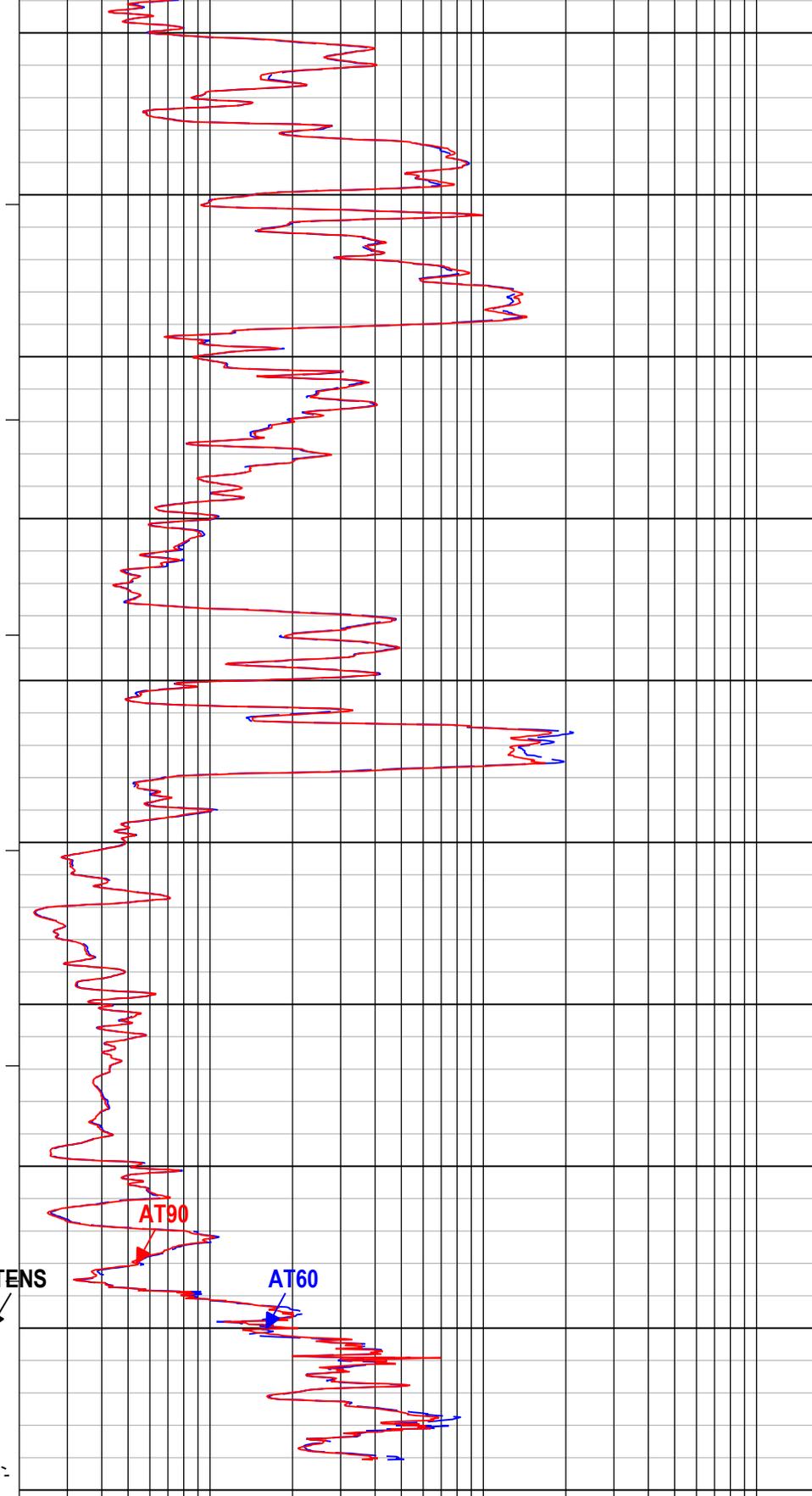
-|IHV - Integrated Hole Volume every 10.00 (ft3)  
-|IHV - Integrated Hole Volume every 100.00 (ft3)





200  
250  
300  
350  
400  
450  
500  
550  
600  
650

Cable Tension (TENS)  
2000 lbf



Array Induction Two Foot Resistivity A60 (AT60) AIT\_SpliceGroup[1]  
ohm.m 2000

Array Induction Two Foot Resistivity A90 (AT90) AIT\_SpliceGroup[1]  
ohm.m 2000

6 in 16

6	in	16
Gamma Ray (ECGR_EDTC) EDTC-B[1]		
0	gAPI	150
Spontaneous Potential (SP) AIT_SpliceGroup[1]		
-160	mV	20

— IHV - Integrated Hole Volume every 100.00 (ft3)

— IHV - Integrated Hole Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

— ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Triple Combo standard resolution template for Platform Express    Format: Log ( BRADFORD AIT )    Index Scale: 2 in per 100 ft    Index Unit: ft  
 Index Type: Measured Depth    Creation Date: 02-Jan-2020 15:37:48

## Channel Processing Parameters

### 1A: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	

### 1A Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	0	12
BS	8.75	12	651

All depth are actual.

### 1B: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Mud Resistivity	
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SP_SHIFT	SP Shift	AIT-M	20	mV

SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
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## 1B Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	0	12
BS	8.75	12	651

All depth are actual.

## 1C: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	

## 1C Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	0	12
BS	8.75	12	648.38

All depth are actual.

## 1D: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	

## Tool Control Parameters

### 1B: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

### 1C: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

### 1D: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

# MAIN PASS 5"=100'

## Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1D, GCSE_UP_PASS, GCSE_DOWN_PASS:1C, GCSE_UP_PASS, GCSE_DOWN_PASS:1B, GCSE_UP_PASS, GCSE_DOWN_PASS:1A	280.68	ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1D, GCSE_UP_PASS, GCSE_DOWN_PASS:1C, GCSE_UP_PASS, GCSE_DOWN_PASS:1B, GCSE_UP_PASS, GCSE_DOWN_PASS:1A, FCD	109.57	ft3

## Software Version

Acquisition System	Version
Maxwell 2020.0	10.0.202864.3100

## Composite Summary

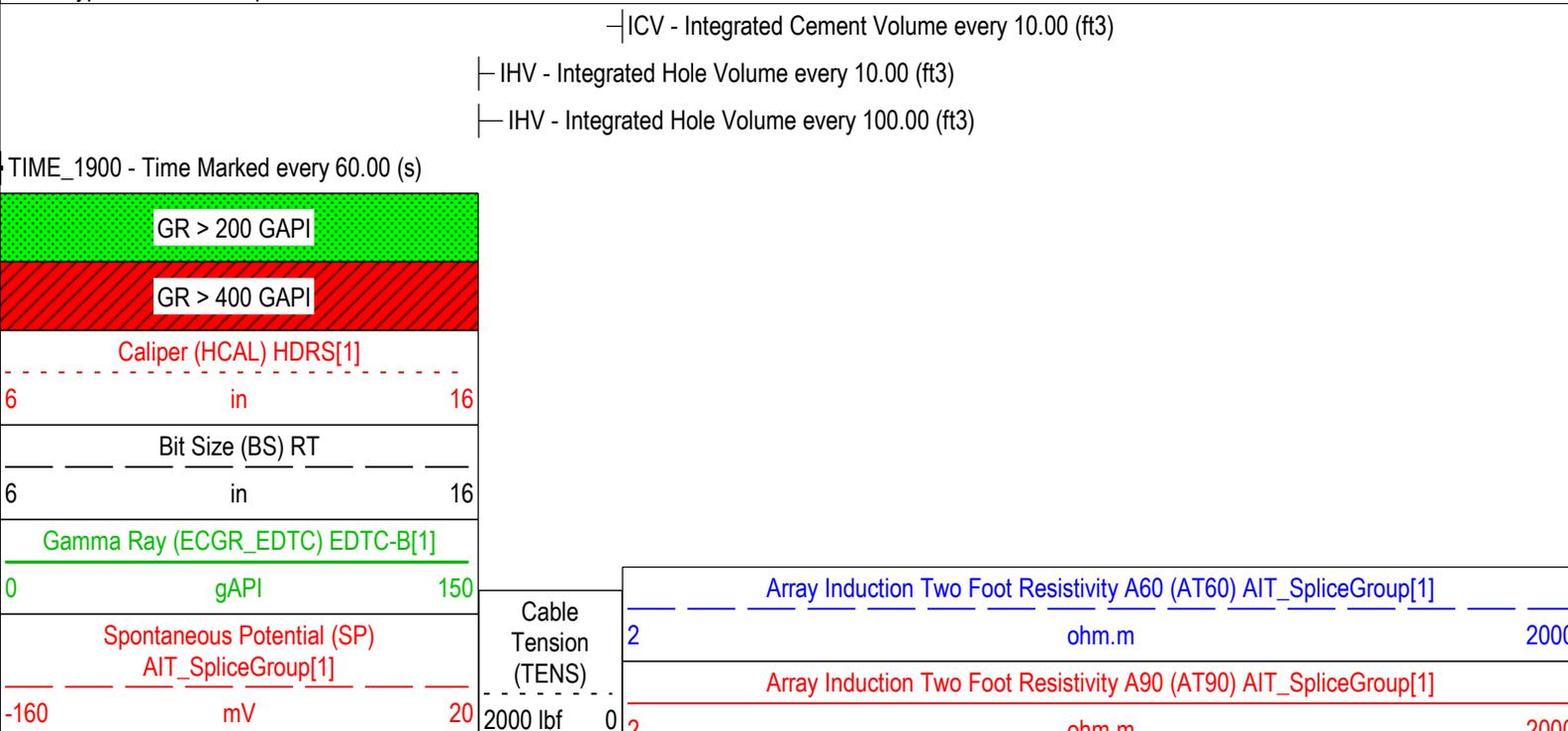
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	2.02 ft	653.16 ft	08-Jan-2020 11:38:26 AM	08-Jan-2020 11:52:08 AM	ON	1.46 ft	Yes
1B	Log[3]:Up	Up	16.81 ft	653.37 ft	08-Jan-2020 12:44:08 PM	08-Jan-2020 1:00:32 PM	ON	1.22 ft	Yes
1C	Main[2]:Up	Up	-3.12 ft	648.38 ft	08-Jan-2020 1:50:14 PM	08-Jan-2020 2:19:54 PM	ON	1.45 ft	Yes
1D	Log[4]:Up	Up	71.63 ft	645.30 ft	08-Jan-2020 2:34:32 PM	08-Jan-2020 2:44:23 PM	ON	2.54 ft	Yes

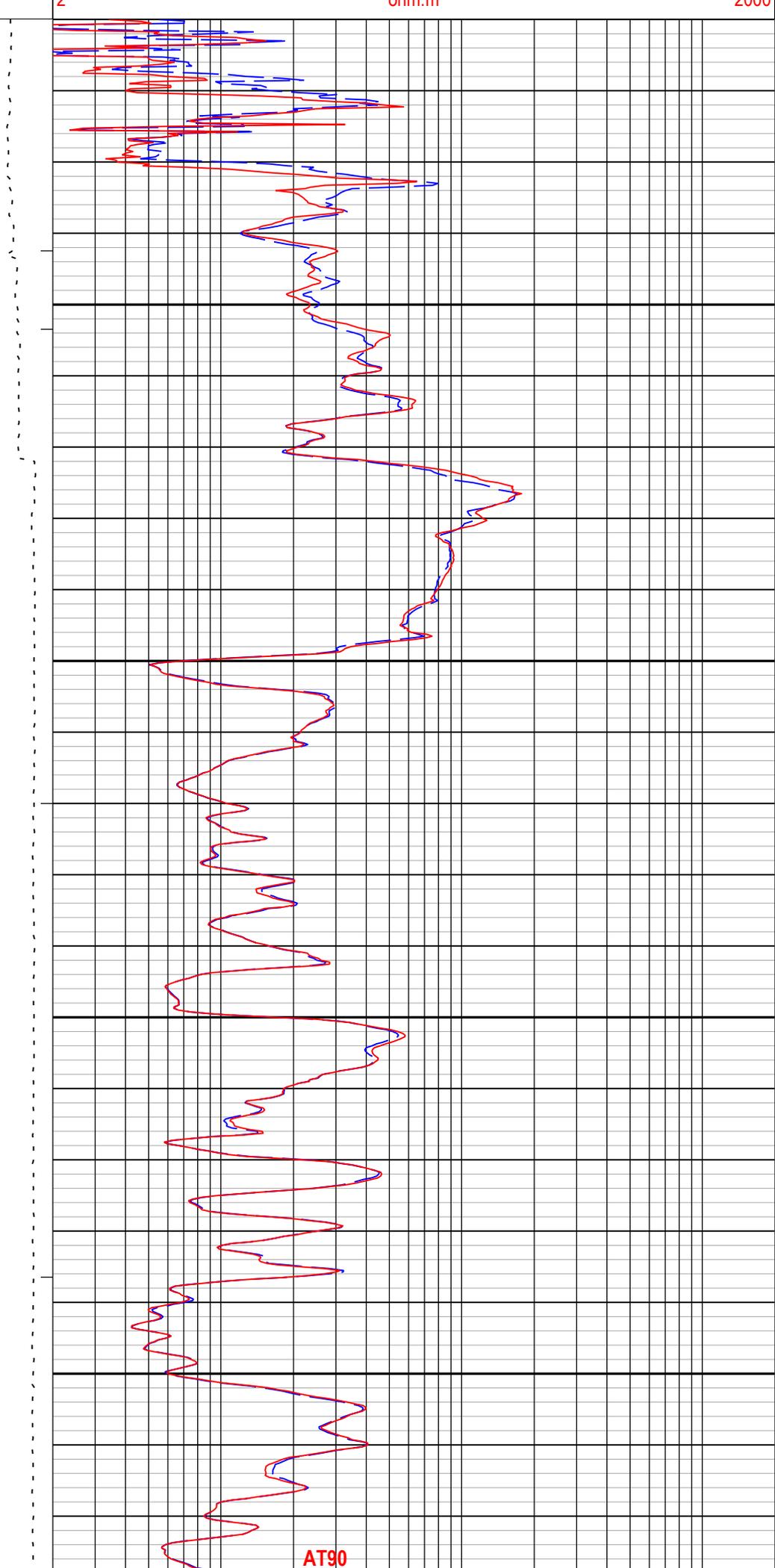
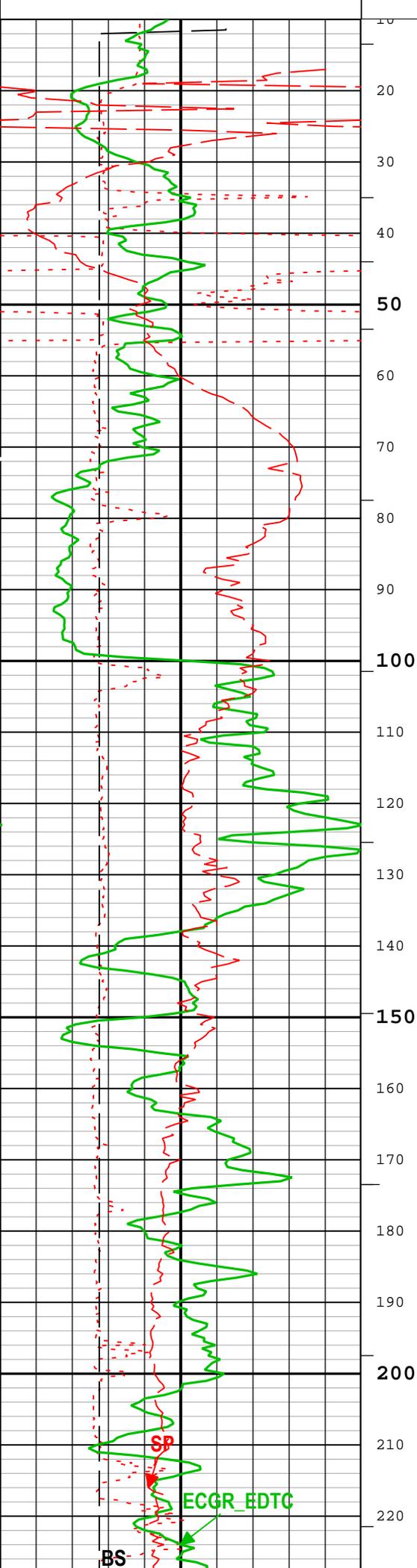
All depths are referenced to toolstring zero

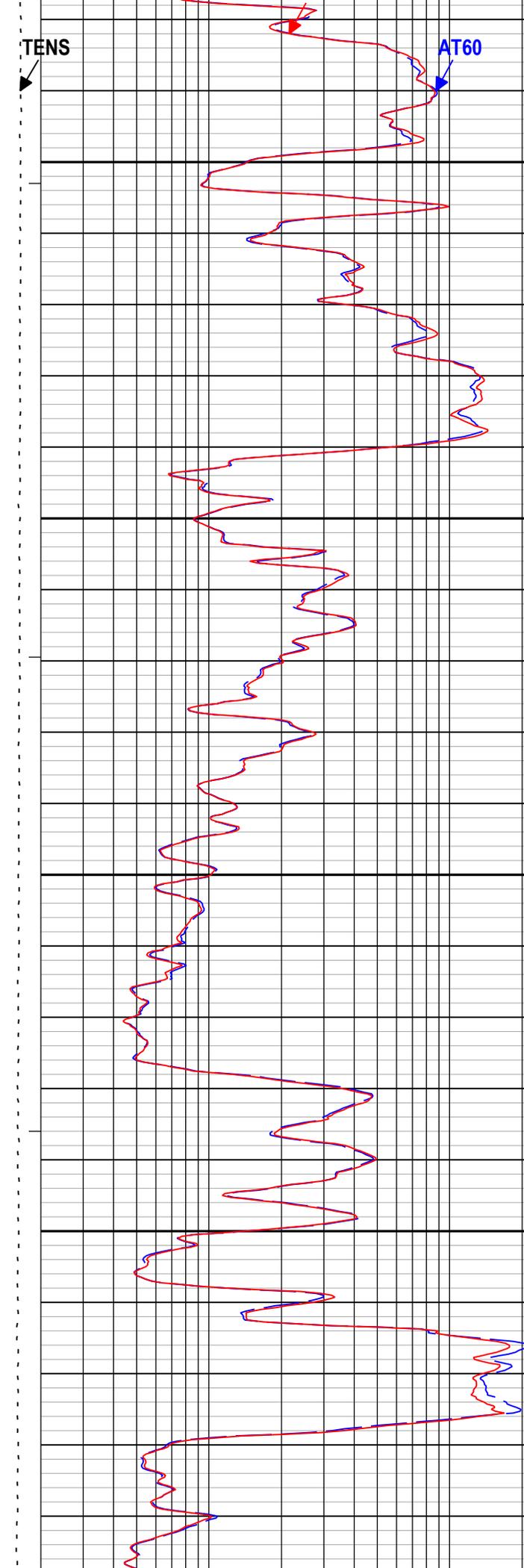
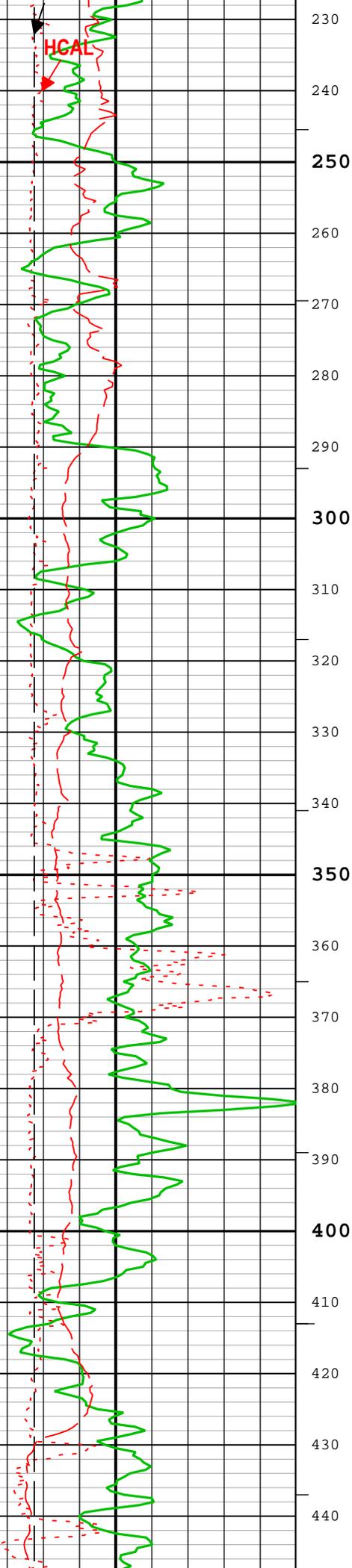
## Log

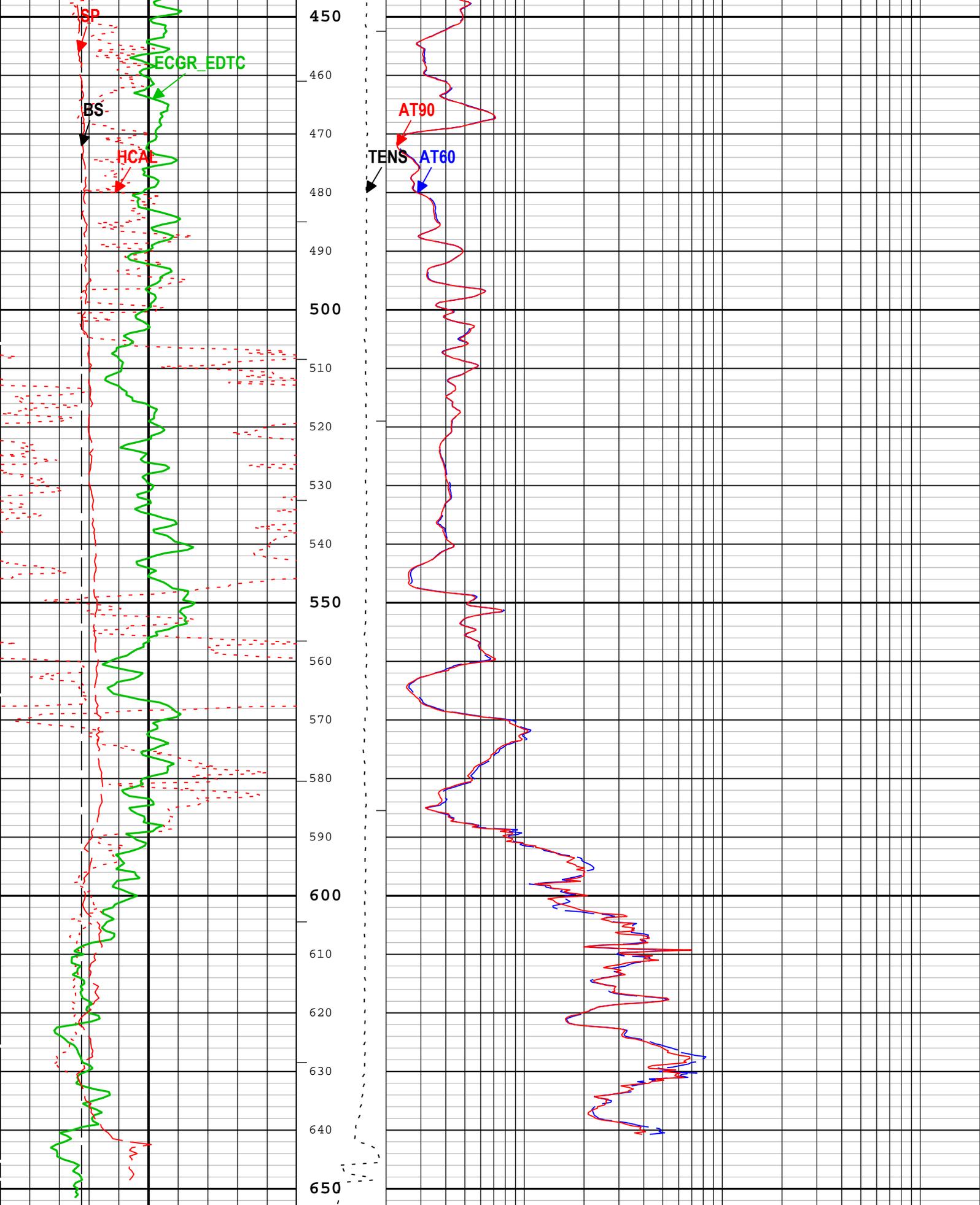
Company: Trueblood Resources Inc. Well: Fitzgerald P1  
Composite 1:S031

Description: Triple Combo standard resolution template for Platform Express Format: Log ( BRADFORD AIT ) Index Scale: 5 in per 100 ft Index Unit: ft  
Index Type: Measured Depth Creation Date: 02-Jan-2020 15:37:50

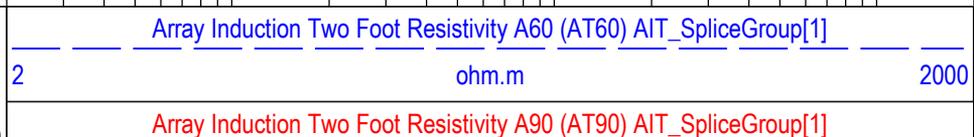








Cable  
Tension  
(TENS)



Caliper (HCAL) HDRS[1]		2000 lbf	2	ohm.m	2000
6	in				16
Bit Size (BS) RT					
6	in				16
Gamma Ray (ECGR_EDTC) EDTC-B[1]					
0	gAPI				150
Spontaneous Potential (SP) AIT_SpliceGroup[1]					
-160	mV				20

TIME\_1900 - Time Marked every 60.00 (s)

— IHV - Integrated Hole Volume every 100.00 (ft3)

— IHV - Integrated Hole Volume every 10.00 (ft3)

— ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Triple Combo standard resolution template for Platform Express Format: Log ( BRADFORD AIT ) Index Scale: 5 in per 100 ft Index Unit: ft  
Index Type: Measured Depth Creation Date: 02-Jan-2020 15:37:50

## Channel Processing Parameters

### 1A: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	

### 1A Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	10	12
BS	8.75	12	651

All depth are actual.

### 1B: Parameters

Parameter	Description	Tool	Value	Unit
AAPL	Array Induction Answer Product Level(Depth Log/View only)	AIT-M	Radial	
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Mud Resistivity	
ACEN	Array Induction Tool Centering Flag (in Borehole)	AIT-M	Eccentered	
AMRF	Array Induction Mud Resistivity Factor	AIT-M	1	
ASTA	Array Induction Tool Standoff	AIT-M	1.7	in
ATSE	Array Induction Temperature Selection(Sonde Error)	AIT-M	Internal	

	Correction)			
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
ROTTEST	Rotation Test Mode	AIT-M	Off	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
SP_SHIFT	SP Shift	AIT-M	20	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	

## 1B Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	10	12
BS	8.75	12	651

All depth are actual.

## 1C: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	10.75	in
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	

## 1C Depth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
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BS	12.25	10	12
BS	8.75	12	648.38

All depth are actual.

## 1D: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	

## Tool Control Parameters

## 1B: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

## 1C: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

## 1D: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

## Calibration Report

### AIT-M (Array Induction Tool - M) Calibration - Run 1B

Primary Equipment :			
File code for AIT-MA Sonde Tool Element	AMIS	278	
Auxiliary Equipment :			
AITM Rm/SP Bottom Nose	AMRM	278	

### AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):	16:50:23 26-Jun-2019						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.019	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.191	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.018	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.606	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.018	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	0.107	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.011	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.227	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.995	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.101	3.000	

Test Loop Gain - 5		Master	1.000	0.950	0.989	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.144	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.996	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.196	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.006	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.126	3.000	

### AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 16:50:23 26-Jun-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	----	-231.000	-66.087	119.000	
Sonde Error Correction Quad - 0		Master	----	-2250.000	-2177.212	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	----	114.000	166.828	204.000	
Sonde Error Correction Quad - 1		Master	----	-625.000	-367.143	625.000	
Sonde Error Correction Real - 2	mS/m	Master	----	66.000	104.928	156.000	
Sonde Error Correction Quad - 2		Master	----	-350.000	10.924	350.000	
Sonde Error Correction Real - 3	mS/m	Master	----	39.000	61.106	89.000	
Sonde Error Correction Quad - 3		Master	----	-250.000	12.057	250.000	
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	26.923	35.000	
Sonde Error Correction Quad - 4		Master	----	-63.000	-61.789	63.000	
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	11.409	24.000	
Sonde Error Correction Quad - 5		Master	----	-50.000	-2.726	50.000	
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	9.406	15.000	
Sonde Error Correction Quad - 6		Master	----	-30.000	-4.579	30.000	
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-1.966	5.000	
Sonde Error Correction Quad - 7		Master	----	-30.000	1.471	30.000	

### AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 16:50:23 26-Jun-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	1.164	1.200	
Fine Gain		Master	1.000	0.800	1.194	1.200	

### AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 16:50:23 26-Jun-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Thru Cal Mag - 0	V	Master	----	0.366	0.629	0.854	
Thru Cal Phase - 0	deg	Master	----	137.000	-172.253	-103.000	
Thru Cal Mag - 1	V	Master	----	0.762	1.288	1.778	
Thru Cal Phase - 1	deg	Master	----	136.000	-173.342	-104.000	
Thru Cal Mag - 2	V	Master	----	0.372	0.638	0.868	
Thru Cal Phase - 2	deg	Master	----	132.000	-176.971	-108.000	
Thru Cal Mag - 3	V	Master	----	0.420	0.720	0.980	
Thru Cal Phase - 3	deg	Master	----	131.000	-177.742	-109.000	
Thru Cal Mag - 4	V	Master	----	0.804	1.348	1.876	
Thru Cal Phase - 4	deg	Master	----	125.000	175.996	-115.000	
Thru Cal Mag - 5	V	Master	----	1.176	1.966	2.744	
Thru Cal Phase - 5	deg	Master	----	122.000	174.330	-118.000	
Thru Cal Mag - 6	V	Master	----	1.176	1.967	2.744	
Thru Cal Phase - 6	deg	Master	----	121.000	174.318	-119.000	
Thru Cal Mag - 7	V	Master	----	0.846	1.418	1.974	
Thru Cal Phase - 7	deg	Master	----	115.000	173.491	-125.000	
SPA Zero	mV	Master		-50.000	-0.084	50.000	
SPA Plus	mV	Master		941.000	992.671	1040.000	
Temperature Zero	V	Master		-0.050	0.000	0.050	
Temperature Plus	V	Master		0.870	0.919	0.960	

### EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run 1B

Primary Equipment :

EDTC-B

EDTC-B

8298

Calibration Parameter :

**EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration**

Before (Measured): 12:23:55 08-Jan-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	31.95	32.84	

**EDTC-B Memory Data - EDTC-B Memory Data**

Master (EEPROM): 12:23:15 08-Jan-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Initial PMT HV	V	Master			1589.000		
Accelerometer Serial Number		Master			544		
Accelerometer Coefficients - 0		Master	----	----	3.037E+000	----	
Accelerometer Coefficients - 1		Master	----	----	3.024E-004	----	
Accelerometer Coefficients - 2		Master	----	----	1.417E-007	----	
Accelerometer Coefficients - 3		Master	----	----	-6.441E-008	----	
Accelerometer Coefficients - 4		Master	----	----	1.574E-009	----	
Accelerometer Coefficients - 5		Master	----	----	-1.202E-011	----	
Accelerometer Coefficients - 6		Master	----	----	3.096E-014	----	
Accelerometer Coefficients - 7		Master	----	----	-5.706E-003	----	
Accelerometer Coefficients - 8		Master	----	----	4.830E-005	----	
Accelerometer Coefficients - 9		Master	----	----	-1.820E-008	----	
Accelerometer Coefficients - 10		Master	----	----	-1.300E-010	----	
Accelerometer Coefficients - 11		Master	----	----	-7.560E-013	----	
Gamma-Ray Detector Serial Number		Master			7144		

**EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients**

Before (Measured): 07:53:49 26-Dec-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before	1.000	0.900	1.057	1.100	

**EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations**

Before (Measured): 07:53:49 26-Dec-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	18.756	120.000	
RGR Plus Measurement	gAPI	Before	165.000	150.000	156.151	180.000	

Company: Trueblood Resources Inc.

**Schlumberger**

Well: Fitzgerald P1

Field: SLOCUM

County: Anderson

State: TEXAS

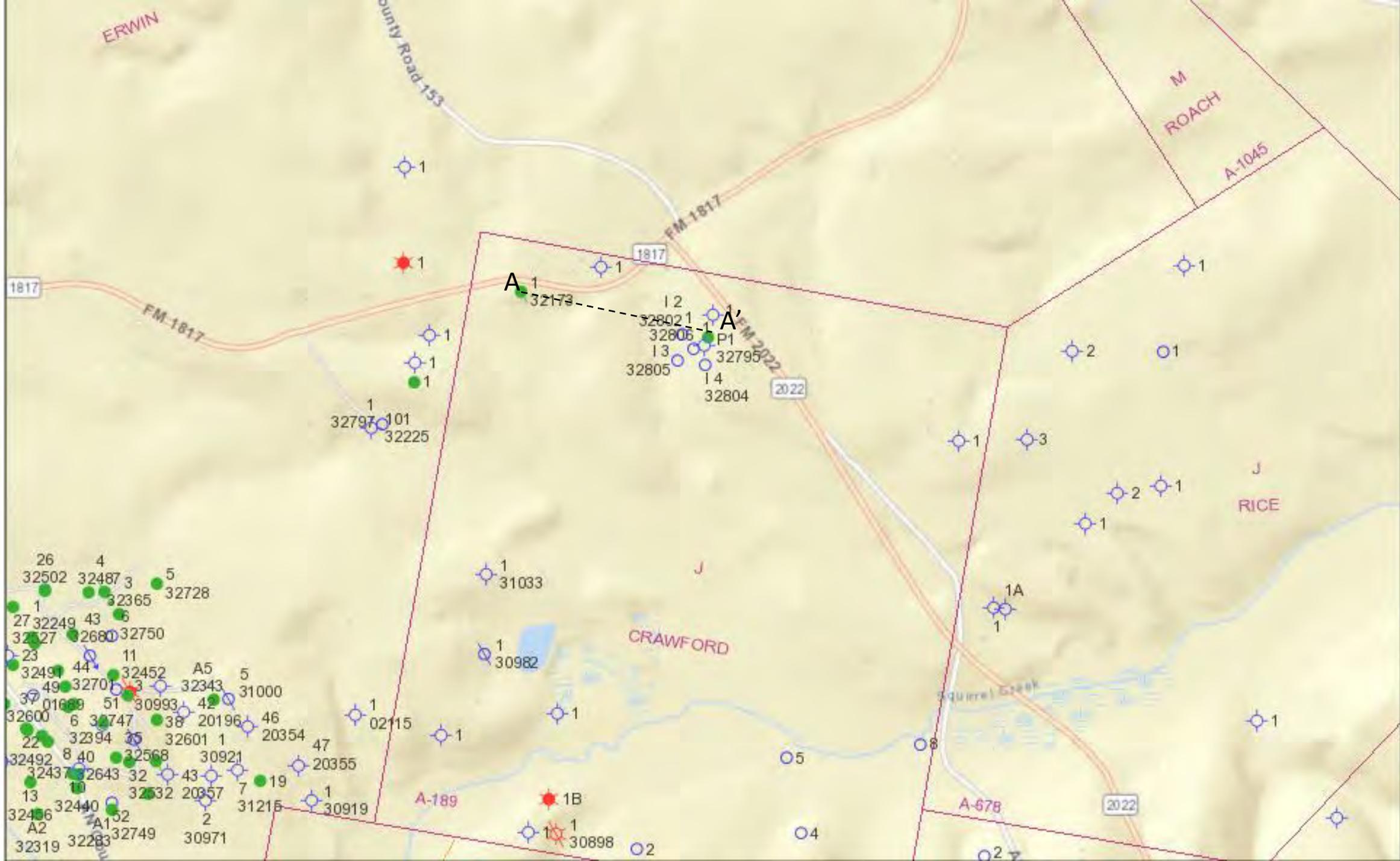
PLATFORM EXPRESS

ARRAY INDUCTION TOOL

RESISTIVITY / GAMMA RAY / CALIPER

# Days Chapel Log Cross- Section

Additional Information Injection Permit 53741



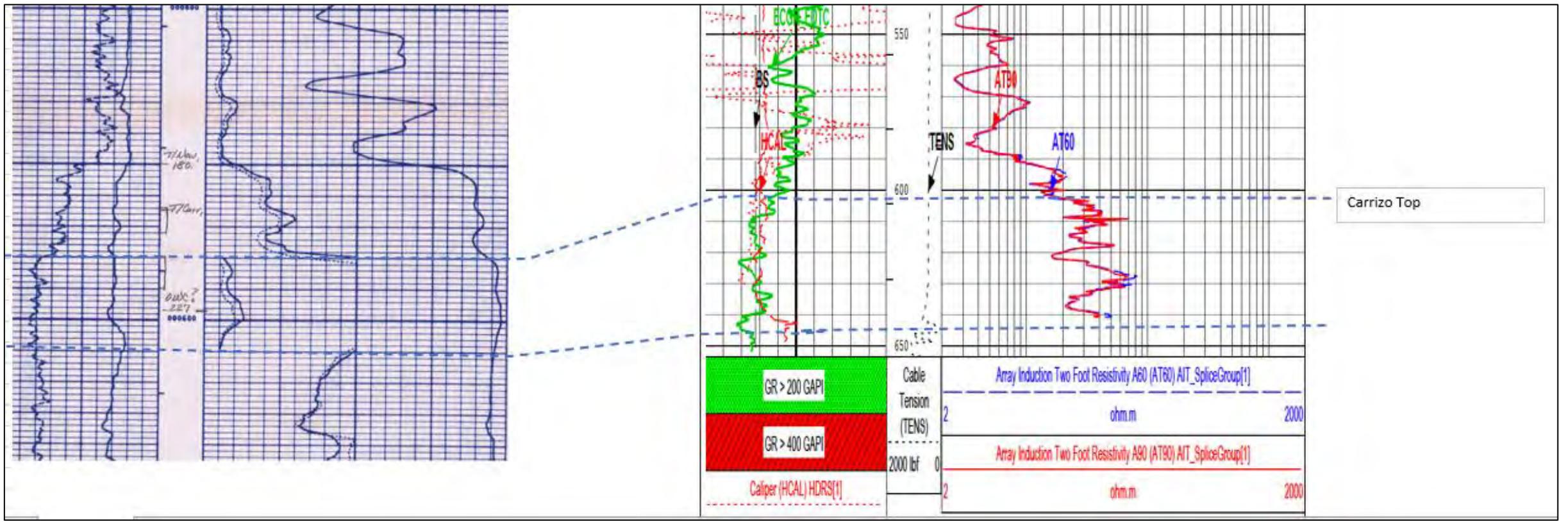
A API - 42001321730000  
 BASA Resources Inc. G.C.Mays 'A' 1

~1780'

A'

API - 42001327950000  
 TRUEBLOOD RESOURCES

FITZGERALD P1





1 mile

Trueblood Resources, Inc.  
 Slocum Structure Map – Top Carrizo  
 June 23, 2021



**Permian Regulatory Solutions, PLLC**  
200 Skywood, Midland TX 79705  
432-894-1857  
TBPELS Firm 15309  
[permianregulatory.com](http://permianregulatory.com)

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June 18, 2021

Trueblood Resources, Inc.  
1720 S. Bellaire Street  
Unit 908  
Denver CO 80222

Re: Pressure Front Analysis for Injection Permit (H-1)  
**Trueblood Resources, Inc**  
Fitzgerald (15772) Lease,  
Well No. P1 (001-32795)  
Slocum Field  
Anderson County, Texas  
RRC District 06  
Tracking No. 53741

To Whom It May Concern:

At the request of Mr. Sriram Solairaj (CEO of JGS Resources LLC), I have performed pressure front calculations to analyze the potential impact the proposed enhanced oil recovery project would have on public water supply wells within a five-mile radius of the proposed project. For the purposes of this analysis, five public supply water wells located between 11,200 ft and 24,500 ft from the above-referenced proposed injection well were the subject of this pressure front study. The study's goal was to demonstrate that injection permitting in the subject well will not adversely affect water quality or volume in the public water supply wells.

This project proposes to inject lease-produced Carrizo water and polymer in a very shallow, dead oil reservoir productive of a heavy, high-viscosity oil. Other tertiary recovery methods have been successfully used in the past, and are currently active in this area, including steam flooding and fire flooding, over the past several decades.

**Data Considered in this Analysis:**

The following information and data were provided by Mr. Solairaj and were reviewed as part of this analysis. This data was collected prior to my involvement in this project and was not

collected by myself, nor under my supervision. This data is believed to be accurate and representative of the project under consideration.

- Fitzgerald #P1 conventional core analysis from Core Labs, dated March 26, 2020
- Fitzgerald #P1 dielectric scanner performed by Schlumberger, run January 8, 2020
- Fitzgerald #P1 Platform Express log conducted by Schlumberger on January 8, 2020
- Measured reservoir pressure in the Fitzgerald #P1 of 190 psi
- Fluid and reservoir properties from these sources, including viscosity, permeability, porosity, and injection zone depth and formation thickness
- A table of 50 water wells of State record located in a 5-mile radius of the subject well containing certain data for each well, including State registration number, depth, coordinates, etc.
- A table of 5 water wells located within the five-mile radius of concern used for this analysis
- An aerial photo showing the locations of the five water wells used in this analysis
- *Criteria for Exempted Aquifers* instruction sheet from 40 CFR 146.4
- Groundwater Advisory Unit's current water protection letter dated May 20, 2021.

The following assumptions, and the reasons for these assumptions, were made during this analysis.

- Injection rate of 400 bbl/day for life of the project. This represents an expected, realistic and sustainable rate for the proposed injection well.
- Formation volume factor assumed 1.00 based on "dead" oil
- A project life of 25 years. Per Mr. Solairaj, actual anticipated injection is forecast to be less than five years.
- Injection fluid hydrostatic of 0.434 psi/ft, equating to a water density of 8.35 ppg. This is equivalent to a fresh water of approximately 1000 mg/l total dissolved solids, suitable for domestic purposes. This approximates the anticipated injectant.

#### **Wells within Five-Mile Radius:**

A public records review conducted by the Commission showed there were five public water supply wells of record within five miles of the proposed project area. These are the details of the five wells studied in this analysis:

Wells within Five-Mile Radius Used In PressureFront Analysis				
State Well Number	Owner	Well Depth (ft)	Designated Aquifer Code Name	Distance (ft)
3820504s	Slocum WSC Well #3	695	124CRRZ - Carrizo Sand	18,000
3821706s	Slocum WSC	720	124CRRZ - Carrizo Sand	11,200
3829108s	Lake Ioni Water Supply	722	124CRRZ - Carrizo Sand	16,700
3820503s	Walston Springs WSC Well #2	800	124CRRZ - Carrizo Sand	24,500
3829109s	Slocum WSC Well #4	1715	124CRRZ - Carrizo Sand	11,700

There are other domestic and livestock water wells in the vicinity, mostly producing from the Sparta Sand or the Queen City. These wells are generally very shallow, some as shallow as 20 ft and up to approximately 200 ft deep. Additionally, there are numerous deeper wells producing from the Wilcox Group at depths up to 1925 ft.

The Texas Water Development Board water well driller’s log database was queried for all wells within a five-mile radius of the project site. These records and the map are incorporated in this report. This database has 36 well records. The TWDB driller’s log records indicate all wells are domestic, irrigation, or stock, and none represent public water supply sources.

**Groundwater In Area:**

In the attached groundwater protection recommendation letter, the Railroad Commission currently recommends groundwater protection depths as follows:

- Interval from surface to: 775 ft
- Plus the zone from: 1275-1700 ft,
- Plus base of UQW at: 2700 ft
- Plus the base of the Wilcox 3000 ft
- Plus the base of USDW at: 3050 ft

Clearly, the groundwater system in this area is complex. The Carrizo-Wilcox aquifer consists of several distinct formation of the Wilcox group and the overlying Carrizo. The aquifer is primarily sand interbedded with gravel, silt, clay, and lignite. The aquifer bears hydrocarbons in some locations, including Anderson County and Nacogdoches County. The uppermost aquifer is the Carrizo Sand. Per the Texas Water Development Board’s 2016 Legislative Aquifer Study, the

Carrizo is generally confined in Anderson County, outcropping in far northwest Anderson County and subcropping across the remainder of the county, dipping southeast. The water quality is generally acceptable, hard and slightly saline. The RRC’s protection letter emphasizes the protection of each water-bearing strata, and requires isolation of each strata from the zone above or below. These separation and protection requirements confirm the impermeable nature of the rock units between the protected zones.

The proposed well construction plan for the Fitzgerald P1 well envisions a single-string design with an open-hole completion. Casing is proposed to be set and cemented to the ground surface from an approximate depth of 603 ft. The injection interval, as proposed in the referenced well, would include the interval from 603 ft to 650 ft, and future injection wells would include the equivalent correlative interval in each subsequent well. This design complies with Railroad Commission Statewide Rules 13 and 46 and is protective of groundwater resources.

**Pressure Front Analysis:**

After a 25-year injection at the proposed 400 bbl/day rate, pressures are predicted to increase in the subject water wells by 2 to 3 psi. It is apparent that the injection in the Fitzgerald P1 well will not negatively impact any of the five water supply wells within a projected maximum life of 25 years. Pressure increases of 3 psi are equivalent to an increase in fluid level of 6.9 feet. These increases are not significant and will not affect the water quality or productive capability of the public supply wells.

The results of the pressure front analysis are attached for each well and summarized in the table below.

Calculated Pressure and Fluid Level Increase in 25 Years					
State Well Number	Owner	Pressure Increase, PSI	Pressure at Receptor Well at Year 25, PSI	Fluid Level Increase, ft	Distance (ft)
3820504s	Slocum WSC Well #3	2	192	4.6	18,000
3821706s	Slocum WSC	3	193	6.9	11,200
3829108s	Lake Ioni Water Supply	2	192	4.6	16,700
3820503s	Walston Springs WSC Well #2	2	192	4.6	24,500
3829109s	Slocum WSC Well #4	3	193	6.9	11,700

**Conclusions:**

The injection permit application for the referenced well is protective of groundwater resources, as demonstrated by the de minimus pressure increase in the surrounding public water supply wells after a 25-year project life. The injection of lease-produced water from the productive formation, into the productive formation, will not adversely affect groundwater resources.

**Certification:**

I hereby certify I am a currently licensed professional engineer. I personally conducted this analysis using data generated by, or provided to, me. Based on my review of the data, the proposed injection project complies with the Commission's Statewide Rules, is protective of groundwater resources, and will not adversely affect usable-quality groundwater within this study's five-mile radius of the project site.

If you have any questions, please do not hesitate to contact me at 432-894-1857 or via email at mark@permianregulatory.com. Thank you for the opportunity to assist in this matter.

Sincerely,



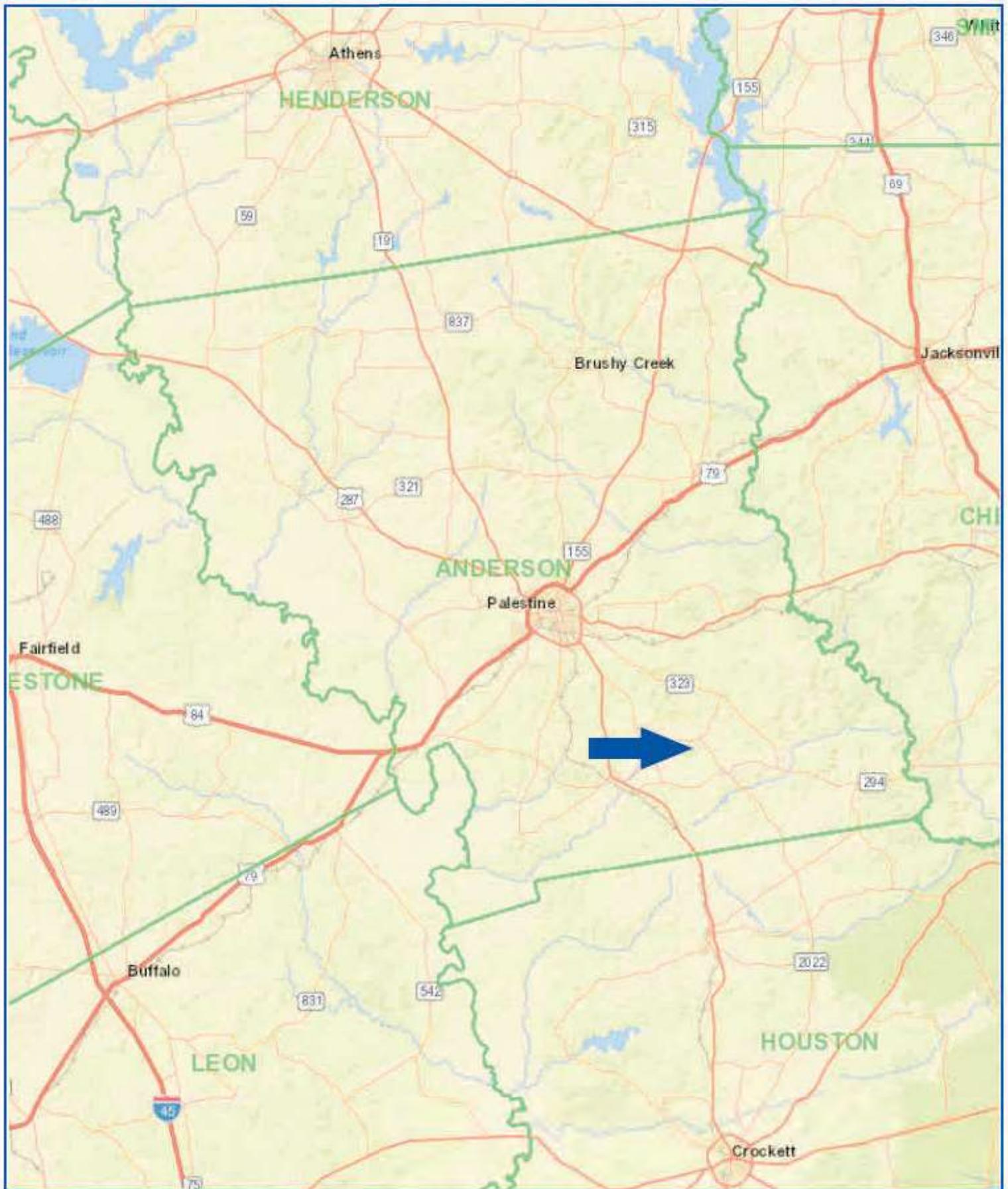
Digitally signed by  
Mark Henkhaus  
Date: 2021.06.24  
11:04:34 -05'00'

R. Mark Henkhaus, PE  
Permian Regulatory Solutions, PLLC



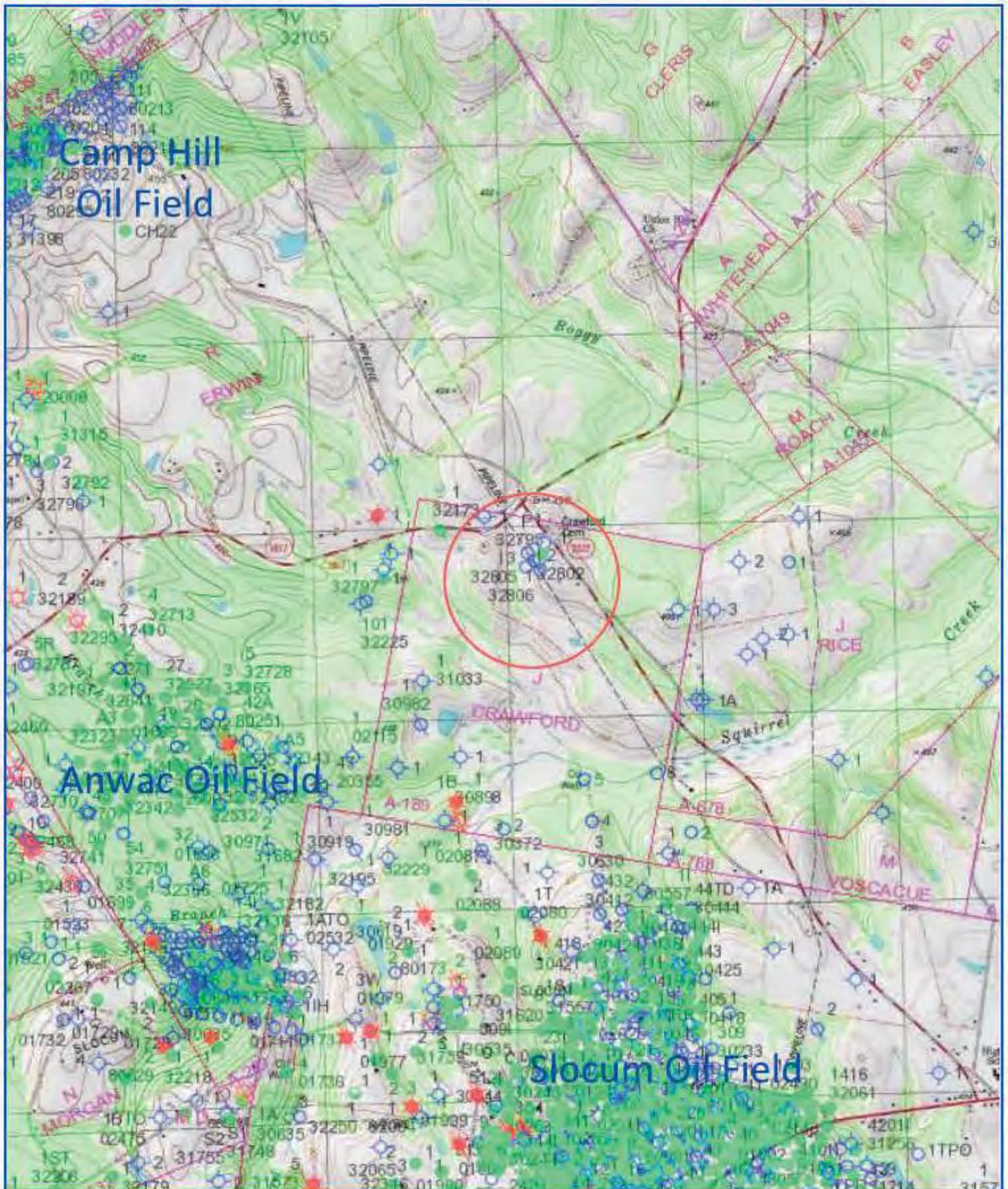
Attachments:

- Project Locator Map
- Project Area Field and Topographic Map
- Pressure front worksheets for each of the five public supply wells
- Schlumberger Platform Express log
- Fitzgerald P1 Wellbore Diagram, as proposed in permit application
- A table of 50 water wells of State record located in a 5-mile radius of the subject well containing certain data for each well, including State registration number, depth, coordinates, etc.
- A table of 5 water wells located within the five-mile radius of concern used for this analysis
- An aerial photo showing the locations of the five water wells used in this analysis
- A table of 37 water wells of record from TWDB
- A map of the five-mile radius on TWDB base map
- Groundwater Advisory Unit's current water protection letter dated May 20, 2021.
- Texas Aquifers Study: Groundwater Quantity, Quality, Flow, and Contributions to Surface Water; Legislative Report, Texas Water Development Board, 2016 (Excerpt for Carrizo-Wilcox Aquifer)



Permian Regulatory Solutions, PLLC  
[www.permianregulatory.com](http://www.permianregulatory.com)

Trueblood Resources Fitzgerald Project  
Locator Map  
Anderson County, Texas



Permian Regulatory Solutions, PLLC  
[www.permianregulatory.com](http://www.permianregulatory.com)

Trueblood Resouces Fitzgerald Project  
 Topographic and Well Map  
 Anderson County, Texas

## PRESSURE FRONT CALCULATION FOR UIC AREA OF REVIEW CALCULATIONS

The pressure front calculations are used to demonstrate that the bottom hole pressure at a radius equal to the distance from the offset well to the injection well would not be great enough to raise a column of fluid to a given level as a result of injection

### Equation for Pressure at radius of investigation

$$P(r,t) = P_i + (70.6 q \mu B_o / k h) [-E_i(\phi \mu c_r r^2 / 0.00105 k t)]$$

#### OFFSET WELL INFORMATION

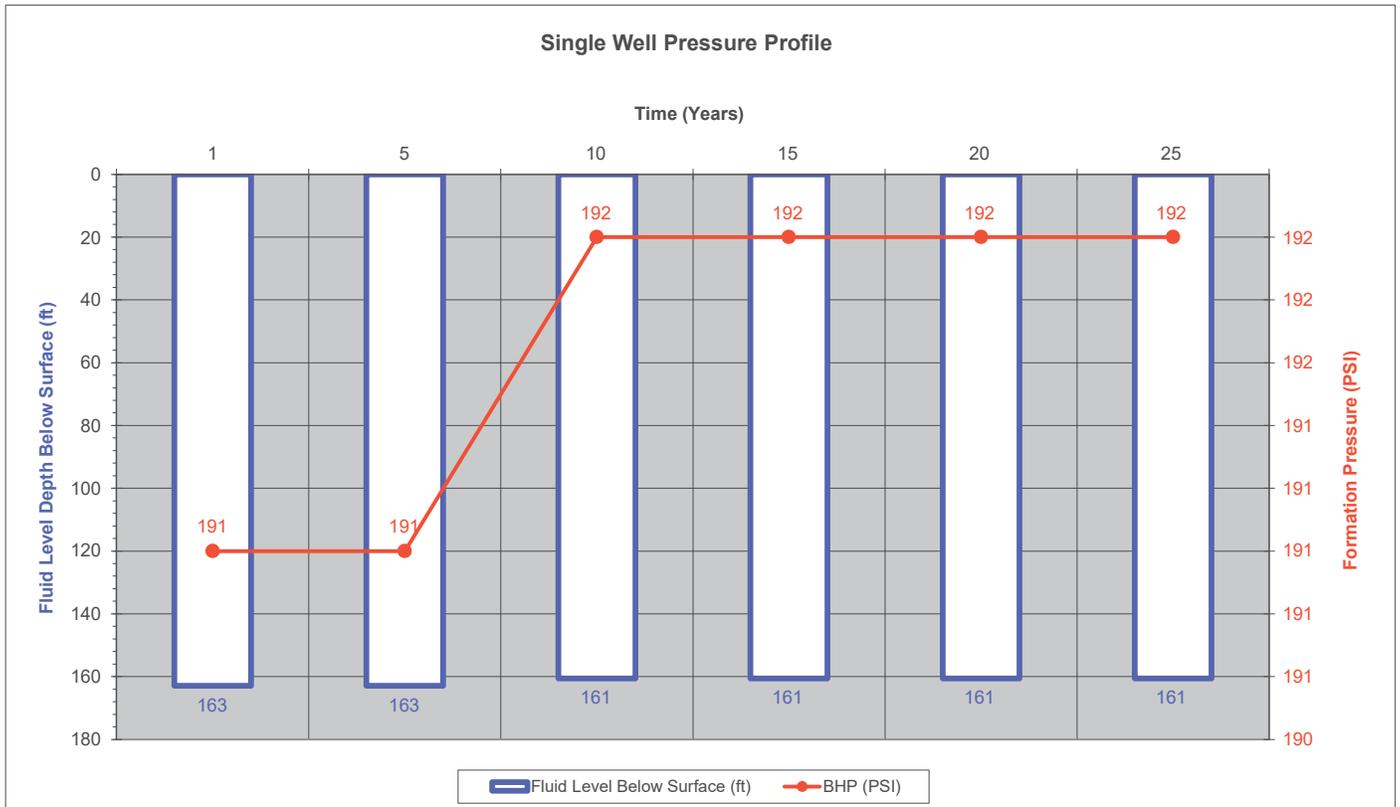
MAP NO:  
OPERATOR: **Walston Sps WSC**  
LEASE NAME: **3820503**  
WELL NO.: **#2**  
FIELD: Upr Carrizo?  
COUNTY: Anderson  
STATE: Texas

#### INJECTION WELL INFORMATION

MAP NO:  
OPERATOR: Trueblood  
LEASE NAME: **Fitzgerald**  
WELL NO.: **Injection Pilot**  
FIELD: Slocum  
COUNTY: Anderson  
STATE: Texas

Variable	Units	Source
Current Reservoir Pressure (BHP)	psi	Input
Injection Rate (q)	Bbbls/day	Input
Viscosity (u)	cp	Input
Formation Volume Factor (Bo)	Decimal	Input
Permeability (k)	md	Input
Formation Thickness (h)	feet	Input
Porosity (%)	Decimal	Input
Compressibility (ct)	1/psi	Input
Distance from Injector to offset	feet	Input
Time (t)	years	Input
Time (t)	days	calc
E(-x)		calc
Ei function validation	days	calc
Formation Pr @ 24,500 ft P(r,t)=	PSI	calc
D Pressure from original BHP =	PSI	calc
Depth of Injection Interval	feet	Input
Base of Usable Quality Water	feet	Input
Fluid Gradient of Injected Fluid	(psi/ft)	Input
Calculated Fluid Head	feet	calc
Fluid Level Below Surface	feet	calc

Value Sets					
1	2	3	4	5	6
190	190	190	190	190	190
400	400	400	400	400	400
1.00	1.00	1.00	1.00	1.00	1.00
1	1	1	1	1	1
1874	1874	1874	1874	1874	1874
39	39	39	39	39	39
37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
<b>24500</b>	<b>24500</b>	<b>24500</b>	<b>24500</b>	<b>24500</b>	<b>24500</b>
1	5	10	15	20	25
365	1,825	3,650	5,475	7,300	9,125
2.049	3.597	4.282	4.685	4.972	5.194
2,852.2	2,852.2	2,852.2	2,852.2	2,852.2	2,852.2
<b>191</b>	<b>191</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>192</b>
1	1	2	2	2	2
603	603	603	603	603	603
<b>800</b>	<b>800</b>	<b>800</b>	<b>800</b>	<b>800</b>	<b>800</b>
0.434	0.434	0.434	0.434	0.434	0.434
440	440	442	442	442	442
<b>163</b>	<b>163</b>	<b>161</b>	<b>161</b>	<b>161</b>	<b>161</b>



## PRESSURE FRONT CALCULATION FOR UIC AREA OF REVIEW CALCULATIONS

The pressure front calculations are used to demonstrate that the bottom hole pressure at a radius equal to the distance from the offset well to the injection well would not be great enough to raise a column of fluid to a given level as a result of injection

### Equation for Pressure at radius of investigation

$$P(r,t) = P_i + (70.6 q \mu B_o / k h) [-E_i(\phi \mu c_r r^2 / 0.00105 k t)]$$

#### OFFSET WELL INFORMATION

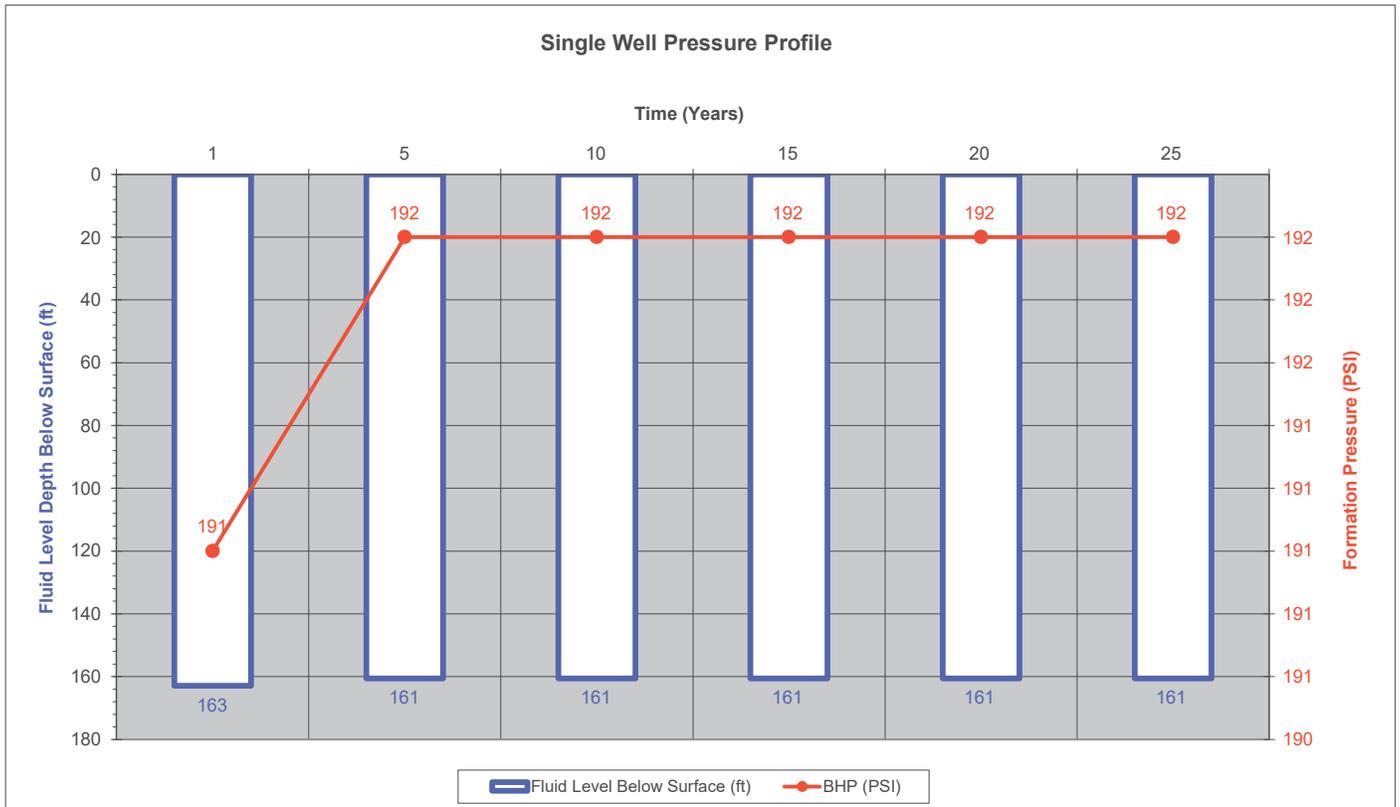
MAP NO:  
OPERATOR: **Slocum WSC**  
LEASE NAME: **3820504**  
WELL NO.: **#3**  
FIELD: Queen City?  
COUNTY: Anderson  
STATE: Texas

#### INJECTION WELL INFORMATION

MAP NO:  
OPERATOR: Trueblood  
LEASE NAME: **Fitzgerald**  
WELL NO.: **Injection Pilot**  
FIELD: Slocum  
COUNTY: Anderson  
STATE: Texas

Variable	Units	Source
Current Reservoir Pressure (BHP)	psi	Input
Injection Rate (q)	Bbbls/day	Input
Viscosity (u)	cp	Input
Formation Volume Factor (Bo)	Decimal	Input
Permeability (k)	md	Input
Formation Thickness (h)	feet	Input
Porosity (%)	Decimal	Input
Compressibility (ct)	1/psi	Input
Distance from Injector to offset	feet	Input
Time (t)	years	Input
Time (t)	days	calc
E(-x)		calc
Ei function validation	days	calc
Formation Pr @ 18,000 ft P(r,t)=	PSI	calc
D Pressure from original BHP =	PSI	calc
Depth of Injection Interval	feet	Input
Base of Usable Quality Water	feet	Input
Fluid Gradient of Injected Fluid	(psi/ft)	Input
Calculated Fluid Head	feet	calc
Fluid Level Below Surface	feet	calc

Value Sets					
1	2	3	4	5	6
190	190	190	190	190	190
400	400	400	400	400	400
1.00	1.00	1.00	1.00	1.00	1.00
1	1	1	1	1	1
1874	1874	1874	1874	1874	1874
39	39	39	39	39	39
37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
18000	18000	18000	18000	18000	18000
1	5	10	15	20	25
365	1,825	3,650	5,475	7,300	9,125
2.631	4.206	4.895	5.299	5.586	5.809
1,539.6	1,539.6	1,539.6	1,539.6	1,539.6	1,539.6
191	192	192	192	192	192
1	2	2	2	2	2
603	603	603	603	603	603
695	695	695	695	695	695
0.434	0.434	0.434	0.434	0.434	0.434
440	442	442	442	442	442
163	161	161	161	161	161



## PRESSURE FRONT CALCULATION FOR UIC AREA OF REVIEW CALCULATIONS

The pressure front calculations are used to demonstrate that the bottom hole pressure at a radius equal to the distance from the offset well to the injection well would not be great enough to raise a column of fluid to a given level as a result of injection

### Equation for Pressure at radius of investigation

$$P(r,t) = P_i + (70.6 q \mu B_o / k h) [-E_i(\phi \mu c_r r^2 / 0.00105 k t)]$$

#### OFFSET WELL INFORMATION

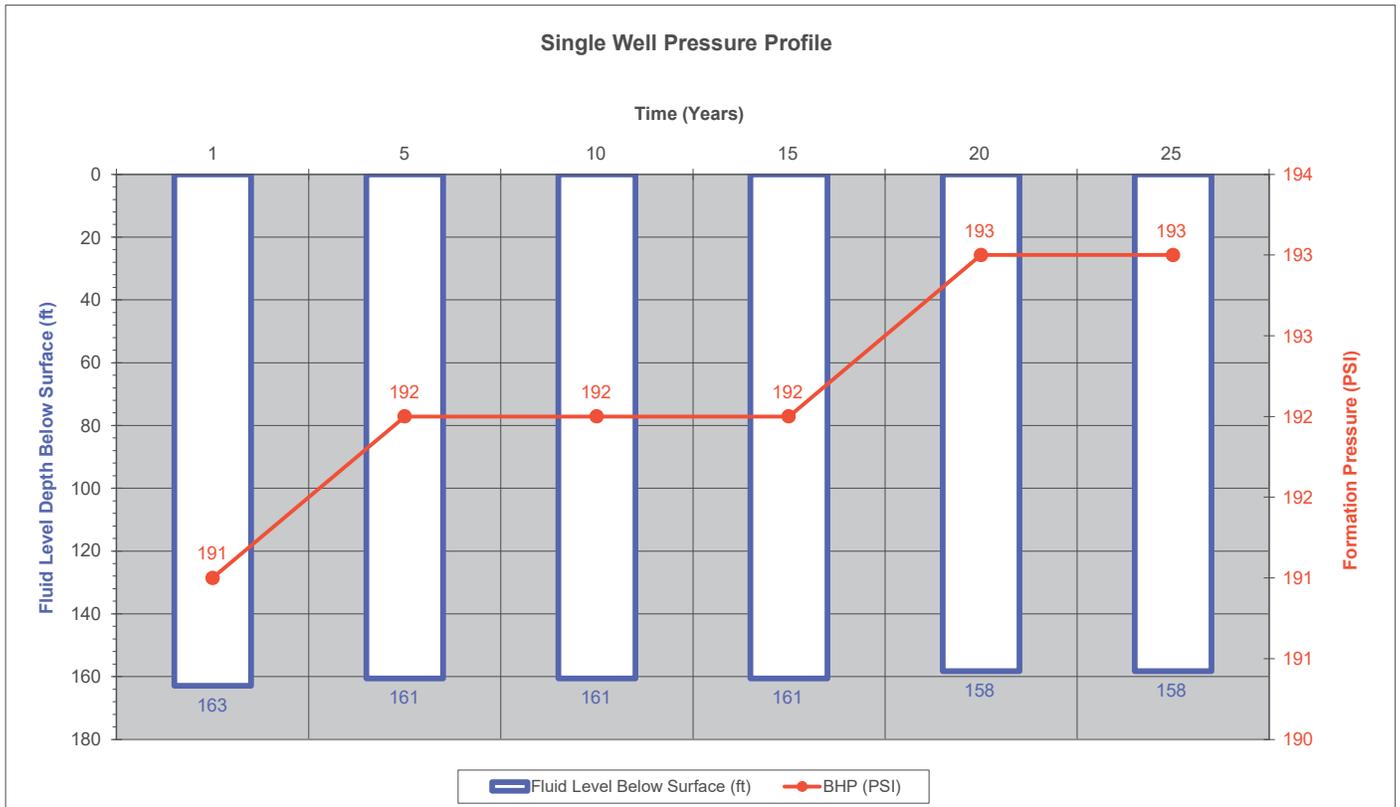
MAP NO:  
OPERATOR: **Slocum WSC**  
LEASE NAME: **3821706**  
WELL NO.:  
FIELD: Upr/Lwr Carrizo transition  
COUNTY: Anderson  
STATE: Texas

#### INJECTION WELL INFORMATION

MAP NO:  
OPERATOR: Trueblood  
LEASE NAME: **Fitzgerald**  
WELL NO.: **Injection Pilot**  
FIELD: Slocum  
COUNTY: Anderson  
STATE: Texas

Variable	Units	Source
Current Reservoir Pressure (BHP)	psi	Input
Injection Rate (q)	Bbbls/day	Input
Viscosity (u)	cp	Input
Formation Volume Factor (Bo)	Decimal	Input
Permeability (k)	md	Input
Formation Thickness (h)	feet	Input
Porosity (%)	Decimal	Input
Compressibility (ct)	1/psi	Input
Distance from Injector to offset	feet	Input
Time (t)	years	Input
Time (t)	days	calc
E(-x)		calc
Ei function validation	days	calc
Formation Pr @ 11,200 ft P(r,t)=	PSI	calc
D Pressure from original BHP =	PSI	calc
Depth of Injection Interval	feet	Input
Base of Usable Quality Water	feet	Input
Fluid Gradient of Injected Fluid	(psi/ft)	Input
Calculated Fluid Head	feet	calc
Fluid Level Below Surface	feet	calc

Value Sets					
1	2	3	4	5	6
190	190	190	190	190	190
400	400	400	400	400	400
1.00	1.00	1.00	1.00	1.00	1.00
1	1	1	1	1	1
1874	1874	1874	1874	1874	1874
39	39	39	39	39	39
37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
11200	11200	11200	11200	11200	11200
1	5	10	15	20	25
365	1,825	3,650	5,475	7,300	9,125
3.555	5.150	5.842	6.247	6.534	6.757
596.1	596.1	596.1	596.1	596.1	596.1
191	192	192	192	193	193
1	2	2	2	3	3
603	603	603	603	603	603
720	720	720	720	720	720
0.434	0.434	0.434	0.434	0.434	0.434
440	442	442	442	445	445
163	161	161	161	158	158



## PRESSURE FRONT CALCULATION FOR UIC AREA OF REVIEW CALCULATIONS

The pressure front calculations are used to demonstrate that the bottom hole pressure at a radius equal to the distance from the offset well to the injection well would not be great enough to raise a column of fluid to a given level as a result of injection

### Equation for Pressure at radius of investigation

$$P(r,t) = P_i + (70.6 q \mu B_o / k h) [-E_i(\phi \mu c_r r^2 / 0.00105 k t)]$$

#### OFFSET WELL INFORMATION

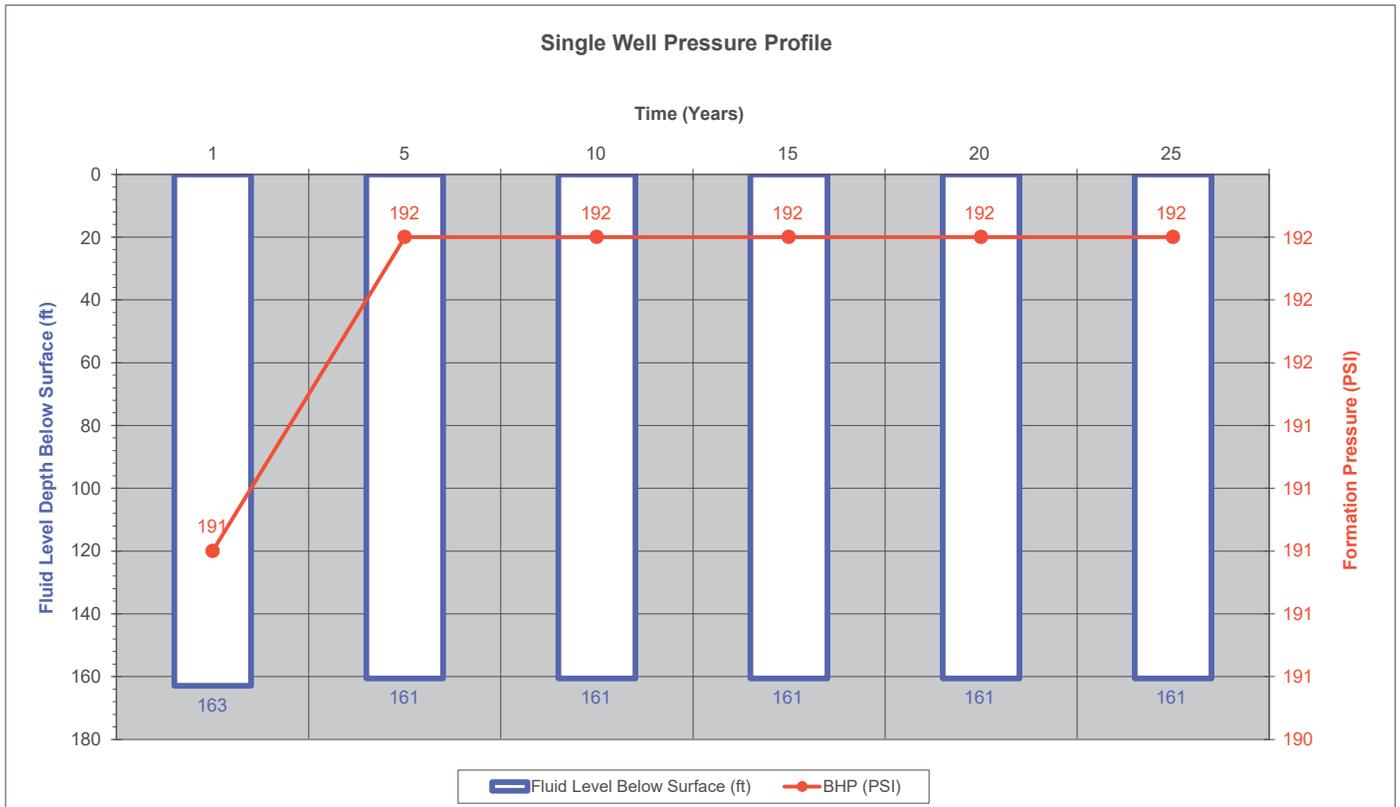
MAP NO:  
OPERATOR: **Lake Ioni WS**  
LEASE NAME: **3829108**  
WELL NO.:  
FIELD: Lwr Carrizo Sand  
COUNTY: Anderson  
STATE: Texas

#### INJECTION WELL INFORMATION

MAP NO:  
OPERATOR: Trueblood  
LEASE NAME: **Fitzgerald**  
WELL NO.: **Injection Pilot**  
FIELD: Slocum  
COUNTY: Anderson  
STATE: Texas

Variable	Units	Source
Current Reservoir Pressure (BHP)	psi	Input
Injection Rate (q)	Bbbls/day	Input
Viscosity (u)	cp	Input
Formation Volume Factor (Bo)	Decimal	Input
Permeability (k)	md	Input
Formation Thickness (h)	feet	Input
Porosity (%)	Decimal	Input
Compressibility (ct)	1/psi	Input
Distance from Injector to offset	feet	Input
Time (t)	years	Input
Time (t)	days	calc
E(-x)		calc
Ei function validation	days	calc
Formation Pr @ 16,700 ft P(r,t)=	PSI	calc
D Pressure from original BHP =	PSI	calc
Depth of Injection Interval	feet	Input
Base of Usable Quality Water	feet	Input
Fluid Gradient of Injected Fluid	(psi/ft)	Input
Calculated Fluid Head	feet	calc
Fluid Level Below Surface	feet	calc

Value Sets					
1	2	3	4	5	6
190	190	190	190	190	190
400	400	400	400	400	400
1.00	1.00	1.00	1.00	1.00	1.00
1	1	1	1	1	1
1874	1874	1874	1874	1874	1874
39	39	39	39	39	39
37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
16700	16700	16700	16700	16700	16700
1	5	10	15	20	25
365	1,825	3,650	5,475	7,300	9,125
2.775	4.355	5.045	5.449	5.736	5.959
1,325.2	1,325.2	1,325.2	1,325.2	1,325.2	1,325.2
191	192	192	192	192	192
1	2	2	2	2	2
603	603	603	603	603	603
722	722	722	722	722	722
0.434	0.434	0.434	0.434	0.434	0.434
440	442	442	442	442	442
163	161	161	161	161	161



## PRESSURE FRONT CALCULATION FOR UIC AREA OF REVIEW CALCULATIONS

The pressure front calculations are used to demonstrate that the bottom hole pressure at a radius equal to the distance from the offset well to the injection well would not be great enough to raise a column of fluid to a given level as a result of injection

### Equation for Pressure at radius of investigation

$$P(r,t) = P_i + (70.6 q \mu B_o / k h) [-E_i(\phi \mu c_r r^2 / 0.00105 k t)]$$

#### OFFSET WELL INFORMATION

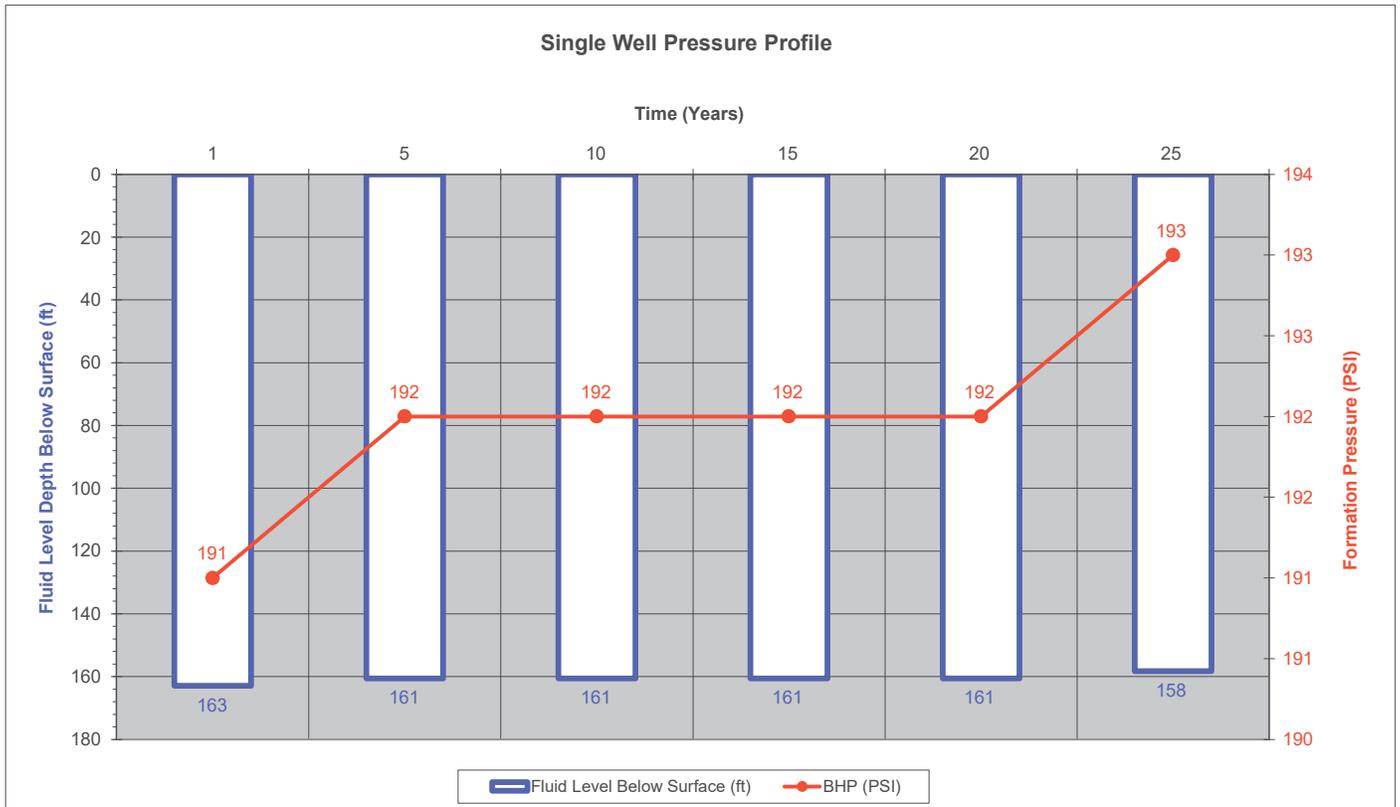
MAP NO:  
OPERATOR: **Slocum WSC**  
LEASE NAME: **3859109**  
WELL NO.: **#4**  
FIELD: Wilcox  
COUNTY: Anderson  
STATE: Texas

#### INJECTION WELL INFORMATION

MAP NO:  
OPERATOR: Trueblood  
LEASE NAME: **Fitzgerald**  
WELL NO.: **Injection Pilot**  
FIELD: Slocum  
COUNTY: Anderson  
STATE: Texas

Variable	Units	Source
Current Reservoir Pressure (BHP)	psi	Input
Injection Rate (q)	Bbls/day	Input
Viscosity (u)	cp	Input
Formation Volume Factor (Bo)	Decimal	Input
Permeability (k)	md	Input
Formation Thickness (h)	feet	Input
Porosity (%)	Decimal	Input
Compressibility (ct)	1/psi	Input
Distance from Injector to offset	feet	Input
Time (t)	years	Input
Time (t)	days	calc
E(-x)		calc
Ei function validation	days	calc
Formation Pr @ 11,700 ft P(r,t)=	PSI	calc
D Pressure from original BHP =	PSI	calc
Depth of Injection Interval	feet	Input
Base of Usable Quality Water	feet	Input
Fluid Gradient of Injected Fluid	(psi/ft)	Input
Calculated Fluid Head	feet	calc
Fluid Level Below Surface	feet	calc

Value Sets					
1	2	3	4	5	6
190	190	190	190	190	190
400	400	400	400	400	400
1.00	1.00	1.00	1.00	1.00	1.00
1	1	1	1	1	1
1874	1874	1874	1874	1874	1874
39	39	39	39	39	39
37.4%	37.4%	37.4%	37.4%	37.4%	37.4%
6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06	6.00E-06
<b>11700</b>	<b>11700</b>	<b>11700</b>	<b>11700</b>	<b>11700</b>	<b>11700</b>
1	5	10	15	20	25
365	1,825	3,650	5,475	7,300	9,125
3.469	5.063	5.755	6.159	6.447	6.670
650.5	650.5	650.5	650.5	650.5	650.5
<b>191</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>193</b>
1	2	2	2	2	3
603	603	603	603	603	603
<b>1,715</b>	<b>1,715</b>	<b>1,715</b>	<b>1,715</b>	<b>1,715</b>	<b>1,715</b>
0.434	0.434	0.434	0.434	0.434	0.434
440	442	442	442	442	445
<b>163</b>	<b>161</b>	<b>161</b>	<b>161</b>	<b>161</b>	<b>158</b>





Company: Trueblood Resources Inc.

Well: Fitzgerald P1

Field: SLOCUM

County: Anderson Country: UNITED STATES

Anderson SLOCUM 2 miles NW direction from SLOCUM Fitzgerald P1 Trueblood Resources Inc.	***PLATFORM EXPRESS*** 5" = 100' MD  ARRAY INDUCTION - GR - SP - CALIPER  COMPENSATED NEUTRON - LITHODENSITY				
	Location: 2 miles NW direction from SLOCUM Distance to Survey Lines 2453 ft W & 498 ft N Survey: Crawford, J ABS: 189		Elev.: K.B. 418.10 ft G.L. 413.10 ft D.F. 418.10 ft		
	Permanent Datum: Ground Level Log Measured From: Kelly Bushing Drilling Measured From: Kelly Bushing		Elev.: 413.10 ft 5.00 ft above Perm.Datum		
	API Serial No. 42-001-32795	Max.Hole Deviation 0 deg	Longitude: -95.485952 degrees	Latitude: 31.656331 degrees	
Logging Date	08-Jan-2020		08-Jan-2020		
Run Number	1A		1B		
Depth Driller	650.00 ft		650.00 ft		
Schlumberger Depth	651.00 ft		651.00 ft		
Bottom Log Interval	645.00 ft		645.00 ft		
Top Log Interval	10.00 ft		10.00 ft		
Casing Driller Size @ Depth	10.75 in @ 12.00 ft		10.75 in @ 12.00 ft		
Casing Schlumberger	12 ft		12 ft		
Bit Size	8.75 in		8.75 in		
Type Fluid In Hole	Water		Water		
MUD	Density	Viscosity	10 lbm/gal	10 lbm/gal	
	Fluid Loss	PH			
	Source of Sample		Active Tank	Active Tank	
RM @ Meas Temp	0.2 ohm.m @ 68 degF	0.2 ohm.m @ 68 degF			
RMF @ Meas Temp	0.15 ohm.m @ 68 degF	0.15 ohm.m @ 68 degF			
RMC @ Meas Temp					
Source RMF	RMC		Pressed	Pressed	
RM @ BHT	RMF @ BHT	0.19 @ 72.66	0.14 @ 72.66	0.19 @ 72.66	0.14 @ 72.6
Max Recorded Temperatures	72.66 degF		72.66 degF		
Circulation Stopped Time	08-Jan-2020	09:15:00	08-Jan-2020	09:15:00	
Logger on Bottom Time	08-Jan-2020	11:24:00	08-Jan-2020	11:40:00	
Unit Number	Location:	3035 TYLER	3035	TYLER	
Recorded By	Julio Martinez		Julio Martinez		
Witnessed By	John Dobrinski		John Dobrinski		

# Merge Composite

## 5" = 100' MD MAIN PASS

### Software Version

Acquisition System	Version
Maxwell 2020.0	10.0.202864.3100
Application Patch	Wireline_Hotfix-Mandatory-2020.0_10.0.204129

### Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	2.02 ft	653.16 ft	08-Jan-2020 11:38:26 AM	08-Jan-2020 11:52:08 AM	ON	1.46 ft	Yes
1B	Log[3]:Up	Up	16.81 ft	653.37 ft	08-Jan-2020 12:44:08 PM	08-Jan-2020 1:00:32 PM	ON	1.22 ft	Yes
1C	Main[2]:Up	Up	-3.12 ft	648.38 ft	08-Jan-2020 1:50:14 PM	08-Jan-2020 2:19:54 PM	ON	1.45 ft	Yes
1D	Log[4]:Up	Up	71.63 ft	645.30 ft	08-Jan-2020 2:34:32 PM	08-Jan-2020 2:44:23 PM	ON	2.54 ft	Yes

All depths are referenced to toolstring zero

### Log

Company: Trueblood Resources Inc. Well: Fitzgerald P1

Merge Composite: S030

Description: Triple Combo standard resolution template for Platform Express Format: Log ( 5MD ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jan-2020 12:53:19

Channel	Source	Sampling	Pass Code
AT10	AIT-M:AMIS:AMIS	3in	Run #2:Log[3]:Up
AT20	AIT-M:AMIS:AMIS	3in	Run #2:Log[3]:Up
AT30	AIT-M:AMIS:AMIS	3in	Run #2:Log[3]:Up
AT60	AIT-M:AMIS:AMIS	3in	Run #2:Log[3]:Up
AT90	AIT-M:AMIS:AMIS	3in	Run #2:Log[3]:Up
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in	Run #3:Main[2]:Up
GR_CAL	EDTC-B:EDTC-B:EDTC-B	6in	Run #1:Log[2]:Up
HDRA	HDRS-H:HRMS-H:HRGD-H	2in	Run #3:Main[2]:Up
NPHI	HGNS-H:HGNS-H:HGNS-H	6in	Run #4:Log[4]:Up
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in	Run #3:Main[2]:Up
SMIN	HDRS-H:HRMS-H:HRGD-H	2in	Run #3:Main[2]:Up
SMNO	HDRS-H:HRMS-H:HRGD-H	2in	Run #3:Main[2]:Up
SP	AIT-M:AMIS:AMIS	6in	Run #2:Log[3]:Up
TENS.1	WLWorkflow	1in	Run #1:Log[2]:Up
TENS.2	WLWorkflow	6in	Run #1:Log[2]:Up

Perm (From SMIN to SMNO)

Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H	Mudcake
0 ohm.m 10	Array Induction Two Foot Resistivity A90 (AT90) AIT-M ohm.m 2000
Synthetic Micro-Normal Resistivity	Array Induction Two Foot Resistivity A60 (AT60) AIT-M ohm.m 2000

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H

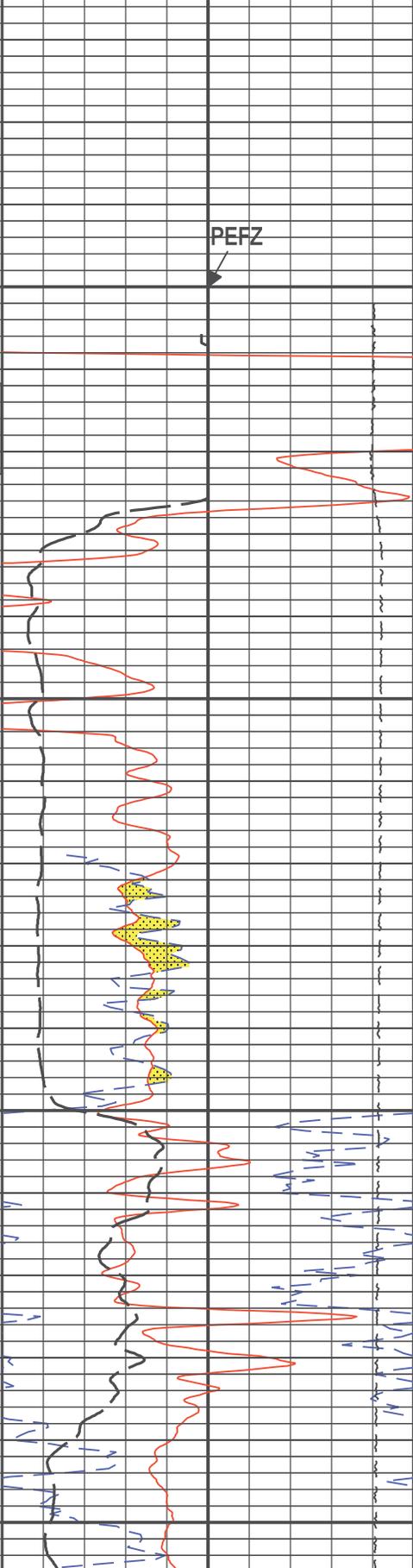
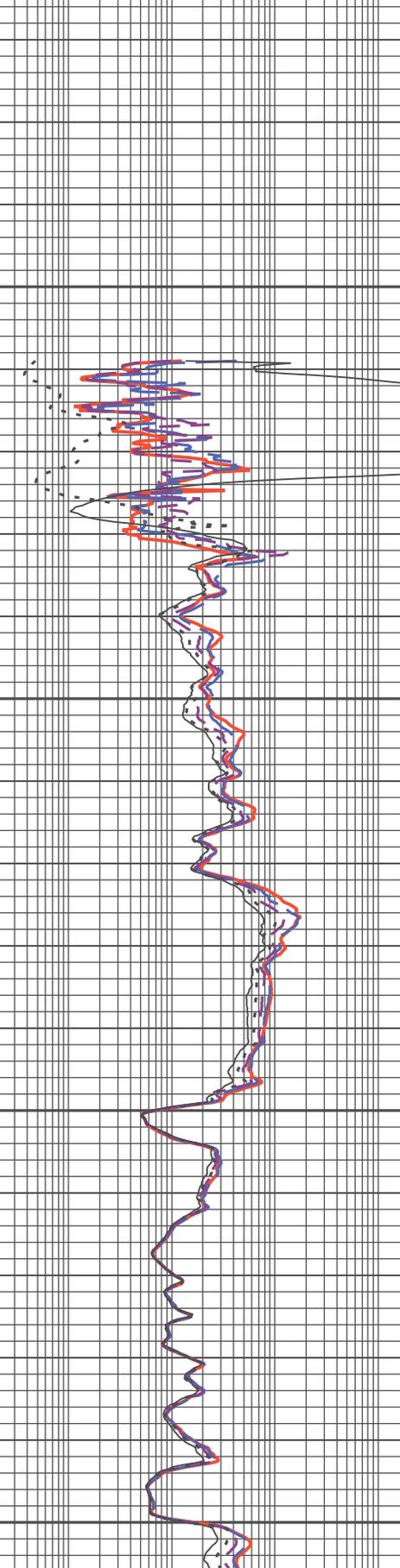
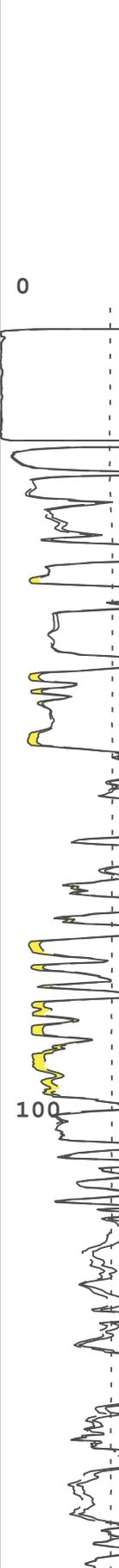
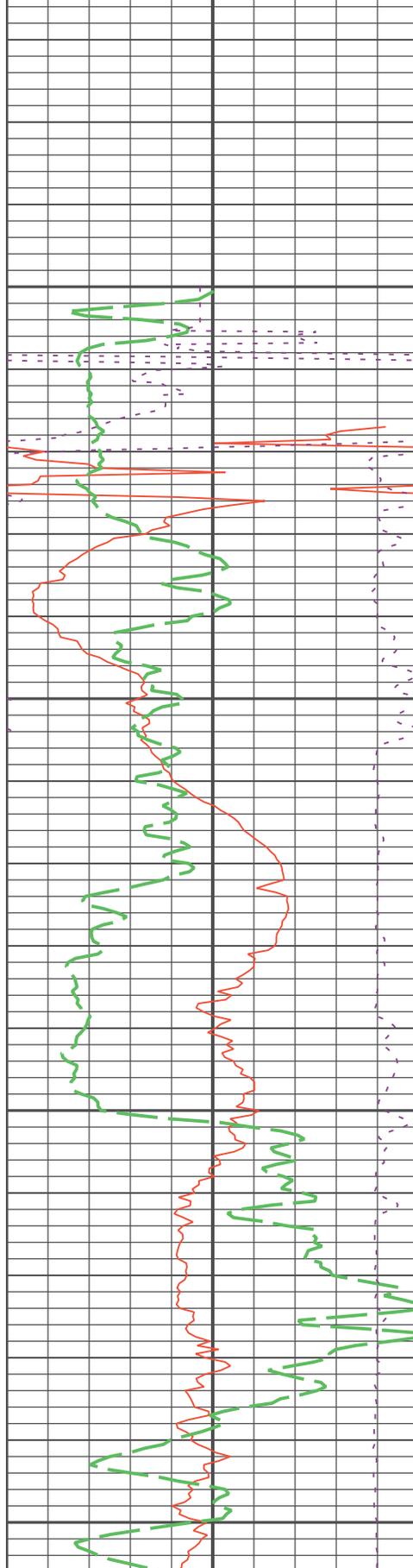
0 10	Washout
0.6	Crossover (From DPHZ to NPHI)
ft3/ft3 0	Standard Resolution Density Porosity (DPHZ) HDRS-H
0.6	Thermal Neutron Porosity (original Ratio Method) in Selected Lithology (NPHI) HGNS-H

Spontaneous Potential (SP) AIT-M  
 -160 mV 60  
 GR  
 0 gAPI 150  
 Density Standoff Correction (HDRA) HDRS-H  
 -0.9 g/cm3 0.1

(HMNO) HDRS-H  
 0 ohm.m 10  
 Cable Tension (TENS).2  
 2000 lbf 0

Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-H  
 2 ohm.m 2000  
 Differential Caliper (DCAL) RT  
 -20 in 20

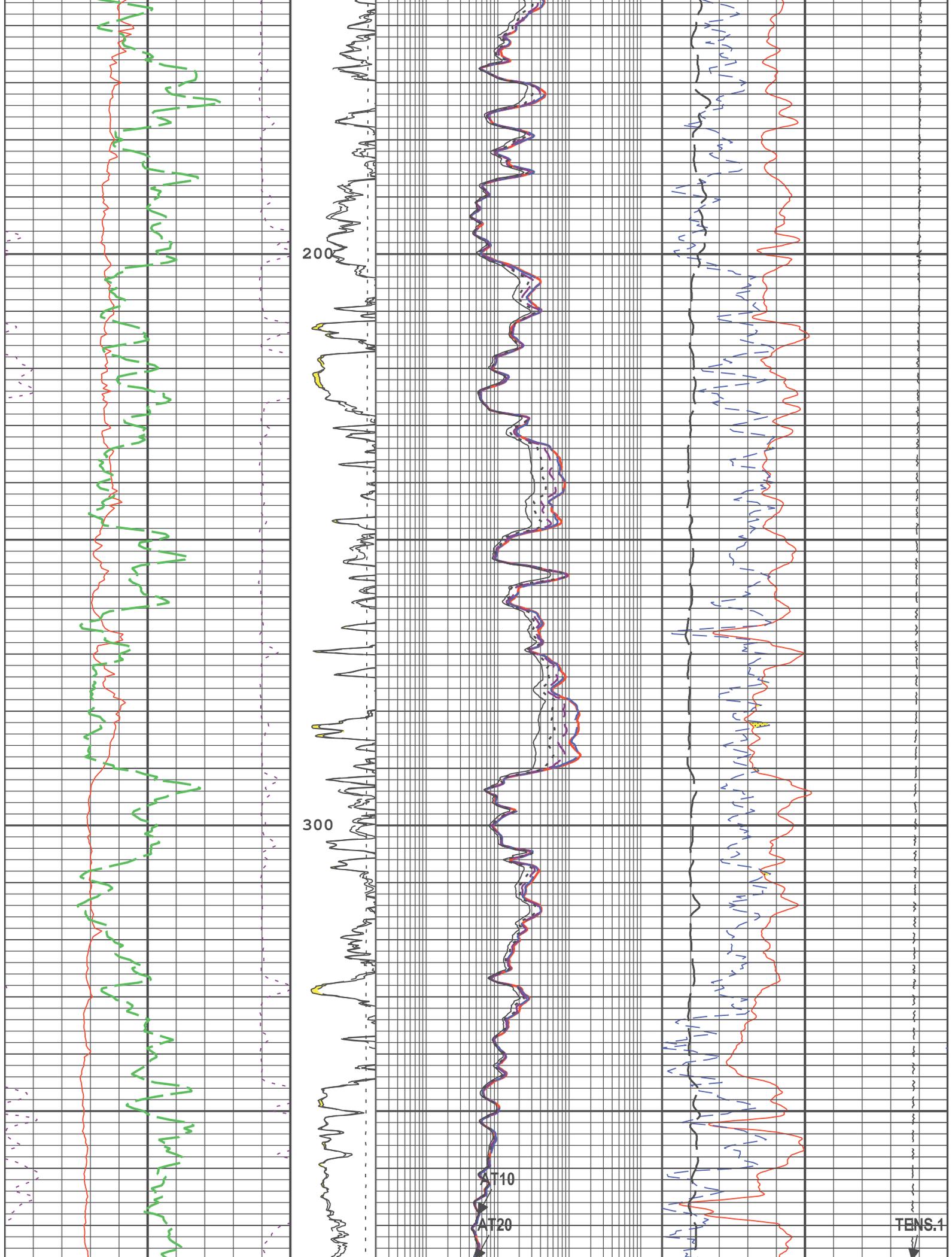
Method in Selected Lithology (NFM) TENS-1  
 0.6 ft3/ft3 0  
 Cable Tension (TENS).1  
 2000 lbf 0

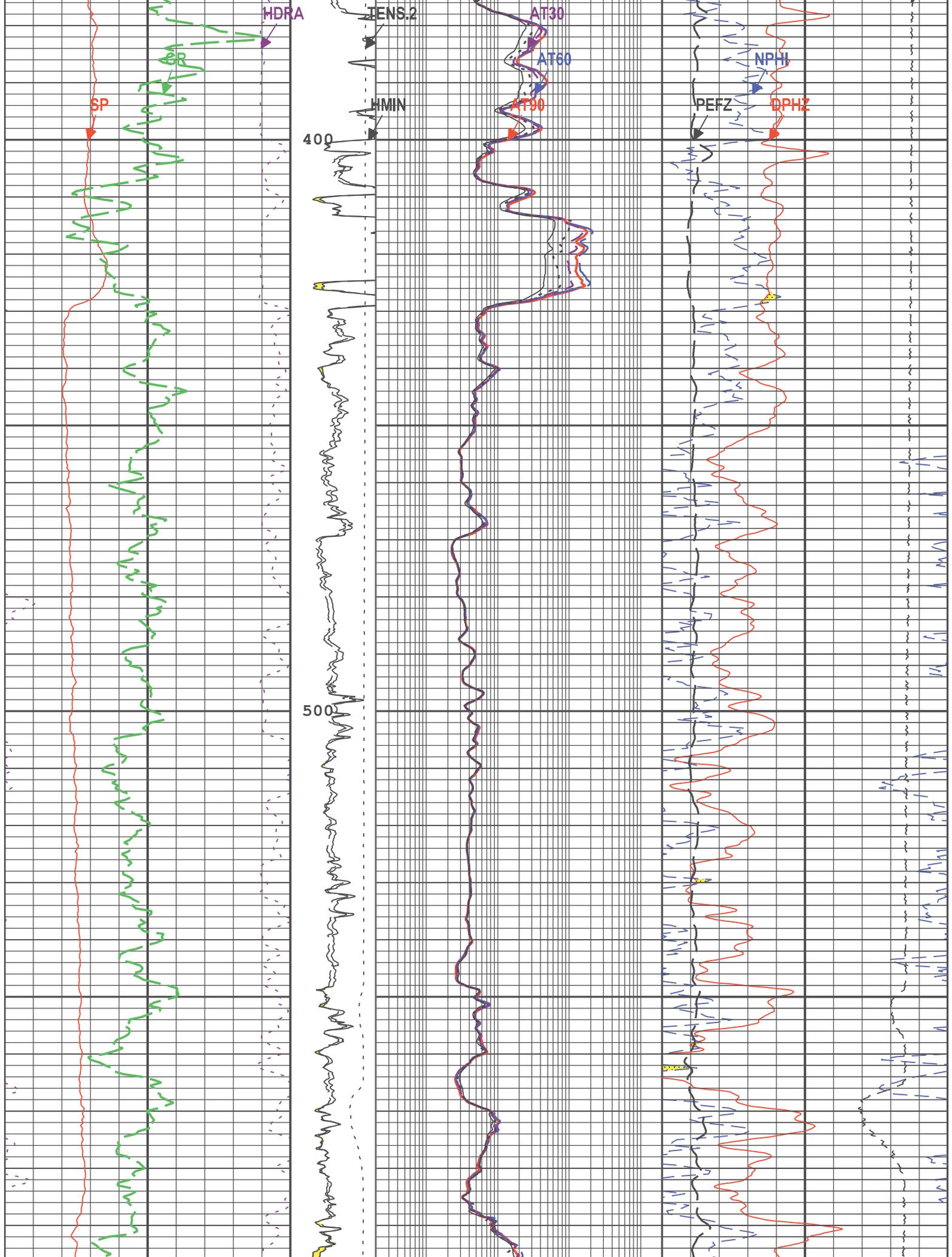


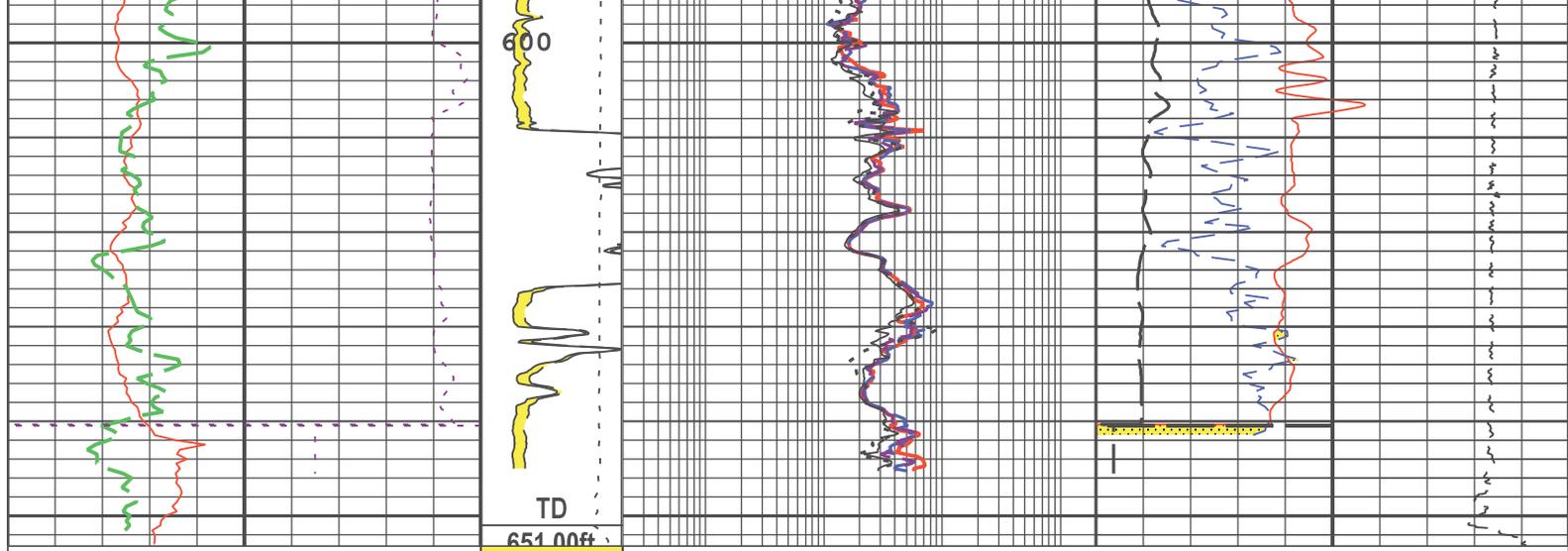
PEFZ

0

100







<b>Spontaneous Potential (SP) AIT-M</b> -160 mV 60		Perm (From SMIN to SMNO) Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H 0 ohm.m 10	<b>Differential Caliper (DCAL) RT</b> -20 in 20	
<b>GR</b> 0 gAPI 150			Mudcake Washout	
<b>Density Standoff Correction (HDRA) HDRS-H</b> -0.9 g/cm3 0.1		Synthetic Micro-Normal Resistivity (HMNO) HDRS-H 0 ohm.m 10	<b>Array Induction Two Foot Resistivity A90 (AT90) AIT-M</b> 2 ohm.m 2000	
			Crossover (From DPHZ to NPHI) <b>Standard Resolution Density Porosity (DPHZ) HDRS-H</b> 0.6 ft3/ft3 0	
		Cable Tension (TENS).2 2000 lbf 0	<b>Array Induction Two Foot Resistivity A60 (AT60) AIT-M</b> 2 ohm.m 2000	
			<b>Invaded Formation Resistivity filtered at 18 inches (RZOZ) HDRS-H</b> 2 ohm.m 2000	
			<b>Cable Tension (TENS).1</b> 2000 lbf 0	
			<b>Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H</b> 0 10	

Description: Triple Combo standard resolution template for Platform Express Format: Log ( 5MD ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 20-Jan-2020 12:53:19

## Channel Processing Parameters

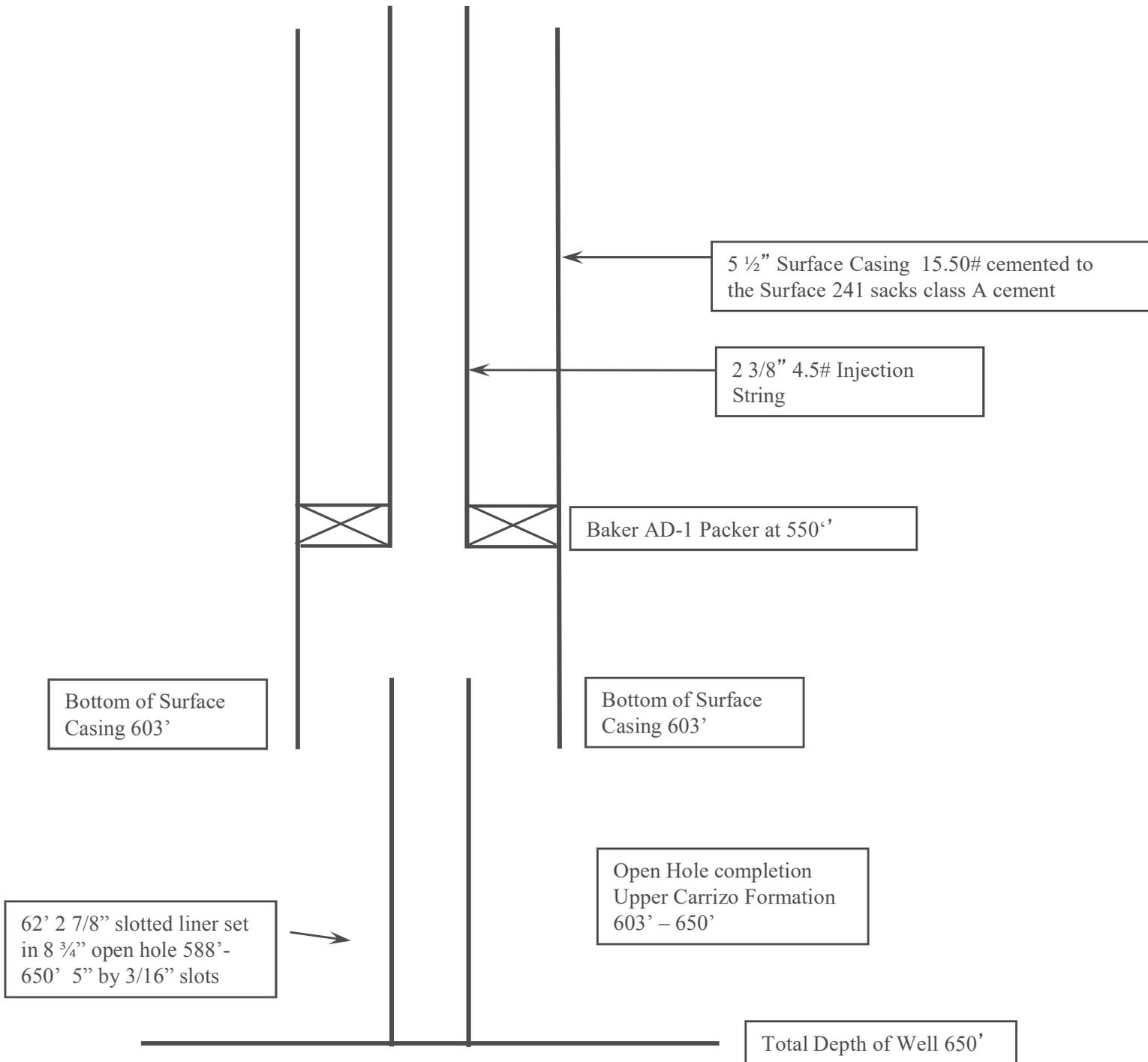
### 1A: Parameters

Parameter	Description	Tool	Value	Unit
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### 1B: Parameters

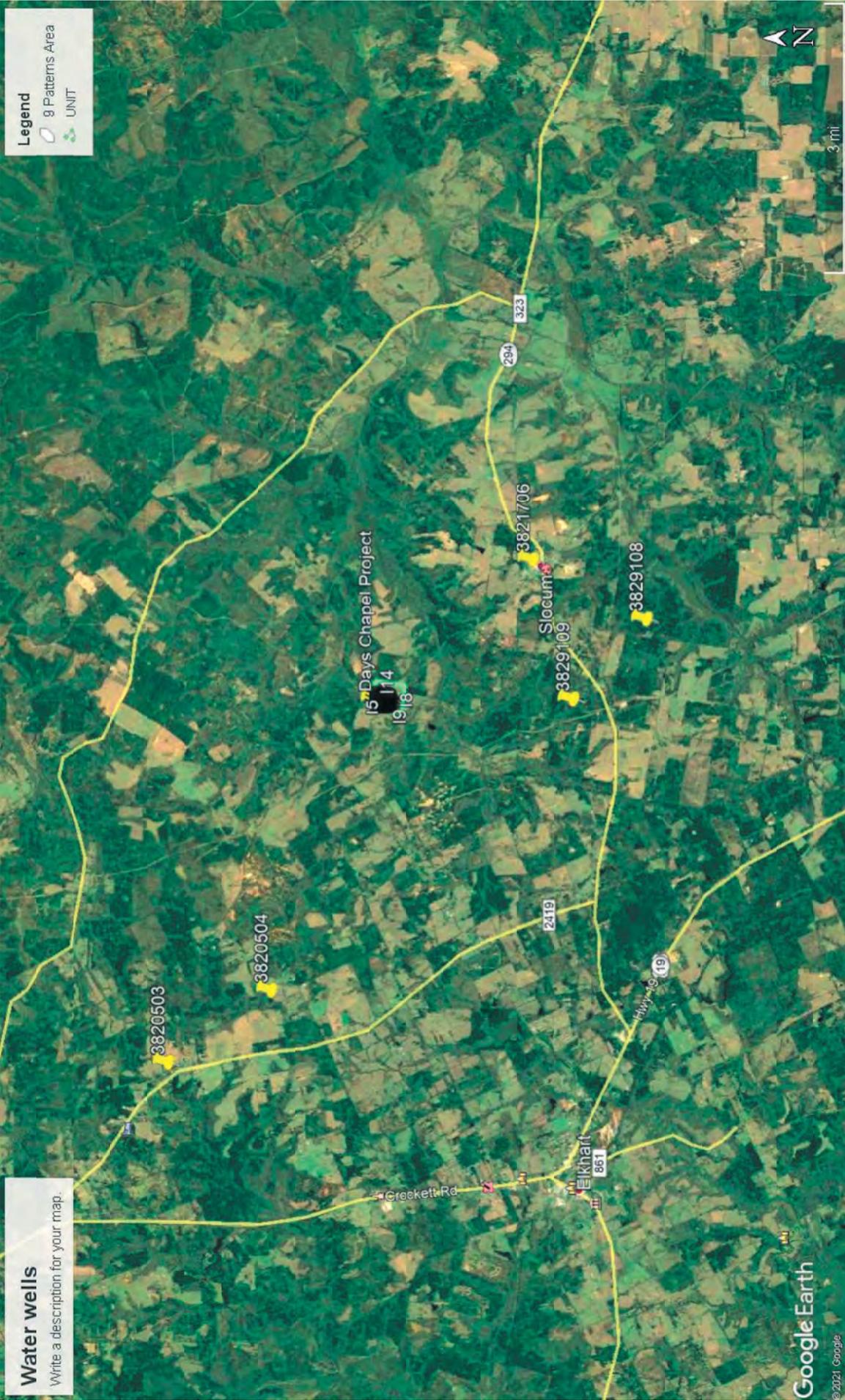
Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Mud Resistivity	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	12	ft
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SP_SHIFT	SP Shift	AIT-M	20	mV

Proposed Wellbore Configuration  
Fitzgerald – P1  
API 42-00132795  
J Crawford Survey Abstract 189  
Anderson County, TX  
April 1, 2021



State Well Number	Owner	Water Use	Elevation (ft)	Well Depth (ft)	Aquifer Code Name	Latitude (DD)	Longitude (DD)	Well Type
3821802	Dan Astrowski	Domestic	452	20	1245PRT - Sparta Sand	31.6413889	-95.4330556	Withdrawal of Water
3820502	Al Bryant	Unused	590	20	124QNCT - Queen City Sand of Claiborne Group	31.683055	-95.554445	Withdrawal of Water
3821506	A.L. Melton	Domestic	470	24	1245PRT - Sparta Sand	31.69	-95.447222	Withdrawal of Water
3820904	J.C. Hamby	Domestic	420	28	1245PRT - Sparta Sand	31.656112	-95.510278	Withdrawal of Water
3821401	D.Clewis	Domestic	490	30	1245PRT - Sparta Sand	31.681111	-95.489722	Withdrawal of Water
3829107	Slocum Gas Co.	Industrial	470	31	1245PRT - Sparta Sand	31.616944	-95.493334	Withdrawal of Water
3828305	Wayne Ratledge	Domestic	420	42	1245PRT - Sparta Sand	31.623611	-95.510278	Withdrawal of Water
3821904	Bruce Doty	Domestic	338	50	124QNCT - Queen City Sand of Claiborne Group	31.6544444	-95.416667	Withdrawal of Water
3829206	Veiva Caskey	Domestic	405	70	124QNCT - Queen City Sand of Claiborne Group	31.611945	-95.435556	Withdrawal of Water
3821507	Arthur Averitte	Domestic	346	82	124QNCT - Queen City Sand of Claiborne Group	31.668889	-95.441389	Withdrawal of Water
3828304	R.H. Alfred	Domestic	500	115	1245PRT - Sparta Sand	31.601389	-95.514723	Withdrawal of Water
3820905	L.J. Wilson	Domestic	420	203	124QNCT - Queen City Sand of Claiborne Group	31.655001	-95.512501	Withdrawal of Water
3828303	W.E. Garland	Domestic	400	229	1245PRT - Sparta Sand	31.612778	-95.539167	Withdrawal of Water
3820504	Slocum WSC Well #3	Public Supply	641	695	124CRRZ - Carrizo Sand	31.6722222	-95.542222	Withdrawal of Water
3821706	Slocum WSC	Public Supply	494	720	124CRRZ - Carrizo Sand	31.6305194	-95.4616278	Withdrawal of Water
3829108	Lake Ioni Water Supply	Public Supply	479	722	124CRRZ - Carrizo Sand	31.612501	-95.472778	Withdrawal of Water
3820503	Walston Springs WSC Well #2	Public Supply	600	800	124CRRZ - Carrizo Sand	31.6886111	-95.5583333	Withdrawal of Water
3829109	Slocum WSC Well #4	Public Supply	464	1715	124CRRZ - Carrizo Sand	31.624167	-95.487778	Withdrawal of Water
3820605	Tenneco Oil Co.	Industrial	540	1800	124WLXC - Wilcox Group	31.675278	-95.516389	Withdrawal of Water
3821705	Shell Oil Co. - J.B. Parker No.2	Industrial	440	1810	124WLXC - Wilcox Group	31.633889	-95.484167	Withdrawal of Water
3821704	Shell Oil Co. - J.B. Parker No.1	Plugged or Destroyed	495	1818	124WLXC - Wilcox Group	31.632778	-95.479167	Withdrawal of Water
3820604	Kimball Productions	Industrial	658	1840	124WLXC - Wilcox Group	31.680555	-95.521667	Withdrawal of Water
3829106	Tenneco Oil Co.	Industrial	460	1852	124WLXC - Wilcox Group	31.623333	-95.49	Withdrawal of Water
3821703	Shell Oil Co. - B.F. Weaver No.1	Industrial	453	1855	124WLXC - Wilcox Group	31.6375	-95.482222	Withdrawal of Water
3829105	Texaco, Inc.	Industrial	500	1925	124WLXC - Wilcox Group	31.623333	-95.478889	Withdrawal of Water
3820901	Cook & Mayo - Southern Pine Lumber Co. No.1		410	5280	NA	31.6475	-95.505834	Oil or Gas
3821502	P.G. Lake & Ralph Spence-Day Estates		360	5342	NA	31.668055	-95.442222	Oil or Gas
3821702	Gibson Drilling Co. et al-G.C. Mays No.1		340	5350	NA	31.646111	-95.484722	Oil or Gas
3820903	G.W. Wilson, Clark & Cowden Exploration Co		530	5466	NA	31.664167	-95.537222	Oil or Gas
3820603	W.H. Bryant et al- Lasiter et al No.1-B		570	5595	NA	31.689722	-95.503889	Oil or Gas
3821504	Deltex Oil Co S.S. Day Estate No.1		360	5598	NA	31.670833	-95.4425	Oil or Gas
3820602	Concho Petroleum Co. et al-J.B. Parker		650	5614	NA	31.679444	-95.539445	Oil or Gas
3820902	F.R. Jackson- D.M. Holcomb No.2		430	5649	NA	31.646945	-95.528333	Oil or Gas
3828302	Placid Oil Co. et al- Polk No.4		420	5650	NA	31.617222	-95.508056	Oil or Gas
3829102	Oil Properties, Inc. et al- Garrison No.2		475	5702	NA	31.618055	-95.485278	Oil or Gas
3820601	British-American & PanAmerican et al -		650	5723	NA	31.688611	-95.534722	Oil or Gas
3828301	Talbert & Hughley Drilling Co. & Oil		460	5745	NA	31.606667	-95.508612	Oil or Gas
3820301	John B. Coffee- T.C. Lassiter No.1		385	5756	NA	31.713889	-95.503056	Oil or Gas
3821801	J.S. Michael - H.W. McIver No.1		450	5770	NA	31.642778	-95.441945	Oil or Gas
3821503	C.L. Ewell et al- Homer E. Casey No.1		350	5780	NA	31.673889	-95.441945	Oil or Gas
3821601	Hastings, Tomlinson & Johnson - V.M.		380	5800	NA	31.668611	-95.410001	Oil or Gas
3829104	Seaboard Oil Co.- Harry Denson No.5		470	5800	NA	31.623055	-95.468889	Oil or Gas
3821701	L.A. Douglas & L.A. Grelling - Mays No.1		380	5862	NA	31.662223	-95.484445	Oil or Gas
3821505	B.L. & H. Drilling- Koepnick No.1		470	5870	NA	31.701112	-95.421111	Oil or Gas
3829201	Apache Drilling Co.& A. Crevlin - Determine		465	5964	NA	31.597222	-95.455556	Oil or Gas
3829103	Art Machin & Associate M.A. Davey No.1		420	5965	NA	31.585278	-95.498334	Oil or Gas
3821901	S.A. Cochran et al- Wright Matthews No.1		298	6000	NA	31.645278	-95.409445	Oil or Gas
3820501	T.D. Humphrey & Sons - Lee Camp et al No.1		550	6025	NA	31.691667	-95.560834	Oil or Gas
3821101	British American Oil Production Davey-		610	6215	NA	31.723611	-95.461112	Oil or Gas
3829203	T.D. Humphrey & Son Ltd - Wallace No.2		450	NA	NA	31.602501	-95.438056	Oil or Gas

Wells Used In Pressure Front Analysis											
State Well Number	Owner	Water Use	Elevation (ft)	Well Depth (ft)	Water Level Obs Type	Subsea depth (ft)	Water Quality Available	Latitude	Longitude	County	Well Type
3820503	Walston Springs WSC Well #2	Public Supply	600	800	Misc Measurement	-200	N	31.6886111	-95.5558333	Anderson	Withdrawal of Water
3820504	Slocum WSC Well #3	Public Supply	641	695	Misc Measurement	-54	N	31.6722222	-95.5422222	Anderson	Withdrawal of Water
3821706	Slocum WSC	Public Supply	494	720	Misc Measurement	-226	Y	31.6305194	-95.4616278	Anderson	Withdrawal of Water
3829108	Lake Ioni Water Supply	Public Supply	479	722	None	-243	Y	31.612501	-95.472778	Anderson	Withdrawal of Water
3829109	Slocum WSC Well #4	Public Supply	464	1715	None	-1251	N	31.624167	-95.487778	Anderson	Withdrawal of Water



### Water wells

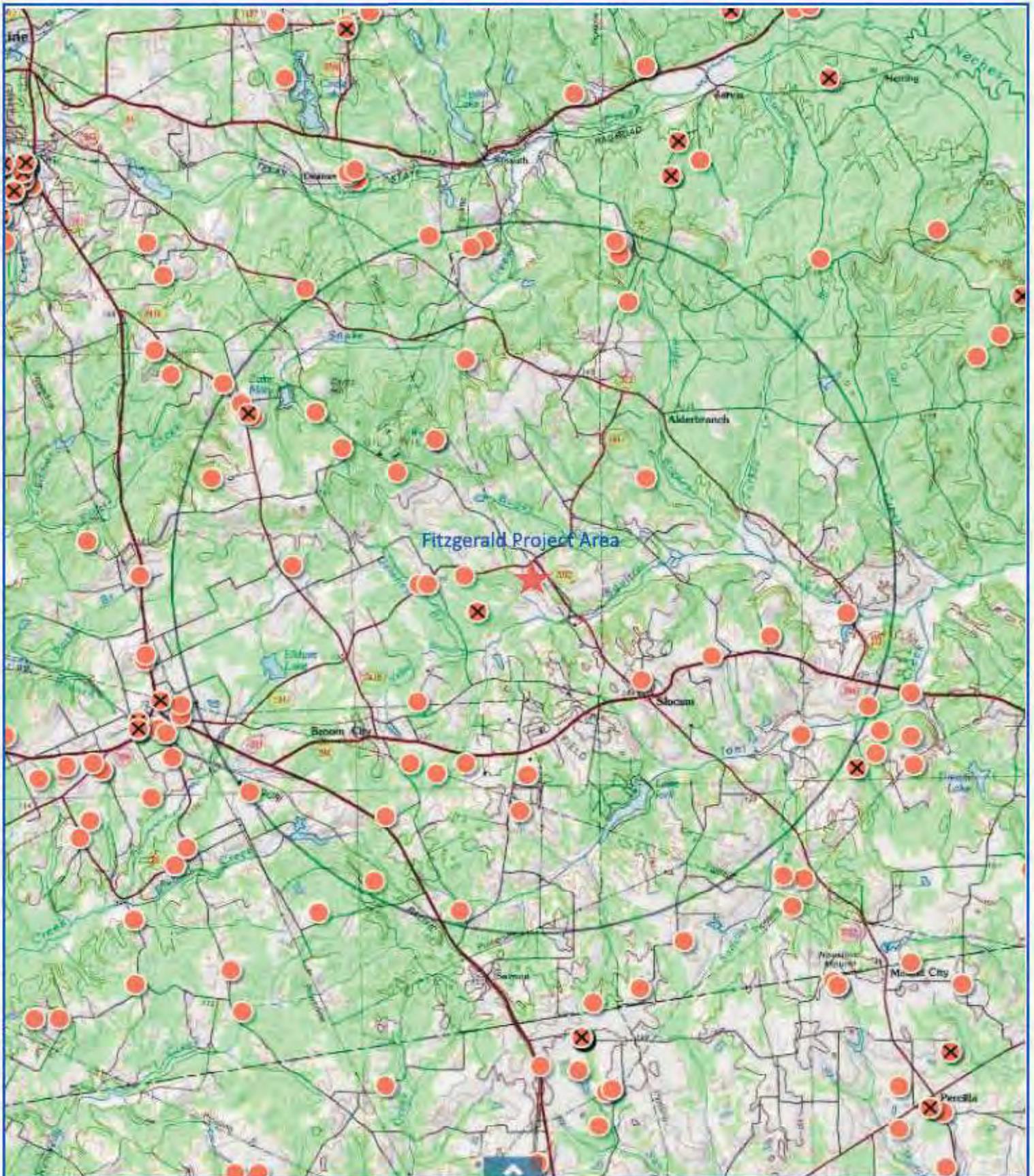
Write a description for your map.

**Legend**  
9 Patterns Area  
UNIT

**TWDB Water Well Inventory**  
**Five mile radius from Fitzgerald Project Area**

Well Report Tracking Number	Well Type	Use	Well Owner	Latitude	Longitude	Date of Well Completion	Depth (ft)	Injurious Water Quality
43701	New Well	Domestic	D. Franklin	31.616944	-95.503889	17-Aug-03	88	no
110194	New Well	Irrigation	brenda williams	31.616944	-95.516944	24-Apr-07	110	
122789	New Well	Domestic	Kurt and Carolyn Newgent	31.699167	-95.503889	29-Jun-04	361	no
134560	New Well	Irrigation	Lirely, P.	31.622778	-95.425278	23-Jan-08	49	no
148773	New Well	Domestic	Bar S Ranch	31.675	-95.563889	19-Jan-06	710	yes
157610	New Well	Rig Supply	GREY WOLF DRILLING CO.	31.676111	-95.520278	1-Jun-08	230	
176417	New Well	Domestic	Bradley, C.	31.606112	-95.522778	2-Apr-09	210	no
176514	New Well	Domestic	Mary E. Zaborowski	31.642778	-95.4325	7-Jul-04	80	no
188005	Replacement	Irrigation	Phillip Davis	31.690278	-95.556945	14-Jun-09	700	no
209199	Replacement	Irrigation	David Gibson	31.723611	-95.499445	3-Feb-10	450	no
215533	New Well	Domestic	R. Hogan	31.681111	-95.533055	30-Nov-08	140	no
217497	New Well	Domestic	D. Hase	31.628611	-95.409445	13-Apr-09	108	no
224661	New Well	Domestic	Shannon Schwingdorf	31.586667	-95.505556	24-Jun-09	580	no
228701	New Well	Domestic	Doyle, R. J.	31.653334	-95.513056	20-Jul-10	110	
256179	New Well	Domestic	Mikesch, James	31.721944	-95.502501	21-Dec-10	460	no
257254	New Well	Irrigation	Allen, Carrol E.	31.614723	-95.510834	16-Feb-11	175	no
305594	New Well	Domestic	Peter Fisher	31.629444	-95.515278	24-Oct-12	137	no
309244	New Well	Stock	Mike Deer	31.638889	-95.446389	20-Dec-12	732	no
312828	New Well	Irrigation	BILL LANE	31.682778	-95.511112	5-Feb-13	340	no
314501	New Well	Irrigation	Bill Lane	31.682778	-95.511112	7-Mar-13	440	no
337503	New Well	Domestic	C & Gay Bradley	31.607223	-95.491389	14-Mar-10	110	
337576	New Well	Domestic	D Fincher	31.6875	-95.554167	9-Oct-10	230	no
337644	New Well	Domestic	W. Riggs	31.633889	-95.462778	17-Oct-11	65	
337786	New Well	Domestic	W. Bridges	31.655278	-95.504445	1-Apr-12	95	no
337960	New Well	Domestic	KEVIN DEMING	31.614445	-95.489445	21-May-13	435	no
347566	New Well	Stock	Linda Galayda	31.6475	-95.414723	23-Oct-13	742	no
358315	New Well	Domestic	Ted Harrod	31.657223	-95.544722	22-Mar-14	440	no
373150	New Well	Irrigation	Kevin Beard	31.653334	-95.515001	13-Jul-14	178	no
380986	New Well	Rig Supply	GHOLE OIL & GAS OPERATIONS LLC	31.688334	-95.539445	15-Oct-14	350	
386154	New Well	Rig Supply	CHESTNUT	31.592778	-95.525555	29-Dec-14	340	
389004	New Well	Stock	Quitntin Baack	31.723333	-95.468889	5-Jan-15	450	no
389014	New Well	Stock	Quitntin Baack	31.722778	-95.468333	5-Jan-15	462	no
389017	New Well	Stock	Quitntin Baack	31.720555	-95.468055	5-Jan-15	470	no
389022	New Well	Stock	Quitntin Baack	31.722778	-95.4675	5-Jan-15	475	no
423223	New Well	Domestic	Richard Hill	31.675	-95.461667	24-May-16	340	no
459938	New Well	Domestic	Ben & Carol Stern	31.71099	-95.4658	28-Mar-17	520	no
528235	New Well	Irrigation	Charles Lame	31.611056	-95.554944	7-Nov-19	258	no

source: <https://www3.twdb.texas.gov/apps/WaterDataInteractive/GroundwaterDataViewer/?map=sdr>



TEXAS WATER DEVELOPMENT BOARD



Permian Regulatory Solutions, PLLC  
[www.permianregulatory.com](http://www.permianregulatory.com)

Texas Water Development Board  
Water Well Database  
5-mi Radius of Fitzgerald Project Area  
June 16, 2021

## GROUNDWATER PROTECTION DETERMINATION

Form GW-2



## Groundwater Advisory Unit

**Date Issued:** 20 May 2021      **GAU Number:** 305436

<b>Attention:</b>	TRUEBLOOD RESOURCES, 1720 S. BELLAIRE STREET DENVER, CO 80222	<b>API Number:</b>	00132795
<b>Operator No.:</b>	871506	<b>County:</b>	ANDERSON
		<b>Lease Name:</b>	Fitzgerald
		<b>Lease Number:</b>	15772
		<b>Well Number:</b>	P1
		<b>Total Vertical</b>	670
		<b>Latitude:</b>	31.656309
		<b>Longitude:</b>	-95.486953
		<b>Datum:</b>	NAD27

**Purpose:** Injection into Producing Zone (H1)  
**Location:** Survey-Crawford, J. ; Abstract-189

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

Protect to the Base of the Wilcox, which is estimated to occur at 3000 feet for protection of usable-quality water.

The base of usable-quality water that must be protected is estimated to occur at a depth of 2700 feet below the land surface. Moreover, the interval from the land surface to a depth of 775 feet and the fresh water contained in the Zone from a depth of 1275 feet to 1700 feet must be isolated from water in overlying and underlying beds.

The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 3050 feet at the site of the referenced well.

This recommendation is applicable for all wells drilled in this Lease, including wells I1 (P1) - 31°39'23.35"N; - 95°29'13.85"W, I2 - 31°39'23.67"N; - 95°29'16.66"W, I3 - 31°39'21.25"N; - 95°29'17.10"W, I4 - 31°39'20.90"N; - 95°29'14.23"W, I5 - 31°39'26.05"N; - 95°29'16.29"W, I6 - 31°39'25.73"N; -95°29'13.41"W, I7 - 31°39'23.06"N; - 95°29'10.98"W, I8 - 31°39'20.58"N; - 95°29'11.37"W, I9 - 31°39'18.45"N; - 95°29'14.61"W, I10 - 31°39'18.81"N; - 95°29'17.47"W, I11 - 31°39'21.63"N; - 95°29'20.00"W, I12 - 31°39'23.95"N; - 95°29'19.51"W, I13 - 31°39'26.33"N; - 95°29'19.14"W, I14 - 31°39'25.43"N; - 95°29'10.54"W, I15 - 31°39'18.10"N; - 95°29'11.72"W, and I16 - 31°39'19.21"N; - 95°29'20.42"W.

Groundwater Advisory Unit, Oil and Gas Division

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. Unless stated otherwise, this recommendation is for normal drilling, production, and plugging operations only.

This determination is based on information provided when the application was submitted on 05/18/2021. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or [gau@rrc.texas.gov](mailto:gau@rrc.texas.gov).

# Texas Aquifers Study

*Groundwater Quantity, Quality, Flow, and Contributions to Surface Water*

Bech Bruun, Chairman

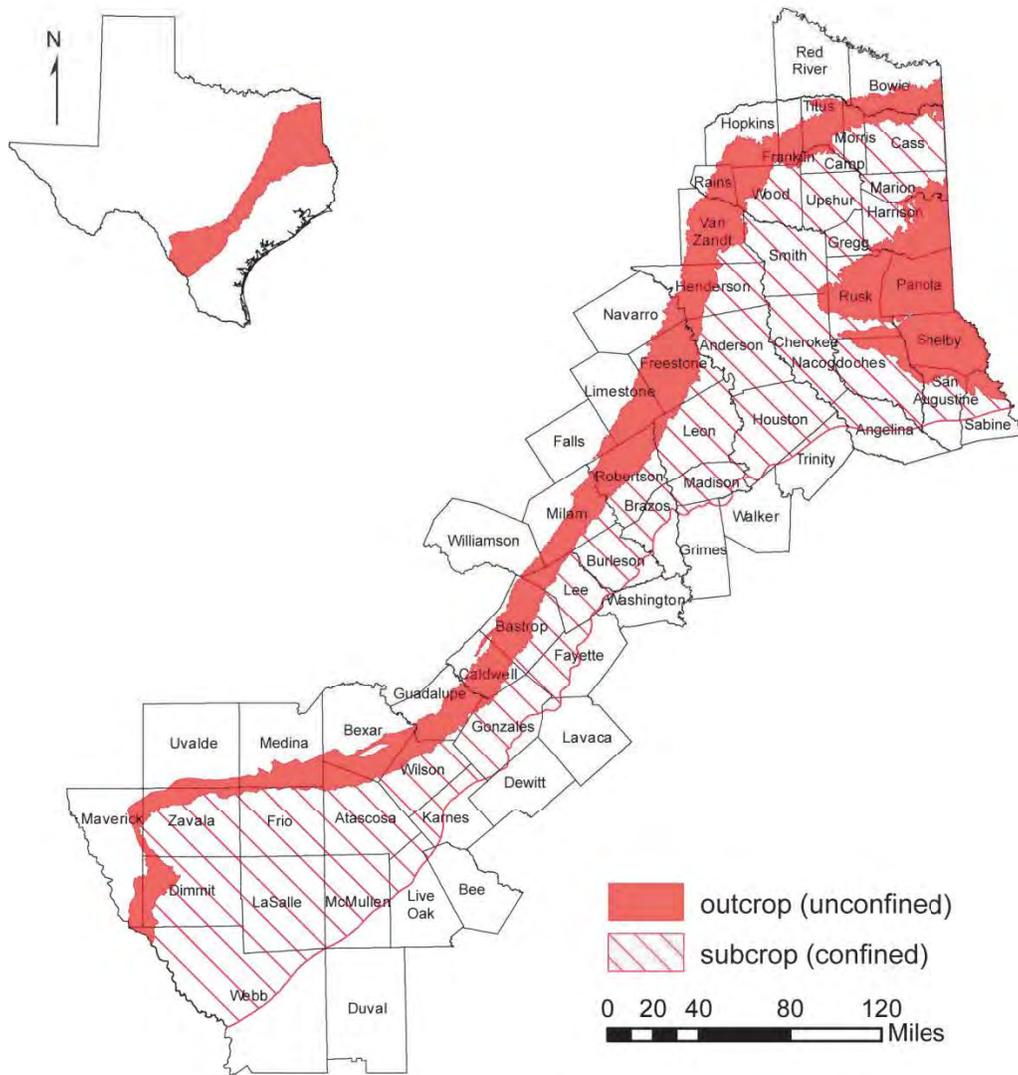
Kathleen Jackson, Member

Peter Lake, Member

Jeff Walker, Executive Administrator

December 31, 2016

## 6.1 Carrizo-Wilcox Aquifer



**Figure 6-1. Extent of the Carrizo-Wilcox Aquifer, showing the unconfined (outcrop) and confined (subsurface) areas.**

### Aquifer characteristics

- Aquifer type: confined and unconfined
- Area of outcrop: 11,227 square miles
- Area of subsurface: 25,491 square miles
- Proportion of aquifer with groundwater conservation districts: 65 percent
- Number of counties containing the aquifer: 66

### Geology and hydrogeology

The Carrizo-Wilcox Aquifer is a major aquifer extending from the Louisiana border to the Mexico border in a wide band adjacent to and northwest of the Gulf Coast Aquifer (Figure 6-1). It consists of the Hooper, Simsboro, and Calvert Bluff formations of the Wilcox Group and the overlying Carrizo Formation of the Claiborne Group. The aquifer is primarily composed of sand locally interbedded with gravel, silt, clay, and lignite. Although the Carrizo-Wilcox Aquifer reaches 3,000 feet in thickness, the freshwater saturated thickness of the sands averages 670 feet.

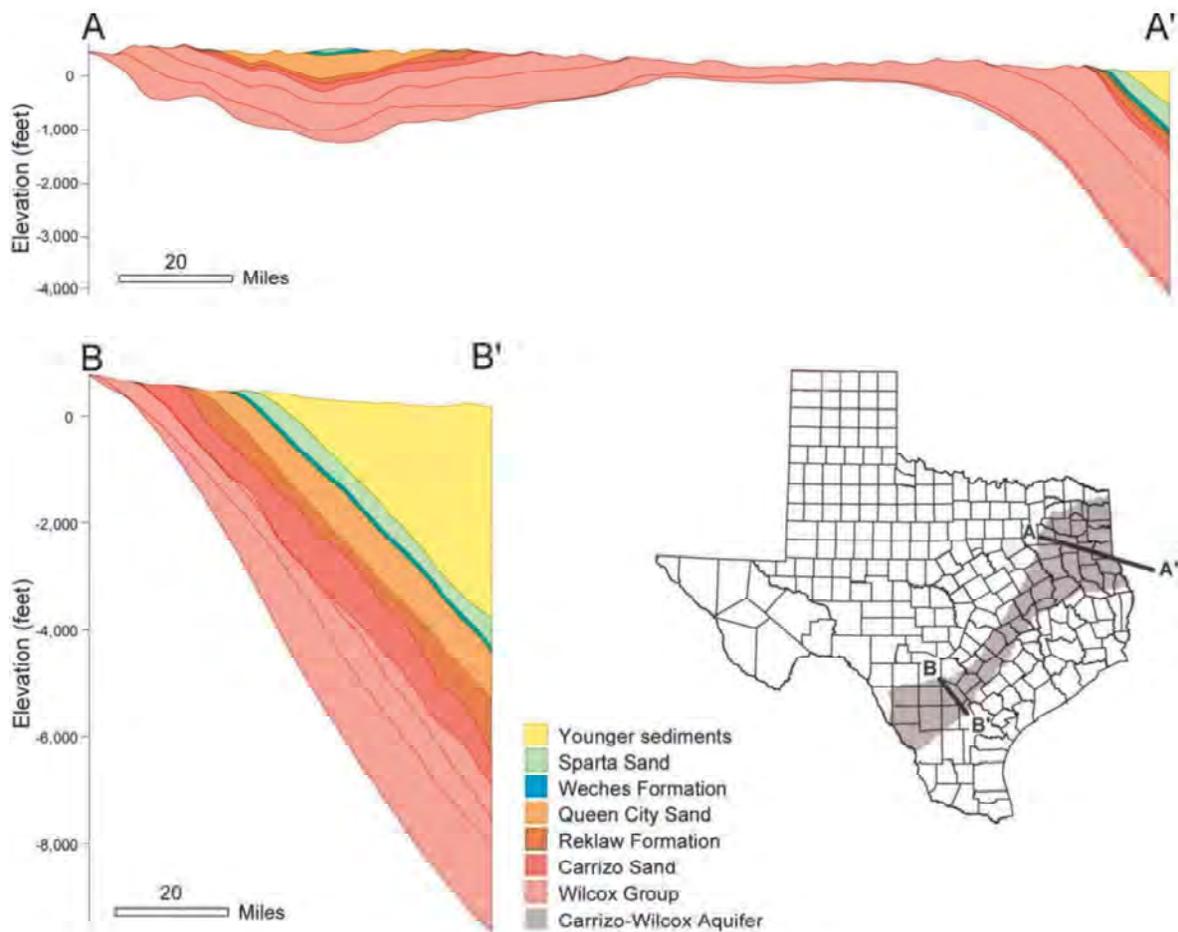
The Carrizo-Wilcox Aquifer is unconfined in the outcrop area. The aquifer is confined in the down-dip region where it is overlain by the lower-permeability Reklaw Formation. Figure 6-2 summarizes the stratigraphic and hydrogeologic units of the aquifer. In general, the Simsboro and Carrizo formations contain thicker, more laterally continuous and more permeable sands and, therefore, are more important hydrostratigraphic units when determining groundwater availability. The Calvert Bluff and Hooper formations typically are made up of clay, silt, and sand mixtures, as well as lignite deposits. Because of their relatively low vertical permeability, the Hooper and Calvert Bluff formations act as leaky aquitards that confine fluid pressures in the Simsboro and Carrizo aquifers and restrict groundwater movement between the layers. Although the Hooper and Calvert Bluff formations contain sand units, they are generally finer and less continuous than the sands of the Simsboro and Carrizo formations (Hutchison and others, 2009).

Series		South Texas		Central Texas		Sabine uplift		
Tertiary	Eocene	U	Jackson Group		Jackson Group		Jackson Group	
		M	Claiborne Group	Yegua Fm.	Claiborne Group	Yegua Fm.	Claiborne Group	Yegua Fm.
				Cook Mountain Fm.		Cook Mountain Fm.		Cook Mountain Fm.
				Sparta Sand		Sparta Sand		Sparta Sand
				Weches Fm.		Weches Fm.		Weches Fm.
				Queen City sand		Queen City sand		Queen City sand
	L	Wilcox Group	Carrizo sand	Wilcox Group	Carrizo sand	Wilcox Group	Carrizo sand	
	Upper Wilcox		Calvert Bluff Fm.		Upper Wilcox			
	Paleocene	U	Middle Wilcox	Wilcox Group	Simsboro Fm.	Wilcox Group	Middle Wilcox	
		L	Lower Wilcox		Hooper Fm.		Lower Wilcox	
L	Midway Formation		Midway Formation		Midway Formation			

**Figure 6-2. Stratigraphy and hydrogeology in the Carrizo-Wilcox Aquifer (modified from Mace and others, 2000). (Fm = Formation; U = Upper; M = Middle; L = Lower)**

Texas Aquifers Study  
Aquifer Summaries: Carrizo-Wilcox Aquifer

The marine deposits of the Paleocene Midway Formation are the lower confining boundary of the Carrizo-Wilcox Aquifer. The Eocene Reklaw Formation represents a semi-confining unit between the Carrizo Sand and the shallower Queen City Aquifer. In the northeastern part of the aquifer the Reklaw clays become discontinuous, providing a more permeable connection between the Carrizo Sand and the overlying Queen City Formation. The Wilcox Fault Zone, a series of growth faults caused by sediment progradation onto marine clays and resulting basinward slippage and subsidence, defines the down-dip limit of the aquifer. Figure 6-3 shows structural cross-sections for the southern and northern portions of the aquifer.



**Figure 6-3. Structural cross-sections of the Carrizo-Wilcox Aquifer and overlying strata (modified from Kelley and others, 2004).**

The mean hydraulic conductivity of the Carrizo-Wilcox Aquifer generally decreases to the northeast. Hydraulic conductivity ranges from about 0.01 to 4,000 feet per day and has a mean of about 6 feet per day. Transmissivity ranges from about 0.1 to 10,000 feet squared per day and has a geometric mean of about 300 feet squared per day. The Simsboro Formation and Carrizo

Sand portions of the Carrizo-Wilcox Aquifer have higher transmissivity and hydraulic conductivity than the Cypress Aquifer, Calvert Bluff Formation, and undivided Wilcox Group. The highest transmissivity and hydraulic conductivity for the Carrizo Formation is in the Winter Garden area. The highest transmissivity and hydraulic conductivity for the Wilcox Group is in the south central and northeast parts of the aquifer.

### **Flows to surface water and other aquifers**

Groundwater discharges to local creeks and major streams crossing the unconfined area of the aquifer when the water level in the aquifer is higher than the stream. Conversely, stream water may recharge the aquifer during flood events when the stream is high or when pumping draws down the water level in the aquifer. Flows from the Carrizo-Wilcox Aquifer to surface-water bodies (Table 6-1), are estimated from stream baseflow and surface runoff measurements.

In general, the low-permeability geological units above and below the Carrizo-Wilcox Aquifer strongly limit inter-aquifer flow. The aquifer also has limited areas of overlap with other major or minor aquifers where freshwater flow could potentially occur. In these areas of potential communication, the direction and magnitude of any inter-aquifer flow depends on the hydraulic conductivity of the intervening formations and the potentiometric head differences between the aquifers.

In most of the groundwater availability models developed by the TWDB, the upper and lower boundaries of the Carrizo-Wilcox Aquifer are specified as no-flow surfaces, based on the conceptual model that any inter-aquifer flows that might occur are several orders of magnitude smaller than flows within the aquifer and are not significant on a regional scale.

Table 6-2 shows estimated flows from the Carrizo-Wilcox Aquifer to other major and minor aquifers, as calculated by approved TWDB models. The only inter-aquifer flow that is calculated by the models is the flow between the Carrizo-Wilcox and the Brazos River Alluvium aquifers. The Queen City Aquifer is present above the Carrizo-Wilcox Aquifer over much of its extent and, as noted above, has potential for inter-aquifer flow to the northeast where the Reklaw Formation clays become thin or discontinuous, but the model for the northern Carrizo-Wilcox Aquifer does not expressly calculate these potential flows.

Brackish and saline groundwater is present in the down-dip regions of the Carrizo-Wilcox Aquifer. The Carrizo and Wilcox sands become oil-producing reservoir rocks in the Gulf Coast region, where they are present at depths of several thousand feet beneath the Gulf Coast Aquifer. Growth faults along the Wilcox Fault Zone limit down-dip movement of freshwater into the brackish and saline zones beyond the established extent of the Carrizo-Wilcox Aquifer.

Texas Aquifers Study  
 Aquifer Summaries: Carrizo-Wilcox Aquifer

**Table 6-1. Summary of groundwater flow from the Carrizo-Wilcox Aquifer to surface water, by county.**

<b>County</b>	<b>Area of aquifer outcrop in county (square miles)</b>	<b>Sum of average annual baseflow (cubic feet per second)</b>	<b>Sum of median annual baseflow (cubic feet per second)</b>
Anderson	47	2.7	0.6
Atascosa	143	12.9	4.5
Bastrop	462	24.1	4.2
Bexar	366	41.3	16.4
Bowie	359	78.1	18.1
Burleson	0	0	0
Caldwell	299	27.7	6.4
Camp	35	5.9	1.3
Cass	131	38.1	9.6
Cherokee	29	10.3	3.8
Dimmit	256	3.8	0.9
Falls	44	2.3	0.2
Franklin	147	24.4	5.5
Freestone	676	59.5	11.9
Frio	26	1.2	0.4
Gonzales	21	3.2	1.1
Gregg	8	2.4	0.7
Guadalupe	362	27.1	8.2
Harrison	526	124.1	29.4
Henderson	309	40.1	13
Hopkins	279	35.8	6.4
Lee	107	4.9	0.8
Leon	66	3.6	0.3
Limestone	338	18.4	1.6
Marion	82	24.4	7.2
Maverick	189	4	1
Medina	342	19.8	6.5
Milam	425	32.3	4
Morris	80	19.1	3.9
Nacogdoches	184	61.9	22
Navarro	101	6.5	1.1
Panola	816	144.3	27.9
Rains	166	18.8	2.7
Red River	6	0.9	0.1

Texas Aquifers Study  
 Aquifer Summaries: Carrizo-Wilcox Aquifer

**Table 6-1 (continued). Summary of groundwater flow from the Carrizo-Wilcox Aquifer to surface water, by county.**

County	Area of aquifer outcrop in county (square miles)	Sum of average annual baseflow (cubic feet per second)	Sum of median annual baseflow (cubic feet per second)
Robertson	390	25.5	2.5
Rusk	646	198.1	65.2
Sabine	117	26	5.1
San Augustine	98	25.2	6.2
Shelby	817	148.7	24.8
Smith	15	4	1.3
Titus	296	60.2	12.1
Uvalde	118	3.9	0.8
Van Zandt	574	61	11.2
Webb	22	0.3	0.1
Williamson	39	2.1	0.3
Wilson	143	10.9	4
Wood	198	25	4.2
Zavala	255	7.6	1.7
<b>Total</b>	<b>11,155</b>	<b>1,522</b>	<b>361</b>

**Table 6-2. Flow between the Carrizo-Wilcox and Brazos River Alluvium aquifers.**

Flow from	Flow to	Total flow (acre-feet per year)
Carrizo-Wilcox Aquifer	Brazos River Alluvium Aquifer	2,361

### Water quantity

Total storage in the Carrizo-Wilcox Aquifer is estimated to be about 5.2 billion acre-feet. Recoverable storage is estimated to be between 25 and 75 percent of the total, about 1.3 billion to 3.9 billion acre-feet (Table 6-3).

Figure 6-4 shows changes in water levels in the Carrizo-Wilcox Aquifer from 1995 to 2015. Most of the aquifer shows increased water levels as a result of recharge during the period from 2000 to 2005. Starting around 2005, the southernmost portion of the aquifer has experienced increasing drawdown, which may be correlated with the expansion of oil field activity in the Eagle Ford Shale and other formations in the area.

Texas Aquifers Study  
 Aquifer Summaries: Carrizo-Wilcox Aquifer

**Table 6-3. Total estimated recoverable storage in the Carrizo-Wilcox Aquifer, by groundwater management area, in acre-feet.**

<b>Groundwater management area</b>	<b>Total storage</b>	<b>25 percent of storage</b>	<b>75 percent of storage</b>
11	2,061,633,000	515,408,250	1,546,224,750
12	1,019,320,000	254,830,000	764,490,000
13	1,951,720,000	487,930,000	1,463,790,000
14	19,804,000	4,951,000	14,853,000
15	69,900,000	17,475,000	52,425,000
16	104,700,000	26,175,000	78,525,000
<b>Total</b>	<b>5,227,077,000</b>	<b>1,306,769,250</b>	<b>3,920,307,750</b>

Texas Aquifers Study  
 Aquifer Summaries: Carrizo-Wilcox Aquifer

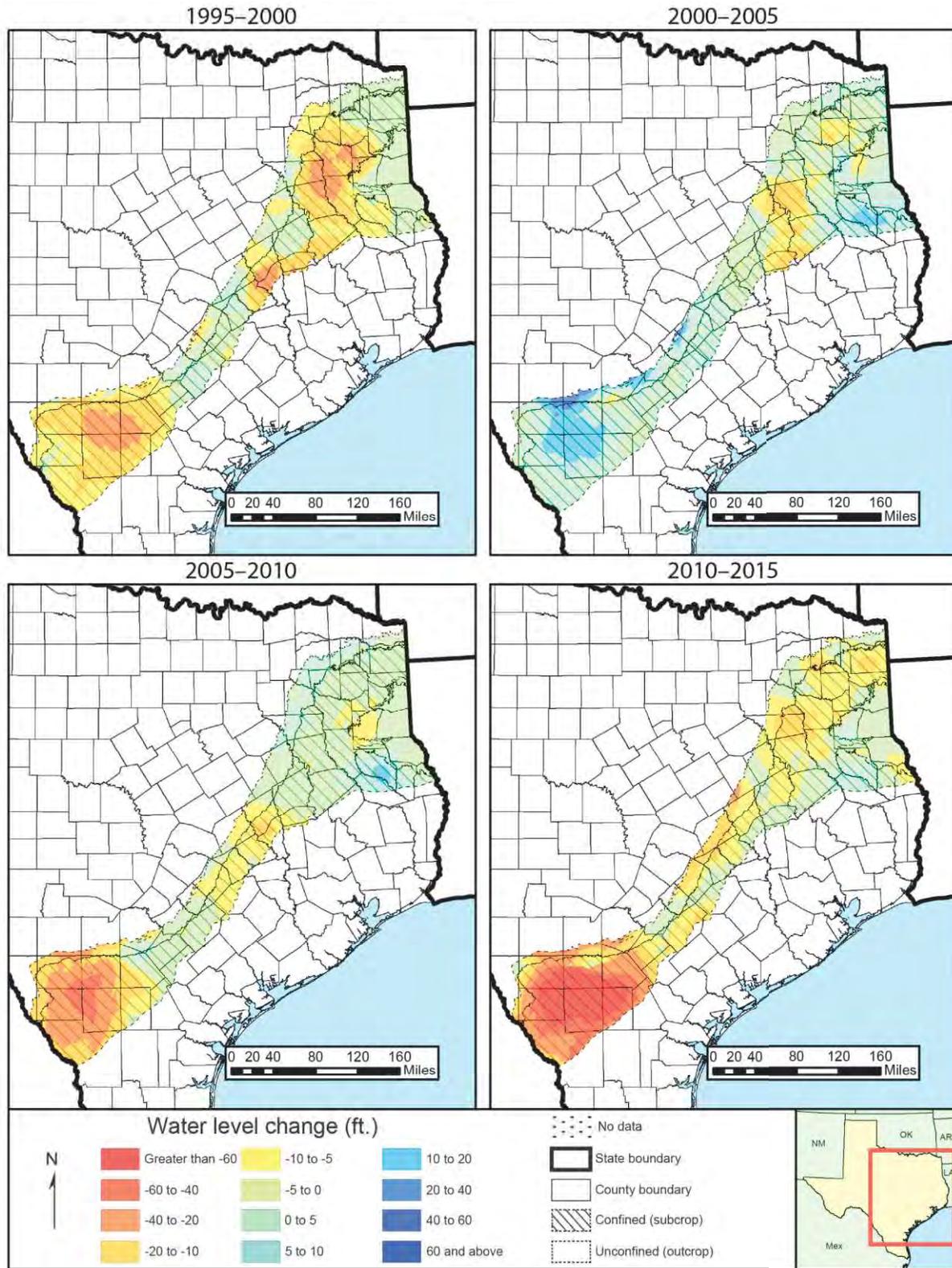


Figure 6-4. Water-level changes in the Carrizo-Wilcox Aquifer, 1995 to 2015.

### **Water quality**

Water quality in the Carrizo-Wilcox Aquifer (Figure 6-5) shows isolated areas of slightly saline to moderately saline groundwater in the eastern and central portions of the aquifer and more widespread areas of slightly to moderately saline groundwater in the southwest. Groundwater in the unconfined area is hard and typically has total dissolved solids concentrations less than 1,000 milligrams per liter. Groundwater in the confined area of the aquifer is generally softer and has total dissolved solids concentrations less than 1,000 milligrams per liter except in the southern and western portions of the aquifer. Parts of the aquifer in the Winter Garden area and in parts of Brazos County are slightly to moderately saline, with total dissolved solids concentrations ranging from 1,000 to 7,000 milligrams per liter.

High iron and manganese content in excess of secondary drinking water standards is characteristic of the deeper subsurface portions of the aquifer. Radionuclides are found at concentrations exceeding drinking water standards in limited areas in the south and central outcrop regions (Reedy and others, 2011).

Texas Aquifers Study  
 Aquifer Summaries: Carrizo-Wilcox Aquifer

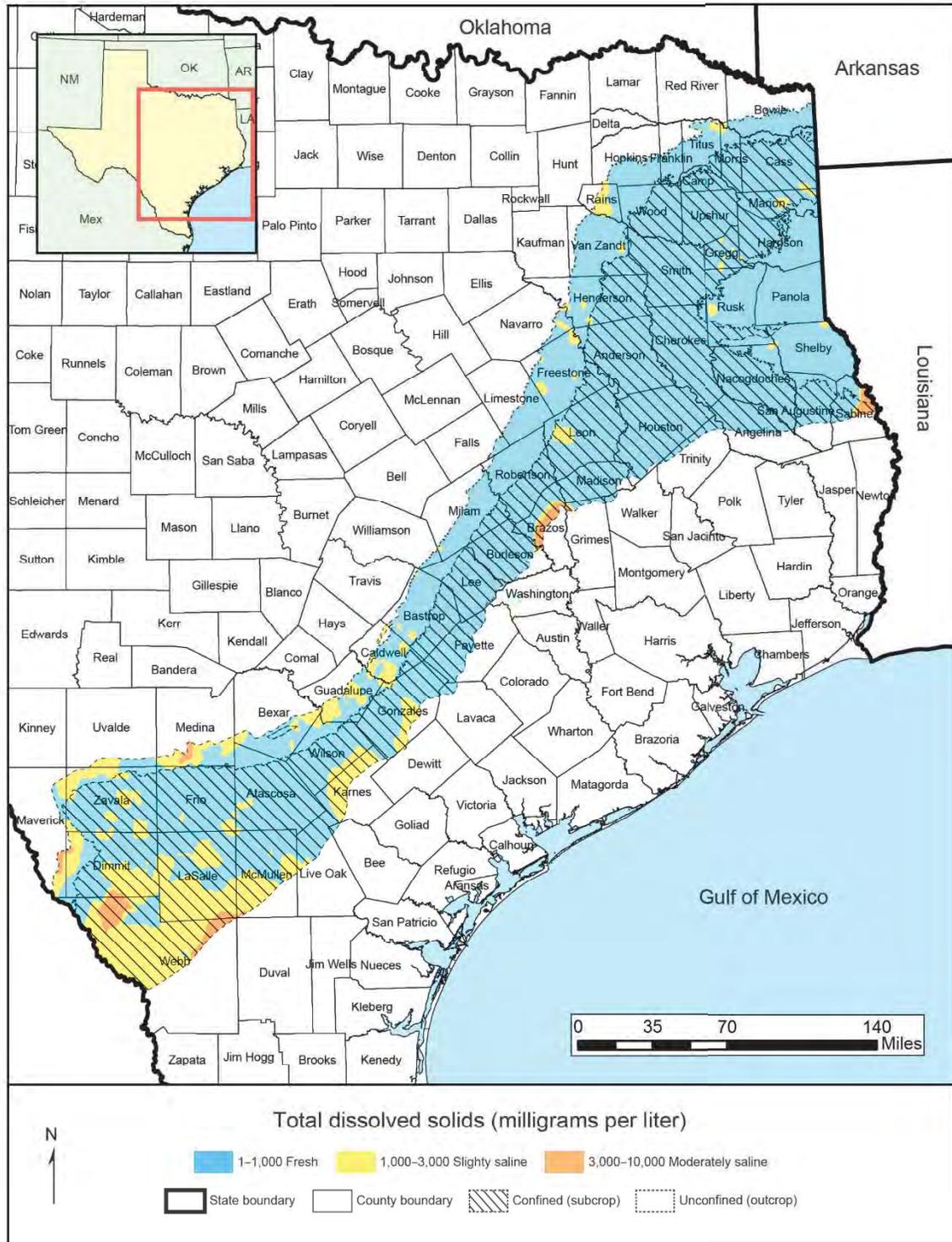


Figure 6-5. Total dissolved solids in the Carrizo-Wilcox Aquifer.

7/25/2021

Sriram Solairaj  
JGS Resources LLC.

I have completed a geological study of the Days Chapel area where Trueblood Resources is developing an oil layer in the Carrizo Sand. This look extended to the west as far as the Camp Hill Field and east to the Slocum Field to capture the five water supply wells that fall within the 5-mile radius of investigation. This work resulted in the attached structure map at the top of the Carrizo Sand. The attached cross-section exhibits correlation between the top of the Carrizo Sand and the Lower Carrizo Sand with the Top of Wilcox being base of Lower Carrizo sand.

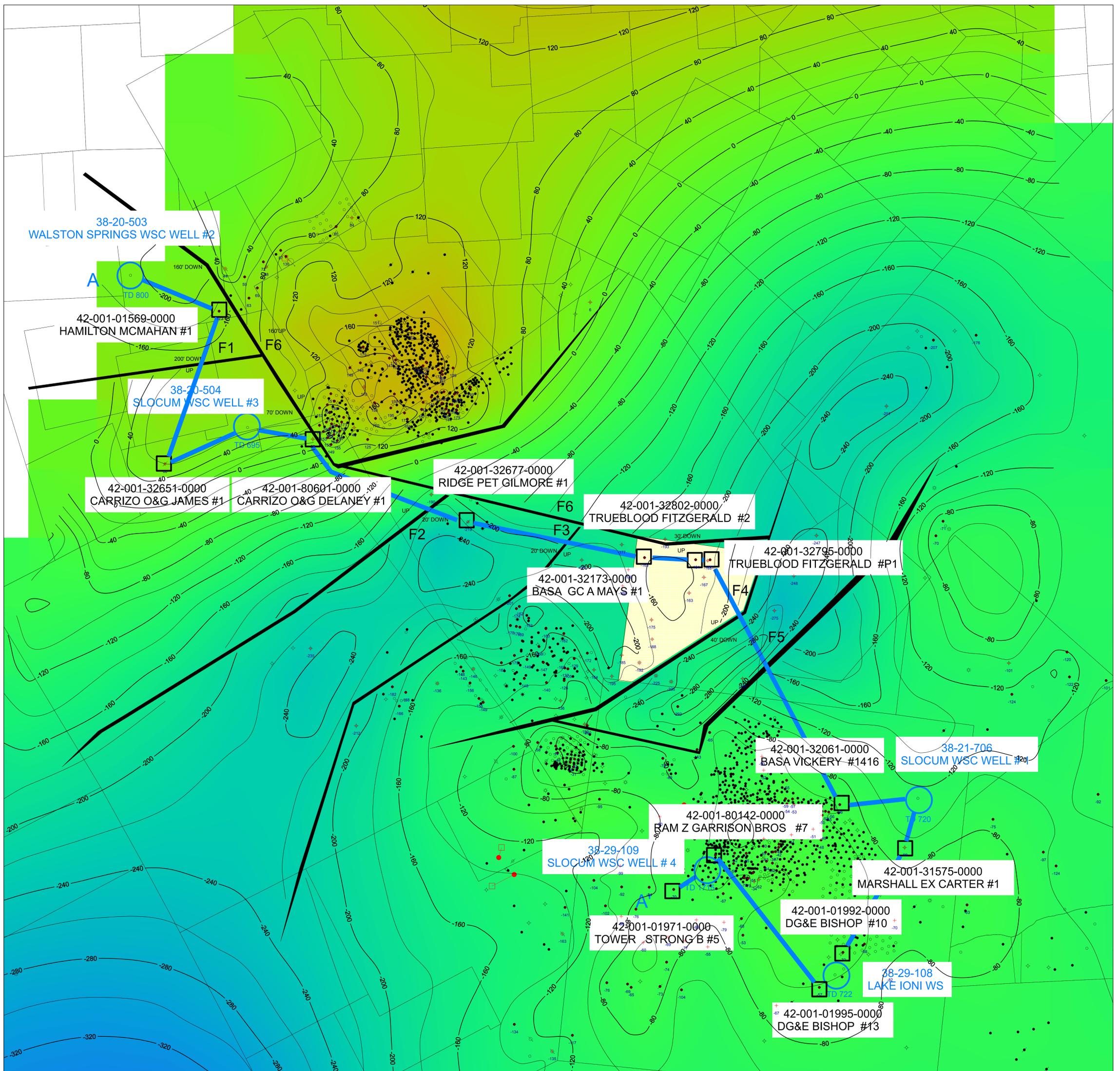
Clearly the Days Chapel Field area is separated from the three water supply wells to the southeast by immediate well-defined faults. The area is bounded on north, east and southeast by 50' (avg) faults (F4, F6) that were critical to trapping the oil in this field. As you move away towards the three water supply wells you cross another 50'(avg) fault (F5) on the east side of the graben. The water supply wells are in the up-thrown Slocum Field block with two wells near the estimated oil-water contact defining the field limits and the other 35' down-dip of that contact.

The two wells to the west of the Days Chapel Field area are west of a fault bounded graben (F3, F2) which represents a significant structurally low area separating the two areas. These well - formed low areas are common and are the result of salt with-drawing during salt deformation creating these large depressions. The farthest west water supply well is even more clearly separated where the faults (F1) are much larger and exhibit 200' of displacement in the graben. Both of these wells are down-thrown to the Camp Hill Field to the north with displacements of 70' to 160'.

The overall conclusion is that the upper Carrizo oil zone in the Days Chapel area is not geologically connected to any of the water supply wells within a five mile radius and therefore poses no risk to the water supply from such wells.

Hal Hawthorne  
Geologist  
Hawthorne Oil and Gas

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hal@hawthorneog.com

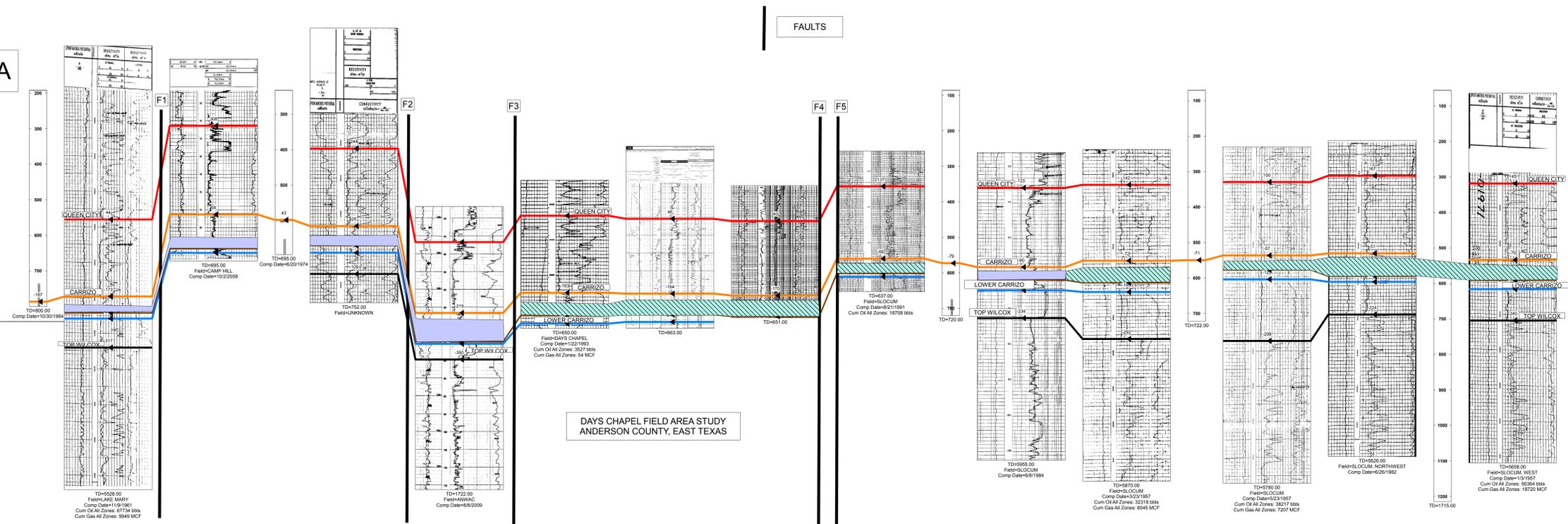


STRUCTURE MAP TOP CARRIZO  
CI 20'

DAYS CHAPEL FIELD AREA  
ANDERSON COUNTY, EAST TEXAS

382053 3656 ft 420101569000 6156 ft 420113261000 3453 ft 382554 2541 ft 420118001000 6728 ft 420112877000 6910 ft 420113213000 1961 ft 420112862000 554 ft 420112795000 10539 ft 420112081000 3009 ft 420113081000 3821708 1937 ft 420115750000 4628 ft 420119920000 906 ft 3829108 766 ft 420119960000 6410 ft 420118142000 574 ft 3829109 1558 ft 420119710000

WALSTON SPRINGS WSC WALSTON SPRINGS WSC-2 HAMILTON, D. W. MCKIMMAN, H. M. I. CARRIZO OIL & GAS JAMES I. SLOCOM WSC SLOCOM WSC-3 SLOCOM WSC SLOCOM WSC-4 SLOCOM WSC SLOCOM WSC-5 SLOCOM WSC SLOCOM WSC-6 SLOCOM WSC SLOCOM WSC-7 SLOCOM WSC SLOCOM WSC-8 SLOCOM WSC SLOCOM WSC-9 SLOCOM WSC SLOCOM WSC-10 SLOCOM WSC SLOCOM WSC-11 SLOCOM WSC SLOCOM WSC-12 SLOCOM WSC SLOCOM WSC-13 SLOCOM WSC SLOCOM WSC-14 SLOCOM WSC SLOCOM WSC-15 SLOCOM WSC SLOCOM WSC-16 SLOCOM WSC SLOCOM WSC-17 SLOCOM WSC SLOCOM WSC-18 SLOCOM WSC SLOCOM WSC-19 SLOCOM WSC SLOCOM WSC-20 SLOCOM WSC SLOCOM WSC-21 SLOCOM WSC SLOCOM WSC-22 SLOCOM WSC SLOCOM WSC-23 SLOCOM WSC SLOCOM WSC-24 SLOCOM WSC SLOCOM WSC-25 SLOCOM WSC SLOCOM WSC-26 SLOCOM WSC SLOCOM WSC-27 SLOCOM WSC SLOCOM WSC-28 SLOCOM WSC SLOCOM WSC-29 SLOCOM WSC SLOCOM WSC-30 SLOCOM WSC SLOCOM WSC-31 SLOCOM WSC SLOCOM WSC-32 SLOCOM WSC SLOCOM WSC-33 SLOCOM WSC SLOCOM WSC-34 SLOCOM WSC SLOCOM WSC-35 SLOCOM WSC SLOCOM WSC-36 SLOCOM WSC SLOCOM WSC-37 SLOCOM WSC SLOCOM WSC-38 SLOCOM WSC SLOCOM WSC-39 SLOCOM WSC SLOCOM WSC-40 SLOCOM WSC SLOCOM WSC-41 SLOCOM WSC SLOCOM WSC-42 SLOCOM WSC SLOCOM WSC-43 SLOCOM WSC SLOCOM WSC-44 SLOCOM WSC SLOCOM WSC-45 SLOCOM WSC SLOCOM WSC-46 SLOCOM WSC SLOCOM WSC-47 SLOCOM WSC SLOCOM WSC-48 SLOCOM WSC SLOCOM WSC-49 SLOCOM WSC SLOCOM WSC-50 SLOCOM WSC SLOCOM WSC-51 SLOCOM WSC SLOCOM WSC-52 SLOCOM WSC SLOCOM WSC-53 SLOCOM WSC SLOCOM WSC-54 SLOCOM WSC SLOCOM WSC-55 SLOCOM WSC SLOCOM WSC-56 SLOCOM WSC SLOCOM WSC-57 SLOCOM WSC SLOCOM WSC-58 SLOCOM WSC SLOCOM WSC-59 SLOCOM WSC SLOCOM WSC-60 SLOCOM WSC SLOCOM WSC-61 SLOCOM WSC SLOCOM WSC-62 SLOCOM WSC SLOCOM WSC-63 SLOCOM WSC SLOCOM WSC-64 SLOCOM WSC SLOCOM WSC-65 SLOCOM WSC SLOCOM WSC-66 SLOCOM WSC SLOCOM WSC-67 SLOCOM WSC SLOCOM WSC-68 SLOCOM WSC SLOCOM WSC-69 SLOCOM WSC SLOCOM WSC-70 SLOCOM WSC SLOCOM WSC-71 SLOCOM WSC SLOCOM WSC-72 SLOCOM WSC SLOCOM WSC-73 SLOCOM WSC SLOCOM WSC-74 SLOCOM WSC SLOCOM WSC-75 SLOCOM WSC SLOCOM WSC-76 SLOCOM WSC SLOCOM WSC-77 SLOCOM WSC SLOCOM WSC-78 SLOCOM WSC SLOCOM WSC-79 SLOCOM WSC SLOCOM WSC-80 SLOCOM WSC SLOCOM WSC-81 SLOCOM WSC SLOCOM WSC-82 SLOCOM WSC SLOCOM WSC-83 SLOCOM WSC SLOCOM WSC-84 SLOCOM WSC SLOCOM WSC-85 SLOCOM WSC SLOCOM WSC-86 SLOCOM WSC SLOCOM WSC-87 SLOCOM WSC SLOCOM WSC-88 SLOCOM WSC SLOCOM WSC-89 SLOCOM WSC SLOCOM WSC-90 SLOCOM WSC SLOCOM WSC-91 SLOCOM WSC SLOCOM WSC-92 SLOCOM WSC SLOCOM WSC-93 SLOCOM WSC SLOCOM WSC-94 SLOCOM WSC SLOCOM WSC-95 SLOCOM WSC SLOCOM WSC-96 SLOCOM WSC SLOCOM WSC-97 SLOCOM WSC SLOCOM WSC-98 SLOCOM WSC SLOCOM WSC-99 SLOCOM WSC SLOCOM WSC-100



DAYS CHAPEL FIELD AREA STUDY  
ANDERSON COUNTY, EAST TEXAS

WAYNE CHRISTIAN, CHAIRMAN  
CHRISTI CRADDICK, COMMISSIONER  
JIM WRIGHT, COMMISSIONER



DANNY SORRELLS  
ASSISTANT EXECUTIVE DIRECTOR  
DIRECTOR, OIL AND GAS DIVISION  
PAUL DUBOIS, P.E.  
ASSISTANT DIRECTOR  
TECHNICAL PERMITTING

# RAILROAD COMMISSION OF TEXAS

## OIL AND GAS DIVISION

October 25, 2021

Ken Johnson, P.E.  
Ground Water/UIC Section (6WDDG)  
US EPA Region 6  
1201 Elm Street, Suite 500  
Dallas, TX 75270-2102

Re: Request for Concurrence for Expansion of an Aquifer Exemption  
Trueblood Resources, Inc.  
Fitzgerald (15772) Lease, Slocum (84144-001) Field  
Anderson County, Texas

Mr. Johnson:

Staff of the Railroad Commission ("Staff") received a permit application from Trueblood Resources, Inc. for an injection well for an enhance oil recovery project in the Slocum field on April 21, 2021. Staff finds that the project includes water with less than 10,000 parts per million total dissolved solids and, therefore, requires expansion of an existing aquifer exemption for the Slocum field. The expansion of the aquifer exemption will not include any portion of an aquifer that is being used as a drinking water source.

Staff attaches the following hereto for your review: the permit application and its attachments, a draft permit, an Aquifer Exemption Checklist and its attachments and the March 29, 1982, letter from US EPA Region 6 to the Commission which outlines the process for expansion of an aquifer exemption for oil and gas production zones in Texas. Staff requests your concurrence for this aquifer exemption expansion within five working days.

If you have any questions, you may contact me at 512-463-3011 or [sean.avitt@rrc.texas.gov](mailto:sean.avitt@rrc.texas.gov).

Sincerely,

A handwritten signature in blue ink that reads "Sean Avitt".

Sean Avitt, Manager  
Injection-Storage Permits Unit  
Technical Permitting

### Attachments

CC: Lisa Pham, US EPA Region 6 *via Email*  
Arnold Bierschenk, US EPA Region 6 *via Email*  
Dan Brown, US EPA *via Email*

Subject: Request for Aquifer Exemption Field Expansion.

From: Railroad Commission of Texas

To: EPA- District 6

1201 Elm St

Dallas, Texas 75270

**Purpose:**

The Railroad Commission of Texas ("RRC") requests a field extension of the Slocum field. The following is included in this request:

1. Aquifer Exemption Checklist
2. RRC Map Images of Current and Requested field boundary
3. Shapefile Layer (.shp file attached in email)
4. References

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in 40 CFR § 146.3 may be determined to be an "exempted aquifer". Class II wells must meet the criteria under 146.4(a) and criteria specified by least one of the following sections: 146.4(b)(1), 146.4(b)(2), 146.4(b)(3), 146.4(b)(4), or 146.4(c).

Location of proposed aquifer exemption

1. Township, Section, Range, Quarter Section, or other method used to identify the area
  - J. Crawford Survey, A-189, 2453 FWL 498 FNL
2. Latitude and longitude
  - Latitude: 31.656096
  - Longitude: -95.487087
3. Distance to the nearest city/town:
  - Lease is 2.3 miles in a Northwest direction from Slocum.
4. Name of aquifer or portion of aquifer to be exempted:
  - Aquifer to be extended is the Carrizo in the Slocum field
5. Areal extent of the area proposed for exemption:
  - 1.025 Square Miles
6. Depth and thickness of the aquifer:
  - Correlative depth is between 601'-650'. The assumed depth range is between 560' and 670' based on the ground elevation changes
  - Thickness: 49' feet at the subject well.

7. TDS content of the aquifer, including the TDS at the top and bottom of the proposed zone to be exempted, and the locations and depths of all fluid samples taken.

- TDS of aquifer is between 3,000-10,000 ppm.

**1. Must meet the criterion in §146.4(a): The proposed aquifer or portion of the aquifer for which the exemption is requested is not currently used as a drinking water source.**

- a. Are there any public or private drinking water wells within and nearby the proposed well? (Minimum review area of 5 miles)
  - a- Shown in figure one.
- b. Water well table: Table of all inventoried water wells showing: Well Name/#, Owner, (Private/Public), Contact information, Purpose of well (Public Water Supply, Domestic, Irrigation, Livestock, etc.), depth of source water, name of aquifer, well completion data, age of well (if known), and the primary source of well data (Applicant/State/EPA).
- c. Table: Attached below.

State Well Number	Owner	Water Use	Elevation (ft)	Well Depth (ft)	Water Quality Available	Aquifer Code Name	County	Well Type
3821802 - Scanned Documents	Dan Astrowski	Domestic	452	20	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3820502 - Scanned Documents	Al Bryant	Unused	590	20	Y	124QNCT - Queen City Sand of Claiborne G	Anderson	Withdrawal of Water
3821506 - Scanned Documents	A.L. Melton	Domestic	470	24	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3820904 - Scanned Documents	J.C. Hamby	Domestic	420	28	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3821401 - Scanned Documents	D.Clewis	Domestic	490	30	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3829107 - Scanned Documents	Slocum Gas Co.	Industrial	470	31	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3828305 - Scanned Documents	Wayne Ratledge	Domestic	420	42	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3821904 - Scanned Documents	Bruce Doty	Domestic	338	50	Y	124QNCT - Queen City Sand of Claiborne G	Anderson	Withdrawal of Water
3829206 - Scanned Documents	Veiva Caskey	Domestic	405	70	Y	124QNCT - Queen City Sand of Claiborne G	Anderson	Withdrawal of Water
3821507 - Scanned Documents	Arthur Averitte	Domestic	346	82	Y	124QNCT - Queen City Sand of Claiborne G	Anderson	Withdrawal of Water
3828304 - Scanned Documents	R.H. Alfred	Domestic	500	115	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3820905 - Scanned Documents	L.J. Wilson	Domestic	420	203	Y	124QNCT - Queen City Sand of Claiborne G	Anderson	Withdrawal of Water
3828303 - Scanned Documents	W.E. Garland	Domestic	400	229	Y	124SPRT - Sparta Sand	Anderson	Withdrawal of Water
3820504 - Scanned Documents	Slocum WSC Well #3	Public Supply	641	695	N	124CRRZ - Carrizo Sand	Anderson	Withdrawal of Water
3821706 - Scanned Documents	Slocum WSC	Public Supply	494	720	Y	124CRRZ - Carrizo Sand	Anderson	Withdrawal of Water
3829108 - Scanned Documents	Lake Ioni Water Supply	Public Supply	479	722	Y	124CRRZ - Carrizo Sand	Anderson	Withdrawal of Water
3820503 - Scanned Documents	Walston Springs WSC Well #2	Public Supply	600	800	N	124CRRZ - Carrizo Sand	Anderson	Withdrawal of Water
3829109 - Scanned Documents	Slocum WSC Well #4	Public Supply	464	1715	N	124CRRZ - Carrizo Sand	Anderson	Withdrawal of Water
3820605 - Scanned Documents	Tenneco Oil Co.	Industrial	540	1800	N	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3821705 - Scanned Documents	Shell Oil Co.- J.B. Parker No.2	Industrial	440	1810	Y	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3821704 - Scanned Documents	Shell Oil Co.- J.B. Parker No.1	Plugged or Destroye	495	1818	Y	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3820604 - Scanned Documents	Kimball Productions	Industrial	658	1840	Y	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3829106 - Scanned Documents	Tenneco Oil Co.	Industrial	460	1852	N	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3821703 - Scanned Documents	Shell Oil Co.- B.F. Weaver No.1	Industrial	453	1855	Y	124WLCX - Wilcox Group	Anderson	Withdrawal of Water
3829105 - Scanned Documents	Texaco, Inc.	Industrial	500	1925	Y	124WLCX - Wilcox Group	Anderson	Withdrawal of Water

Maps: For all water wells that are screened in the proposed injection interval.

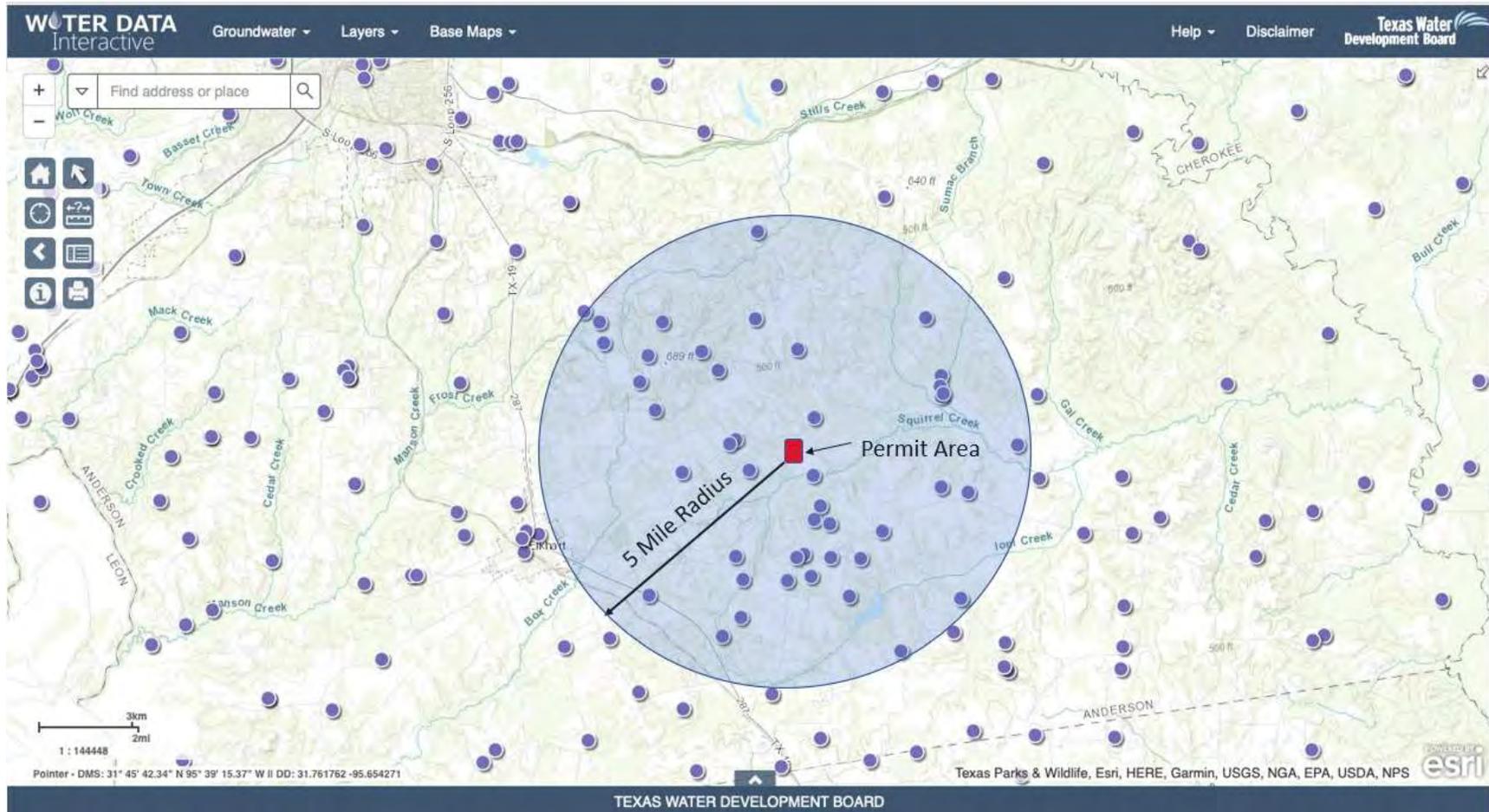


Figure one: Texas Water Development Board Map of water wells within a 5-mile radius of the project area.

# TWDB WATER WELLS IN 5-MILE RADIUS

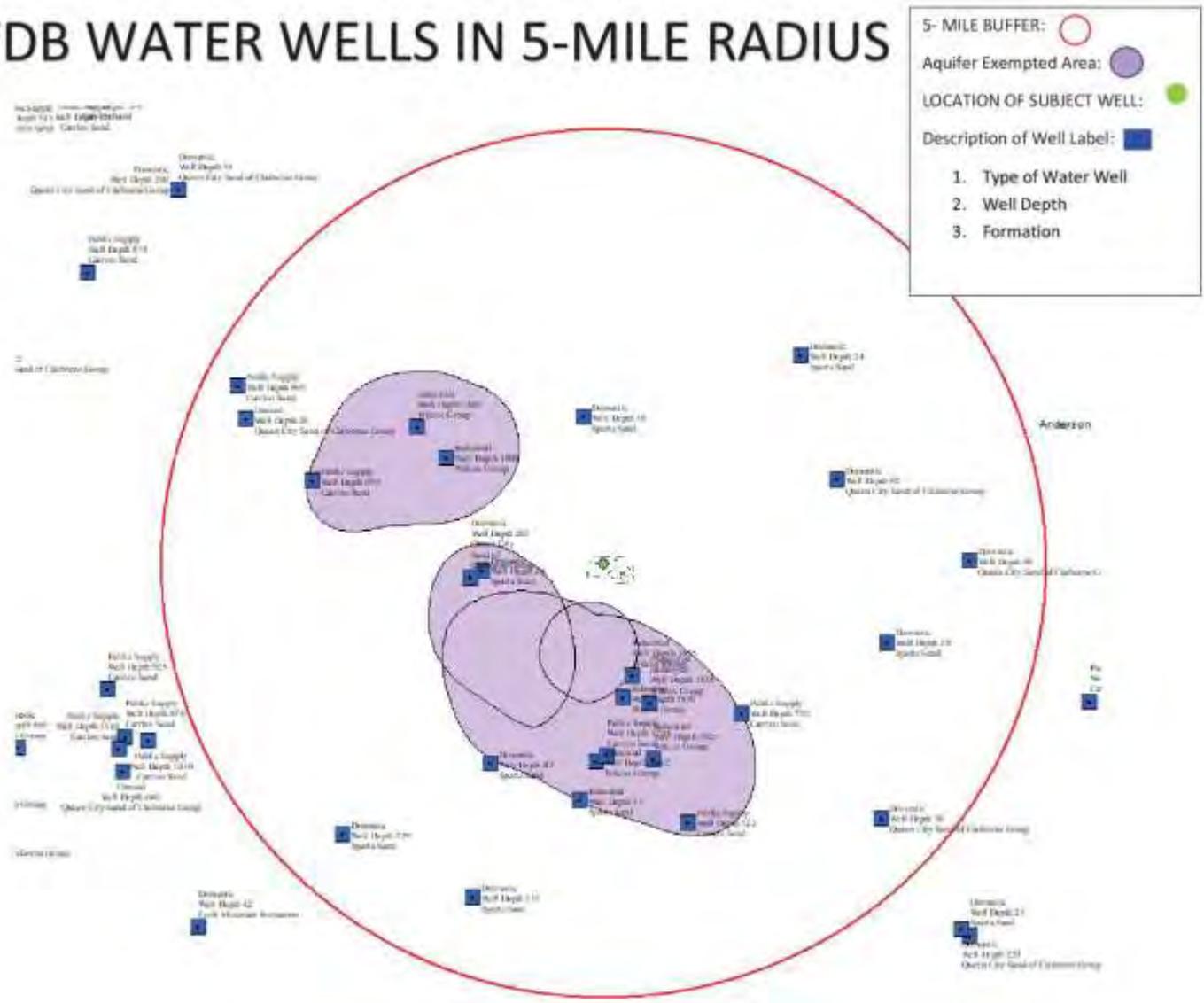


Figure two: RRC Aquifer Exemption Map of project area and water wells within 5-mile radius.

# 5-MILE RADIUS WITH PRODUCTION WELLS

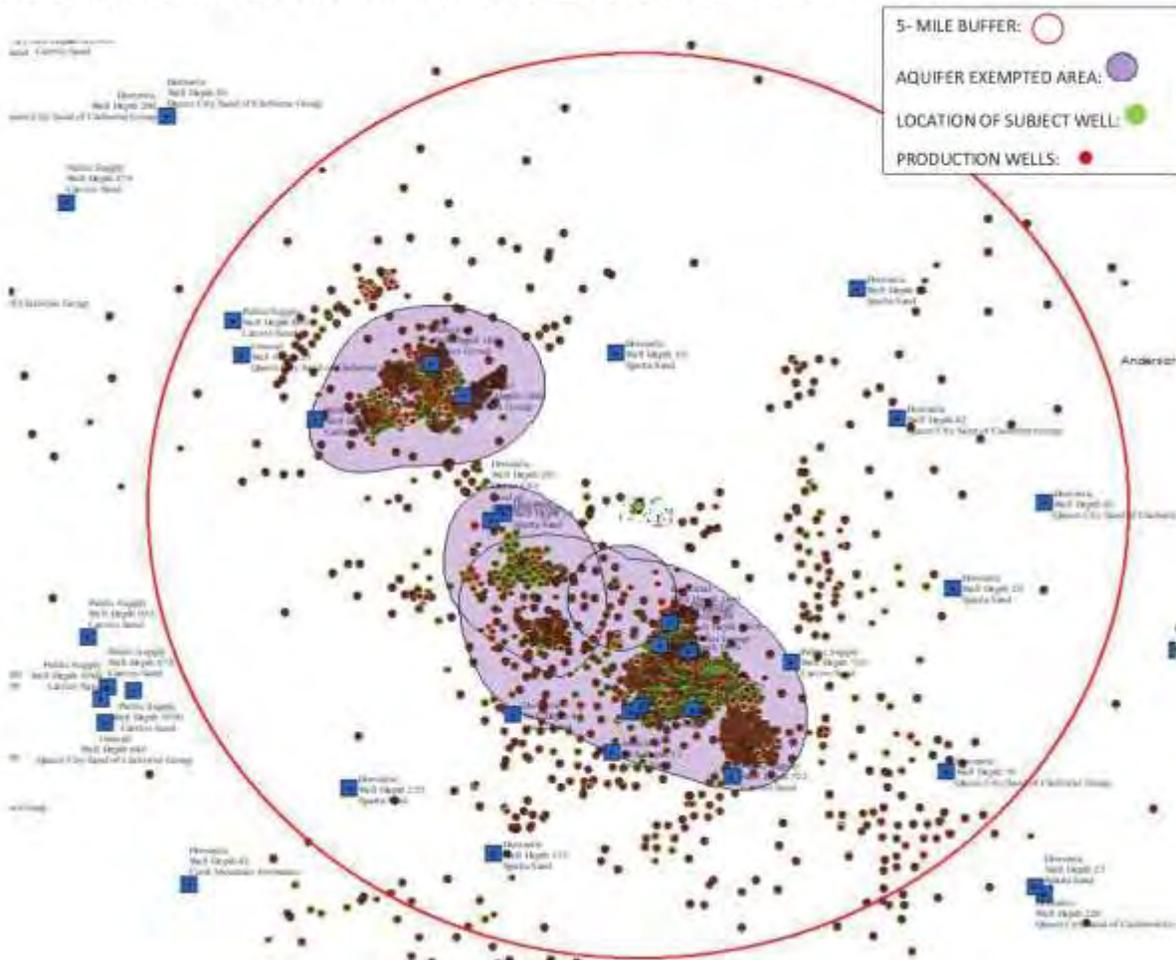


Figure three: RRC Aquifer Exemption Map of project area, production wells, and water wells within 5-mile radius.

- d. Pertinent map(s) visually showing the areal extent of exemption boundary, depth and thickness of the aquifer proposed for exemption, all known subsurface structures such as faults affecting the aquifer, and each of the inventoried water well locations by well # or owner name.

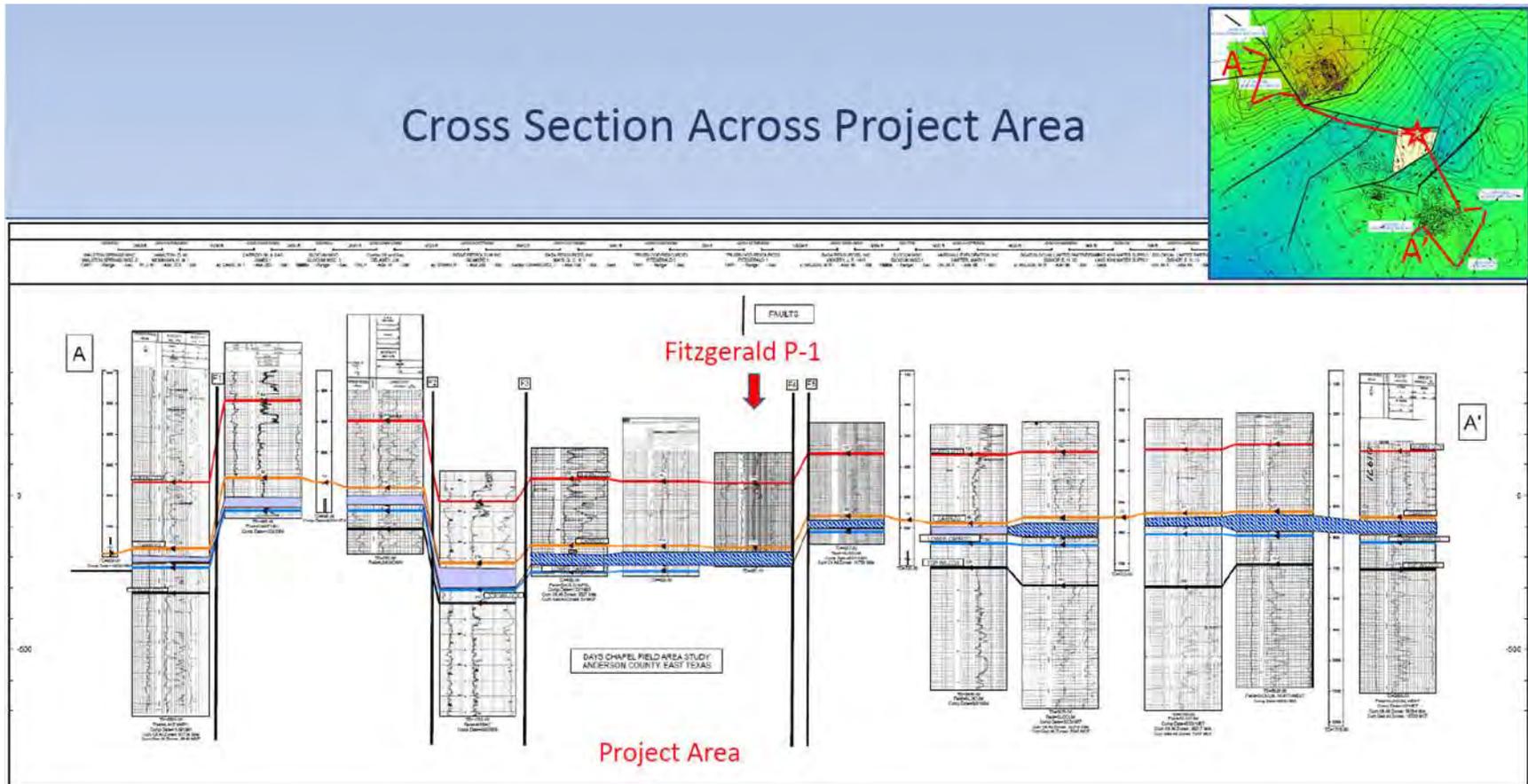


Figure four: Cross section of Slocum field project area.

- e. Map showing the areal extent of exemption boundary, all domestic water wells considered potentially down gradient of the exemption and hydraulically connected to the exemption. If wells are deemed horizontally and/or vertically isolated from the exemption, this should be foot noted on the Table as well. Use arrow(s) to indicate the direction and speed of ground water in the aquifer proposed for exemption.

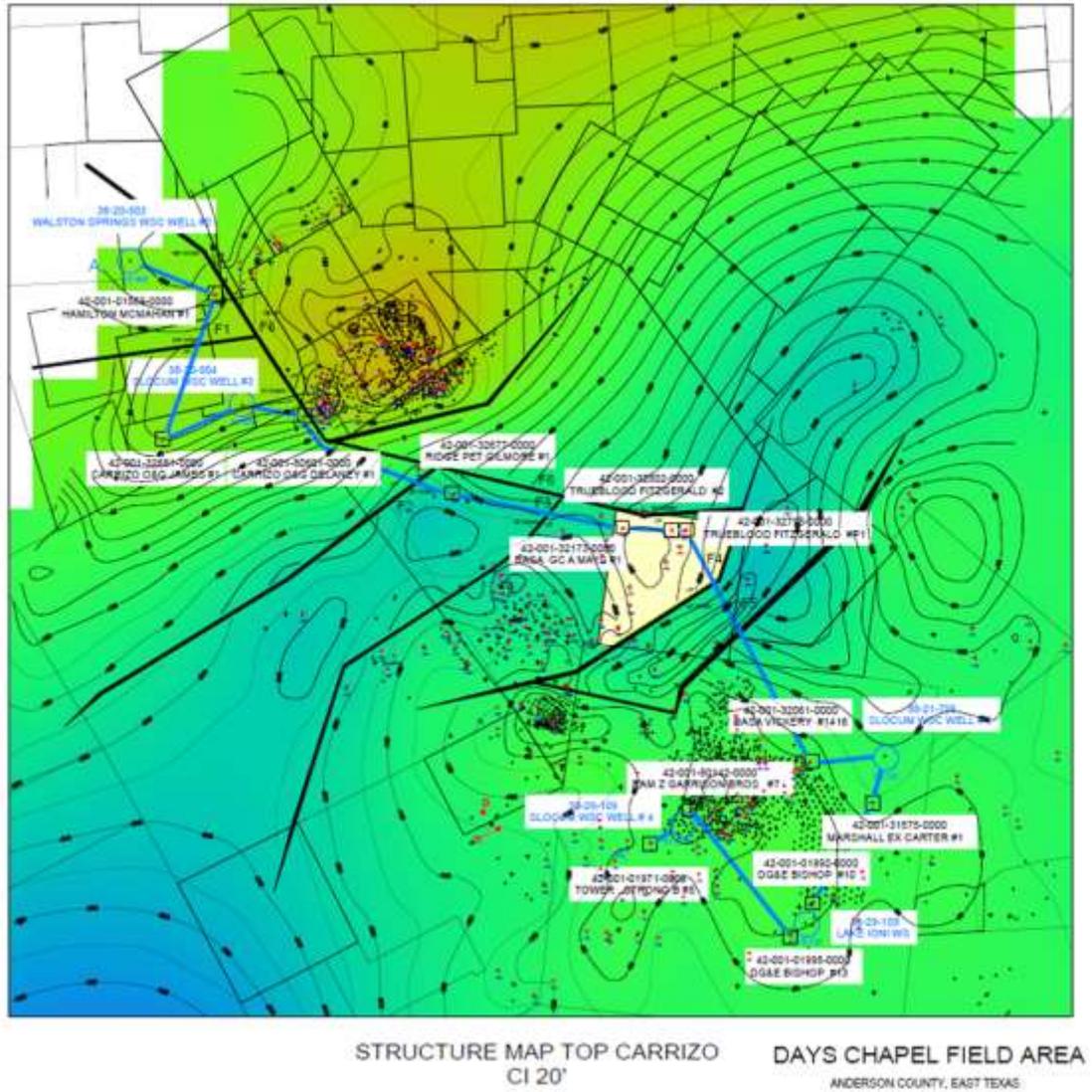


Figure five: Structure map of the top of the Carrizo formation, showing the faults in the project area and the water wells in relation to the substructure.

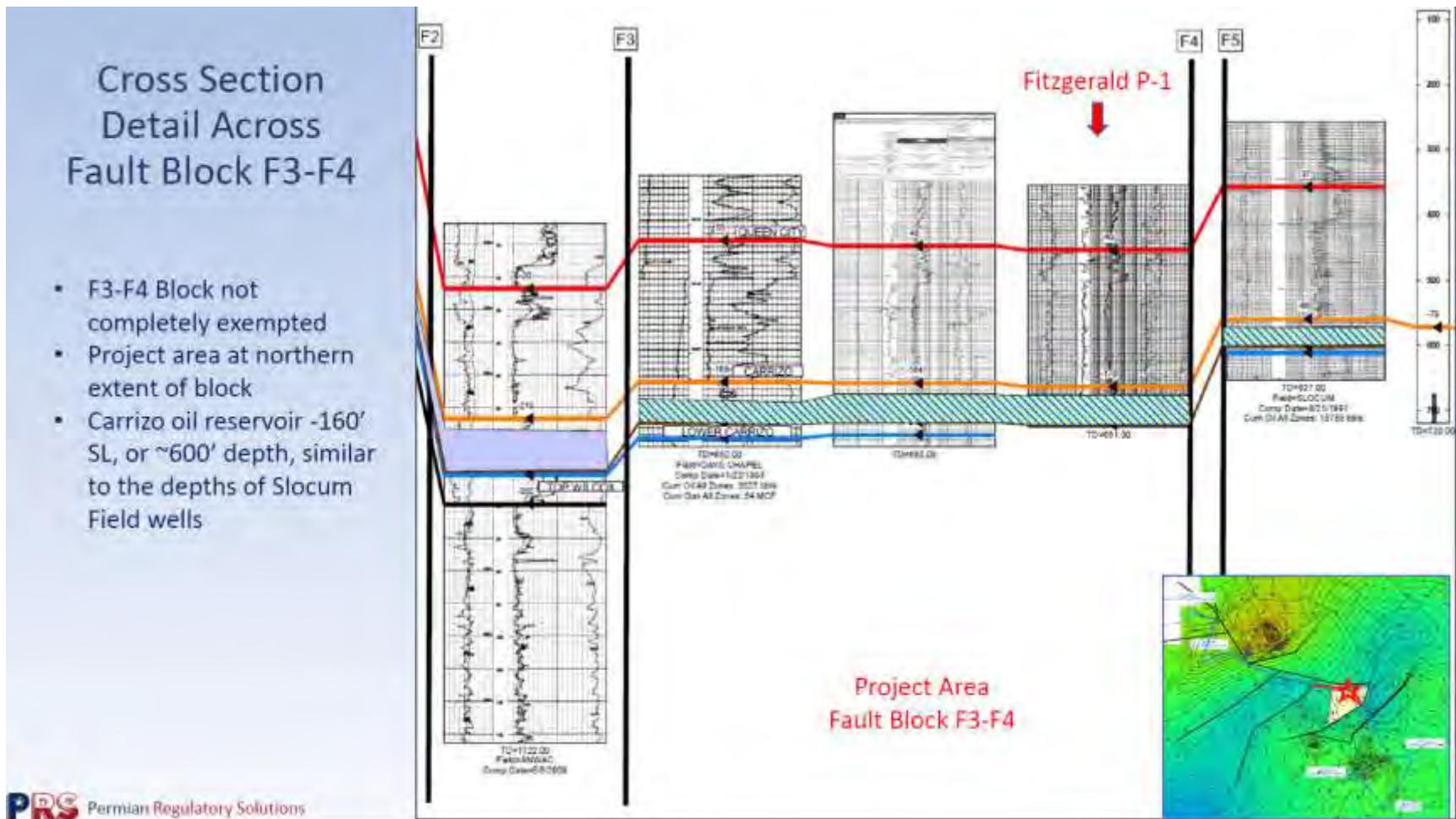


Figure six: Cross section focused on the area between fault block 3 and block 4. This section further shows the throw that will separate the project area from the water wells toward the southeast.

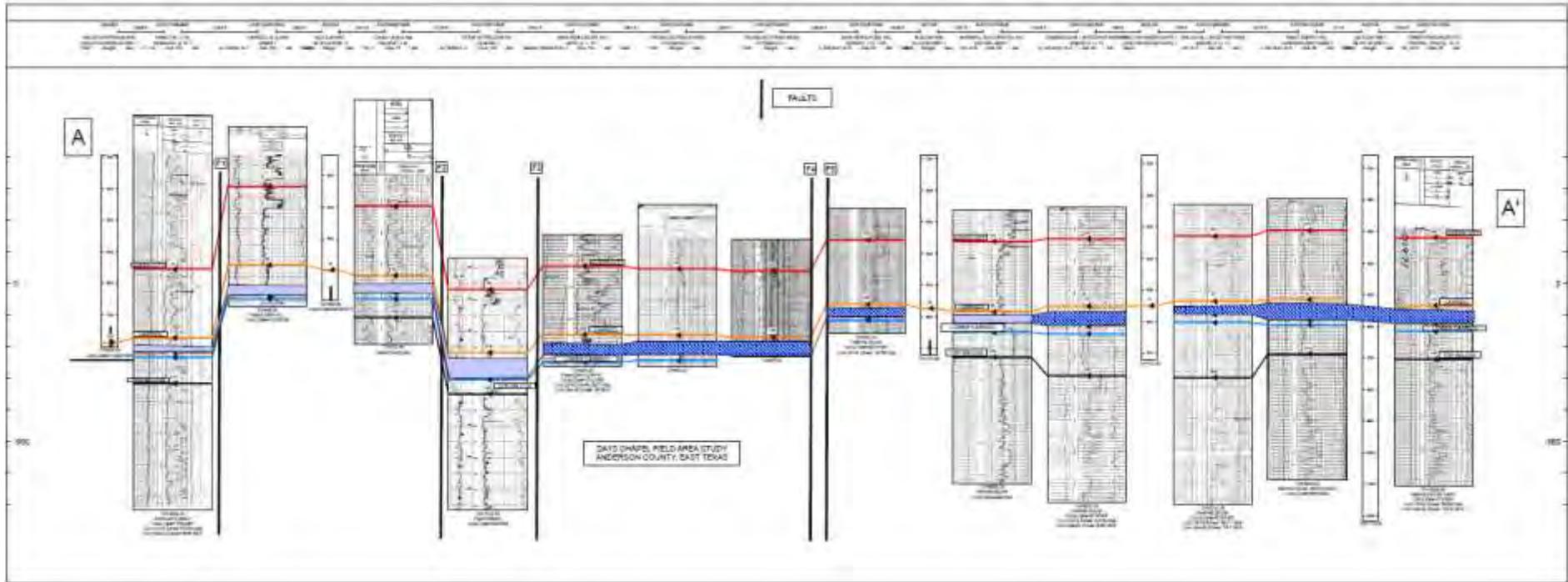


Figure seven: Full cross-section from A to A'.

2. Demonstration that the aquifer or portion thereof is mineral, hydrocarbon or geothermal energy producing per 146.4(b)(1)
  - a. Production history of the well if it is a former production well which is being converted.
  - b. Description of any drill stem tests run on the horizon in question, including information on the amount of oil and water produced during the test.
  - c. Production history of other wells in the vicinity which produce from the horizon in question.
  - d. Description of the project, if it is an enhanced recovery operation including the number of wells and their location.
    - Points A-D are answered in the following geologic and engineering reports below.

7/25/2021

Sriram Solairaj  
JGS Resources LLC.

I have completed a geological study of the Days Chapel area where Trueblood Resources is developing an oil layer in the Carrizo Sand. This look extended to the west as far as the Camp Hill Field and east to the Slocum Field to capture the five water supply wells that fall within the 5-mile radius of investigation. This work resulted in the attached structure map at the top of the Carrizo Sand. The attached cross-section exhibits correlation between the top of the Carrizo Sand and the Lower Carrizo Sand with the Top of Wilcox being base of Lower Carrizo sand.

Clearly the Days Chapel Field area is separated from the three water supply wells to the southeast by immediate well-defined faults. The area is bounded on north, east and southeast by 50' (avg) faults (F4, F6) that were critical to trapping the oil in this field. As you move away towards the three water supply wells you cross another 50'(avg) fault (F5) on the east side of the graben. The water supply wells are in the up-thrown Slocum Field block with two wells near the estimated oil-water contact defining the field limits and the other 35' down-dip of that contact.

The two wells to the west of the Days Chapel Field area are west of a fault bounded graben (F3, F2) which represents a significant structurally low area separating the two areas. These well - formed low areas are common and are the result of salt with-drawing during salt deformation creating these large depressions. The farthest west water supply well is even more clearly separated where the faults (F1) are much larger and exhibit 200' of displacement in the graben. Both of these wells are down-thrown to the Camp Hill Field to the north with displacements of 70' to 160'.

The overall conclusion is that the upper Carrizo oil zone in the Days Chapel area is not geologically connected to any of the water supply wells within a five mile radius and therefore poses no risk to the water supply from such wells.

Hal Hawthorne  
Geologist  
Hawthorne Oil and Gas

512-944-0123  
hal@hawthorneog.com

**Description of the Days Chapel Water Reinjection Project operated by Trueblood Resources**

Days Chapel is a part of the Slocum Dome oil field. Primary production from the Days Chapel area of the Slocum field has been very limited because the oil has a high viscosity (~1000 cP). Primary oil production rates in the Slocum field are very low. Steam has been injected in other parts of the Slocum field to recover this heavy oil. Some of the previous injection permits in the Slocum field included approvals for water, steam, and solvent injection in the equivalent Carrizo sand interval as in our application. A map with the injection/ disposal well permits in the Slocum field along with the location of the water wells in consideration is attached.

Polymer flooding is an alternative to steam flooding with several big advantages such as being simpler and easier to control. Polymer is commonly used to increase the viscosity of the water to more efficiently displace heavy oil. JGS Resources LLC has designed a polymer flood for a very small area of about 13 acres in Days Chapel based in part on log and core data from a new production well (Fitzgerald P1). Both the injection and production wells will be completed in the Upper Carrizo formation (equivalent of 601' to 650' in Fitzgerald P1). Our engineering plan calls for using nine 1.43 acre regular five-spot well patterns to flood an oil zone with a thickness of about 40 feet. The water produced from the nine production wells will be injected into the 16 injection wells in the nine five-spot well patterns. Thus, the net water injection into the 13 acre area will be much less than the 400 bbl/day assumed in the pressure front calculations done by Permian Regulatory Solutions. After a short water injection period, about 1000 ppm polymer will be added to the injected water to increase its viscosity but the balanced injection/production strategy will be continued for the entire flood. This use of confined well patterns is the most efficient way to operate the polymer flood based on sound reservoir engineering principles and extensive polymer flooding practice in Texas and many other places. The same polymer is also commonly used for water treatment and many other applications. Extensive numerical reservoir simulations have been performed by JGS Resources LLC to design and optimize the polymer flood. The predicted duration of the flood to reach its economic limit is less than five years.

The wells in the Days Chapel project area are completed in the Upper Carrizo, which has an average oil saturation of about 45%. The formation water is highly contaminated by toxic components from the crude oil dissolved in the water and thus the water is not safe to drink, and any water wells that might be hydraulically connected to this oil zone should not be used for a drinking water supply. Geological data show the existing water wells within a five mile radius of the project area are separated from the project zone by faults, and/or such wells are completed in different geological zones separated from the Upper Carrizo by impermeable barriers such as shales. Otherwise the water from the water wells would be contaminated and not safe to use for drinking water. The five water wells in consideration all have significantly different salinity (~350 ppm for four wells, and 1000 ppm for the deeper well #109) when compared to the salinity from the Days Chapel produced water sample (650 ppm). This difference in salinity is additional evidence that the Fitzgerald well is geologically isolated from the water supply wells.

- e. Provide a summary of logging indicating that commercially producible quantities of hydrocarbons are present.

**Production History for G.C.Mays 'A' 1 – API 42001321730000**

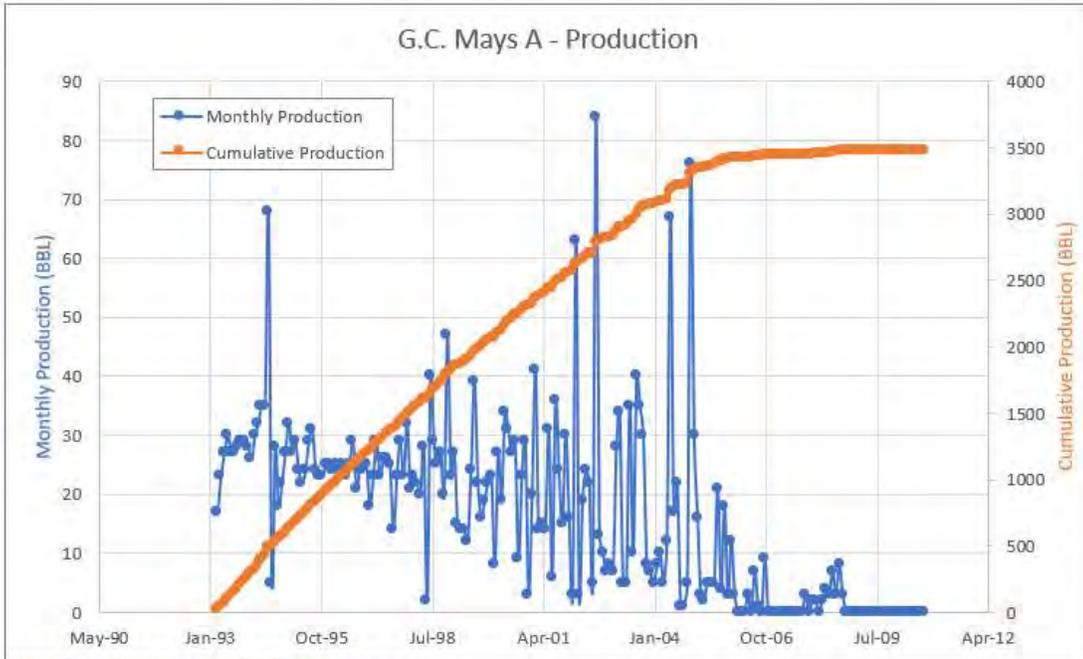
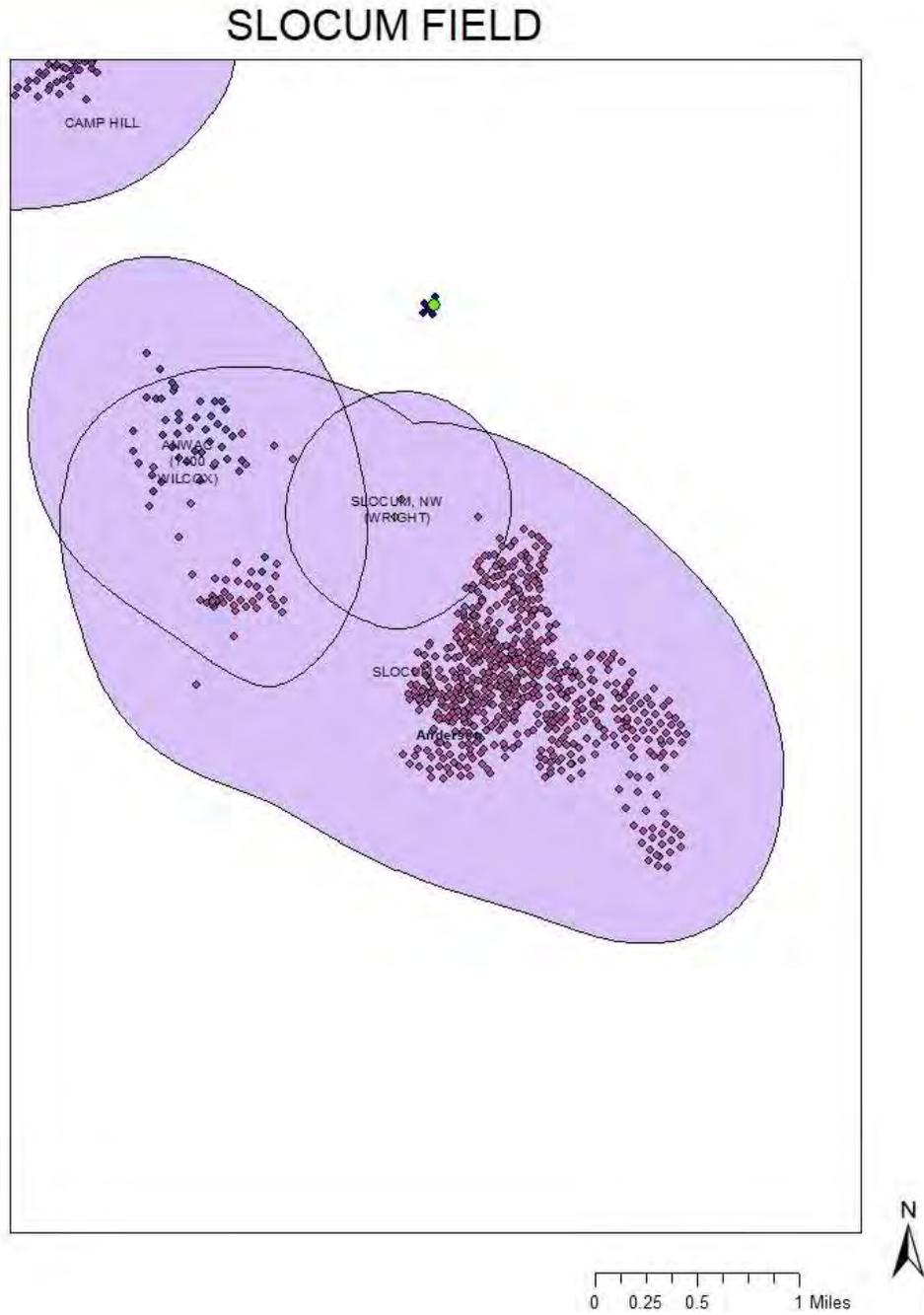


Figure 2. Production History for G.C.Mays 'A' well

Characteristics of the Carrizo formation obtained from the Shell and DG&E core holes and the G.C. Mays #1 well are:

- Oil gravity - 18 degrees to 20 degrees API;
- Viscosity - 800 centipose;
- Porosity - Average of 36%;
- Permeability - 1,500 Millidarcies, and
- Oil saturation - 45%.

# RRC Map Image of Current Boundary





# REFERENCES

1. <https://www3.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION VI  
1201 ELM STREET  
DALLAS, TEXAS 75270

RECEIVED  
R.E.C. OF TEXAS

APR 1 1982

O.G. - U.I.C.  
DALLAS, TEXAS

March 29, 1982

Jerry Mullican  
Director of Underground Injection Control  
Texas Railroad Commission  
Oil and Gas Division  
P. O. Drawer 12967, Capitol Station  
Austin, Texas 78711

Dear Mr. Mullican:

Thank you for meeting with the Environmental Protection Agency (EPA) Headquarters and Regional staff in Washington, D.C. on March 26, 1982, to discuss the Texas Railroad Commission's (TRC) application for the Underground Injection Control (UIC) program under section 1425 of the Safe Drinking Water Act. As a result of this meeting, it is my understanding that the following practices will be implemented regarding aquifer exemptions:

- (1) EPA will recognize and approve aquifer exemptions for all existing production zones with the initial program approval. As stated in your letter of March 21, 1982, you will supply maps of the productive zones.
- (2) If any expansion of current production zones necessitates the extension of an exempted aquifer in the same horizon, the TRC will send the permit application for any proposed injection into this extended area to EPA Region 6 for concurrence prior to issuance of the permit.
- (3) EPA will take action on any application submitted under item #2 above within five working days.
- (4) Extension of aquifer exemptions for production zones will not be granted if the area proposed for exemption is currently being used as a drinking water source. This will be examined in the area of review for any proposed injection well in the area proposed for exemption.
- (5) Aquifer exemptions for any new production fields, or for any non-producing zones, will be submitted for EPA concurrence as outlined in 40 CFR 122.35 (b).

Please inform me immediately of your concurrence or nonconcurrence with the above points. Your letters of March 10, and March 21, 1982, satisfied all other concerns, and your concurrence with the above points will enable us to move forward with full approval of your program.

Sincerely yours,

*Frances E. Phillips*  
for Dick Whittington, P.E.  
Regional Administrator

cc: Alan Levin, WH-550

CONCUR: *J. M. Sullivan* Date: 4/1/82

NONCONCUR: \_\_\_\_\_ Date: \_\_\_\_\_