

**SOURCE WATER ASSESSMENT STUDY  
AND POTENTIAL CONTAMINANT SOURCES INVENTORY  
CITY OF BREWTON, ALABAMA  
PEA RIDGE ROAD WELL**



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- 4. Potentiometric Surface Map of the Lisbon aquifer in 2018
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## **SECTION I INTRODUCTION**

### **1.1 Introduction to Source Water Protection**

The 1986 amendment to the Safe Drinking Water Act requires public water supply systems to delineate source water zones around public water supply wells and to identify potential contaminant sources within the delineated areas. In response to the amendment, the Alabama Department of Environmental Management (ADEM) adopted regulations that became effective January 2, 1996. The regulations are contained in the ADEM's Administrative Code Division 7, "Water Supply Program". The intent of the regulations is to protect public health by minimizing the introduction of contamination into the source water supply.

The source water assessment area (SWAA) boundary delineation is based on the type of aquifer from which a particular well, well field, or spring produces ground water. Either time-of-travel (TOT), flow boundaries, or a predetermined radius will determine the criteria for delineation of a particular SWAA. The aerial extent of the SWAA's boundaries is dependent on the well depth, pumping rate, and characteristics of the aquifer. A delineated area is valid for a single pumping rate. Where the SWAA is estimated based on time-of-travel, an increase or decrease in the well pumping rate will have a direct impact on the size of the SWAA.

### **1.2 Location and System Service Area**

The City of Brewton is located in west-central Escambia County, Alabama, in the south-eastern part of the state. There are approximately 5,200 residents. The Water Works Board of the City of Brewton serves the residents of Brewton, and areas in the immediate vicinity of the City. The system currently has 3,420 meters, 85% of which are residential. The average daily demand is 1.2 million gallons per day, and the peak demand is 2.4 million gallons per day.

### **1.3 Water Supply Inventory**

The existing water system consists of approximately 87-miles of distribution lines, 6 elevated water storage tanks with a capacity of 2,275,000 gallons, and 5 deep supply wells (Sheet 1). The 5 wells are capable of producing 2,900 gallons per minute (1,740,000 in 10 hours). Average daily production is 1,300,000 gallons per day. The City shares emergency connections with the East Brewton and McCall water systems.

In 2020, the City of Brewton contracted with the Donald Smith Company to construct a new supply well. The new well (Pea Ridge Road Well) is located approximately 4 miles northwest of Brewton on Pea Ridge Road (Sheet 1). It is cased to a depth of 654 feet, and has 135 feet of screens set from 654 to 715, 741 to 783, and 855 to 890 feet below land surface.

Public Water Supply Well	Table 1.1 General Well Data					
	<sup>1</sup> Location	Surface Elevation (FT MSL)	Total Depth (FT BGS)	Screened Interval (FT BGS)	Permitted Capacity (GPM)	<sup>3</sup> Aquifer
Well No. 1 ALCO Well	31° 06' 08" 087° 05' 06"	162	731	600 - 650 691 - 721	750	Lisbon
Well No. 2 Hospital Well	31° 07' 32" 087° 04' 23"	151	665	517 - 537 560 - 590 641 - 661	650	Lisbon
Well No. 3 N. Tank Well	31° 09' 27" 087° 03' 45"	200	785	570 - 590 620 - 640 666 - 681 710 - 770	900	Lisbon and Gosport Sand
Well No. 4 Industrial Park Well	<sup>2</sup> 31° 05' 28.0" 087° 06' 48.4"	167	505	434 - 505	300	Crystal River (Moodys Branch) Formation
Well No. 5 Ridge Road Well	<sup>2</sup> 31° 06' 55.7" 086° 56' 06.4"	119	580	540 - 580	300	Lisbon and Gosport Sand
Proposed Well No. 6 Pea Ridge Road Well	<sup>2</sup> 31° 07' 44.8" 087° 07' 07.2"	242	900	654 - 715 741 - 783 855 - 890	1,000 *	Moodys Branch LS, Lisbon and Gosport Sand
<sup>1</sup> Located and mapped by Castleberry and others, 1989; <sup>2</sup> Located by GMC 2021; Ft MSL – feet in mean sea level; Ft BGS – feet below ground surface; GPM – gallons per minute; * proposed permitted rate						

## **SECTION II PHYSICAL SETTING**

### **2.1 Climate**

Long term, average climatic data for Escambia County are available from the weather station in Brewton, Alabama (Brewton 3 SSE, accessed April 1, 2021 at <https://nowdata.rcsc-acis.org/>). For the period of record from 2000 to 2014, the annual average temperatures ranged between 49 degrees F in January and 82 degrees F in July and August. Mean monthly temperature extremes ranged from 27 degrees in January 2003 to 98 degrees F in July 2007. Average annual precipitation was about 58.7 inches. Rainfall is fairly uniformly distributed, with mean monthly rainfall varying between 5 and 6.5-inches per month. However, the months of May, October and November are drier. Mean monthly rainfall during those months is 3.5 to 4.5 inches, a reduction of about 25-30-percent. Remnants of hurricanes occasionally move through the area and result in one to three days of extremely heavy rainfall.

### **2.2 Physiography**

Most of Escambia County is located in the Southern Pine Hills physiographic district of the East Gulf Coastal Plain physiographic section of South Central Alabama (Sapp and Emplainscourt, 1975). The Southern Pine Hills district is characterized by uplands to the north with relief of up to 250 feet. It slopes gradually to the south where relief is less than 100 feet. The land surface ranges from 35 to 400 feet above sea level. Drainage is westward to the Alabama River, and southward to the Conecuh and Yellow Rivers.

### **2.3 Surface Drainage**

Pea Ridge Road is built along a drainage divide. Areas along the southwestern side of the Pea Ridge Road drain towards the Conecuh River proper and its tributaries; areas northeast of Pea Ridge Road drain towards Burnt Corn Creek and its tributaries. Burnt Corn Creek flows south to its confluence with Murder Creek. Murder Creek flows southwest to its confluence with the Conecuh River. The Conecuh River flows south-southwest and crosses the State line near Jay, Florida where it is renamed the Escambia River.

### **2.4 Geologic Setting**

The sediments of the Alabama Coastal Plain form a seaward thickening wedge of clastic and carbonate deposits that dip south to southwest between 20 and 40 feet per mile (Davis, 1987). The northern extent of the Coastal Plain sediments forms a curvilinear band across Alabama. The geologic units beneath Brewton consist of the Citronelle Formation of Pliocene-Pleistocene age, the Miocene Series undifferentiated beneath that, and sediments of the Tertiary system at depth (Szabo and Copeland, 1988). The Citronelle Formation is composed of reddish-brown quartz sand and gravel with beds of varicolored clay. The thickness of the Citronelle Formation in Escambia County ranges from 5-50 feet (Castleberry and others, 1989). Sediments of the Miocene Series underlie the Citronelle Formation. The Miocene sediments in Escambia County are composed of up to 650 feet of sand, silt, clay, gravel, and sandstone. Beneath the Miocene sediments are limestone,

sand, clay, and silts of the Tertiary system (Moody's Branch/Crystal River Formation; Gosport, Lisbon, and Tallahatta Formations).

## **2.5 Hydrogeologic Setting**

There are no major aquifers in the Citronelle Formation in Escambia County (Castleberry and others, 1989). Some lower capacity wells completed in the Citronelle Formation are used for domestic supply and for livestock (Cagle and Newton, 1963). The Citronelle aquifer is hydraulically connected to the underlying Miocene Series and is considered to be part of the Pliocene-Miocene aquifer (Gillett and others, 2004).

The Pliocene-Miocene aquifer is the major source of water for the City of Atmore and the western part of Escambia County. Although thick clay beds may be drilled at individual well sites, available data indicate that the clay units are not continuous over a county wide scale. The entire sequence of sand and gravel in the Miocene Series probably responds to pumping as one unit. Wells completed in the Miocene sediments produce from 50 to 500 gal/min (Castleberry and others, 1989).

The City of Brewton is supplied with public water from 5 wells completed in the Lisbon aquifer. Permeable layers of limestone, sand, and gravel in the Moody's Branch, Crystal River Formation, and the Lisbon, Gosport, and Tallahatta Formations comprise the Lisbon aquifer in central Escambia County. The Lisbon aquifer is well confined by overlying layers of clay and limestone. The primary recharge area for the Lisbon aquifer is many miles north of Brewton in Conecuh County where the formations are exposed at land surface. Some groundwater does move downward from overlying sediments, but vertical flow of groundwater is impeded by layers of low-permeability clay and limestone. Large, long-term withdrawals of ground water have probably resulted in the lowering of the potentiometric surfaces of the Lisbon aquifer.

## **2.6 Specific Capacity Test and Estimation of Hydraulic Parameters**

Well Number 6 is completed in the Lisbon aquifer (Sheet 3). Geophysical logs, lithologic sample description, and water-level data indicate the aquifer is confined at this location. The production well was test pumped on 8/14-15/2020 at 1,000 gallons per minute for 29 hours. The pumping rate was then increased to 1,500 gallons per minute for 9 hours. The recovery of the water level in the well after the pump was shut down was monitored for 12 hours. Water-level changes during the pump test due to barometric pressure change were not corrected for as the barometric correction was significantly less than the magnitude of water-level change resulting from pumping.

The specific capacity of the well was estimated to be 9.34 gallons per minute per foot of drawdown at 1,000 gallons per minute. The hydraulic conductivity of the Lisbon aquifer at well number 6 was estimated to be about 35 ft/d using a simple straight-line analyses of the drawdown data (Lohman, 1979). The equivalent transmissivity of the aquifer is about 4,700 ft<sup>2</sup>/d. The storage coefficient cannot be estimated from single well tests, but should be on the order of 0.0001 (Lowman, 1979, p. 53).

## **2.7 Potentiometric Surface Maps**

A potentiometric surface map is intended to represent the pressure surface in a confined aquifer. As explained in detail by Freeze and Cherry (1979), the concept of a potentiometric surface is “rigorously” valid only for horizontal flow in horizontal aquifers. The pressure surface within a confined aquifer will vary vertically, unless the aquifer materials are homogeneous, isotropic, and the hydraulic conductivity of the aquifer material is much higher than that of the overlying and underlying confining units. Nonetheless, a properly constructed potentiometric surface map can be used to indicate the direction of ground-water flow within an aquifer.

Potentiometric maps for the Lisbon aquifer have been prepared by the U.S. Geological Survey (Castleberry, Moreland, and Scott, 1989) and the Geological Survey of Alabama (Gillette, Raymond, and Moore, 2004). These maps indicate that the ground-water surface of the Lisbon aquifer in the vicinity of Brewton forms a relatively uniform sloping surface towards the southwest. Ground-water withdrawals for public supply and private use in the vicinity of Brewton have probably lowered the ground-water surface, however, the available water-level data are insufficient to allow mapping of the cone of depression. Previous potentiometric surface maps of the Lisbon aquifer were updated using recent water-level measurements (2018 and 2020) from the City of Brewton wells, and that is presented as Sheet 4.

**Table 2.1 Water-level measurements**

<b>Public Water Supply Well</b>	<b>Driller</b>	<b>Total Depth (ft)</b>	<b>Static Water Level (ft BLS)</b>	<b>Land Surface Elevation (msl)</b>	<b>Water Level Elevation ft-MSL</b>	<b>Aquifer(s)</b>
Well No. 1 ALCO Well	Layne (1954)	731	56.6 (2018)	162	105.4	Lisbon
Well No. 2 Hospital Well	Layne (1948)	665	26 (2018)	151	125	Lisbon
Well No. 3 N. Tank Well	Layne (1974)	785	51 (2018)	200	149	Lisbon and Gospport Sand
Well No. 4 Industrial Park Well	Griner (1994)	505	124(2018)	167	43	Moodys Branch/Crystal River Formation
Well No. 5 Ridge Road Well	Griner (1997)	580	+12(2018)	118	130	Lisbon and Gospport Sand
Proposed Well No. 6 Pea Ridge Road Well	Donald Smith (2020)	900	124.8	242	117.2	Moodys Branch, Lisbon and Gospport Sand

### **SECTION III SOURCE WATER PROTECTION AREA**

#### **3.1 Source Water Protection Area Delineation**

##### **3.1.1 Methodology**

The Source Water Assessment Area was delineated by the methodologies set forth in ADEM Administrative Code. Well Number 6 is developed within a porous flow aquifer with a casing depth of 654 feet below land surface. The ADEM Administrative Code 335-7-15-.04 states that the SWPA I may be established as a 400 foot fixed radius, and SWPA II is not required.

##### **3.1.2 Delineation of Source Water Protection Area I**

A fixed 400-foot radius around the wellhead was established to delineate the SWAA I for Well Number 5. The SWAA I is illustrated on Sheet 5.

**SECTION IV POTENTIAL CONTAMINANT SOURCE INVENTORY**

**4.1 Land Use**

Land use within the SWAA is primarily forested and undeveloped land. Table 4.1 lists a summary of major land uses within SWPA I.

<b>Table 4.1 Land use inventory for Well Number 6</b>	
<b>Land Use/Activity</b>	<b>SWPA Area I</b>
Percent owned/controlled by your system	0.25
Percent sewered	0
Percent Timberland/Undeveloped	96
Percent agriculture (pasture)	0
Percent Industrial	0
Percent residential	0
Percent Lakes and Streams	0
Percent Commercial	0.75
Airport (w/fueling system)	0
Hazardous waste facility	0
General Manufacturing	0
Pesticide manufacturing	0
Wood preservative manufacturing	0
Chemical manufacturing	0
Petroleum storage tank farm	0
Approximate Linear Feet of Sanitary Sewer	0
Number of septic systems	0
Residential sites (homes)	0
Roads (number of miles)	0.14
Dry Cleaners	0
Auto repair/gas stations	0
Furniture stripping	0
Machine shop/metal working	0
Photo labs/printers	0
Junkyard	0
Landfill	0
Parking areas	0
Mining	0
Underground fuel storage tank	0
Wells	1
Percent Transportation Corridors	3

## **4.2 Potential Contaminant Source Inventory**

The potential contaminant source inventory was compiled using several sources and methods. Public information available from EPA and ADEM were obtained from the Environmental First Search Technology Corporation. Additional information was obtained from the ADEM UST Release Incident List, and the ADEM Land Division Website. A field reconnaissance of the SWPA area was performed. ADEM and EPA sources are listed by classification in section 4.2.1. Additional sources are listed in section 4.2.2. All inventoried sources are listed in Table 4.2, and located on Sheet 5 by Map ID number.

### **4.2.1 List Review**

Records from the U.S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM) were reviewed for evidence of previous contamination episodes. The following lists were reviewed:

**1. U.S. EPA National Priorities List (NPL) (Updated November 2020)**

*NPL - a list of sites designated as needing long-term remedial cleanup.*

No evidence of a listing in the study area.

**2. U.S. EPA Comprehensive Environmental Response Compensation and Liability Information System List (CERCLIS) (Updated November 2020)**

*CERCLIS - a database maintained by U.S. EPA and the states which lists sites where releases have either been addressed or need to be addressed for Superfund investigation of onsite contamination.*

No evidence of a listing in the study area.

**3. Resource Conservation and Recovery Act (RCRA) Notifiers List of Generators (From State of Alabama Data Base) (Updated January 2021)**

*RCRA - regulates materials and hazardous wastes generated, treated, stored, disposed or distributed by industrial facilities.*

No evidence of a listing in the study area.

**4. Federal Emergency Response Notification System (ERNS) List (Updated February 2021)**

*ERNS - EPA's list of reported CERCLA hazardous substance releases or spills in quantities greater than the reportable quantity, as maintained at the National Response Center.*

No evidence of a listing in the study area.

**5. Alabama Commercial Treatment, Storage & Disposal Facilities (TSDF) for State of Alabama (Updated January 2021)**

*TSDF - a facility regulated under RCRA that treats, stores, and/or disposes of hazardous wastes.*

No evidence of a listing in the study area.

- 6. Alabama Hazardous Substance Cleanup Fund (AHSCF) List (Updated January 2020)**  
*AHSCF - State list of hazardous waste sites identified for investigation or remediation (NPL and CERCLIS equivalents)*

No evidence of a listing in the study area.

**5. State Landfill List**

**8.a. State Permitted Sanitary Landfills (Updated January 2021)**

*State Permitted Sanitary Landfill - a municipal solid waste landfill that receives household waste.*

No evidence of a listing in the study area.

**8b. State Permitted Construction/Demolition Landfills, and Permitted Sanitary Landfills Downgraded to Construction/Demolition Landfills, and/or Industrial Landfills (Updated January 2021)**

*Construction/Demolition Waste - waste building materials, packaging, and rubble resulting from construction, remodeling, repair, or demolition operations on pavements, houses, commercial buildings, and other structures. Such wastes include, but are not limited to, masonry materials, sheet rock, roofing waste, insulation (not including asbestos) rebar, scrap metal, paving materials, and wood products. Uncontaminated concrete, soil, brick, rock and similar materials are excluded from the definition.*

*Industrial Landfill - non-hazardous industrial waste excluding sanitary waste.*

No evidence of a listing in the study area.

**8. Leaking Underground Storage Tank (LUST) List (Updated March 2021)**

*LUST - leaking tanks that store "regulated substances" including hazardous chemical products regulated under CERCLA and petroleum products, and that are more than 10% below the surface of the ground.*

No evidence of a listing in the study area.

**9. Registered Underground Storage Tank (UST) List (February 2021)**

*UST - one or more tanks, including underground connective piping, that store regulated substances, and are more than 10% below the surface of the ground. Regulated substances include hazardous chemical products regulated under CERCLA and petroleum products.*

No evidence of a listing in the study area.

**4.2.2 Field Reconnaissance**

A reconnaissance of the SWPA was conducted. Each potential contaminant source was logged, and surveyed with a Global Positioning System (GPS).

<b>Map I.D.</b>	<b>Name/Location</b>	<b>Phone #</b>	<b>Lat./Long.</b>
1	Belly Tank for emergency generator City of Brewton 1010A Douglas Ave Brewton, Alabama 36426	251-809-1784	31° 07' 48.2" 87° 07' 07.9"
2	Pea Ridge Road Escambia County Engineering and Road Department P.O. Box 848 Brewton, Alabama 36427	251-867-0236	N/A

<b>Table 4.2 Potential contaminant source inventory</b>				
<b>Map Number and Facility ID</b>	<b>Physical Address</b>	<b>Coordinates</b>	<b>ADEM ID Code</b>	<b>Remarks</b>
<b>SWPA I</b>				
1. Brewton Utilities	County Road 41	31° 07' 48.2" 87° 07' 07.9"	63	Belly Tank for Emergency Generator
2. Pea Ridge Road	N/A	N/A	55	Transportation Corridor
ADEM ID numbers are taken from ADEM 1996 Wellhead Protection Regulations				

## **SECTION IV LIMITATIONS**

### **6.1 Limitations**

**GMC** has performed this investigation for the exclusive use of the client, their lending institution and their legal counsel specifically for the subject sites. **GMC** prohibits publication or reuse of any report without **GMC** prior written consent.

The conclusions contained in this report are based upon the condition at the site during the time of investigation.

The information contained in this report was compiled from both field observations made by **GMC** and records review of published and unpublished data. **GMC** cannot be held liable for the accuracy of the data presented in the public and private documents reviewed

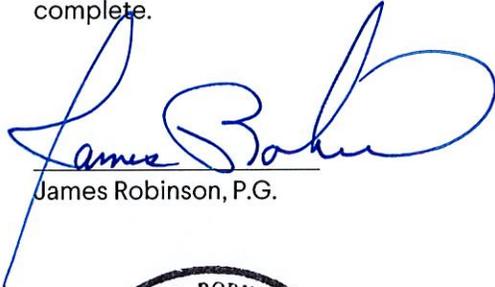
The only warranty made by **GMC** concerning the services provided are that we have used the degree of skill and care ordinarily exercised by similarly situated professionals in our locality. No other warranty, expressed or implied, is made or intended.

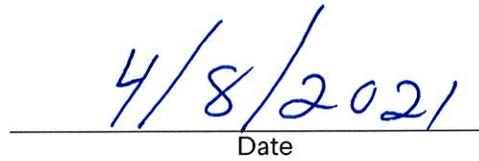
**GMC** will not be required to sign any documents, no matter by whom requested, that would result in **GMC** having to certify, guarantee or warrant the existence or character of conditions that **GMC** cannot ascertain. The CLIENT also agrees not to make resolution of any dispute with **GMC** or payment of any amount due to **GMC** in any way contingent upon **GMC** signing any such certificate.

SECTION VI CERTIFICATION

6.1 Certification

This Source Water Protection Area Delineation and Potential Contaminant Source Inventory were conducted in accordance with standard geologic and engineering practices consistent with similarly situated environmental professionals in this area. All information collected was reviewed and the collecting of information was overseen by either a geologist, hydrogeologist or engineer experienced in subsurface investigation. The information submitted herein, to the best of my knowledge and belief is, true, accurate, and complete.

  
James Robinson, P.G.

  
Date



## SECTION VII REFERENCES

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**APPENDIX A**

Boring Logs, Geophysical Logs, Well Schematics, and Water Quality Data

**City of Brewton, Alabama**  
**Pea Ridge Test Well Lithologic Description of Cuttings**  
**Latitude 31 07 48.52/Longitude 087 07 08.03, elevation 242 AMSL**

<b>Depth Interval (FT BLS)</b>	<b>Lithology from sample bags with depths adjusted by E-Log</b>
0 – 10	<b>Sand</b> , dark yellowish orange (10YR6/6), very fine to medium grained, rounded to subrounded, quartz, silty, some clay.
10 – 20	<b>Sand</b> , light brown (5YR6/4), very fine to medium grained, subrounded, some quartz granules, whiye, yellow, red, silty.
20 – 30	<b>Sand</b> , light brown (5YR6/4), as above, mixed with very light gray clay (N7), some limonite sandstone, moderate reddish brown (10R4/6) to dark reddish brown (10R3/4).
30 – 40	<b>Sand</b> , as above, mixed with more abundant clay, as above, some grayish green (5G5/2) clayey sand.
40 – 60	<b>Sand, as above, less clay</b> , more granules, some pale red purple (5RP 6/2) clay, soft, sandy.
60 – 70	<b>Sand</b> , pale yellowish brown (10YR6/2) to grayish orange (10YR7/4), medium to very fine grained, subrounded to rounded, chert gravel, angular and blocky, clay, very light gray (N7), grayish red (10R4/2), silty.
70 – 80	<b>Sand</b> , moderate yellowish brown (10YR5/4), very fine to medium grained, rounded to subrounded, clay, moderate reddish brown (10R4/6), very light gray (N7), soft, sandy, silty.
80 – 93	<b>Sand</b> , grayish orange (10YR7/4), very fine to very coarse grained, rounded to angular, some granules, angular, clean, trace silt.
<b>93 – 105</b>	<b>Clay</b> , very light gray (N7), moderate reddish brown (10R4/6), sandy, silty, firm.
105 – 140	<b>Sand</b> , grayish orange (10YR7/4), medium to coarse grained, subrounded, some granules, angular, some sity.
140 – 170	<b>Sand</b> , as above, <b>clay</b> as above, becoming more clayey with depth.

**City of Brewton, Alabama**  
**Pea Ridge Test Well Lithologic Description of Cuttings**  
**Latitude 31 07 48.52/Longitude 087 07 08.03, elevation 242 AMSL**

<b>Depth Interval (FT BLS)</b>	<b>Lithology from sample bags with depths adjusted by E-Log</b>
170 – 184	<b>Sand, medium gray (N5) to light olive green (5Y6/1)</b> , very fine to fine grained, rounded, abundant clay and silt, gravel washout.
<b>184 – 216</b>	<b>Clay</b> , medium gray (N5), soft, sandy.
216 – 220	<b>Sand</b> , grayish orange (10 YR 7/4), very fine to medium grained, subrounded, clay washout as above.
220 – 230	<b>Sand</b> , pinkish gray (5YR8/1), very fine to coarse grained, rounded to subrounded, mica, 3% dark minerals.
230 – 240	<b>Sand</b> , grayish orange (10YR7/4), fine to very coarse grained, rounded to angular, gravel up to 0.7 cm, <b>limestone</b> , light gray (N7), firm to brittle, friable, sandy.
240 – 250	<b>Sand</b> , grayish orange (10YR7/4), very fine to medium grained, subrounded, silty.
250 – 280	<b>Limestone</b> , light gray (N7) to medium gray (N5), firm to brittle, friable, sandy, sand, pinkish gray (5YR8/1), fine grained, rounded.
280 – 292	<b>Sand</b> , very light gray (N8), very fine coarse grained, rounded to angular, some gravel, limestone, light (N7) to medium gray (N5), cherty, 10% dark minerals.
292 – 310	<b>Sand and limestone</b> , as above, <b>shale</b> , black, platy.
310 – 320	<b>Sand and limestone</b> , as above, <b>shale</b> , black, platy.
320 – 340	<b>Limestone</b> , yellowish gray (5Y8/1), cherty, <b>shale</b> , grayish olive (10Y4/2).
340 – 347	<b>Limestone</b> , olive gray (5Y3/2), clayey, broken shells, pinkish gray (5YR8/1), very fine grained sand and silt.
347 – 435	<b>Clay</b> , olive gray (5Y4/1), soft and gummy, mixed with shells, traces silt and very fine grained sand.
435 – 475	<b>Broken shells</b> , medium gray (N5), <b>clay</b> , olive gray (5Y4/1), soft.

**City of Brewton, Alabama**  
**Pea Ridge Test Well Lithologic Description of Cuttings**  
**Latitude 31 07 48.52/Longitude 087 07 08.03, elevation 242 AMSL**

<b>Depth Interval (FT BLS)</b>	<b>Lithology from sample bags with depths adjusted by E-Log</b>
475 – 482	<b>Broken shells</b> and <b>clay</b> , medium gray (N5), silt and traces very fine grained sand.
482 – 520	<b>Limestone</b> , medium light gray (N6), blocky, broken shells, sand, very fine grained, rounded, chert, flaky.
520 – 550	<b>Shale</b> , medium gray (N5), platy, silty, 20% dark minerals, <b>sand</b> , medium to light gray (N6-N8), very fine to very coarse grained, some chert granules, rounded to angular.
550 – 600	<b>Limestone</b> , very light gray (N8), blocky, sand, very fine, as above.
600 – 625	<b>Limestone</b> , medium light gray (N6), blocky, broken shells, sand, very fine grained, rounded, <b>shale</b> , black (N1) to dark medium dark gray (N4), platy.
<b>625 – 655</b>	<b>Clay</b> , greenish gray (5GY6/1), silt, sand, pinkish gray, very fine to fine grained, rounded, 5% dark minerals, shale, black, hard.
655 – 720	<b>Sand</b> , yellowish gray (5Y8/1) to light olive gray (5Y6/1), very fine to medium grained, rounded to subrounded, 2 – 10% dark minerals.
720 – 730	<b>Sand</b> , pale yellowish brown (10YR6/2), grayish orange (10YR7/4), very fine to medium grained, rounded to subrounded, some coarse grained to gravel size, silt, 1% dark minerals.
730 – 740	<b>Sand</b> , pale yellowish brown (10YR6/2), very fine to fine grained, 1% dark minerals, silt, <b>Clay</b> , greenish gray (5GY6/1), soft.
740 – 760	<b>Sand</b> , light olive gray (5Y5/2), very fine to fine grained, rounded, 1% dark minerals, some silt, clean.
760 – 770	<b>Sand</b> , as above, 3% dark minerals.
770 – 780	<b>Sand</b> , light olive gray (5Y5/2), fine to medium grained, some granules, rounded, 1% <b>shale</b> , <b>black</b> (N1), some silt.
780 – 785	<b>Sand</b> , light gray (N7), very fine to very coarse grained, rounded to angular, clean, less shale and silt.

**City of Brewton, Alabama**  
**Pea Ridge Test Well Lithologic Description of Cuttings**  
**Latitude 31 07 48.52/Longitude 087 07 08.03, elevation 242 AMSL**

<b>Depth Interval (FT BLS)</b>	<b>Lithology from sample bags with depths adjusted by E-Log</b>
785 – 800	<b>Clay</b> , olive gray (5Y4/1), <b>shale</b> , greenish gray (5GY6/1), soft, some <b>sand</b> , very fine grained, rounded to angular.
800 – 810	<b>Sandy Clay</b> , olive gray (5Y4/1), sand and shale as above.
810 – 840	<b>Clay and shale</b> , olive gray (5Y4/1), shale is platy and firm.
840 – 860	<b>Sand and shale</b> , light gray to medium gray (N7-N6), sand is fine to medium grained, rounded, 3% dark minerals.
860 – 870	<b>Sand and shale</b> , very light gray (N8), as above.
870 – 880	<b>Sand</b> , yellowish gray (5Y8/1), very fine to fine grained, rounded, 10% dark minerals, silty, <b>shale</b> washout as above.
880 – 890	<b>Sand</b> , as above, some <b>clay</b> .
890 – 900	<b>Sand</b> , yellowish gray (5Y7/2), very fine to very coarse grained, rounded to angular, some granules, <b>shale</b> as above.
900 – 930	<b>Sand</b> , yellowish gray (5Y7/2), very fine grained, rounded, <b>shale</b> as above.
930 – 940	<b>Sand</b> , light olive gray (5Y5/2), very fine to fine grained, rounded, 5% dark minerals, <b>shale</b> as above.

# Donald Smith Company, Inc.

Water Wells • Pumps & Service • Utility Division



Headland, AL Office

Shannon, MS Office

746 E. Main St.  
Headland, AL 36345  
Ph. (334) 693-2969  
Fx. (334) 693-3089

772 Romie Hill Ave.  
Shannon, MS 38868  
Ph. (662) 767-9777  
Fx. (662) 767-3107

**OWNER:** City of Brewton

**WELL ID:** Pea Ridge Road

**COUNTY:** Escambia

**STATE:** AL

**LOCATION:**  
1 mile south of AL Hwy 41 on the east side  
of Pea Ridge Rd

**ELEV:** 242'

**LAT:** 31° 07' 48.52" N

**LONG:** 87° 07' 08.03" W

**DATE:** 5-20-20

**RUN #:** 1

**TYPE LOG:** Gamma/ Resistivity

**SURFACE CASING SET:** 184' of 24"

**TEST HOLE DIA:** 11"

**LOG MEAS. FROM:** Ground Level

**DRILLER TD:** 964'

**LOGGER TD:** 964'

**RIG:** Gardner Denver 2500

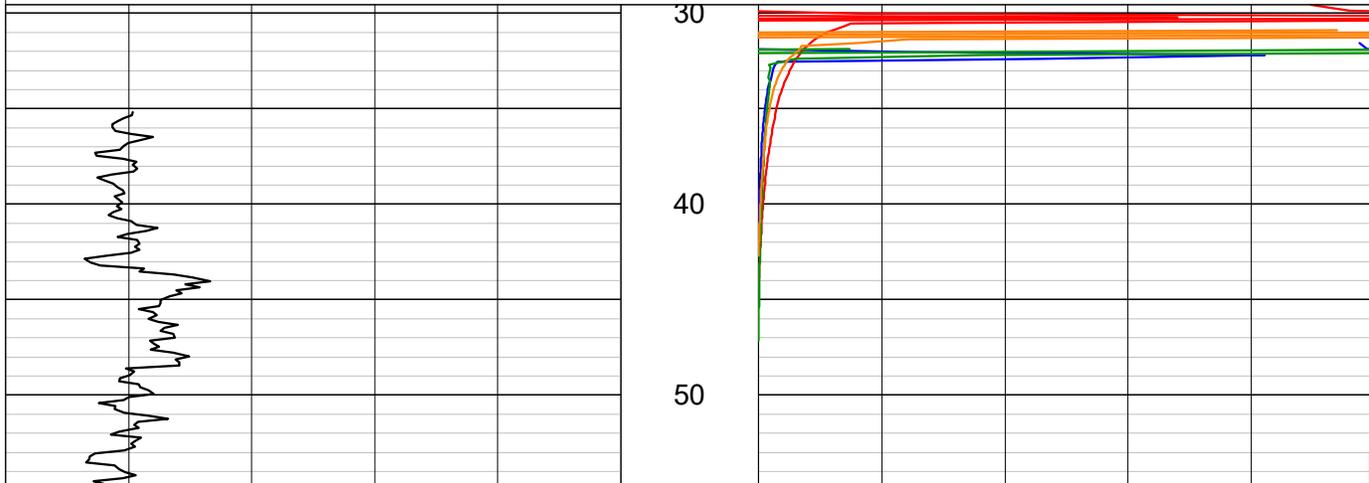
**DRILLER:** Lennie Watson

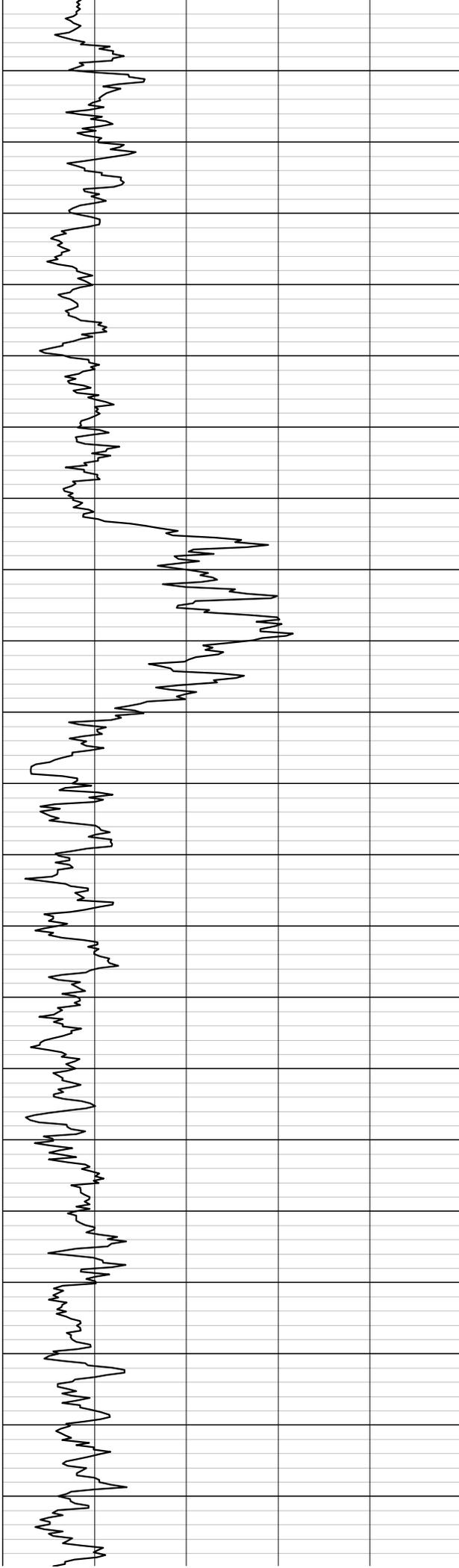
**LOGGER:** Hunter Bower



**NOTES:**

GR	Depth	N16
0	0	0
Cps	1ft:120ft	Ohm.m
50		N64
		0
		Ohm.m
		N8
		0
		Ohm.m
		N32
		0
		Ohm.m
		150





60

70

80

90

100

110

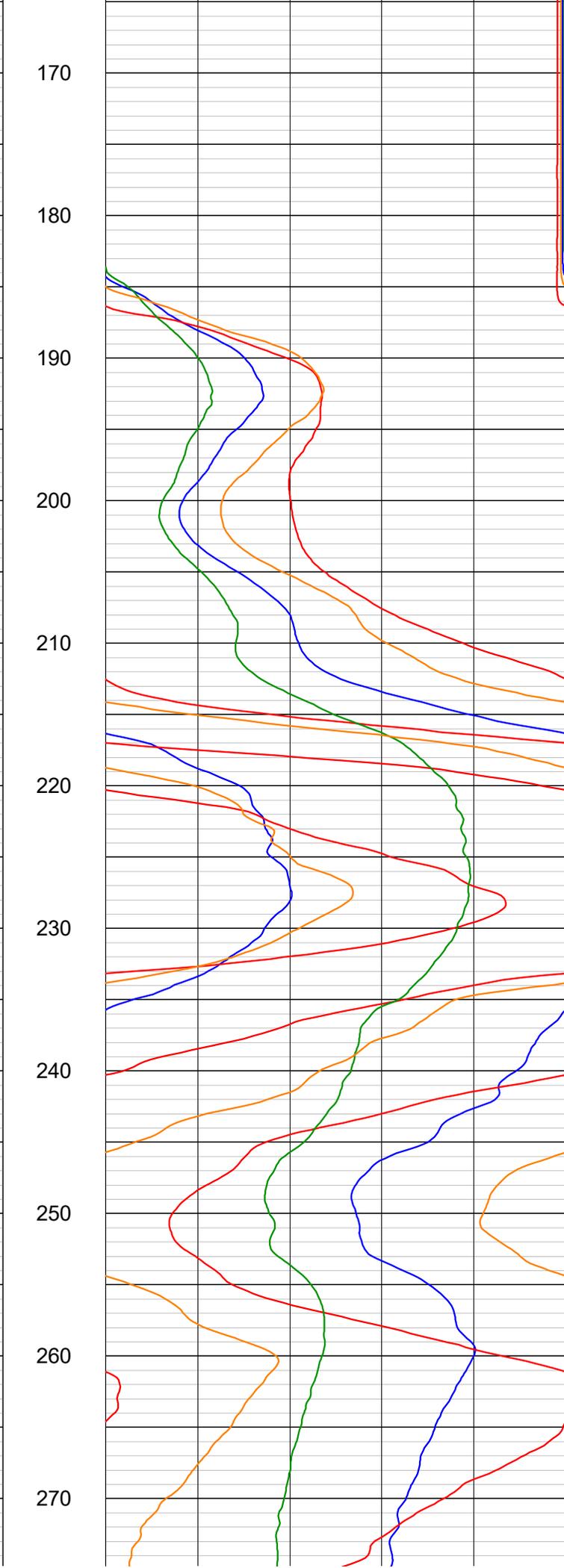
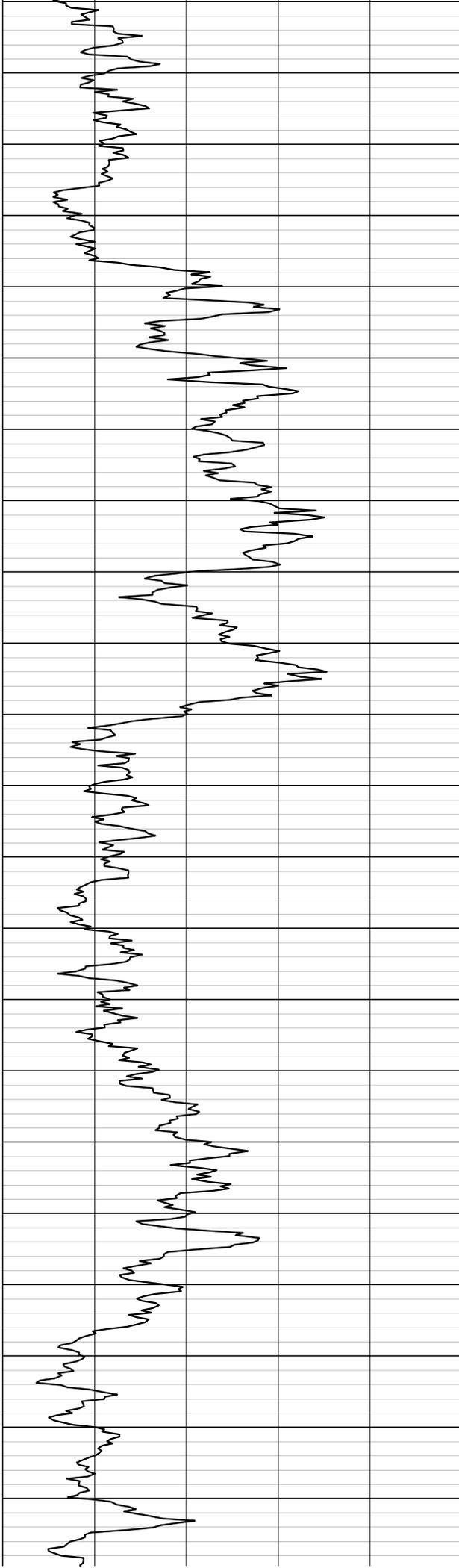
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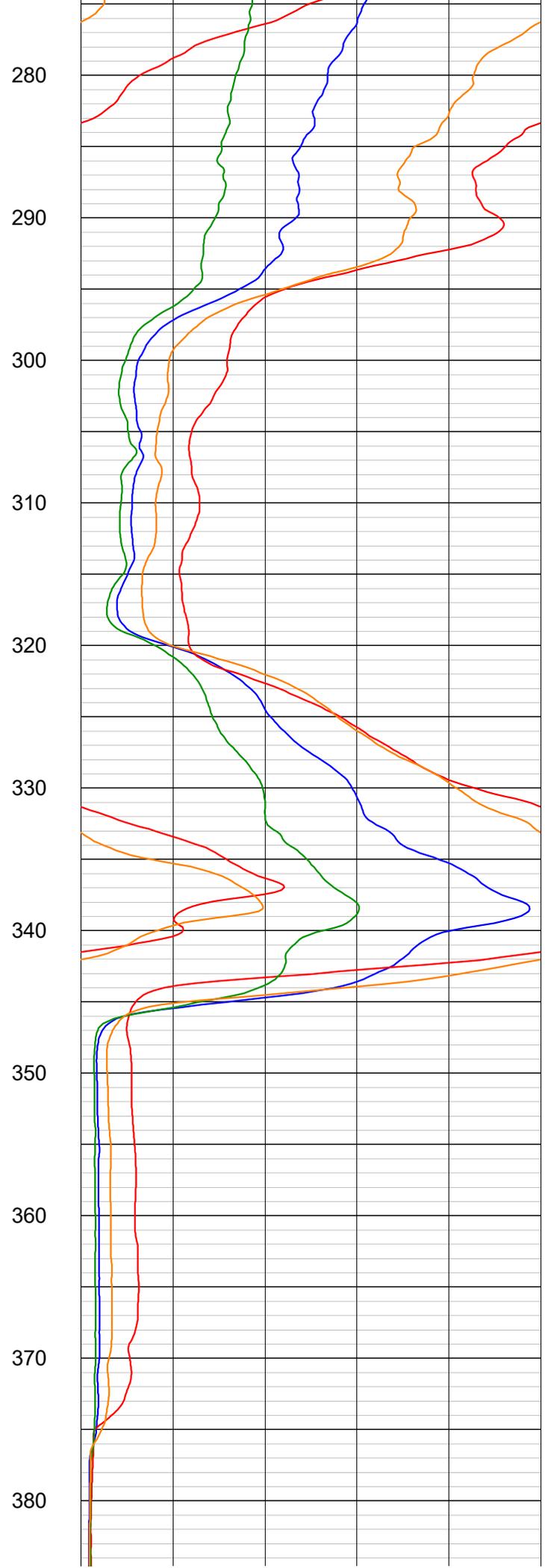
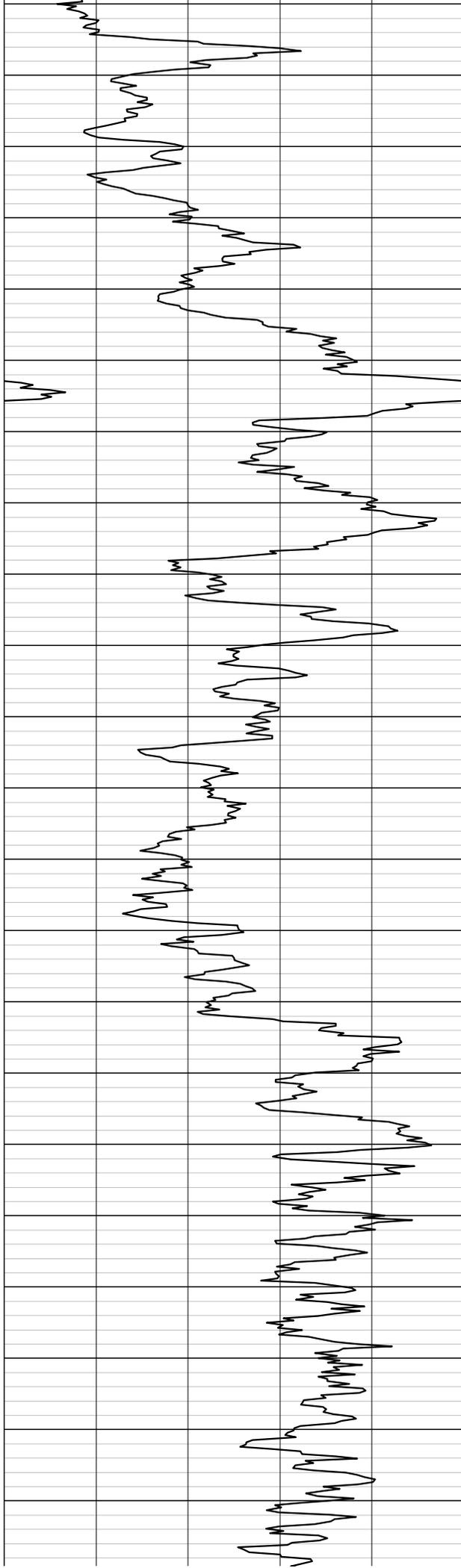
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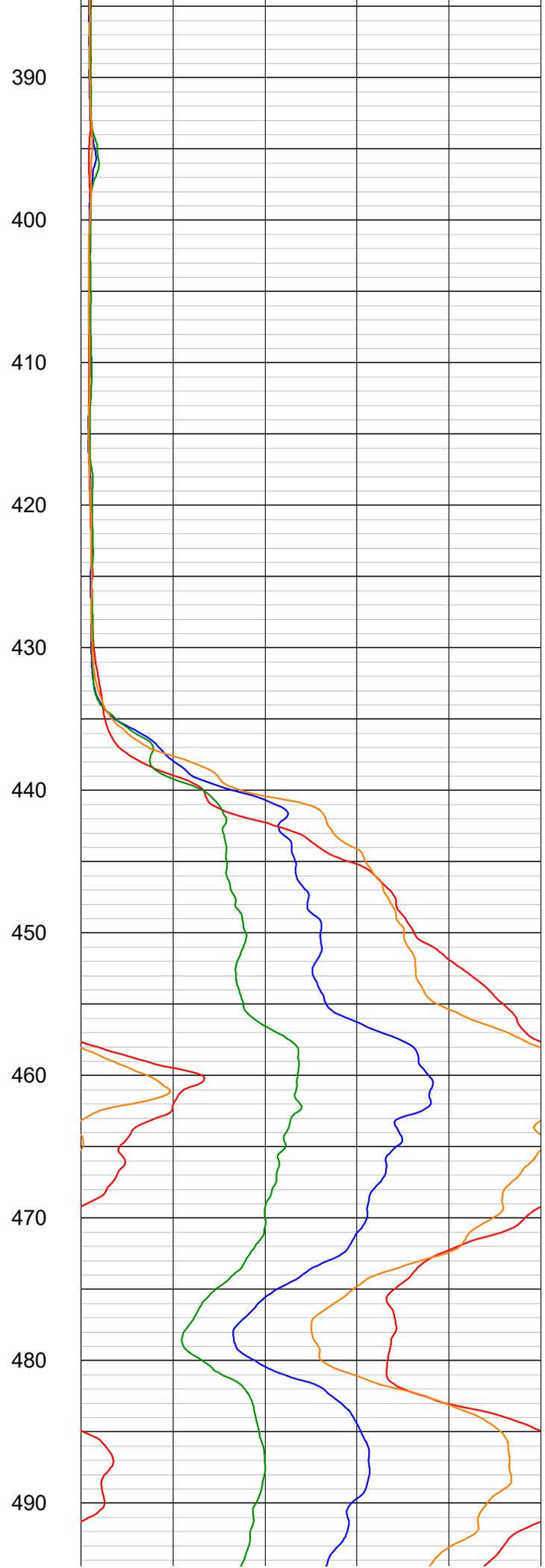
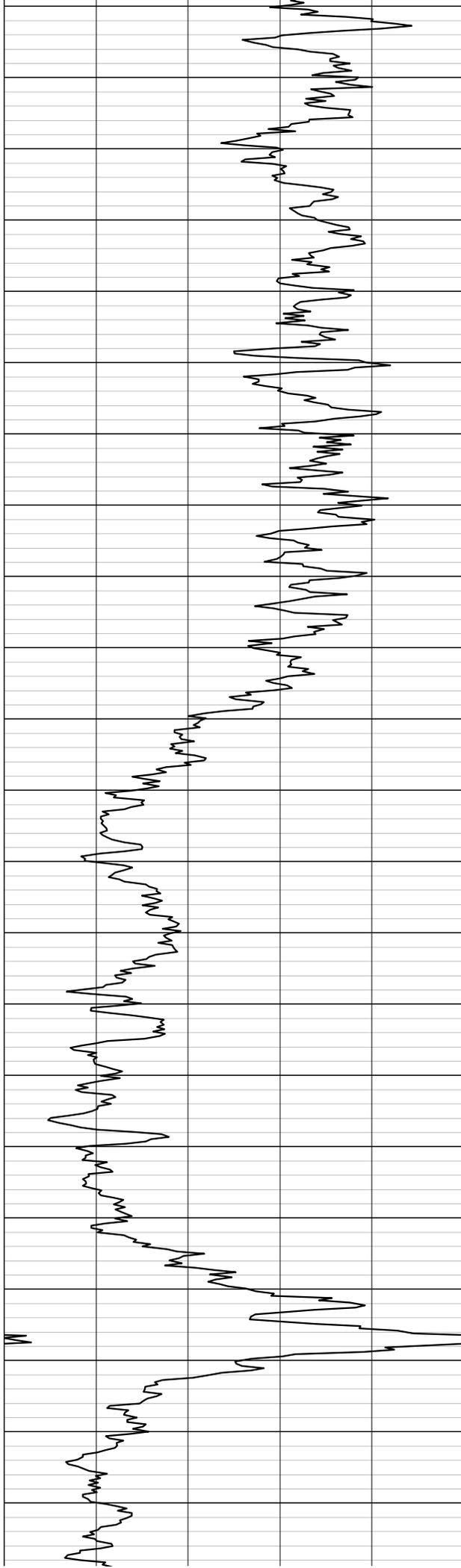
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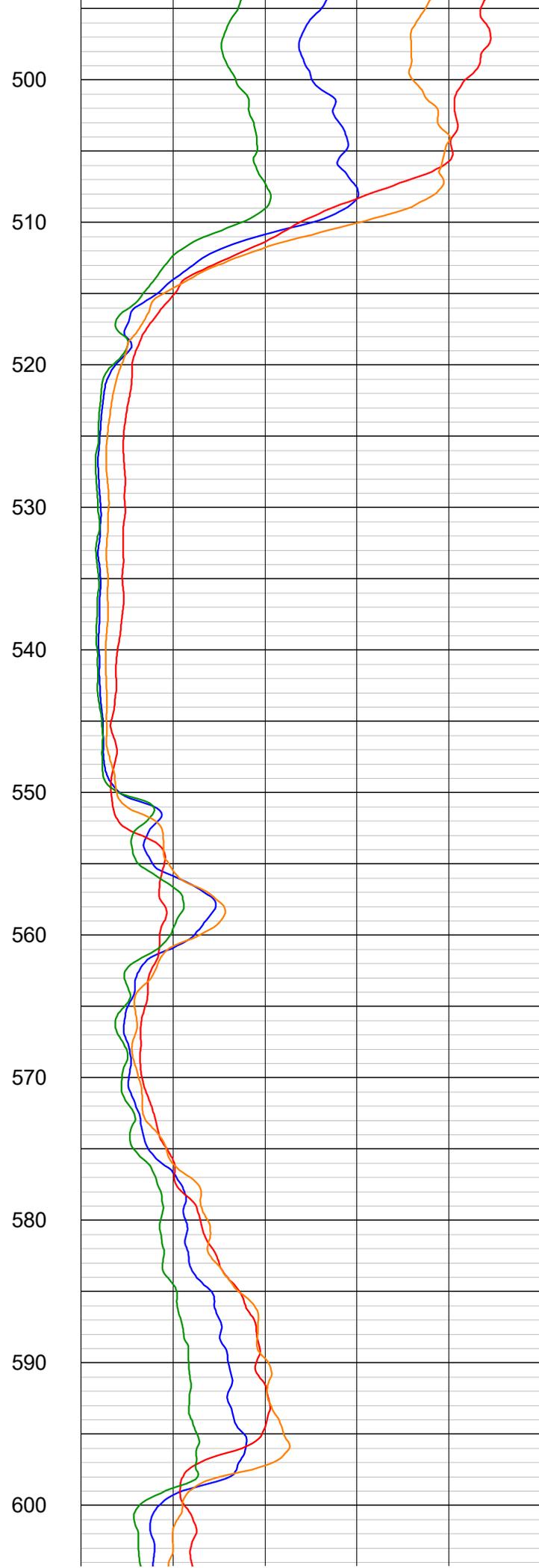
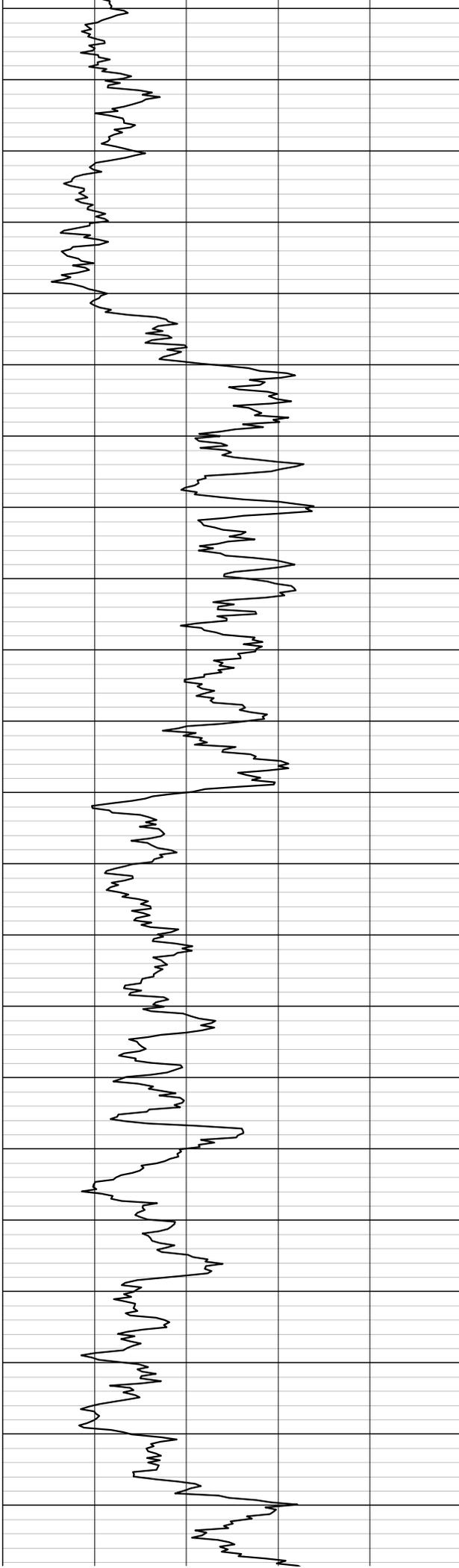
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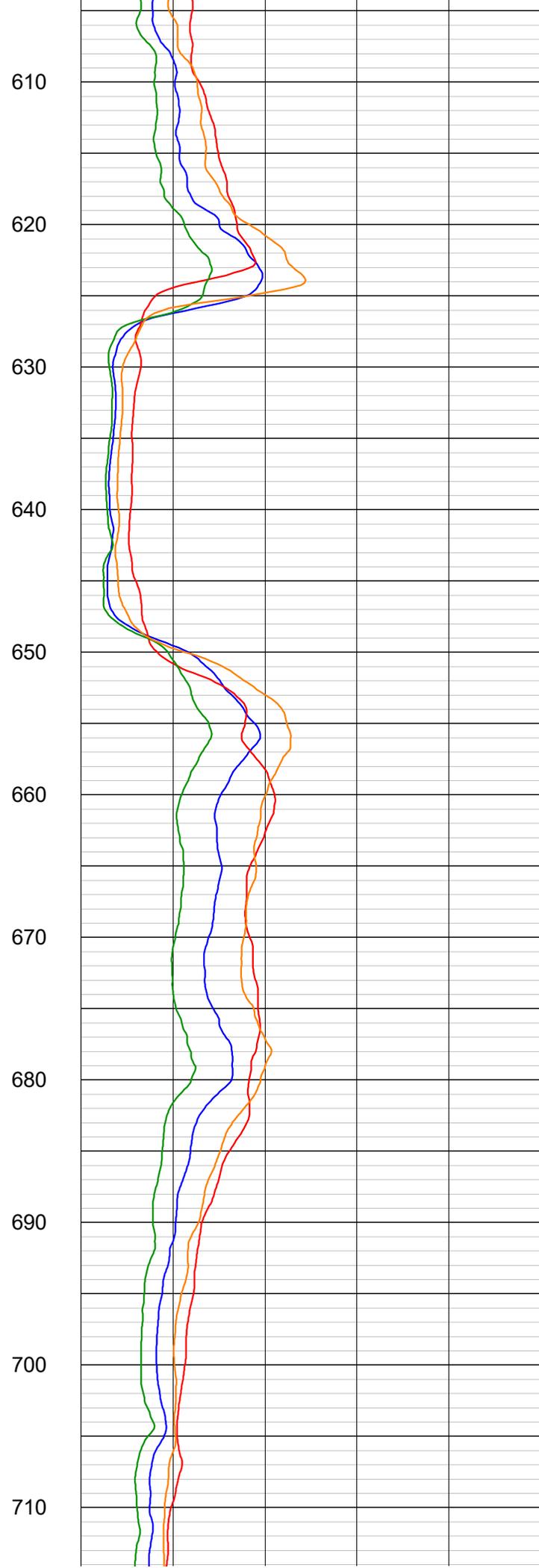
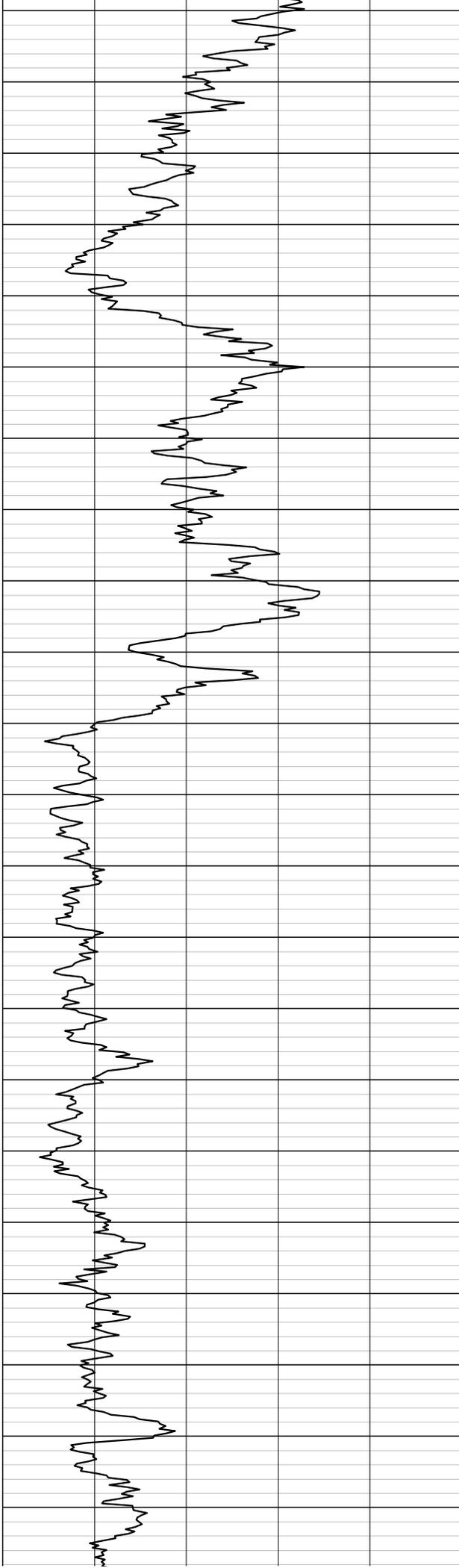
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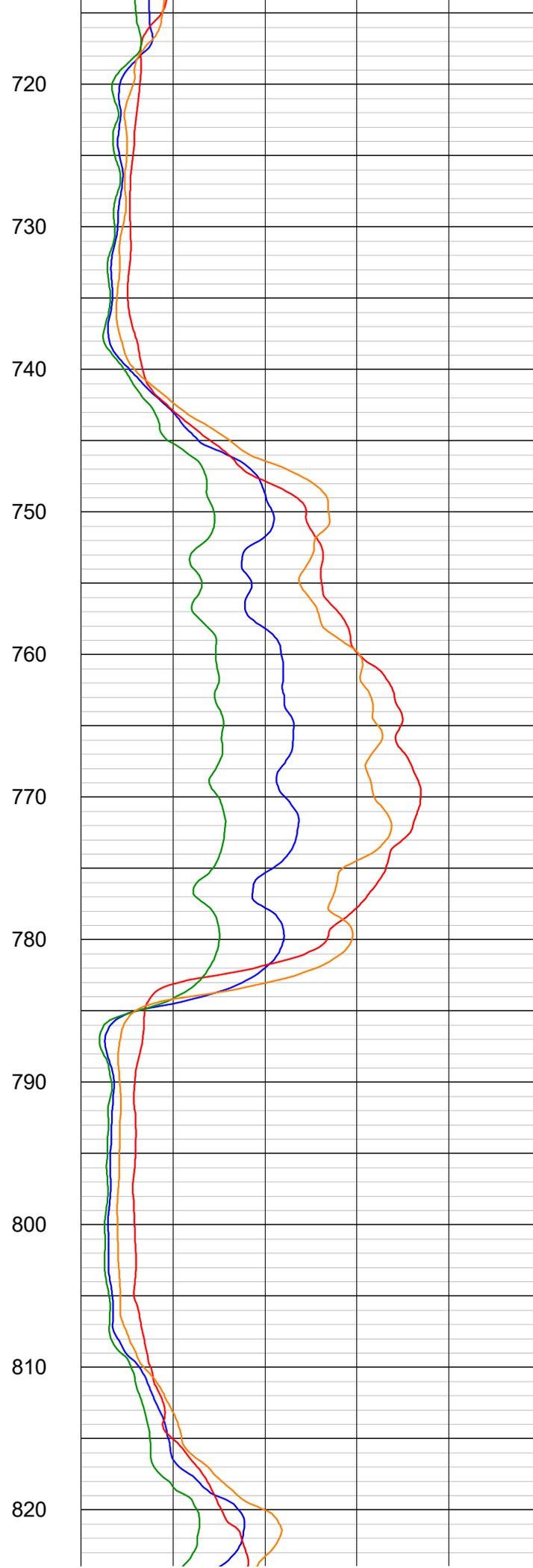
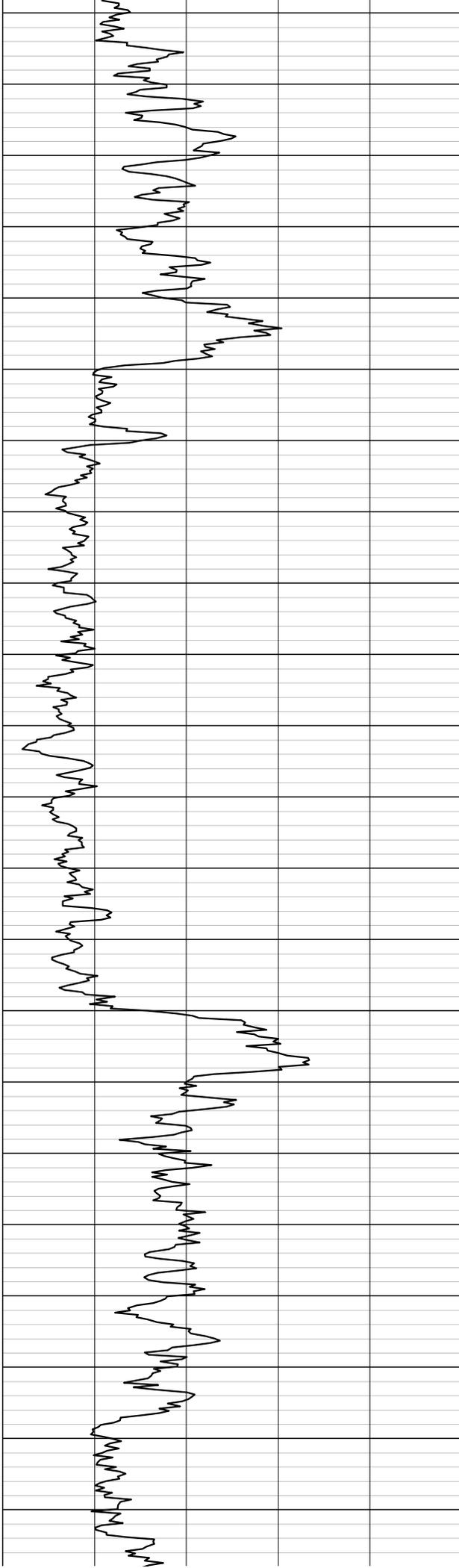


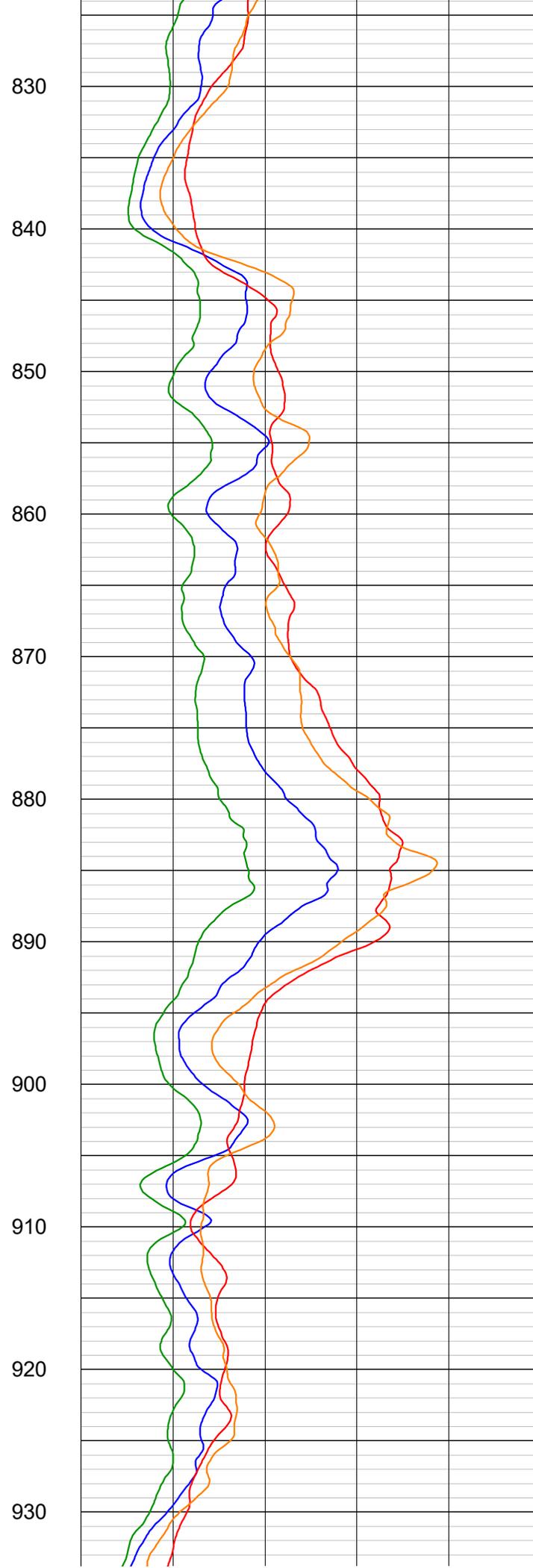
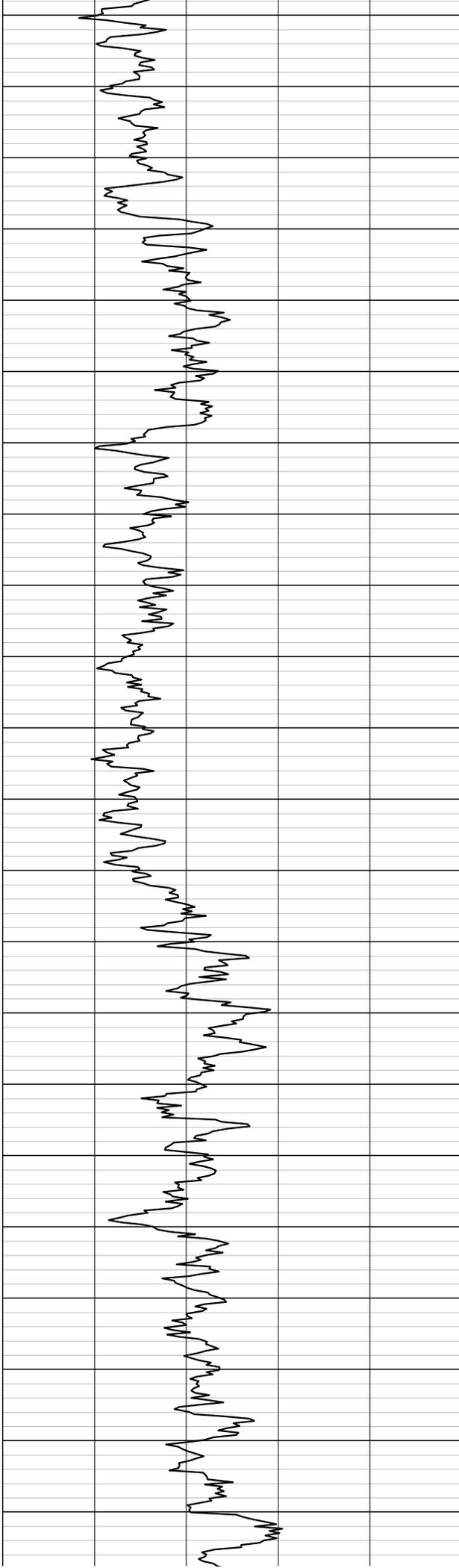


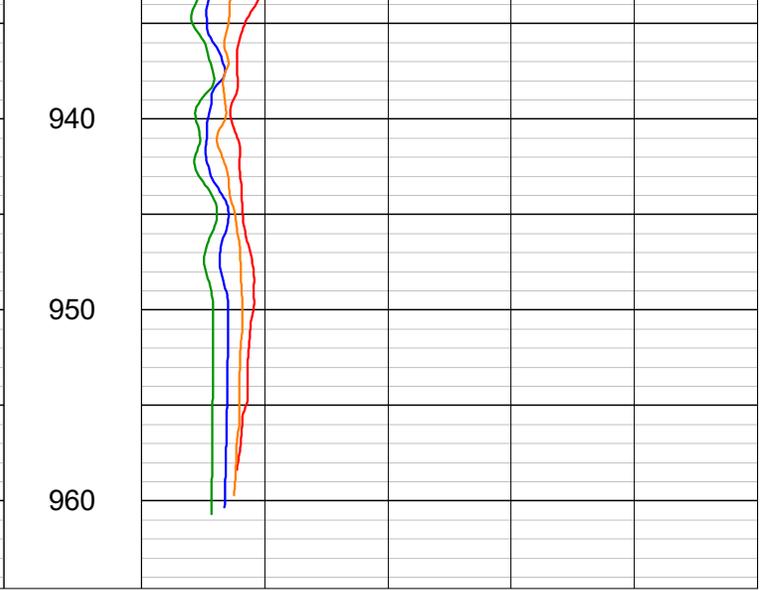












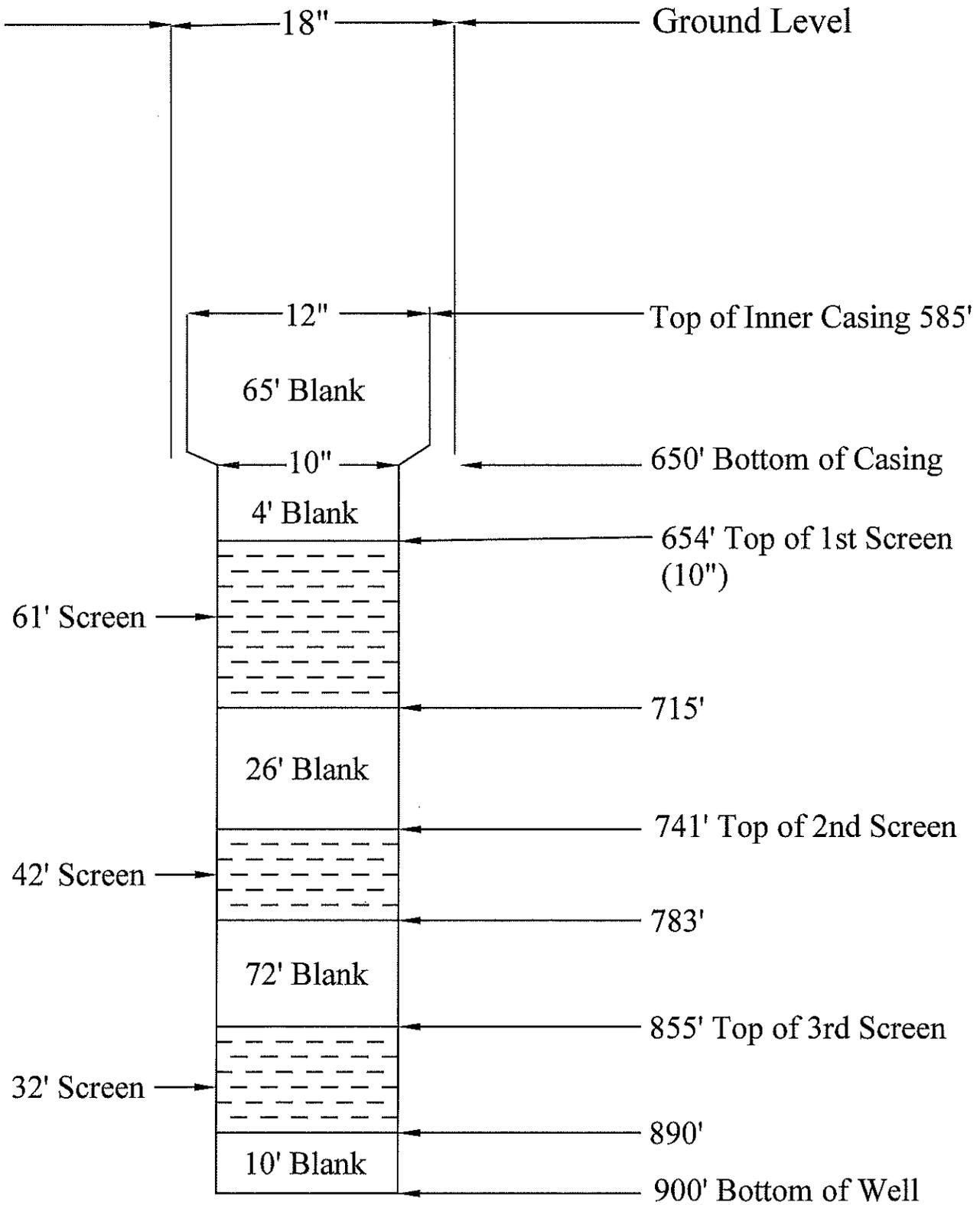
**DS002 Brewton Pea Ridge Road Well  
Production Well Design and Screen  
Submittal City of Brewton  
Brewton, Alabama**

**TABLE OF CONTENTS**

- Production Well Design
- Screens



Brewton Pea Ridge Road Well  
18"x 12"x 10" Gravel Packed Well  
Provided By:  
Donald Smith Co. Inc.  
June 12, 2020







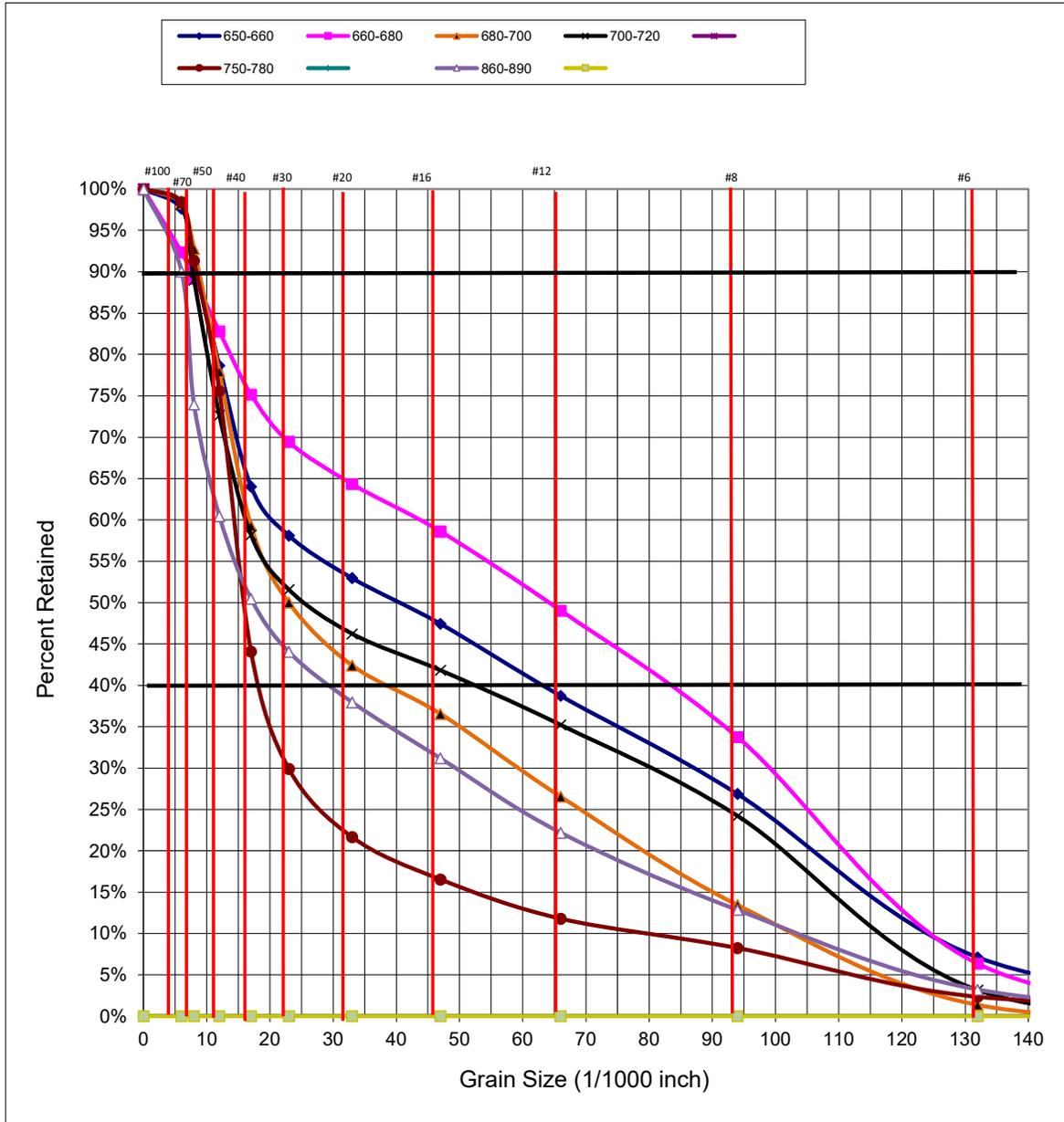
# Johnson Screens

## WELL SCREEN SUBMITTAL DATA

CLIENT: DONALD SMITH  
PROJECT: 1000' HIQ CONSTRUCTION

Material		304 Stainless		
Nom Size	10	PS	250	mm
Top x Bottom Fitting Configuration	WR x WR			
Estimated Total Well Depth	950	ft	290	meters
Estimated Feet of Screen	138	ft	42	meters
Design Slot Size	0.030	in	0.8	mm
Approx. Outside Diameter	10.84	in	275	mm
Screen Barrel Inside Diameter	10.07	in	256	mm
Approx. Clear ID at Fittings	9.85	in	250	mm
Approx. Weight Per Ft	24	lbs	11	kg
Wire Width	0.130	in	3.3	mm
Wire Height	0.250	in	6.4	mm
Calc. Collapse Strength *	356	PSI	25	kg/sq.cm
Open Area	18.8%			
Intake Area	77	sq.in./ft	1,622	sq.cm./meter
Transmitting Capacity-at 0.1 ft/sec	24	gpm/ft	5	lps/meter
Support Rod Diam	0.204	in	5.2	mm
No Rods	56			
Cross Sectional Rod Area	1.83	sq.in.	11.81	sq.cm.
Design Yield Strength	30,000	PSI	2,109	kg/sq.cm
Calc.Tensile Strength *	38,500	lbs	17,500	kg
Max.Recomended Hang Wt. *	19,200	lbs	8,700	kg
Column Load *	28,100	lbs	12,700	kg

\* A broad range of site conditions and completion methods can impact the physical strength requirements (collapse, tensile, hang weight and column strengths) for a successful screen installation. Consult a Johnson Screens technical representative with questions regarding the parameters presented above as they may relate to your specific site requirements. Final design parameters should be reviewed and confirmed by the customer and his third-party consultants.



Job Name 8" Test Well  
Location Brewton Pea Ridge  
Driller Donald Smith Co.

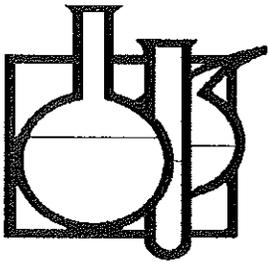
Sample ID 052920-1  
Analyzed by: Duvall, Steven  
Date: 6/1/2020

Casing  $\phi$  8 in  
Screen  $\phi$  8 in

Desired Yield  
SWL (ft)

Recommended Slot Size 30 slot (0.030") screen from 650'-720', 750'-780' and 860'-890' bgs.  
Recommended Gravel Pack 12 x 20

*Based exclusively on the samples provided by the contractor, a sieve analysis graph and suggested screen slot size is provided as requested. Since numerous construction considerations and site circumstances influence successful well completion, Johnson Screens assumes no responsibility for final well performance nor awareness of local regulations pertaining to well installations.*



# GUARDIAN SYSTEMS, INC.

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Page 1 of 2

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/21/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00276 Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well- PFO's

Sample Date: 08/13/2020  
Sample Time: 17:03

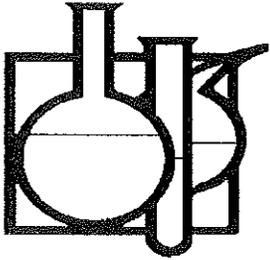
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
PFA's Method 537.1 DW			OS	08/20/2020	16:26	EPA 537.1	
11CI-PF3OUdS	<0.0015	ug/L	OS	08/20/2020	16:26	EPA 537.1	
9CI-PF3ONS	<0.0011	ug/L	OS	08/20/2020	16:26	EPA 537.1	
ADONA	<0.00069	ug/L	OS	08/20/2020	16:26	EPA 537.1	
HFPO-DA	<0.0016	ug/L	OS	08/20/2020	16:26	EPA 537.1	
NEtFOSAA	<0.00088	ug/L	OS	08/20/2020	16:26	EPA 537.1	
NMeFOSAA	<0.0015	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorobutanesulfonic Acid	<0.00063	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorodecanoic Acid	<0.0019	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorohexanoic Acid	<0.0012	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorododecanoic Acid	<0.0014	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluoroheptanoic Acid	<0.00096	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorohexanesulfonic Acid	<0.0007	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorononanoic Acid	<0.0019	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorooctanesulfonic Acid	<0.0011	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorooctanoic Acid	<0.00083	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorotetradecanoic Acid	<0.0018	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluorotridecanoic Acid	<0.0017	ug/L	OS	08/20/2020	16:26	EPA 537.1	
Perfluoroundecanoic Acid	<0.0019	ug/L	OS	08/20/2020	16:26	EPA 537.1	

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition, May 1996



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Page 2 of 2

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/21/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

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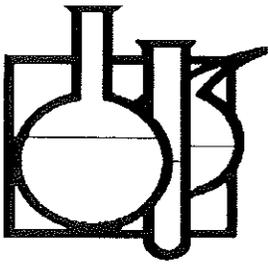
Approved By: \_\_\_\_\_

*Ginda Skyles Miller*

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Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

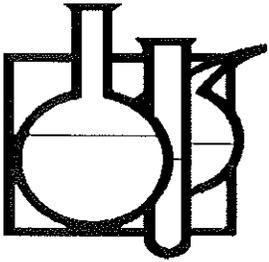
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
pH	7.63	SU	DB	08/13/2020	17:03	150.1	
Specific Conductance	327.	umhos	DB	08/13/2020	17:03	SM2510B	
Alkalinity	145.	mg/L	ML	08/18/2020	11:40	SM2320B	
Carbon Dioxide	8.8	mg/L	ML	08/18/2020	14:00	4500CO2-D	
Color, APHA	<10.	PCU	ML	08/14/2020	8:45	SM2120B	
Turbidity, Nephelometric	3.47	NTU	DB	08/13/2020	17:03	180.1	(1)
Odor	<1.0	T.O.N.	ML	08/14/2020	8:50	SM2150B	
Foaming Agents(Surfactants)	<0.02	mg/L	DL	08/14/2020	16:00	425.1	
Fluoride	<0.20	mg/L	ML	08/14/2020	17:07	300.0	(1)
Solids, Total Dissolved	218.	mg/L	ML	08/17/2020	14:30	SM-2540C	(2)
Nitrogen, Nitrite	<0.10	mg/L	ML	08/14/2020	17:07	300.0	(1)
Nitrogen, Nitrate	<0.10	mg/L	ML	08/14/2020	17:07	300.0	(1)
Total Nitrate/Nitrite	<0.1	mg/L	ML	08/14/2020	17:07	300.0	
Sulfate	8.08	mg/L	ML	08/14/2020	17:07	300.0	(1)
Chloride	2.26	mg/L	ML	08/13/2020	17:07	300.0	(1)
Cyanide, Total	<0.02	mg/L	JH	08/20/2020	13:53	335.4	(1)
Aluminum	0.057	mg/L	DRH	08/17/2020	10:00	200.8	
Antimony	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Arsenic	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	

This Certificate is Continued On Next Page.

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Page 2 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

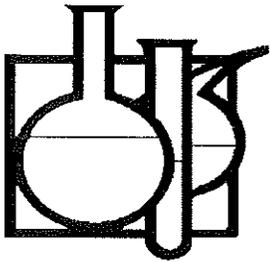
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Barium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Beryllium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Cadmium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Calcium	19.4	mg/L	DRH	08/19/2020	13:00	200.7	(1)
Chromium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Copper	0.010	mg/L	DRH	08/17/2020	10:00	200.8	
Iron	0.09	mg/L	DRH	08/18/2020	12:00	200.7	(1)
Lead - mg/L	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Magnesium	4.90	mg/L	DRH	08/19/2020	13:00	200.7	(1)
Manganese	<0.02	mg/L	DRH	08/18/2020	12:00	200.7	(1)
Nickel	0.002	mg/L	DRH	08/17/2020	10:00	200.8	
Selenium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Silver	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Sodium	38.	mg/L	DRH	08/19/2020	13:00	200.7	(1)
Thallium	<0.001	mg/L	DRH	08/17/2020	10:00	200.8	
Zinc	<0.03	mg/L	DRH	08/18/2020	12:00	200.7	(1)
Hardness as CaCO3/L	69.	mg/L	DRH	08/19/2020	13:00	200.7	
Total Organic Carbon	0.3	mg/L	CFS	08/14/2020	15:51	415.3	
Langlier Saturation Index	(-0.510)	L.I.	CFS	08/21/2020	13:00	100E	(2)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
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Page 3 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

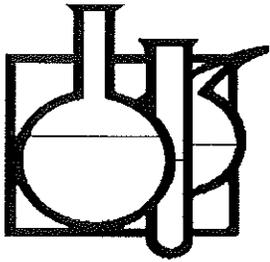
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Mercury	<0.001	mg/L	DRH	08/18/2020	10:00	200.8	
<b>VOC's, Method 524.2</b>			CFS	08/17/2020	17:02	524.2	
<b>REGULATED COMPOUNDS</b>					0:00		
Benzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Carbon tetrachloride	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
o-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
p-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,2-Dichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
cis-1,2-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
trans-1,2-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Methylene Chloride	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,2-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Ethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Monochlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Styrene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Tetrachloroethene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Toluene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)

This Certificate is Continued On Next Page.

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1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
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Page 4 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

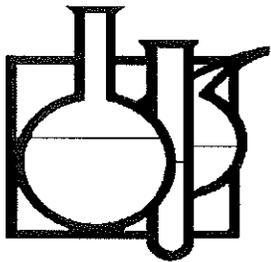
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
1,2,4-Trichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1,1-Trichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1,2-Trichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
TCE(Trichloroethene)	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Vinyl chloride	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Xylene (total)	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
UNREGULATED COMPOUNDS					0:00		
Chloroform	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Bromodichloromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Dibromochloromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Bromoform	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Bromochloromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Bromomethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
m-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Dichlorodifluoromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Trichlorofluoromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Dibromomethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Isopropylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)

This Certificate is Continued On Next Page.

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Page 5 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

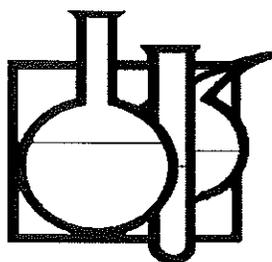
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
n-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1-Dichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
tert-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
p-Isopropyltoluene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
cis-1,3-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
trans-1,3-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1,2,2-Tetrachloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,2,3-Trichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,1,1,2-Tetrachloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Chloroethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Chloromethane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
2,2-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
o-Chlorotoluene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
p-Chlorotoluene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Bromobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,3-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
sec-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,2,4-Trimethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
n-Propylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
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Page 6 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

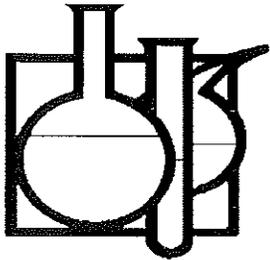
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Naphthalene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Hexachlorobutadiene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,3,5-Trimethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
1,2,3-Trichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
Methyl tert-Butyl Ether	<0.0005	mg/L	CFS	08/17/2020	17:02	524.2	(5)
DBCP	<0.00002	mg/L	CAC	08/21/2020	10:46	504.1	
EDB(Ethylene Dibromide)	<0.00001	mg/L	CAC	08/21/2020	10:46	504.1	
REGULATED COMPOUNDS					0:00		
Glyphosate	<0.006	mg/L	DL	08/23/2020	21:47	547	(5)
Chlordane	<0.0002	mg/L	JH	08/19/2020	15:25	508	(5)
Endrin	<0.00001	mg/L	JH	08/19/2020	15:25	508	(5)
Heptachlor	<0.00004	mg/L	JH	08/19/2020	15:25	508	(5)
Heptachlor Epoxide	<0.00002	mg/L	JH	08/19/2020	15:25	508	(5)
Lindane	<0.00002	mg/L	JH	08/19/2020	15:25	508	(5)
Methoxychlor	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1016	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1221	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1232	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1242	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
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Page 7 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

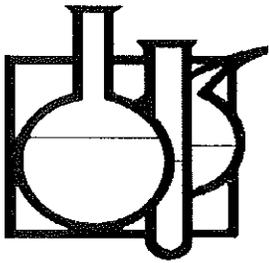
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
PCB, 1248	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1254	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
PCB, 1260	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
Toxaphene	<0.001	mg/L	JH	08/19/2020	15:25	508	(5)
Aldrin	<0.001	mg/L	JH	08/19/2020	15:25	508	(5)
Dieldrin	<0.0001	mg/L	JH	08/19/2020	15:25	508	(5)
2,4-D	<0.0001	mg/L	JH	08/20/2020	11:08	515.4	(5)
Pentachlorophenol	<0.00004	mg/L	JH	08/20/2020	11:08	515.4	(5)
2,4,5-TP (Silvex)	<0.0002	mg/L	JH	08/20/2020	11:08	515.4	(5)
Dalapon	<0.001	mg/L	JH	08/20/2020	11:08	515.4	(5)
Dinoseb	<0.0002	mg/L	JH	08/20/2020	11:08	515.4	(5)
Picloram	<0.0001	mg/L	JH	08/20/2020	11:08	515.4	(5)
Dicamba	<0.0002	mg/L	JH	08/20/2020	11:08	515.4	(5)
Alachlor	<0.0002	mg/L	JH	08/20/2020	13:22	525.2	(1)
Atrazine	<0.0001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Benzo(a)pyrene	<0.00002	mg/L	JH	08/20/2020	13:22	525.2	(5)
Di(2-ethylhexyl)adipate	<0.0006	mg/L	JH	08/20/2020	13:22	525.2	(5)
Di(2-ethylhexyl)phthalate	<0.0012	mg/L	JH	08/20/2020	13:22	525.2	(5)
Hexachlorobenzene	<0.0001	mg/L	JH	08/20/2020	13:22	525.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

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Page 8 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well

Sample Date: 08/13/2020  
Sample Time: 17:03

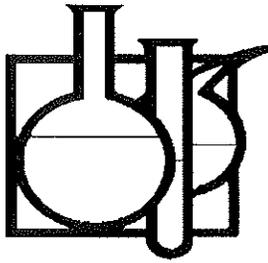
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Hexachlorocyclopentadiene	<0.0001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Simazine	<0.00007	mg/L	JH	08/20/2020	13:22	525.2	(5)
Butachlor	<0.001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Metolachlor	<0.001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Metribuzin	<0.001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Propachlor	<0.001	mg/L	JH	08/20/2020	13:22	525.2	(5)
Aldicarb	<0.0005	mg/L	DL	08/18/2020	8:19	531.2	(5)
Aldicarb Sulfone	<0.0008	mg/L	DL	08/18/2020	8:19	531.2	(5)
Aldicarb Sulfoxide	<0.0005	mg/L	DL	08/18/2020	8:19	531.2	(5)
Carbofuran	<0.0009	mg/L	DL	08/18/2020	8:19	531.2	(5)
Oxamyl	<0.002	mg/L	DL	08/18/2020	8:19	531.2	(5)
UNREGULATED COMPOUNDS					0:00		
Carbaryl	<0.002	mg/L	DL	08/18/2020	8:19	531.2	(5)
3-Hydroxycarbofuran	<0.002	mg/L	DL	08/18/2020	8:19	531.2	(5)
Methomyl	<0.0005	mg/L	DL	08/18/2020	8:19	531.2	(5)
Endothall (mg/L)	<0.009	mg/L	JH	08/15/2020	1:26	548.1	(5)
Diquat	<0.0004	mg/L	DL	08/25/2020	12:46	549.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
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Page 9 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008 00256    Sample # 002  
Sampler : DB  
Sample ID: Trip Blank

Sample Date: 08/13/2020  
Sample Time: 17:03

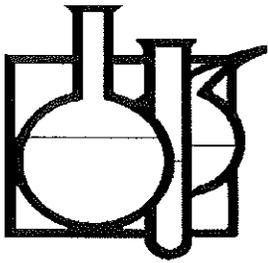
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
VOC's, Method 524.2			CFS	08/17/2020	17:42	524.2	
REGULATED COMPOUNDS					0:00		
Benzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Carbon tetrachloride	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
o-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
p-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2-Dichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
cis-1,2-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
trans-1,2-Dichloroethene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Methylene Chloride	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Ethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Monochlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Styrene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Tetrachloroethene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition, May 1996



# GUARDIAN SYSTEMS, INC.

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P.O. Box 190  
Leeds, Alabama 35094

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Toll Free (866) 729-7211  
Fax (205) 699-3882

Page 10 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 002  
Sampler : DB  
Sample ID: Trip Blank

Sample Date: 08/13/2020  
Sample Time: 17:03

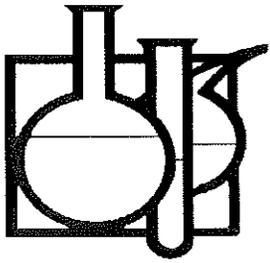
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Toluene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2,4-Trichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1,1-Trichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1,2-Trichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
TCE(Trichloroethene)	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Vinyl chloride	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Xylene (total)	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
UNREGULATED COMPOUNDS					0:00		
Chloroform	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Bromodichloromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Dibromochloromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Bromoform	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Bromochloromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Bromomethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
m-Dichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Dichlorodifluoromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Trichlorofluoromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Dibromomethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition, May 1996



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Page 11 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 002  
Sampler : DB  
Sample ID: Trip Blank

Sample Date: 08/13/2020  
Sample Time: 17:03

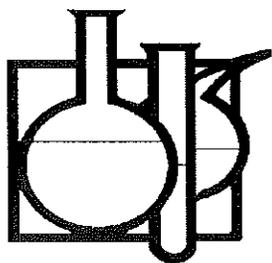
## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Isopropylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
n-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1-Dichloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
tert-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
p-Isopropyltoluene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
cis-1,3-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
trans-1,3-Dichloropropene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1,2,2-Tetrachloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2,3-Trichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,1,1,2-Tetrachloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Chloroethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Chloromethane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
2,2-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
o-Chlorotoluene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
p-Chlorotoluene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Bromobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,3-Dichloropropane	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
sec-Butylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2,4-Trimethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)

This Certificate is Continued On Next Page.

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
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Page 12 of 12

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00256    Sample # 002  
Sampler : DB  
Sample ID: Trip Blank

Sample Date: 08/13/2020  
Sample Time: 17:03

## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
n-Propylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Naphthalene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Hexachlorobutadiene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,3,5-Trimethylbenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
1,2,3-Trichlorobenzene	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)
Methyl tert-Butyl Ether	<0.0005	mg/L	CFS	08/17/2020	17:42	524.2	(5)

Approved By: \_\_\_\_\_

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
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Guardian Systems, Inc.

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 email: gsi@gsilab.com

Chain of Custody Record/ Analysis Report

(205) 699-3882 Fax  
 www.gsilab.com



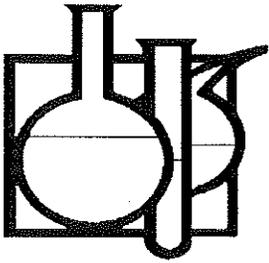
Client: Eli Bundrick  
 Company: Donald Smith Company  
 Address: 746 East Main Street  
 Headland, AL 36345

Phone: 334-693-2969  
 Fax: 334-693-9332  
 P.O.#: 220-142  
 Project: Brewton Pearidge Production Well

Sample ID	Sample Description	Sample Date	Sample Time	Sample Bottle				Sample Preservative				Analysis Requested					
				Comp.*	Glass	Plastic	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	Cool 4°C	Other**					
	Brewton Pearidge Rd	8-13-20		X	X		X					X	X	EPA 504 (1:1 HCL, Sodium Thiosulfate)			
	Brewton Pearidge Rd			X	X							X	X	EPA 515 (Sodium Sulfite)			
	Brewton Pearidge Rd			X	X							X	X	EPA 508 (Sodium Thiosulfate)			
	Brewton Pearidge Rd			X	X		X					X	X	EPA 525 (1:1 HCL, Sodium Sulfite)			
	Brewton Pearidge Rd			X	X							X	X	EPA 531 (Potassium Dihydrogen Citrate)			
	Brewton Pearidge Rd			X	X							X	X	EPA 547 (Sodium Thiosulfate)			
	Brewton Pearidge Rd			X	X							X	X	EPA 548 (Sodium Thiosulfate)			
	Brewton Pearidge Rd			X						X		X	X	EPA 549 (Sodium Thiosulfate)			

Sampled by: Dale Brackage  
 Received by: [Signature] Date: 8-14-20 Time: 08:00  
 Relinquished by: [Signature] Date: Date: Time: Time:  
 Received for Laboratory by: [Signature] Date: 14 Aug 20 Time: 9:00  
 Was Shipped Container intact when received? Yes [X] No [ ] Initials [Signature] Seals intact? Yes [X] No [ ]  
 Were all samples properly preserved? Yes [X] No [ ] Initials [Signature] Sample temp. 4.1 °C  
 Comments: Other = See Above for Sample Preservatives, Field Measurements

Put an "X" in the appropriate column for sample type and sample preservative. Write in analysis requested.  
 \* For composite samples include start and stop date and time in comments section \*\*Write in preservative used in comments



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Page 1 of 1

Donald Smith Company, Inc.  
746 East Main Street  
Headland, AL 36345-

Report Date: 08/25/2020  
Receive Date: 08/14/2020  
Receive Time: 8:00

Attention: Mr. Eli Bundrick

Control No : 2008-00275    Sample # 001  
Sampler : DB  
Sample ID: Brewton Pearidge Production Well- Rads

Sample Date: 08/13/2020  
Sample Time: 17:03

## Laboratory Certificate

PARAMETER	RESULTS	UNITS	ANALYST	DATE	TIME	METHOD	REF
Gross Alpha	<1.4	pCi/L	OS	08/21/2020	6:26	900.0	(6)
Gross Beta	6.4	pCi/L	OS	08/21/2020	6:26	900.0	(6)
Radium 226	<0.2	pCi/L	OS	08/25/2020	11:45	EPA 903.1	
Radium 228	<0.8	pCi/L	OS	08/24/2020	13:46	EPA RA-05	

Approved By: \_\_\_\_\_

### METHOD REFERENCES

1. Methods for Chemical Analysis of Water and Wastes. EPA-600/4-79-20, revised March 1983, August 1993 May 1994
2. Standard Methods for the Examination of Water and Waste Water, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, and 22<sup>nd</sup> Edition, 2012
3. Test Methods for Evaluating Solid Wastes Physical Chemical Method SW-846, 3<sup>rd</sup> Edition, Updated IV December 1996
4. 1987 ASTM Annual Standards
5. Code of Federal Regulations, Title 40, Part 136, Appendix A, Revised July 1995
6. Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88/039, Revised July 1991, August 1995
7. NIOSH Manual of Analytical Methods, 4<sup>th</sup> Edition, May 1996



**APPENDIX B**

Pump Test Data and Aquifer Test Analysis

Page 1 of 3	<b>Donald Smith Company, Inc.</b> P.O. Box 1 • Herdland, Alabama 36345 • (334) 693-2969 • Fax (334) 693-3089	Job: Brewton, AL Well # and Location: Pea Ridge, Test Pump							
Operator: CS	<b>AQUIFER PUMP TEST</b>	Date Ended: 8/14/20							
Date Started: 8/12/20		Time Ended:							
Time Started:	WATER LEVEL SUBM. FT. <input type="checkbox"/> DIRECT FT. <input type="checkbox"/>	Time Ended:							
LAPSED TIME	ORIFICE TUBE - PLATE	GPM	DRAW DOWN	SPEC. CAP.	PUMP LEVEL	PSI	AMPS 1 2 3	VOLTS 1/2 1/3 2/3	COLOR SAND COMMENTS

LAPSED TIME	ORIFICE TUBE - PLATE	GPM	WATER LEVEL SUBM. FT. <input type="checkbox"/> DIRECT FT. <input type="checkbox"/>	DRAW DOWN	SPEC. CAP.	PUMP LEVEL	PSI	AMPS 1 2 3	VOLTS 1/2 1/3 2/3	COLOR SAND COMMENTS
0	0	0		0	0	124.8	0	0 0 0		Static New Well
1 M										
2 M		1000		82.5	12.12	207.3				
3 M		1000		91.3	10.95	216.1				
4 M		1000		93.1	10.74	217.9				
5 M		1000		93.8	10.66	218.6				
6 M		1000		94.8	10.55	219.6				
7 M		1000		96.5	10.36	221.3				
8 M		1000		97.9	10.21	222.7				
9 M		1000		98.4	10.16	223.2				
10 M		1000		98.7	10.13	223.5				
12 M		1000		97.3	10.28	222.1				
14 M		1000		97.6	10.25	222.4				
16 M		1000		97.9	10.21	222.7				
18 M		1000		98.2	10.18	223				
20 M		1000		98.4	10.16	223.2				
25 M		1000		99.5	10.05	224.3				
30 M		1000		101	9.901	225.8				
40 M		1000		101.8	9.823	226.6				
50 M		1000		102	9.804	226.8				
1.0 HR		1000		102.3	9.775	227.1				
1.5 HR		1000		102.7	9.737	227.5				
2.0 HR		1000		103.6	9.653	228.4				
2.5 HR		1000		105.5	9.479	230.3				

New Airline Gauge Yes Scale 0 - 230 Ft.	Record Water Temperature: Start: ___ Middle: ___ End: ___ of test.
New PSI Gauge Yes Scale 0- 100 PSI	Comments: Nameplate amps: 338
Airline Length: ___ Ft.	
Tank ___ % Full at Static	
Tank ___ % Full at Max PSI ___ #	Approved By: _____

Page 2 of 3	<b>Donald Smith Company, Inc.</b>	Job: Brewton, AL
Operator CS	Fl. 9, Box 1 • Headland, Alabama 36345 • (334) 693-2969 • Fax (334) 693-9089	Well # and Location Pea Ridge, Test Pump
Date Started 8/12/20	<b>AQUIFER PUMP TEST</b>	Date Ended 8/14/20
Time Started		Time Ended

LAPSED TIME	ORIFICE TUBE - PLATE	GPM	WATER LEVEL		DRAW DOWN	SPEC. CAP.	PUMP LEVEL	PSI	AMPS			VOLTS			COLOR SAND COMMENTS
			SUBM. FT.	DIRECT FT.					1	2	3	1/2	1/3	2/3	
	0	0			0	0	124.8	0	0	0	0				
3.0 HR		1000			106.1	9.4251	230.9								
3.5 HR		1000			106.6	9.3809	231.4								
4.0 HR		1000			106.9	9.3545	231.7								
4.5 HR		1000			107.4	9.311	232.2								
5.0 HR		1000			107.5	9.3023	232.3								
6.0 HR		1000			104.5	9.5694	229.3								
7.0 HR		1000			107.5	9.3023	232.3								
8.0 HR		1000			107.5	9.3023	232.3								
9.0 HR		1000			107.6	9.2937	232.4								
10.0 HR		1000			107.6	9.2937	232.4								
11.0 HR		1000			107.6	9.2937	232.4								
12.0 HR		1000			107.6	9.2937	232.4								
13.0 HR		1000			107.6	9.2937	232.4								
14.0 HR		1000			107.6	9.2937	232.4								
15.0 HR		1000			107.6	9.2937	232.4								
16.0 HR		1000			107.6	9.2937	232.4								
17.0 HR		1000			107.6	9.2937	232.4								
18.0 HR		1000			107.6	9.2937	232.4								
19.0 HR		1000			107.7	9.2851	232.5								
20.0 HR		1000			107.7	9.2851	232.5								
21.0 HR		1000			107.7	9.2851	232.5								
20.0 HR		1000			107.7	9.2851	232.5								
21.0 HR		1000			107.7	9.2851	232.5								

Comments:

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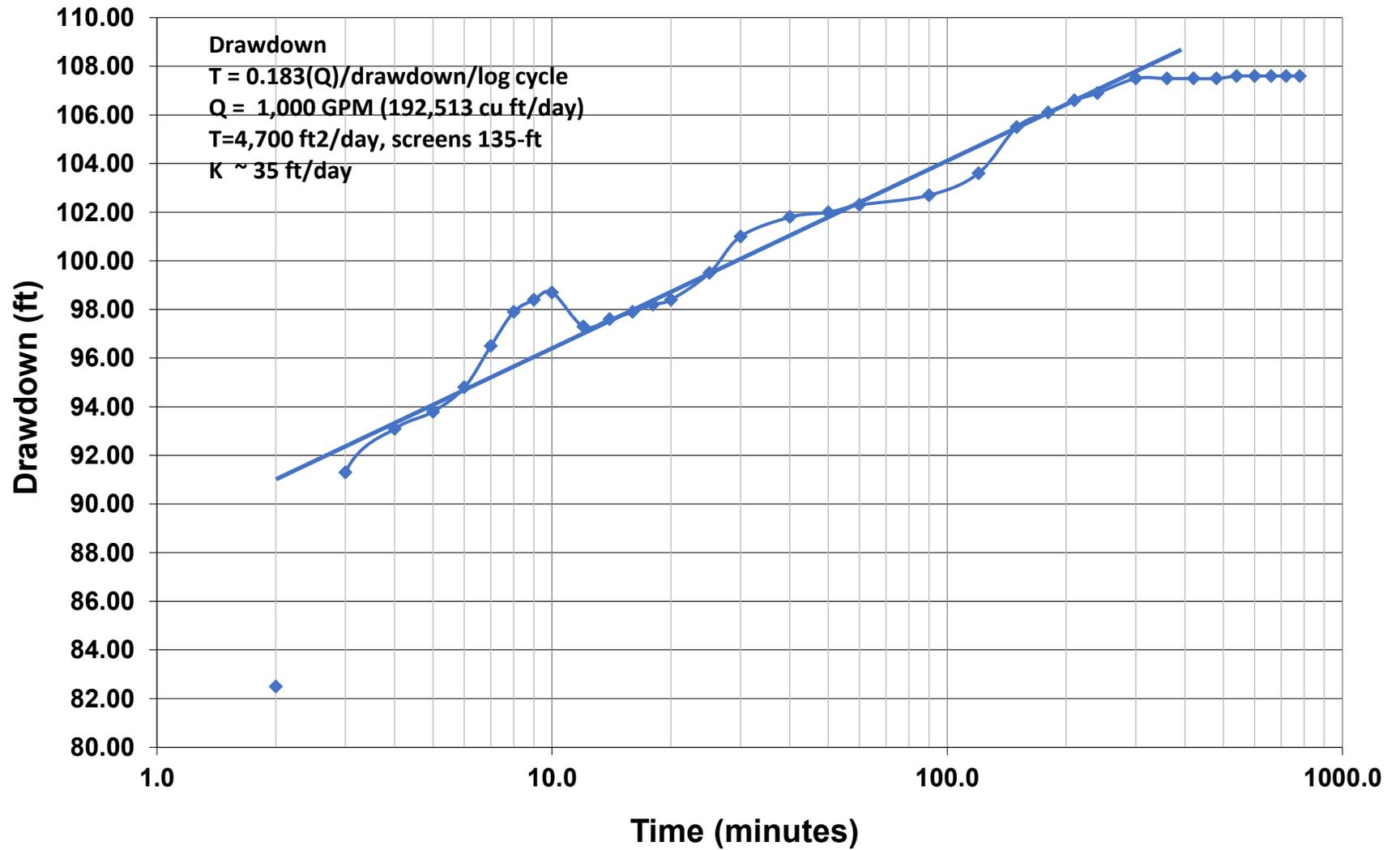
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Page 1 of 2		<b>Donald Smith</b> <b>Company, Inc.</b> 746 E. Main St. • Headland, Alabama 36345 • (334) 693-2969 • Fax (334) 693-3089			JOB: Brewton, AL	
Operator CS/DS					Well # and Location: Pea Ridge, TP	
Date Started: 8/14/20		<b>AQUIFER RECOVERY</b>			Date Ended: 8/14/20	
Time Started:					Time Ended:	
LAPSED TIME	WATER LEVEL SUBM. FT. <input type="text"/> DIRECT FT. <input type="text"/>	WATER LEVEL	RECOVERY FT	CUMULATIVE RECOVERY FT	COMMENTS	
0		296.2	*	*		
1 M		184.6	111.6	111.6		
2 M		172.8	11.8	123.4		
3 M		163.4	9.4	132.8		
4 M		155.3	8.1	140.9		
5 M		152.8	2.5	143.4		
6 M		149.7	3.1	146.5		
7 M		146.9	2.8	149.3		
8 M		144.5	2.4	151.7		
9 M		142.3	2.2	153.9		
10 M		140.3	2	155.9		
12 M		138.8	1.5	157.4		
14 M		137.7	1.1	158.5		
16 M		136.5	1.2	159.7		
18 M		135.3	1.2	160.9		
20 M		134.2	1.1	162		
25 M		132.7	1.5	163.5		
30 M		131.4	1.3	164.8		
45 M		130.5	0.9	165.7		
1.0 HR		129.8	0.7	166.4		
1.5 HR		128.9	0.9	167.3		
2.0 HR		128.3	0.6	167.9		
2.5 HR		127.9	0.4	168.3		
3.0 HR		127.6	0.3	168.6		
3.5 HR		127.2	0.4	169		
4.0 HR		126.9	0.3	169.3		
4.5 HR		126.5	0.4	169.7		
5.0 HR		126.1	0.4	170.1		



### Drawdown data for Production Well 6 at 1,000-gpm



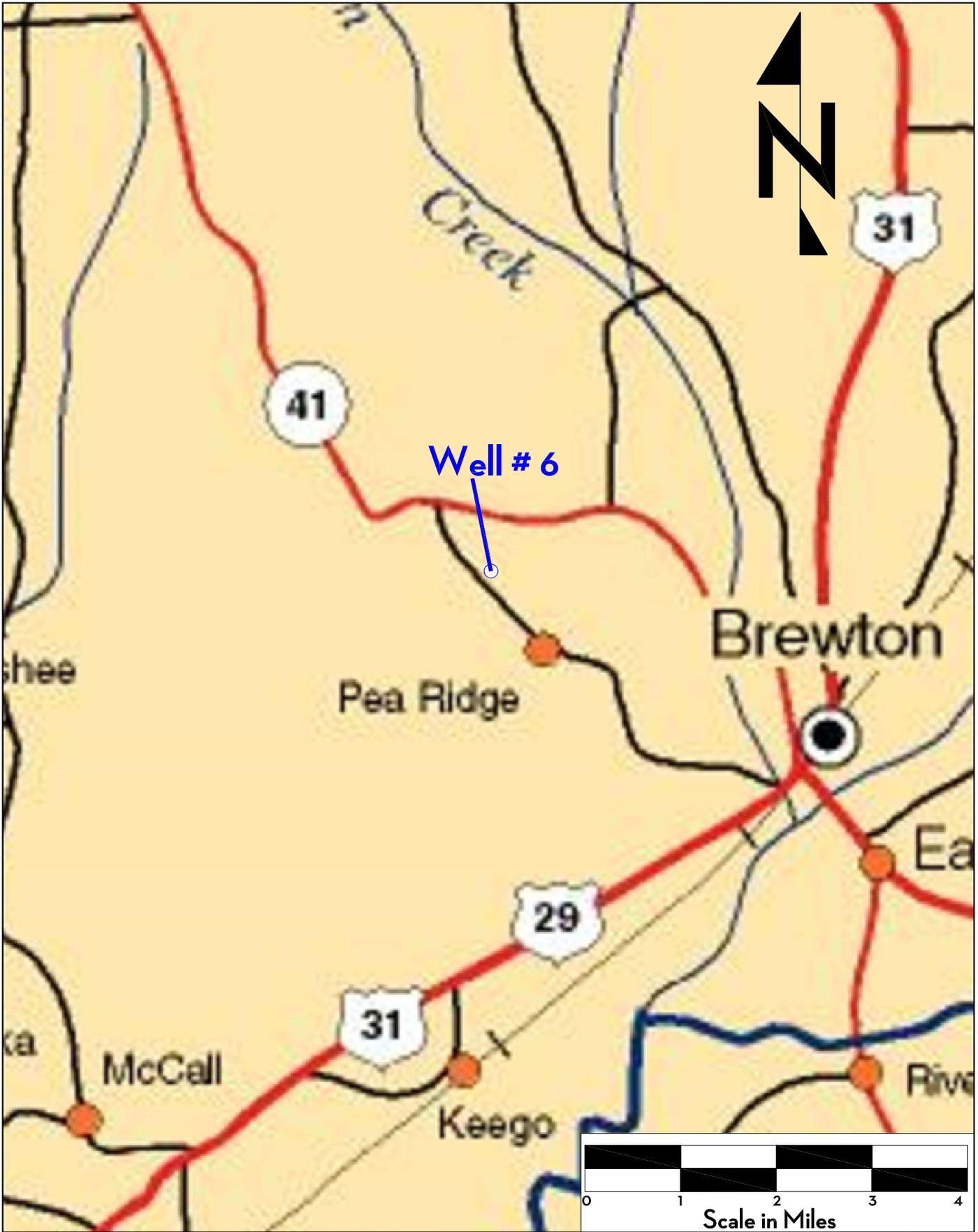
**APPENDIX C**

Community System Susceptibility Analysis Sheet

## Community System Susceptibility Analysis Sheet

<b>System Name:</b>		Water Works Board City of Brewton				<b>Raw Source ID:</b>		6	
<b>PWSID #:</b>		AL0000555							
<b>County:</b>		Escambia							
<b>Date:</b>		4/8/2021							
<b>Source ID #</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Source Type</b>	<b>Owner Name</b>	<b>Owner Address</b>	<b>Owner Phone #</b>	<b>Contaminant Names</b>	<b>Ranking</b>	<b>Comment</b>
1	31° 07' 48.2"	87° 07' 07.9"	63	Brewton WWB	1010A Douglas Ave Brewton, AL 36426	251-809-1783	Petroleum	Moderate	Generator Bell Tank
2	N/A	N/A	55	Escambia County	P.O. Box 848 Brewton, AL 36427	251-867-0236	Various	Low	Transportation

High - Red  
 Medium - Yellow  
 Low - Green



REF. SHEET: 1

DESCRIPTION: Brewton Well 6 Source Water Assessment

**City of Brewton, Alabama**

1010A Douglas Ave, Brewton, AL 36426

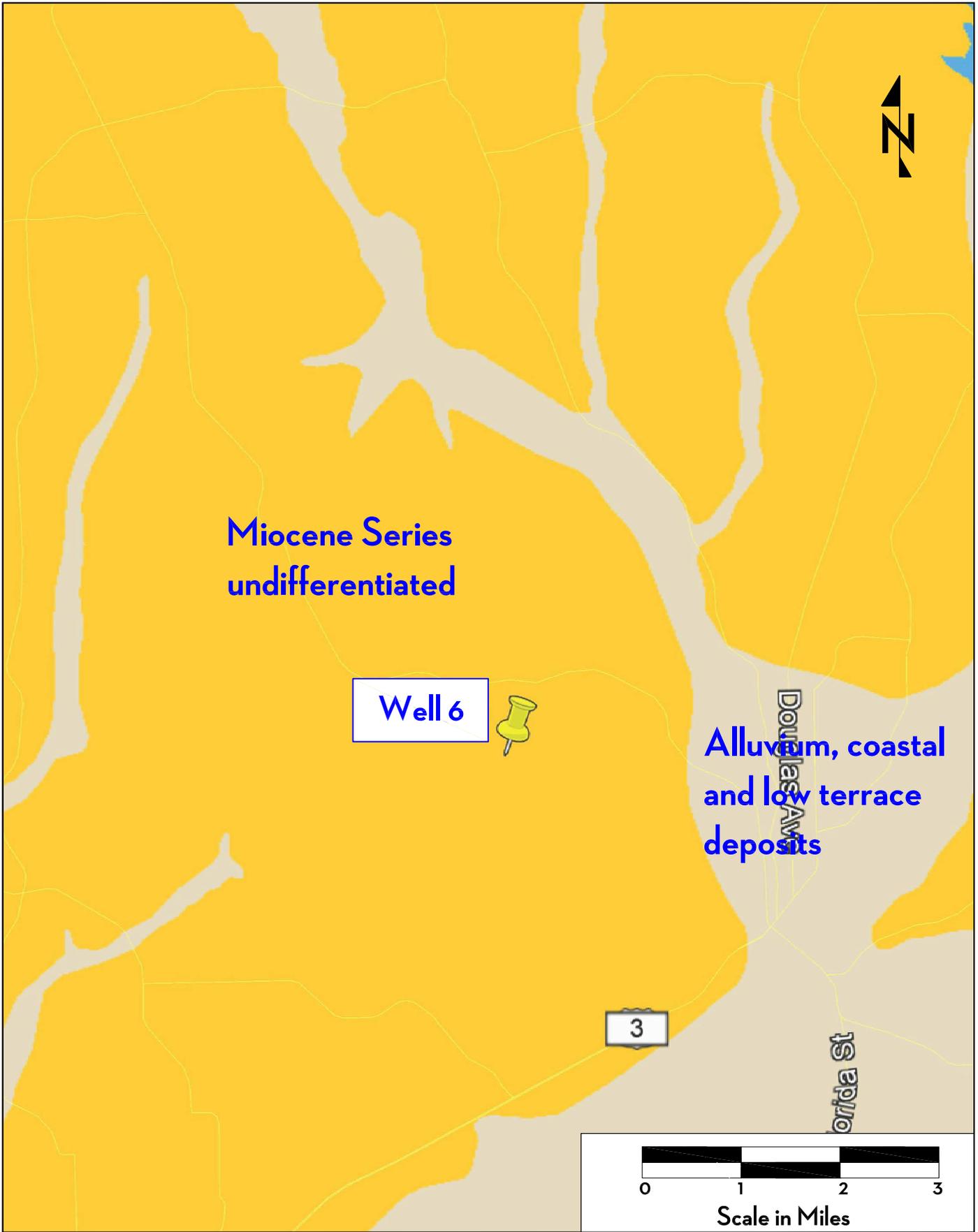
**SHEET 1**

Well 6 Location  
 GMC # EMGM210010  
 DATE: 04/7/2021  
 DRAWN BY: JLR



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 Tel 334.271.3200 | GMCNETWORK.COM



REF. SHEET: 1  
 DESCRIPTION: Brewton Well 6 Source Water Assessment

**City of Brewton, Alabama**  
 1010A Douglas Ave, Brewton, Alabama 36426

**SHEET 2**

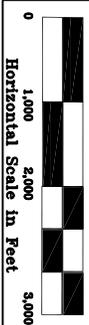
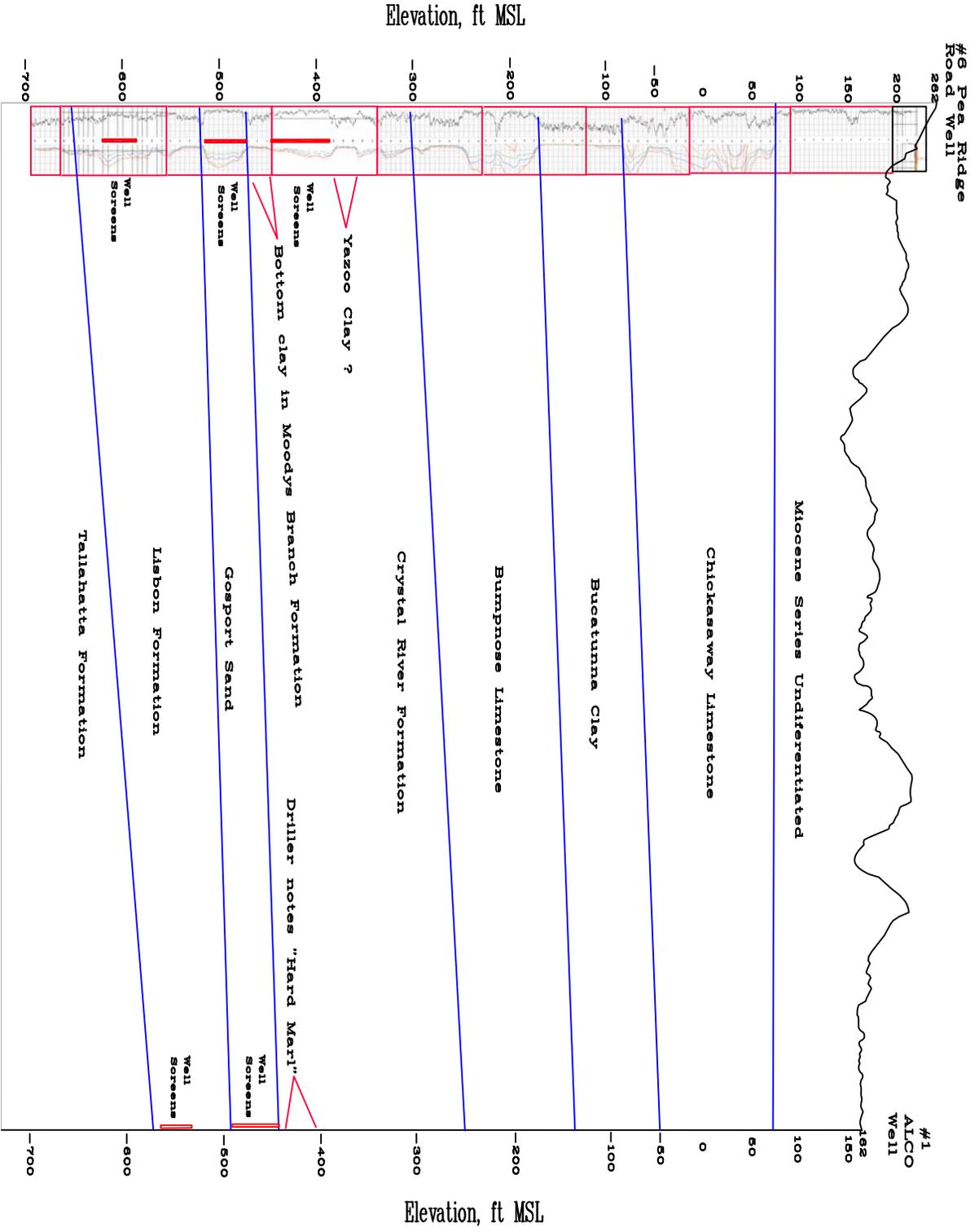
Geologic Map  
 GMC # EMGM210010  
 DATE: 04/7/2021  
 DRAWN BY: JLR



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GENERALIZED GEOLOGIC CROSS-SECTION A - A'

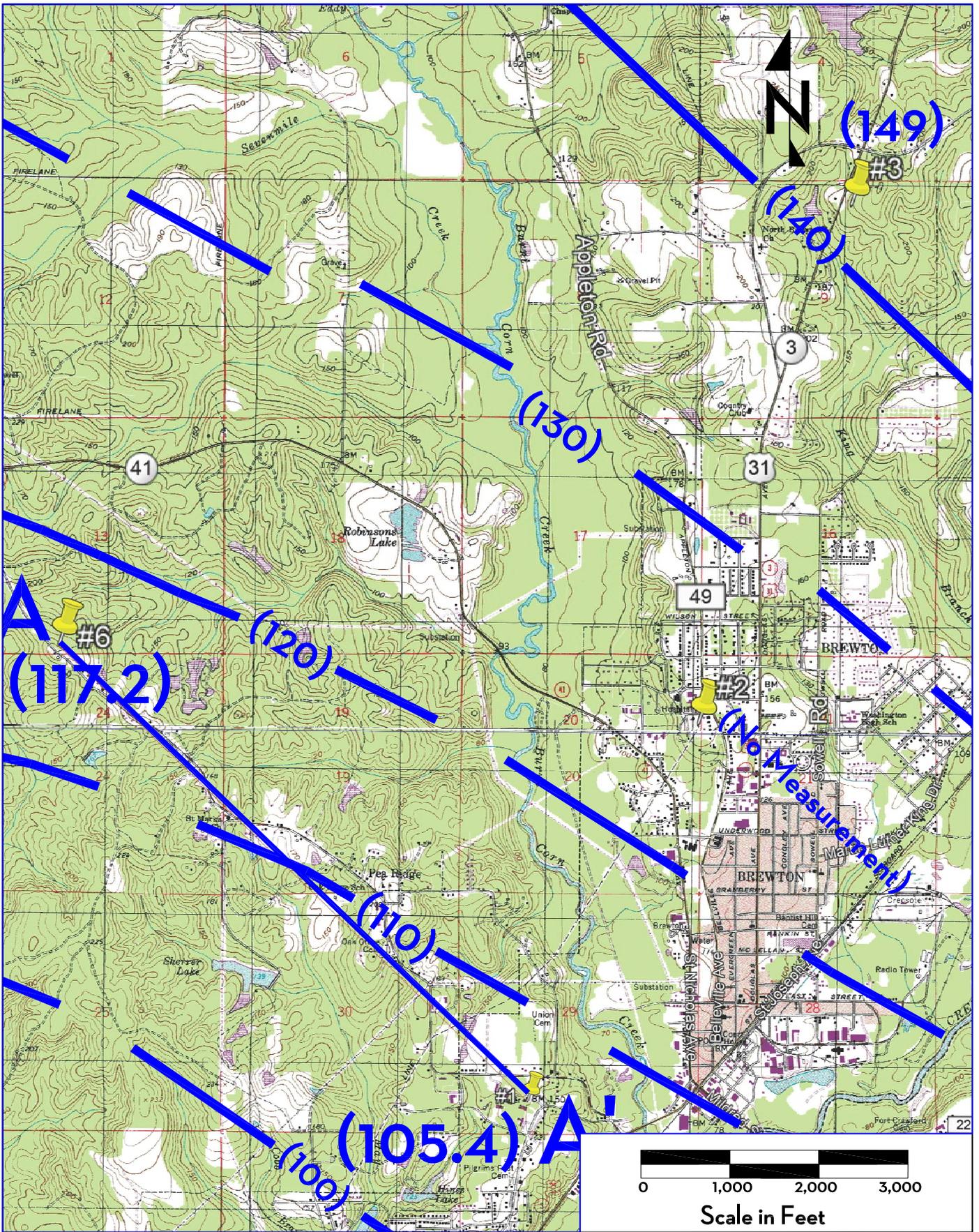


*GOODWYN, MILLS & CAWOOD, LLC.*

**MONTGOMERY, ALABAMA**

**SWAA CITY OF BREWTON WELL # 6**  
**Geologic Section A- A'**  
**Line of Section shown on Sheet 4**

DESIGNED JLR	DRAWN JLR	CHECKED JLR	REVISED	PROJECT NO. EMGM210010
DATE 4/2021		Vertical Scale Greatly Exaggerated		SHEET 3 OF 5



REF. SHEET: Lisbon Aquifer Potentiometric Map 2018 - 2020  
 DESCRIPTION: Brewton Well 6 Source Water Assessment

**City of Brewton, Alabama**  
 1010A Douglas Avenue, Brewton, Alabama 36426

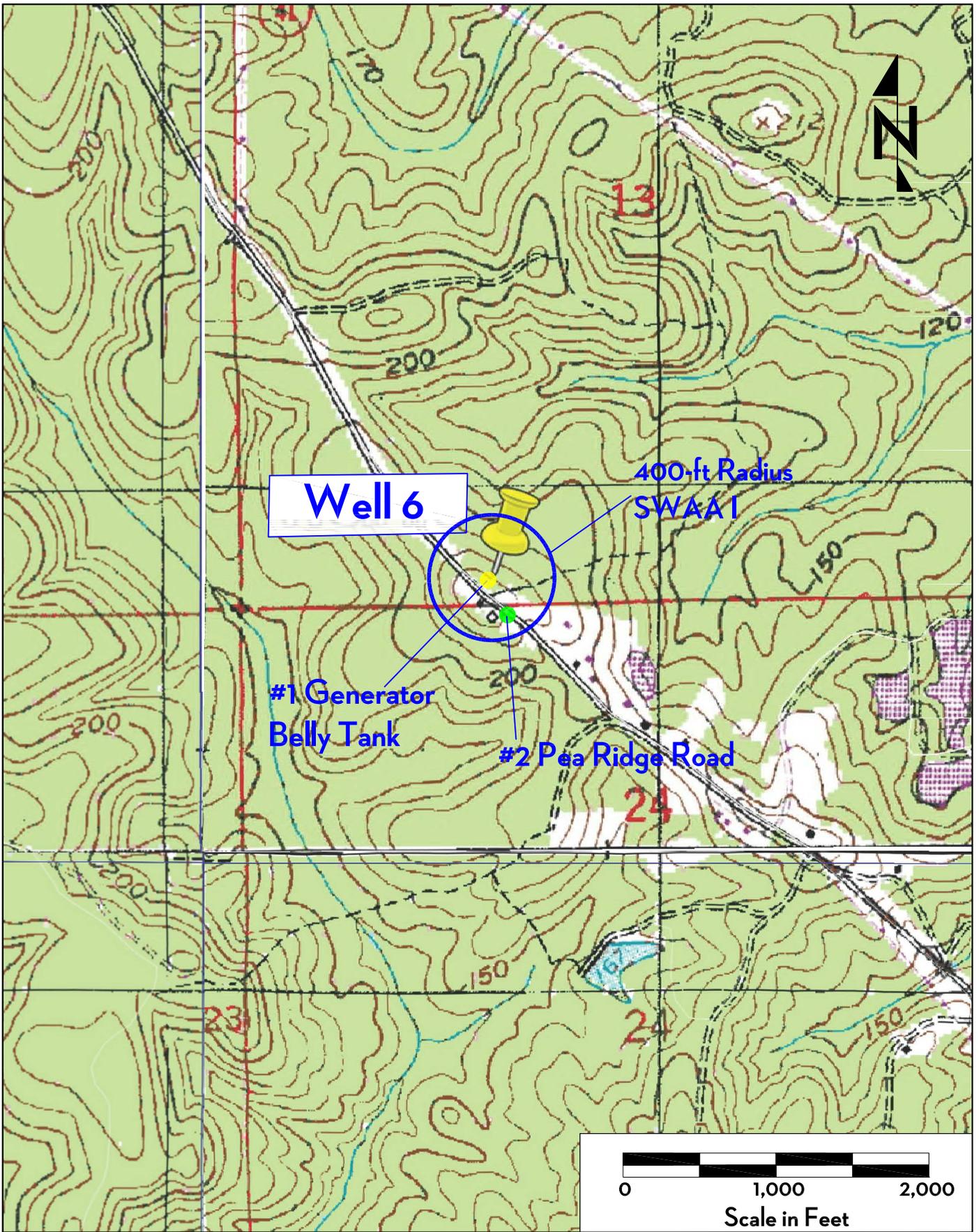
## SHEET 4

Potentiometric Map  
 GMC # EMGM210010  
 DATE: 04/7/2021  
 DRAWN BY: JLR



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REF. SHEET: 1  
 DESCRIPTION: City of Brewton Well 6 Source Water Assessment

**Brewton, Alabama**  
 1010A Douglas Avenue, Brewton, Alabama 36426

## SHEET 5

Potential Contaminant Sources  
 GMC # EMGM210010  
 DATE: 04/7/2021  
 DRAWN BY: JLR

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