Report of Findings: WRGS 17-001

Report of Findings
Hydrogeologic Report of the Electro Purification, LLC Cow Creek Well Field: Hays County, Texas

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Hays County, Texas
July 2017

WRGS Project No. 100-002-16

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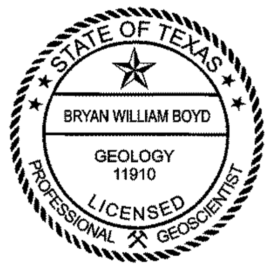

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Section I: Executive Summary

This report details the results of a hydrogeologic analysis of aquifer testing of the EP Well Field to meet the guidelines mandated by the Barton Springs Edwards Aquifer Conservation District (BSEACD) for wells that are related to an existing water supply contract with the Goforth Special Utility District (Goforth SUD) that will provide water to Hays County residents. Production will start at 0.75 million gallons per day (MGD) and increase to 2.5 MGD over an 8 year period via five (5) production wells completed within the Cow Creek Member of the Middle Trinity Aquifer (the Project). The Project is located along Ranch to Market (RM) Road 3237 approximately 9 miles northwest of the City of Kyle and 5.5 miles northeast of Wimberley. Water produced from the EP Well Field will be delivered to Goforth SUD via a 16-inch underground water line that extends approximately 11-miles eastward to the delivery point.

Aquifer testing and report parameter guidelines laid out in the BSEACD "Guidelines for Hydrogeologic Reports and Aquifer Testing - Barton Springs/Edwards Aquifer Conservation District Hays, Caldwell, and Travis Counties" (May 2016) were used to structure this hydrogeologic report. Beginning on October 31, 2016, Wet Rock Groundwater Services, LLC (WRGS) performed a series of aquifer tests on three of the existing EP wells. An aquifer test work plan was designed and approved by BSEACD staff prior to starting the field work. The three pumping wells (Bridges Wells No. 1 & 2 and Odell Well No. 2) were acidized prior to each of the three aquifer tests to increase overall production of the wells. During the testing of each well, a Baski MD-7.5 packer was set to seal the borehole within the Bexar Shale Formation, effectively isolating production from the well being tested to the Cow Creek Member. A total of 24 wells identified in cooperation with BSEACD were utilized as observation wells during the testing which included wells within the EP Well Field and neighboring land owners' domestic wells.

In the vicinity of the EP Well Field, wells generally are completed within the Upper Trinity and Middle Trinity Aquifers. Within the Middle Trinity some wells are completed in the Lower Glen Rose, the Lower Glen Rose and the Cow Creek, and just the Cow Creek Member. A well site investigation conducted in December 2016 indicated that no known or readily-accessible recharge features or springs that affect the Middle Trinity Aquifer are located within a two mile radius of the EP Well Field.

After an initial drawdown period, during the aquifer tests for each well the production at each well was maintained at a steady rate with water levels that remained relatively stable throughout the test duration. The aquifer test data indicate that there were no significant effects from nearby pumping of surrounding wells and no significant recharge or discharge boundaries experienced.

Odell Well No. 1 is completed within the Lower Glen Rose portion of the Middle Trinity Aquifer which was utilized as a monitoring well during the aquifer testing. The water level within the well indicated no observable impact during the testing from production within the Cow Creek Member. This indicates that the Cow Creek Limestone is hydraulically disconnected from the Lower Glen Rose in the vicinity of the EP Well Field.

Based upon the results of the aquifer testing, some drawdown will be seen in neighboring wells completed within the Cow Creek Limestone. Wells completed within the Upper Trinity Aquifer and the Lower Glen Rose however, should not be effected by EP Well Field pumping. In addition, the water quality of the tested wells indicate the finished water will meet all Texas Commission on Environmental Quality (TCEQ) Maximum Contaminant Levels (MCLs) and Secondary Contaminant Levels (SCLs) and pumping should not affect the overall water quality of the Middle Trinity Aquifer.

Section II: Introduction

This report details the results of a well field hydrogeologic report to meet the guidelines mandated by the Barton Springs/Edwards Aquifer Conservation District (BSEACD) for a regular production permit application. Electro Purification, LLC (EP) is submitting a regular production permit application for the Bridges Wells No. 1, No. 2, No. 5, No. 6, and Odell Well No. 2, which are located on the Bridges and Odell properties in central Hays County (Figure 1). Water produced from the completed wells will be utilized by Goforth Special Utility District (Goforth SUD). The Project is located along Ranch to Market (RM) Road 3237 approximately 9 miles northwest of the City of Kyle and 5.5 miles northeast of Wimberley (Figure 1).

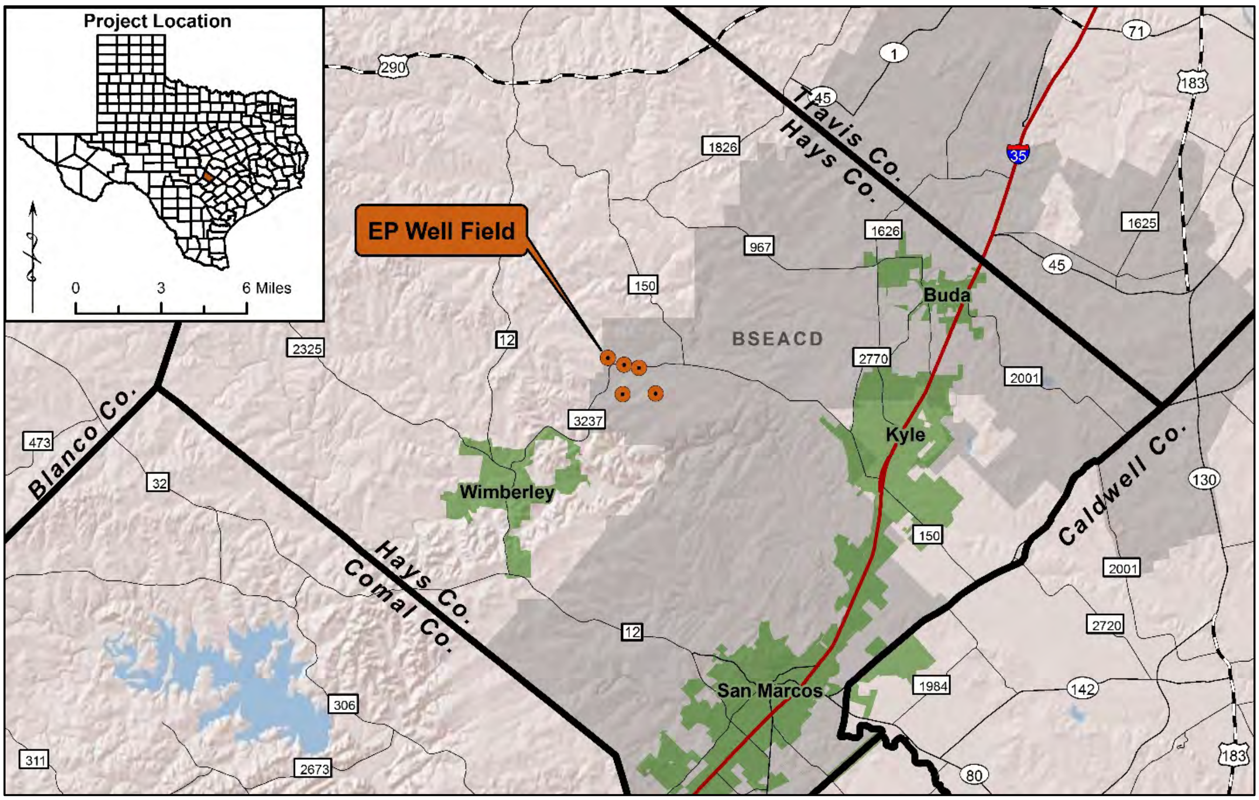


Figure 1: Location map of the EP well field project area

Acquisition of a regular production permit from BSEACD requires an acceptable aquifer test and a hydrogeologic report for the well field. Aquifer testing and report parameter guidelines laid out in the BSEACD "Guidelines for Hydrogeologic Reports and Aquifer Testing - Barton Springs/Edwards Aquifer Conservation District Hays, Caldwell, and Travis Counties" (May 2016) were used to structure this hydrogeologic report pursuant to BSEACD mandate. Beginning on October 31, 2016, Wet Rock Groundwater Services, LLC (WRGS) performed a series of aquifer tests on three of the EP wells. The aquifer testing procedures were closely coordinated with BSEACD to ensure an accurate assessment of the hydrogeologic properties of the Trinity Aquifer at the well sites.

The objectives of this Report are to support EP's application for a regular production permit authorizing production from the Middle Trinity Aquifer, by demonstrating the following:

1. Provide a detailed description of the project to include location, pumping demands, pumping schedules (frequency, peak demand hours, and pumping rates), and the location and volume of the water;

2. Describe the geologic properties and develop a conceptual hydrogeological model of the Trinity Aquifer in the area of the EP well field;

3. Take an inventory of potential recharge and discharge locations influencing or being influenced by the EP well field;

4. Give surrounding parties sufficient public notice of aquifer tests to be performed on the EP wells;

5. Design, perform, and analyze the results of the aquifer tests at the EP well field;

6. Discuss the potential for unreasonable impacts to the aquifer and/or surrounding wells;

7. Discuss proposed pumping relative to the Modeled Available Groundwater and any possible impacts to the Desired Future Condition for the Trinity Aquifer;

8. Address any potential impacts to area springs and streams; and

9. Report water quality sample results, evaluate future water level impacts, and assess potential water quality impacts from the EP well field.

Section III: Description of the Well Sites and Future Water System

III.1. Introduction

EP controls the rights to production of water from the Middle Trinity Aquifer within two parcels of land owned by the Bridges (~903 acres) and Odell (~443 acres) families where seven wells were constructed (Figure 2). The wells were completed for purposes of determining the volume and quality of water available. After initial testing of the wells in 2014 and 2015, EP decided to develop Bridges Well No. 1, Bridges Well No. 2, and Odell No. 2 for future public supply. Two additional wells (Bridges Wells No. 5 and No. 6) will be completed in the future and will supplement the existing wells. The remaining wells (Bridges Well Nos. 3 & 4, and Odell Well Nos. 1 & 3) may be utilized as monitoring wells, exempt domestic/livestock wells, or plugged. EP is in discussions with the respective landowners about the future of the four wells.

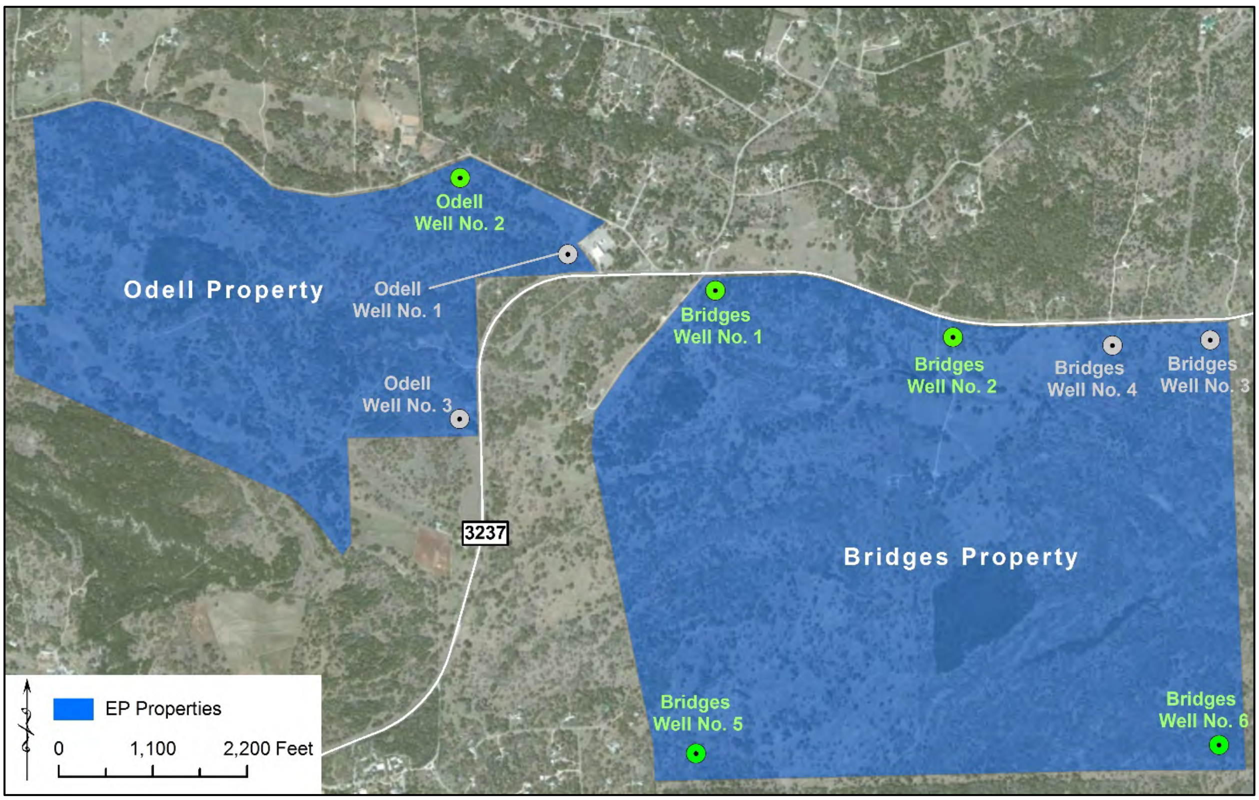


Figure 2: EP facilities map

III.2. Well Sites and Details

The EP Well Field site is located within the Texas Hill Country and is dominated by central Texas vegetation characterized by a combination of tall, medium, and short grasses intermixed into woodland or forest settings with hardwood trees, thin soils, and rocky terrain with Edwards Group limestone outcroppings. The majority of the land within the properties is undeveloped with natural vegetation and is used for livestock grazing. There are five storage ponds within the properties (two on the Bridges property and three on the Odell property; (Table 1) designated for livestock use. The Bridges storage ponds BA, BB, and Odell storage ponds OB and OC are located along the ephemeral Halifax Creek; the Odell storage pond OA is located near Odell Well No. 1 (Figure 3). The storage ponds are used to capture precipitation runoff and were utilized temporarily during the aquifer testing of the wells to capture discharge. The storage ponds will not be used in association with future production. Table 1 provides a summary of the storage ponds and their respective capacity.

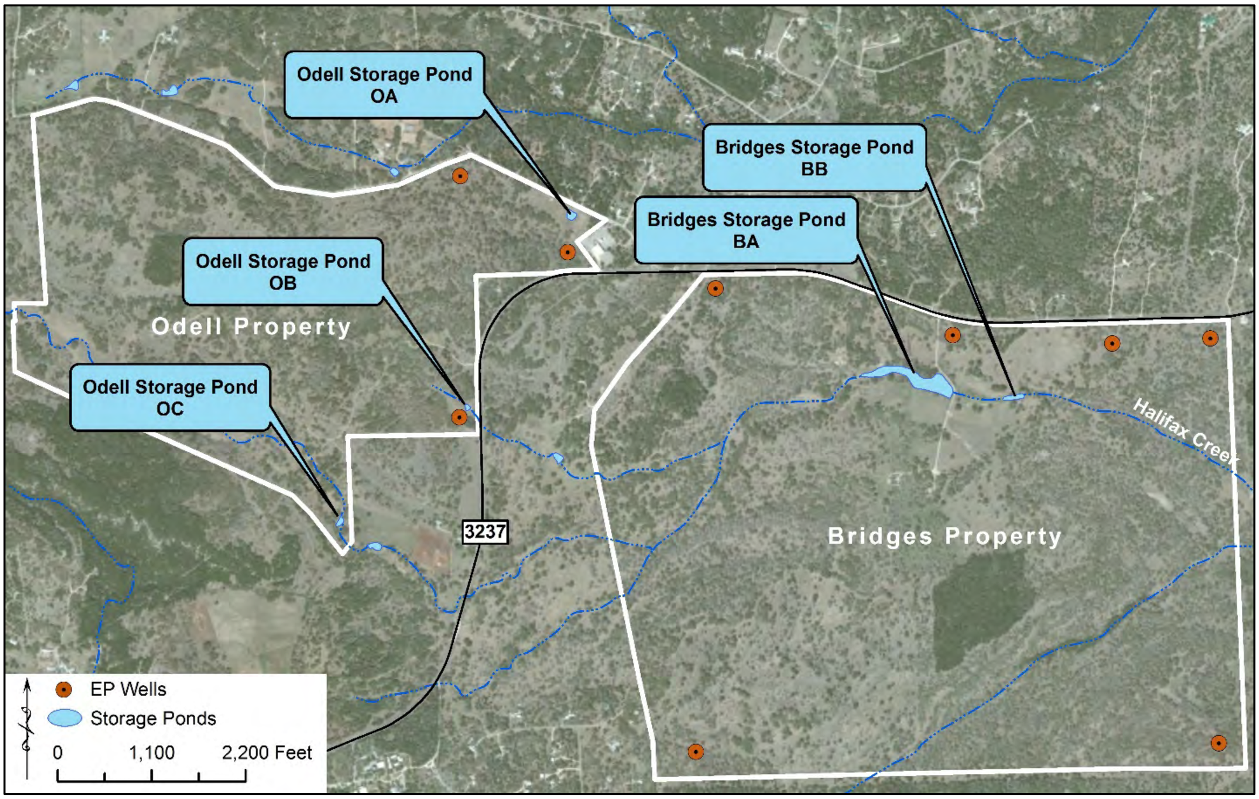


Figure 3: Map of water storage facilities at the Bridges and Odell family properties

Table 1: Water storage facilities at the Bridges and Odell family properties

Storage Facility	Surface Area (acres)	Average Depth (ft.)	Volume (acre-feet)
Bridges Storage Pond BA	3.04	5	15.2
Bridges Storage Pond BB	0.28	2	0.6
Odell Storage Pond OA	0.23	2	0.5
Odell Storage Pond OB	0.07	3	0.2
Odell Storage Pond OC	0.15	3	0.4
Total (acre-feet)			16.9

Bridges Well No. 1 Site

Figures 4 and 5 (A - D) show aerial and field photos of the area near the Bridges Well No. 1 site; the field photo (Figures 5A - D) locations are designated on the map in Figure 4. Photo A was taken near Bridges Well No. 1 with the foreground showing the water level monitoring equipment and wellhead setup prior to aquifer testing. Photo B was taken near the wellhead looking to the southwest and shows the water tanks along with the flat terrain, large oak trees, and bluestem grasses dominating the area landscape. Photo C was taken from along the drainage channel looking south. The water in the photo is present due to pumping Bridges Well No. 1. Photo D was taken from the south side of the pumping well looking east along the drainage direction.

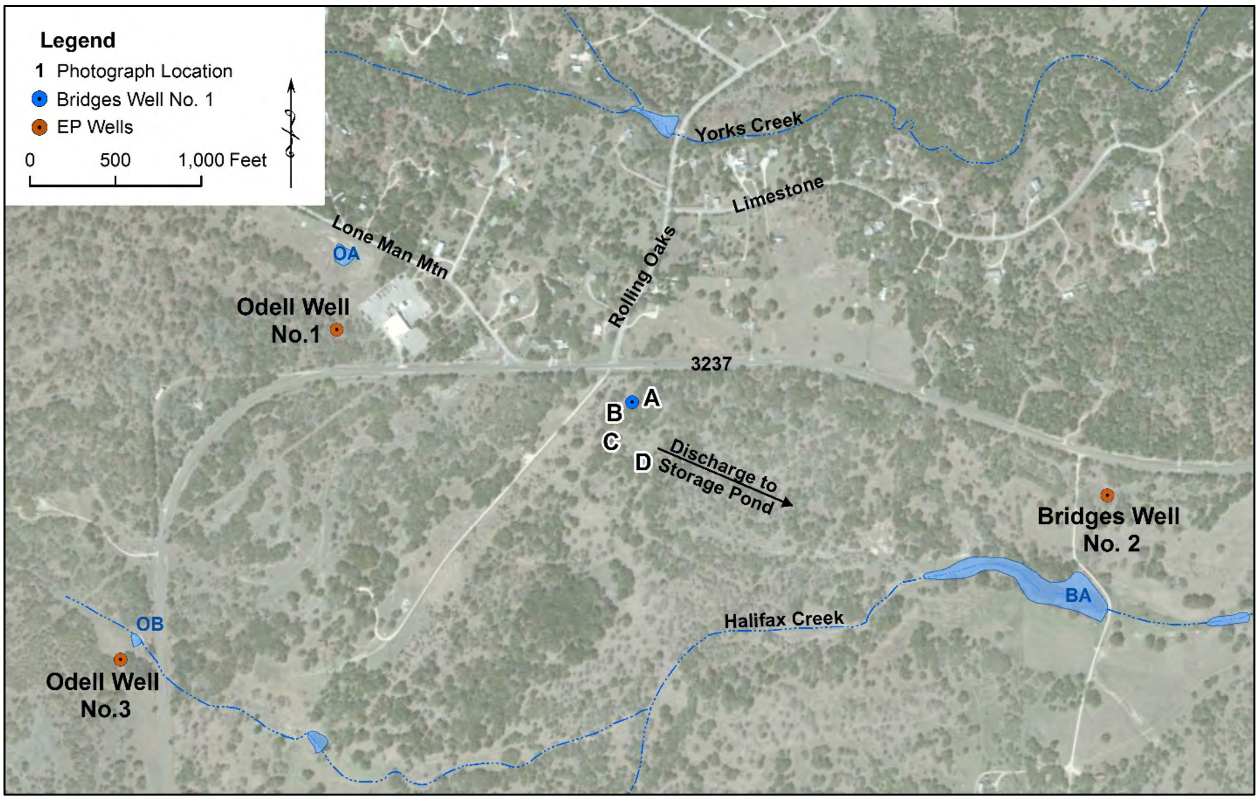


Figure 4: Bridges Well No. 1 site schematic

Figure 5: Photos from well site area –A) Looking northeast towards Bridges Well No. 1; B) looking southwest toward water tanks; C) looking south from drainage area; D) looking east towards Bridges storage pond BA

Bridges Well No. 2 Site

Figures 6 and 7 (A - D) show aerial and field photos of the area near the Bridges Well No. 2 site; the field photo (Figures 7A - 6D) locations are designated on the map in Figure 6. Photo A was taken near Bridges Well No. 2 prior to acidization looking to the northeast. Photo B was taken to the east of the well and shows the direction of the discharge from aquifer testing. Photo C was taken along a path looking south. The discharge (pictured) ran south from the well and into Bridges storage pond BB. Photo D was taken along the north bank of the storage pond.

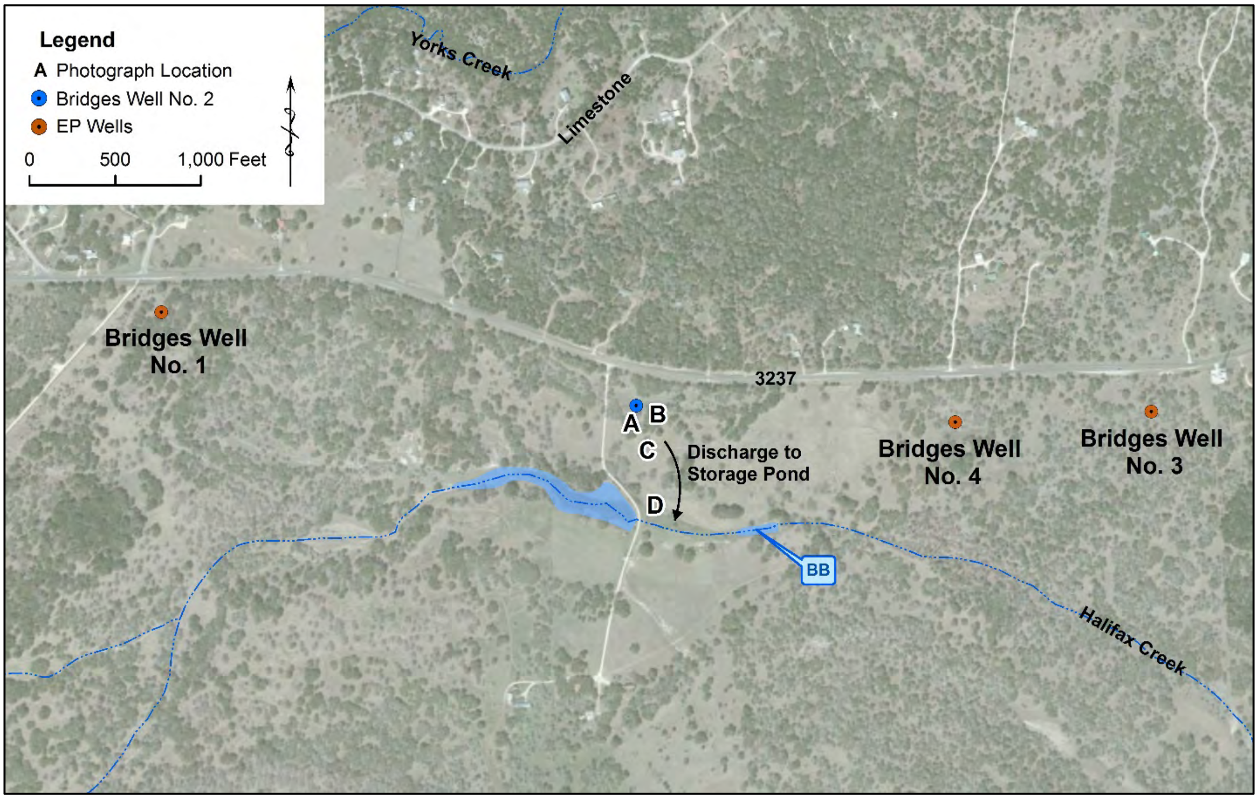


Figure 6: Bridges Well No. 2 site schematic

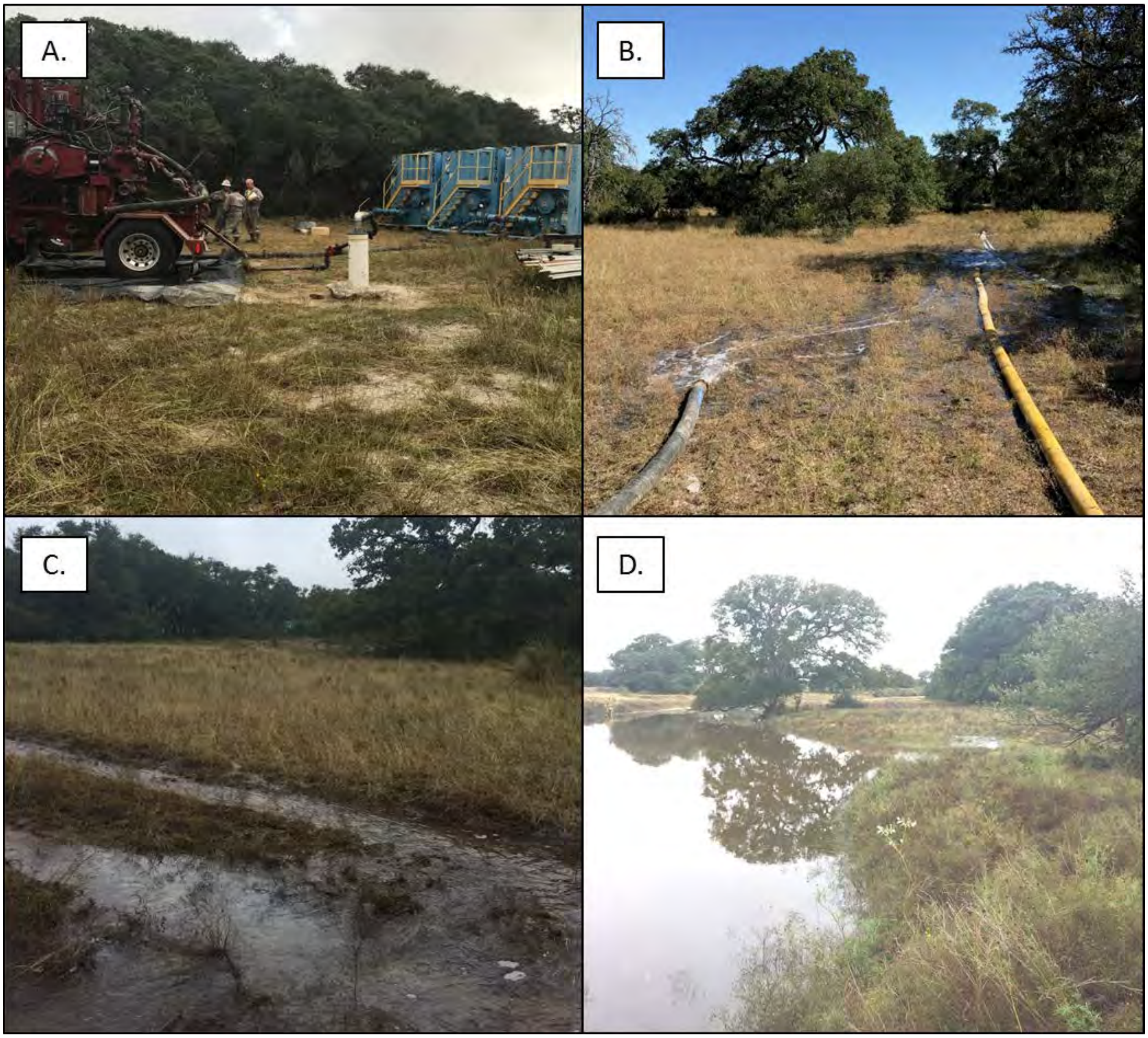


Figure 7: Photos from well site area – A) Looking northeast towards Bridges Well No. 2; B) looking east toward drainage area; C) looking south from drainage area; D) looking southwest towards Bridges storage pond BA

Odell Well No. 2 Site

Figures 8 and 9 (A - D) show aerial and field photos of the area near the Odell Well No. 2 site; the field photo (Figures 9A - D) locations are designated on the map in Figure 8. Photo A was taken near Odell Well No. 2 with the foreground showing the water level monitoring equipment and wellhead setup prior to pumping. Photo B was taken south of the wellsite and provides an example of the weathered limestone and oak trees that dominate the area topography. Photo C was taken southwest of the wellsite where part of the discharge from the aquifer testing was piped. Photo D was taken to the east of the wellsite where a portion of the discharge from the aquifer testing was routed into Odell storage pond OA.

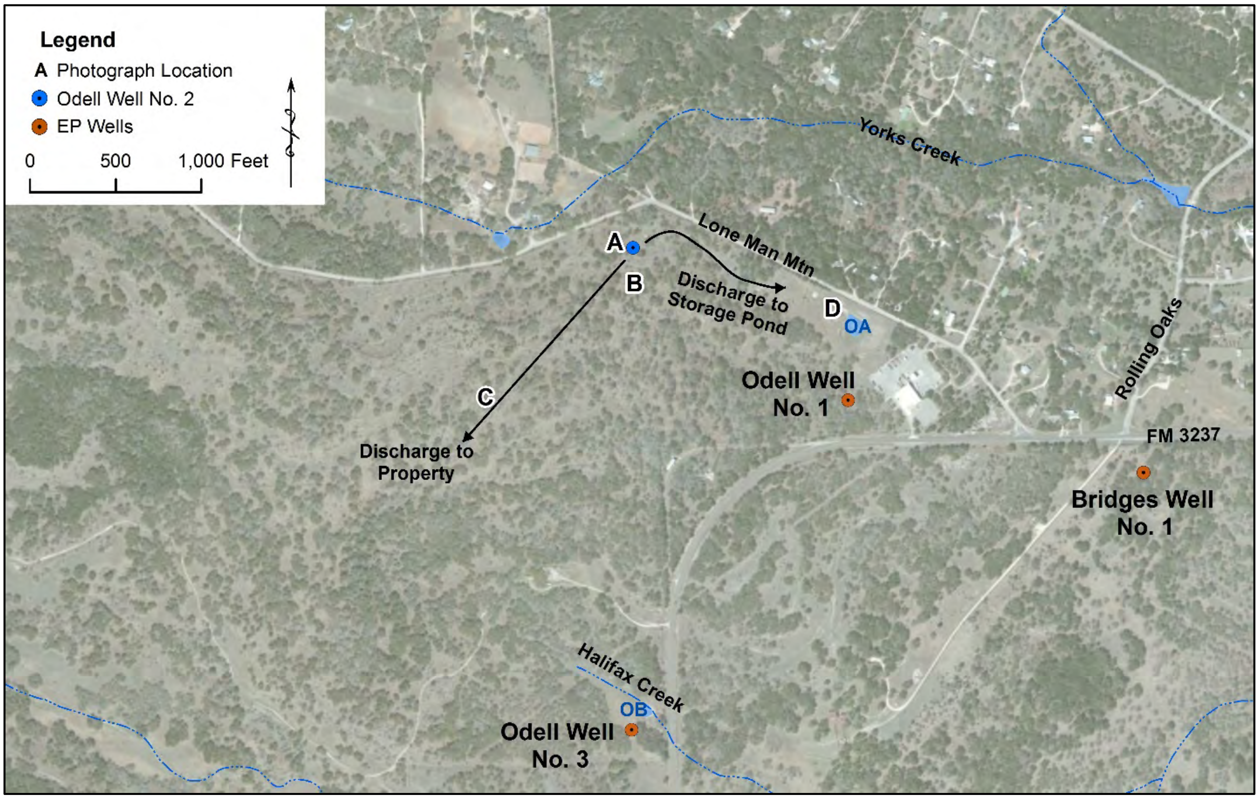


Figure 8: Odell Well No. 2 well site schematic

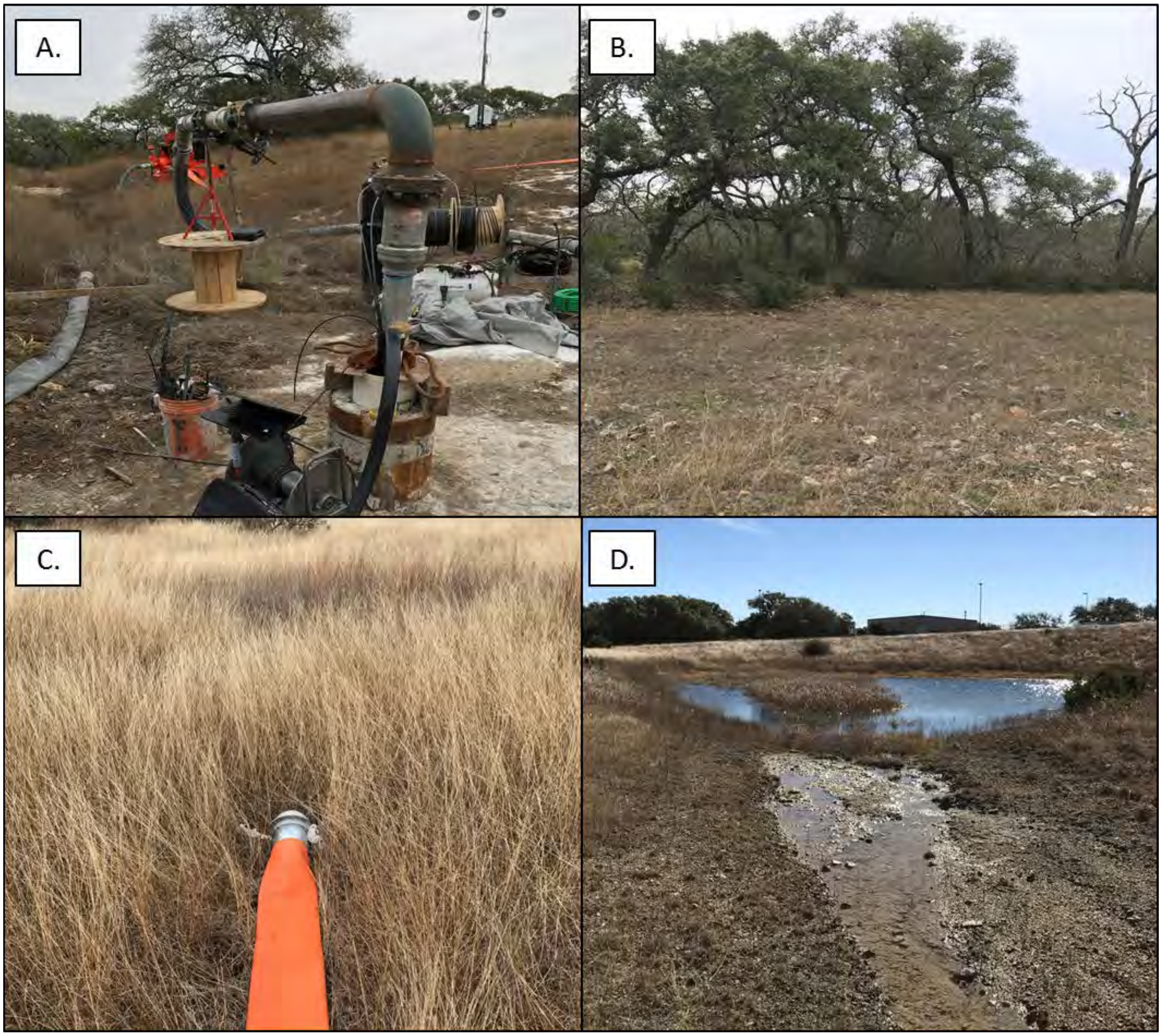


Figure 9: Photos from well site area – 1) Looking southeast toward Odell Well No. 2; 2) looking south at area vegetation; 3) looking southwest from pipe discharge; 4) looking east towards Odell storage pond OA along discharge channel

III. 3. Future Water System

The groundwater produced from the EP well field will be utilized for public supply pursuant to an existing contract with Goforth SUD. Plans for distribution from the well field to the wholesaler are currently being developed. According to the preliminary plans, the water produced from the EP well field will be transferred to the Goforth SUD facility approximately 11.24 miles to the east via a 16-inch underground pipeline (Figure 10). Contracts in place with Goforth SUD call for EP to deliver treated water at a specified daily volume to be agreed upon at a later date. The pumping schedule for water to be produced from the EP Wells in the future will be dependent upon water system demand. Peak pumping demand hours are projected for the early morning and evening hours to accommodate typical public water supply demand. Table 2 provides a conservative estimated pumping schedule for the first 8 years of operation. Production is projected to start at 0.75 million gallons per day (MGD) and increase to 2.5

MGD at an average 0.25 MGD annual increase over an 8 year period. After the eighth year, 2.5 MGD will be available to Goforth SUD on an as needed basis. The actual demand, however, may be greater or less depending on need. This conservatively phased pumping schedule will allow EP and BSEACD to monitor any effects on the aquifer from production without any threat of unreasonable impacts to either the aquifer or neighboring wells.

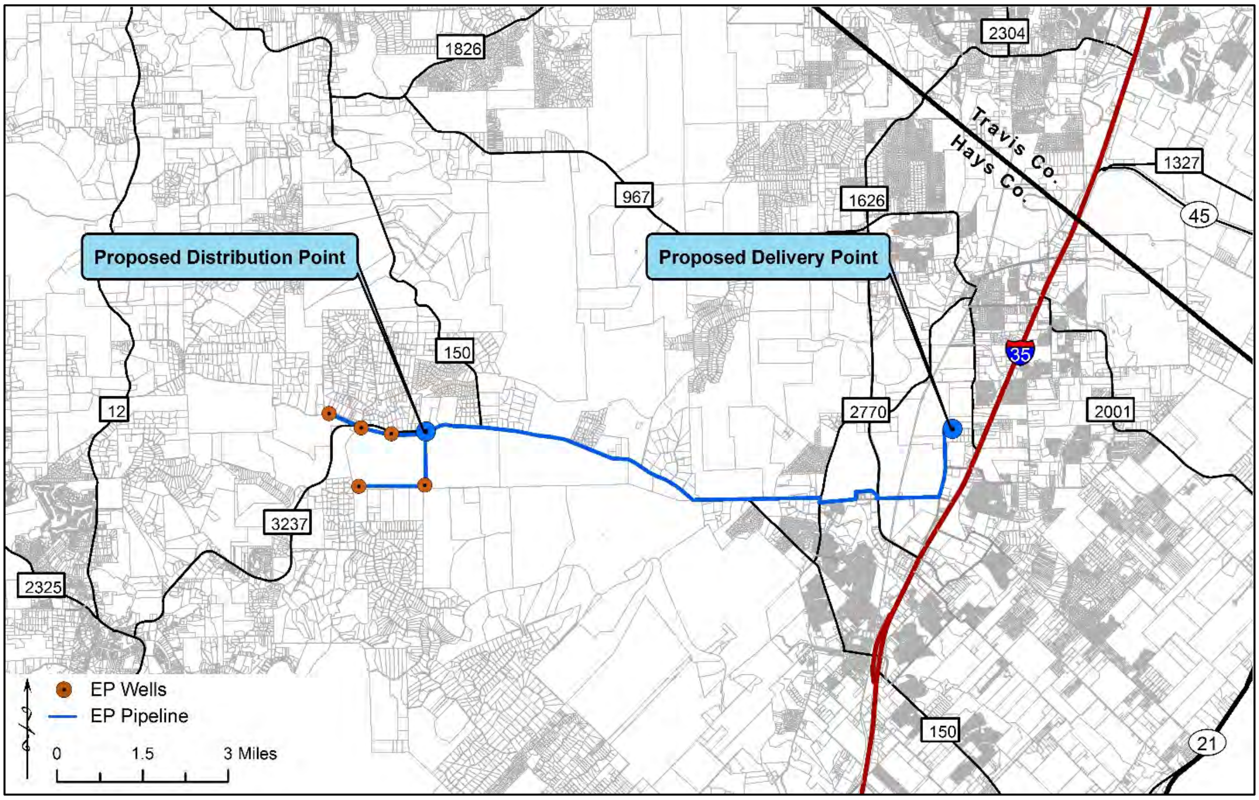


Figure 10: EP distribution map

Table 2: Estimated pumping projections

Pumping Year	Estimated Pumping Volume (MGD)	Total Annual Production Volume (MG)	Total Annual Production Volume (acre-feet)
No. 1	0.75	273.8	840.1
No. 2	1.00	365.0	1,120.1
No. 3	1.25	456.3	1,400.2
No. 4	1.50	547.5	1,680.2
No. 5	1.75	638.8	1,960.3
No. 6	2.00	730.0	2,240.3
No. 7	2.25	821.3	2,520.3
No. 8	2.50	912.5	2,800.4
Note: MGD = million gallons per day; MG = million gallons; Starting in Year 8 going forward, up to 2.5 MGD will be pumped on an as needed basis			

Section IV: Groundwater Management in Hays County

Throughout the State of Texas, each Groundwater Management Area (GMA) collaborates with the member Groundwater Conservation Districts (GCDs) that are completely or partially within their boundaries to determine the Desired Future Conditions (DFC) for all aquifers within the GMA. According to Texas Administration Code 31TAC§356.2(8), DFCs are the desired, quantified conditions of groundwater resources (such as water levels, water quality, spring flows, or volumes) at a specified time or times in the future or in perpetuity. Based upon the DFC provided by the GMA, the TWDB utilizes a Groundwater Availability Model (GAM) or alternative methods, such as hydrologic budgeting formulas, to develop a modeled available groundwater (MAG) value which could be used for planning purposes including during the permitting process. Modeled Available Groundwater is defined in the Texas Water Code, Section 36.001, Subsection (25), as *"the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108."*

The DFC for the Trinity Aquifer within GMA 9 is:

- Allow for an increase in average drawdown of approximately 30 feet across the aquifer through 2060.

The DFCs for the Trinity Aquifer within GMA 10 are:

- Average regional well drawdown not exceeding 25 feet during average recharge conditions (including exempt and non-exempt use);
- Within the Hays-Trinity Groundwater Conservation District; no drawdown; and
- Within Uvalde County; 20 feet.

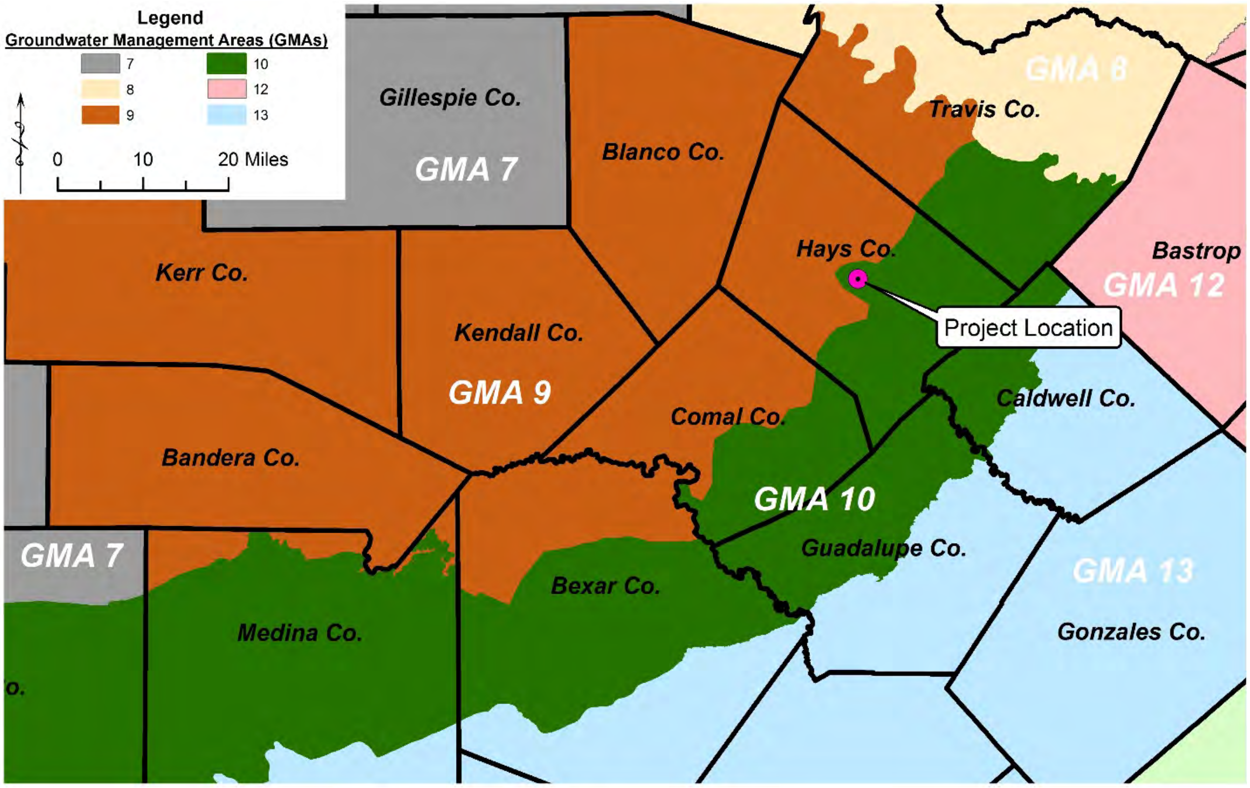


Figure 11: Groundwater Management Areas

Hays County is under the jurisdiction of GMA 9 and 10. Figure 11 provides a map showing the GMA boundaries in the vicinity of the Project location.

Table 3 provides a summary of the MAG values for Hays County. To calculate the MAG for GMA 9, TWDB staff utilized the Groundwater Availability Model (version 2.01) for the Hill Country portion of the Trinity Aquifer developed by Jones and others (2009) (GAM Run 10-050 MAG Version 2). In GMA 10 rather than utilizing a model, the MAG was calculated by using a transient hydrologic budget formula in a Microsoft Excel worksheet (GTA Aquifer Assessment 10-06). It should be noted that the model for the Trinity Aquifer does not differentiate between the three aquifers (Upper, Middle, and Lower Trinity). In addition, the model excludes the majority of the confined zone of the aquifer. When considering aquifer properties which show much of an aquifer's storage is within the confined zone, the MAG numbers for this portion of the Trinity Aquifer are most likely grossly underestimated by current models.

Table 3: Modeled Available Groundwater values for the Trinity Aquifer

Modeled Available Groundwater for the Trinity Aquifer (from TWDB)							
County	**GMA-Co. Total**	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Hays	9	9,131	9,120	9,117	9,116	9,116	9,116
	10	3,815	3,815	3,815	3,815	3,815	3,815
	County Total	12,946	12,935	12,932	12,931	12,931	12,931
Notes: All values are expressed in acrefeet/year; GMA - Groundwater Management Area; TWDB - Texas Water Development Board							

Table 4 provides a summary of the historic gross pumpage for a ten year period within Hays County. The gross pumpage data was obtained from TWDB with 2015 being the most recent year of available data. When the anticipated EP maximum production of approximately 2,800 acre-feet/year (ac-ft/yr) (2.5 million gallons per day) is added to recent Trinity Aquifer average production volumes within Hays County, the total pumping volume is below the MAG volumes of approximately 12,930 ac-ft/yr. Since the anticipated EP production volumes combined with other county production does not exceed the Trinity Aquifer MAG for Hays County, no detrimental impacts to the adopted DFCs are anticipated.

Table 4: Groundwater production from the Trinity Aquifer

Historic Trinity Pumpage for Hays County (From TWDB)										
2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**10-Year Average**
3,497	3,818	3,670	4,262	4,985	6,110	5,287	5,061	3,287	2,786	4,276
Notes: All values are expressed in acre/feet-year; TWDB - Texas Water Development Board										

Section V: Geology and Aquifer Description

V.1. Introduction

The two major aquifers located within Hays County are the Edwards Aquifer and the Trinity Aquifer. These two aquifers make up a thick and regionally extensive aquifer system composed of Lower Cretaceous carbonates that were deposited throughout central Texas. On the Edwards Plateau in northwestern Hays County, the regional dip of the Cretaceous rocks is generally about 50 to 70 feet per mile to the southeast, which is the approximate gulfward slope of the land surface. Southeast of the Balcones fault zone the dip is progressively greater toward the Gulf, probably approaching 100 feet per mile in southeastern Hays County (DeCook, 1963).

The lower of the two aquifers, the Trinity Aquifer is composed of three distinct hydrogeologic units: the Upper, Middle, and Lower Trinity Aquifers. The Upper Trinity Aquifer, composed of the Upper Glen Rose Limestone, is overlain by the limestone and dolomite of the Edwards Aquifer in the southeast portion of the county. The Middle Trinity Aquifer consists of the Lower Glen Rose, Hensell / Bexar Shale, and Cow Creek formations. All units of the Middle Trinity are karstic carbonates and mudstones. Separating the Middle and Lower Trinity aquifers is the Hammett Shale, which is a regional confining layer underlying the Cow Creek Formation.

V.2. Stratigraphy and Geologic History

The project location is situated in central Hays County, where the San Marcos Arch and the Balcones Fault Zone (BFZ) dominate the regional geologic and hydrogeologic properties. The San Marcos arch or platform as described by Adkins (1933) is a broad anticlinal extension of the Llano uplift extending toward the city of San Marcos in Hays County and has had significant impacts on the deposition of overlying sediments (Ashworth, 1983). The Miocene BFZ is a series of normal en-echelon faults that trend in a general northeast-to-southwest direction extending from Williamson County in the northeast to Kinney County in the west. Faults are generally steeply dipping (45-85 degrees) to the southeast and strike to the northeast (Collins, 1995). Faulting in the area associated with the BFZ has caused some rock units to be upthrown against others, creating both barriers to flow and conduits for water to pass through. Figure 12 illustrates the regional geologic and hydrogeologic units encountered within and in the vicinity of the Hays County project location.

The Trinity Aquifer as its name implies is divided into three aquifers from oldest to youngest: the Lower, Middle and Upper Trinity Aquifers. Formations comprising the Lower Trinity Aquifer include, from oldest to youngest, the Hosston Sand Member and Sligo Limestone Member of the Travis Peak Formation (Figure 12). The Hosston consists of a conglomerate of gravel, sand and clay cemented by both calcite and quartz. The Hosston also contains sections of sandstone, siltstone, claystone, dolomite, limestone and shale. The Sligo Limestone consists of clastic sediment near the project location, and becomes dominantly limestone and dolomite to the east. Surface outcrops are referred to in the literature as Sycamore; Hosston and Sligo are the subsurface equivalents.

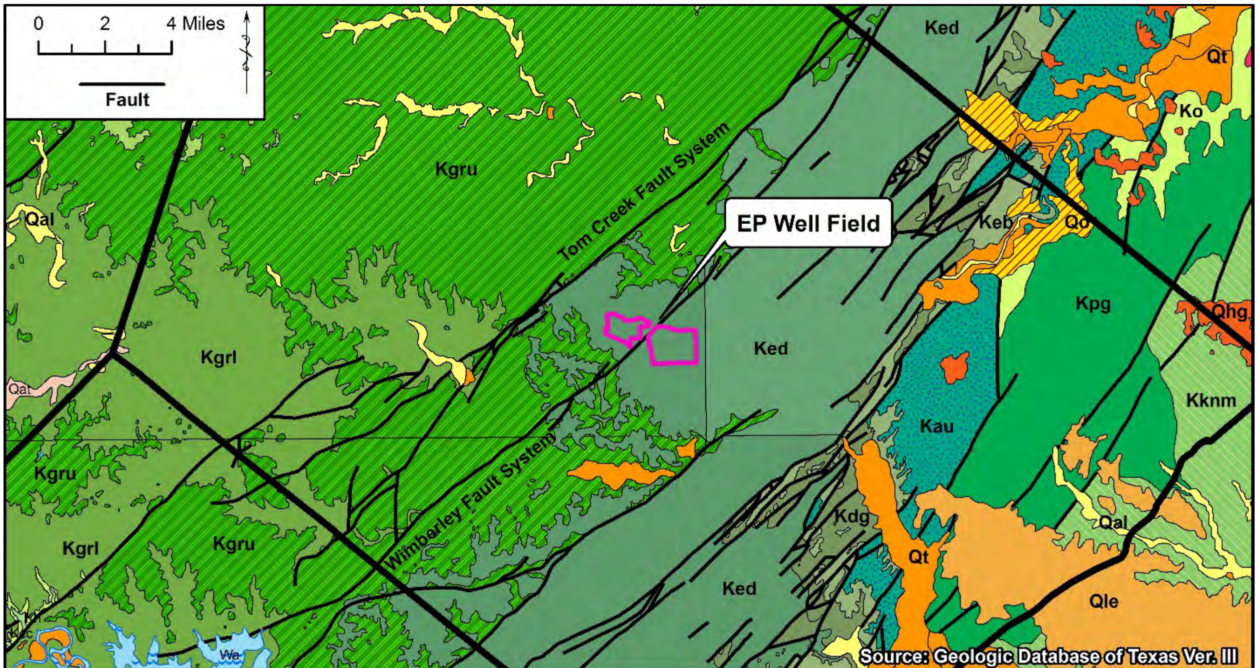
Located stratigraphically above the Hosston Sand is the Hammett Clay Member also known as the Pine Island Shale. The Hammett is a transgressive "shale" deposit that onlaps Lower Trinity Sligo and Hosston formations. The interval averages 40 feet in thickness in the Hays County area (Wierman et al., 2010). The unit is primarily a clay rich, gray-green sticky, dolomitic shale/claystone with siltstone and dolomite lenses. Color can be dark gray to black, blue, greenish gray and gray. The Hammett is a confining bed separating the Lower Trinity Aquifer from the Middle Trinity Aquifer (Figure 12).

Above the Hammett Clay lies the Middle Trinity Aquifer composed of the Cow Creek Limestone and the Bexar Shale members of the Travis Peak Formation and the Lower Glen Rose Limestone member of the Glen Rose Formation (Figure 12). The Cow Creek Limestone is a massive, fossiliferous limestone and dolomite ranging up to 100 feet in thickness and may contain some interbedded sand, clay, and evaporite minerals such as gypsum and anhydrite (Ashworth, 1983; Preston et. al, 1996; Wierman et al., 2010). The formation was subaerially exposed and subjected to meteoric water infiltration during early Hensell time, which resulted in widespread vuggy porosity (Loucks, 1977). In some areas, the Cow Creek is heavily fractured and capable of producing large well yields.

Overlying the Cow Creek is the Hensell Sand Member (Figure 12), which in the outcrop, is composed of loose sand and grades into thick continental deposits of red clay, silt, sand, and conglomerate with limestone beds in the subsurface. The Hensell is a water-bearing unit to the north and west of the project location. Downdip, the Hensell grades into marine deposits of silty dolomite, marl, calcareous shale, and shaley limestone known as the Bexar Shale Member (Ashworth, 1983). Downdip, the Bexar Shale acts as a confining unit for the Cow Creek (Wierman et al., 2010).

Stratigraphically above the Hensell Sand/Bexar Shale, the Glen Rose Limestone Formation is divided into a Lower and Upper Member (Figure 12). The Glen Rose along with the Hensell Sand represents a wedge of sediments deposited in a transgressing sea. George (1952) separated the Glen Rose into upper and lower members. The boundary between the two members is identified by a thin, heavily fossfiliferous limestone bed containing *Corbula martinae* that persists throughout the study area except where erosion has lowered the land surface below the bed (Whitney, 1952; Ashworth, 1983). The separation between the two units is also distinguishable on electric logs where two distinct evaporite zones are found within the Upper Glen Rose; one midway through the Upper Glen Rose and another near the base shown by resistivity spikes on a geophysical log. The lower member of the Glen Rose Limestone consists of a massive, fossiliferous limestone at the base grading upward into thin beds of limestone, dolomite, marl, and shale. The top 15 to 20 feet of the lower member, designated the *Salenia texana* zone, is a highly fossiliferous, nodular marl and limestone which is capped by the Corbula bed (Ashworth, 1983). Near the top of the Lower Glen Rose, in some locations, is a reef deposit that is cavernous, heavily fractured, and can range in thickness. Where the reef deposit is encountered, the Lower Glen Rose can provide high yielding wells.

The Upper Member of the Glen Rose Formation, comprising the Upper Trinity Aquifer, consists of alternating beds of limestone and dolomite with marly sections that act as aquitards and restrict downward migration of groundwater to the Middle and Lower Trinity Aquifers (Wierman et al., 2010). The Upper Glen Rose also contains two distinct evaporite beds of gypsum or anhydrite that are easily distinguishable on geophysical logs due to high resistivity values. The lower evaporite zone occurs at the base of the Upper Glen Rose, which Ashworth (1983) describes as a “convenient correlation marker” between the Upper and Lower Glen Rose. The evaporite beds in some cases are the source of elevated sulfate concentrations in groundwater. Where present, the Upper Trinity Aquifer can yield small amounts of water to shallow wells which are often utilized for livestock and domestic use.



ERA	System	Group	Formation	Legend	Member	Hydrogeologic Unit
Cenozoic	Quaternary to Neogene		Pliocene to Recent floodplain (alluvium and fluviatile terrace deposits)	Qa Qat Qt Qhg, Qle, Qo		localized alluvial aquifers
Mesozoic	Upper Cretaceous	Navarro/ Taylor	Marlbrook Marl	Kknm		confining beds
			Pecan Gap Chalk	Kpg		
			Ozan (Lower Taylor Marl)	Ko		
		Austin	Austin Chalk Lmst.	Kau		localized fractured limestone aquifer
		Eagle Ford	Eagle Ford Shale	Kef / Keb		confining beds
		Washita	Buda Lmst.	Kbu / Keb		
			Del Rio Clay	Kdr / Kdg		
	Lower Cretaceous		Georgetown Lmst.	Kgt / Kdg		Edwards Aquifer
		Edwards	Person	Ked	Marine Leached/Collapsed Regional Dense Grainstone	
			Kainer	Ked	Kirschburg evap. Dolomite Mbr. Burrowed Mbr. Basal Nodular Bed	
		Trinity	Glen Rose Lmst.	Kgru	Upper Mbr.	Upper Trinity Aquifer
				Kgrl	Lower Mbr.	Middle Trinity Aquifer: Aquifer
			Travis Peak	Kh / Kch	Hensell Sand Bexar Shale	Middle Trinity Aquifer: Aquitard
				Kcc / Kch	Cow Creek Lmst.	Middle Trinity Aquifer: Aquifer
				Kha	Hammett Shale	confining bed
				Ksy	Sligo Lmst. Hosston Sand	Lower Trinity Aquifer

Figure 12: Geologic map with stratigraphic column (modified from Ashworth, 1983; Maclay and Small, 1986)

The EP Well Field sits atop a relatively thin portion (less than 100 feet) of the Edwards Group adjacent to the Wimberley fault system (Figures 14 & 15). A suite of geophysical logs (gamma ray, spontaneous potential, 4-point resistivity, and caliper) were performed on the EP Wells and a few BSEACD observation wells to determine the formation thickness and fracture locations within the boreholes. Figure 13 shows a map of the wells used to create two cross sections of the study area. The cross-sections include the available static water levels prior to the aquifer testing. Appendix A provides copies of the geophysical logs with formational picks based upon gamma and resistivity signatures. According to the available geophysical logs, the thickness of the Edwards Formation ranges from 20 feet to 150 feet in the study area, thickening with dip to the southeast; the thickness of the Upper Trinity Aquifer ranges from approximately 420 feet to 475 feet across the study area; and the Middle Trinity Aquifer averages approximately 350 feet across the study area. In this area, the Middle Trinity is made up of the Cow Creek Limestone, the Bexar Shale, and the Lower Glen Rose Limestone. The Cow Creek Limestone is the most prolific in terms of groundwater production and averages approximately 83 feet in thickness in the EP Well Field. Based on the results of the pump tests completed for this report, in the vicinity of the EP Well Field the Cow Creek Limestone is vertically isolated from the Lower Glen Rose Limestone by the Bexar Shale aquitard which averages approximately 45 feet in thickness. The Lower Glen Rose Limestone average thickness is approximately 225 feet in the area.

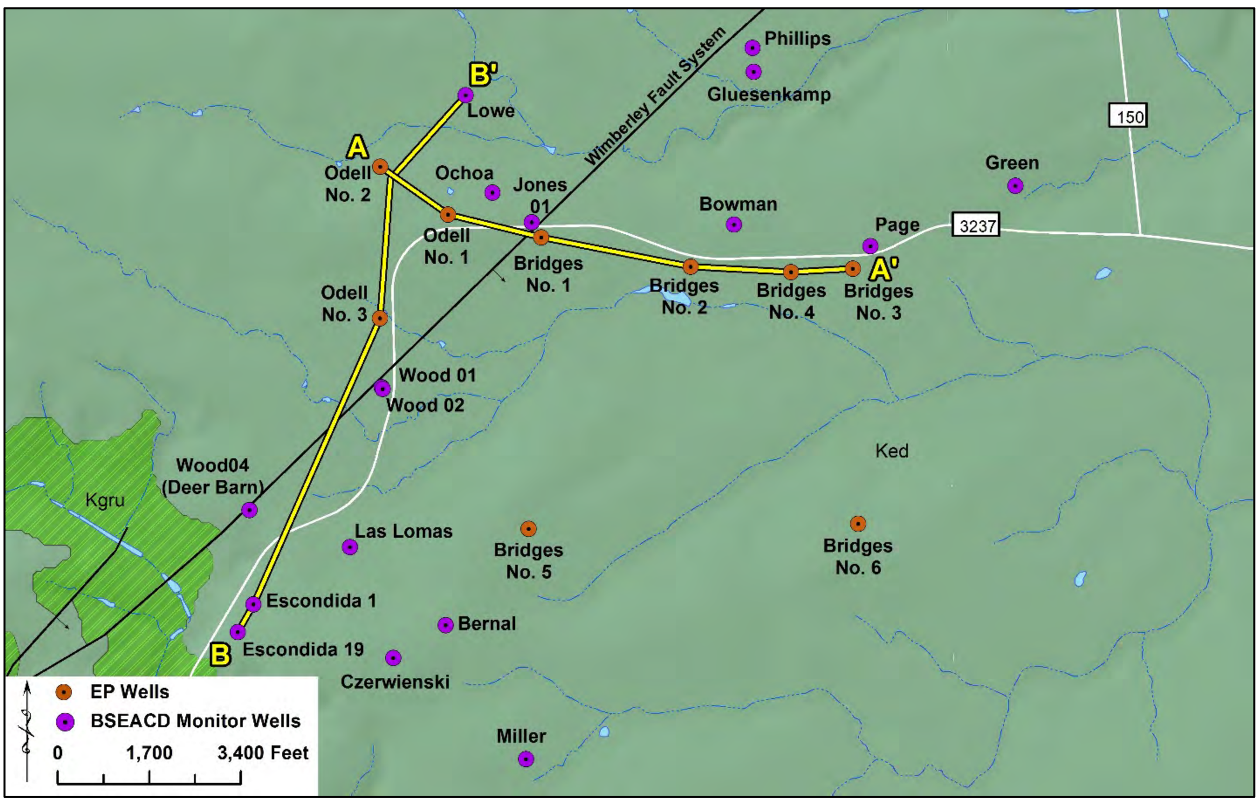


Figure 13: Geologic map with EP and BSEACD wells with cross-sections

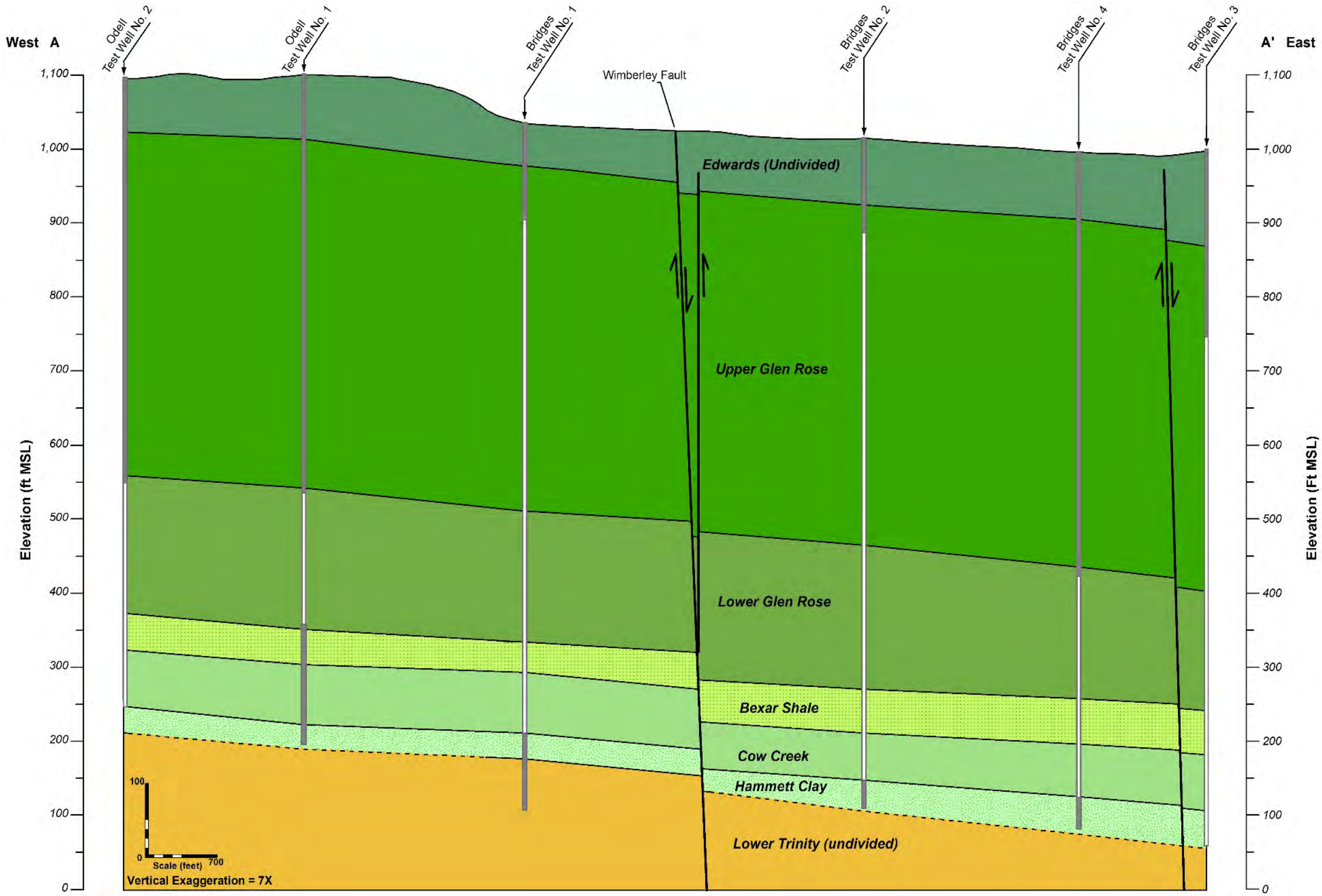


Figure 14: Conceptual geologic cross section A-A’

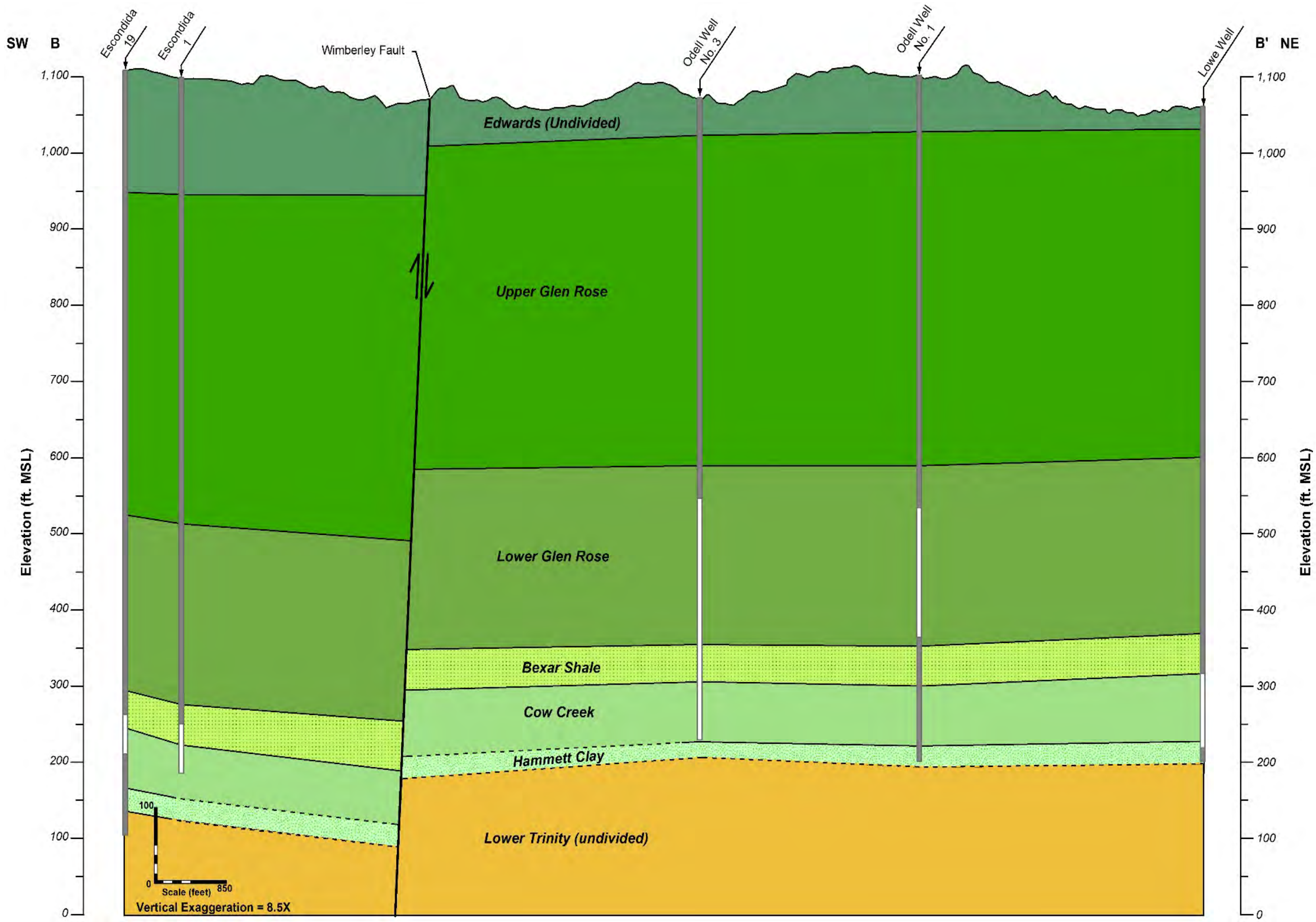


Figure 15: Conceptual geologic cross section B - B'

Section VI: Hydrogeology of the Study Area

The Trinity Aquifer in the Hill Country area spans as far north as Gillespie County and as far south as Bexar, Comal, and Hays County where fresh water can be produced. As the name suggests, the Trinity is composed of three aquifers: Upper, Middle and Lower Trinity Aquifers. Figure 16 shows the location of the Trinity Aquifer with respect to other major aquifers in the area, including the Edwards Aquifer. The solid blue portion reflects the unconfined zone of the Edwards Aquifer where recharge occurs; the solid light green portion reflects the unconfined zone of the Upper Trinity Aquifer where recharge occurs; and the solid dark green portion reflects the unconfined zone of the Middle Trinity Aquifer where recharge occurs. The green diagonal hatched region reflects the confined zone of the Trinity Aquifer where the formations that make up the aquifer dip beneath the land surface, and the blue diagonal hatched region reflects the confined zone of the Edwards Aquifer (Figure 16).

The Middle Trinity Aquifer is under confined conditions in the area of the EP well field. Confined groundwater is isolated from the atmosphere at the point of discharge by impermeable geologic formations, and the confined aquifer is generally subject to pressures higher than atmospheric pressure (Driscoll, 1986).

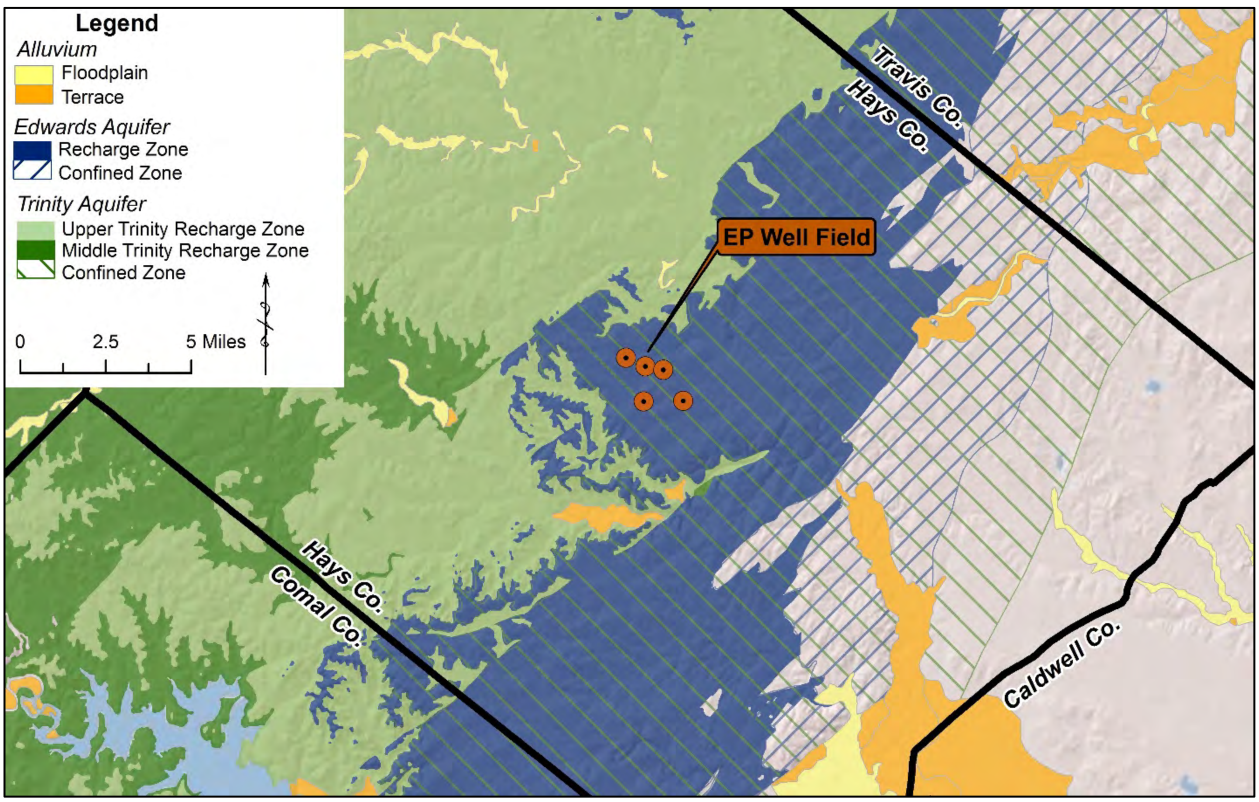


Figure 16: Aquifer Map

Typically, the highest yielding aquifer of the Trinity Aquifers is the Middle Trinity, specifically the Cow Creek Limestone Member of the Travis Peak Formation. This formation is, in some localities, a heavily fractured limestone, making it more productive because of its enhanced ability to transmit groundwater. Generally, the best producing wells are located farther downdip within the confined zone or on the edge of the recharge zone near the confined zone. These deeper Middle Trinity wells have more stable water levels and are capable of sustaining greater pumping rates.

Figure 17 provides a map with hydrographs from three Middle Trinity Aquifer (Cow Creek Member) wells located in Hays County which are a part of the Texas Water Development Board (TWDB) statewide monitoring system. Each hydrograph shows the water level from the well accompanied by rain gauge data from a nearby Edwards Aquifer Authority (EAA) rain gauge HA157. Groundwater in the Middle Trinity Aquifer generally flows in a southeast direction. Overall, the hydrographs show relatively long term stable water level elevations with fluctuations in the short term. The hydrographs also show the rapid response to precipitation and thereby recharge to the aquifer.

Water levels within the Middle Trinity Aquifer follow a short term cycle of decreasing water level during times of low precipitation and higher well production followed by a recovery of water level during precipitation events. This cyclic pattern can be seen in the Cow Creek monitoring wells in the area near the EP Well Field. The observation wells are located within the confined portion of the Middle Trinity and are expected to be hydraulically disconnected from the unconfined Upper Trinity Aquifer. The hydrograph for State Well No. 5764705 has the longest period of record, and demonstrates the short term fluctuations associated with climatic conditions. The lowest recorded water level for the observation well (795.27 ft. MSL) occurred during the drought of record in October of 2011 (Figure 17). Since then, the observation well has experienced an overall rise in water levels. Overall, the long term trend of water levels within the three identified monitoring wells show a relatively stable level with a slightly upward trend from late 2015 to the present (Figure 17).

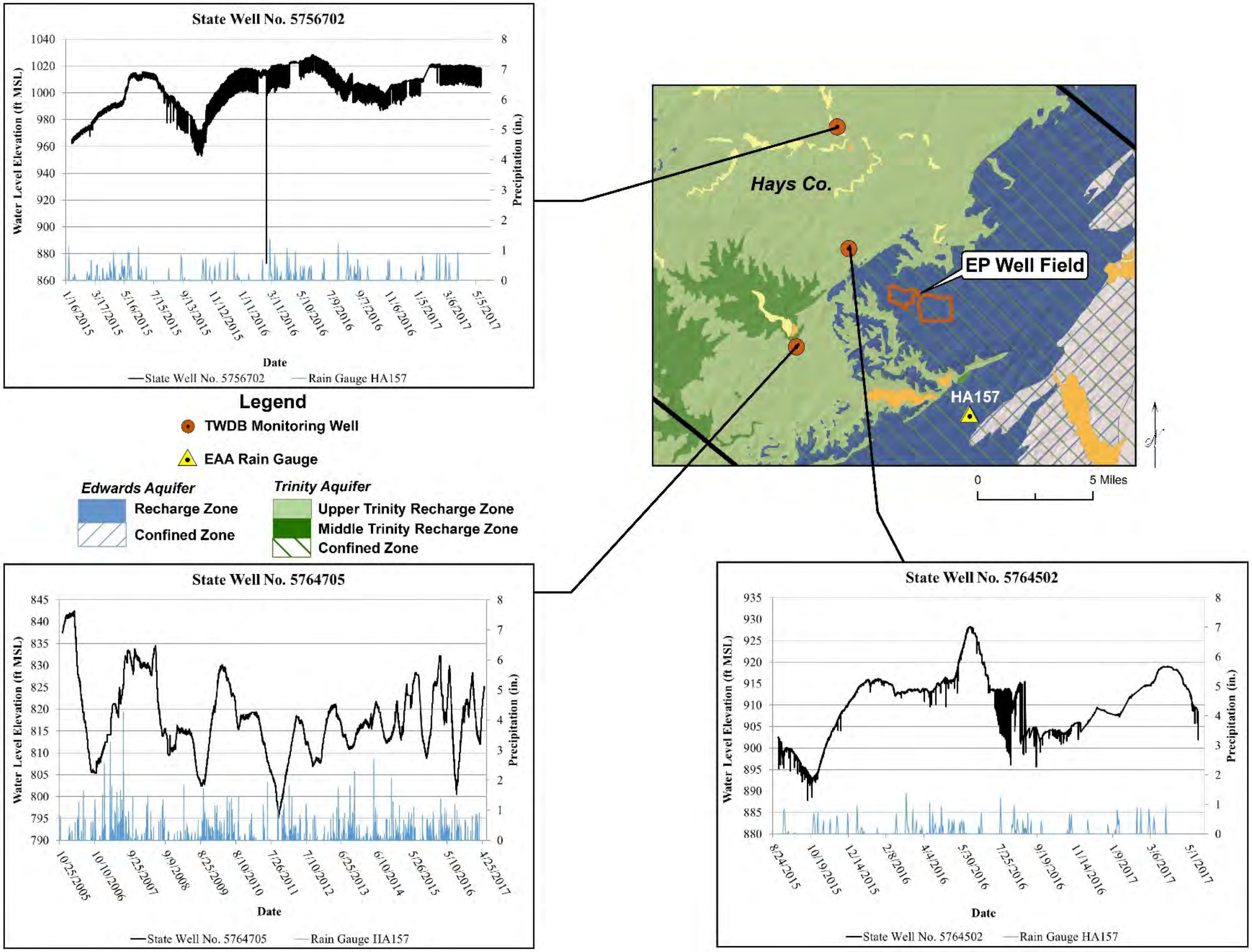


Figure 17: Hydrographs of Hays County Cow Creek Wells

Section VII: Inventory of Potential Recharge and Discharge Features

In the vicinity of the EP Well Field, wells are completed within the Upper Trinity, Middle Trinity, and Lower Trinity aquifers. A well site investigation conducted in December 2016 indicated that no known or readily-accessible recharge features or springs that affect the Middle Trinity Aquifer are located within a two mile radius of the EP Well Field. Due to the EP Well Field being downdip within the confined portion of the Trinity Aquifer, it is expected that no naturally occurring recharge or discharge features for the Middle Trinity Aquifer would be encountered within this distance. Figure 18 provides a map of the documented wells, surface water bodies, springs, karst features, and potential recharge features in the area surrounding the EP Well Field.

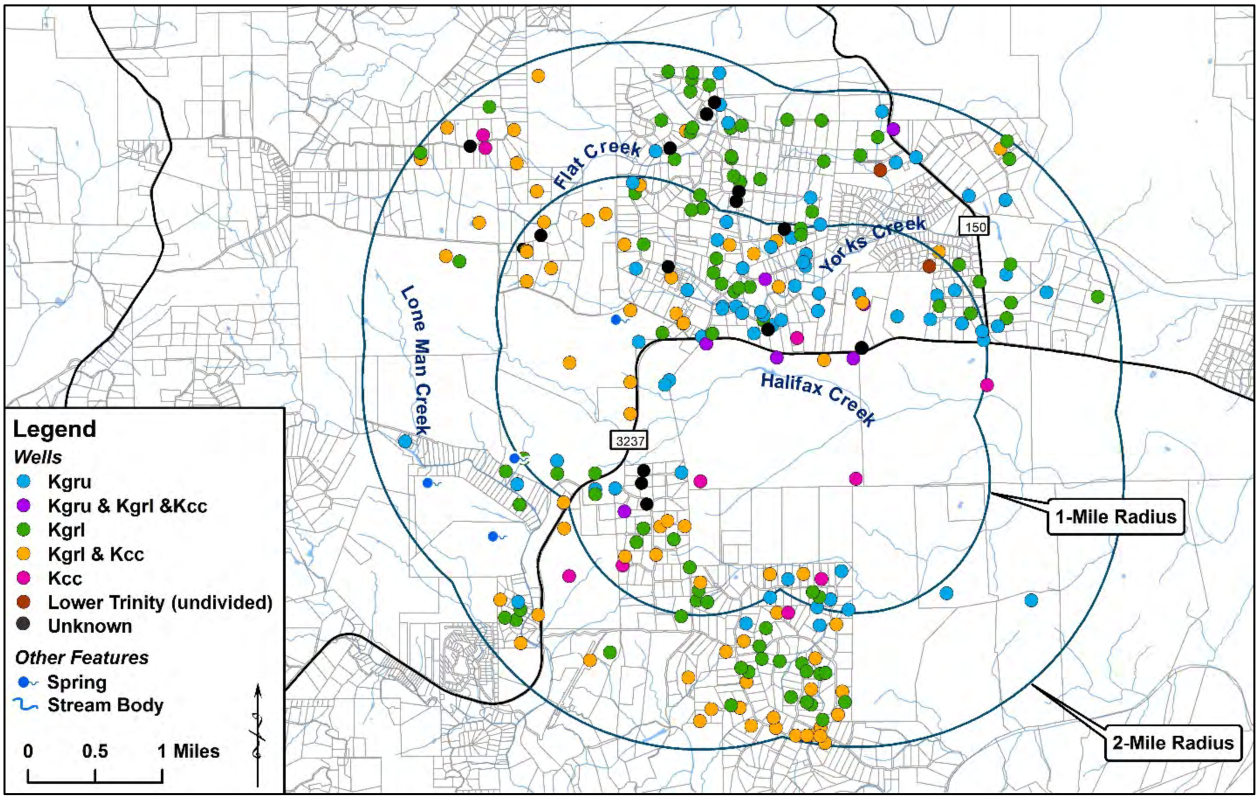


Figure 18: Map of area wells and surface water bodies near the EP well field

Utilizing data from the Texas Water Development Board Groundwater Database, Texas Commission on Environmental Quality well database, the Texas Department of Licensing and Registration well database, and the BSEACD well database, records of wells within the study area were reviewed. The data revealed that approximately 285 wells are located within two miles of the EP Well Field. Due to the lack of available well reports, logs, and/or video surveys for each of the 285 wells in the area, it is difficult to determine with confidence the exact formation in which the wells are completed. However, utilizing the reported well depths and water levels, it was possible to estimate the targeted formations. The majority of the wells utilized for domestic use are completed in the Upper and Lower Glen Rose members. Table 5 provides a summary of the wells within a two-mile radius of the EP Well Field.

Table 5: Summary of wells completed within a two-mile radius of the EP well field

Formation Targeted	Upper Glen Rose	Upper & Lower Glen Rose	Lower Glen Rose	Lower Glen Rose & Cow Creek	Cow Creek	Sligo & Hosston	Unknown	Springs
Number of Wells	73	7	104	70	10	2	15	4

Multiple surface water bodies are located within a two-mile radius of the EP Well Field, including ephemeral creeks, perennial streams, and stock ponds. From north to south, Flat Creek and Yorks Creek flow east to Onion Creek and ultimately the Colorado River; Halifax Creek and Lone Man Creek flow to the southeast and contribute to the Blanco River.

There are four documented springs within a two-mile radius of the EP Well Field (Heitmuller and Reece, 2003). Interpretation of geologic maps indicates that the springs occur at contact points between the Kainer and Walnut members of the Edwards Limestone Formation and between the Edwards and Upper Glen Rose formations. Two of the springs have no documentation supporting either water quality or flow rate. One of the documented springs (Cruze Joe Spring – [TWDB State Well No. 5764602]) in Figure 18 is located within the Odell property near Odell Well No. 2, but correspondence with the landowner revealed that the spring did not exist on his property. Mr. Odell noted that the property immediately to the north was once owned by the Cruze family, therefore the spring could be located there. One of the springs within the two-mile radius (TWDB State Well No. 5764819) has documentation on water quality and discharge rate. The spring was reported to have a discharge rate of approximately 7 gpm in January of 2015 by BSEACD. The landowners divert the spring flow into a cistern and into a nearby creek via pipe. Jacobs Well Spring and the Pleasant Valley Spring located within the Wimberley Valley provide flow to Cypress Creek (Jacobs Well Spring) and the Blanco River (Pleasant Valley Spring). The springs issue from the Middle Trinity Aquifer and are located approximately 6.4 and 11.2 miles, respectively up dip within the aquifer from the EP Well Field.

Potentiometric surface maps created in 2013 by Watson et. al, (2014) indicated that the source area for Jacobs Well is limited to the Cypress Creek watershed and under different hydrologic conditions could be from the Blanco River. The study found that Jacobs Well Spring is fed from a trough located northwest of the spring along Cypress Creek (Figure 19). In addition, the Tom Creek Fault and the Wimberley Fault located just southwest of Jacobs Well Spring and Pleasant Valley Spring and northwest of the EP well field are likely acting as partial barriers to groundwater flow. Watson et. al, (2014) stated that within the confined region of the Middle Trinity Aquifer downgradient of the Tom Creek and Wimberley Faults, steeper gradients were observed in potentiometric maps indicating that the faults likely act as partial barriers to groundwater flow. The location of the EP Well field downgradient of these springs coupled with the faulting in the region indicate that there likely will be no effect on these springs from production at the EP Well Field. The source area for both of these springs and the Wimberley Valley are from areas within the recharge zone of the aquifer northwest and up-gradient within the aquifer.

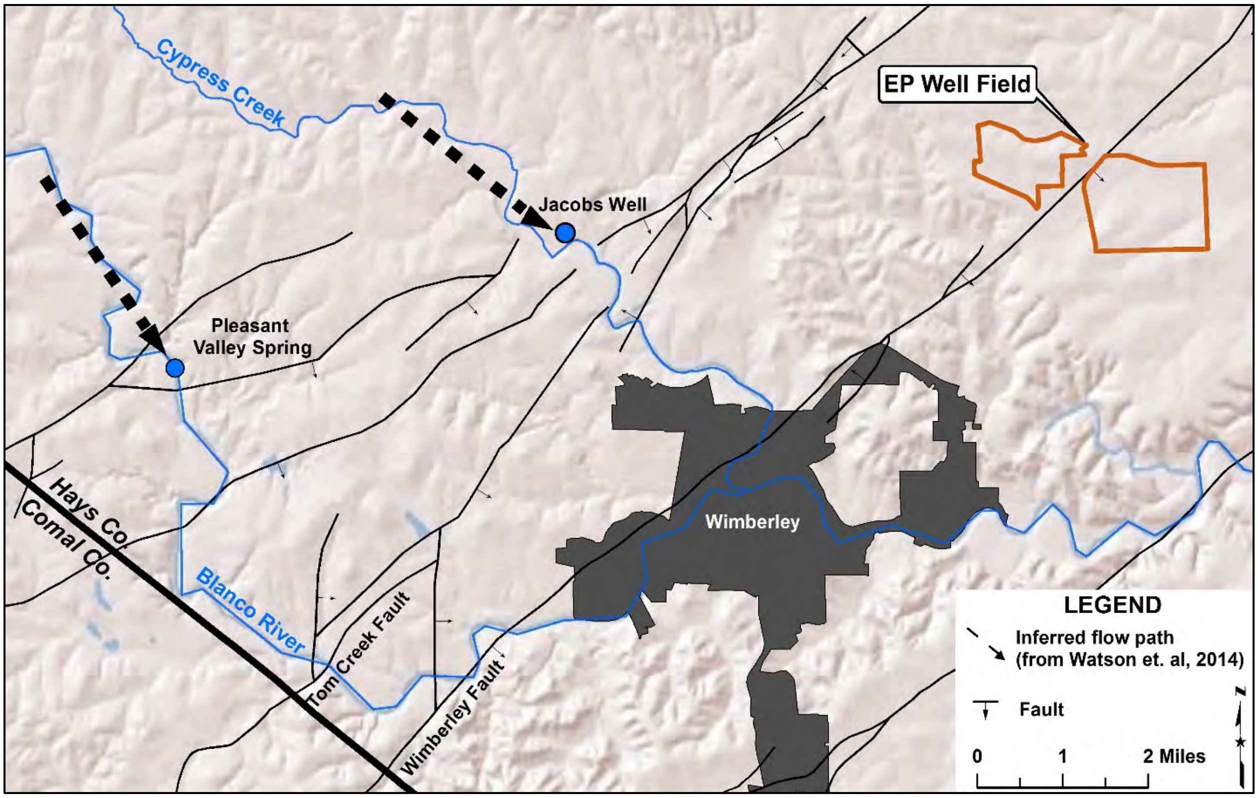


Figure 19: Location of Jacobs Well Spring and Pleasant Valley Spring

Section VIII: Well Drilling and Aquifer Testing

VIII.1. Wells

Davenport Drilling and Pump Service Co. (Davenport Drilling) drilled and completed two (2) new wells within the Upper and Middle Trinity aquifers in 2013 (Bridges Well No. 1) and 2014 (Bridges Wells No. 2). Whisenant & Lyle Water Service Co. drilled and completed five (5) new wells within the Middle Trinity Aquifer in 2014 and 2015 (Bridges Wells No. 3 & 4 and Odell Wells No. 1, 2, and 3). Odell Well No. 2 is the most updip well within the well field; Bridges Well No. 3 is located approximately 1.7 miles east-southeast and is most downdip (Figure 13). Bridges Wells No. 5 and No. 6 will be completed in the future as production ramps up (Figure 24).

Each of the EP Wells was completed initially as a test well to assess the respective Well's production capacity and water quality. Upon completion of each well, a suite of geophysical logs (gamma ray, SP, SPR, 4-point resistivity, and caliper log) was conducted to determine the depth of each formation and the location of fractures. Figures 20, 21, and 22 provide the well log profiles for the three pumping wells (Bridges Wells No. 1 & 2 and Odell Well No. 2), Appendix B provides the available well diagrams for the observation wells with completion data. Nine Energy Services acidized Bridges Well No. 1, Bridges Well No. 2, and Odell Well No. 2 in October, November, and December 2016, respectively, by injecting 10,000 gallons of 28% hydrochloric acid under pressure at specified intervals. Following acidization, 60,000 gallons of water was pumped into each well to displace the acid from the borehole and into the formation. The acidization was performed to increase the well yield by opening groundwater flow paths through dissolving the limestone within fractures. Table 6 provides the well construction details for each pumping well. Appendix C provides copies of the available State of Texas Well Reports.

Data from 25 Trinity Aquifer wells were utilized to characterize the EP Well Field area geology and hydrogeology. Water levels were observed in a total of 24 wells – 7 EP wells, and 16 wells owned by adjacent properties monitored by BSEACD. Some completion data for the BSEACD wells are unknown, but water levels measured within the wells were indicative of the respective targeted aquifer. Table 7 provides the available well construction details for each observation well.

Table 6: Pumping well construction summary

Well	Construction Date	Elevation (ft. MSL)	Borehole Diameter (in.)	From (ft.bgs)	To (ft.bgs)	Casing Type	Casing Size (in.)	From (ft.)	To (ft.)	Packer Setting (ft. bgs)	Test Pump (HP)	Test Pump Setting
Bridges Well No. 1	12/20/2013	1,040	14 3/4	0	160	SDR-17 PVC	10 3/4 x 0.632	+2	160	733	100	771 ft.
			9 7/8	160	930	Open Hole	-	160	840			6-inch Steel
Bridges Well No. 2	1/15/2014	1,010	14 3/4	0	160	SDR-17 PVC	10 3/4 x 0.632	+2	160	781	100	816 ft.
			9 7/8	160	905	Open Hole	-	160	905			4-inch Steel
Odell Well No. 2	1/21/2015	1,093	14 3/4	0	540	SDR-17 PVC	10 3/4 x 0.632	+2	540	751	100	789 ft.
			9 7/8	540	850	Open Hole	-	540	840			6-inch Steel

Notes: ft = feet; in = inches; MSL = Mean Sea Level; HP = horsepower

Table 7: Observation well construction summary

Well	Construction Date	Elevation (ft. MSL)	Aquifer	Borehole Diameter (in.)	From (ft.bgs)	To (ft.bgs)	Casing Type	Casing Size (in.)	From (ft.bgs)	To (ft.bgs)
Odell Well No. 1	1/12/2015	1,102	Middle Trinity	14 3/4	0	565	SDR-17 PVC	10 3/4 x 0.632	0	565
				9 7/8	565	903	Open Hole	-	565	903
Odell Well No. 3	1/10/2015	1,063	Middle Trinity	14 3/4	0	520	SDR-17 PVC	10 3/4 x 0.632	0	520
				9 7/8	520	845	Open Hole	-	520	845
Bridges Well No. 3	1/4/2014	1,000	Middle Trinity	14 3/4	0	260	SDR-17 PVC	10 3/4 x 0.632	0	260
				9 7/8	260	940	Open Hole	-	260	940
Bridges Well No. 4	1/27/2015	994	Middle Trinity	14 3/4	0	580	SDR-17 PVC	10 3/4 x 0.632	0	580
				9 7/8	580	905	Open Hole	-	580	905
Bernal	9/21/2009	1,118	Middle Trinity	*	*	915	*	*	*	*
Bowman	12/20/2013	1,035	Middle Trinity	9	0	50	SDR-17 PVC	5	0	810
				6.5	50	850	SDR-17 PVC	5	810	850
Carnes	1/1/1997		Middle Trinity	*	*	520	*	*	*	*
Czerwienski	1/1/1998	1,134	Middle Trinity	*	*	700	*	*	*	*
Escondida 1	9/12/2016	1,104	Middle Trinity	9.875	*	925	*	*	*	855
Escondida 19	9/11/2016	1,125	Middle Trinity	9.875	*	910	*	*	*	855
Gluesenkamp	*	1,007	Upper Trinity	*	*	195	Ceramic	8	*	*
Green	12/1/1997	1,000	Middle Trinity	*	*	483	*	*	*	*
Jones 01		1,049	Upper Trinity	6	0	350	*	*	*	*
Las Lomas		1,070	Upper Trinity	*	*	225	*	*	*	*
Lowe	4/15/2015	1,070	Middle Trinity	7.875	0	860	SDR-17 PVC	4.5	0	840
Miller	8/24/2005	1,067	Middle Trinity	9	0	300	Slotted PVC	4.5	0	300
				8	300	900	Open Hole	-	300	900
Ochoa	3/27/2002	1,073	Middle Trinity	8.75	0	50	SCH-40 PVC	5	0	810
				6	50	810				
Page		1,007	Upper Trinity	*	*	430	*	*	*	*
							Open Hole	-	*	*
Phillips		1,010	Upper Trinity	*	*	*	*	*	*	*
Wood 01	10/8/2010	1,067	Middle Trinity	9	0	50	SDR-17 PVC	5	0	710
				6.5	50	790	Slotted PVC	5	710	790
Wood 02		1,066	Upper Trinity	*	*	110	*	*	*	*
Wood 04	11/15/2005	1,081	Middle Trinity	9	0	50	SDR-17 PVC	5	0	570
				6.5	50	630	Slotted PVC	5	570	630

Notes: ft. = feet; in. = inches; MSL = Mean Sea Level; *Data unknown

Bridges Well No. 1

According to the State of Texas well report (Tracking No. 364899), Bridges Well No. 1 was drilled by Davenport Drilling to a depth of 930 feet below ground surface (bgs) on December 20, 2013. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 160 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 930 ft. bgs (Figure 20 – Appendix C). The Hammett Shale Member sloughed in and closed off the borehole at approximately 830 ft. bgs. A geophysical log was conducted during the original well construction and a video log was conducted in June of 2015 as part of education outreach to local water management groups; based on the analysis of the geophysical and video logs, the Edwards Group is present from ground surface to 55 ft. bgs, the Upper Glen Rose Formation is present from 55 to 476 ft. bgs, the Lower Glen Rose Formation is present from 476 to 710 ft. bgs, the Bexar Shale is present from 710 to 744 ft. bgs, the Cow Creek Member is present from 744 to 826 ft. bgs, and the Hammett Clay is present from 826 ft. bgs to the total depth (Figure 20 – Appendix A).

Bridges Well No. 2

According to the State of Texas well report (Tracking No. 364900), Bridges Well No. 2 was drilled by Davenport Drilling to a depth of 905 ft. bgs on January 15, 2014. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 260 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 905 ft. bgs (Figure 21 – Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 130 ft. bgs, the Upper Glen Rose Formation is present from 130 to 551 ft. bgs, the Lower Glen Rose Formation is present from 551 to 745 ft. bgs, the Bexar Shale is present from 745 to 792 ft. bgs, the Cow Creek Member is present from 792 to 871 ft. bgs, and the Hammett Clay is present from 871 ft. bgs to the total depth (Figure 21 – Appendix A).

Bridges Well No. 3

According to the State of Texas well report (Tracking No. 353110), Bridges Well No. 3 was drilled by Davenport Drilling to a depth of 940 ft. bgs on January 4, 2014. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 160 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 940 ft. bgs (Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 80 ft. bgs, the Upper Glen Rose Formation is present from 80 to 512 ft. bgs, the Lower Glen Rose Formation is present from 512 to 765 ft. bgs, the Bexar Shale is present from 765 to 823 ft. bgs, the Cow Creek Member is present from 823 to 907 ft. bgs, and the Hammett Clay is present from 907 ft. bgs to the total depth (Appendix A).

Bridges Well No. 4

According to the State of Texas well report (Tracking No. 388352), Bridges Well No. 4 was drilled by Whisenant & Lyle to a depth of 905 ft. bgs on February 14, 2015. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 580 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 905 ft. bgs (Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 78 ft. bgs, the Upper Glen Rose Formation is present from 78 to 554 ft. bgs, the Lower Glen Rose Formation is present from 554 to 742 ft. bgs, the Bexar Shale is present from 742 to 798 ft. bgs, the Cow Creek Member is present from 798 to 882 ft. bgs, and the Hammett Clay is present from 882 ft. bgs to the total depth (Appendix A).

Odell Well No. 1

According to the State of Texas well report (Tracking No. 388355), Odell Well No. 1 was drilled by Whisenant & Lyle to a depth of 903 ft. bgs on January 20, 2015. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 565 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 903 ft. bgs (Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 80 ft. bgs, the Upper Glen Rose Formation is present from 80 to 516 ft. bgs, the Lower Glen Rose Formation is present from 516 to 752 ft. bgs, the Bexar Shale is present from 752 to 798 ft. bgs, the Cow Creek Member is present from 798 to 883 ft. bgs, and the Hammett Clay is present from 883 ft. bgs to the total depth (Appendix A).

For the 2016 aquifer testing of the EP well field, Odell Well No. 1 was converted to a Lower Glen Rose well and operated as a Monitor Well during the aquifer testing. On October 15, 2016, Hydro Resources backfilled the well with cement from 745 ft. bgs to 903 ft. bgs, sealing off the Cow Creek, and Bexar Shale members of the Middle Trinity Aquifer (Appendix C).

Odell Well No. 2

According to the State of Texas well report (Tracking No. 388364), Odell Well No. 2 was drilled by Whisenant & Lyle to a depth of 850 ft. bgs on February 11, 2015. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 540 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 850 ft. bgs (Figure 22 – Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 63 ft. bgs, the Upper Glen Rose Formation is present from 63 to 495 ft. bgs, the Lower Glen Rose Formation is present from 495 to 725 ft. bgs, the Bexar Shale is present from 725 to 761 ft. bgs, the Cow Creek Member is present from 761 to the total depth (Figure 22 – Appendix A).

Odell Well No. 3

According to the State of Texas well report (Tracking No. 388365), Odell Well No. 3 was drilled by Whisenant & Lyle to a depth of 845 ft. bgs on January 30, 2015. The report indicated that the well was constructed with 10 3/4-inch SDR-17 PVC cemented within a 14 3/4-inch borehole to 520 ft. bgs with an open-hole completion throughout the remaining 9 7/8-inch borehole to 845 ft. bgs (Appendix C). A geophysical log was conducted during the original well construction; based on the analysis of the geophysical log, the Edwards Group is present from ground surface to 46 ft. bgs, the Upper Glen Rose Formation is present from 46 to 476 ft. bgs, the Lower Glen Rose Formation is present from 476 to 715 ft. bgs, the Bexar Shale is present from 715 to 752 ft. bgs, the Cow Creek Member is present from 752 to 838 ft. bgs, and the Hammett Clay is present from 838 ft. bgs to the total depth (Appendix A).

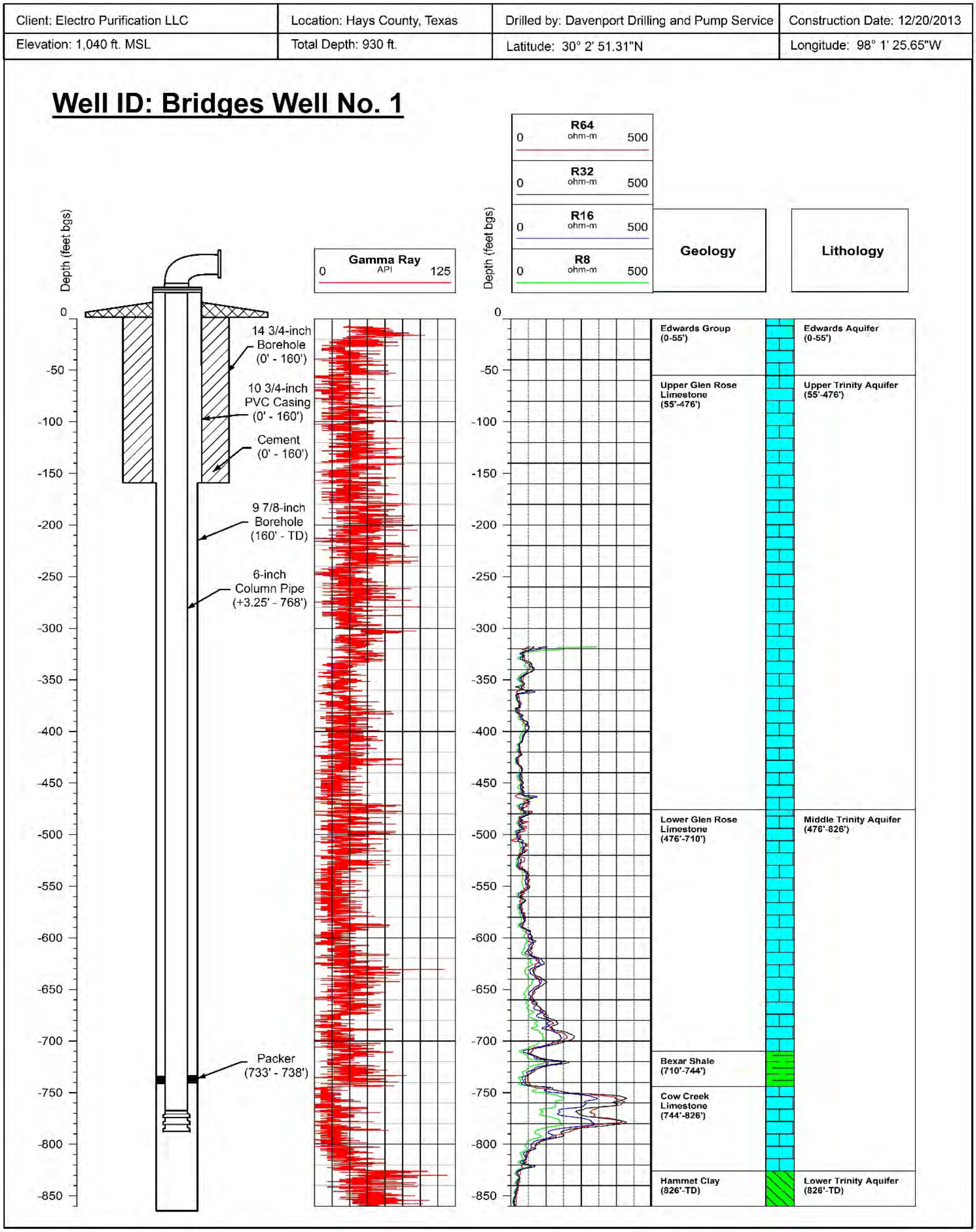


Figure 20: Well log profile for Bridges Well No. 1

Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Davenport Drilling and Pump Service	Construction Date: 1/15/2014
Elevation: 1,004 ft. MSL	Total Depth: 905 ft.	Latitude: 30° 2' 45.40"N	Longitude: 98° 0' 54.17"W

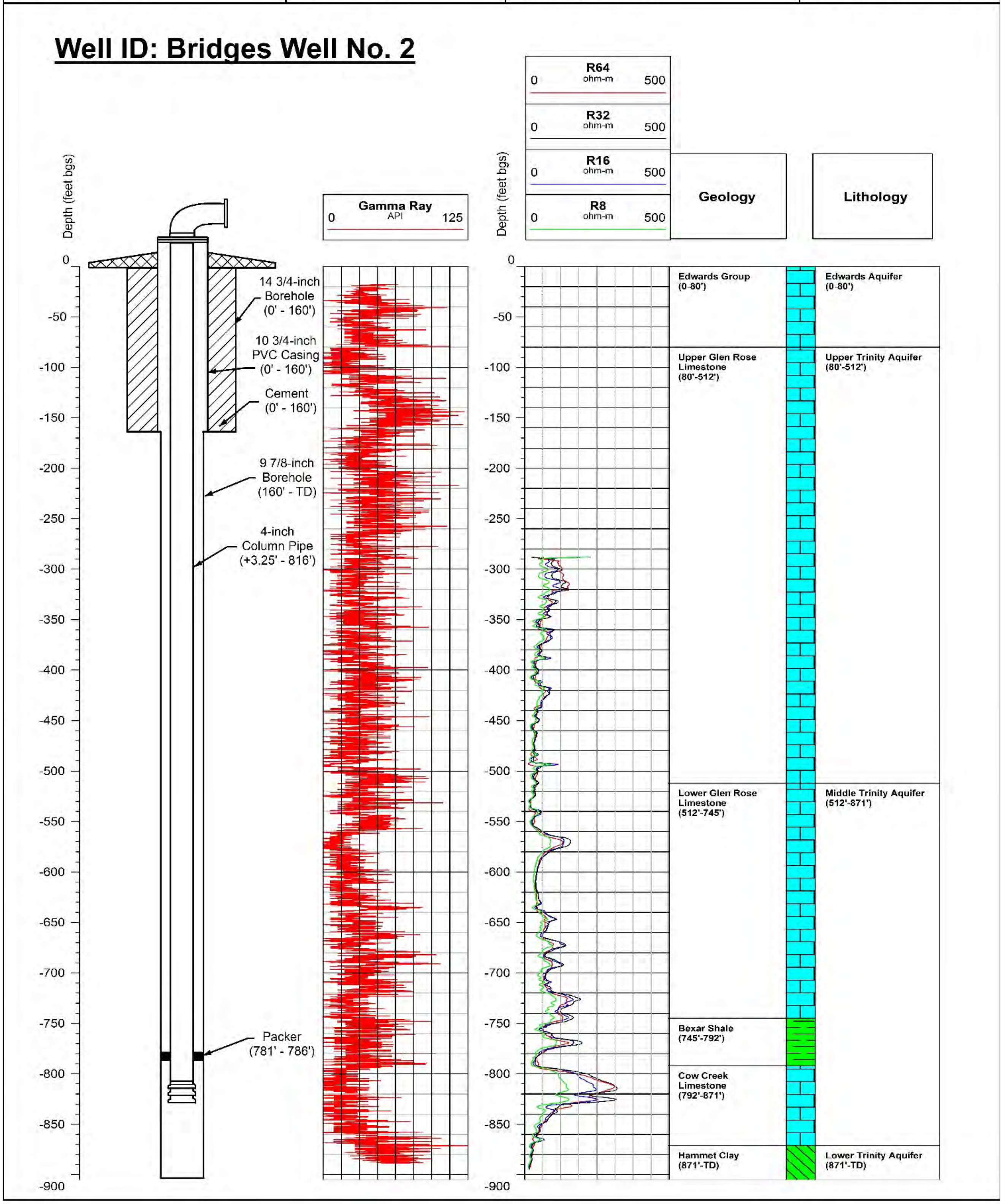


Figure 21: Well log profile for Bridges Well No. 2

Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Whisenant & Lyle Water Services	Construction Date: 2/11/2015
Elevation: 1,098 ft. MSL	Total Depth: 850 ft.	Latitude: 30° 3' 4.60" N	Longitude: 98° 1' 59.79" W

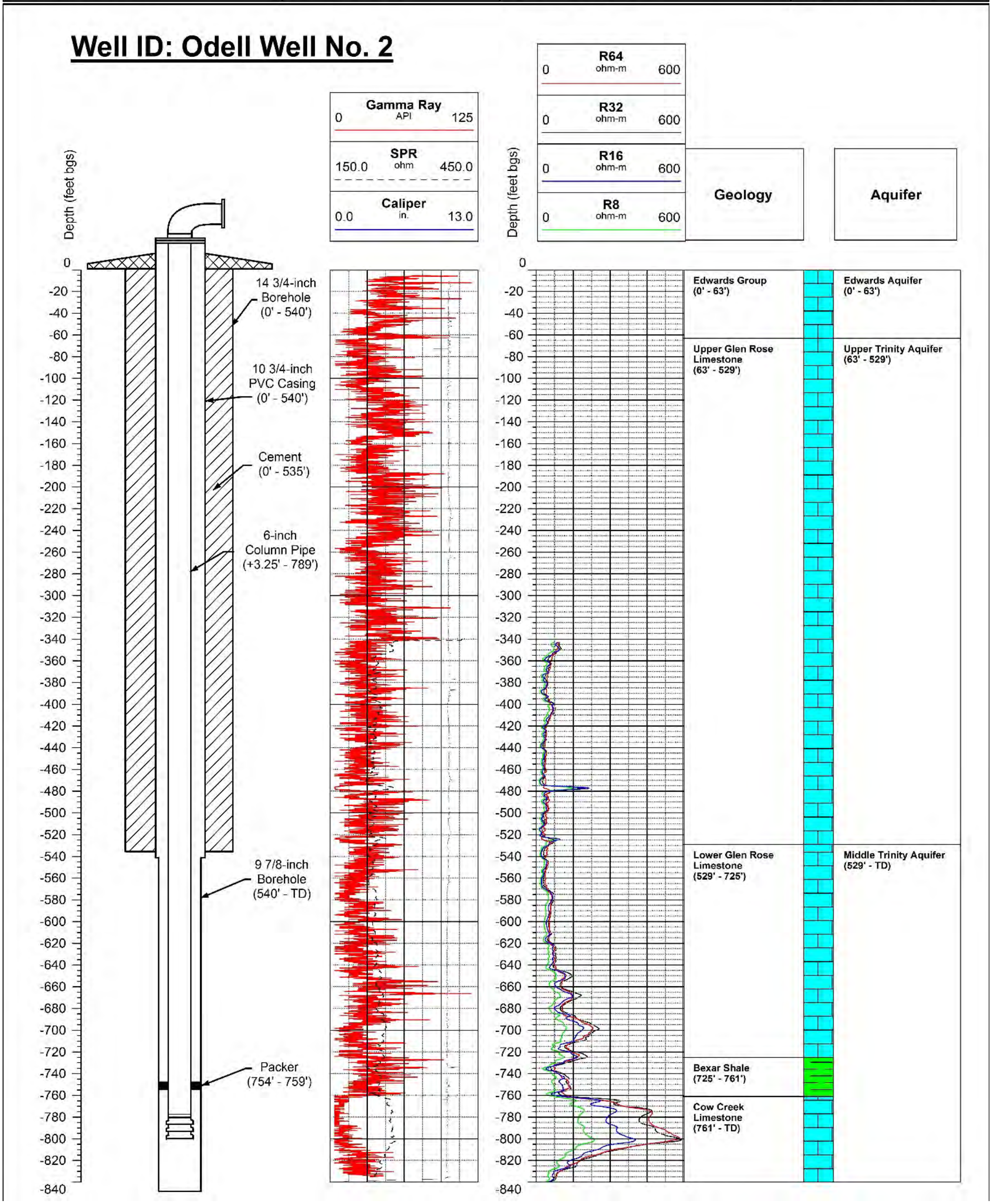


Figure 22: Well log profile for Odell Well No. 2

VIII.2. Aquifer Testing

Aquifer tests allow for the estimation of transmissivity, hydraulic conductivity, specific capacity, and storativity of wells when at least one observation well is available. In cooperation with the BSEACD, the following actions were taken to ensure an acceptable aquifer test for each of the EP Wells:

- Background water levels were taken for approximately seven days prior to the pumping phase of each test utilizing electric lines and pressure transducers at Bridges Well No. 1, Bridges Well No. 2 and Odell Well No. 2. Two pressure transducers (In-Situ Level Troll 500 and 700; accurate to the nearest 0.01 ft.; set above and beneath the packer unit) were utilized in the active pumping well during the pumping phase of each test and for at least seven days after the pumping phase of the test.

- A total of 24 wells were utilized as observation wells during the testing. Figure 23 provides a modified Gantt Chart of the twenty-four observation wells. Their respective observation dates are represented by blue boxes. Water level measurements in the observation wells continued for fifteen days after the final aquifer test ended at Odell Well No. 2;

- The flow meter used to measure discharge from each of the pumping wells was calibrated and tested prior to the aquifer testing in each well. Appendix D provides a copy of the calibration certificate and the water use log for all water pumped during acidization and aquifer testing;

- Surrounding well owners were notified of the aquifer testing prior to commencement of the acidization and pumping. WRGS and BSEACD openly communicated plans and specifications, along with updates and field visits. Nearby landowners were encouraged to take part in water level measurement throughout the aquifer testing;

- In order to maintain pH value of 6.5 or greater in the discharged water, dense soda ash (sodium carbonate [Na_2CO_3]) was mixed with the pumped groundwater in holding tanks until the pH reached acceptable levels for land application of the water;

- A total of 14,224,897 gallons were pumped during the EP Well Field acidization and aquifer testing (Appendix D). This volume represented more than five times the requested daily volume of 2.5 million gallons. The BSEACD testing guidelines requires the aquifer test to produce at least three times the requested daily volume;

- Discharge from each pumping well was routed: i) away from the well site to ensure no recharge occurred within the pumping well, and ii) in a manner so that minimal discharge exited each respective property. The discharge was carefully monitored during each pumping phase to minimize environmental impact (i.e. erosion, roadway hazards);

- 90% recovery of water level was achieved after the Bridges Well No. 2 and Odell Well No. 2 aquifer tests. After the Bridges Well No. 1 aquifer test the water level recovered to approximately 81% of the static level prior to deflating the packer. This procedure was followed due to time constraints and in an effort to complete the project in a timely manner, the equipment needed to be removed from the well. The water levels did recover to near static levels and were still recovering upon final measurements; and

- Nearby pumping of surrounding wells other than the designated pumping well was minimized during the aquifer testing to reduce interference and effects on water levels. However, pumping from nearby domestic wells most likely occurred out of necessity.

During each respective aquifer test, water levels were continually measured in at least twelve observation wells in addition to the pumping well in order to calculate aquifer properties such as transmissivity, hydraulic conductivity, and storativity. An additional twelve wells were measured periodically via pressure transducer or by electric line (Figure 23).

EP completed construction on the test wells in 2015 with plans of upgrading the well construction to public supply well specifications. As a result, aquifer testing was conducted at each well to fulfill the Hydrogeologic Report requirements for a regular production permit mandated by BSEACD. A five day aquifer test (120 hours) was completed at Bridges Well No. 1, Bridges Well No. 2, and Odell Well No. 2 with at least 12 adjacent wells serving as observation wells. Figure 24 provides a location map of the pumping well and the observation wells.

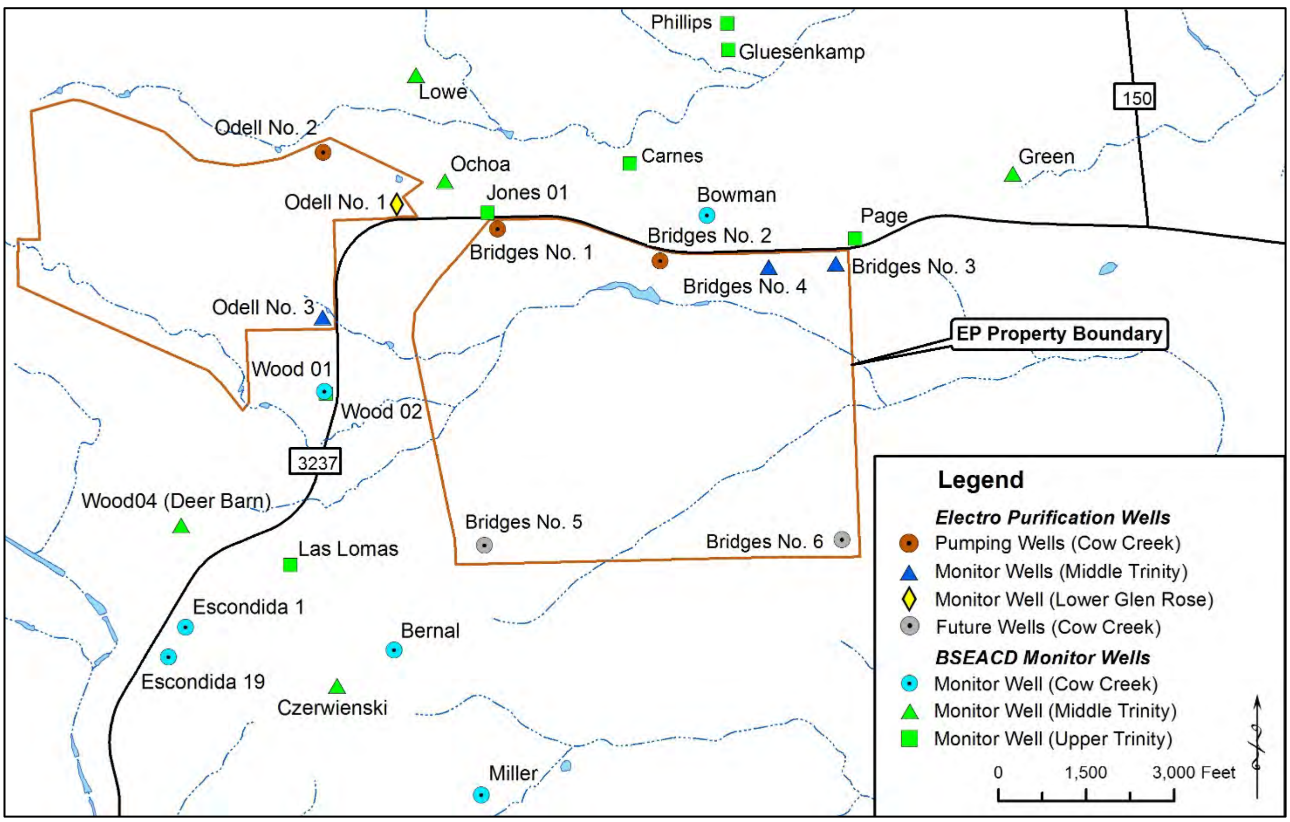


Figure 23: Location map - pumping well and observation wells

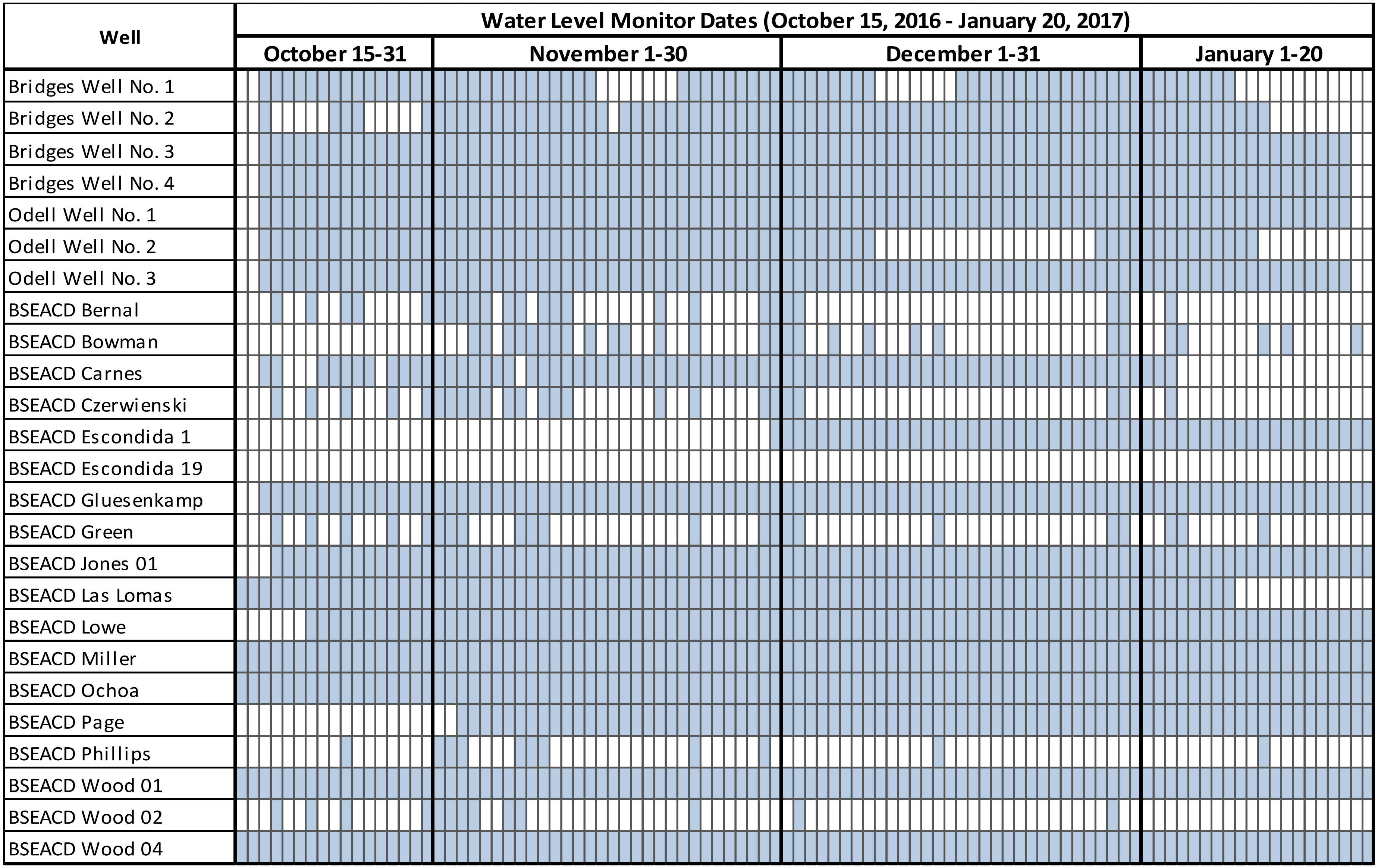


Figure 24: Modified Gantt Chart for observation wells

VIII.2.1 Bridges Well No. 2

A 100 horsepower (HP) submersible pump was set at 816 ft. bgs on 6-inch steel column pipe. A Baski MD-7.5 packer was set at 781 ft. bgs to seal the borehole within the Bexar Shale Formation. This process isolated the well production during the aquifer test to the Cow Creek Formation (Figure 21). A pressure transducer programmed to measure water level and temperature at one minute intervals was set within a 1-inch PVC line equipped above the packer so that the water level could be measured within the formations overlying the Cow Creek Member. A pressure transducer was also strapped to the column pipe beneath the packer and above the pump to record water levels and temperature at one minute intervals within the Cow Creek Member (Figure 21).

For the duration of the pumping and recovery phases for the Bridges Well No. 2 aquifer testing, pressure transducers programmed to measure the water level and temperature at one minute intervals were placed within Bridges Well No. 1, Bridges Well No. 3, Bridges Well No. 4, Odell Well No. 1, Odell Well No. 2, and Odell Well No. 3 by WRGS staff. Pressure transducers programmed to measure the water level at one hour intervals were also placed within the Gluesenkamp, Jones, Las Lomas, Lowe, Miller, Ochoa, Page, Wood 01, and Wood 04 wells by BSEACD staff. Periodic water level measurements via electric line were also collected by BSEACD staff from the Bernal, Bowman, Carnes, Cerwienski, Green, Phillips, and Wood 02 wells during the pumping and recovery periods for the Bridges Well No. 2 testing. Figure 25 provides a map of the pumping and observation wells along with their respective static levels and observed drawdown levels during the aquifer testing at Bridges Well No. 2.

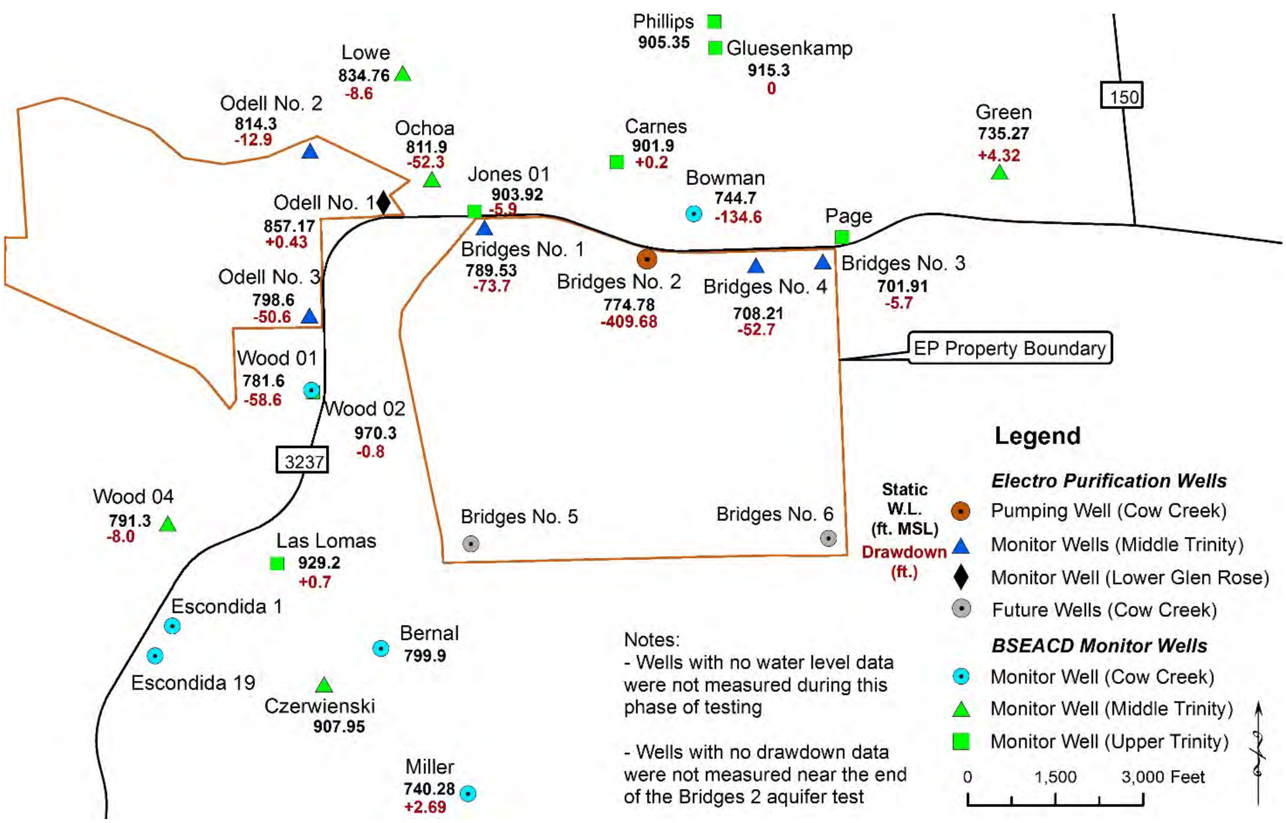


Figure 25: Bridges Well No. 2 aquifer test - pumping well and observation wells with respective water levels

On October 17, 2016, a static water level of 215.18 ft. bgs was measured in Bridges Well No. 2. The well was acidized on October 20, 2016 and outfitted with the test pump, packer, and associated equipment for the aquifer testing. On October 24, 2016, a static water level of 225.9 ft. bgs was measured in upper portion of Bridges Well No. 2 after the packer was set and inflated, theoretically representing the water level of the Upper and Lower Glen Rose formations. The well was pumped for over two (2.1) hours before the generator began to inconsistently provide power to the pump, causing the pump to fail. Over the following hour, the pump was sporadically started and stopped before completely shutting down. During this initial pumping period, the well was pumped for a total of 149 minutes (2.48 hours) at an average rate of 562.3 gpm. The water level above the packer did not decrease during the initial pumping. The entire pumping assembly was then pulled and replaced in the following days by Hydro Resources.

On October 30, 2016, after a new pumping assembly was installed in the well, a static water level of 229.25 ft. bgs was measured prior to the packer inflation. The following day, the packer was inflated and a static water level of 224.69 ft. bgs was measured in the portion above the packer. The well was pumped into holding tanks for over seven (7.52) hours in order to mitigate pH levels before it was discharged directly onto the ground for over nine (9.83) hours before the generator malfunctioned. During this pumping period, the well was pumped for a total of 1,014 minutes (16.9 hours) at an average rate of 335.14 gpm. The water level above the packer increased approximately 2 feet during this pumping period demonstrating the separation of the Cow Creek Formation from the Upper and Lower Glen Rose Formations. The generator was replaced by Hydro Resources.

On November 2, 2016, the pump was restarted and the well pumped continuously at an average rate of 304.74 gpm for over one hundred and twenty-eight (128.02) hours with a final pumping rate of 300 gpm with 401.65 feet of drawdown for a specific capacity of 0.75 gpm/ft. During the aquifer test, the pumping water level dropped slowly throughout the test, reaching stable conditions near the end of the pumping phase of the aquifer test (Figures 26 and 27). During the recovery phase of the test, water levels achieved 90% recovery at approximately 2.4 days after pumping was stopped.

The Bridges Well No. 2 aquifer test data was analyzed using the Cooper-Jacob, Theis, and the Theis Recovery methods to calculate transmissivity, hydraulic conductivity, and storativity for the pumping well and observation wells (Appendix E). The Theis and Cooper-Jacob methods analyze data from the pumping phase and the Theis Recovery method analyzes data from the recovery phase of the aquifer test. Using the Cooper-Jacob analysis, the resulting transmissivity at Bridges Well No. 2 was 220 ft.^{2}/day with a hydraulic conductivity of 2.78 ft./day. The Theis analysis resulted in a transmissivity of 600 ft.^{2}/day and a hydraulic conductivity of 7.59 ft./day, and the Theis Recovery analysis resulted in a transmissivity of 197 ft.^{2}/day (Table 8). To find the storativity, the Cooper-Jacob and Theis methods were used which resulted in an average storativity from the Cooper- Jacob analysis of 1.6 x 10^{-4} and the Theis analysis of 1.45 x 10^{-4}. A summary of the aquifer test results are provided in Table 8. The aquifer test data indicate that at Bridges Well No. 2 there were i) no significant effects from nearby pumping of surrounding wells; and ii) no significant recharge or discharge boundaries experienced.

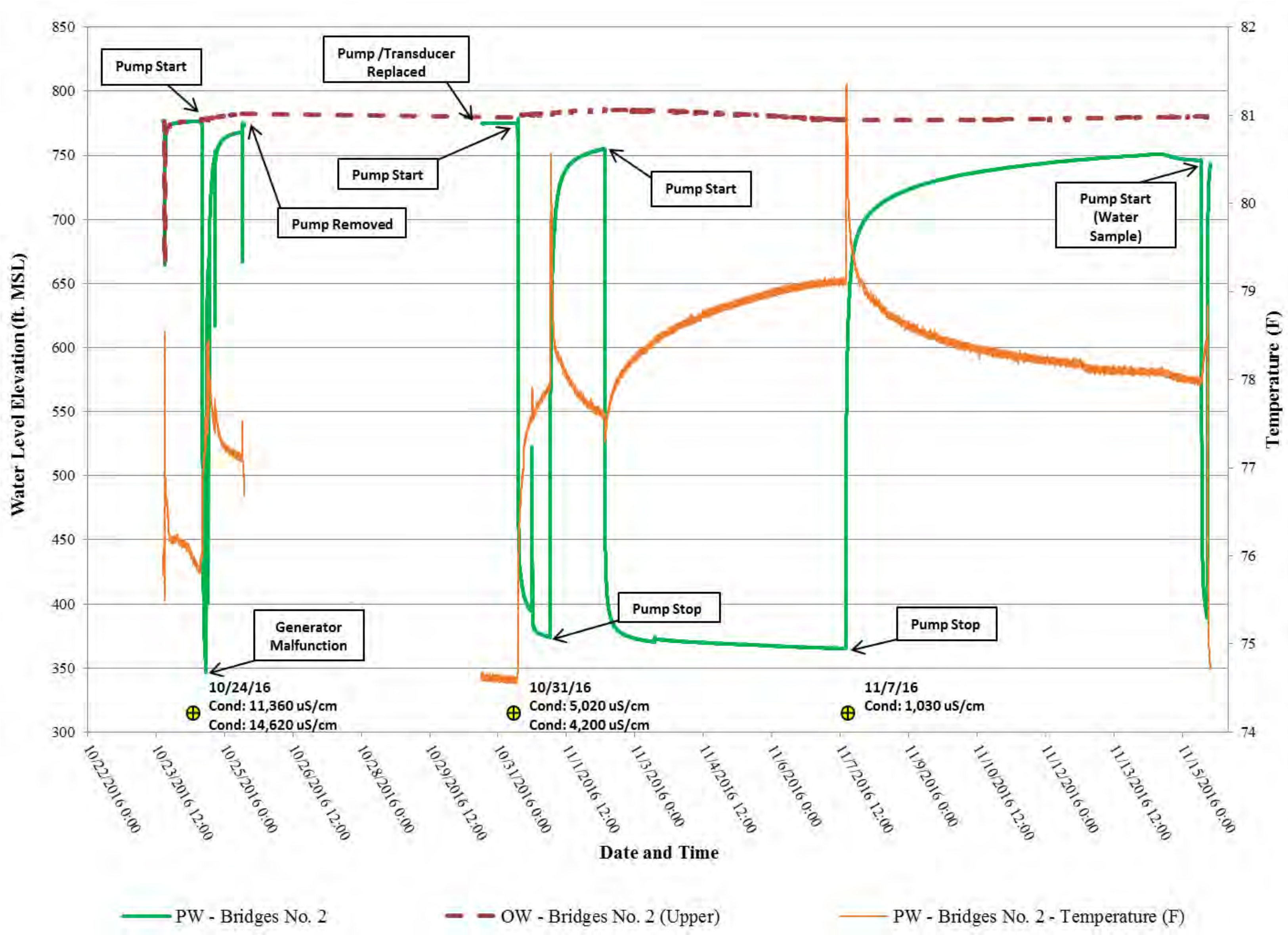


Figure 26: Aquifer Testing - Bridges Well No. 2 water level elevation

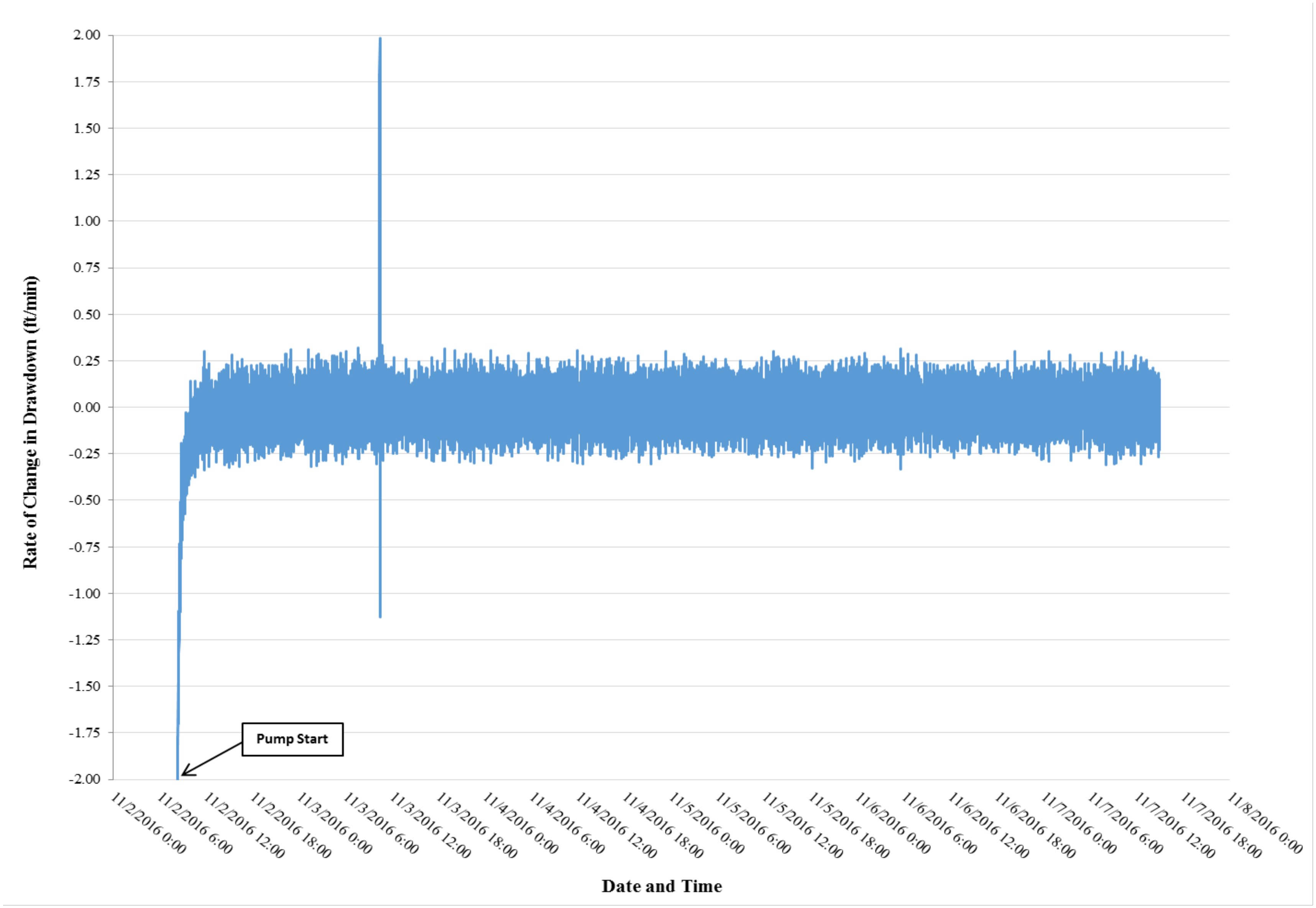


Figure 27: Rate of Change in drawdown (ft./minute) during the Bridges Well No. 2 aquifer test

Table 8: Bridges Well No. 2 aquifer test parameters summary

Analysis	Pumping Well	Date	Final Pump Rate (gpm)	Well	Transmissivity (ft.^{2}/d)	Hydraulic Conductivity (ft./day)	Storativity
Cooper-Jacob	Bridges Well No. 2	11/2/2016	300	Bridges Well No. 2 (PW)	220	2.78	-
				Bridges Well No. 1 (OW)	832	10.50	1.06×10^{-6}
				Bridges Well No. 3 (OW)	981	12.40	1.11×10^{-3}
				Bridges Well No. 4 (OW)	284	3.60	3.07×10^{-5}
				Odell Well No. 2 (OW)	1,060	13.40	2.85×10^{-5}
				Odell Well No. 3 (OW)	247	3.13	5.99×10^{-6}
				Ochoa Well (OW)	256	3.25	1.14×10^{-5}
				Wood Well No. 1 (OW)	231	2.92	4.17×10^{-6}
				Lowe Well (OW)	505	6.39	8.60×10^{-5}
Average					513	6.49	1.60×10^{-4}
Theis	Bridges Well No. 2	11/2/2016	300	Bridges Well No. 2 (PW)	600	7.59	-
				Bridges Well No. 1 (OW)	235	2.97	9.02×10^{-6}
				Bridges Well No. 3 (OW)	129	1.63	9.56×10^{-4}
				Bridges Well No. 4 (OW)	400	5.06	1.60×10^{-5}
				Odell Well No. 2 (OW)	600	7.59	4.70×10^{-5}
				Odell Well No. 3 (OW)	258	3.27	5.98×10^{-6}
				Ochoa Well (OW)	245	3.10	1.35×10^{-5}
				Wood Well No. 1 (OW)	231	2.92	4.30×10^{-6}
				Lowe Well (OW)	210	2.66	1.08×10^{-4}
Average					323	4.09	1.45×10^{-4}
Theis Recovery	Bridges Well No. 2	11/2/2016	300	Bridges Well No. 2 (PW)	197	-	
				Bridges Well No. 1 (OW)	209	-	
				Bridges Well No. 3 (OW)	1,320	-	
				Bridges Well No. 4 (OW)	210	-	
				Odell Well No. 2 (OW)	Unable to calculate due to lack of recovery		
				Odell Well No. 3 (OW)	249	-	
				Ochoa Well (OW)	272	-	
				Wood Well No. 1 (OW)	203	-	
				Lowe Well (OW)	Unable to calculate due to lack of recovery		
Average					380	-	

Notes: gpm = gallons per minute; PW = Pumping Well; OW = Observation Well; ft. = feet; d = day

VIII.2.2 Bridges Well No. 1

A 100 HP submersible pump was set at 768 ft. bgs on 6-inch steel column pipe. A Baski MD-7.5 packer was set at 733 ft. bgs to seal the borehole within the Bexar Shale Formation. This process isolated the well production to the Cow Creek Formation (Figure 20). A pressure transducer programmed to measure water level and temperature at one minute intervals was set within a 1-inch PVC line equipped above the packer so that the water level could be measured within the formations overlying the Cow Creek Member. A pressure transducer was also strapped to the column pipe beneath the packer and above the pump to record water levels and temperature at one minute intervals within the Cow Creek Member (Figure 20).

For the duration of the pumping and recovery phases for the Bridges Well No. 1 aquifer testing, pressure transducers programmed to measure the water level and temperature at one minute intervals were placed within Bridges Well No. 2, Bridges Well No. 3, Bridges Well No. 4, Odell Well No. 1, Odell Well No. 2, and Odell Well No. 3 by WRGS staff. Pressure transducers programmed to measure the water level at one hour intervals were also placed within the Gluesenkamp, Jones, Las Lomas, Lowe, Miller, Ochoa, Page, Wood 01, and Wood 04 wells by BSEACD staff. Periodic water level measurements via electric line were also collected by BSEACD staff from the Bernal, Bowman, Carnes, Cerwienski, Escondida 1, Green, Phillips, and Wood 02 wells during the pumping and recovery periods for the Bridges Well No. 2 testing. Figure 28 provides a map of the pumping and observation wells along with their respective static levels and observed drawdown levels during the aquifer testing at Bridges Well No. 1.

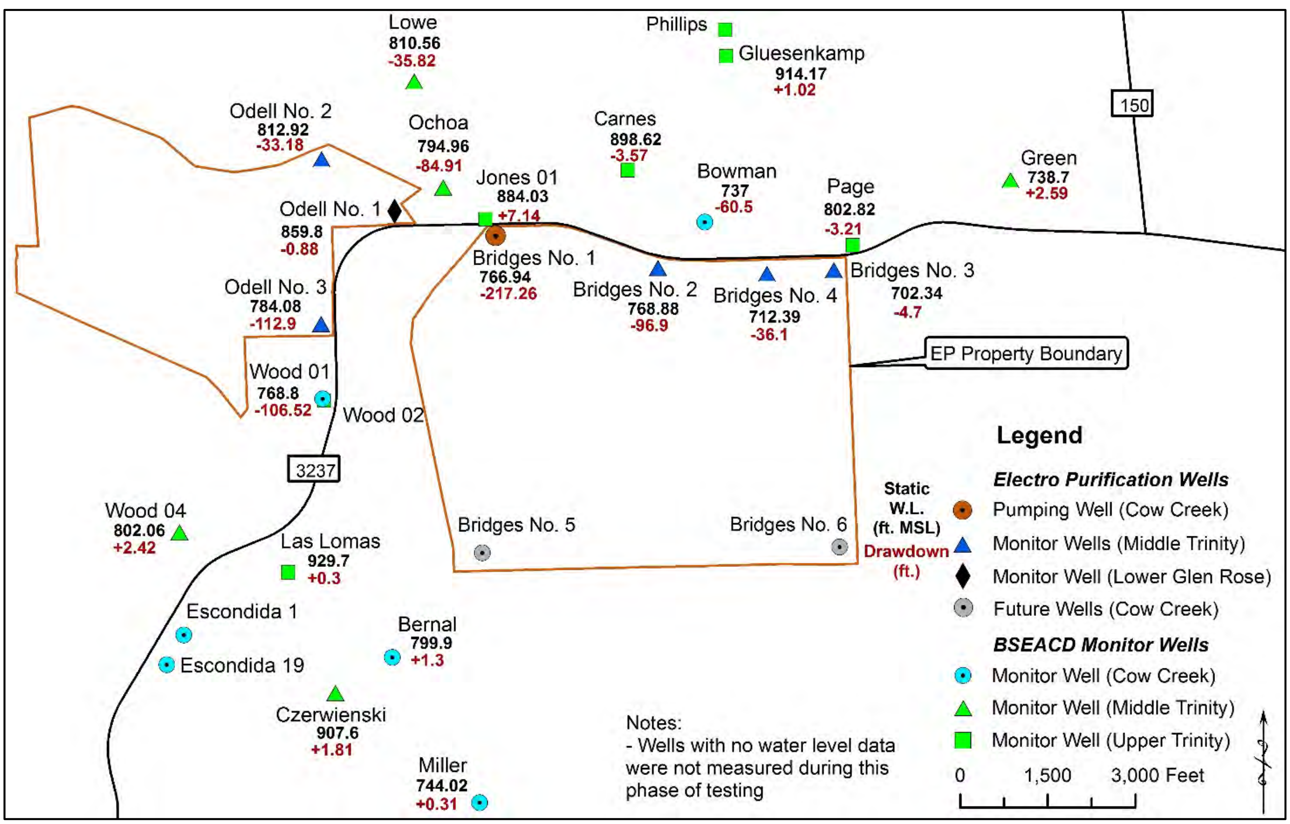


Figure 28: Bridges Well No. 1 aquifer test - pumping well and observation wells with respective water levels

Bridges Well No. 1 was acidized on November 16, 2016 and outfitted with the test pump, packer, and associated equipment for the aquifer testing the following day. On November 22, 2016, a static water level of 271.8 ft. bgs was measured in Bridges Well No. 1 prior to the inflation of the packer. After the packer was fully inflated, a static water level of 205.5 ft. bgs was measured in the upper portion of the well above the packer. The well was pumped into holding tanks for over six (6.42) hours in order to mitigate pH levels before it was discharged directly onto the ground for over forty-five (45.92) hours before the generator failed. During this pumping period, the well was pumped for a total of 3,140 minutes (52.33 hours) at an average rate of 746 gpm. The water level above the packer increased approximately 40 feet during this pumping period demonstrating the separation of the Cow Creek Formation from the Upper and Lower Glen Rose Formations. The generator was replaced by Hydro Resources on November 25, 2016 and the pumping was restarted.

The pump was restarted on November 25, 2016 and the well pumped continuously at an average rate of 654.8 gpm for over one hundred and twenty (120.08) hours with a final pumping rate of 645 gpm with 217.26 feet of drawdown for a specific capacity of 2.97 gpm/ft. During the aquifer test, the pumping water level dropped slowly throughout the test, reaching stable conditions near the end of the pumping phase of the aquifer test (Figures 29 and 30). During the recovery phase of the test, water levels achieved 81% recovery at approximately 3.5 days after pumping was stopped and prior to the packer being deflated.

The Bridges Well No. 1 aquifer test data was analyzed using the Cooper-Jacob, Theis, and the Theis Recovery methods to calculate transmissivity, hydraulic conductivity, and storativity for the pumping well and observation wells (Appendix E). The Theis and Cooper-Jacob methods analyze data from the pumping phase and the Theis Recovery method analyzes data from the recovery phase of the aquifer test. Using the Cooper-Jacob analysis, the resulting transmissivity at Bridges Well No. 1 was 1,010 ft.^{2}/day with a hydraulic conductivity of 12.30 ft./day. The Theis analysis resulted in a transmissivity of 392 ft.^{2}/day and a hydraulic conductivity of 4.78 ft./day, and the Theis Recovery analysis resulted in a transmissivity of 411 ft.^{2}/day and a hydraulic conductivity of 5.01 ft./day (Table 9). To find the storativity, the Cooper-Jacob and Theis methods were used which resulted in an average storativity from the Cooper- Jacob analysis of 1.29 x 10^{-4} and the Theis analysis of 1.79 x 10^{-4}. A summary of the aquifer test results are provided in Table 9. The aquifer test data indicate that at Bridges Well No. 1 there were i) no significant effects from nearby pumping of surrounding wells; and ii) no significant recharge or discharge boundaries experienced.

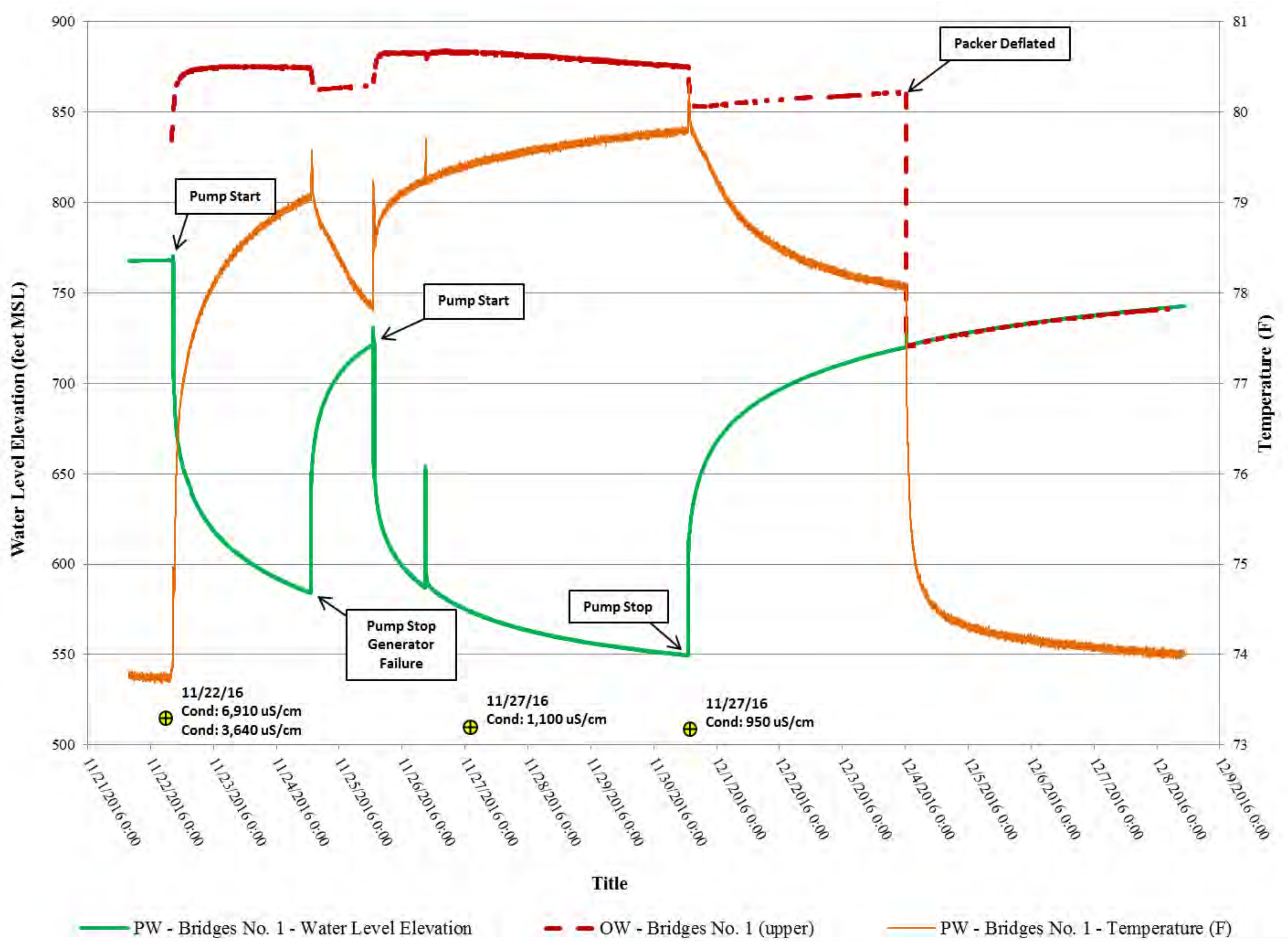


Figure 29: Aquifer Testing - Bridges Well No. 1 water level elevation

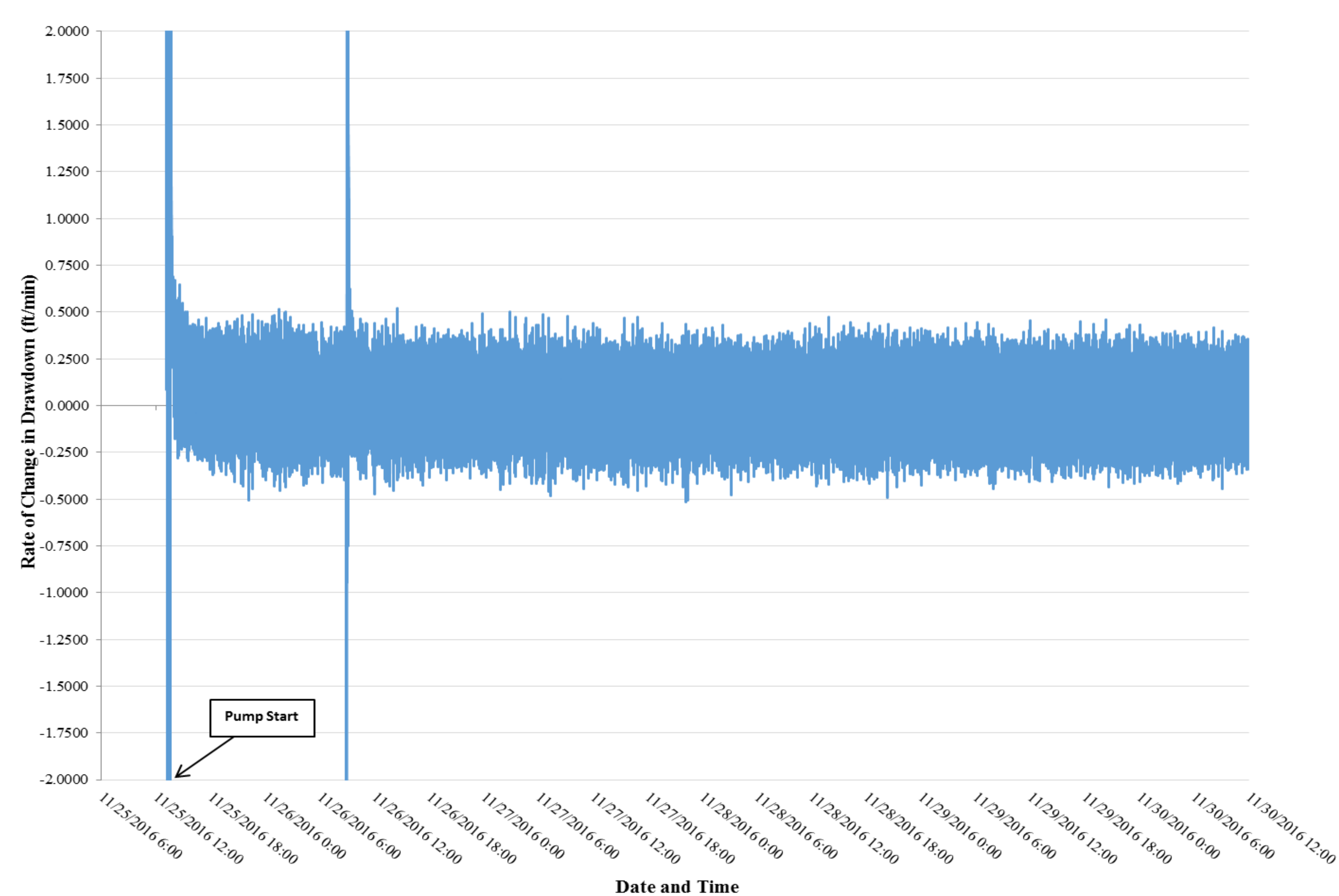


Figure 30: Rate of change in drawdown (ft./minute) during the Bridges Well No. 1 aquifer test

Table 9: Bridges Well No. 1 aquifer test parameters summary

Analysis	Pumping Well	Date	Final Pump Rate (gpm)	Well	Transmissivity (ft.²/d)	Hydraulic Conductivity (ft./day)	Storativity
Cooper-Jacob	Bridges Well No. 1	11/22/2016	645	Bridges Well No. 1 (PW)	1,010	12.30	-
				Bridges Well No. 2 (OW)	317	3.86	3.37×10^{-5}
				Bridges Well No. 3 (OW)	1,250	15.20	3.84×10^{-4}
				Bridges Well No. 4 (OW)	601	7.32	3.57×10^{-5}
				Odell Well No. 2 (OW)	1,160	14.20	1.99×10^{-4}
				Odell Well No. 3 (OW)	205	2.50	3.23×10^{-5}
				Wood Well No. 1 (OW)	328	4.00	5.74×10^{-6}
				Lowe Well (OW)	312	3.81	2.12×10^{-4}
Average					648	7.90	1.29×10^{-4}
Theis	Bridges Well No. 1	11/22/2016	645	Bridges Well No. 1 (PW)	392	4.78	-
				Bridges Well No. 2 (OW)	320	3.90	3.7×10^{-5}
				Bridges Well No. 3 (OW)	4,040	49.30	6.6×10^{-4}
				Bridges Well No. 4 (OW)	609	7.43	3.75×10^{-5}
				Odell Well No. 2 (OW)	810	9.88	2.4×10^{-4}
				Odell Well No. 3 (OW)	330	4.02	1.23×10^{-5}
				Wood Well No. 1 (OW)	350	4.27	5.36×10^{-6}
				Lowe Well (OW)	410	5.00	2.61×10^{-4}
Average					908	11.10	1.79×10^{-4}
Theis Recovery	Bridges Well No. 1	11/22/2016	645	Bridges Well No. 1 (PW)	411	5.01	
				Bridges Well No. 2 (OW)	271	3.30	
				Bridges Well No. 3 (OW)	Unable to calculate due to lack of recovery		
				Bridges Well No. 4 (OW)	855	10.40	
				Odell Well No. 2 (OW)	912	11.10	
				Odell Well No. 3 (OW)	423	5.16	
				Wood Well No. 1 (OW)	243	2.96	
				Lowe Well (OW)	499	6.09	
Average					516	6.30	

Notes: gpm = gallons per minute; PW = Pumping Well; OW = Observation Well; ft. = feet; d = day

VIII.2.3 Odell Well No. 2

A 100 HP submersible pump was set at 785 ft. bgs on 6-inch steel column pipe. A Baski MD-7.5 packer was set at 751 ft. bgs to seal the borehole within the Bexar Shale Formation. This process isolated the well production to the Cow Creek Formation (Figure 22). A pressure transducer programmed to measure water level and temperature at one minute intervals was set within a 1-inch PVC line equipped above the packer so that the water level could be measured within the formations overlying the Cow Creek Member. A pressure transducer was also strapped to the column pipe beneath the packer and above the pump to record water levels and temperature at one minute intervals within the Cow Creek

Member (Figure 22).

For the duration of the pumping and recovery phases for the Odell Well No. 2 aquifer testing, pressure transducers programmed to measure the water level and temperature at one minute intervals were placed within Bridges Well No. 1, Bridges Well No. 2, Bridges Well No. 3, Bridges Well No. 4, Odell Well No. 1, and Odell Well No. 3 by WRGS staff. Pressure transducers programmed to measure the water level at one hour intervals were also placed within the Escondida 1, Gluesenkamp, Jones, Las Lomas, Lowe, Miller, Ochoa, Page, Wood 01, and Wood 04 wells by BSEACD staff. Periodic water level measurements via electric line were also collected by BSEACD staff from the Bernal, Bowman, Carnes, Cerwienski, Green, Phillips, and Wood 02 wells during the pumping and recovery periods for the Bridges Well No. 2 testing. Figure 31 provides a map of the pumping and observation wells along with their respective static levels and observed drawdown levels during the aquifer testing at Odell Well No. 2.

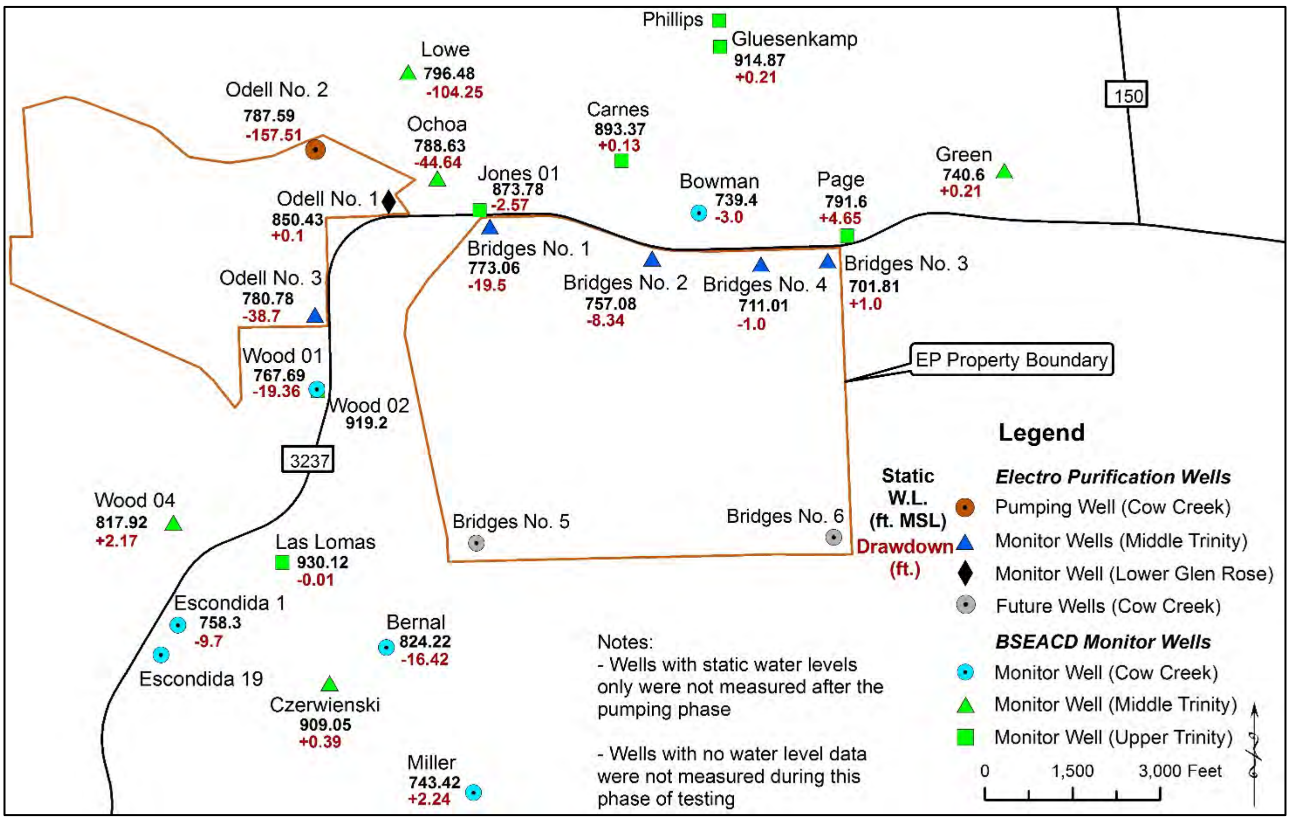


Figure 31: Odell Well No. 2 aquifer test - pumping well and observation wells with respective water levels

Odell Well No. 2 was acidized on December 22, 2016 and outfitted with the test pump, packer, and associated equipment for the aquifer testing the following week. On December 29, 2016, a static water level of 308.5 ft. bgs was measured in Odell Well No. 2 prior to the inflation of the packer. After the packer was fully inflated, a static water level of 310.4 ft. bgs was measured in the upper portion of the well. The well was pumped into holding tanks for over four (4.87) hours in order to mitigate pH levels before it was discharged directly onto the ground for over one hundred and sixteen (116.13) hours. The well pumped continuously at an average rate of 564.9 gpm with a final pumping rate of 560 gpm with 157.51 feet of drawdown for a specific capacity of 3.55 gpm/ft. During the aquifer test, the pumping water level dropped slowly throughout the test, reaching stable conditions near the end of the pumping phase of the aquifer test (Figures 32 and 33). During the recovery phase of the test, water levels achieved

90% recovery at approximately 6.2 days after pumping was stopped.

The Odell Well No. 2 aquifer test data was analyzed using the Cooper-Jacob, Theis, and the Theis Recovery methods to calculate transmissivity, hydraulic conductivity, and storativity for the pumping well and observation wells (Appendix E). The Theis and Cooper-Jacob methods analyze data from the pumping phase and the Theis Recovery method analyzes data from the recovery phase of the aquifer test. Using the Cooper-Jacob analysis, the resulting transmissivity at Odell Well No. 2 was 1,150 $ft.^2$/day with a hydraulic conductivity of 14.20 ft./day. The Theis analysis resulted in a transmissivity of 450 $ft.^2$/day and a hydraulic conductivity of 5.56 ft./day, and the Theis Recovery analysis resulted in a transmissivity of 806 $ft.^2$/day and a hydraulic conductivity of 9.95 ft./day (Table 8). To find the storativity, the Cooper-Jacob and Theis methods were used which resulted in an average storativity from the Cooper- Jacob analysis of 1.11×10^{-4} and the Theis analysis of 1.23×10^{-4}. A summary of the aquifer test results are provided in Table 8. The aquifer test data indicate that at Odell Well No. 2 there were i) no significant effects from nearby pumping of surrounding wells; and ii) no significant recharge or discharge boundaries experienced.

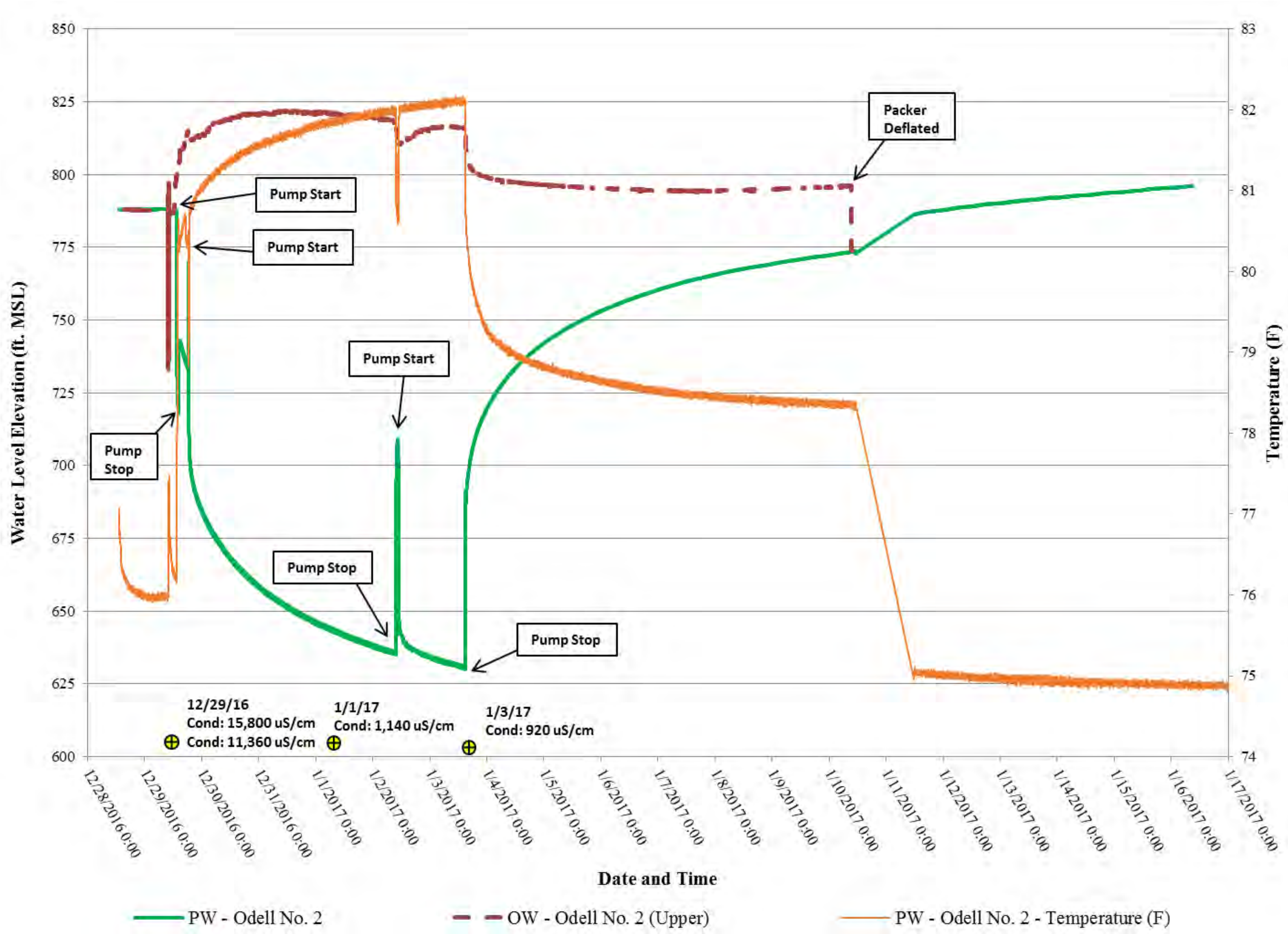


Figure 32: Aquifer Testing – Odell Well No. 2 water level elevation

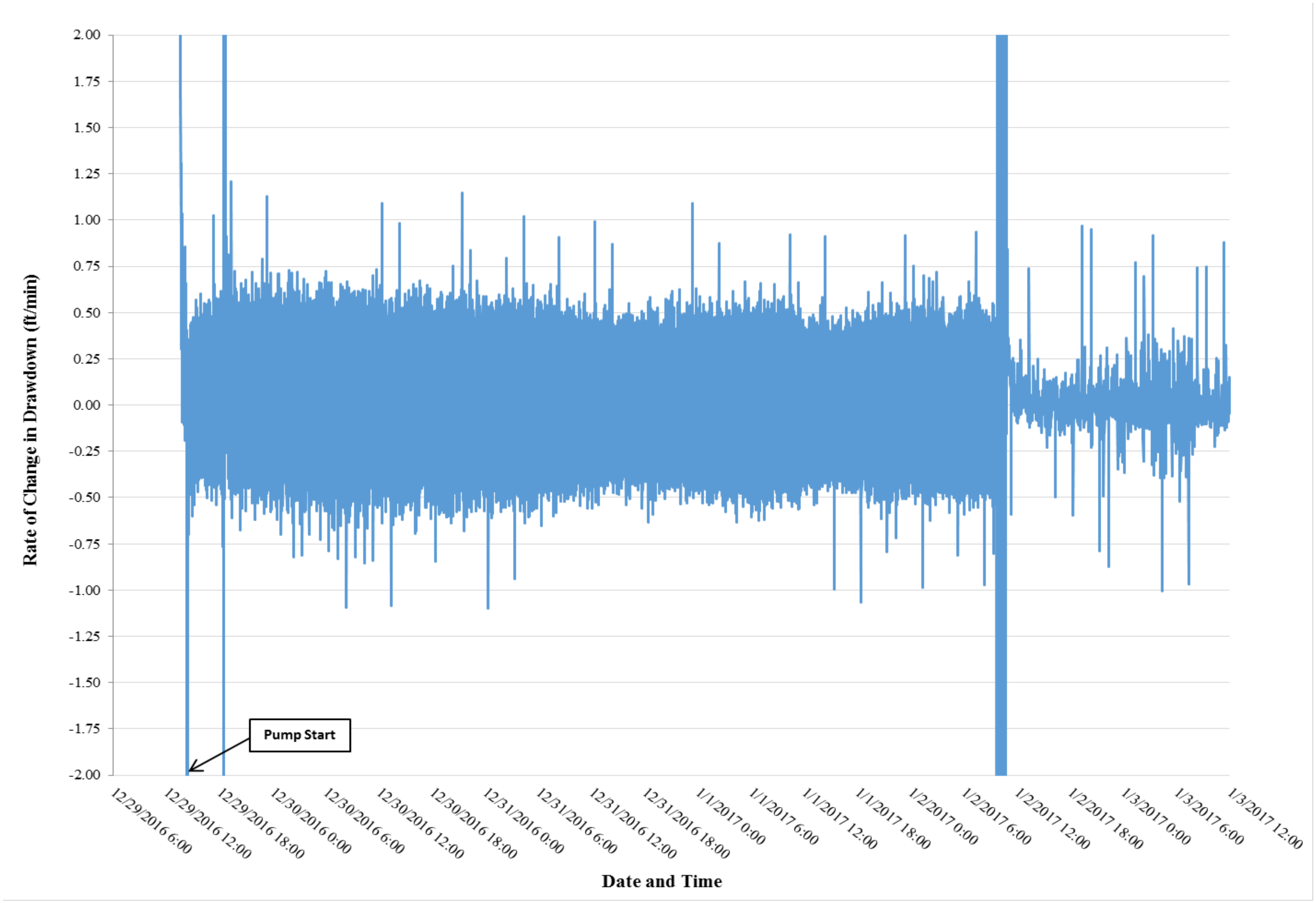


Figure 33: Rate of change in drawdown (ft./minute) during the Odell Well No. 2 aquifer test

Table 10: Odell Well No. 2 aquifer test parameters summary

Analysis	Pumping Well	Date	Final Pump Rate (gpm)	Well	Transmissivity (ft.^{2}/d)	Hydraulic Conductivity (ft./day)	Storativity
Cooper-Jacob	Odell Well No. 2	12/29/2016	560	Odell Well No. 2 (PW)	1,150	14.20	-
				Bridges Well No. 1 (OW)	1,350	16.70	1.68×10^{-4}
				Bridges Well No. 2 (OW)	811	10.00	1.16×10^{-4}
				Bridges Well No. 4 (OW)	2,390	29.50	3.3×10^{-4}
				Odell Well No. 3 (OW)	935	11.50	6.15×10^{-5}
				Ochoa Well (OW)	499	6.16	1.03×10^{-4}
				Wood Well No. 1 (OW)	681	8.41	1.11×10^{-4}
				Lowe Well (OW)	371	4.58	1.29×10^{-5}
				Escondida Well No. 1 (OW)	788	9.73	5.29×10^{-5}
Average					997	12.30	1.11×10^{-4}
Theis	Odell Well No. 2	12/29/2016	560	Odell Well No. 2 (PW)	450	5.56	-
				Bridges Well No. 1 (OW)	513	6.33	2.26×10^{-4}
				Bridges Well No. 2 (OW)	390	4.81	1.49×10^{-4}
				Bridges Well No. 4 (OW)	217	2.68	1.79×10^{-4}
				Odell Well No. 3 (OW)	513	6.33	8.61×10^{-5}
				Ochoa Well (OW)	480	5.93	1.2×10^{-4}
				Wood Well No. 1 (OW)	513	6.33	1.5×10^{-4}
				Lowe Well (OW)	350	4.32	1.5×10^{-5}
				Escondida Well No. 1 (OW)	210	2.59	5.5×10^{-5}
Average					404	4.99	1.23×10^{-4}
Theis Recovery	Odell Well No. 2	12/29/2016	560	Odell Well No. 2 (PW)	806	9.95	
				Bridges Well No. 1 (OW)	1,060	13.10	
				Bridges Well No. 2 (OW)	582	7.19	
				Bridges Well No. 4 (OW)	1,930	23.80	
				Odell Well No. 3 (OW)	930	11.50	
				Ochoa Well (OW)	517	6.38	
				Wood Well No. 1 (OW)	683	8.44	
				Lowe Well (OW)	250	3.08	
				Escondida Well No. 1 (OW)	1,110	13.70	
Average					873	10.80	

Notes: gpm = gallons per minute; PW = Pumping Well; OW = Observation Well; ft. = feet; d = day

VIII.2.4 Summary of Aquifer Testing

The aquifer test data were analyzed using the Cooper-Jacob, Theis, and the Theis Recovery methods to calculate transmissivity, hydraulic conductivity, and storativity for the pumping well and observation wells (Appendix E). The following parameters were used to calculate the aquifer test data using the Schlumberger AquiferTest program (Version 2015.1, Build 5.0.1.4) and AQTESOLV version 4.5, and are summarized in Table 11. The Theis and Cooper-Jacob methods analyze data from the pumping phase and the Theis Recovery method analyzes data from the recovery phase of the aquifer test. The digital water level and pumping data from the three aquifer tests is provided in Appendix G.

Table 11: Parameters used to calculate transmissivity, hydraulic conductivity, and storativity

Well ID	Aquifer Thickness (ft.)	Aquifer Penetration	Screen Length (ft.)	Screen Radius (ft.)	Casing Radius (ft.)	Pumping Time (min)	Avg. Pumping Rate (gpm)
Bridges Well No. 1	82	Full	82	0.411	0.448	11,775	652
Bridges Well No. 2	79	Full	79	0.411	0.448	7,681	305
Bridges Well No. 3	78	Full	63	0.411	0.448	n/a	n/a
Bridges Well No. 4	72	Full	72	0.411	0.448	n/a	n/a
Odell Well No. 2	81	Full	81	0.411	0.448	7,273	578.98
Odell Well No. 3	78	Full	78	0.411	0.448	n/a	n/a
Escondida No. 1	81	Partial	70	0.411	0.25	n/a	n/a
Lowe	81	Partial	60	0.328	0.1875	n/a	n/a
Wood 01	81	Partial	80	0.21	0.21	n/a	n/a
Ochoa	81	Full	100	0.21	0.21	n/a	n/a
Notes: Aquifer thickness based on the distance between the bottom of the Bexar Shale and the bottom of the Cow Creek Limestone (using geophysical logs).							

The results of the aquifer testing were representative of a heterogeneous system with hydraulic disconnects between some areas, even between adjacent wells. Transmissivity values ranged from 129 to 4,040 ft.^{2}/day; storativity values ranged from 1.06 x 10^{-6} to 1.1 x 10^{-3}; and drawdown within observation wells showed both very strong and very weak connections across the monitored wells.

As discussed earlier, Odell Well No. 1 was back plugged prior to testing to isolate the Lower Glen Rose Formation within the well. During the aquifer testing, the water level within Odell Well No. 1 was not influenced by pumping. These findings indicate that the Lower Glen Rose and Cow Creek Members of the Middle Trinity Aquifer are isolated from each other by the Bexar Shale, effectively creating a separate aquifer made up of the Cow Creek Limestone in the vicinity of the EP Well Field.

There was no connection observed between the pumping wells and observation wells completed in the Upper Glen Rose formation. The water levels in the Upper Glen Rose wells had minor fluctuations, however they remained relatively stable and any changes in water level can be attributed to natural regional water level fluctuations, and/or localized pumping within the Upper Glen Rose Formation and not related to the pumping of the EP wells.

During the post pumping monitoring phases, the water level within Bridges Well No. 1 did not reach 90% recovery during the test period. The water levels recovered quickly after pumping ceased and continued to recover during the monitoring phase reaching 81% recovery prior to the packer being deflated. Due to cost and time constraints of the project, the packer was deflated to begin the process of removing the pump prior to achieving 90% recovery. Bridges Well No. 2 achieved 90% recovery approximately 2.4 days after pumping stopped while Odell Well No. 2 achieved 90% recovery approximately 6.2 days after pumping stopped. In theory, the water level should recover at the same rate the water level drew down during the recovery phase. In reality, however, the rate to achieve 90% recovery typically takes longer. Driscoll points out that *"drawdown and recovery should be identical if the aquifer conditions conform to the basic assumptions of the Theis concept (Driscoll, 1986)."* Karst aquifers like the Middle Trinity do not conform to the basic Theis assumptions due to the natural heterogeneity and anisotropic properties that occur in fractured limestone aquifers. *"Complete recovery generally requires a period considerably longer than the previous pumping period, except in cases where recharge to the aquifer occurs during the pumping and recovery periods. The storativity for a confined aquifer depends upon the elastic properties of the formation. If the aquifer is not perfectly elastic, it does not rebound vertically during recovery of water levels (recovery of pressure) at the same rate that it is compressed as a result of the drawdown during the preceding pumping (Driscoll, 1986)."* The heterogeneity, anisotropy, and non-perfect elasticity characteristics of the Middle Trinity Aquifer explain the delayed recovery rates post pumping phase of the aquifer test.

Varying levels of drawdown and water level rise were observed in the monitoring wells throughout the pumping and recovery phases of each aquifer test. During the Bridges Well No. 2 aquifer test, the largest drawdown in the monitoring wells was seen at the Bowman Well (completed within the Cow Creek Member) with 134.6 ft. at a distance of approximately 1,137 ft. from the pumping well (Figure 25). However, the Miller Well (completed within the Cow Creek Member) located approximately 1.8 miles from the pumping well experienced a 2.69 ft. rise in water level. Figure 25 provides static and maximum drawdown water levels of the monitored wells during the Bridges Well No. 2 aquifer test.

During the Bridges Well No. 1 aquifer test, the largest drawdown was observed in Odell Well No. 3 with 112.9 ft. of drawdown at a distance of approximately 1,260 ft. from the pumping well. While an increase of 0.31 ft. in water level was observed within the Miller Well (Cow Creek Member) at approximately 1.8 miles and an increase of 2.42 ft. in water level was observed within the Wood 04 Well (Middle Trinity completion) at a distance of 1.4 miles. Figure 28 provides static and maximum drawdown water levels of the monitored wells during the Bridges Well No. 1 aquifer test.

During the Odell Well No. 2 aquifer test, the largest drawdown was observed in the Lowe Well with 104.25 ft. of drawdown at a distance of approximately 2,000 ft. from the pumping well. While an increase of 1.0 ft. in water level was observed within Bridges Well No. 3 (Middle Trinity completion) at approximately 1.7 miles and an increase of 2.24 ft. in water level was observed within the Miller Well (Cow Creek Member) at a distance of 2.1 miles. Figure 31 provides static and maximum drawdown water levels of the monitored wells during the Odell Well No. 2 aquifer test.

In general, the drawdown patterns formed somewhat of an elliptical shape with the largest drawdown occurring where a greater hydraulic connection exists between wells. Within a karst aquifer like the Middle Trinity Aquifer this hydraulic connection is typically found along the dominant fracture trace; in this case associated with the Balcones Fault Zone along a northeast/southwest trend. Drawdown perpendicular to the dominant fracture trace is much less resulting in an elliptical cone of depression.

It is also important to note that the observation wells monitored outside of the EP Well Field serve homes for domestic use and were producing water at various intervals throughout the monitoring phase and the pumping phase of the aquifer tests. The wells monitored by BSEACD recorded data at one hour intervals (where transducers were used) rather than one minute intervals which makes it difficult to determine exact production times. While the production from the domestic wells are for the most part at relatively small volumes for short periods of time, it does have some effect on the overall drawdown and particularly within the well being pumped. For example, at the observation wells where maximum drawdown was observed (Bowman, Ochoa, and Lowe) the wells could have recently completed a pumping phase which added to the overall maximum drawdown. While it is apparent that most of the drawdown in the monitoring wells was due to the pumping of the EP Wells, the cumulative effect of pumping in the surrounding domestic wells did have some influence on the overall drawdown at each of the wells.

VIII.2.5 Summary of Water Quality

During each of the three aquifer tests, a water sample was obtained using methods approved by the Texas Commission on Environmental Quality (TCEQ) and taken to a laboratory certified by the National Environmental Laboratory Accreditation Conference (NELAC). The water quality parameters analyzed were outlined in the aquifer test work plan approved by BSEACD staff. Appendix F includes the laboratory water quality reports from each sampling event. In addition to the laboratory analyzed samples, field parameters were taken for pH and specific conductance periodically during the pumping phase of each test.

Table 13 provides a summary of the Bridges Well No. 2 water quality test results. The Total Dissolved Solids (TDS) concentration was 732 mg/L with a sulfate concentration of 149 mg/L, both of which meet the TCEQ Secondary Contaminant Level (SCL). The chloride concentration of 138 mg/L is slightly elevated from typical concentration levels within Middle Trinity Groundwater, this is likely due to the acidization process which can cause a temporary rise in chloride levels. The elevated chloride levels are below the TCEQ SCL and will naturally return to native concentration levels. The iron concentration exceeds the TCEQ SCL which is not unusual within the Middle Trinity, however it is also possible that the elevated iron concentration is due to the acidization process which dissolves the rock formation. The remaining parameters meet the TCEQ SCLs and all of the parameters meet TCEQ Maximum Contaminant Levels (MCLs).

Table 12: Bridges Well No. 2 water quality summary

Date		units in mg/L											
	pH	TDS	As	Cl	F	Fe	NO_2	NO_3	Mn	Al	Cu	Zn	SO_4
	Maximum and Secondary Contaminant Levels (MCL/SCL)												
	≥ 7.0 [2]	1,000 [2]	0.01 [1]	300 [2]	4.0 [1] & 2.0 [2]	0.3 [2]	1.0 [1]	10 [1]	0.05 [2]	0.2 [2]	1.0 [2]	5.0 [2]	300 [2]
11/15/2016	6.9	732	<0.005	138.0	1.73	0.46	<0.20	<0.5	0.015	<0.01	<0.005	0.057	149

Table 14 provides the field parameter data collected during the Bridges Well No. 2 aquifer test, including pH and specific conductance taken at various times during the pumping phase of the aquifer test. The results indicate that the pH and specific conductance changed throughout the test. The specific conductance decreased throughout the test while the pH values increased. The well was acidized prior to the aquifer test which results in a temporary increase in specific conductance and a lowering of the pH due to the dissolving of limestone and the presence of acid, respectively. Throughout the pumping phase as the acid was flushed from the well, the pH and the specific conductance returned to levels that are more indicative of native Middle Trinity Aquifer groundwater. No negative impacts to water quality are anticipated with prolonged production from Bridges Well No. 2.

Table 13: Bridges Well No. 2 water quality field parameters summary

Date	pH	Specific Conductance (uS/cm)
10/31/2016 - 10:27	6.0	5,020
10/31/2016 - 10:29	5.8	5,640
10/31/2016 - 14:45	6.3	4,600
10/31/2016 - 16:25	6.5	4,200
11/7/2016 - 8:50	7.0	1,030
Notes: measurements taken by Wet Rock Groundwater Services, LLC		

Table 15 provides a summary of the Bridges Well No. 1 water quality test results. The TDS concentration was 432 mg/L with a sulfate concentration of 108 mg/L and a chloride concentration of 21 mg/L. All of the parameters meet the TCEQ MCLs and SCLs and are within the concentration ranges of native Middle Trinity Groundwater.

Table 14: Bridges Well No. 1 water quality summary

		units in mg/L											
Date	pH	TDS	As	Cl	F	Fe	NO_2	NO_3	Mn	Al	Cu	Zn	SO_4
	Maximum and Secondary Contaminant Levels (MCL/SCL)												
	≥ 7.0 [2]	1,000 [2]	0.01 [1]	300 [2]	4.0 [1] & 2.0 [2]	0.3 [2]	1.0 [1]	10 [1]	0.05 [2]	0.2 [2]	1.0 [2]	5.0 [2]	300 [2]
11/30/2016	7.2	432	<0.01	21	1.37	0.058	<0.20	<0.20	<0.01	<0.01	<0.005	0.082	108

Table 16 provides the field parameter data collected during the Bridges Well No. 1 aquifer test, including pH and specific conductance taken at various times during the pumping phase of the aquifer test. The results indicate that the pH and specific conductance changed throughout the test. Similar to Bridges Well No. 2, the change in levels is due to the acid being flushed from the well and the groundwater returning to native concentration levels.

Table 15: Bridges Well No. 1 water quality field parameters summary

Date	pH	Specific Conductance (uS/cm)
11/22/2016 - 9:05	6.06	6,910
11/22/2016 - 9:21	5.86	5,510
11/22/2016 -15:26	6.52	3,640
11/23/2016 - 14:31	6.67	1,980
11/24/2016 - 12:00	7.18	1,260
11/27/2016 - 10:31	7.30	1,100
11/28/2016 - 17:06	7.28	1,240
11/29/2016 - 17:54	7.21	1,740
11/30/2016 - 13:16	7.31	950
Notes: measurements taken by Wet Rock Groundwater Services, LLC		

Table 17 provides a summary of the Odell Well No. 2 water quality test results. The TDS concentration was 484 mg/L with a sulfate concentration of 75 mg/L and a chloride concentration of 93 mg/L. The chloride concentration is slightly elevated from typical concentration levels within Middle Trinity Groundwater, this is likely due to the acidization process which can cause a temporary rise in chloride levels. The elevated chloride level is below the TCEQ SCL and will naturally return to native levels. All of the parameters meet the TCEQ MCLs and SCLs.

Table 16: Odell Well No. 2 water quality summary

		units in mg/L											
Date	pH	TDS	As	Cl	F	Fe	NO_2	NO_3	Mn	Al	Cu	Zn	SO_4
	Maximum and Secondary Contaminant Levels (MCL/SCL)												
	≥ 7.0 [2]	1,000 [2]	0.01 [1]	300 [2]	4.0 [1] & 2.0 [2]	0.3 [2]	1.0 [1]	10 [1]	0.05 [2]	0.2 [2]	1.0 [2]	5.0 [2]	300 [2]
1/3/2017	6.8	484	<0.0005	93	1.06	0.14	<0.2	<0.2	<0.01	<0.01	<0.005	0.034	75

Table 18 provides the field parameter data collected during the Odell Well No. 2 aquifer test, including pH and specific conductance taken at various times during the pumping phase of the aquifer test. The results indicate that the pH and specific conductance changed throughout the test. Similar to Bridges Well No. 2 and Well No. 1, the change in levels is due to the acid being flushed from the well and the groundwater returning to native concentration levels.

Table 17: Odell Well No. 2 water quality field parameters summary

Date	pH	Specific Conductance (uS/cm)
12/29/2016 - 13:35	5.59	15,800
12/29/2016 - 18:04	6.55	11,360
12/30/2016 - 10:50	6.77	3,300
12/30/2016 - 20:04	7.70	2,200
12/31/2016 - 8:16	6.94	1,780
12/31/2016 - 19:48	7.61	1,510
1/1/2017 - 8:10	7.78	1,140
1/2/2017 - 11:37	7.33	1,140
1/2/2017 - 20:20	7.31	1,000
1/3/2017 - 6:51	7.24	980
1/3/2017 - 14:47	6.99	920
Notes: measurements taken by Wet Rock Groundwater Services, LLC		

Section IX: Estimated Drawdown and Pumping Effects

As required by the BSEACD Guidelines for Hydrogeologic Reports, the effects of current and projected pumpage on water levels on surrounding wells for a one week, one year, and seven year period was estimated using the Theis equation. Figures 35 through 39 show the estimated drawdown with continuous pumping of Bridges Well No. 1 (436 gpm), Bridges Well No. 2 (100 gpm), Odell Well No. 2 (550 gpm), and at future Bridges Well No. 5 (325 gpm) and future Bridges Well No. 6 (325 gpm). EP has conducted the aquifer tests for a permitted production rate of 2.5 MGD. The proposed production from the Well Field will be increased over a period of years starting at a production rate much lower than 2.5 MGD. During normal operation of the Well Field to limit drawdown over the regional area, maintain a lower production rate at each well to reduce pumping levels and to provide redundancy to the Well Field, additional wells will be used. For modeling purposes we added two additional wells farther away from Bridges Well No. 1, Bridges Well No. 2, and Odell Well No. 2 on the south side of the Bridges property which will be drilled, completed and tested at a later point in time. The modeled pumping rates at each well were intended to model the Well Field at its full capacity of 2.5 MGD and may vary from well to well during normal operation.

Within a karst aquifer such as the Middle Trinity Aquifer over long term periods of production, however, accurate estimation of water levels due to pumping is difficult. The heterogeneity of the Middle Trinity Aquifer coupled with the identified potential disconnects between the Cow Creek Member and other formations causes traditional methods of estimating drawdown, such as the Theis equation, to overestimate drawdown. The use of the state's Groundwater Availability Model (GAM) to estimate drawdown from a single well also has limitations identified in the GAM's disclaimer due to scaling because the model is regional in nature. In addition, the GAM for the Trinity Aquifers neither covers the full extent of the Project Area nor the confined zone of the affected aquifers. In an effort to satisfy the requirements of the BSEACD we used the Theis equation (Driscoll, 1986) to estimate drawdown. The Theis equation has several critical assumptions used to derive the formula which include:

1. The water-bearing formation is uniform in character and the hydraulic conductivity is the same in all directions;
2. The aquifer is uniform in thickness and infinite in areal extent;
3. The aquifer receives no recharge from any source;
4. The well penetrates, and receives water from the full thickness of the aquifer;
5. The water from storage is discharged instantaneously when the head is lowered;
6. The pumping well is 100% efficient;
7. All water removed from the well comes from aquifer storage;
8. Laminar flow exists through the well and aquifer; and,
9. The water table or potentiometric surface has no slope.

It is important to note that several of the assumptions used to derive the Theis equation are not appropriate for the Middle Trinity Aquifer and specifically wells completed within the Cow Creek

Member. These include assumptions 1, 3, 7 and 8. The Middle Trinity Aquifer is a karst aquifer. It is fractured, and not uniform or homogenous in either character or its hydrogeologic properties (transmissivity and storativity). In addition, the Theis assumptions that (i) the formation receives no recharge from any source and (ii) that all water removed from the well comes from aquifer storage are inaccurate under these known conditions. They are, therefore, inappropriate, for application to the Middle Trinity Aquifer. Driscoll (1986) states,

> *"The assumption that an aquifer receives no recharge during the pumping period is one of the six fundamental conditions upon which the non-equilibrium formulas (Theis) are based. Therefore, all water discharged from a well is assumed to be taken from storage within the aquifer. It is known, however that most formations receive recharge. Hydrographs from long-term observation wells monitored by the US Geological Survey, various state agencies, and similar data-gathering agencies in other parts of the world show that most water-bearing formations receive continual or intermittent recharge."*

Konikow and Leake (2014) note that contrary to the Theis assumptions, with increased pumping time, (i) the fraction of pumpage derived from storage tends to decrease, and (ii) the fraction derived from capture (recharge) increases. Eventually a new equilibrium will be achieved when no more water is derived from storage and heads, or water levels, in the aquifer stabilize (Figure 34). This result is achieved when the initial cone of depression formed by discharge reaches a new source of water, typically the recharge zone of the aquifer. The actual response time for an aquifer system to reach a new equilibrium is a function of the dimensions, hydraulic properties, and boundary conditions for each specific aquifer. For example, the response time will decrease as the hydraulic diffusivity of the aquifer increases (Theis 1940; Barlow and Leake 2012). The response time can range from days to millennia (Bredehoeft and Durbin 2009; Walton 2011).

Since the Theis equation assumes (i) that all water is derived from storage and (ii) that the aquifer receives no recharge, the Theis equation overestimates drawdown within a well that is located in an aquifer that receives recharge rapidly. Hydrographs of wells (Figure 17) confirm that the Middle Trinity Aquifer exhibits increases in water level quickly after precipitation events. For this reason, using the Theis equation to calculate drawdown over periods of time greater than when water from capture exceeds water from storage leads to an exaggerated estimate of drawdown.

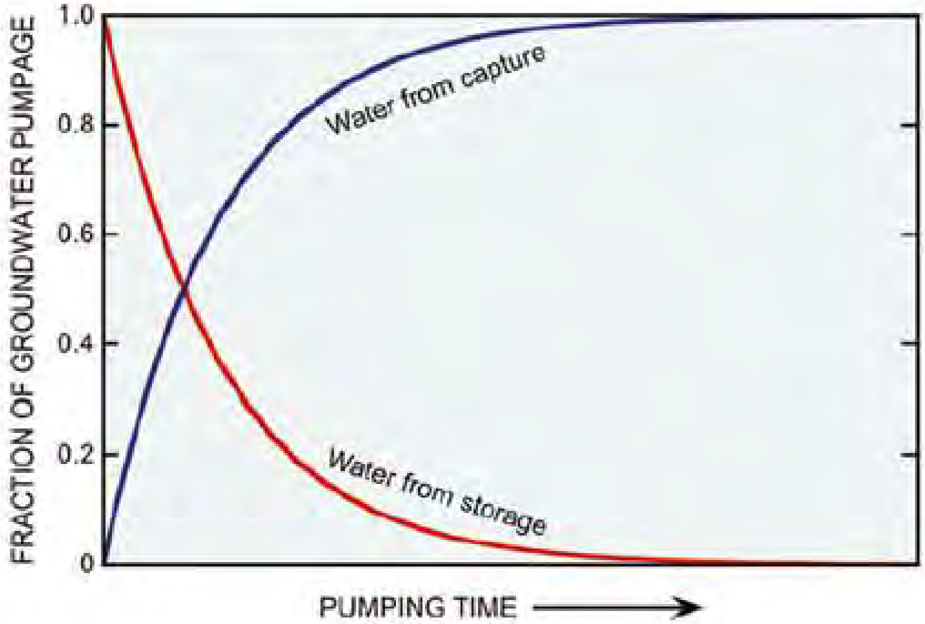


Figure 34: Water sources to a pumping well over time (from Konikow and Leake (2014))

Figures 35 through 39 provide graphs of the estimated distance-drawdown calculations for 1 week, 1 year, and 7 years at Bridges Wells No. 1, 2, 5, and 6 as well as Odell Well No. 2, respectively, using the Theis equation at a cumulative production rate of 2.5 MGD. For each of the existing wells, the calculated transmissivity using the Cooper-Jacob method at the pumping well was used and an average of the storativity values from each of the monitoring wells was used. The transmissivity value from the Cooper-Jacob method was used due to the ability of the resulting transmissivity value to recreate actual measured drawdown during the aquifer test when utilizing the modified non-equilibrium equation or Theis equation. At the future proposed pumping wells (Bridges Wells No. 5 & 6), an average of the pumping well transmissivities and an average of all of the monitoring well storativities were used. The Cooper-Jacob method was used to meet BSEACD guidelines. The transmissivity (T) and storativity (S) values used for each of the drawdown calculations are as follows:

- Bridges Well No. 1: T = 1,010 $ft.^2$/day; S = 1.29 x 10^{-4}
- Bridges Well No. 2: T = 220 $ft.^2$/day; S = 1.6 x 10^{-4}
- Bridges Well No. 5: T = 793 $ft.^2$/day; S = 1.33 x 10^{-4}
- Bridges Well No. 6: T = 793 $ft.^2$/day; S = 1.33 x 10^{-4}
- Odell Well No. 2: T = 1,150 $ft.^2$/day; S = 1.11 x 10^{-4}

Figures 40 and 41 provide cross sections with the static water levels measured prior to starting the Bridges Well No. 2 aquifer test (unless otherwise noted), maximum drawdown recorded during the aquifer tests, and the estimated 7 year drawdown at each well. Figure 42 provides a map of the estimated drawdown after 7 years of pumping.

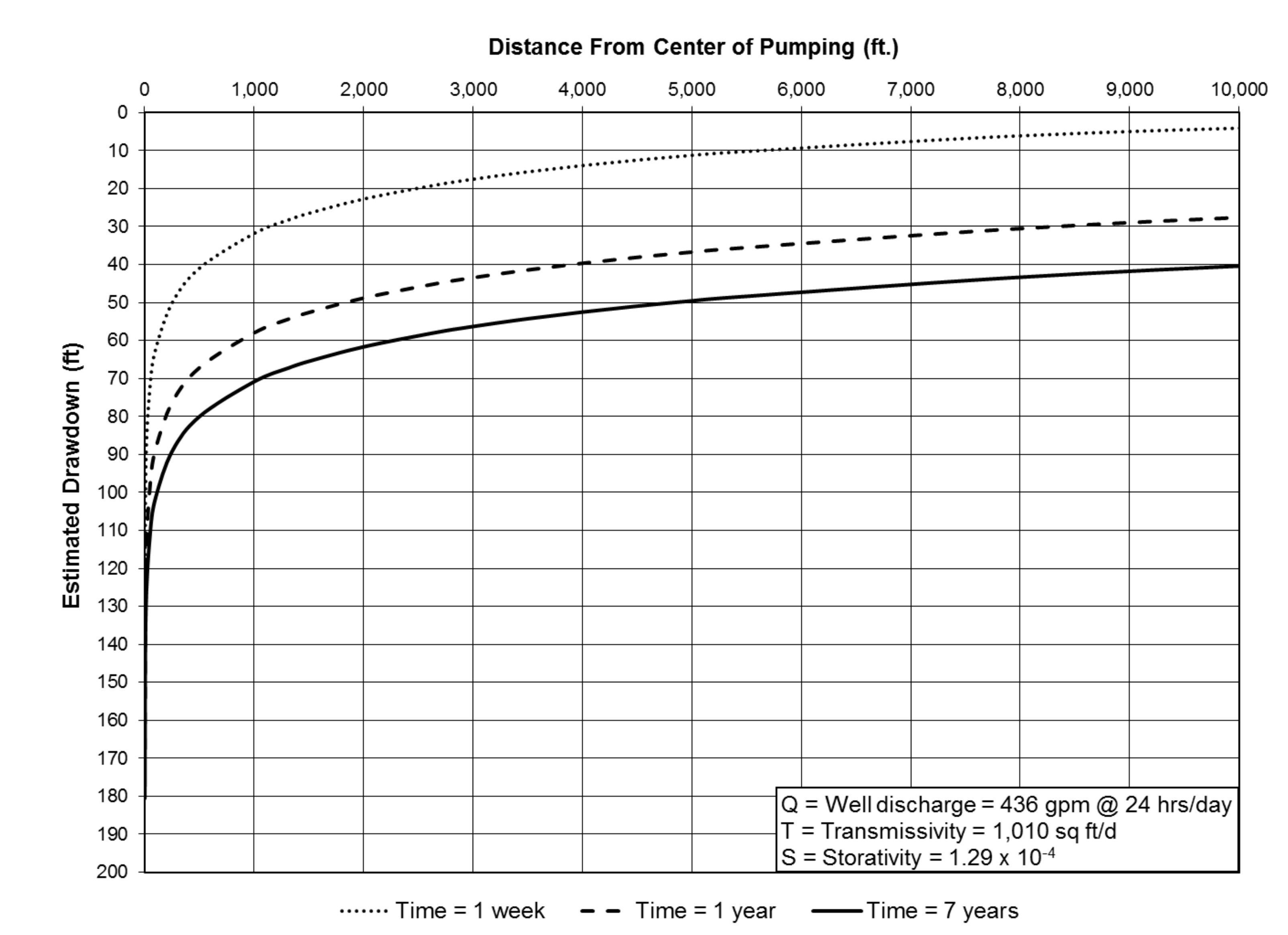


Figure 35: Bridges Well No. 1 distance-drawdown estimations

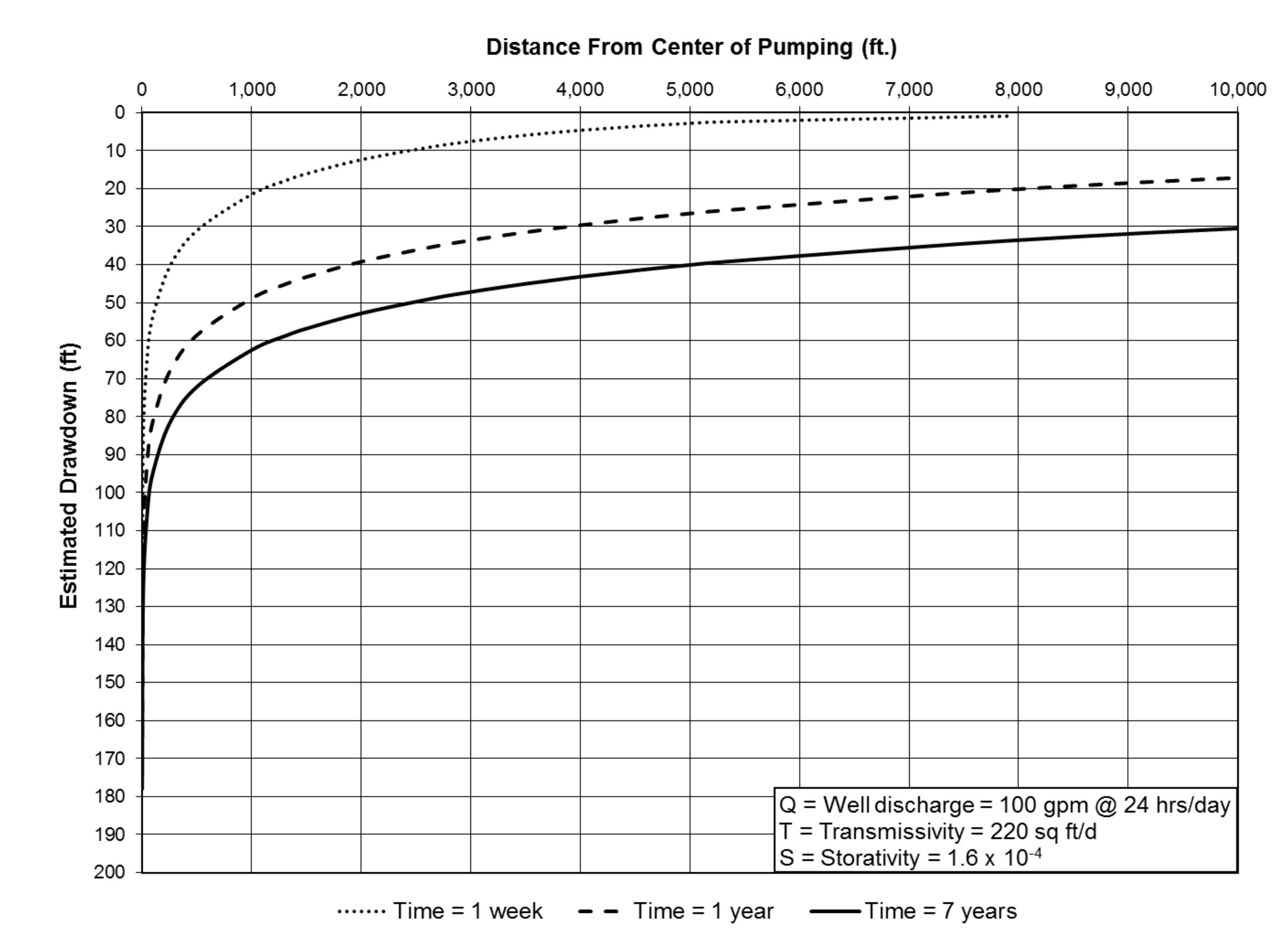


Figure 36: Bridges Well No. 2 distance-drawdown estimations

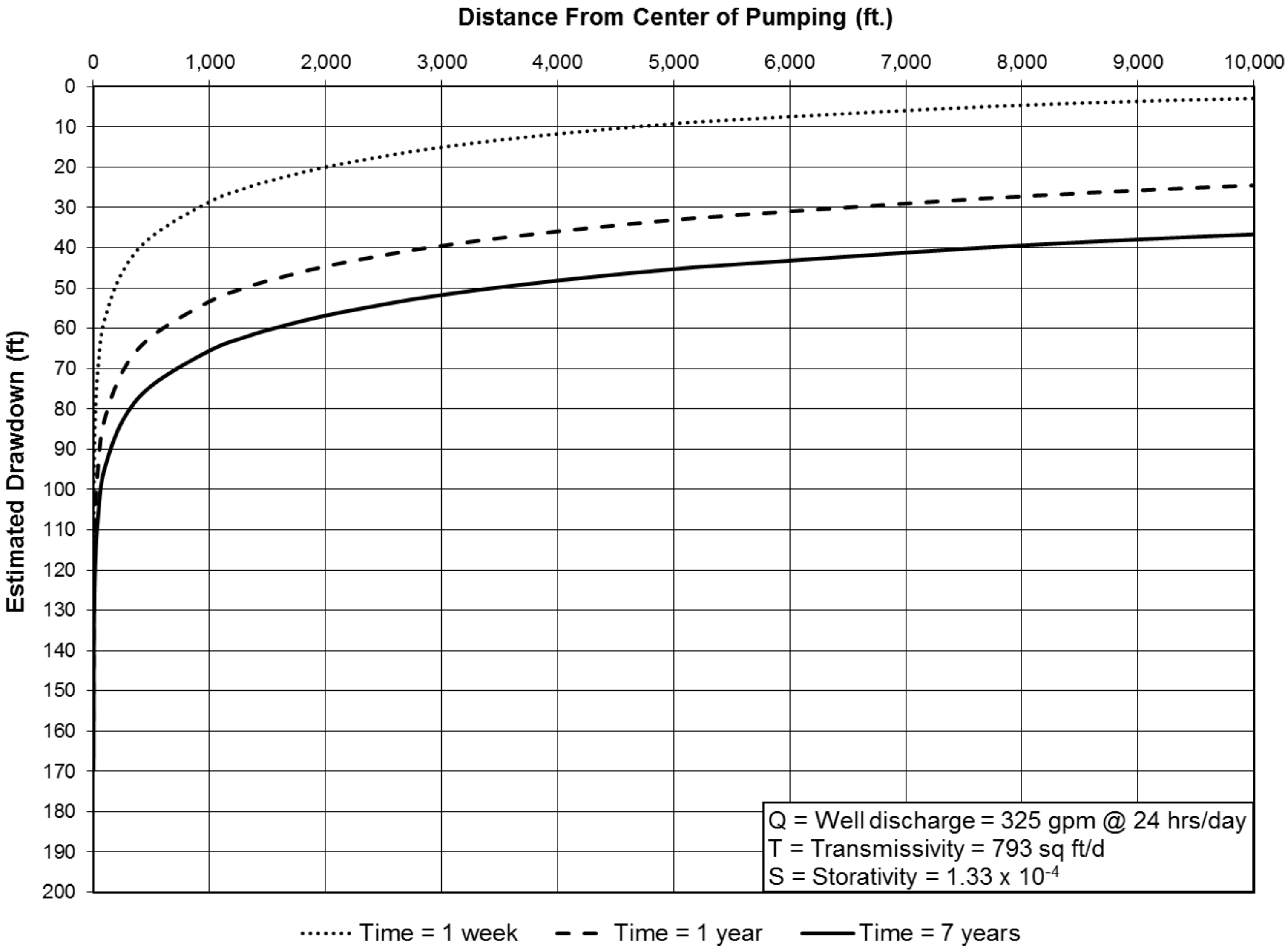


Figure 37: Bridges Well No. 5 distance-drawdown estimations

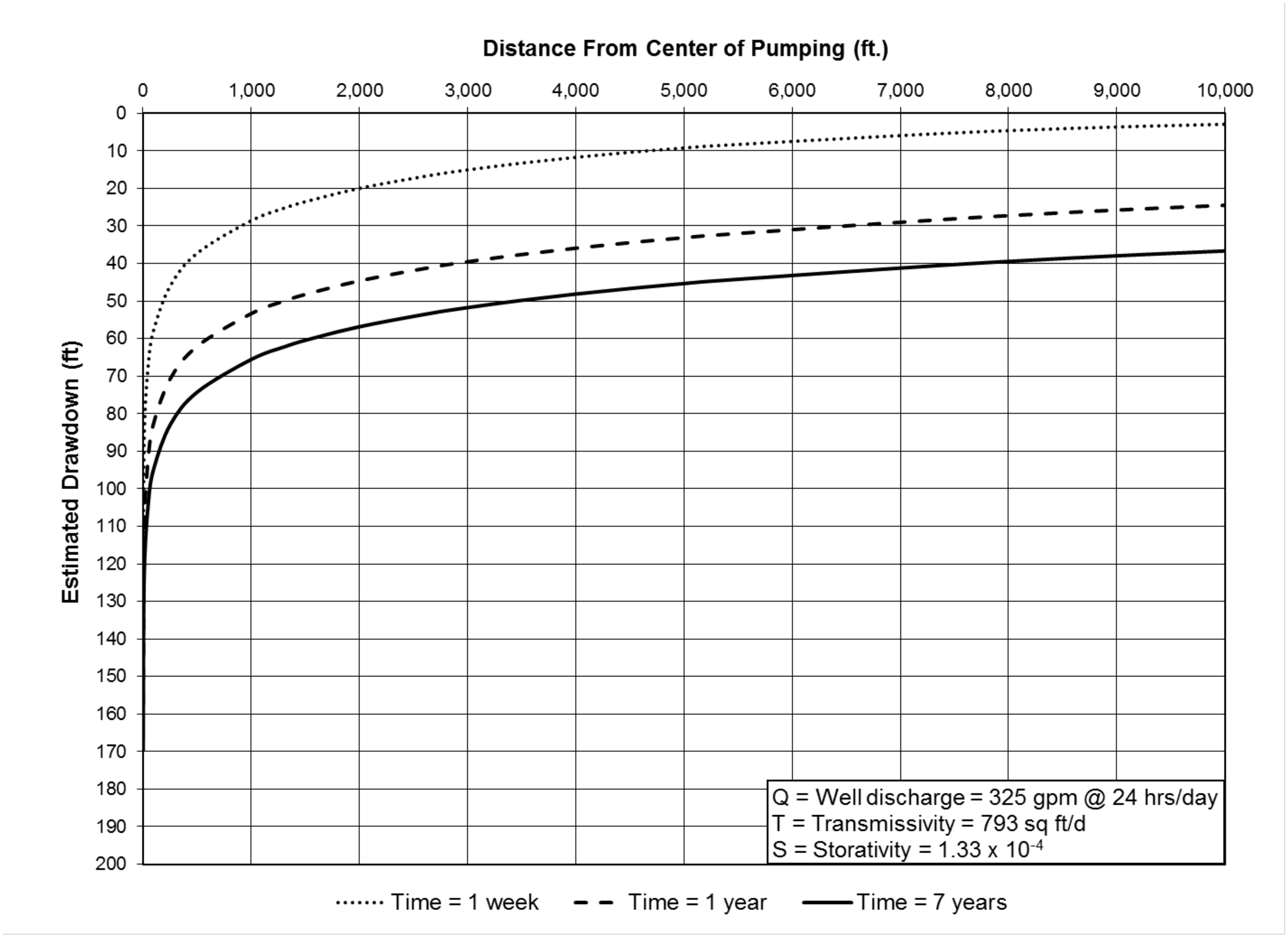


Figure 38: Bridges Well No. 6 distance-drawdown estimations

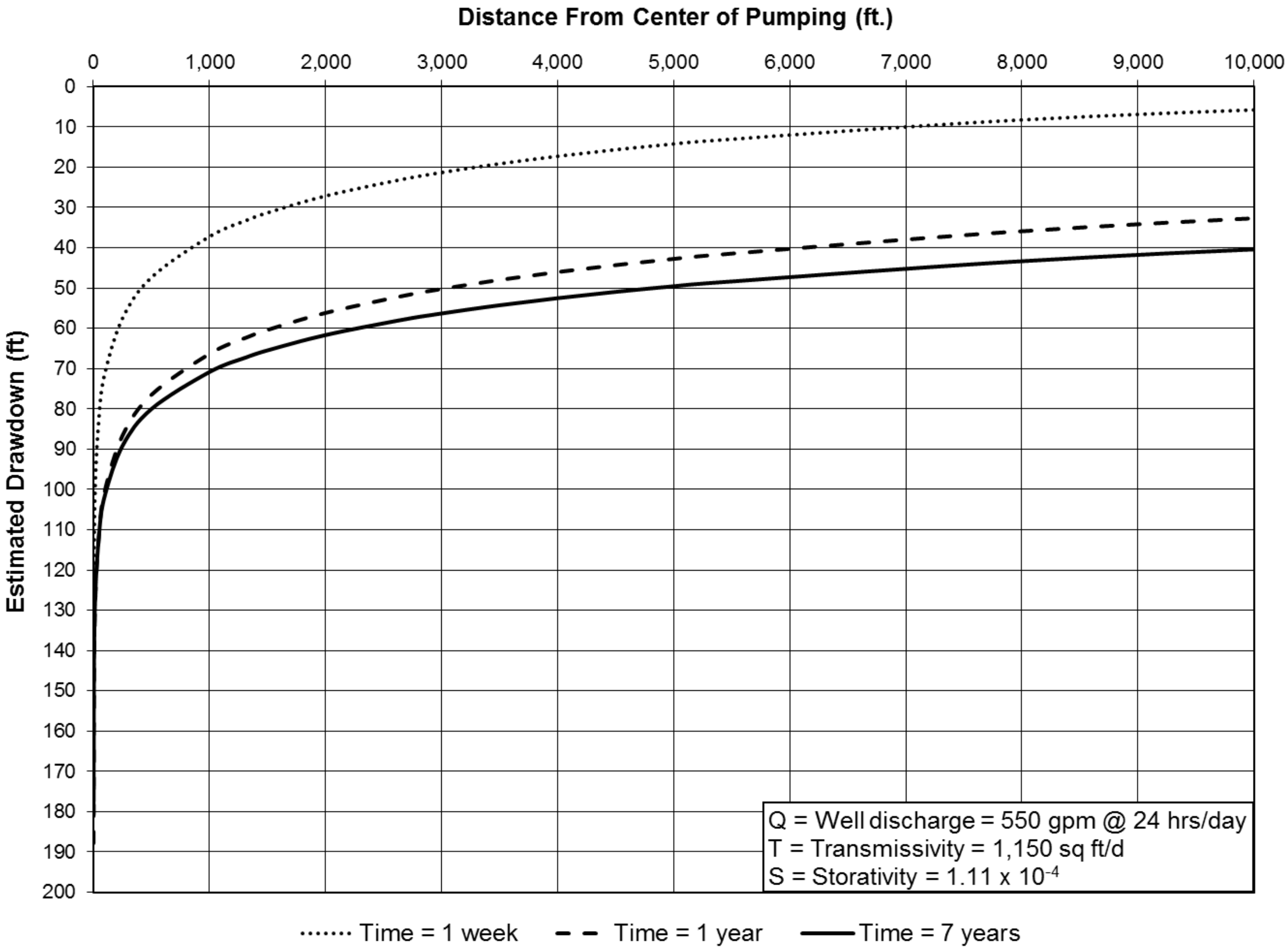


Figure 39: Odell Well No. 2 distance-drawdown estimations

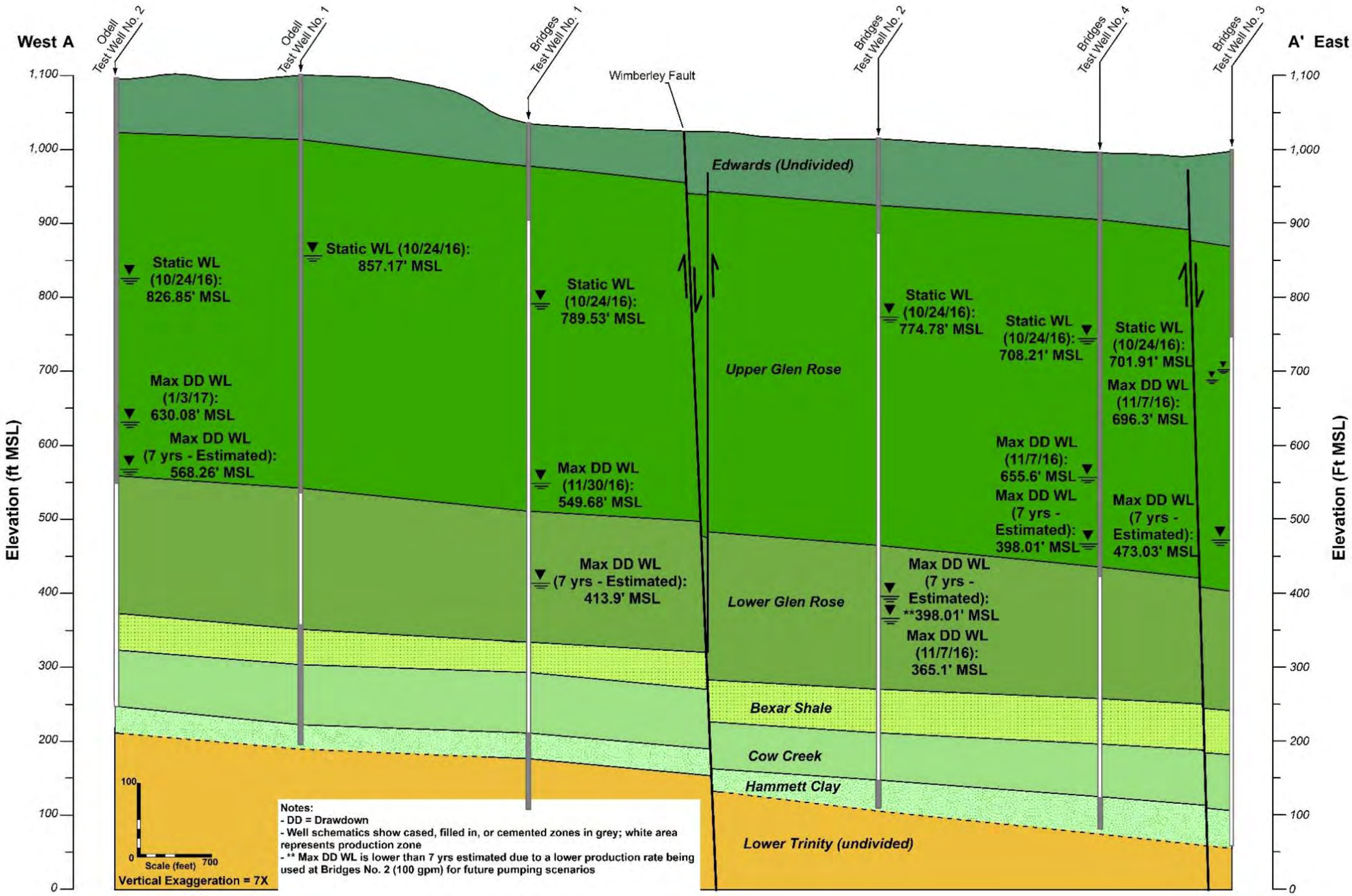


Figure 40: A-A' Cross section with water levels

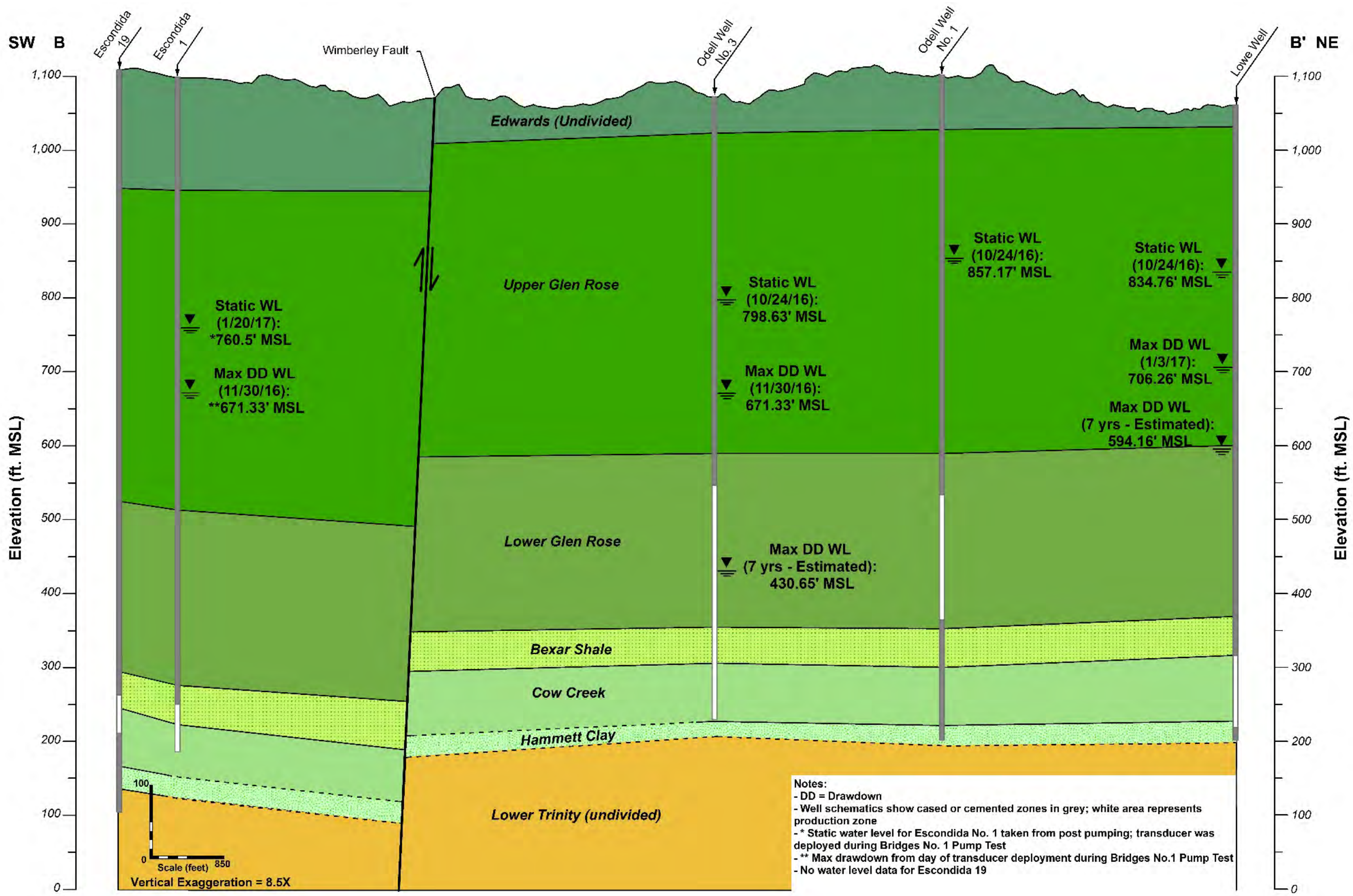


Figure 41: Cross section B-B' with water levels

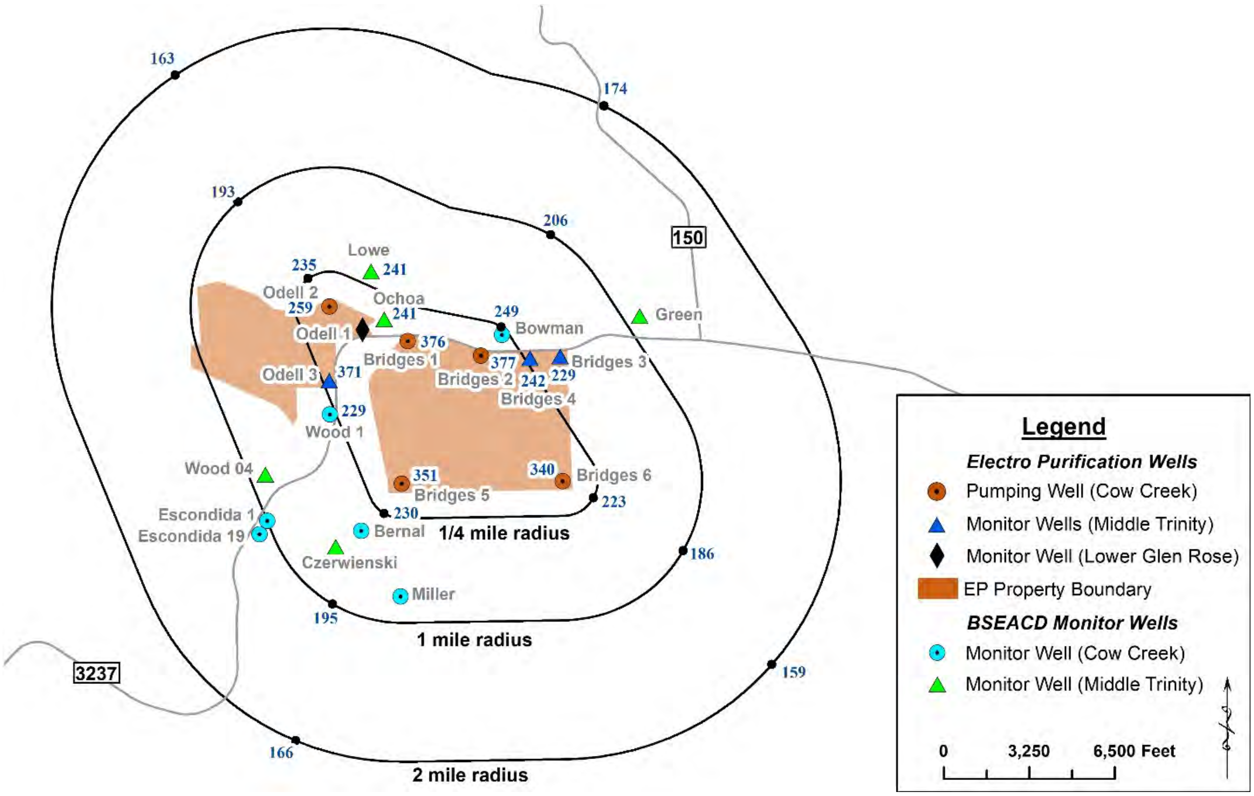


Figure 42: Estimated drawdown after 7-years of pumping

During the aquifer testing, precipitation and stream flow on the Trinity Aquifer recharge zone from EAA rain gauge HA157 and USGS flow stations 08171000 (Blanco River at Wimberley) and 08171300 (Blanco River near Kyle) were monitored to determine potential influences from the EP pumping. Figure 43 provides a graph of the precipitation and stream flow data for each site. According to the EAA rain gauge, there was a minor precipitation event during the aquifer testing. The hydrograph indicates an observable influence from precipitation but no observable influence from pumping during the EP aquifer tests.

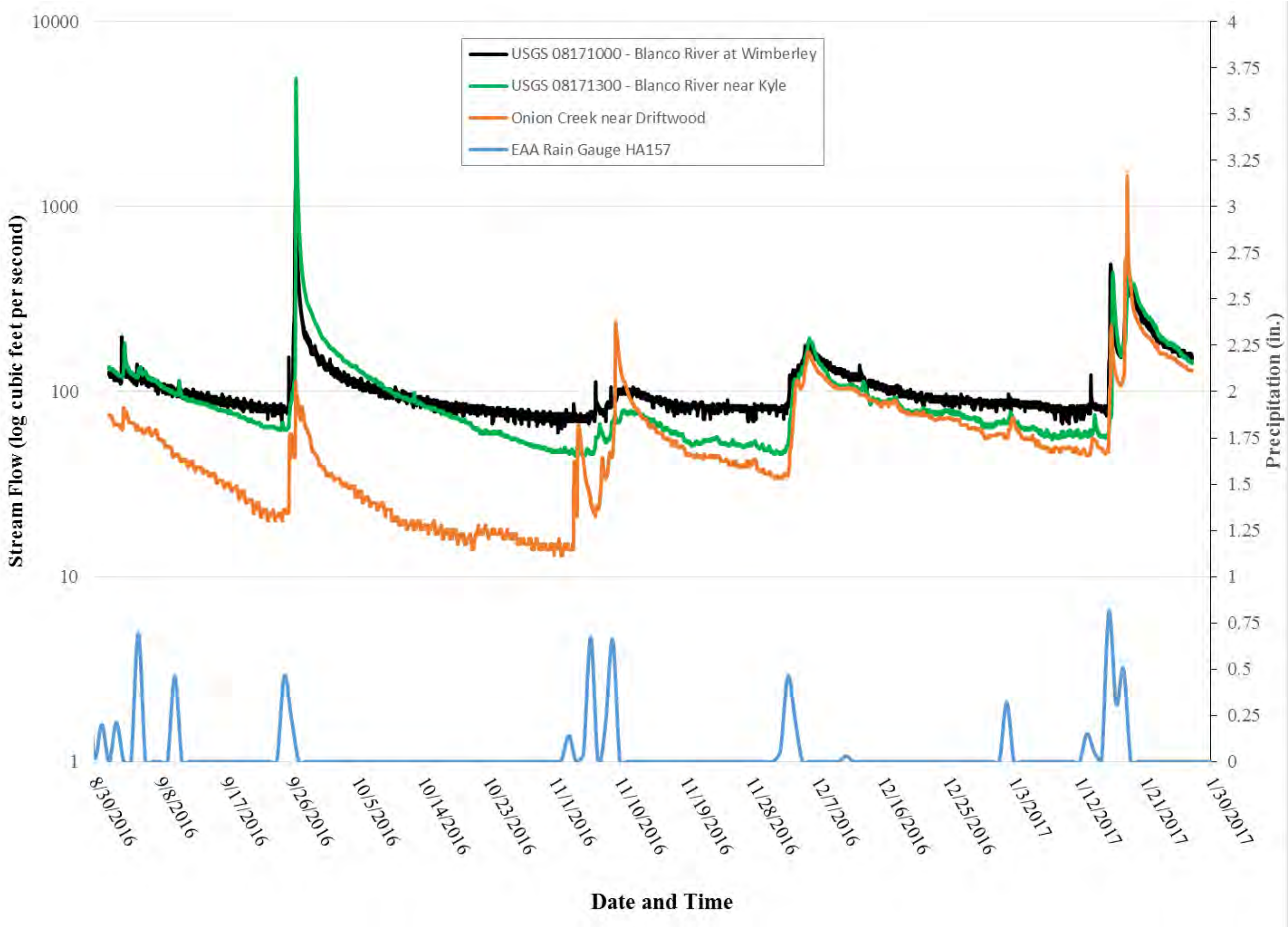


Figure 43: Stream Hydrographs for the Blanco River and Onion Creek near the EP Well Field

During the aquifer testing, precipitation and discharge rate from Jacob's Well Spring were analyzed to determine if there were any effects on spring discharge rates from the EP pumping. Precipitation data was obtained from EAA rain gauge HA157 and discharge from Jacob's Well was obtained from the USGS station 08170990 (Jacob's Well Spring). Figure 44 provides a graph of the precipitation and discharge data. The hydrograph indicates an observable increase in discharge with a precipitation event but no observable influence from production during the EP aquifer tests.

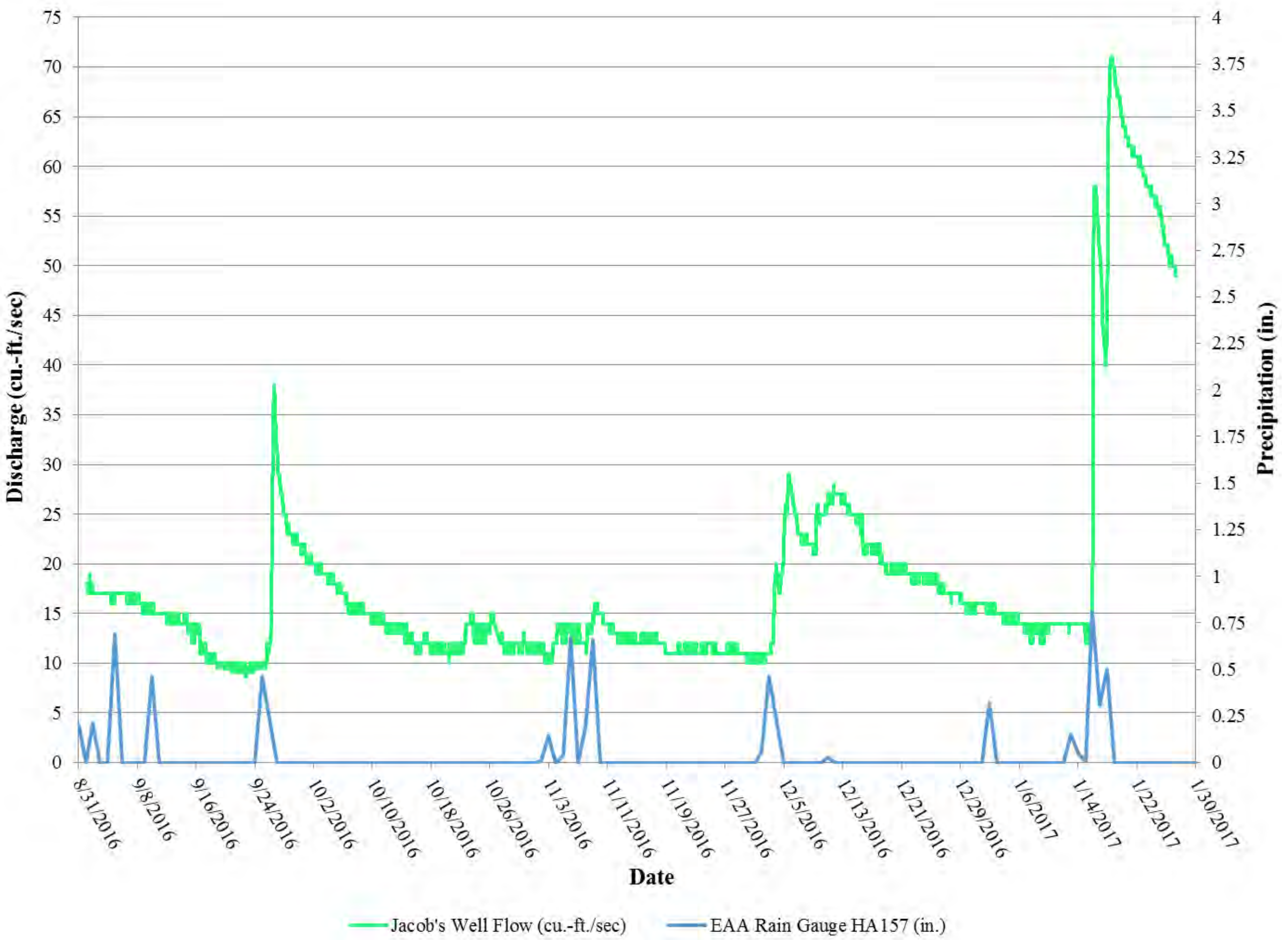


Figure 44: Discharge rate from Jacob's Well

Section X: Conclusions

This report details the results of a hydrogeologic report of the EP Well Field to meet the guidelines mandated by the BSEACD for wells that are related to an existing water supply contract that will provide public supply water to Hays County residents. EP is seeking to produce 2.5 million gallons per day (approximately 2,800 acre-feet/year from the well field). The Project is located along Ranch to Market (RM) Road 3237 approximately 9 miles northwest of the City of Kyle and 5.5 miles northeast of Wimberley. The conclusions from this report are as follows:

- EP will produce water from the Cow Creek Member of the Middle Trinity Aquifer from two tracts of land via three existing wells (Bridges Wells No. 1 & 2 and Odell Well No. 2) and two future wells (Bridges Wells No. 5 & 6). The produced water will be delivered to the Goforth SUD for beneficial use (municipal and industrial purposes) via an underground pipepline that will extend approximately 11 miles eastward from the well field;

- Production will start at 0.75 million gallons per day (MGD) and increase to 2.5 MGD over an 8 year period. After the eighth year, up to 2.5 MGD will be available to Goforth SUD on an as needed basis;

- In the vicinity of the EP Well Field, wells are completed within the Upper Trinity, and Middle Trinity Aquifers. Within the Middle Trinity some wells are completed in the Lower Glen Rose, the Lower Glen Rose and the Cow Creek, and just the Cow Creek Member. A well site investigation conducted in December 2016 indicated that no known or readily-accessible recharge features or springs that affect the Middle Trinity Aquifer are located within a two mile radius of the well field;

- An aquifer test work plan was designed and approved by BSEACD staff prior to starting the field work. The three pumping wells (Bridges Wells No. 1 & 2 and Odell Well No. 2) were acidized prior to each of the three aquifer tests to increase overall production of the wells. During the testing of each well, a Baski MD-7.5 packer was set to seal the borehole within the Bexar Shale Formation, effectively isolating the well production to the Cow Creek Formation. A total of 24 wells were utilized as observation wells during the testing which included wells within the EP Well Field and neighboring land owner's domestic wells;

- A total of 14,224,897 gallons were pumped throughout the EP well field acidization and aquifer testing. This volume represented more than five times the requested daily volume of 2.5 million gallons;

- Bridges Well No. 2 was tested at an average rate of 304.74 gpm for over one hundred and twenty-eight (128.02) hours with a final pumping rate of 300 gpm with 401.65 feet of drawdown for a specific capacity of 0.75 gpm/ft. Using the Cooper-Jacob analysis, the resulting transmissivity at Bridges Well No. 2 was 220 $ft.^2$/day with a hydraulic conductivity of 2.78 ft./day;

- Bridges Well No. 1 was tested at an average rate of 654.8 gpm for over one hundred and twenty (120.08) hours with a final pumping rate of 645 gpm with 217.26 feet of drawdown for a specific capacity of 2.97 gpm/ft. Using the Cooper-Jacob analysis, the resulting transmissivity at Bridges Well No. 1 was 1,010 $ft.^2$/day with a hydraulic conductivity of 12.30 ft./day;

- Odell Well No. 2 was tested at an average rate of 564.9 gpm with a final pumping rate of 560 gpm with 157.51 feet of drawdown for a specific capacity of 3.55 gpm/ft. Using the Cooper-Jacob analysis, the resulting transmissivity at Odell Well No. 2 was 1,150 $ft.^2$/day with a hydraulic conductivity of 14.20 ft./day;

- During the aquifer tests after an initial drawdown period, the production at each well was maintained at a steady rate with water levels that remained relatively stable throughout the test. The aquifer test data indicate that there were no effects from nearby pumping of surrounding wells and no significant recharge or discharge boundaries experienced;

- Odell Well No. 1 is completed within the Lower Glen Rose portion of the Middle Trinity Aquifer which was utilized as a monitoring well during the aquifer testing. The water level within the well indicated no observable impact from production within the Cow Creek Member. This indicates that the Cow Creek Limestone is hydraulically disconnected from the Lower Glen Rose in the vicinity of the EP Well Field;

- The accurate estimation of water levels due to pumping within a karst aquifer such as the Middle Trinity Aquifer over long term periods of production is difficult. The heterogeneity of the aquifer, in addition to potential disconnects between the Cow Creek Member and other formations, causes traditional methods of estimating drawdown such as the Modified Non-equilibrium Equation or Theis Equation to overestimate drawdown. Since the Theis Equation assumes that all water is derived from storage and that the aquifer receives no recharge, Theis overestimates drawdown within a well that is located in an aquifer that receives recharge rapidly. For this reason, using the Theis Equation to calculate drawdown over periods of time greater than when water from capture exceeds water from storage leads to an exaggerated estimate of drawdown;

- With Bridges Well No. 2 pumping at a rate of 100 gpm the 1 week, 1 year and 7 year drawdown at the well was estimated at 182.81 ft., 311.72 ft., and 376.77 ft., respectively;

- With Bridges Well No. 1 pumping at a rate of 436 gpm the 1 week, 1 year and 7 year drawdown at the well was estimated at 183.09 ft., 310.61 ft., and 375.63 ft., respectively;

- With Odell Well No. 2 pumping at a rate of 550 gpm the 1 week, 1 year and 7 year drawdown at the well was estimated at 69.06 ft., 193.63 ft., and 258.59 ft., respectively;

- With future Bridges Well No. 5 pumping at a rate of 325 gpm the 1 week, 1 year and 7 year drawdown at the well was estimated at 161.64 ft., 285.80 ft., and 350.76 ft., respectively;

- With future Bridges Well No. 6 pumping at a rate of 325 gpm the 1 week, 1 year and 7 year drawdown at the well was estimated at 152.94 ft., 274.77 ft., and 339.68 ft., respectively;

- Based upon the results of the aquifer testing, some drawdown will be seen in neighboring wells completed within the Cow Creek Limestone while wells completed within the Upper Trinity Aquifer and the Lower Glen Rose should not be effected by EP Well Field pumping. The related pumping should not have unreasonable impacts on the aquifer or surrounding wells;

- During the aquifer testing, precipitation and stream flow on the Trinity Aquifer recharge zone from rain gauges and flow stations were monitored to determine potential influences from pumping. According to the rain gauge data collected from the vicinity of the well field, there was only minor precipitation during the aquifer testing. The hydrograph indicated an observable influence on the Blanco River from precipitation but no observable influence from pumping;

- During the aquifer testing, precipitation and discharge rate from Jacob's Well Spring were analyzed to determine if there were any effects on discharge rates from pumping. The hydrograph indicated an observable influence on Jacob's Well from precipitation but no observable influence from pumping;

- The water quality parameters analyzed for groundwater produced during the testing were outlined in the aquifer test work plan approved by BSEACD staff. In general, the water quality results indicate the water produced during the aquifer testing meet TCEQ MCLs and SCLs. The one exception was an elevated iron concentration from the Bridges Well No. 2; and

- Based upon EP's anticipated phased-in pumping schedule for delivery to the Goforth SUD, actual impacts on the aquifer and neighboring wells will be able to be observed based upon actual pumping and appropriate measures taken, if needed, in a timely manner without the threat of unreasonable impacts occurring.

Section XI: References

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Appendix A

Geophysical Logs

GEO CAM

Water Well Logging & Video Recording Services

Borehole: **HAYS COUNTY NO. 1**

Logs: **GAMMA, CALIPER, RESISTIVITY**

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: **HAYS COUNTY NO. 1** Date: 12-19-2013
Client: **DAVENPORT DRILLING** County: HAYS
Location: **N 30* 2' 51.45" W 98* 1' 26.22"** State: TX

BOREHOLE DATA

Drilling Contractor: DAVENPORT DRILLING **Driller T.D. (ft) : 930**
Elevation: 931' GPS Logger T.D. (ft) : 916
Depth Ref: TOP OF CASING Date Drilled: 12-19-2013

BIT RECORD				CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9 1/2	0	915	10.5 OD PVC	+ 2.8	160
2						
3						

Drill Method: AIR ROTARY Weight: **Fluid Level (ft) :** 323
Hole Medium: Mud Type: Time Since Circ: NA
Viscosity: NA Rm: at: Deg C

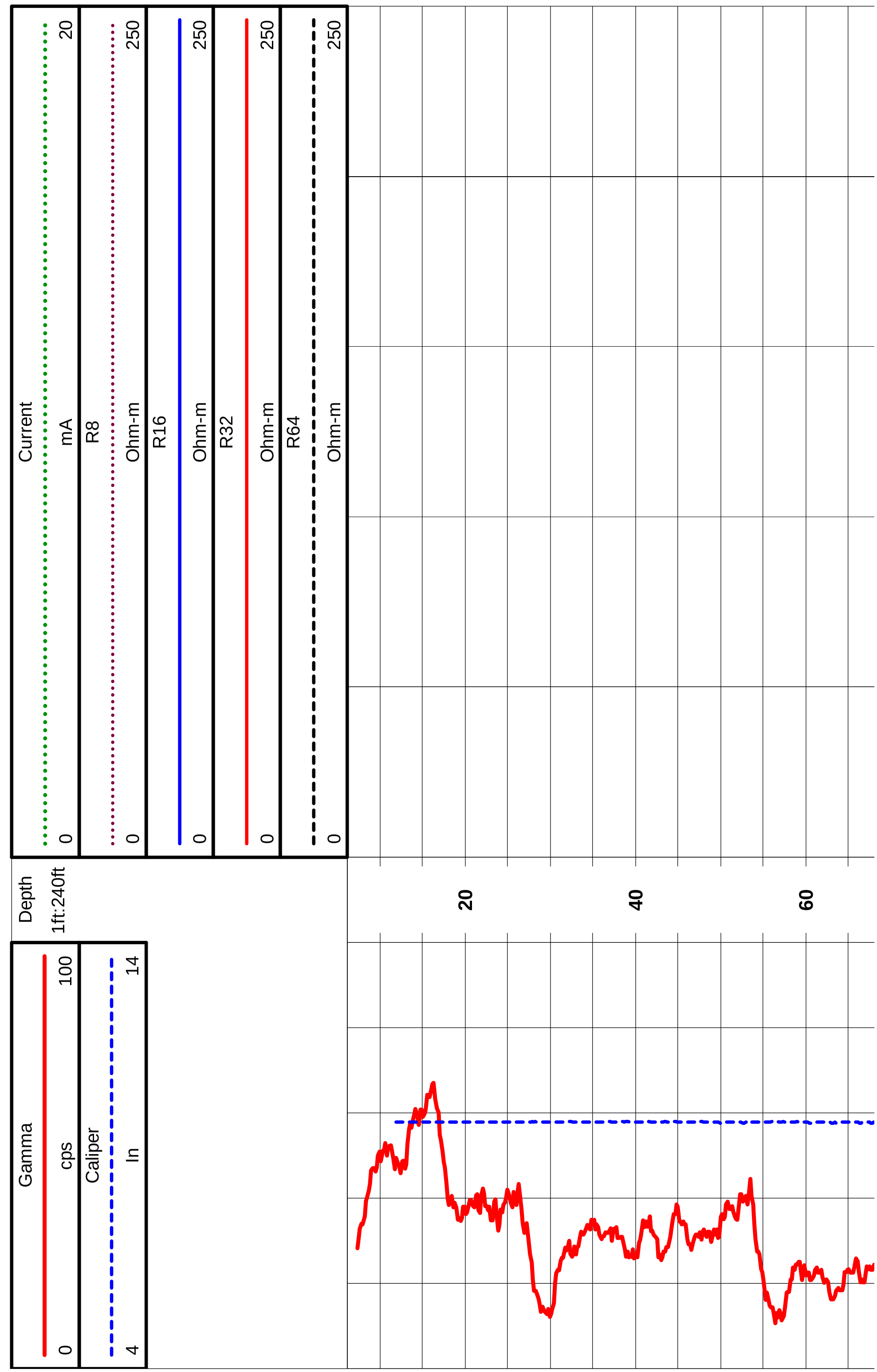
GENERAL DATA

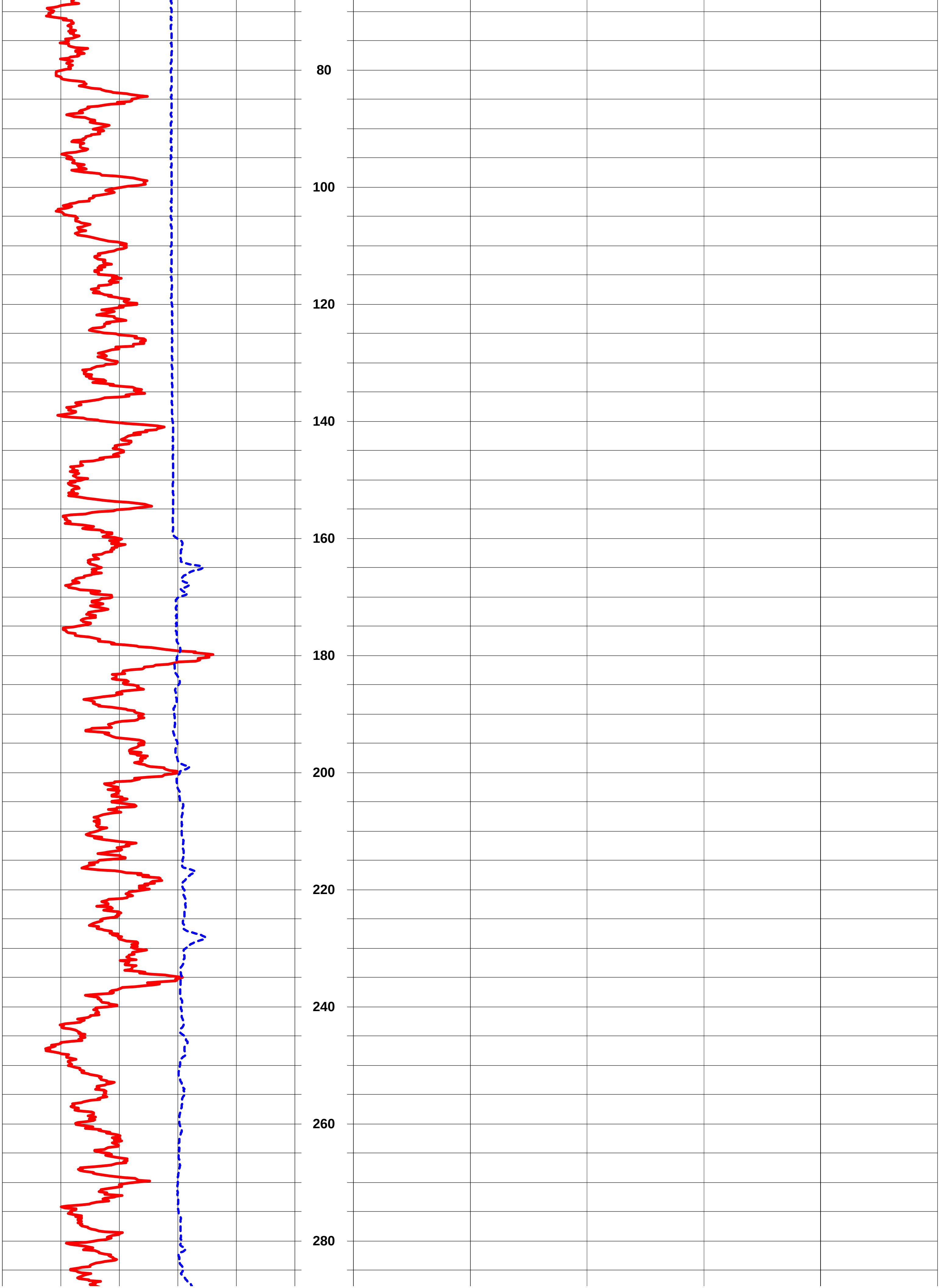
Logged by: ERASMO DE LA FUENTE Unit/Truck: 08
Witness: RICK

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	35	910.7	7.4	20
CALIPER	2	35	915.2	11.9	20
RESISTIVITY	2	35	886.1	318.1	20

Comments: THE LOG IN THE RESISTIVITY PASS WAS SHORTER THAN THE CALIPER. POSSIBLE LOSS OF HOLE.

Bridges Test Well No. 1





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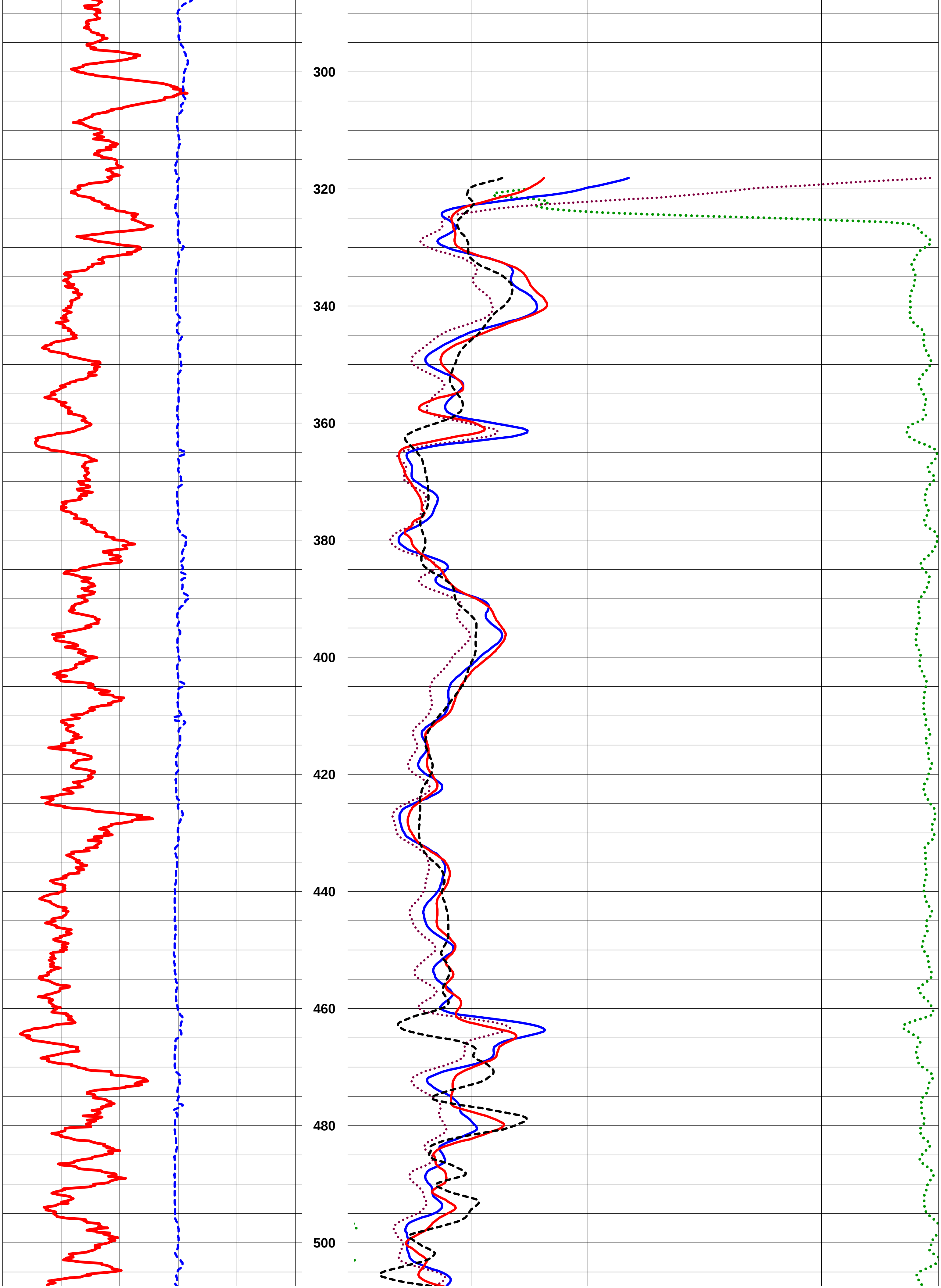

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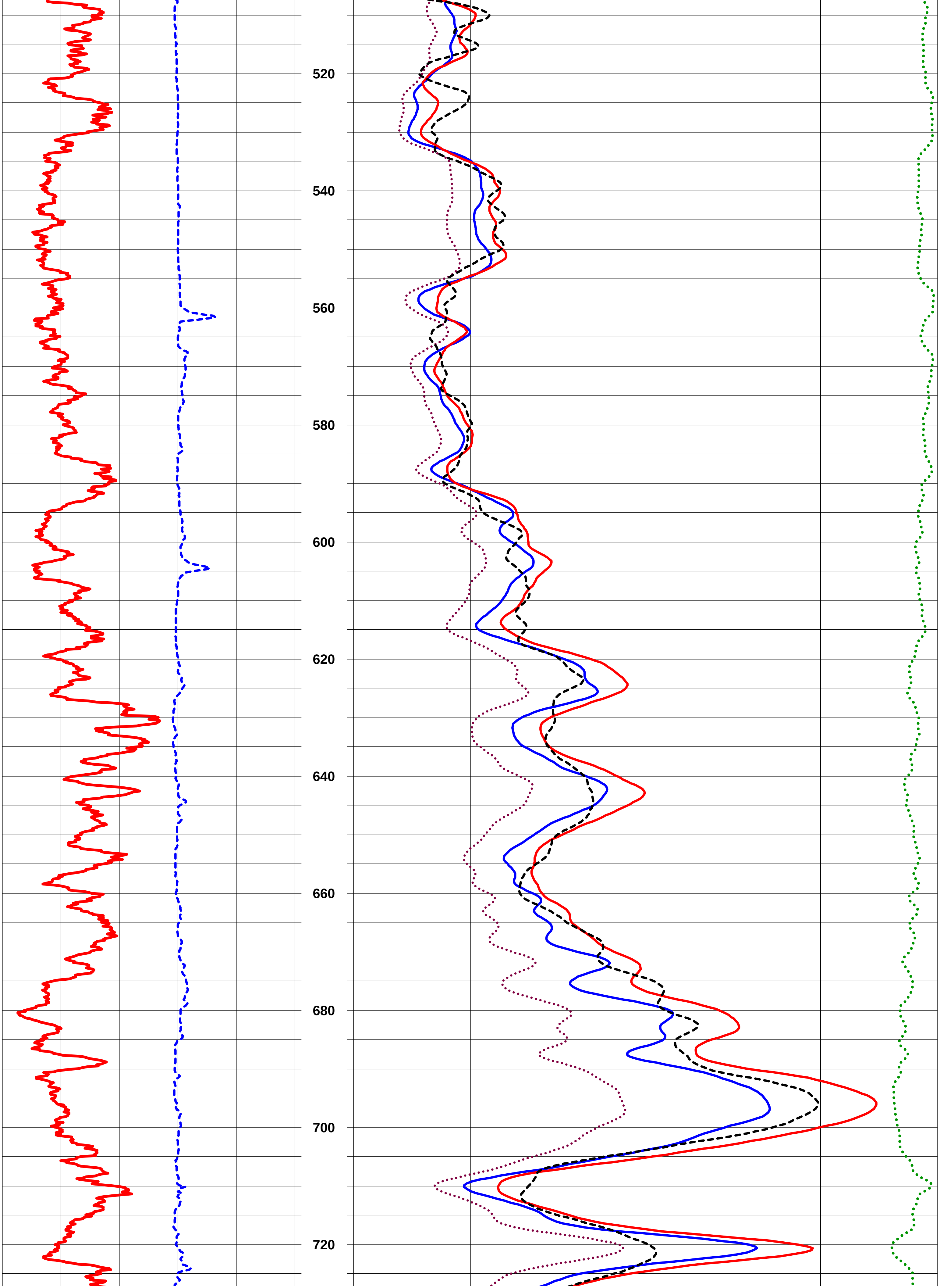

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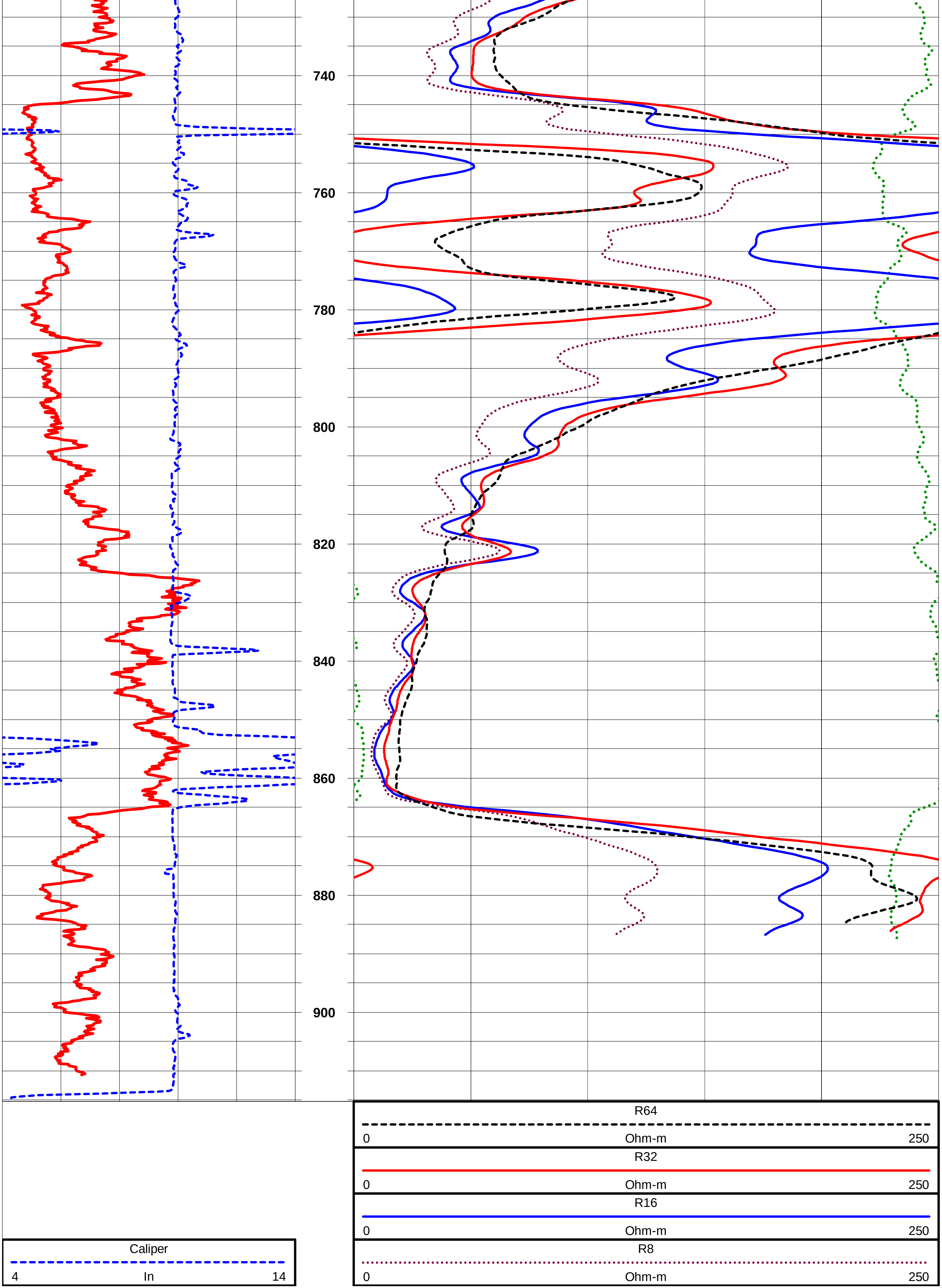
720



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780
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820
840
860
880
900
R64
0 Ohm-m 250
R32
0 Ohm-m 250
R16
0 Ohm-m 250
R8
0 Ohm-m 250
Caliper
4 In 14

Gamma	Depth	Current
0 cps 100	1ft:240ft	0 mA 20

GEO CAM

Water Well Logging & Video Recording Services

Geo Cam, Inc.   126 Palo Duro,   San Antonio, TX   210-495-9121

Borehole: **WELL NO. 2**

Logs: **GAMMA, RESISTIVITY, CALIPER**

Project: **DR. BRIDGES NO. 2** Date: 01-15-04

Client: **DAVENPORT DRILLING & P.S.** County: HAYS

Location: **N 30* 2' 45.43" W 98* 0' 54.14"** State: TX

BOREHOLE DATA

Drilling Contractor: DAVENPORT DRILLING & P.S. **Driller T.D. (ft) : 905' TC**

Elevation: 974 GPS. Logger T.D. (ft) : 896' GL

Depth Ref: G.L. Date Drilled: 01-15-04

BIT RECORD				CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9 1/2"	0	905	9 7/8 ID PVC	+ 3.3	155
2						
3						

Drill Method: AIR ROTARY Weight: NA **Fluid Level (ft) :** 288'

Hole Medium: NA Mud Type: NA Time Since Circ: NA

Viscosity: NA Rm: at: Deg C

GENERAL DATA

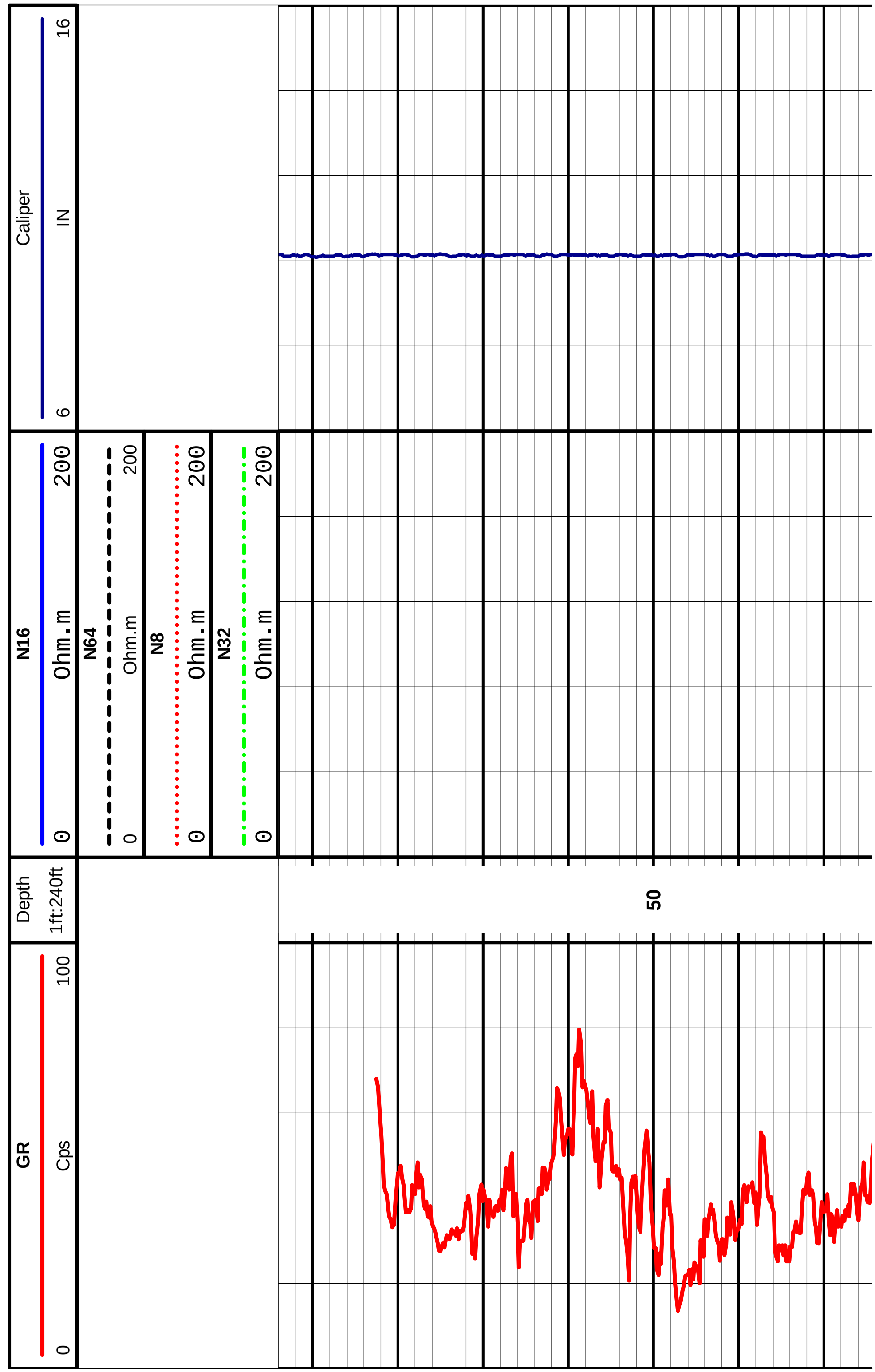
Logged by: ERASMO DE LA FUENTE Unit/Truck: 07

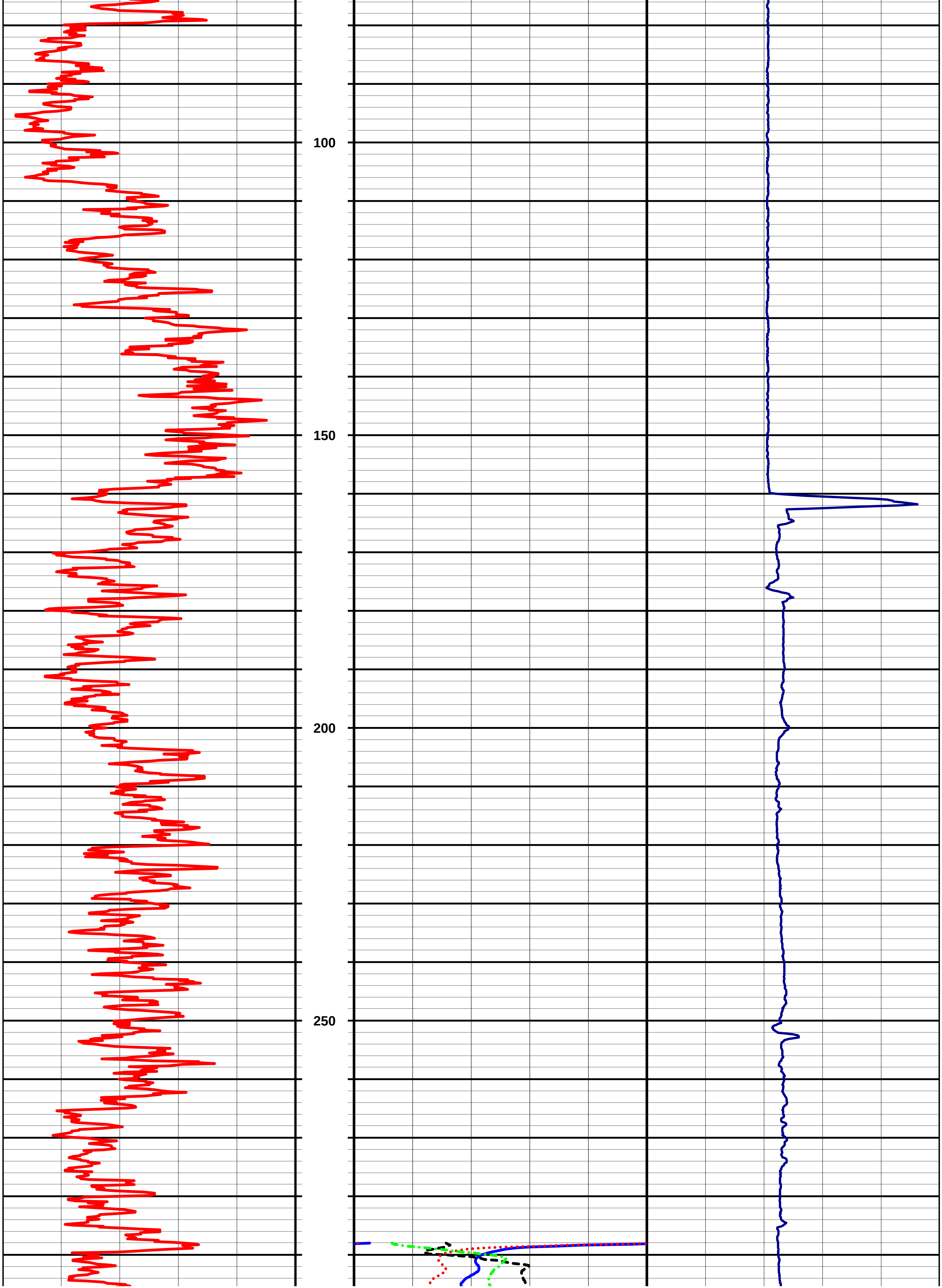
Witness: BRIAN BOYD

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	40	888.5	17.5	20
RESISTIVITY	2	40	894.4	288	20
CALIPER	1	45	898.5	5.9	20

Comments:

Bridges Test Well No. 2

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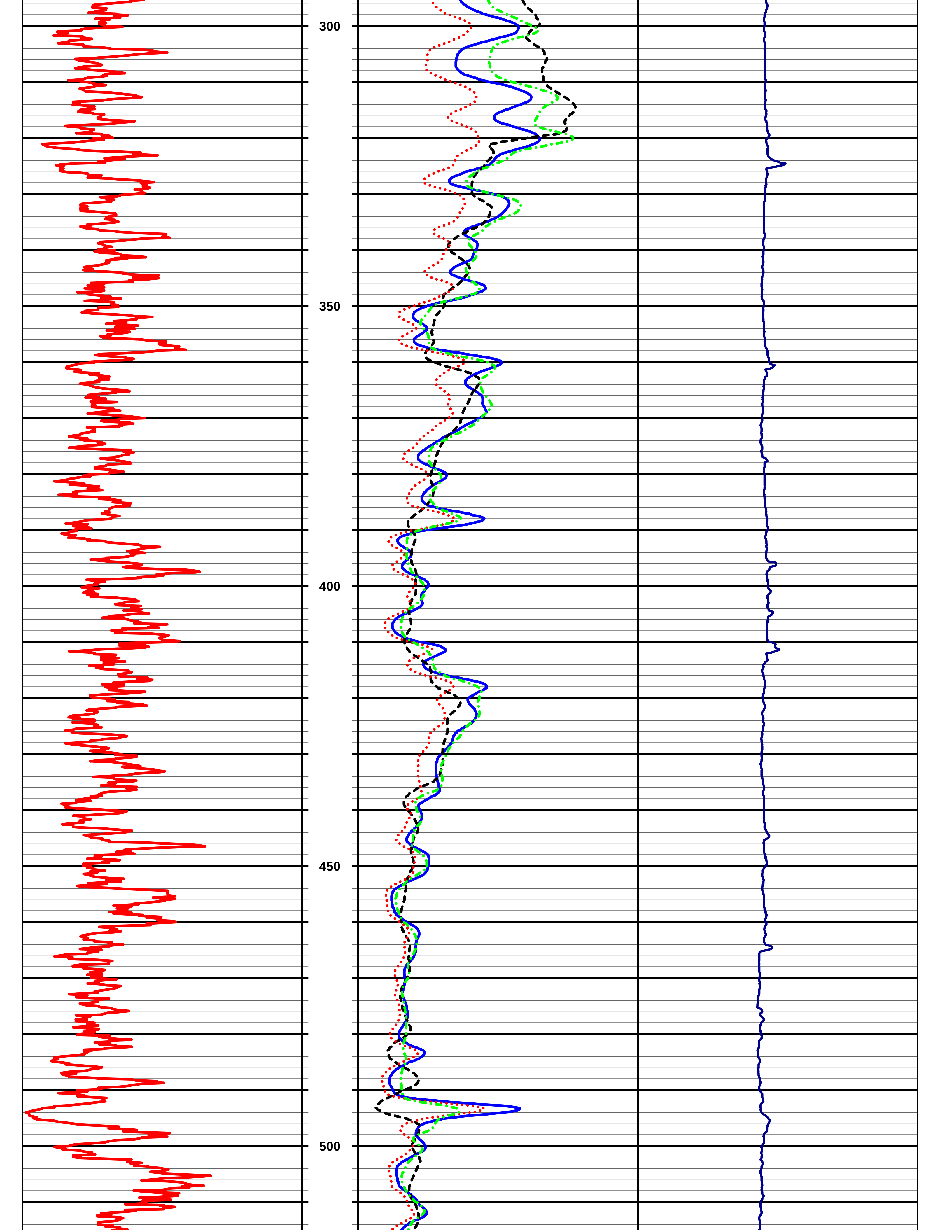
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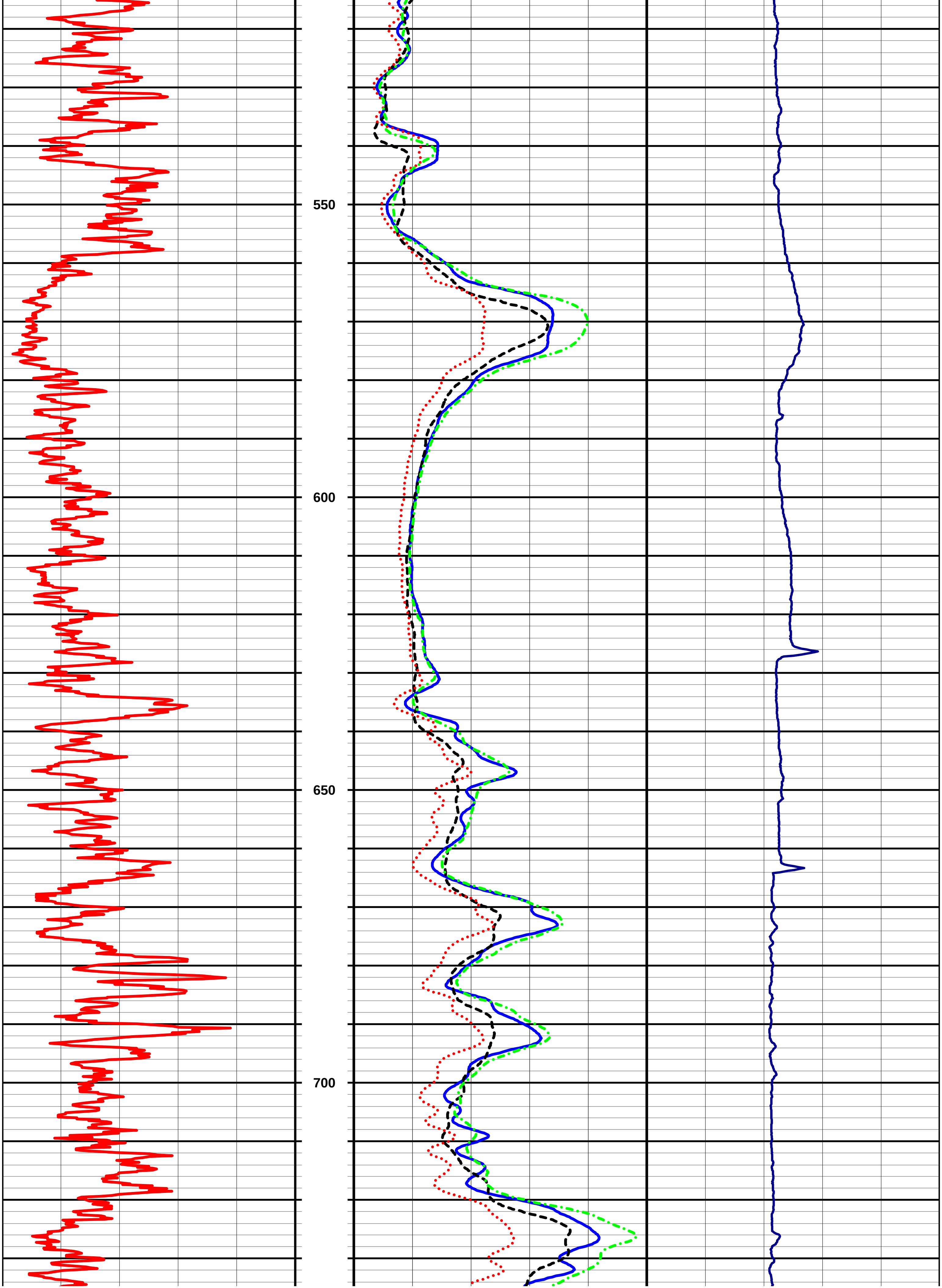
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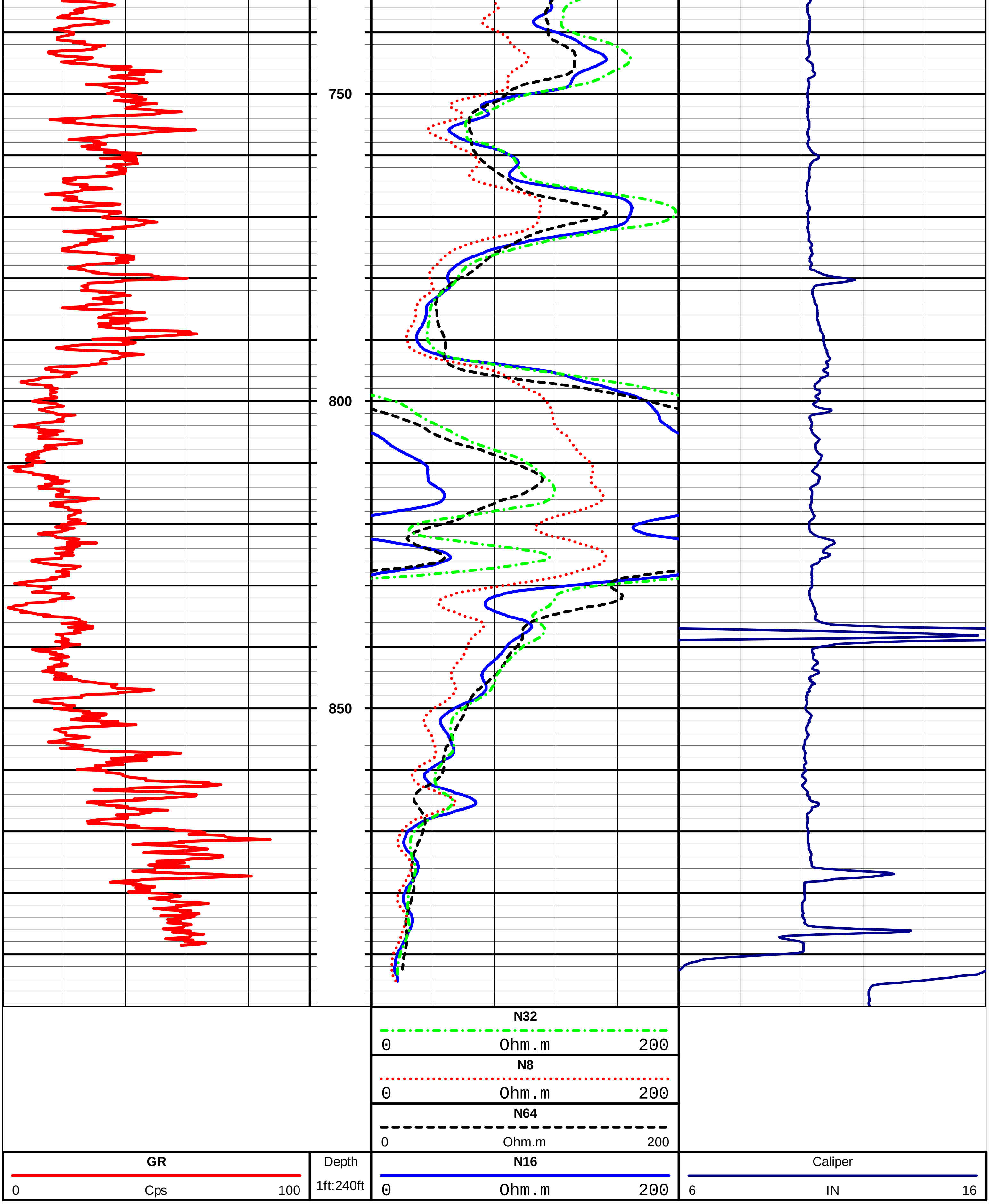
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800
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N8
0 Ohm.m 200
N64
0 Ohm.m 200
GR
0 Cps 100
Depth
1ft:240ft
N16
0 Ohm.m 200
Caliper
6 IN 16

Borehole: HAYS TRINITY NO. 3

Logs: GAMMA, RESISTIVITY, CALIPER, SPR

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Project: HAYS TRINITY NO. 3 Date: 12-23-13

Client: WHISENANT AND LYLE County: HAYS

Location: **N 30* 02' 44.7" W98* 00' 20.4"** State: TX

BOREHOLE DATA

Drilling Contractor: WHISENANT AND LYLE **Driller T.D. (ft) : 940'**

Elevation: 990' GPS Logger T.D. (ft) : 938'

Depth Ref: G.L. Date Drilled: 12-23-13

BIT RECORD				CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	14"	0'	260'	9 3/4"	+1.4'	255'
2	8 1/2"	260'	940'			
3						

Drill Method: AIR ROTARY Weight: **Fluid Level (ft) : 360'**

Hole Medium: Mud Type: Time Since Circ:

Viscosity: Rm: at: Deg C

GENERAL DATA

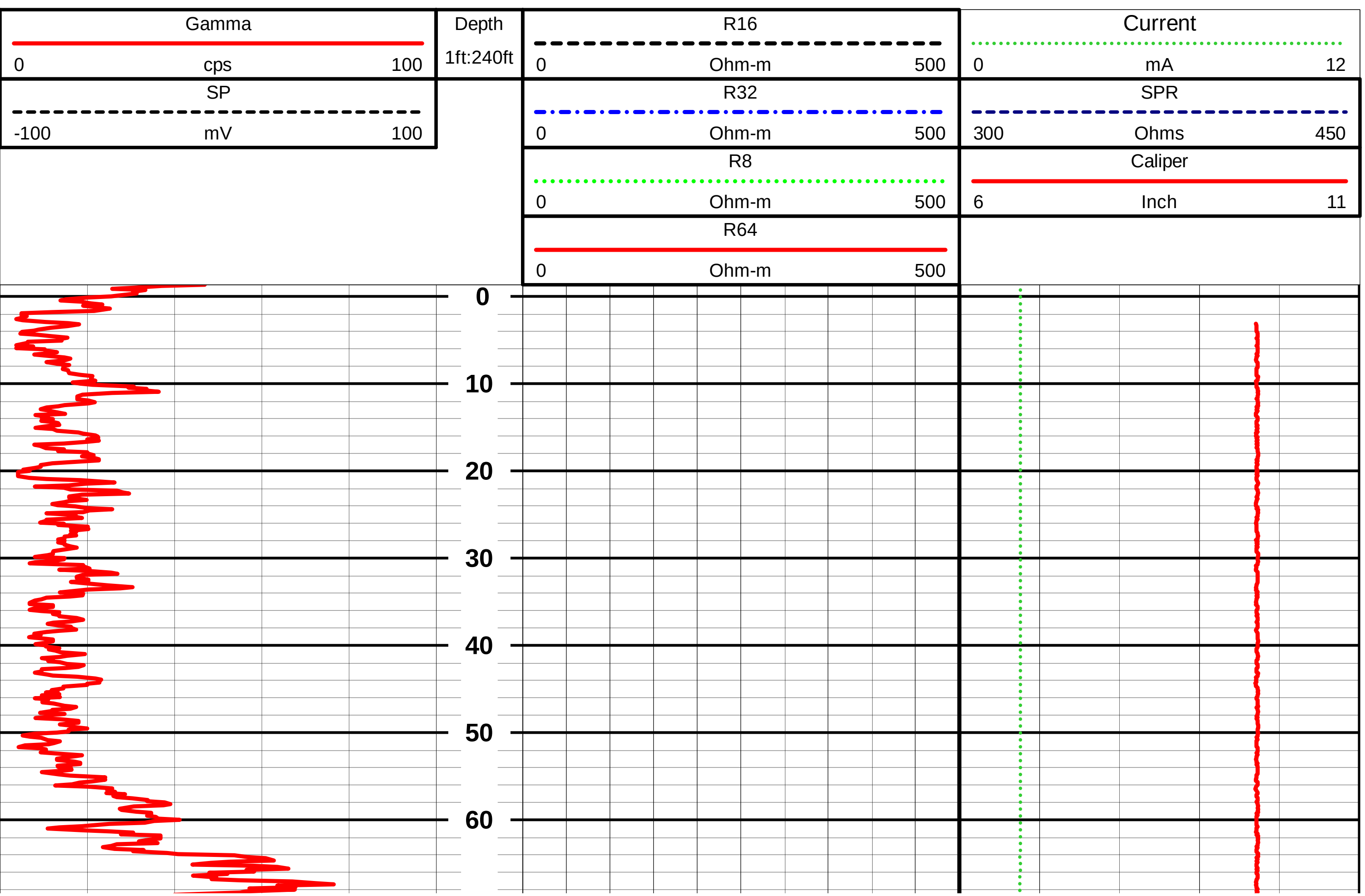
Logged By: ROBERT C. BECKNAL Unit/Truck: 06

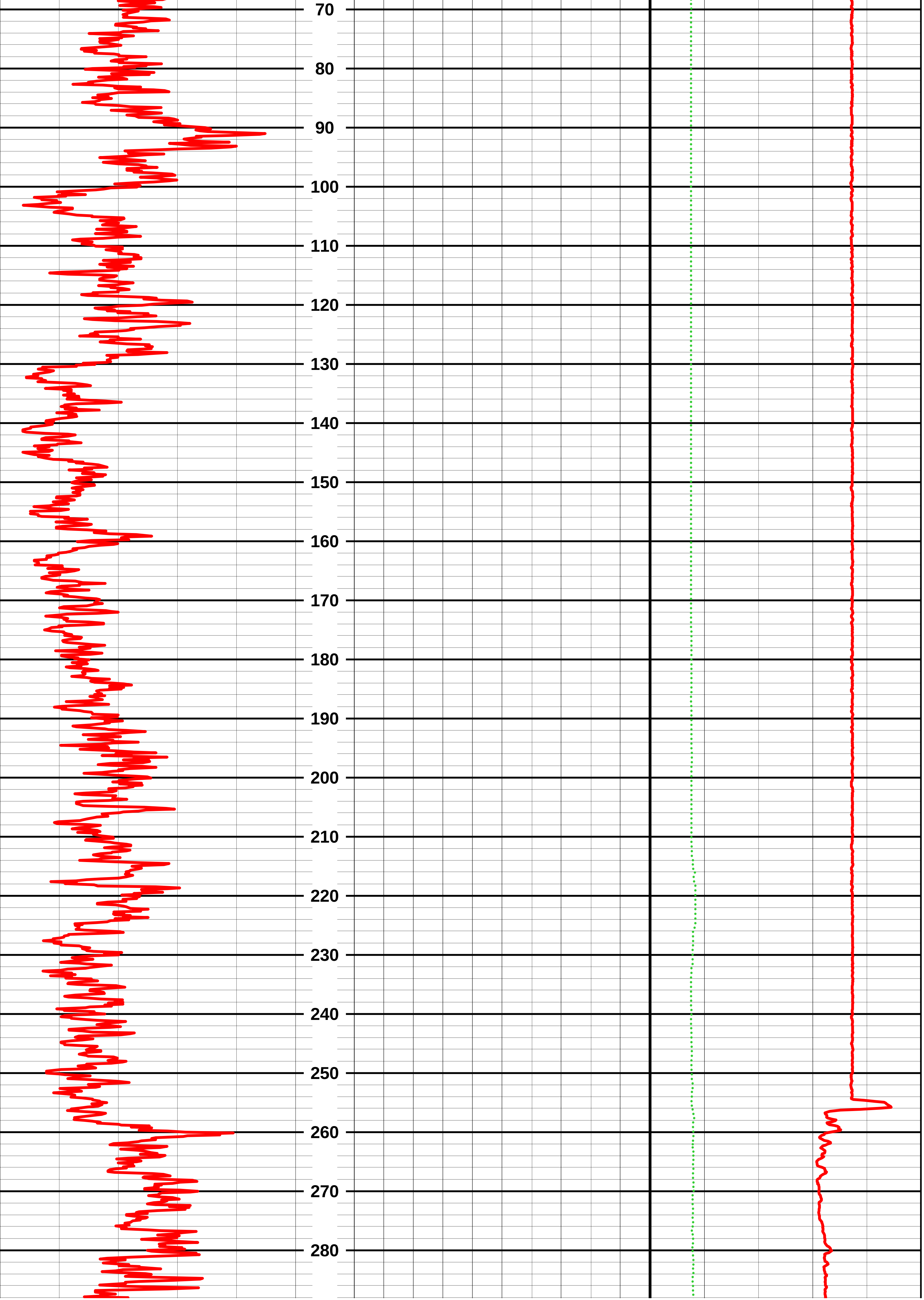
Witness: MARTIN LINGLE

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./IN.
GAMMA	2	25	932'	1'	20
CALIPER	2	25	937'	3'	20
RESISTIVITY, SPR	2	30	937'	360'	20

Comments:

Bridges Test Well No. 3

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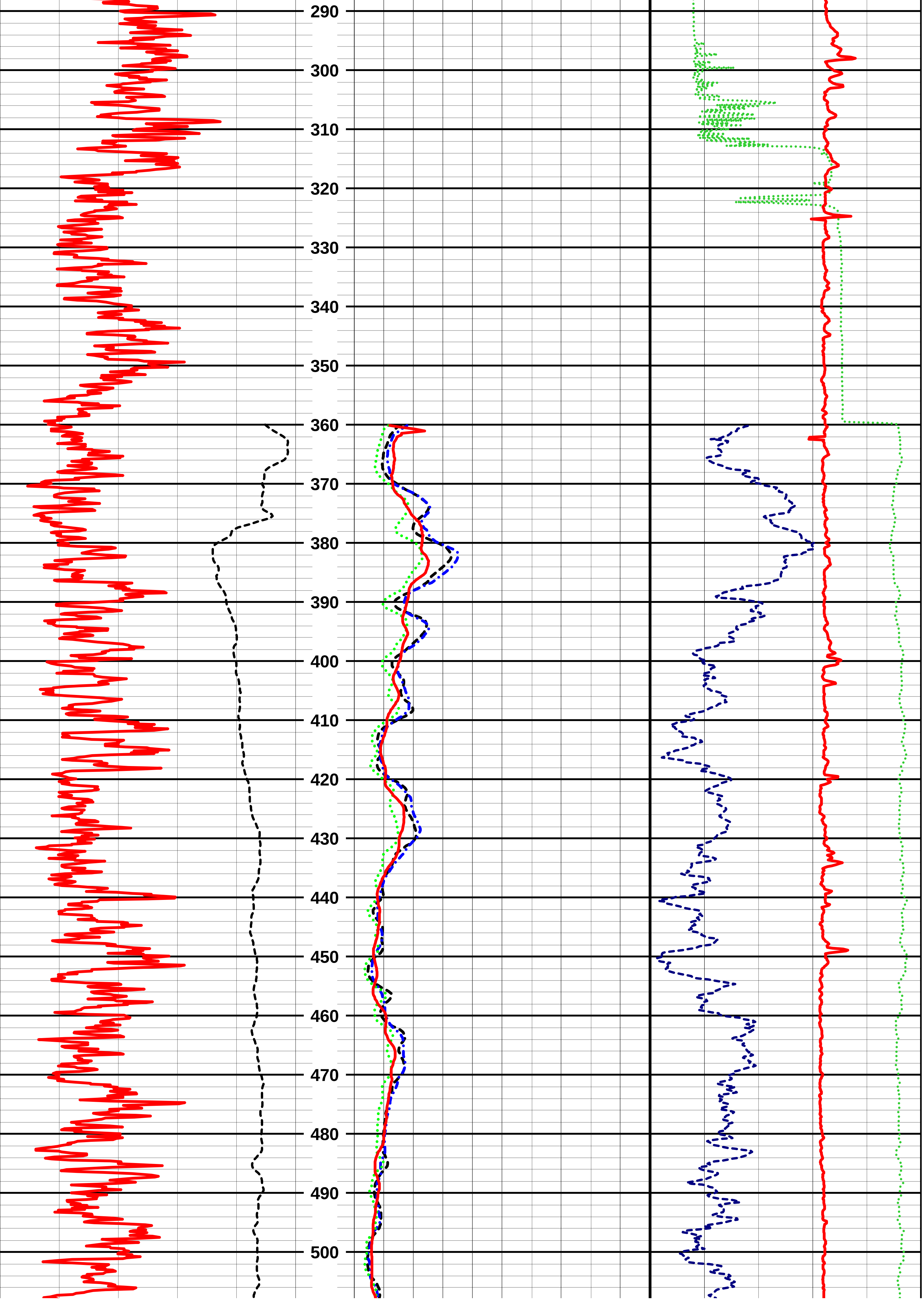
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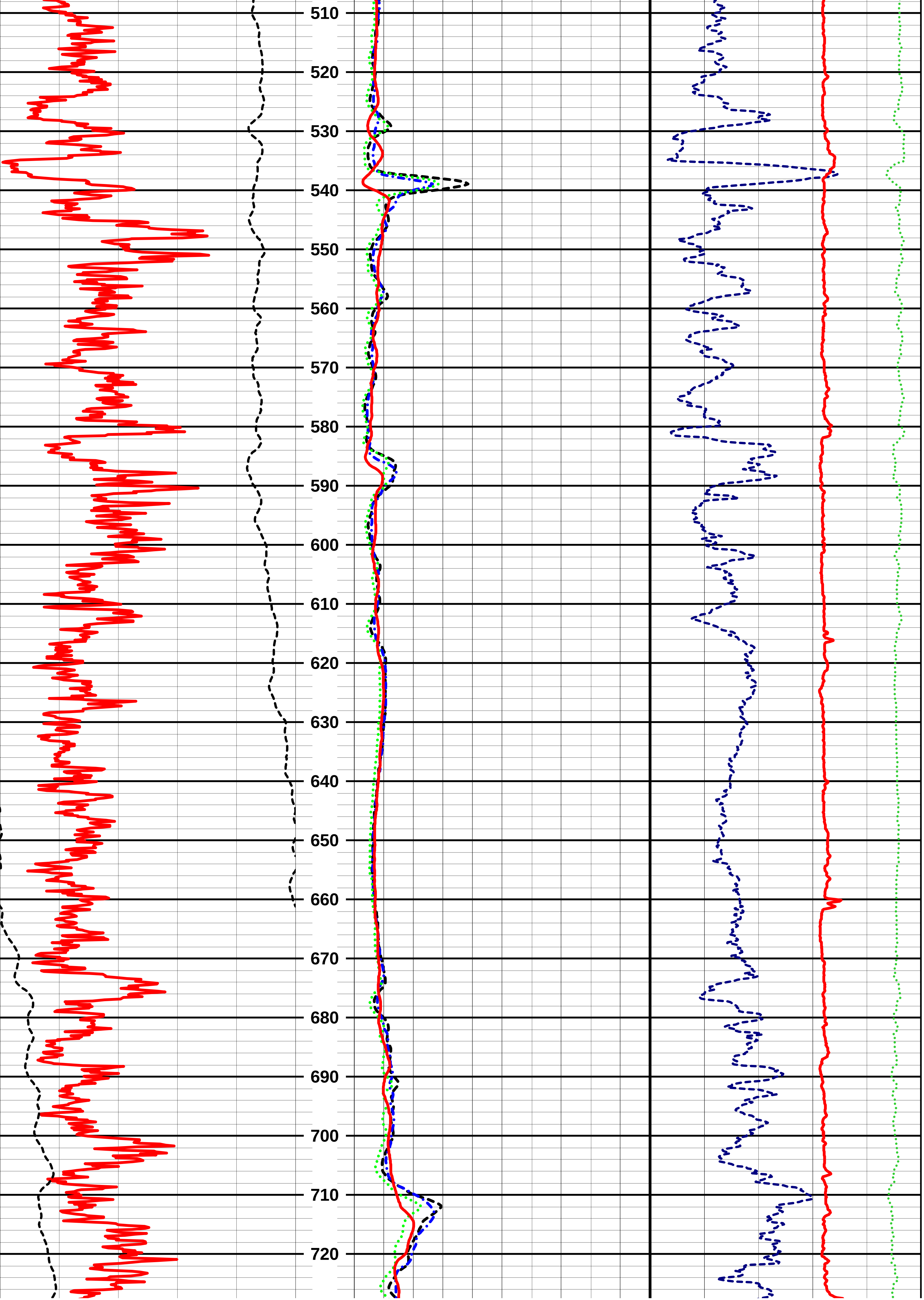
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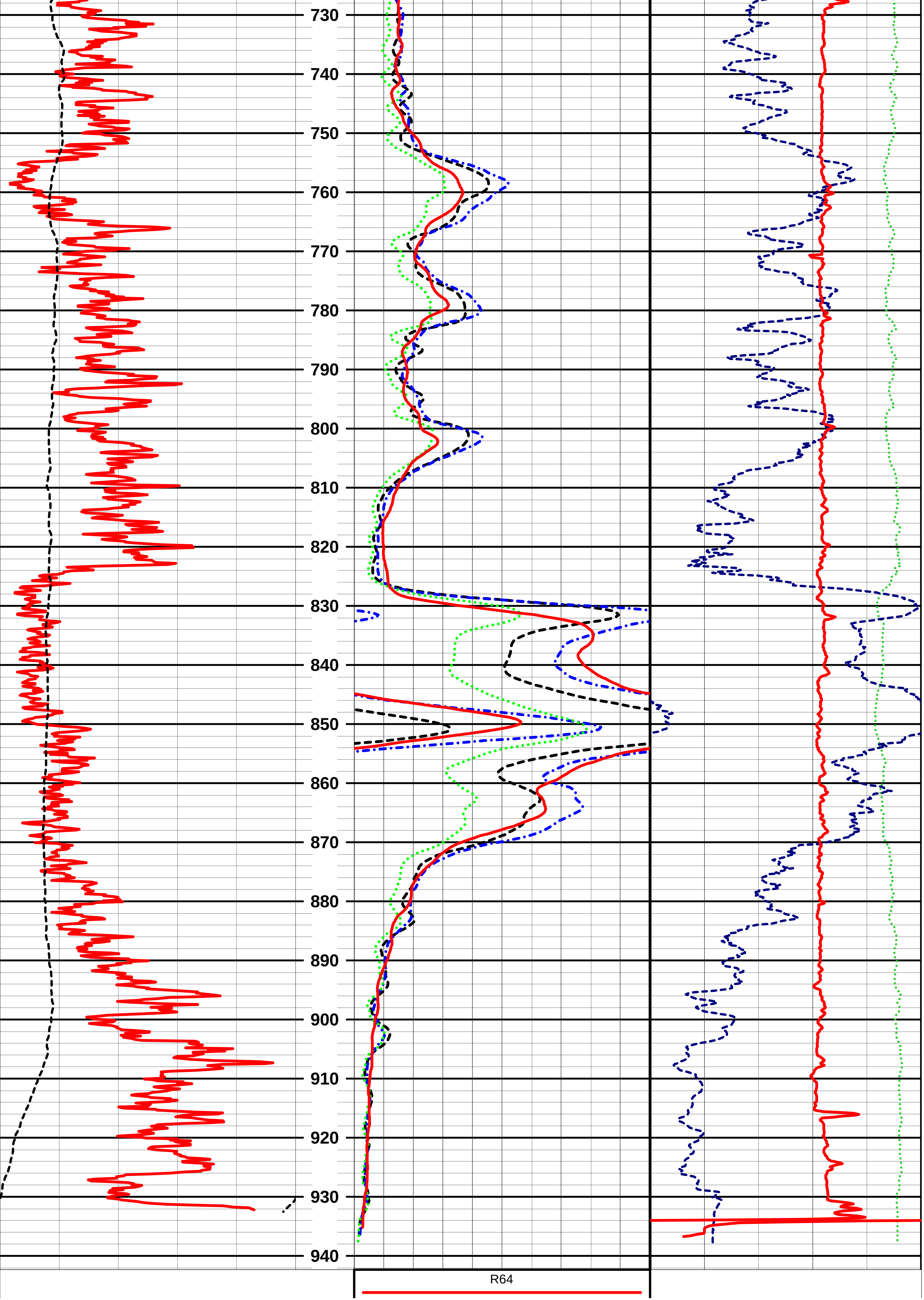
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930
940
R64

		0 Ohm-m 500	
		R8 0 Ohm-m 500	Caliper 6 Inch 11
SP -100 mV 100		R32 0 Ohm-m 500	SPR 300 Ohms 450
Gamma 0 cps 100	Depth 1ft:240ft	R16 0 Ohm-m 500	Current 0 mA 12

Borehole: BRIDGES TEST WELL NO.4

Logs: GAMMA, RESISTIVITY, SPR, CALIPER

Water Well Logging & Video Recording Services

Geo Cam, Inc. 17118 Classen Rd, San Antonio, TX 210-495-9121

Project: ELECTRO PURIFICATION, LLC Date: 01-28-15

Client: **WHISENANT & LYLE** County: HAYS

Location: N 30* 2' 44.3" W 98* 0' 32.7" State: TX

BOREHOLE DATA

Drilling Contractor: WHISENANT & LYLE **Driller T.D. (ft) : 905'**

Elevation: 994' GPS Logger T.D. (ft) : 905'

Depth Ref: G.L. Date Drilled: 01-28-15

	BIT RECORD			CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9.875"	G.L.	905'	NONE		
2						
3						

Drill Method: AIR ROTARY Weight: **Fluid Level (ft) : 345'**

Hole Medium: Mud Type: Time Since Circ:

Viscosity: Rm: at: Deg C

GENERAL DATA

Logged by: ADAM ROBERTS Unit/Truck: 08

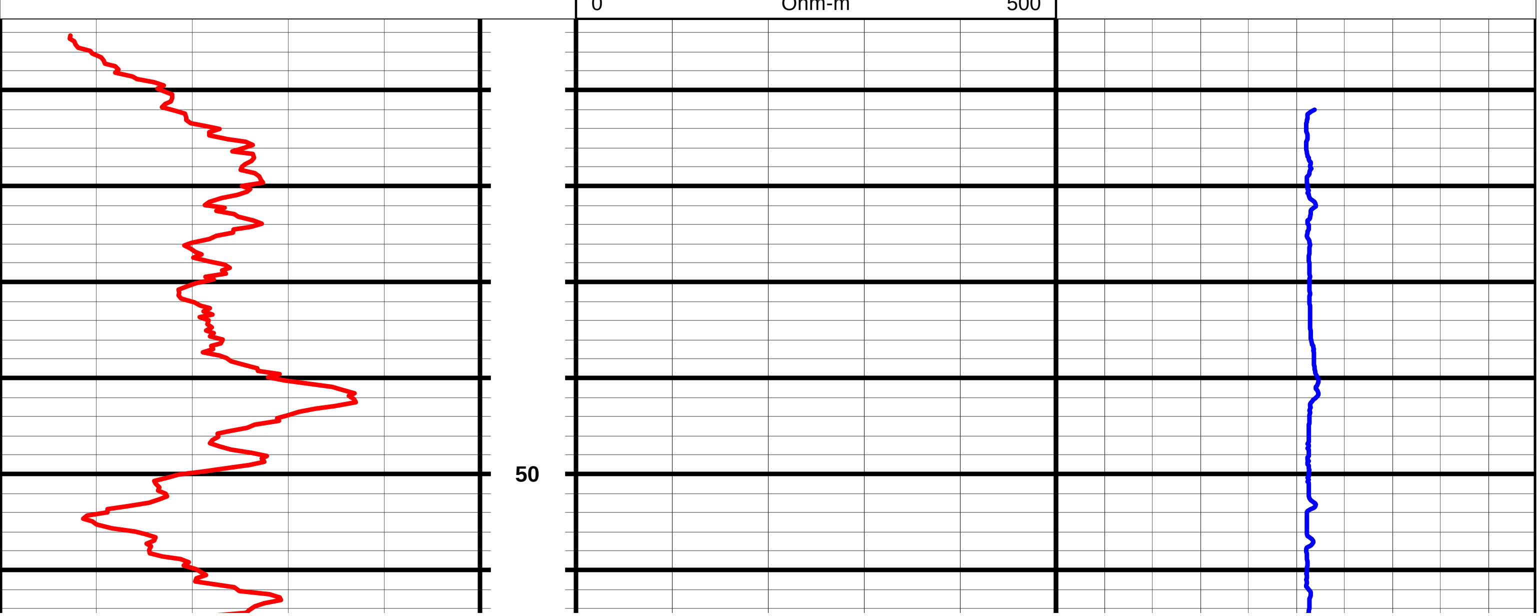
Witness: BRICE

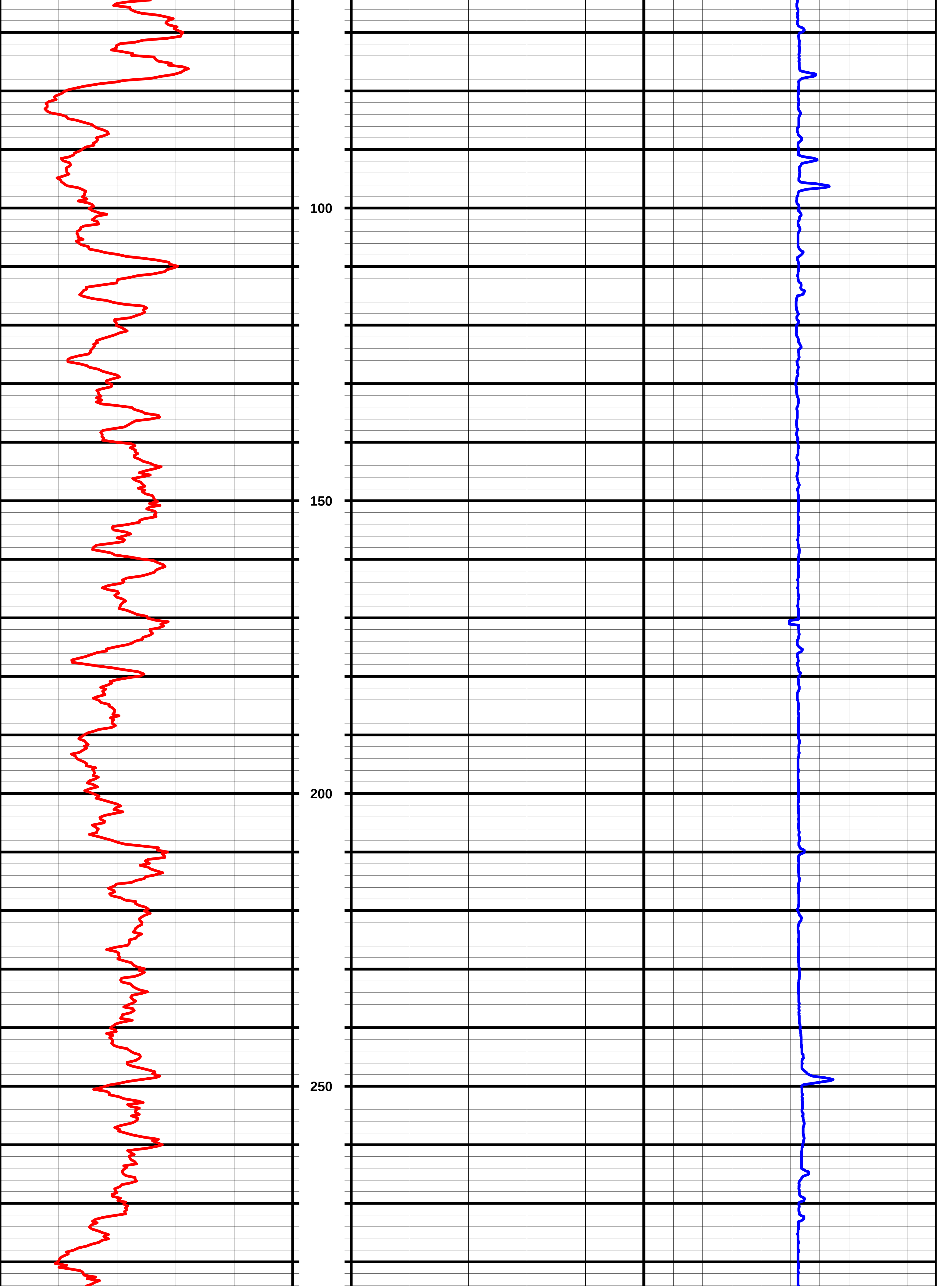
LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	35	901'	4.3'	20
RESISTIVITY, SPR	2	35	904'	350'	20
CALIPER	4	35	904.7'	12'	20

Comments: ALL MEASUREMENTS TAKEN FROM GROUND LEVEL

Bridges
Test Well
No. 4

Gamma	Depth	SPR	Caliper
0 CPS 100	1ft:240ft	0 ohm 250	5 in 15
Current		R8	
0 mA 20		0 Ohm-m 500	
		R16	
		0 Ohm-m 500	
		R32	
		0 Ohm-m 500	
		R64	
		0 Ohm-m 500	

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200
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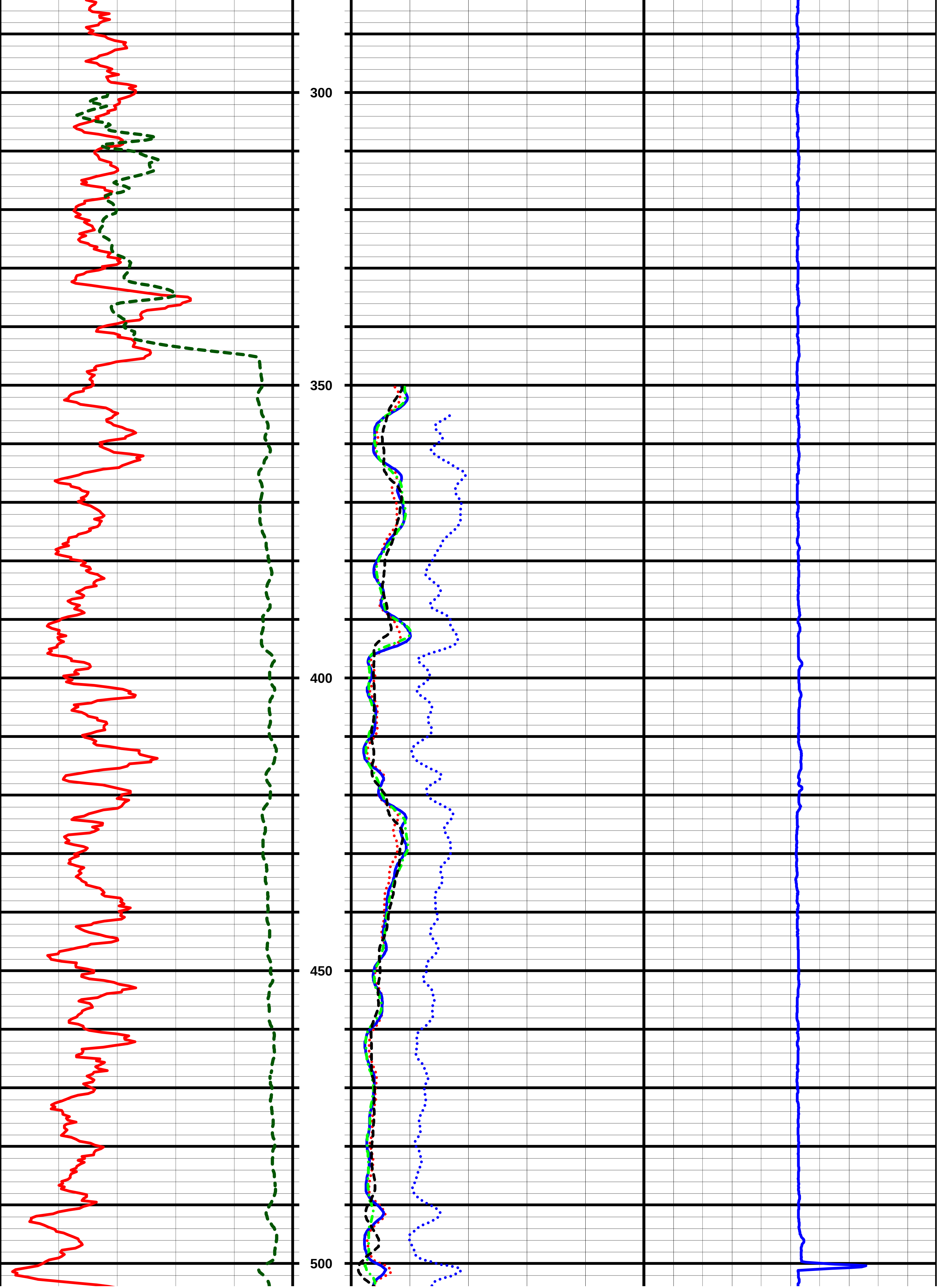
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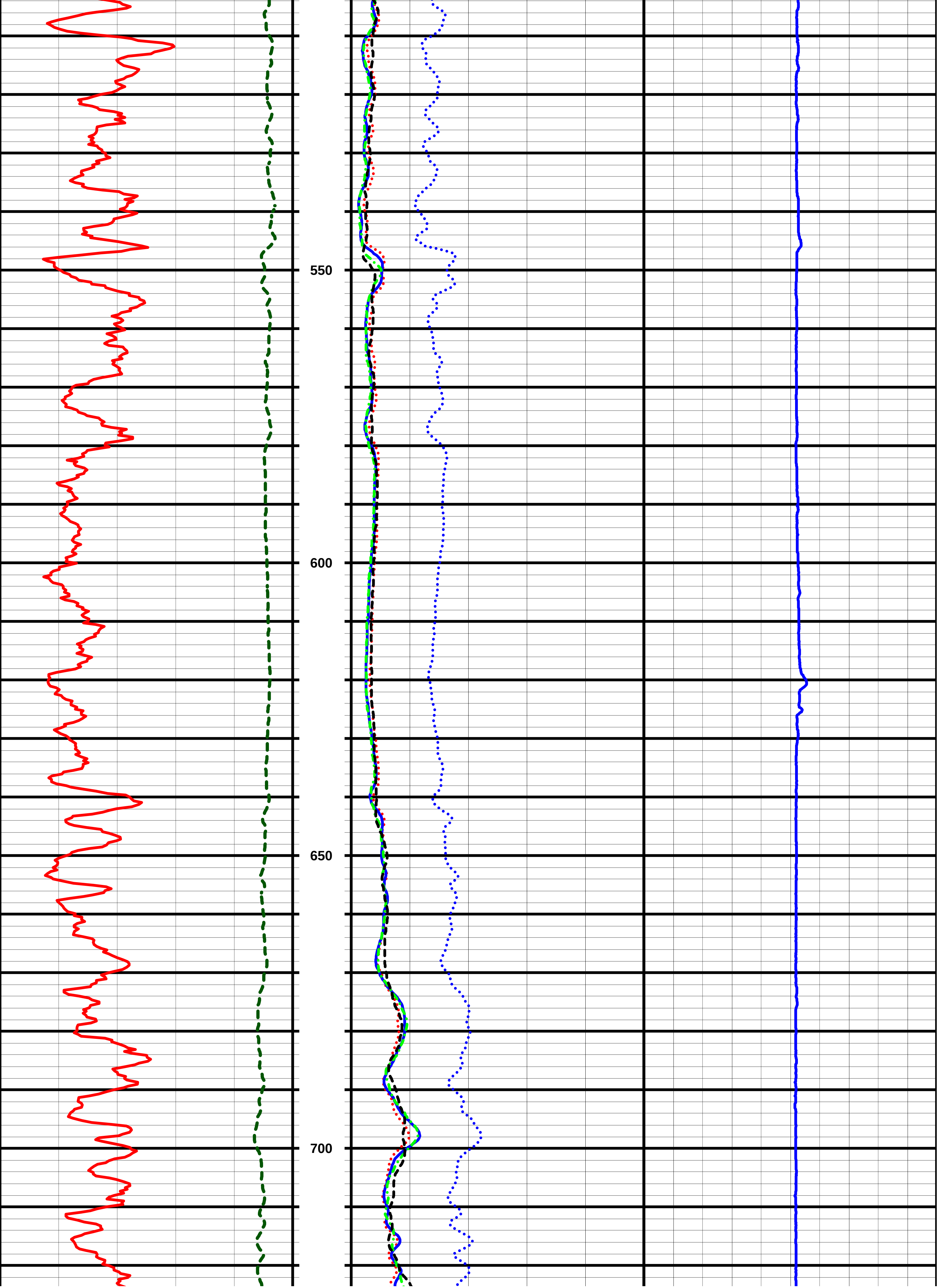
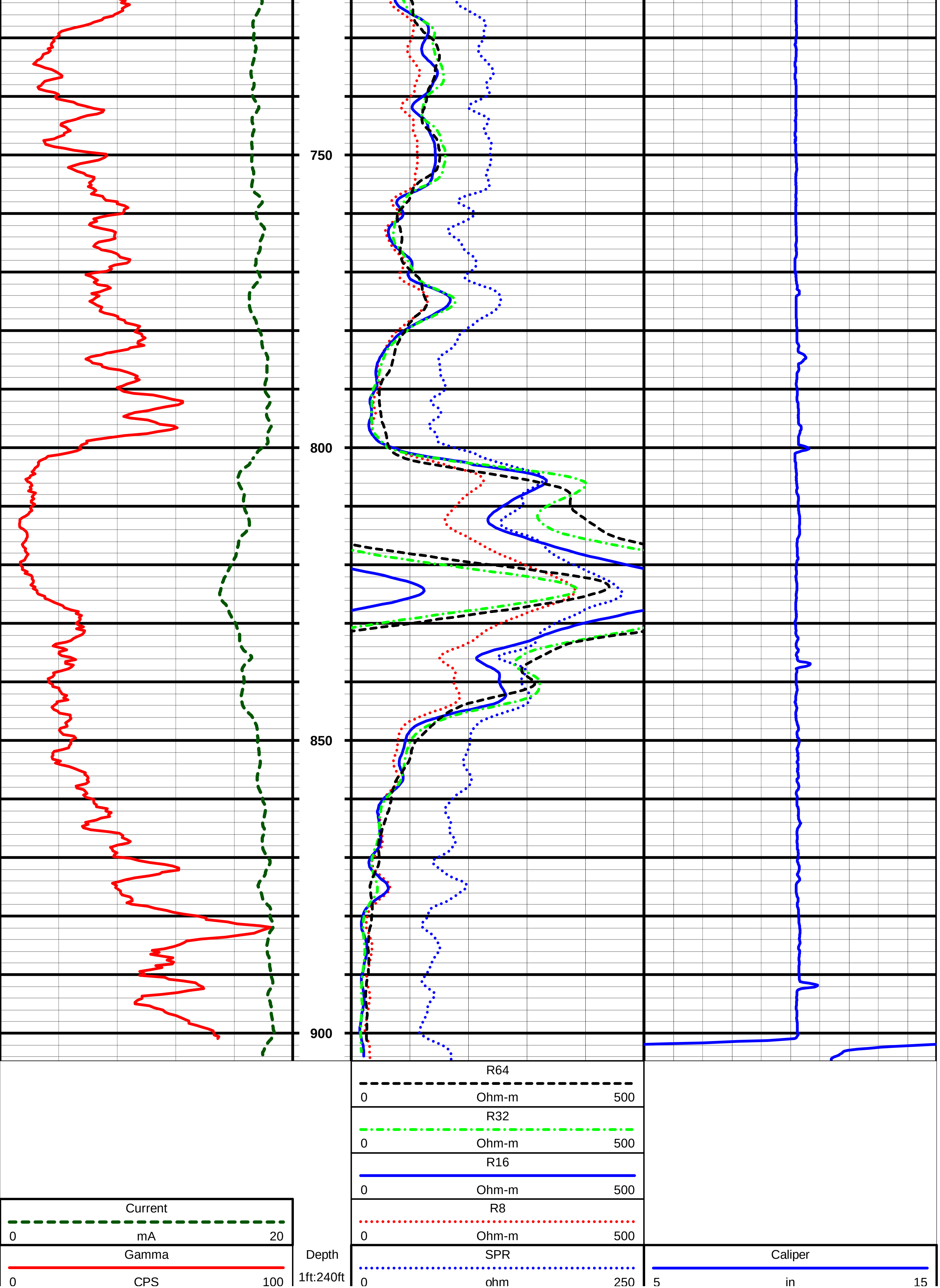

550
600
650
700



750
800
850
900
R64
0 Ohm-m 500
R32
0 Ohm-m 500
R16
0 Ohm-m 500
R8
0 Ohm-m 500
Current
0 mA 20
Gamma
0 CPS 100
Depth
1ft:240ft
SPR
0 ohm 250
Caliper
5 in 15

GEO CAM

Water Well Logging & Video Recording Services

Geo Cam, Inc. 17118 Classen Rd. San Antonio, TX   Office: 877-495-9121

Borehole: **TELEPHONE COMANY TEST WELL**

Logs: **GAMMA, RESITIVITY, SPR. CALIPER**

Project: **TELEPHONE COMANY TEST WELL**   Date: 01-13-2014

Client: **WHISENANT & LYLE**   County: HAYS

Location: **N 30* 2' 55.55" W 98* 1' 45.43"**   State: TX

BOREHOLE DATA

Drilling Contractor: WHISENANT & LYLE   **Driller T.D. (ft) : 906**

Elevation: 1102' GPS.   Logger T.D. (ft) : 906.2

Depth Ref: G.L.   Date Drilled: 01-13-2014

BIT RECORD				CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9 7/8	0	906	NA		
2						
3						

Drill Method: AIR ROTARY   Weight: NA   **Fluid Level (ft) :** 329

Hole Medium: NA   Mud Type: NA   Time Since Circ: NA

Viscosity: NA   Rm: at: Deg C

GENERAL DATA

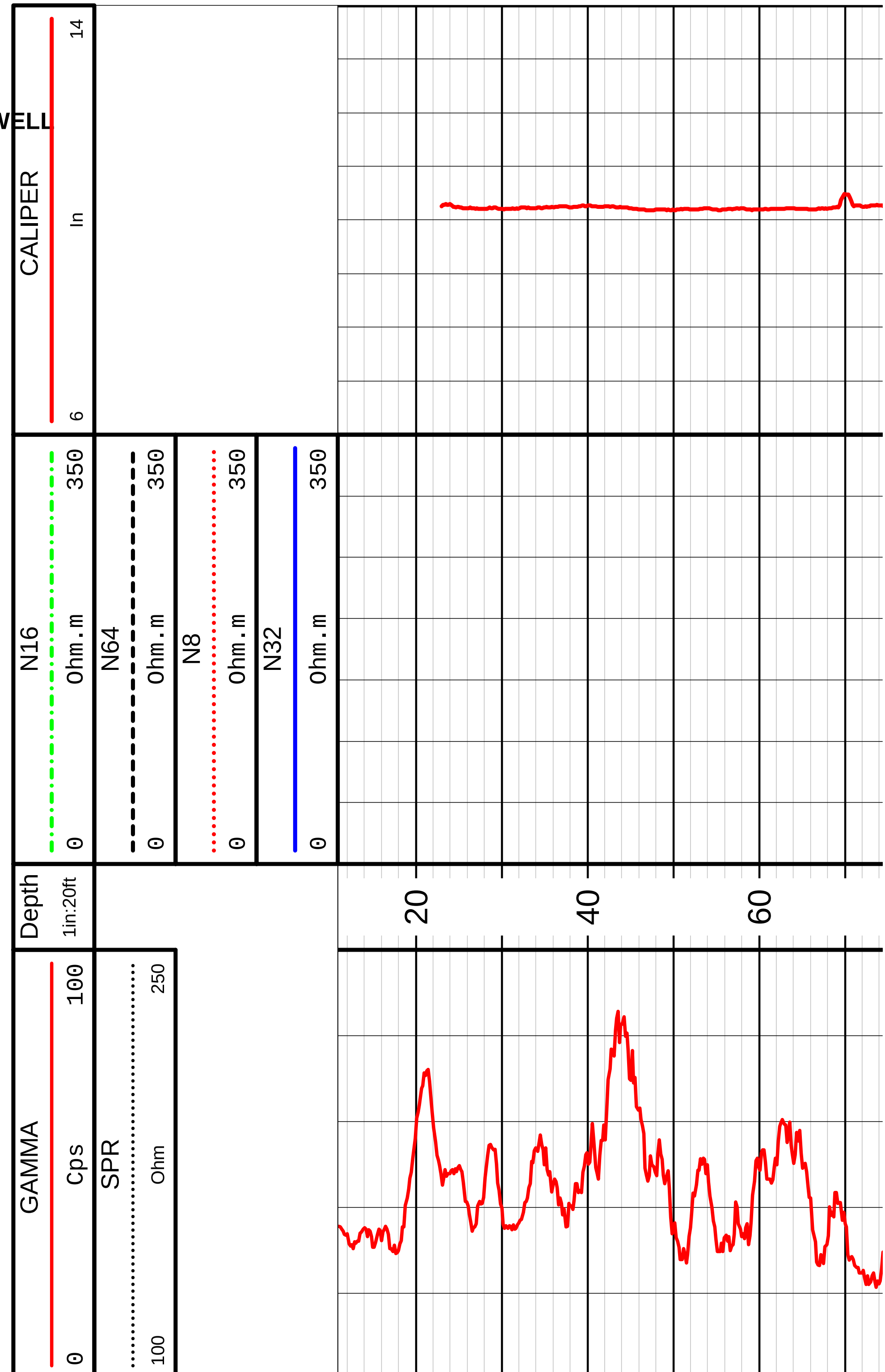
Logged by: ERASMO DE LA FUENTE   Unit/Truck: 10

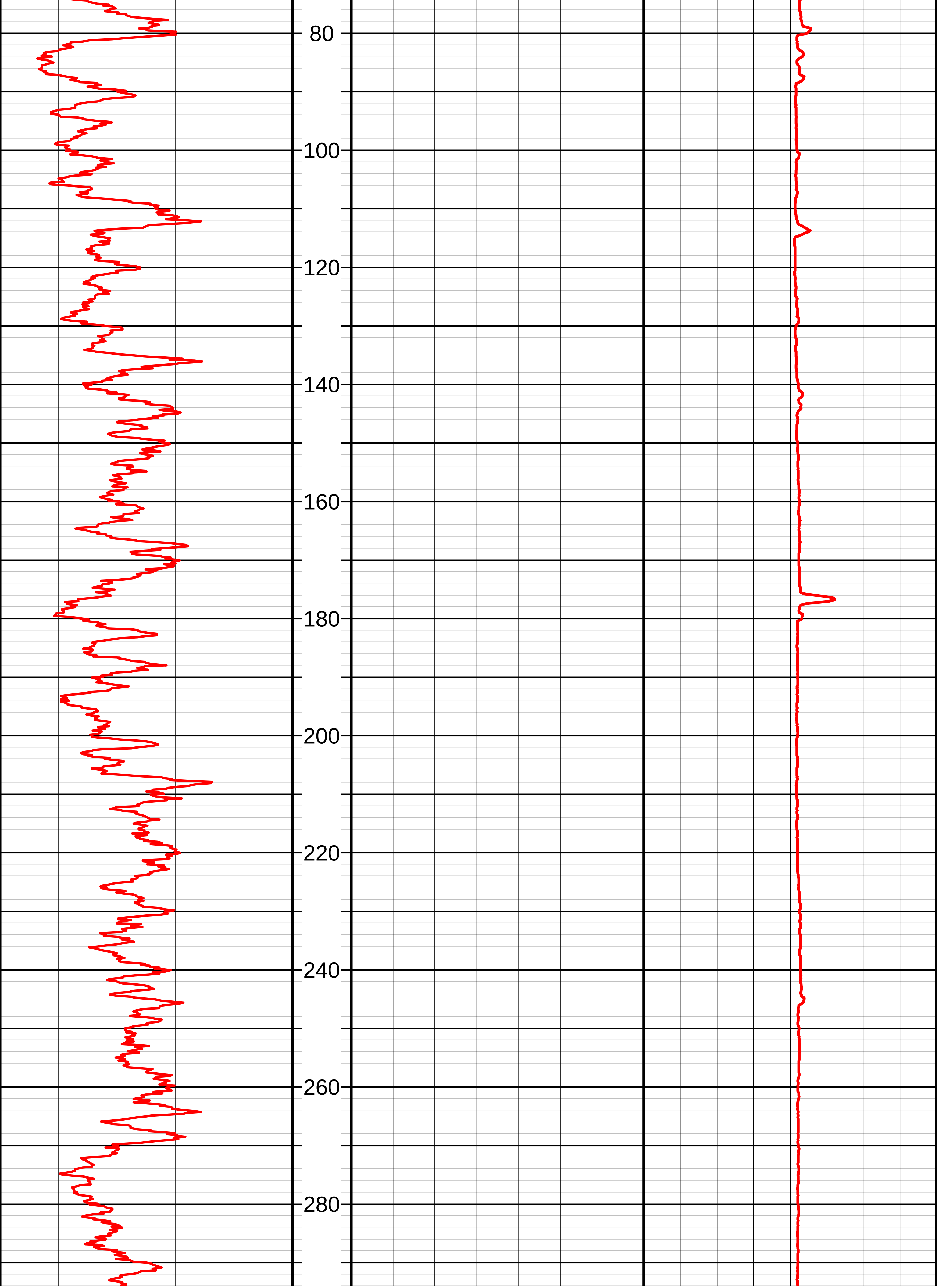
Witness: MARTIN - ANDREW

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	40	892.4	11	20
RESISTIVITY. SPR.	2	40	899	327.1	20
CALIPER	2	40	904.4	23	20

Comments:

Odell
Test Well
No. 1

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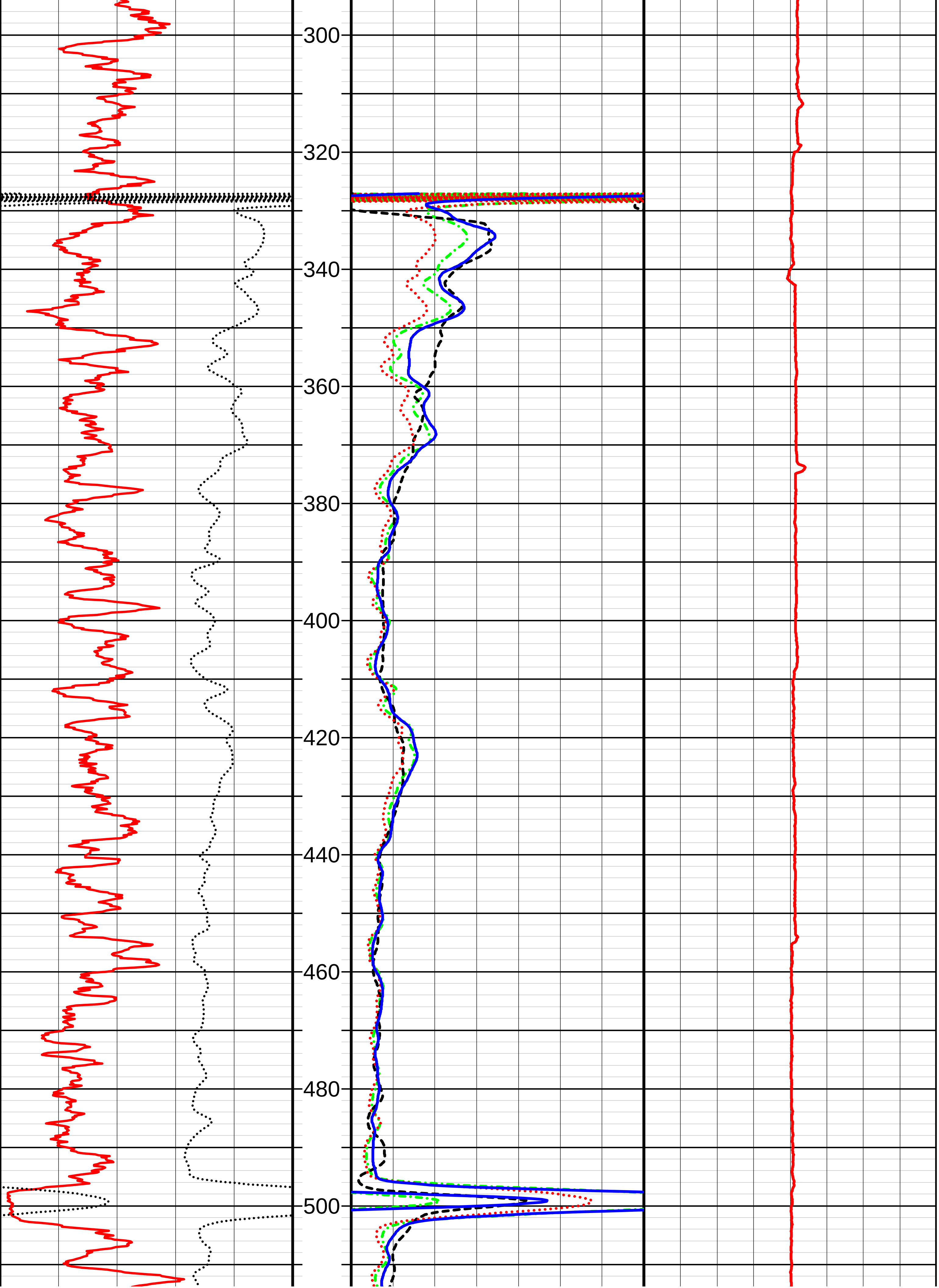
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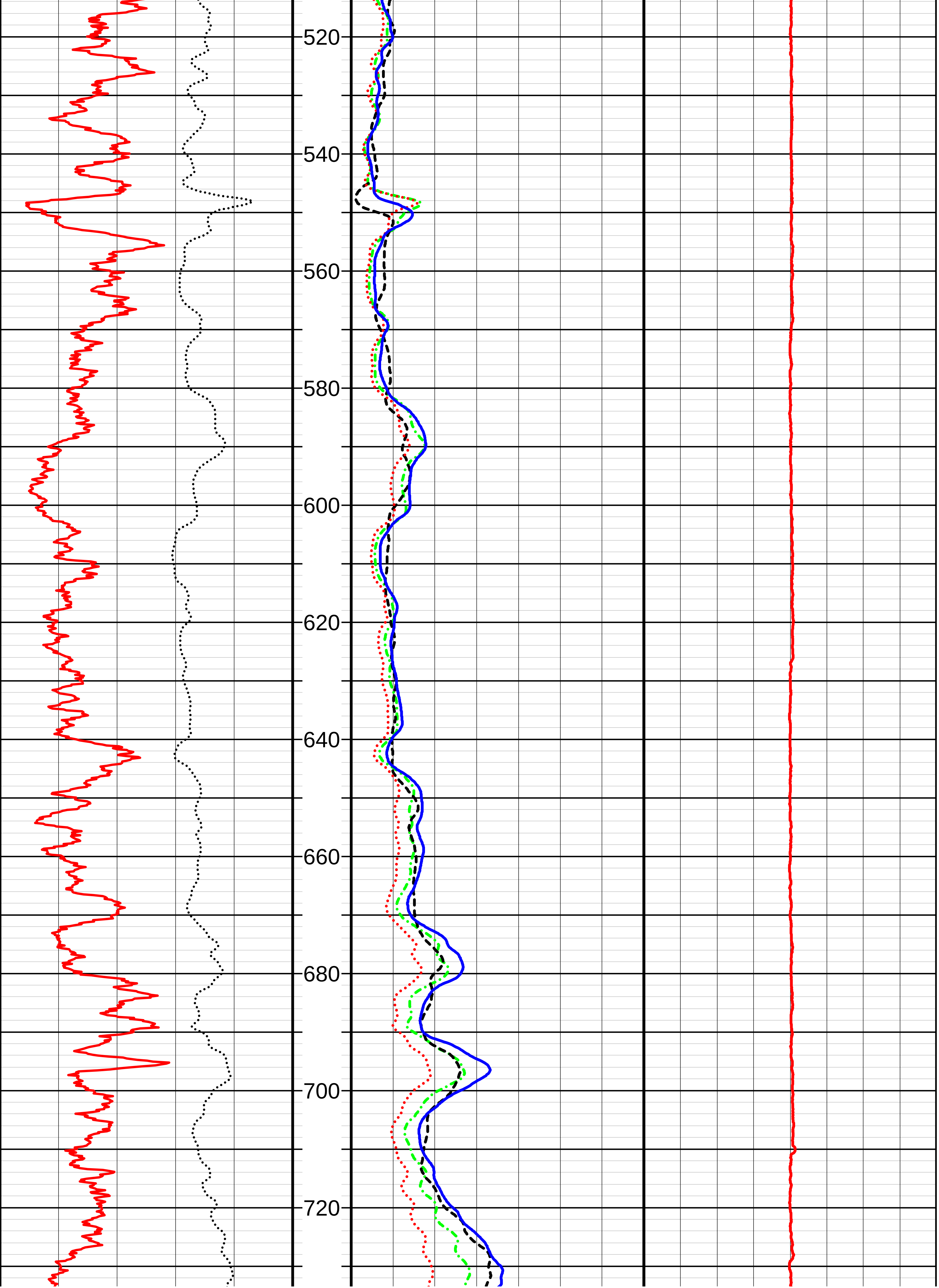
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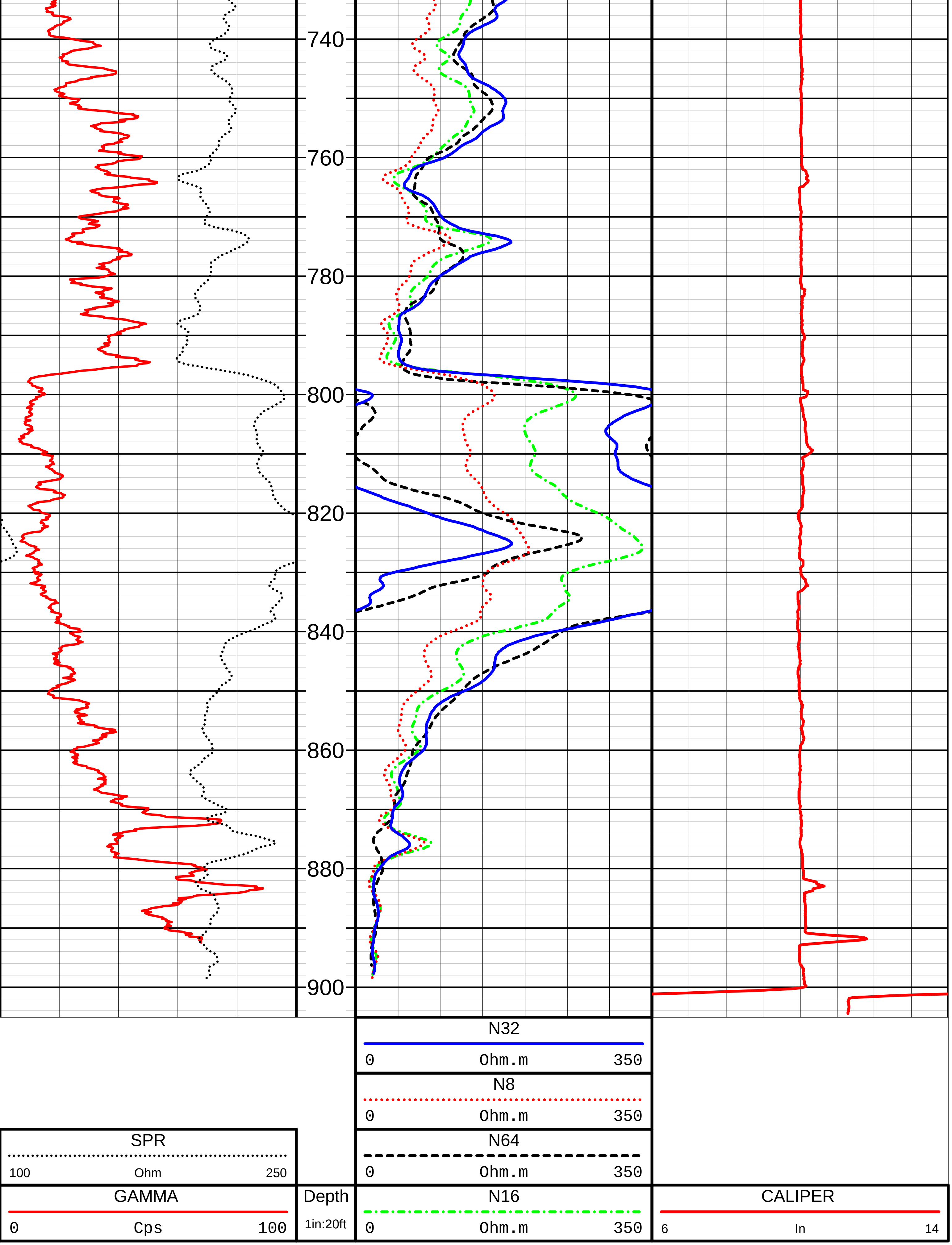
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760
780
800
820
840
860
880
900
N32
0 Ohm.m 350
N8
0 Ohm.m 350
SPR
100 Ohm 250
N64
0 Ohm.m 350
GAMMA
0 Cps 100
Depth
1in:20ft
N16
0 Ohm.m 350
CALIPER
6 In 14

Borehole: LONEMAN MTN TW2

Logs: GAMMA, CALIPER, RESISTIVITY

Water Well Logging & Video Recording Services

Geo Cam, Inc. 17118 Classen Rd, San Antonio, TX 210-495-9121

Project: LONEMAN MTN TW2 Date: 01-25-15

Client: **WHISENANT & LYLE** County: HAYS

Location: N30* 03' 04.6" W98* 01' 59.2" State: TX

BOREHOLE DATA

Drilling Contractor: WHISENANT & LYLE **Driller T.D. (ft) : 840'**

Elevation: 1050' GPS Logger T.D. (ft) : 840'

Depth Ref: G.L. Date Drilled: 01-24-15

BIT RECORD				CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9 7/8"	0'	840'	NA		
2						
3						

Drill Method: AIR ROTARY Weight: **Fluid Level (ft) :** 342'

Hole Medium: Mud Type: Time Since Circ:

Viscosity: Rm: at: Deg C

GENERAL DATA

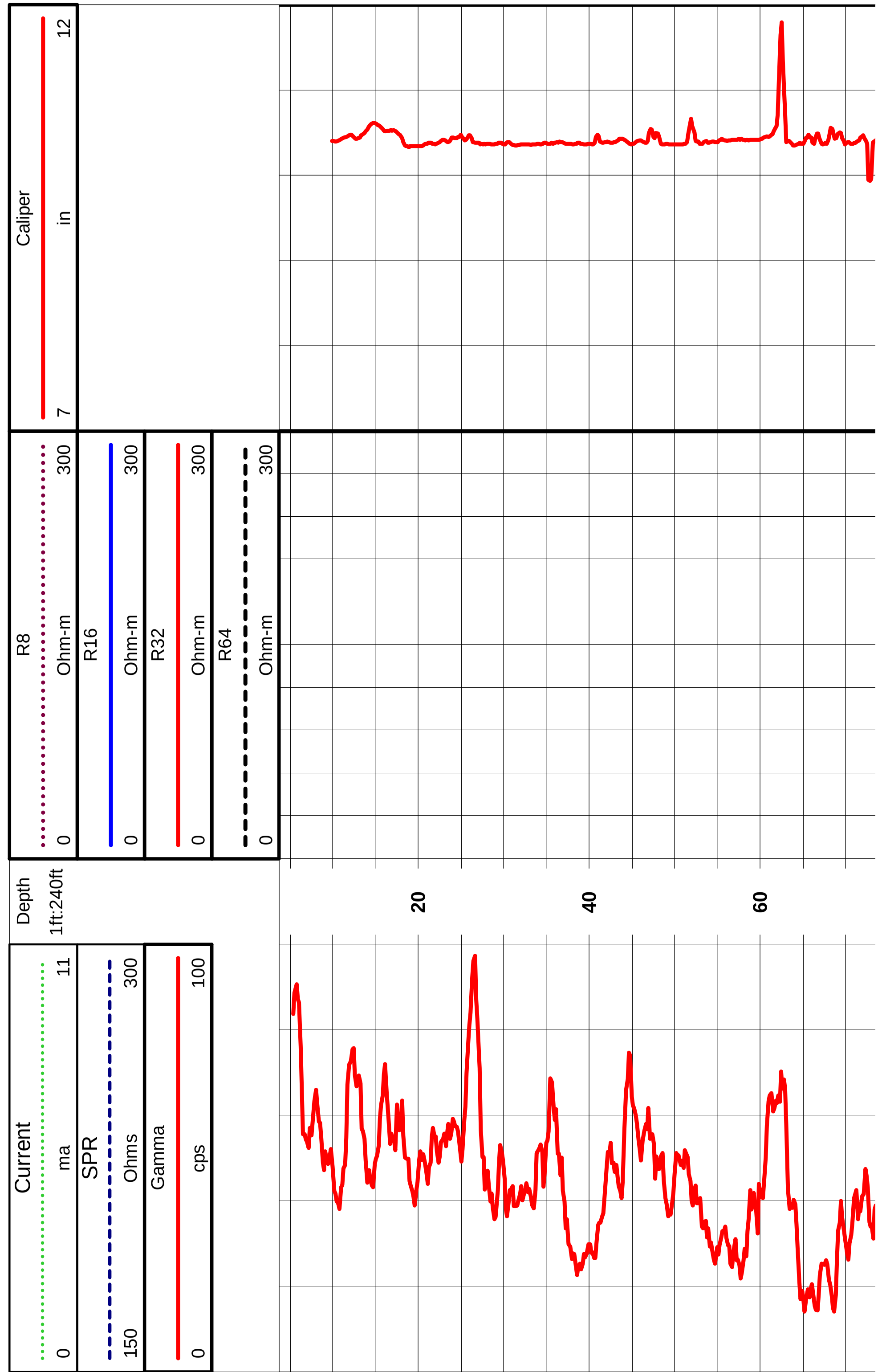
Logged by: ROBERT C. BECKNAL Unit/Truck: 08

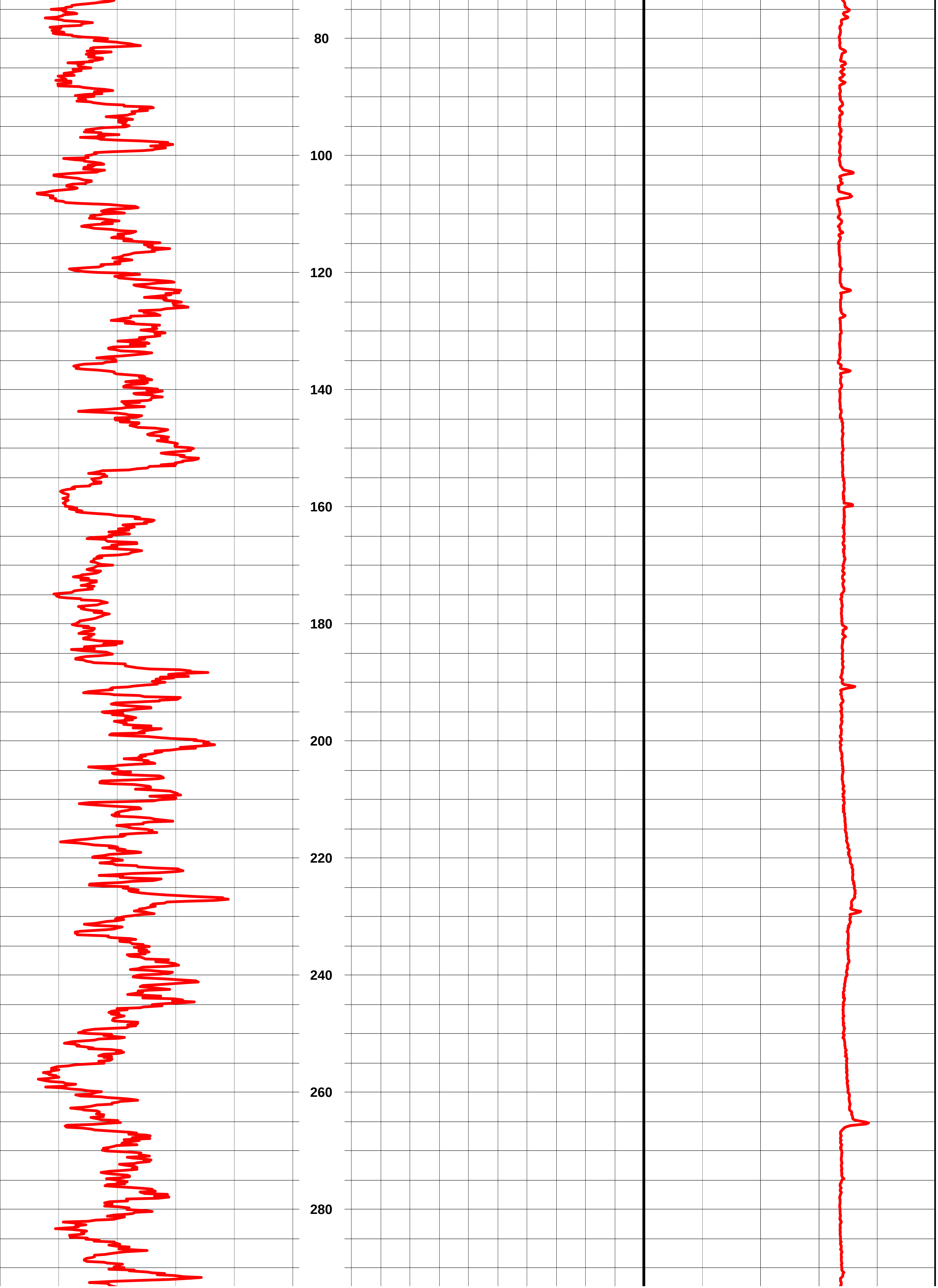
Witness: TYLER LOMAN

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	1	35	835'	5'	20
CALIPER	1	35	840'	10'	20
RESISTIVITY	2	40	343'	840'	

Comments:

Odell
Test Well
No. 2

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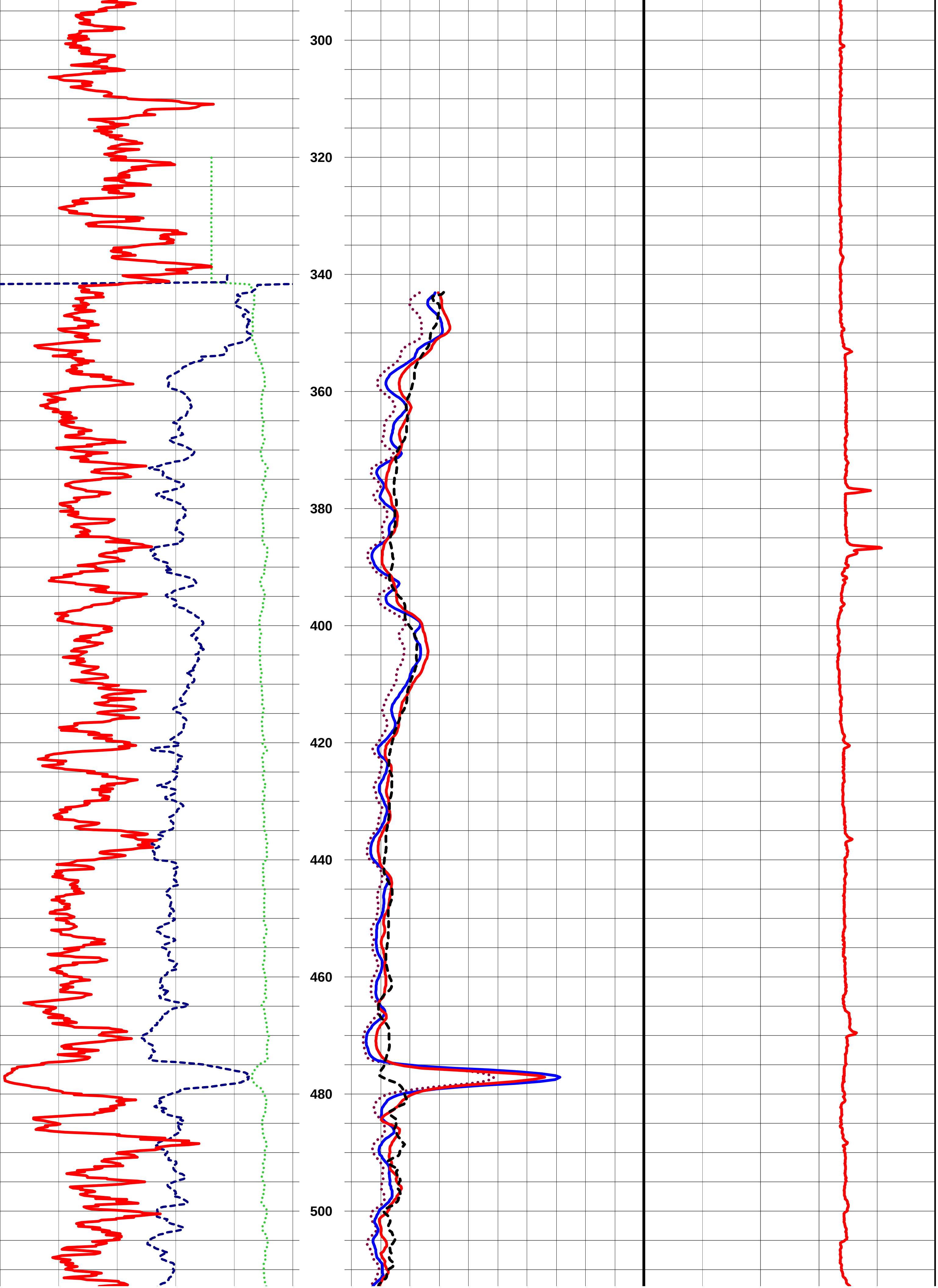
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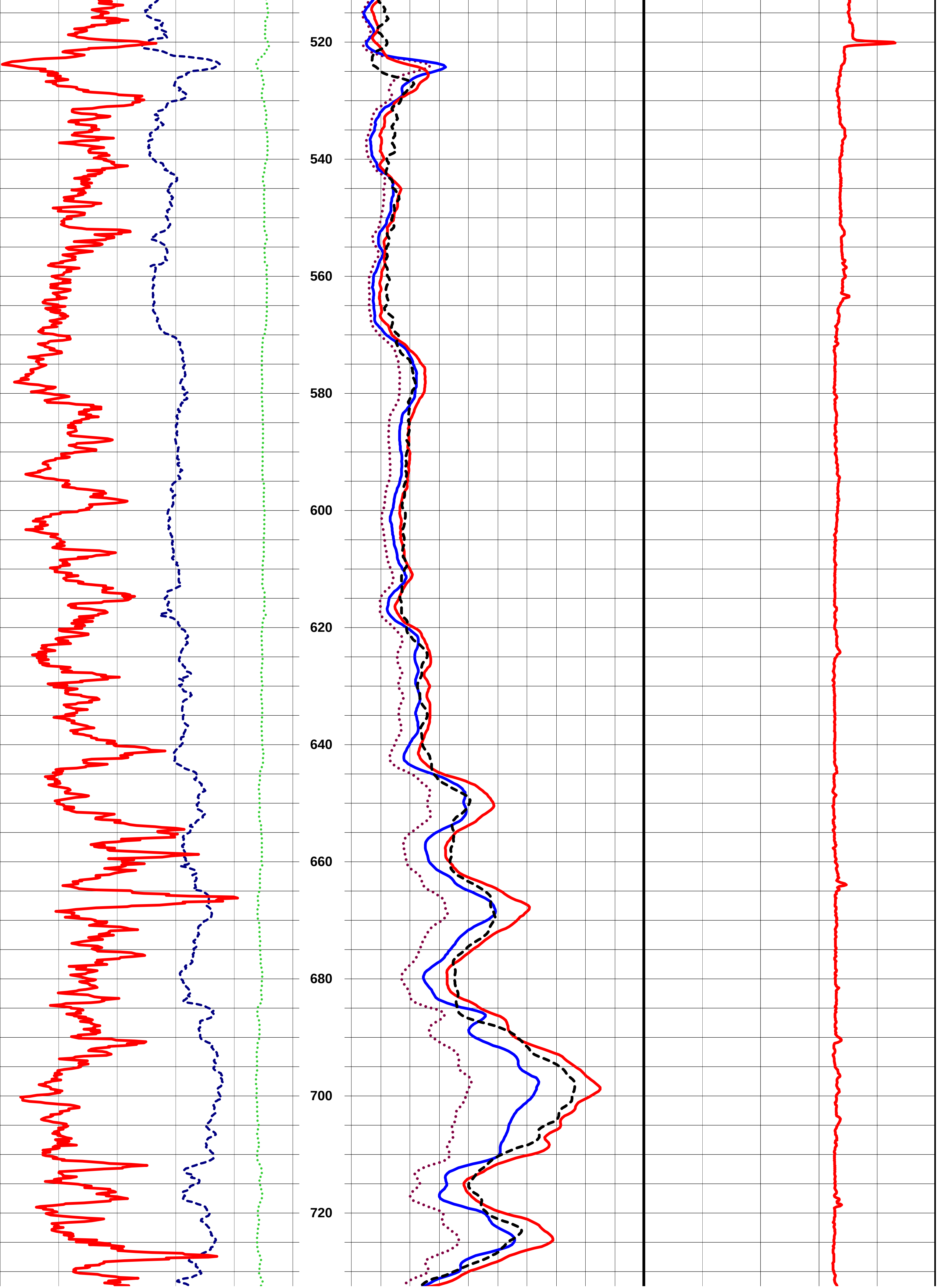
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700
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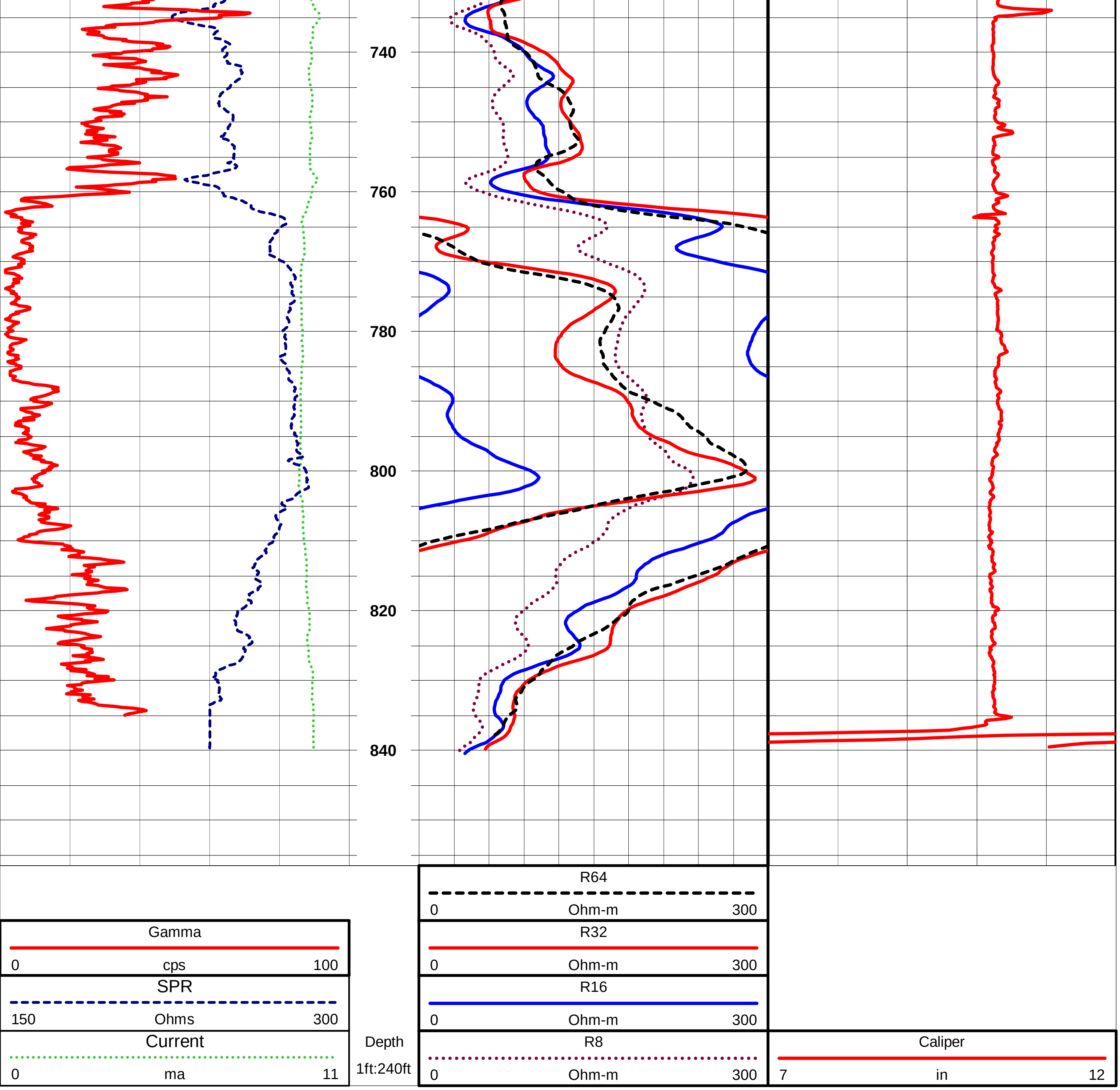


740
760
780
800
820
840
R64
0 Ohm-m 300
R32
0 Ohm-m 300
R16
0 Ohm-m 300
R8
0 Ohm-m 300
Gamma
0 cps 100
SPR
150 Ohms 300
Current
0 ma 11
Depth
1ft:240ft
Caliper
7 in 12

GEO CAM

Water Well Logging & Video Recording Services

Geo Cam, Inc. 126 Palo Duro, San Antonio, TX 210-495-9121

Borehole: **ODELL TEST WELL 3**

Logs: **GAMMA, RESITIVITY, SPR. CALIPER**

Project: **ODELL TEST WELL 3** Date: 01-08-2015

Client: **WHISENANT & LYLE** County: HAYS

Location: **N 30* 2' 36.64" W 98* 2' 0.01"** State: TX

BOREHOLE DATA

Drilling Contractor: WHISENANT & LYLE **Driller T.D. (ft) :**

Elevation: 1073' GPS. Logger T.D. (ft) :

Depth Ref: G.L. Date Drilled:

	BIT RECORD			CASING RECORD		
RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	9 7/8	0	1073	NA		
2						
3						

Drill Method: AIR ROTARY Weight: NA **Fluid Level (ft) :** 330

Hole Medium: NA Mud Type: NA Time Since Circ: NA

Viscosity: NA Rm: at: Deg C

GENERAL DATA

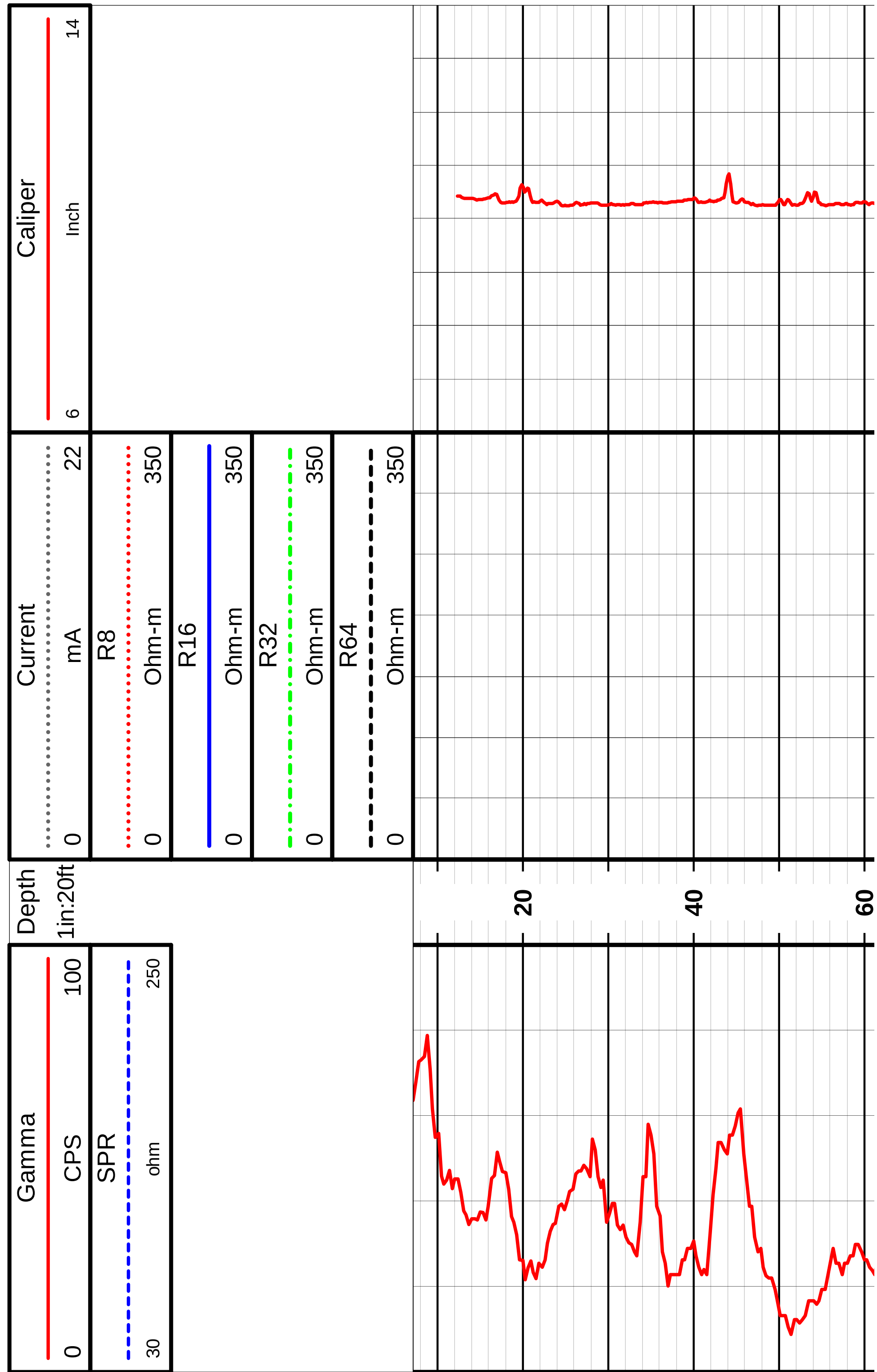
Logged by: Erasmo De La Fuente Unit/Truck: 05

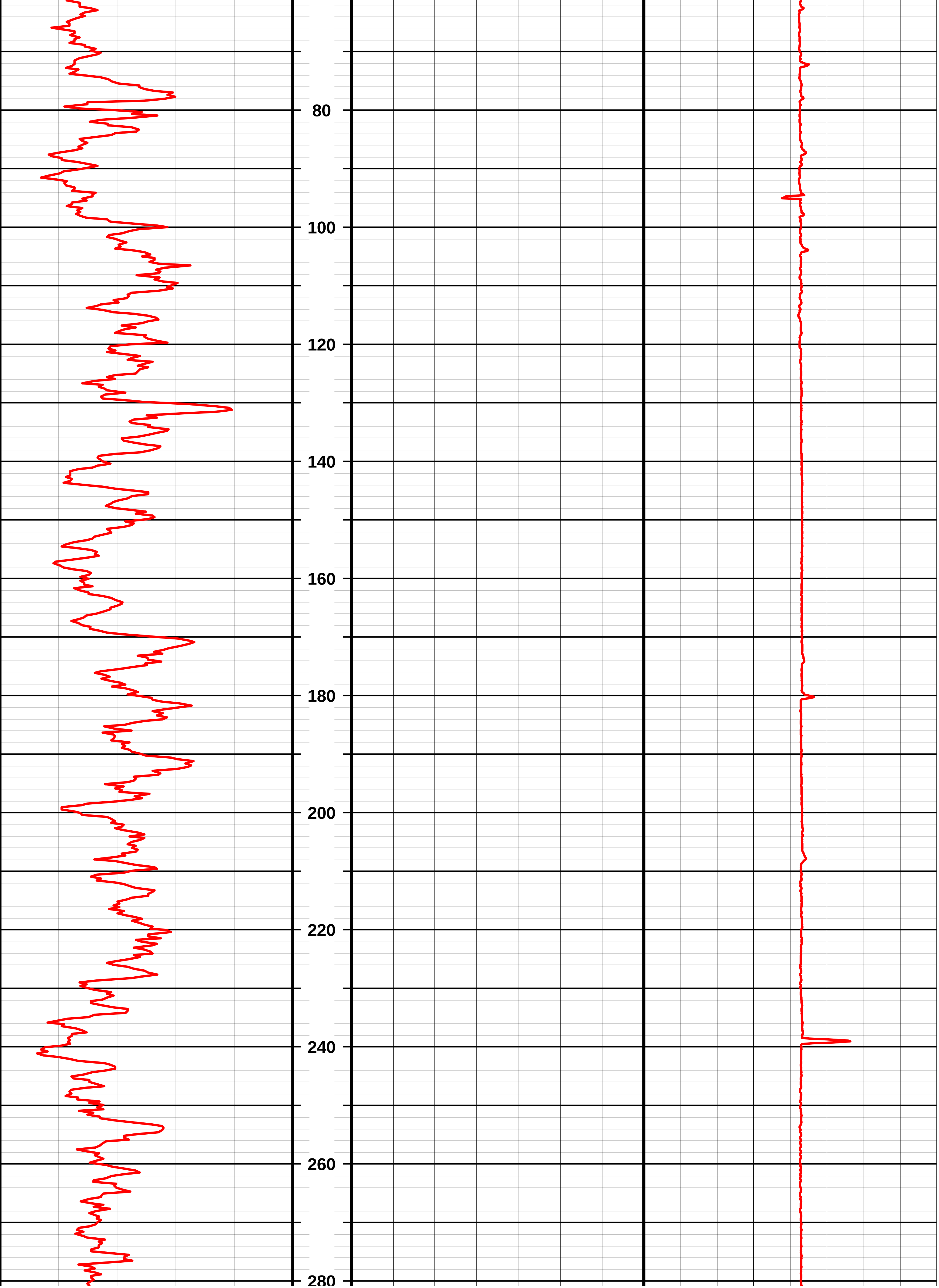
Witness: MARTIN LINGLE

LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	35	842.2	7.2	20
RESISTIVITY, SPR.	2	35	845.8	329	20
CALIPER	3	35	845.2	12.3	20

Comments:

Odell
Test Well
No. 3

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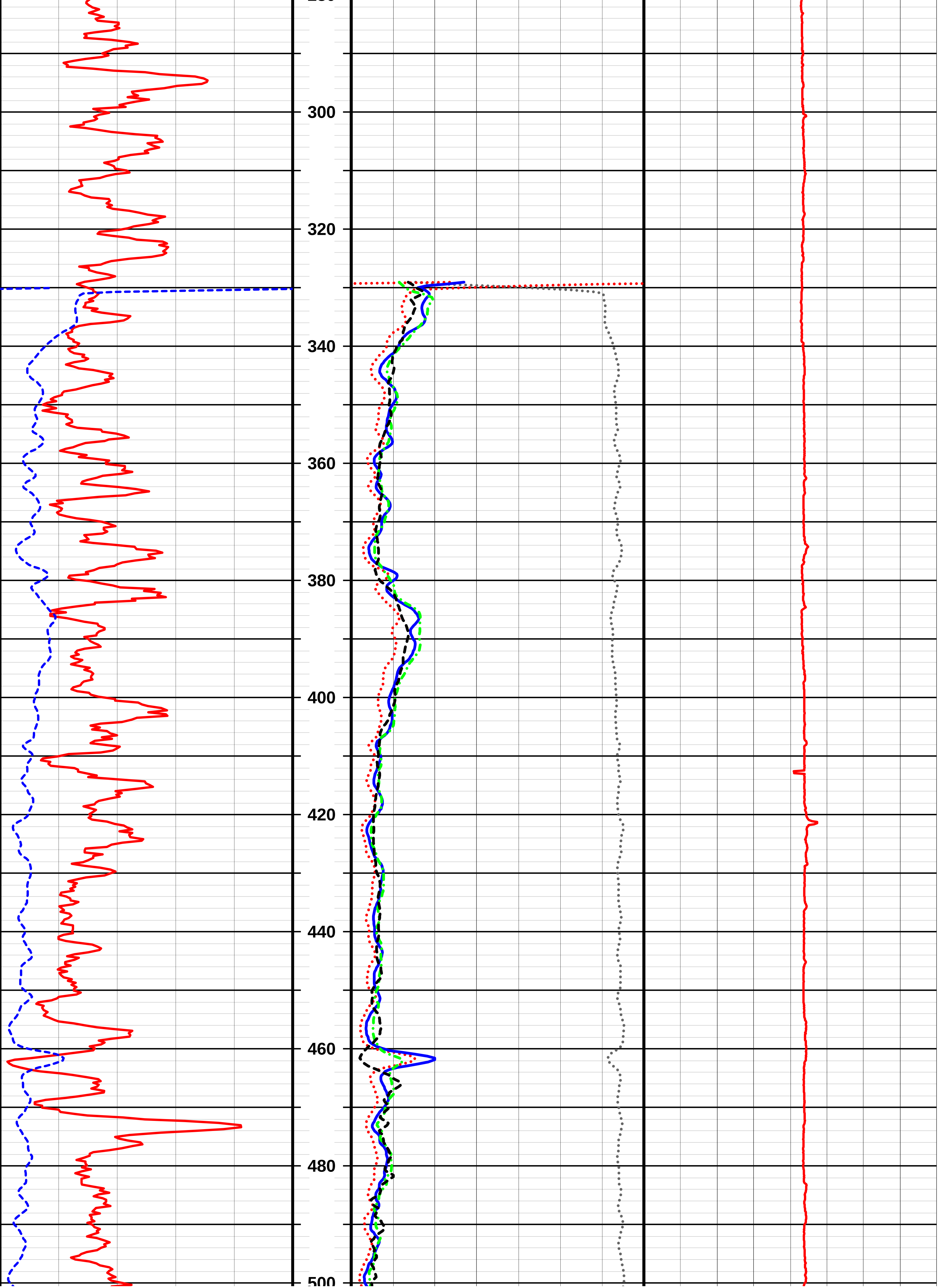
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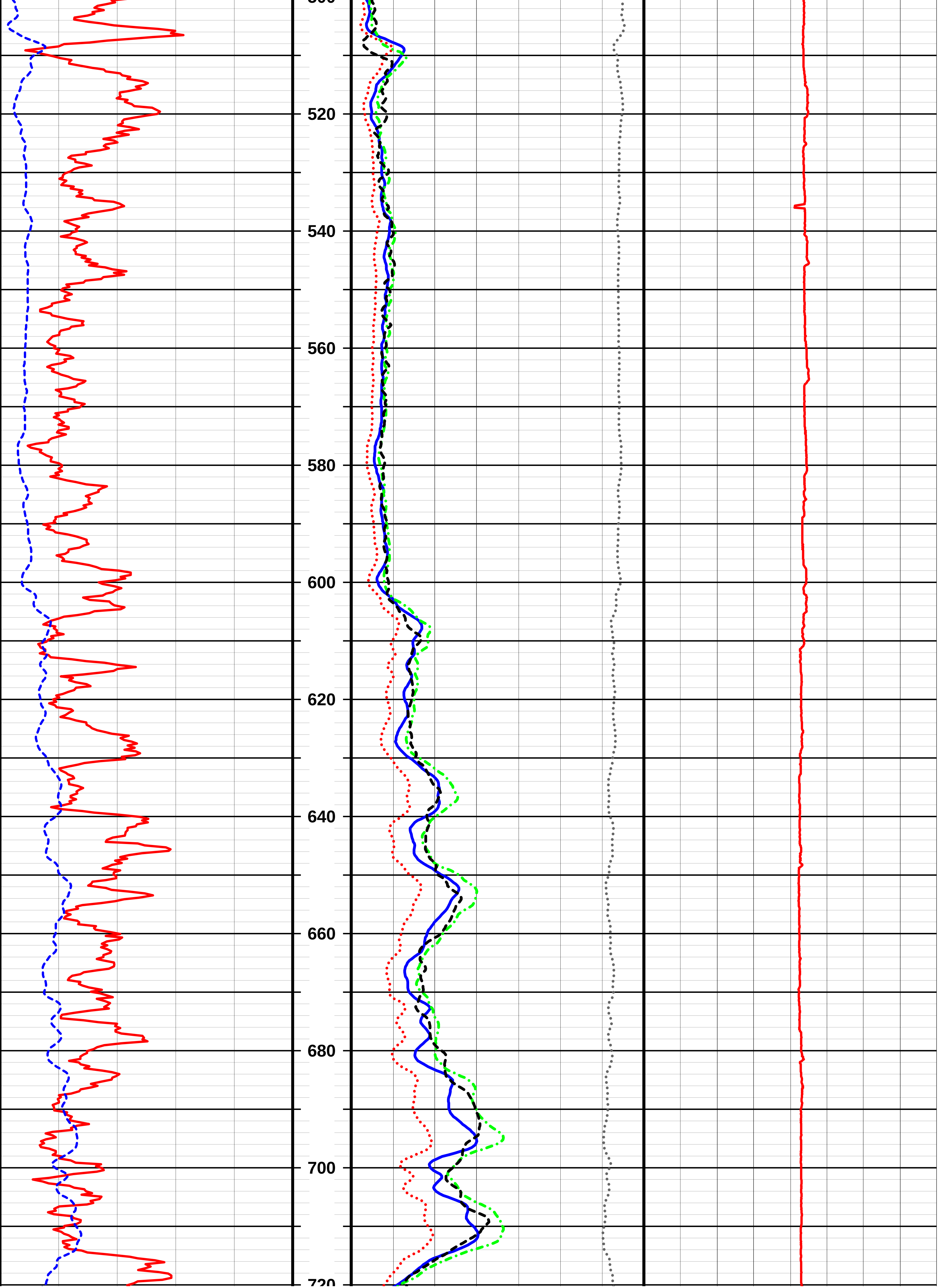
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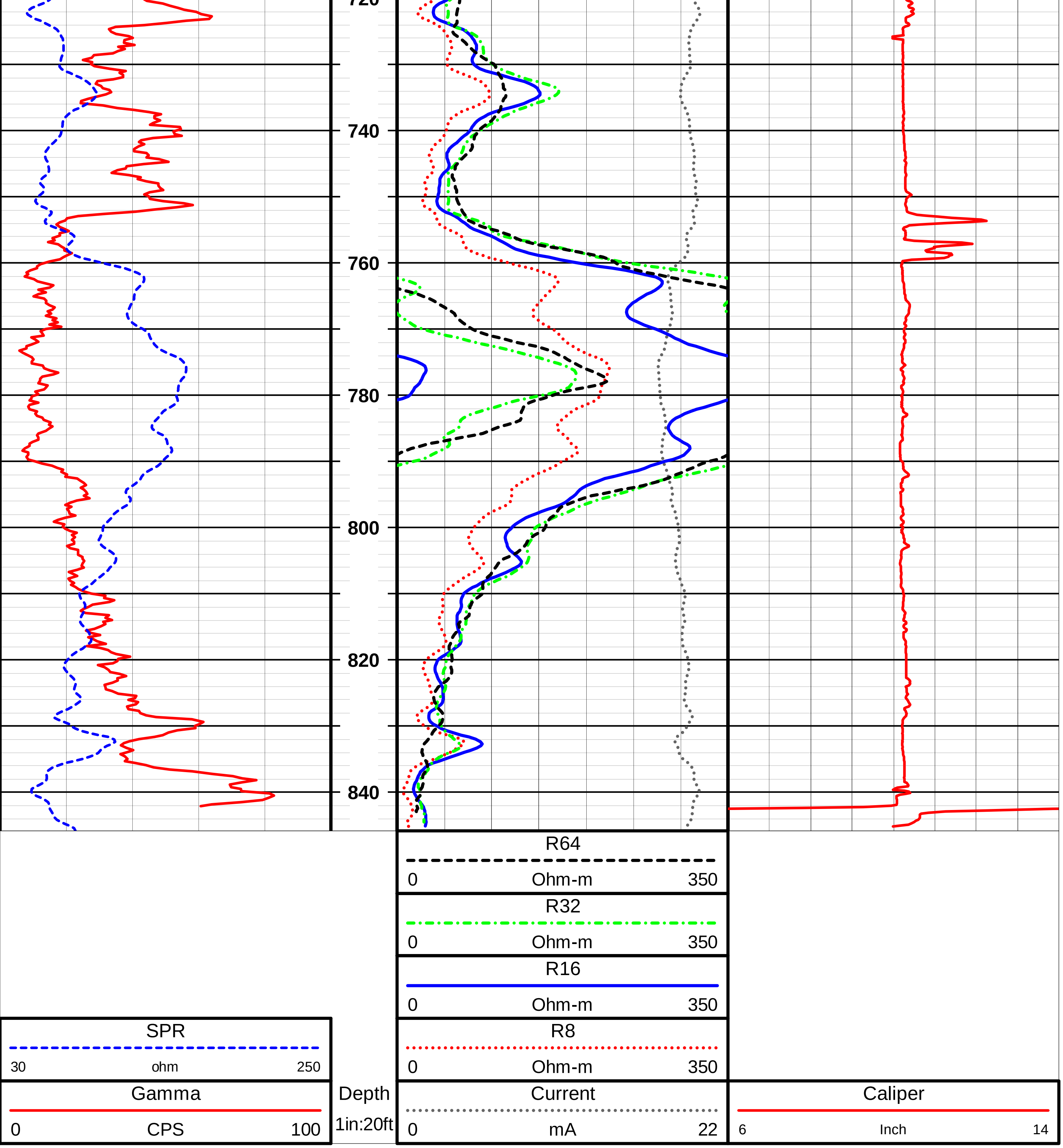
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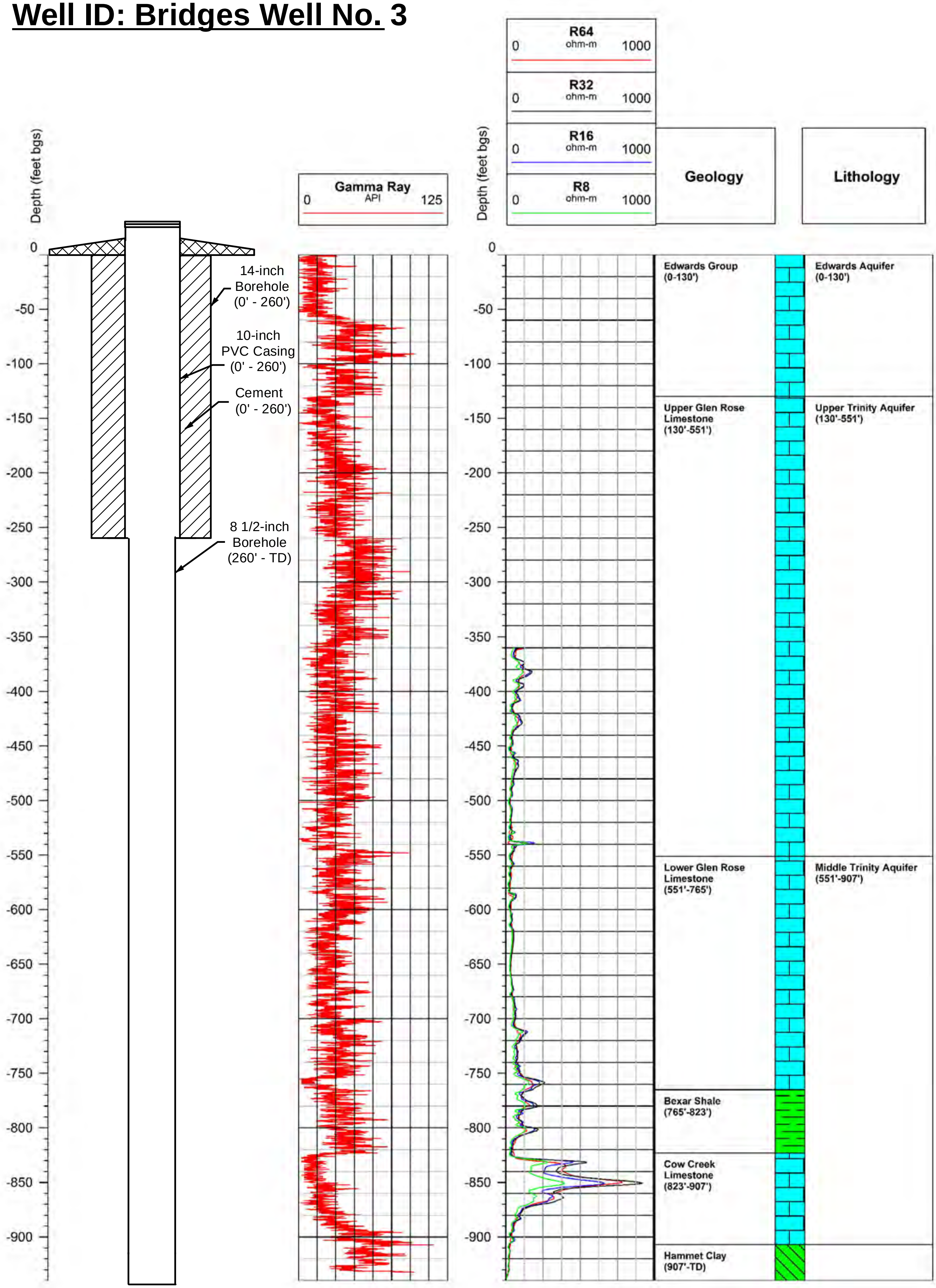
760
780
800
820
840
R64
0 Ohm-m 350
R32
0 Ohm-m 350
R16
0 Ohm-m 350
R8
0 Ohm-m 350
SPR
30 ohm 250
Gamma
0 CPS 100
Depth
1in:20ft
Current
0 mA 22
Caliper
6 Inch 14

Appendix B

Monitoring Well Diagrams

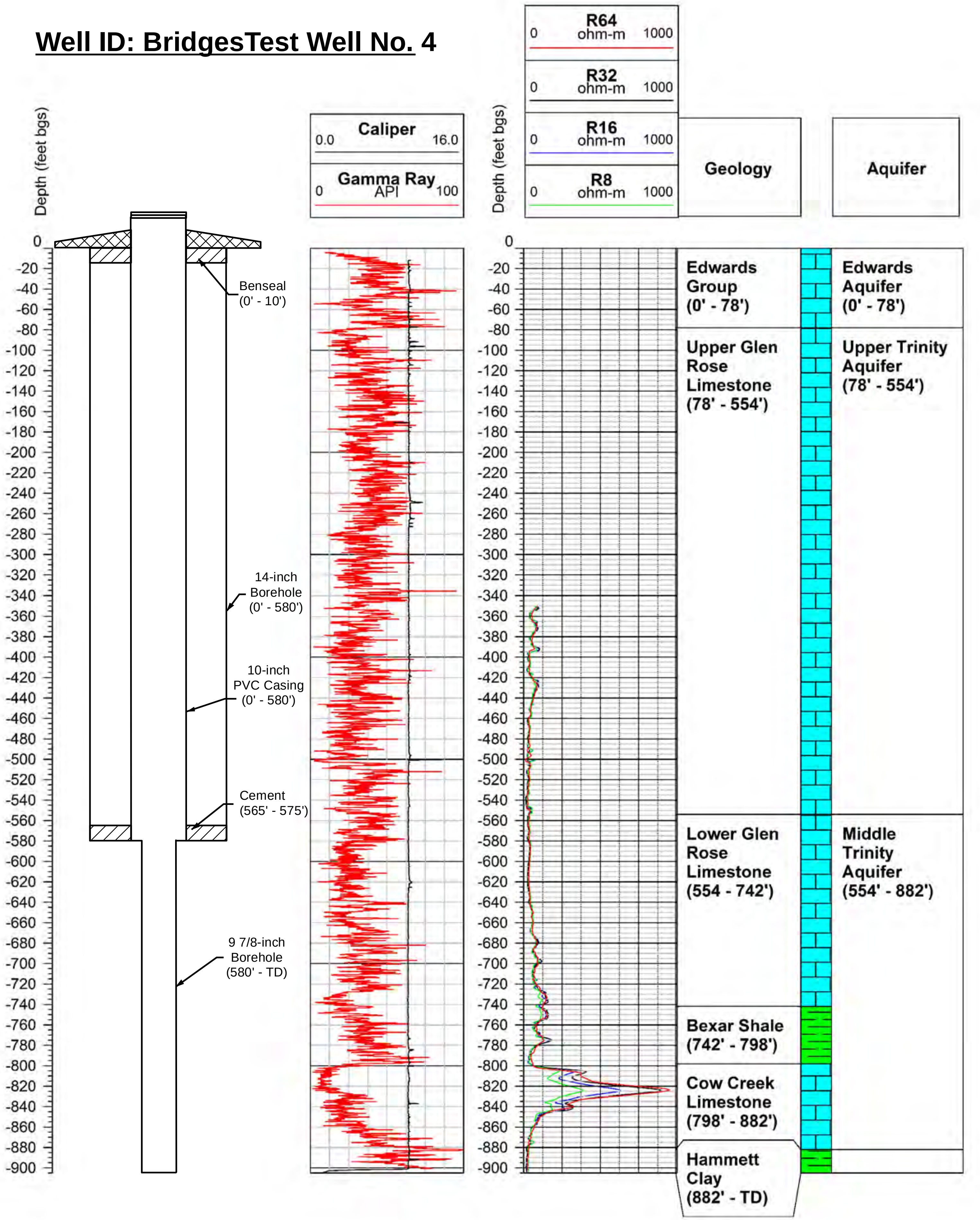
Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Whisenant & Lyle Water Services	Construction Date: 1/4/2014
Elevation: 999 ft. MSL	Total Depth: 940 ft.	Latitude: 30° 2' 44.53" N	Longitude: 98° 0' 19.83" W

Well ID: Bridges Well No. 3



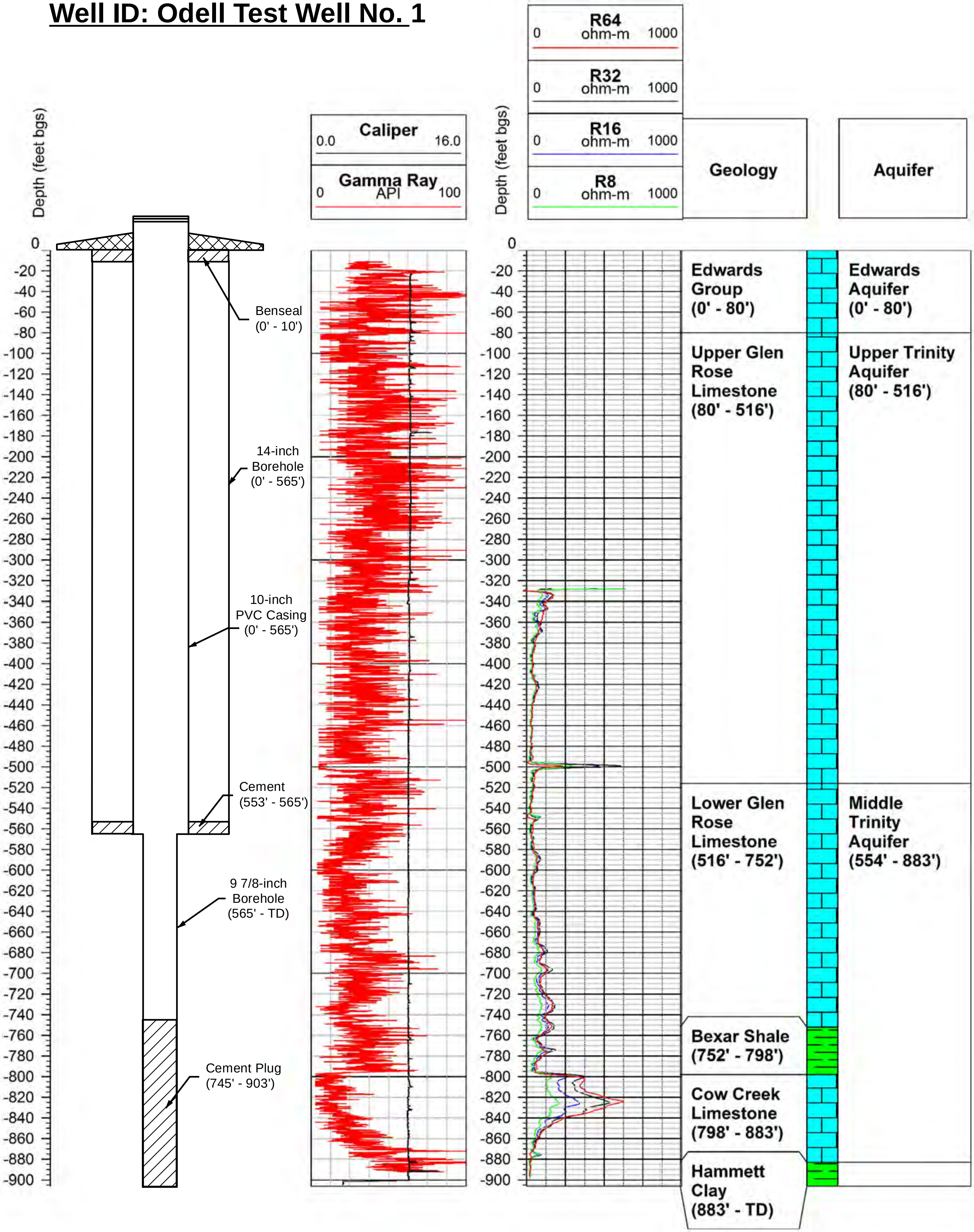
Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Whisenant & Lyle Water Services	Construction Date: 2/14/2015
Elevation: 994 ft. MSL	Total Depth: 905 ft.	Latitude: 30° 2' 44.3" N	Longitude: 98° 0' 32.7" W

Well ID: BridgesTest Well No. 4



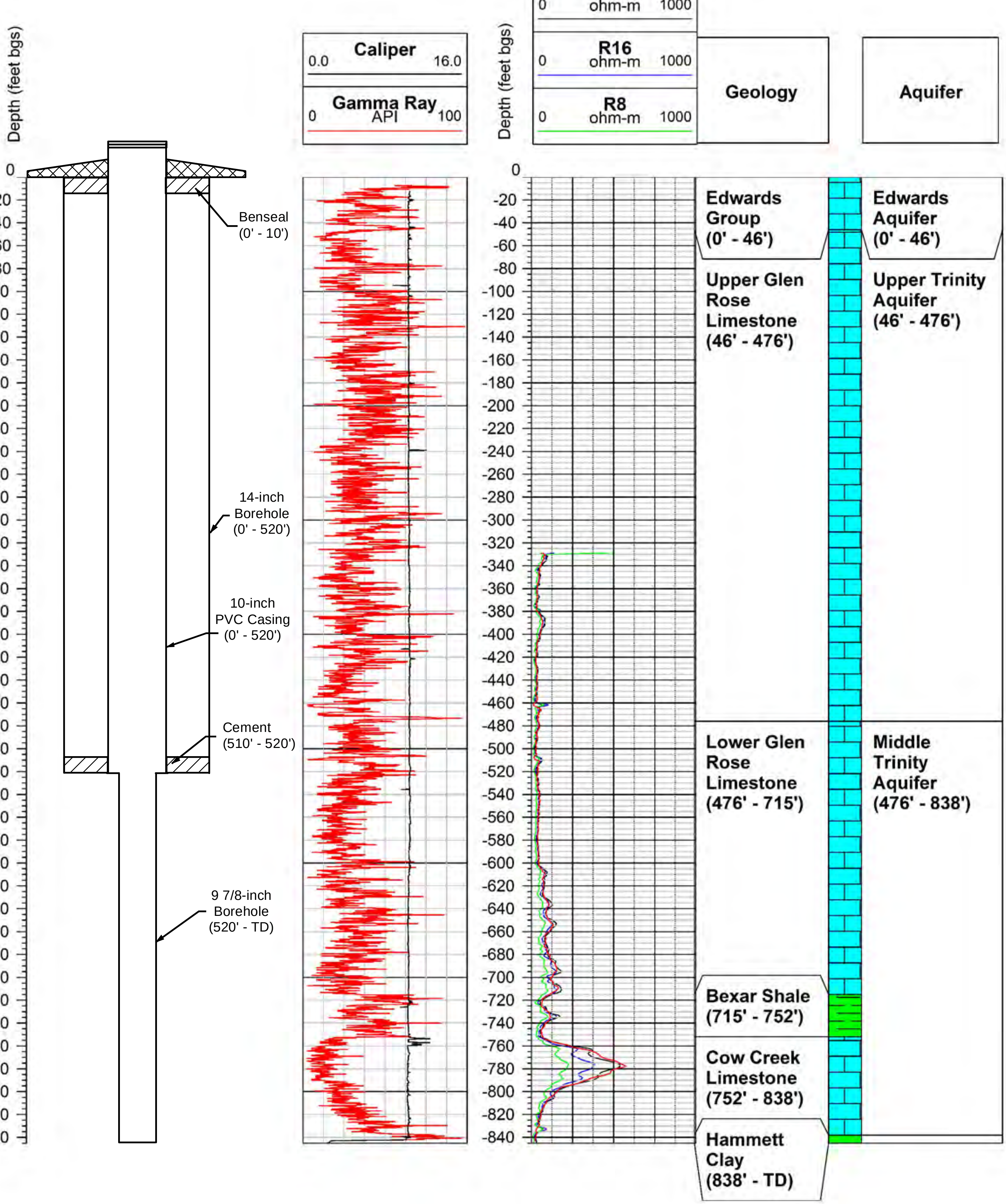
Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Whisenant & Lyle Water Services	Construction Date: 1/20/2015
Elevation: 1,102 ft. MSL	Total Depth: 903 ft.	Latitude: 30° 2' 55.55" N	Longitude: 98° 1' 45.43" W

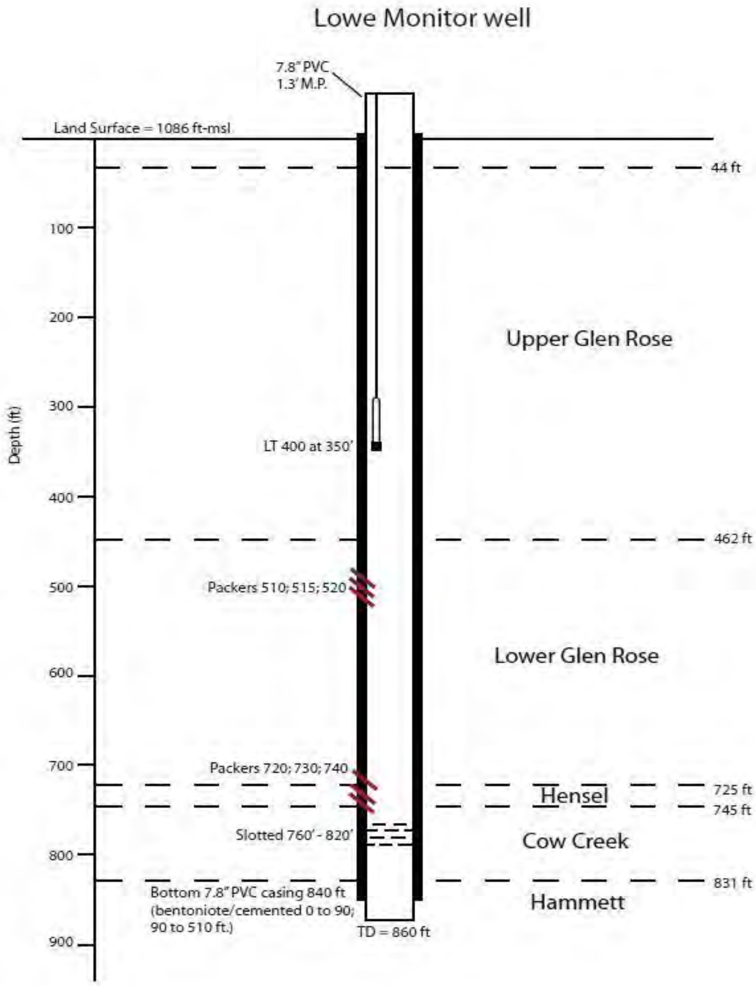
Well ID: Odell Test Well No. 1



Client: Electro Purification LLC	Location: Hays County, Texas	Drilled by: Whisenant & Lyle Water Services	Construction Date: 1/30/2015
Elevation: 1,063 ft. MSL	Total Depth: 845 ft.	Latitude: 30° 2' 36.64" N	Longitude: 98° 0' 0.01" W

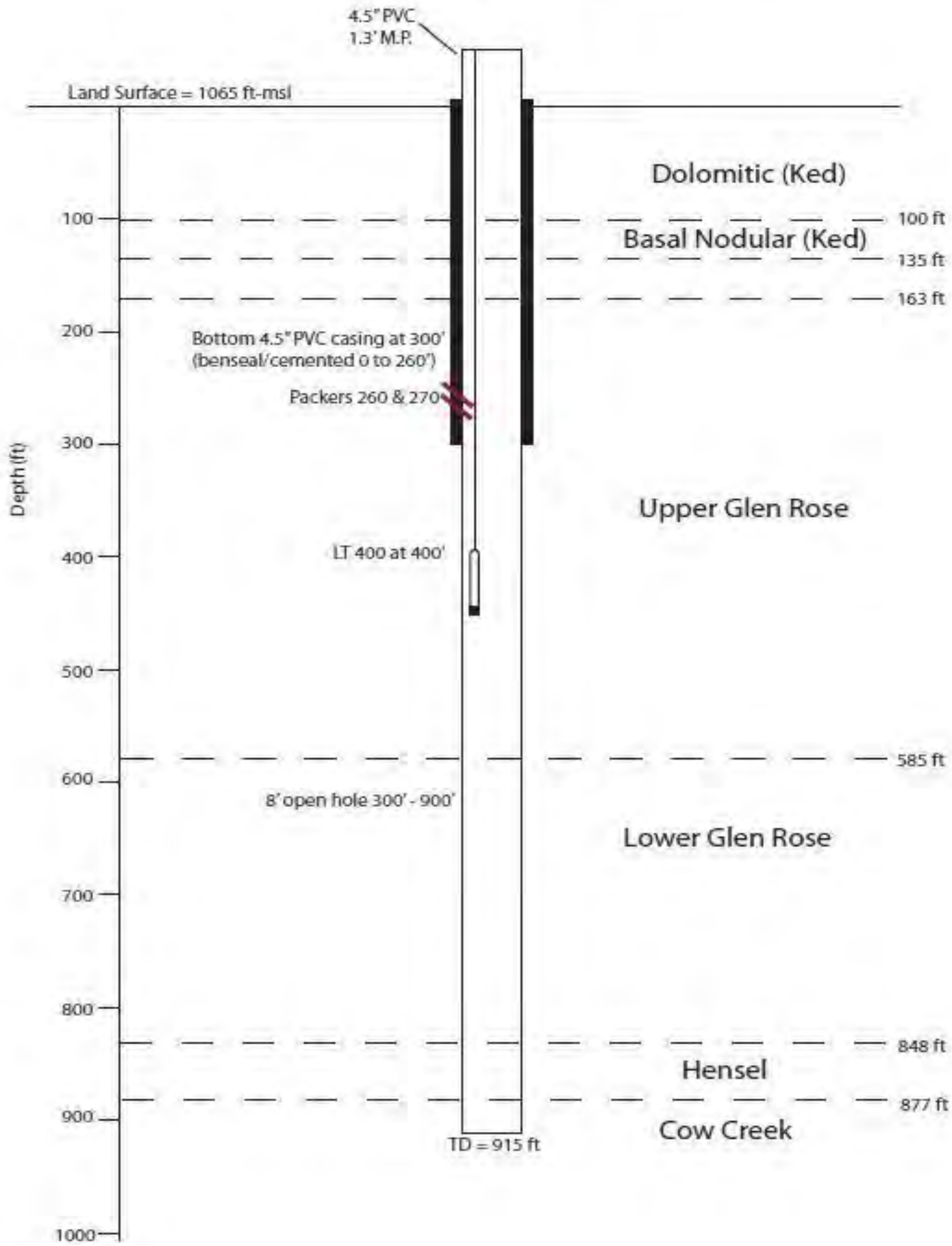
Well ID: Odell Test Well No. 3



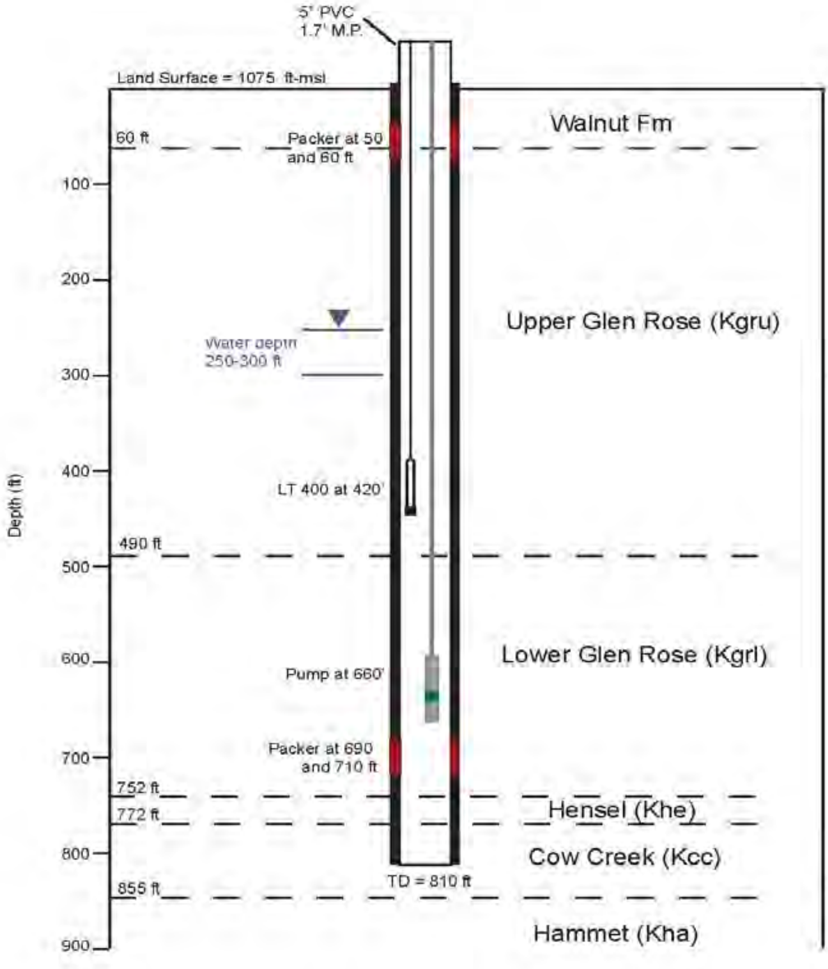


Pump Depth= 760'

Miller Monitor well

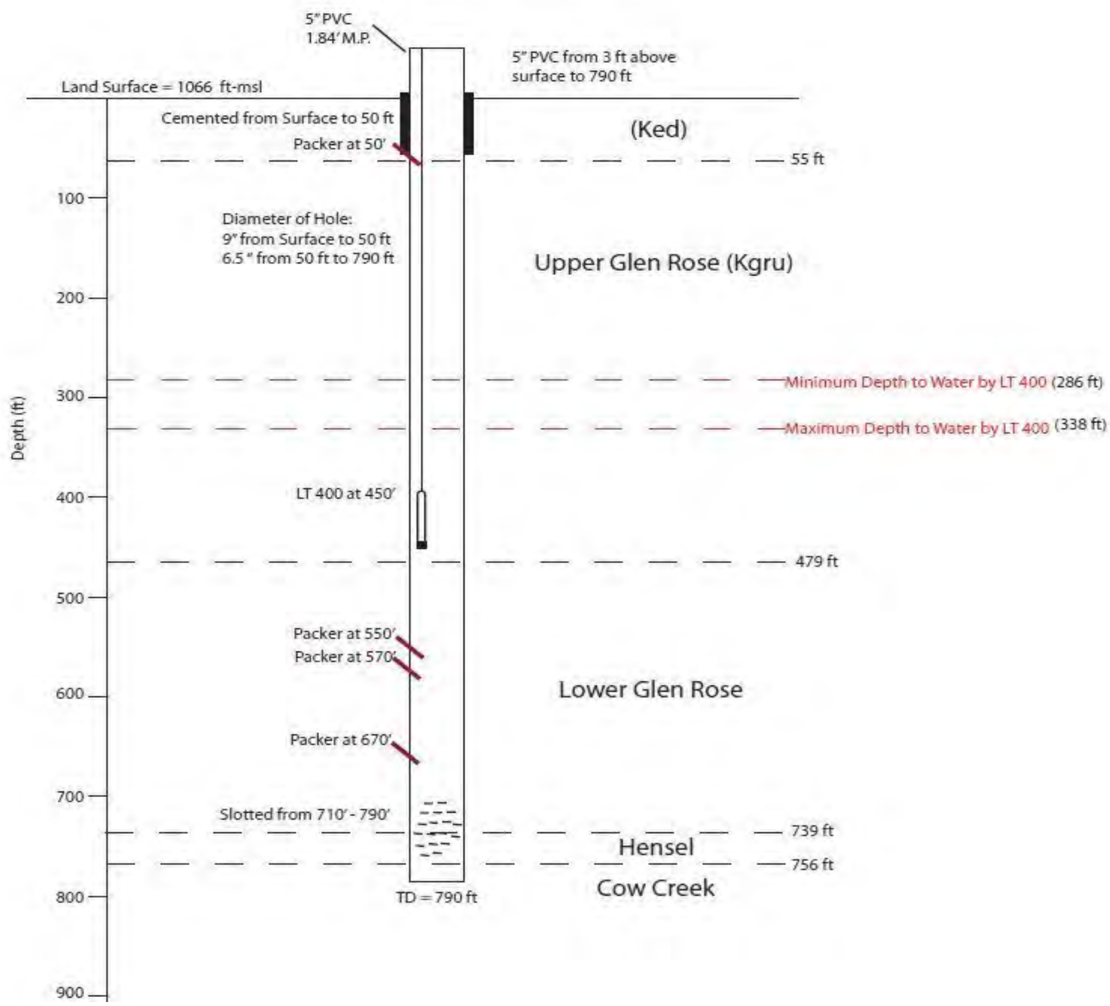


Ochoa Monitor well

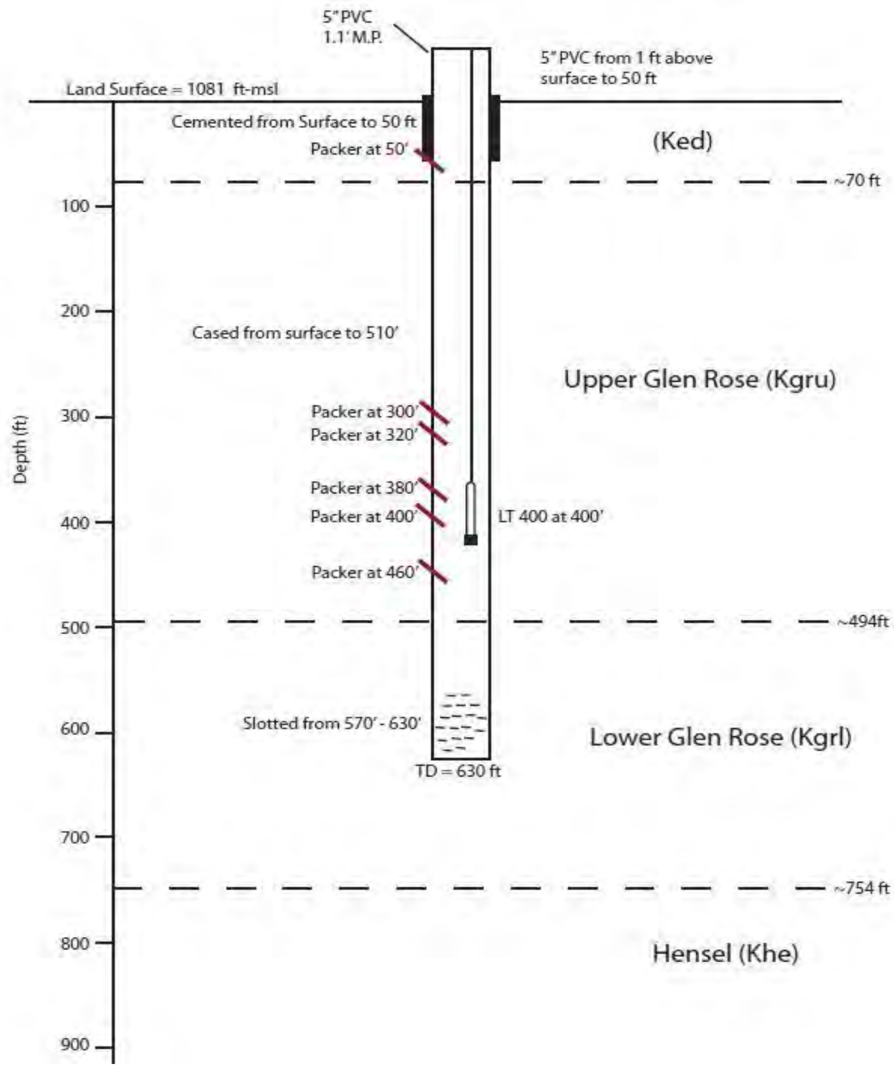


Construction Notes:
5" PVC from +1.7 to 810 ft;
Cemented from surface to 50 ft.
Assume slotted at Kcc.

Wood 01 Monitor well



Wood Deer Barn Monitor well



Appendix C

Well Reports

Bridges Well No. 1

STATE OF TEXAS WELL REPORT for Tracking #364899

Owner:	**Electro Purification**	Owner Well #:	**1**
Address:	**4605 Post Oak Place Dr Houston , TX 77027**	Grid #:	**57-64-6**
Well Location:	**FM 3237 Wimberley , TX 78676**	Latitude:	**30° 02' 51" N**
Well County:	**Hays**	Longitude:	**098° 01' 26" W**
Elevation:	**931 ft.**	GPS Brand Used:	**Garmin**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **12/10/2013** Completed: **12/20/2013**
Diameter of Hole:	Diameter: **14.75 in From Surface To 160 ft** Diameter: **9.87 in From 160 ft To 930 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Open Hole**
Annular Seal Data:	1st Interval: **From 0 ft to 160 ft with 95 (#sacks and material)** 2nd Interval: **No Data** 3rd Interval: **No Data** Method Used: **Pos. Disp.** Cemented By: **DDPS** Distance to Septic Field or other Concentrated Contamination: **150+ ft** Distance to Property Line: **150+ ft** Method of Verification: **Measured** Approved by Variance: **No Data**
Surface Completion:	**Alternative Procedure Used**
Water Level:	Static level: **325 ft. below land surface on 12/20/2013** Artesian flow: **No Data**
Packers:	**N/A**
Plugging Info:	Casing left in well: Cement/Bentonite left in well: From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used **N/A**
Type Of Pump:	**Other: N/A** Depth to pump bowl: **(No Data) ft**
Well Tests:	**Jetted** Yield: **350 GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Trinity** Depth of Strata: **745 ft.** Chemical Analysis Made: **Yes** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information:	**Davenport Drilling & Pump Service** **10293 FM 1560** **Helotes , TX 78023**
Driller License Number:	**50268**
Licensed Well Driller Signature:	**Rick Pfeiffer**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**Test Well #1-temp casing left in hole** **Amended Ref# 12807 2-18-15 ~DG**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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

Please include the report's Tracking number (Tracking **#364899**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-55 Brown LS W/Churt
55-460 Tan & Grey LS & Caliche W/Greenish streaks
460-710 Lt Grey LS W/off white shell @ 540 & pourous @ 680(water)

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10.75 New SDR 17 PVC 0-160

Bridges Well No. 2

STATE OF TEXAS WELL REPORT for Tracking #364900

Owner:	**Electro Purification**	Owner Well #:	**2**
Address:	**4605 Post Oak Place Dr Houston , TX 77027**	Grid #:	**57-64-6**
Well Location:	**FM 3237 Wimberley , TX 78676**	Latitude:	**30° 02' 45" N**
Well County:	**Hays**	Longitude:	**098° 00' 54" W**
Elevation:	**974 ft.**	GPS Brand Used:	**Garmin**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **1/6/2014** Completed: **1/15/2014**
Diameter of Hole:	Diameter: **14.75 in From Surface To 160 ft** Diameter: **9.87 in From 160 ft To 905 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Open Hole**
Annular Seal Data:	1st Interval: **From 0 ft to 160 ft with 110 (#sacks and material)** 2nd Interval: **No Data** 3rd Interval: **No Data** Method Used: **Pos. Disp.** Cemented By: **DDPS** Distance to Septic Field or other Concentrated Contamination: **150+ ft** Distance to Property Line: **150+ ft** Method of Verification: **Measured** Approved by Variance: **No Data**
Surface Completion:	**Alternative Procedure Used**
Water Level:	Static level: **290 ft. below land surface on 1/15/2014** Artesian flow: **No Data**
Packers:	**N/A**
Plugging Info:	Casing left in well: Cement/Bentonite left in well: From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used **N/A**
Type Of Pump:	**Other: N/A** Depth to pump bowl: **(No Data) ft**
Well Tests:	**Jetted** Yield: **350 GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Trinity** Depth of Strata: **790 ft.** Chemical Analysis Made: **Yes** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information:	**Davenport Drilling & Pump Service 10293 FM 1560 Helotes , TX 78023**
Driller License Number:	**50268**
Licensed Well Driller Signature:	**Rick Pfeiffer**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**Test Well #1-temp casing left in hole Amended Ref# 12807 2-18-15 ~DG**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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

Please include the report's Tracking number (Tracking **#364900**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-65 Brown LS
65-492 White & grey LS
492-745 Lt grey LS

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10.75 New SDR 17 PVC 0-160

Bridges Well No. 3

STATE OF TEXAS WELL REPORT for Tracking #353110

Owner:	**Electro Purification, LLC**	Owner Well #:	**1**
Address:	**4605 Post Oak Place Dr. Houston , TX 77027**	Grid #:	**57-64-9**
Well Location:	**FM 3237 Wimberley , TX 78676**	Latitude:	**30° 02' 27" N**
Well County:	**Hays**	Longitude:	**098° 00' 12" W**
Elevation:	**954 ft.**	GPS Brand Used:	**Magellan Explorist 100**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **12/18/2013** Completed: **1/4/2014**
Diameter of Hole:	Diameter: **14 in From Surface To 260 ft** Diameter: **8.5 in From 260 ft To 940 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Straight Wall**
Annular Seal Data:	1st Interval: **From 0 ft to 260 ft with 190TH/10hp/12bs (#sacks and material)** 2nd Interval: **No Data** 3rd Interval: **No Data** Method Used: **Pos. Displacement** Cemented By: **Whisenant & Lyle Water Services** Distance to Septic Field or other Concentrated Contamination: **N/A ft** Distance to Property Line: **500+ ft** Method of Verification: **Measured** Approved by Variance: **No Data**
Surface Completion:	**Surface Slab Installed**
Water Level:	Static level: **360 ft. below land surface on 12/23/2013** Artesian flow: **No Data**
Packers:	**6MIL Poly/Shale Packer 260'**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**Jetted** Yield: **50+ GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Good** Depth of Strata: **730/905 ft.** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	

Whisenant & Lyle Water Services
P.O. Box 525
Dripping Springs , TX 78620

Driller License Number:	**54813**
Licensed Well Driller Signature:	**Martin Lingle**
Registered Driller Apprentice Signature:	**Travis Haffelder**
Apprentice Registration Number:	**No Data**
Comments:	**TDS 675**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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

Please include the report's Tracking number (Tracking **#353110**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-.5 Topsoil
.5-10 White Limestone Hard
10-20 White Red Limestone Hard
20-35 White Limestone Red Clay
35-50 White Brown Limestone Fractured
50-70 White Limestone
70-110 Gray Limestone
110-140 Gray Limestone
140-180 Brown Limestone
180-210 Gray Limestone
210-500 Brown Gray Limestone
500-540 White Tan Limestone
540-620 Tan Gray Limestone
620-660 Brown White Limestone
660-825 Tan Gray Limestone
825-890 Tan Brown Limestone Cow Creek
890-905 Gray Limestone
905-940 Gray Clay

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10" New PVC-SDR 17IB +2'/260

Bridges Well No. 4

STATE OF TEXAS WELL REPORT for Tracking #388352

Owner:	**Electro Purification, LLC**	Owner Well #:	**Bridges TW#4**
Address:	**4605 Post Oak Place Dr** **Houston , TX 77027**	Grid #:	**57-64-9**
Well Location:	**7200 FM 3237** **Wimberley , TX 78676**	Latitude:	**30° 02' 26" N**
Well County:	**Hays**	Longitude:	**098° 00' 20" W**
Elevation:	**977 ft.**	GPS Brand Used:	**Magellan Explorist 100**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **1/27/2015** Completed: **2/14/2015**
Diameter of Hole:	Diameter: **9 7/8 in From Surface To 905 ft** Diameter: **14 3/4 in From 0 ft To 580 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Straight Wall**
Annular Seal Data:	1st Interval: **From 575 ft to 565 ft with 7 Type H (#sacks and material)** 2nd Interval: **From 10 ft to 0 ft with 4 benseal (#sacks and material)** 3rd Interval: **No Data** Method Used: **Pos Displacement** Cemented By: **Whisenant & Lyle Water Services** Distance to Septic Field or other Concentrated Contamination: **N/A ft** Distance to Property Line: **100+ ft** Method of Verification: **measured** Approved by Variance: **No Data**
Surface Completion:	**Alternative Procedure Used**
Water Level:	Static level: **350 ft. below land surface on 1/28/2015** Artesian flow: **No Data**
Packers:	**Shale packer 575'** **6Mil poly 580'**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**Jetted** Yield: **150 GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Good TDS 1000** Depth of Strata: **580-905 ft.** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	

	Whisenant & Lyle Water Services **PO Box 525** **Dripping Springs , TX 78620**
Driller License Number:	**54855**
Licensed Well Driller Signature:	**Brice Bormann**
Registered Driller Apprentice Signature:	**Tyler Loman**
Apprentice Registration Number:	**No Data**
Comments:	**Other driller** **Martin Lingle** **Apprentices** **Walker Dodson** **Justin Nance**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-1 rock
1-18 brown limestone
18-23 gray limestone
23-100 brown tan limestone 105 fractured
100-300 tan limestone
300-600 tan gray limestone
600-740 tan limestone
740-745 gray tan limestone clay
745-820 gray shale
820-830 gray clay
830-880 gray tan limestone
880-905 gray clay

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10" New PVC-SDR17IB +2 -580

Odell Well No. 1

STATE OF TEXAS WELL REPORT for Tracking #388355

Owner:	Electro Purification, LLC	Owner Well #:	Odell TW#1
Address:	4605 Post Oak Place Dr Houston, TX 77027	Grid #:	57-64-6
Well Location:	5801 Old Kyle Rd Wimberley, TX 78676	Latitude:	30° 02' 33" N
		Longitude:	098° 01' 21" W
Well County:	Hays	Elevation:	1063 ft. above sea level
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Start Date: **1/12/2015** Drilling End Date: **1/20/2015**

Borehole:

Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
14.75	0	565
9.875	0	903

Drilling Method: **Air Rotary**

Borehole Completion: **Straight Wall**

Annular Seal Data:

Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
0	10	2 benseal
553	565	7 Type H

Seal Method: **Pos Displacement**

Sealed By: **Driller**

Distance to Property Line (ft.): **100+**

Distance to Septic Field or other concentrated contamination (ft.): **N/A**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **measured**

Surface Completion: **Alternative Procedure Used**

Water Level: **330 ft.** below land surface on **2015-01-13** Measurement Method: **Unknown**

Packers: **Shale packer 560'**
6Mil poly 565'

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 75 GPM**

Plug Information:

Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
Cement	742	903

Water Quality:

Strata Depth (ft.)	Water Type
800-860	**Good TDS 300**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Whisenant & Lyle Water Services**

PO Box 525
Dripping Springs, TX 78620

Driller Name: **Brice Bormann** License Number: **54855**

Comments: **Other driller**
Martin Lingle

Apprentices
Walker Dodson
Justin Nance

Report Amended on 3/16/2017 by Request #20977

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	10	white limestone
10	17	brown limestone
17	80	gray limestone
80	85	brown limestone
85	280	gray limestone
280	885	gray tan limestone
885	900	shale gray limestone
900	903	shale

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
10"	New	PVC-SDR 17IB	0-565

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Odell Well No. 2

STATE OF TEXAS WELL REPORT for Tracking #388364

Owner:	**Electro Purificaton, LLC**	Owner Well #:	**Odell TW#2**
Address:	**4805 Post Oak Place Dr Houston , TX 77027**	Grid #:	**57-64-6**
Well Location:	**4885 Loneman Mt Rd Wimberley , TX 78676**	Latitude:	**30° 03' 03" N**
Well County:	**Hays**	Longitude:	**098° 01' 36" W**
Elevation:	**1056 ft.**	GPS Brand Used:	**Magellan Explorist 100**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **1/21/2015** Completed: **2/11/2015**
Diameter of Hole:	Diameter: **9 7/8 in From Surface To 850 ft** Diameter: **14 3/4 in From 0 ft To 540 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Straight Wall**
Annular Seal Data:	1st Interval: **From 535 ft to 525 ft with 7 Type H (#sacks and material)** 2nd Interval: **From 10 ft to 0 ft with 5 benseal (#sacks and material)** 3rd Interval: **No Data** Method Used: **Pos Displacement** Cemented By: **Whisenant & Lyle Water Services** Distance to Septic Field or other Concentrated Contamination: **N/A ft** Distance to Property Line: **100+ ft** Method of Verification: **measured** Approved by Variance: **No Data**
Surface Completion:	**Alternative Procedure Used**
Water Level:	Static level: **340 ft. below land surface on 1/25/2015** Artesian flow: **No Data**
Packers:	**Shale packer 535'** **6Mil poly 540'**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**Jetted** Yield: **150 GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Good TDS 220** Depth of Strata: **540-850 ft.** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	

	Whisenant & Lyle Water Services **PO Box 525** **Dripping Springs , TX 78620**
Driller License Number:	**54855**
Licensed Well Driller Signature:	**Brice Bormann**
Registered Driller Apprentice Signature:	**Tyler Loman**
Apprentice Registration Number:	**No Data**
Comments:	**Other driller** **Martin Lingle** **Apprentices** **Justin Nance** **Walker Dodson**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking **#388364**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-2 topsoil
2-18 brown tan limestone
18-65 brown gray limestone clay
65-100 brown gray limestone
100-130 gray limestone
130-200 brown limestone
200-220 gray limestone
220-800 gray tan limestone
800-850 dark gray limestone clay

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10" New PVC-SDR 17IB +2-540

Odell Well No. 3

STATE OF TEXAS WELL REPORT for Tracking #388365

Owner:	**Electro Purification, LLC**	Owner Well #:	**Odell TW#3**
Address:	**4605 Post Oak Place Dr Houston , TX 77027**	Grid #:	**57-64-9**
Well Location:	**8452 Old Kyle Rd Wimberley , TX 78676**	Latitude:	**30° 02' 22" N**
Well County:	**Hays**	Longitude:	**098° 02' 00" W**
Elevation:	**1086 ft.**	GPS Brand Used:	**Magellan Explorist 100**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Date:	Started: **1/10/2015** Completed: **1/30/2015**
Diameter of Hole:	Diameter: **9 7/8 in From Surface To 845 ft** Diameter: **14 3/4 in From 0 ft To 520 ft**
Drilling Method:	**Air Rotary**
Borehole Completion:	**Straight Wall**
Annular Seal Data:	1st Interval: **From 830 ft to 840 ft with 7 Type H (#sacks and material)** 2nd Interval: **From 2 ft to 10 ft with 3 benseal (#sacks and material)** 3rd Interval: **No Data** Method Used: **Pos Displacement** Cemented By: **Whisenant & Lyle Water Services** Distance to Septic Field or other Concentrated Contamination: **N/A ft** Distance to Property Line: **100+ ft** Method of Verification: **measured** Approved by Variance: **No Data**
Surface Completion:	**Alternative Procedure Used**
Water Level:	Static level: **330 ft. below land surface on 1/8/2015** Artesian flow: **No Data**
Packers:	**Shale packer 515'** **6Mil poly 520'**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**Jetted** Yield: **150 GPM with (No Data) ft drawdown after (No Data) hours**
Water Quality:	Type of Water: **Good TDS 300** Depth of Strata: **660-680 755-800 ft.** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**
Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	

	Whisenant & Lyle Water Services **PO Box 525** **Dripping Springs , TX 78620**
Driller License Number:	**54855**
Licensed Well Driller Signature:	**Brice Bormann**
Registered Driller Apprentice Signature:	**Tyler Loman**
Apprentice Registration Number:	**No Data**
Comments:	**Other driller** **Martin Lingle** **Apprentices** **Walker Dodson** **Justin Nance**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking number (Tracking **#388365**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-2 topsoil
2-45 brown limestone clay
45-140 tan limestone
140-180 gray shale limestone
180-640 gray tan limestone
640-720 tan limestone
720-830 tan dark gray limestone
830-845 clay

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
10" New PVC-SDR 17IB 0-520

Appendix D

Flow Meter Calibration Certificate & Water Use Log

FMS FLUID METER SERVICE, CORP.

SALES • REPAIR • TESTING • CALIBRATION
METERS • CONTROL VALVES • BACKFLOW PREVENTERS

FMS (800) 944-4472
(512) 258-3594 Tel.
(512) 258-4386 Fax

Gary Faber - C.E.O.
512-426-4035 Mobile
Email fluidmeter1@aol.com

P.O. Box 340215
Austin, TX 78734-0215

7304 McNeil Dr., #604
Austin, TX 78729

TO: Hydro Resources

DATE: 10-21-2016

SIZE: 6" MAKE: Badger TYPE: TSM

METER# 0656 7625

BEFORE: 006722 x1000

METER LOCATION

P.O.#_____ W.O.#_____ FMS ORDER #_____

QUANTITY	DESCRIPTION	PRICE
1	Meter test	

CERTIFICATE OF CALIBRATION

This is to certify that the physical standards described below were on this day compared to the standards of the state of Texas which are directly traceable to standards of the National Bureau of Standards [NBS Test-No.'s 39569,40093,179355,225713] A.W.W.A Test.

DETAILS OF TEST

LINE NO.	CU.FT. GALS.	RATE OF FLOW G.P.M.	TOTAL CU.FT. GALS.	% OF ACCURACY	CORRECTED % OF ACCURACY
1	200	30	200	100.0%	
2	500	100	498	99.6%	
3	1000	400	1002.0	100.2%	

SIGNATURE: [signature]

Water Use Log

Bridges Well No. 2

Frac Tank Fill

10/19/2016: meter: 1601886 start

10/20/2016: meter: 1698724 stop

96,838 gallons subtotal

Pump Check

10/22/2016: meter: 33481680 start

10/22/2016: meter: 33487940 stop

6,260 gallons subtotal

10/23/2016: meter: 33487940 start

10/23/2016: meter: 33495570 stop

7,630 gallons subtotal

Aquifer Testing

10/24/2016: meter 12:25: 6726750 gallons start

10/24/2016: meter 16:05: 6810540 gallons stop

83,790 gallons subtotal

10/31/2016: meter: 6811650 gallons start

11/1/2016: meter: 7150365 gallons stop

338,715 gallons subtotal

11/2/2016: meter: 7150365 gallons start

11/7/2016: meter: 9491100 gallons stop

2,340,735 gallons subtotal

1/13/2017: meter: 20643740 gallons start

1/13/2017: meter: 20677690 gallons stop

33,950 gallons subtotal

TOTAL: 2,907,918 gallons pumped

<u>**Bridges Well No. 1**</u>

Frac tank fill

11/15/2016: meter 1698724 gallons start

11/16/2016: meter 1768479 gallons stop

69,755 gallons subtotal

Pump Check

11/19/2016: meter 08:45: 9485830 gallons start

11/19/2016: meter 09:45: 9493280 gallons stop

7,450 gallons subtotal

Aquifer Testing

11/22/2016: meter: 9493280 gallons start

11/24/2016: meter: 11835940 gallons stop

2,342,660 gallons subtotal

11/25/2016: meter: 11835940 gallons start

11/30/2016: meter: 16533780 gallons stop

4,697,840 gallons subtotal

<u>**TOTAL: 7,117,705 gallons pumped**</u>

Odell Well No. 2

Frac Tank Fill

12/15/2016: meter: 1768479 gallons start

12/16/2016: meter: 1857793 gallons stop

89,314 gallons subtotal

Pump Check

12/28/2016: meter: 16533780 gallons start

12/28/2016: meter: 16535050 gallons stop

1,270 gallons subtotal

Aquifer Testing

12/29/2016: meter: 16535050 gallons start

1/3/2017: meter: 20643740 gallons stop

4,108,690 gallons subtotal

TOTAL: 4,199,274 gallons pumped

Appendix E

Aquifer Test Analyses

Wet Rock Groundwater Services, LLC
Groundwater Specialists
317 Ranch Road 620 South, Suite 203
Austin, Texas 78734
Ph: 512.773.3226
www.wetrockgs.com

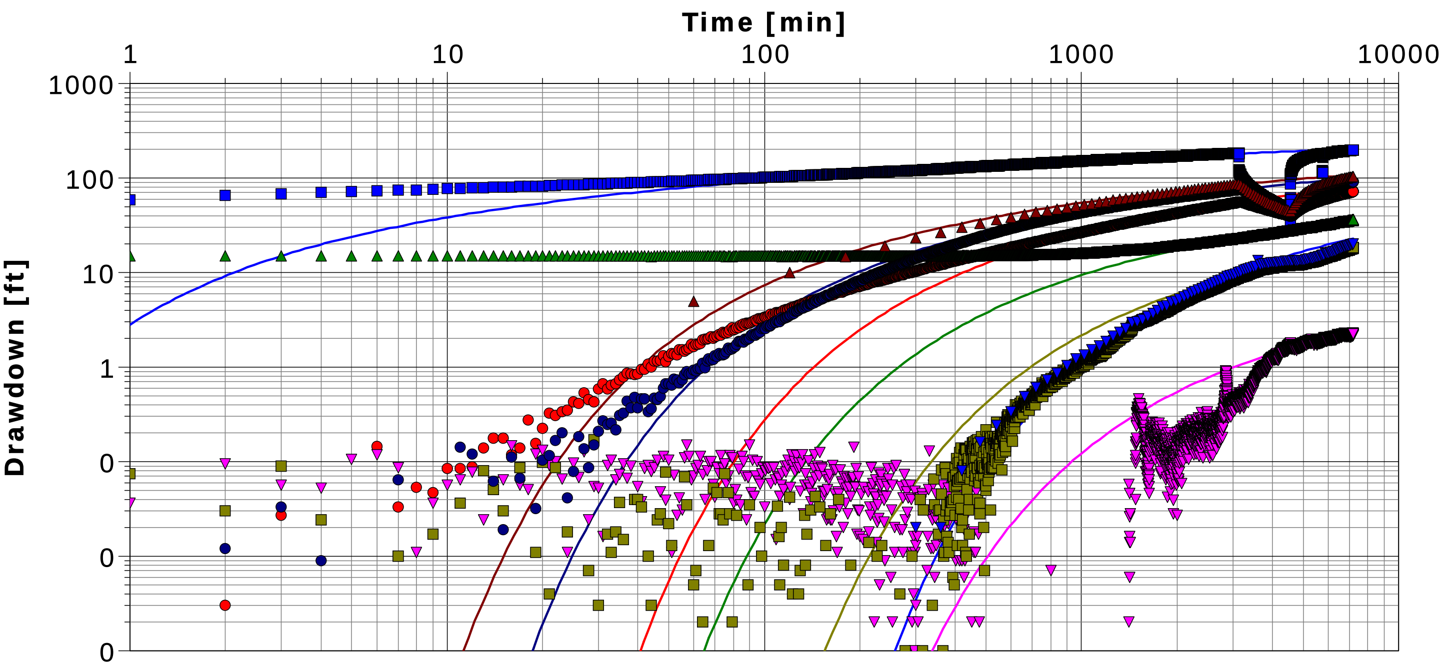
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Bridges Well No. 1	Pumping Well: Bridges No. 1
Test Conducted by: AW		Test Date: 11/22/2016
Analysis Performed by: BWB	Theis	Analysis Date: 1/27/2017
Aquifer Thickness: 82.00 ft	Discharge Rate: 652 [U.S. gal/min]	



Calculation using Theis

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	3.92×10^{2}	4.78×10^{0}			
Bridges No. 2	3.20×10^{2}	3.90×10^{0}	3.70×10^{-5}	2821.65	
Bridges No. 4	6.09×10^{2}	7.43×10^{0}	3.75×10^{-5}	4692.21	
Bridges No. 3	4.04×10^{3}	4.93×10^{1}	6.60×10^{-4}	5823.05	
Odell No. 2	8.10×10^{2}	9.88×10^{0}	2.40×10^{-4}	3261.7	
Odell No. 3	3.30×10^{2}	4.02×10^{0}	1.23×10^{-5}	3349.2	
Wood #1	3.50×10^{2}	4.27×10^{0}	5.36×10^{-6}	4060.19	
Lowe	4.10×10^{2}	5.00×10^{0}	2.61×10^{-4}	2986.26	
Average	9.08×10^{2}	1.11×10^{1}	1.79×10^{-4}		

Wet Rock Groundwater Services, LLC
Groundwater Specialists
317 Ranch Road 620 South, Suite 203
Austin, Texas 78734
Ph: 512.773.3226
www.wetrockgs.com

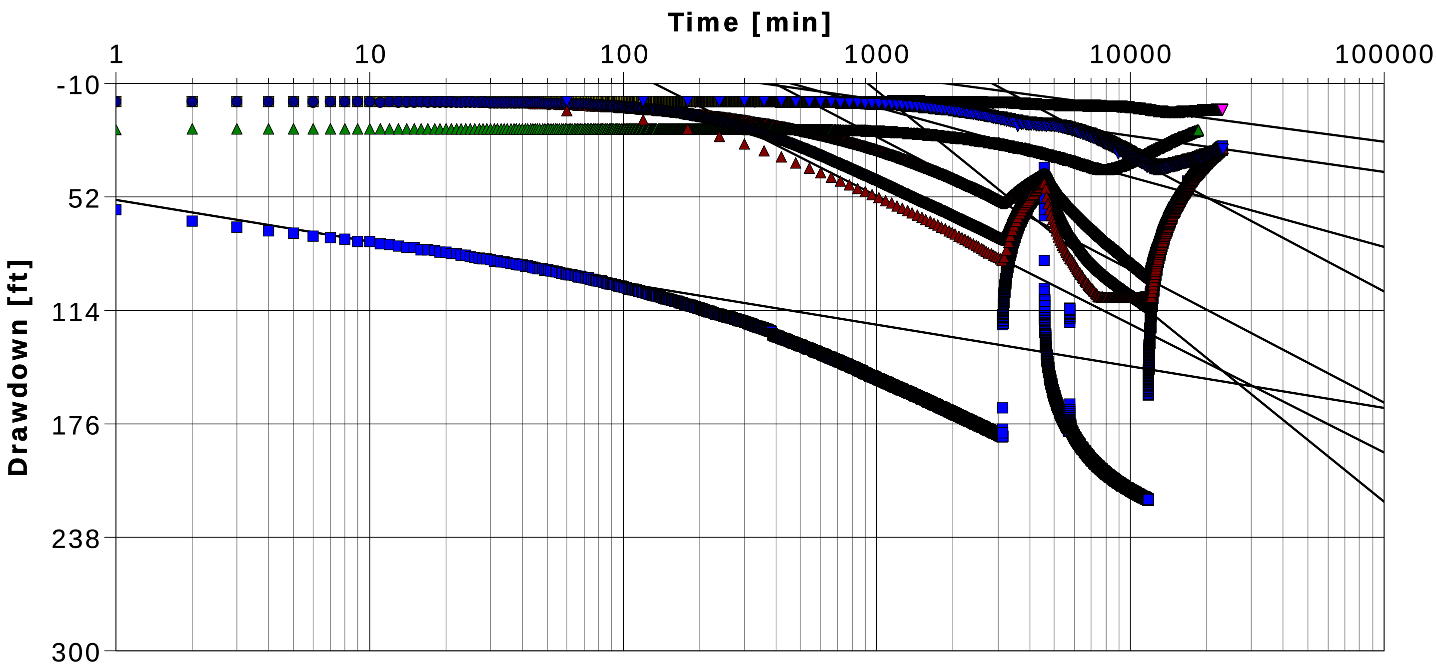
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Bridges Well No. 1	Pumping Well: Bridges No. 1
Test Conducted by: AW		Test Date: 11/22/2016
Analysis Performed by: BWB	Cooper-Jacob	Analysis Date: 1/27/2017
Aquifer Thickness: 82.00 ft	Discharge Rate: 652 [U.S. gal/min]	



Calculation using COOPER & JACOB

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	1.01×10^{3}	1.23×10^{1}			
Bridges No. 2	3.17×10^{2}	3.86×10^{0}	3.37×10^{-5}	2821.65	
Bridges No. 4	6.01×10^{2}	7.32×10^{0}	3.57×10^{-5}	4692.21	
Bridges No. 3	1.25×10^{3}	1.52×10^{1}	3.84×10^{-4}	5823.05	
Odell No. 2	1.16×10^{3}	1.42×10^{1}	1.99×10^{-4}	3261.7	
Odell No. 3	2.05×10^{2}	2.50×10^{0}	3.23×10^{-5}	3349.2	
Wood #1	3.28×10^{2}	4.00×10^{0}	5.74×10^{-6}	4060.19	
Lowe	3.12×10^{2}	3.81×10^{0}	2.12×10^{-4}	2986.26	
Average	6.48×10^{2}	7.90×10^{0}	1.29×10^{-4}		

Wet Rock Groundwater Services, LLC
Groundwater Specialists
317 Ranch Road 620 South, Suite 203
Austin, Texas 78734
Ph: 512.773.3226
www.wetrockgs.com

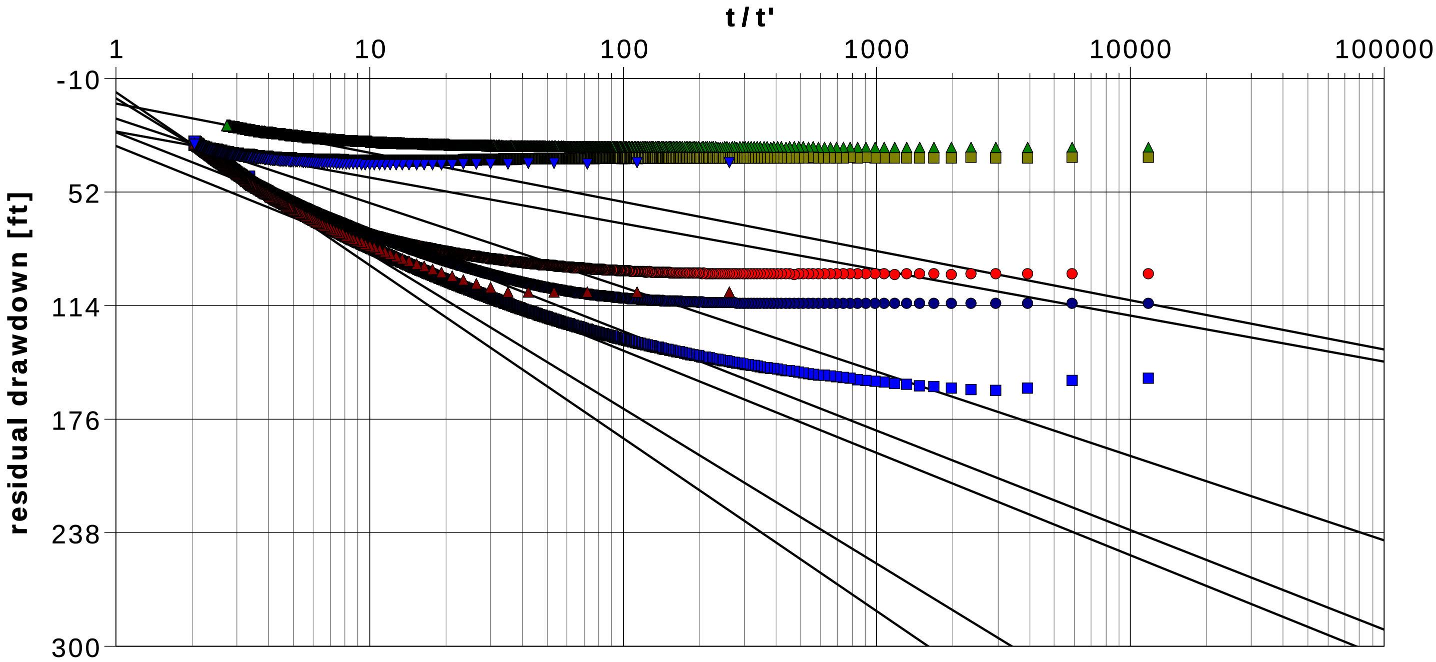
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Bridges Well No. 1	Pumping Well: Bridges No. 1
Test Conducted by: AW		Test Date: 11/22/2016
Analysis Performed by: BWB	Theis Recovery	Analysis Date: 1/27/2017
Aquifer Thickness: 82.00 ft	Discharge Rate: 652 [U.S. gal/min]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Radial Distance to PW [ft]	
Bridges No. 1	4.11×10^{2}	5.01×10^{0}		
Bridges No. 2	2.71×10^{2}	3.30×10^{0}	2821.65	
Bridges No. 4	8.55×10^{2}	1.04×10^{1}	4692.21	
Odell No. 2	9.12×10^{2}	1.11×10^{1}	3261.7	
Odell No. 3	4.23×10^{2}	5.16×10^{0}	3349.2	
Wood #1	2.43×10^{2}	2.96×10^{0}	4060.19	
Lowe	4.99×10^{2}	6.09×10^{0}	2986.26	
Average	5.16×10^{2}	6.30×10^{0}		

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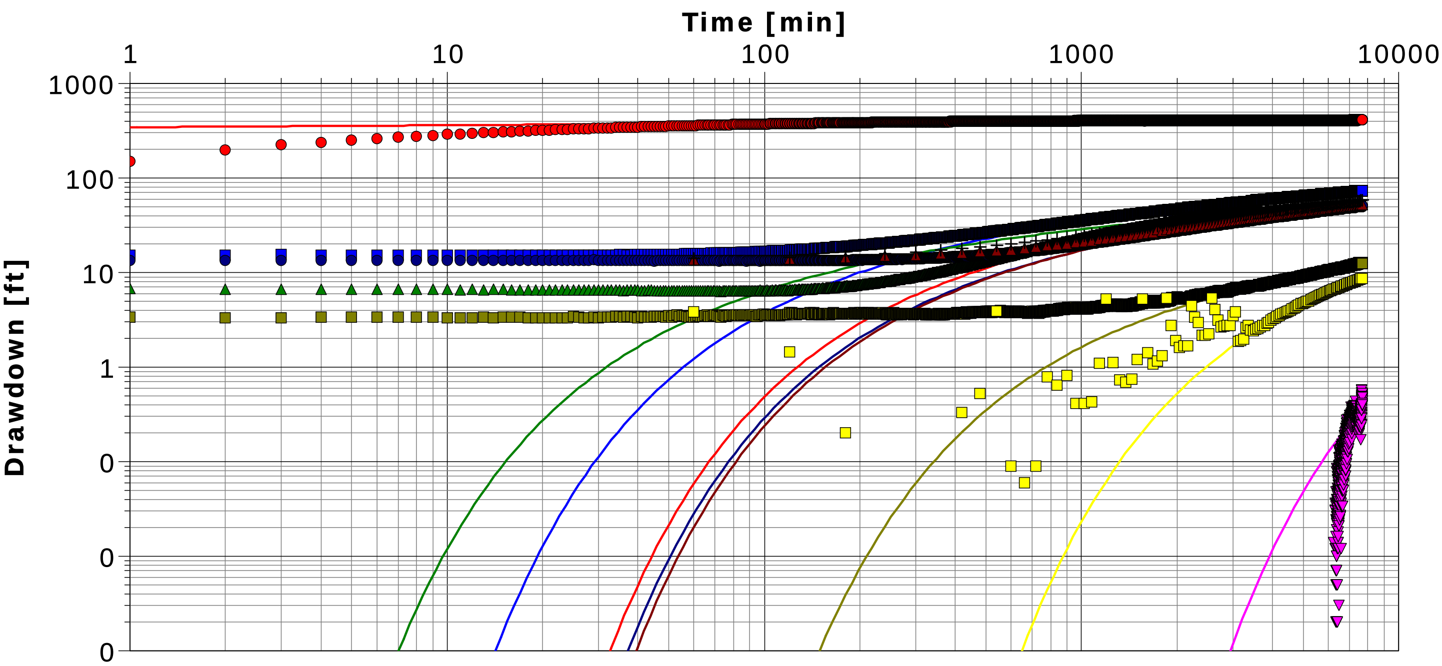
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Bridges Well No. 2	Pumping Well: Bridges No. 2
Test Conducted by: AW		Test Date: 11/22/2016
Analysis Performed by: BWB	Theis	Analysis Date: 1/27/2017
Aquifer Thickness: 79.00 ft	Discharge Rate: 305 [U.S. gal/min]	



Calculation using Theis

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	2.35×10^{2}	2.97×10^{0}	9.02×10^{-6}	2821.65	
Bridges No. 2	6.00×10^{2}	7.59×10^{0}			
Bridges No. 4	4.00×10^{2}	5.06×10^{0}	1.60×10^{-5}	1882.11	
Bridges No. 3	1.29×10^{2}	1.63×10^{0}	9.56×10^{-4}	3025.9	
Odell No. 2	6.00×10^{2}	7.59×10^{0}	4.70×10^{-5}	6046.74	
Odell No. 3	2.58×10^{2}	3.27×10^{0}	5.98×10^{-6}	5839.45	
Ochoa	2.45×10^{2}	3.10×10^{0}	1.35×10^{-5}	3913.63	
Wood #1	2.31×10^{2}	2.92×10^{0}	4.30×10^{-6}	6146.57	
Lowe	2.10×10^{2}	2.66×10^{0}	1.08×10^{-4}	5242.05	
Average	3.23×10^{2}	4.09×10^{0}	1.45×10^{-4}		

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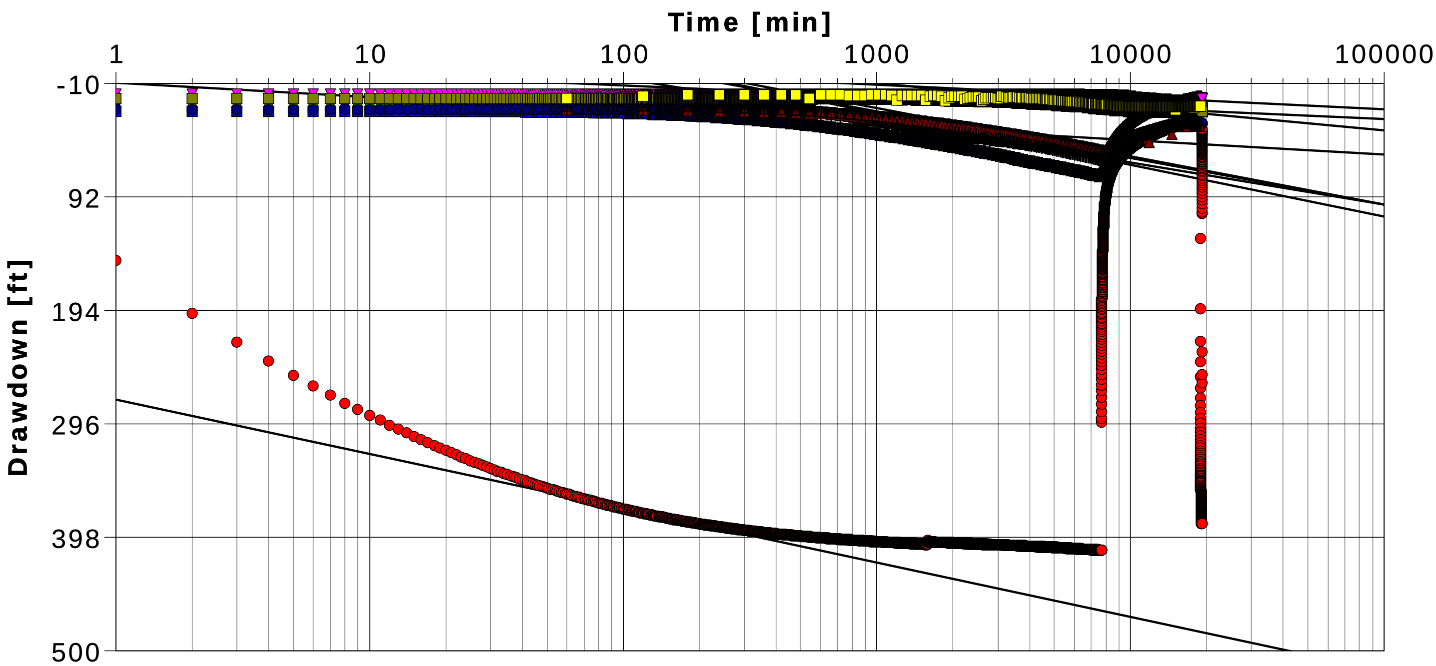
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

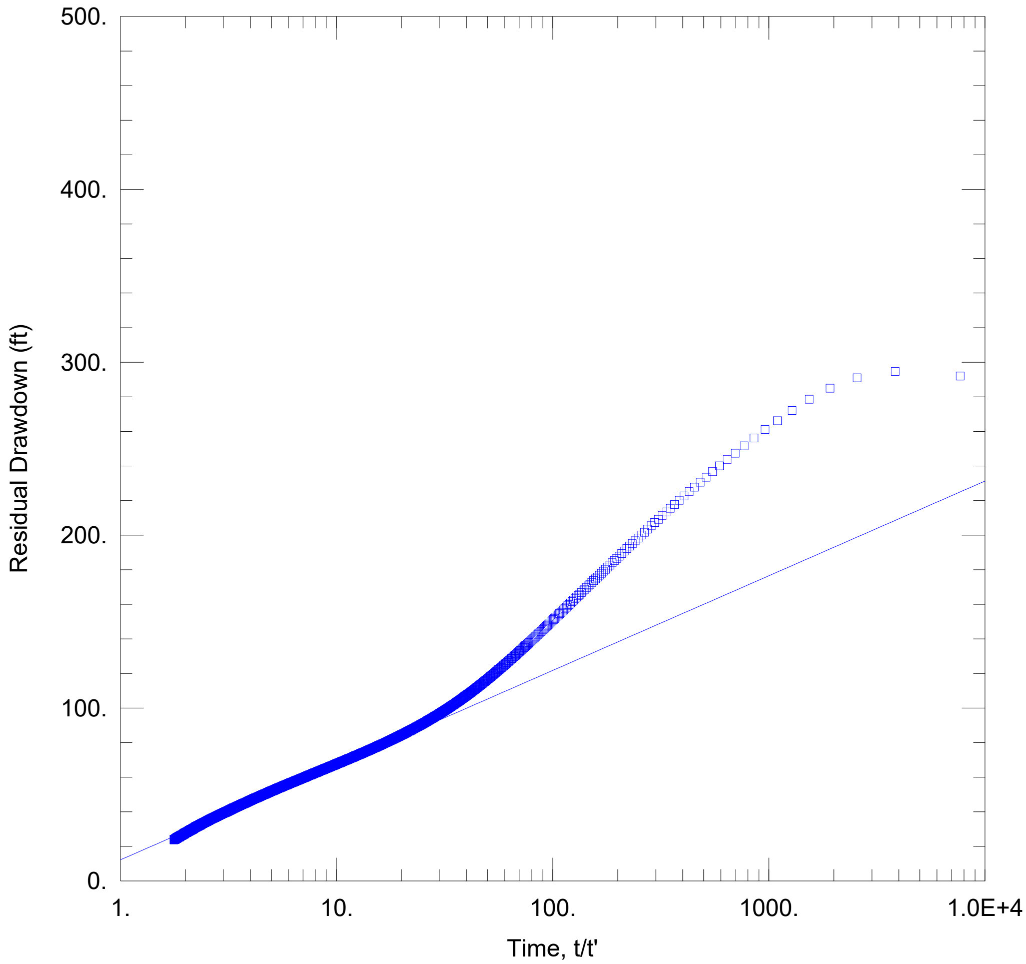
Client: Electro Purification

Location: Hays County, TX	Pumping Test: Bridges Well No. 2	Pumping Well: Bridges No. 2
Test Conducted by: AW		Test Date: 11/22/2016
Analysis Performed by: BWB	Cooper-Jacob	Analysis Date: 1/27/2017
Aquifer Thickness: 79.00 ft	Discharge Rate: 305 [U.S. gal/min]	



Calculation using COOPER & JACOB

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	8.32×10^{2}	1.05×10^{1}	1.06×10^{-6}	2821.65	
Bridges No. 2	2.20×10^{2}	2.78×10^{0}			
Bridges No. 4	2.84×10^{2}	3.60×10^{0}	3.07×10^{-5}	1882.11	
Bridges No. 3	9.81×10^{2}	1.24×10^{1}	1.11×10^{-3}	3025.9	
Odell No. 2	1.06×10^{3}	1.34×10^{1}	2.85×10^{-5}	6046.74	
Odell No. 3	2.47×10^{2}	3.13×10^{0}	5.99×10^{-6}	5839.45	
Ochoa	2.56×10^{2}	3.25×10^{0}	1.14×10^{-5}	3913.63	
Wood #1	2.31×10^{2}	2.92×10^{0}	4.17×10^{-6}	6146.57	
Lowe	5.05×10^{2}	6.39×10^{0}	8.60×10^{-5}	5242.05	
Average	5.13×10^{2}	6.50×10^{0}	1.60×10^{-4}		



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:17:08

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
Bridges Well No. 2	3030061.42	9988092.816

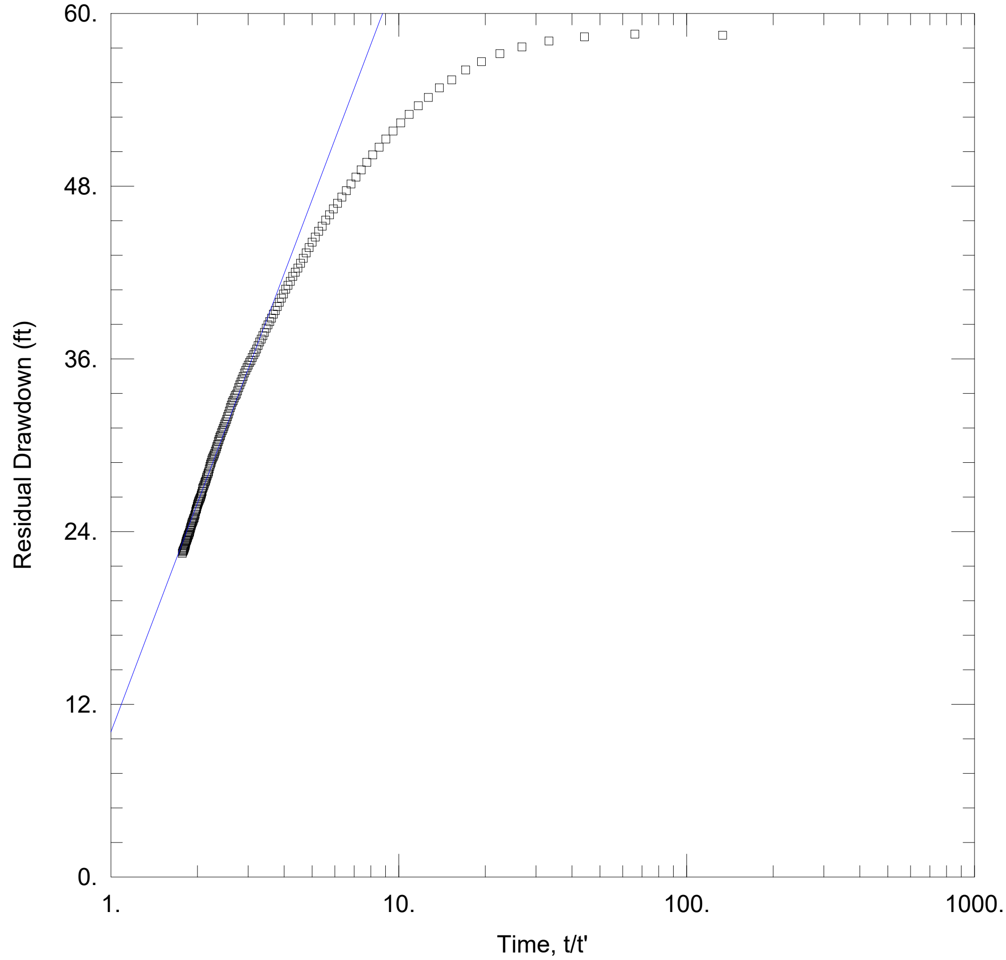
Observation Wells

Well Name	X (ft)	Y (ft)
□ Bridges Well No. 2	3030061.42	9988092.816

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 196.5 ft^2/day S/S' = 0.5991



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Wood No 1 PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:43:32

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

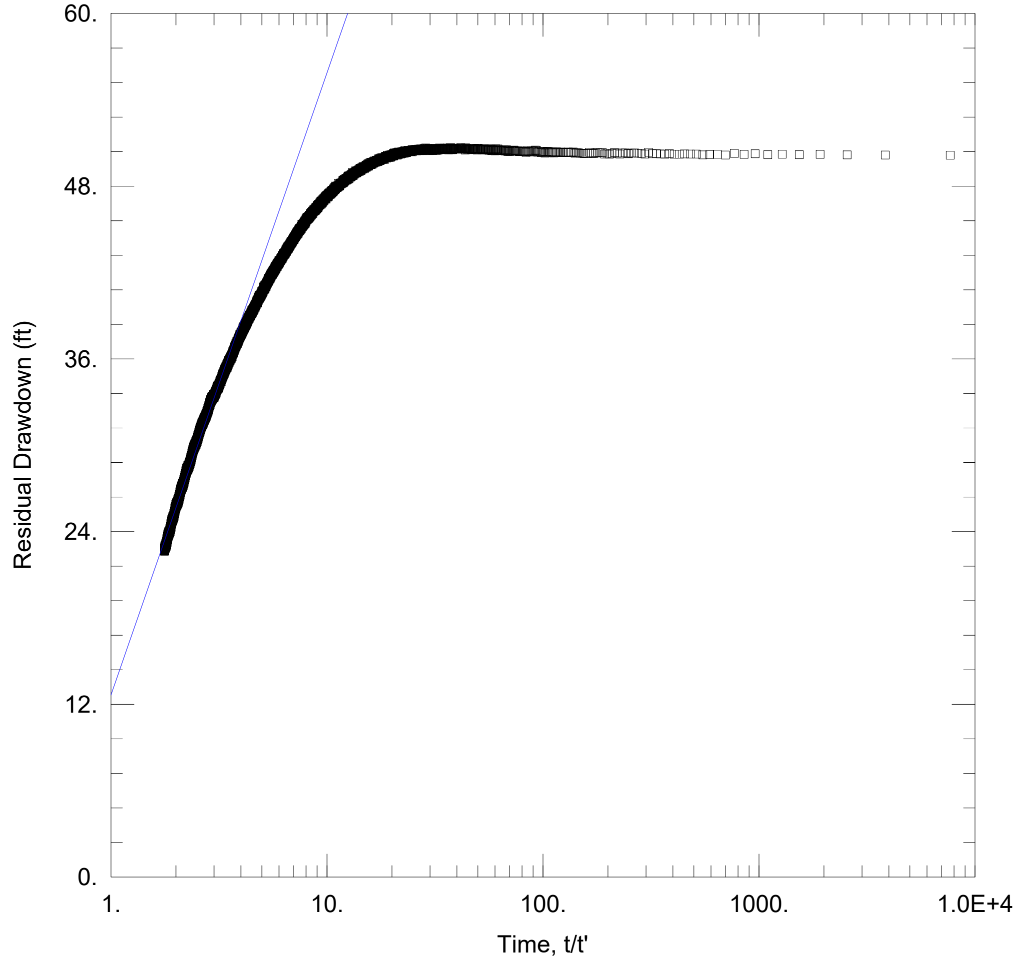
Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Wood No. 1	3024363.68	9985787.149

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 203.4 ft^2/day S/S' = 0.6451



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Odell 3 PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:35:22

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

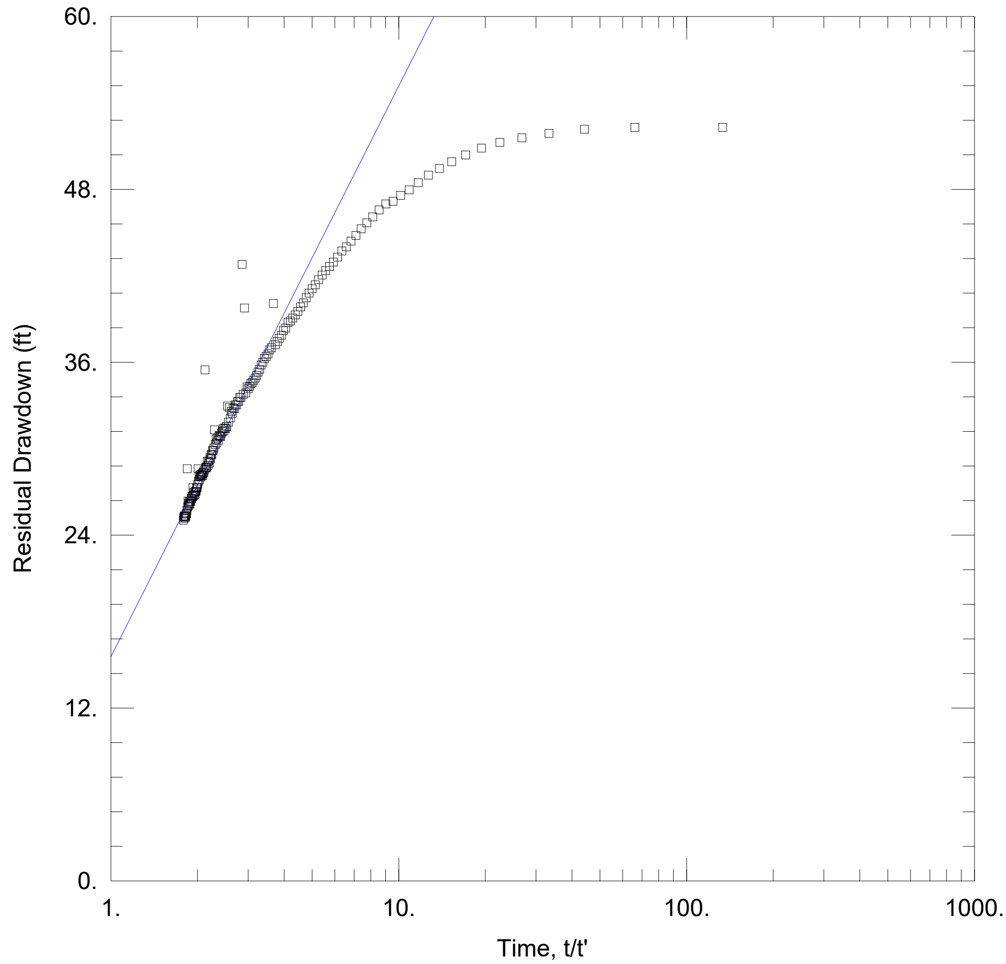
Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Odell Well No. 3	3024313.409	9987063.466

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 249. ft^2/day S/S' = 0.5099



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Ochoa PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:32:52

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

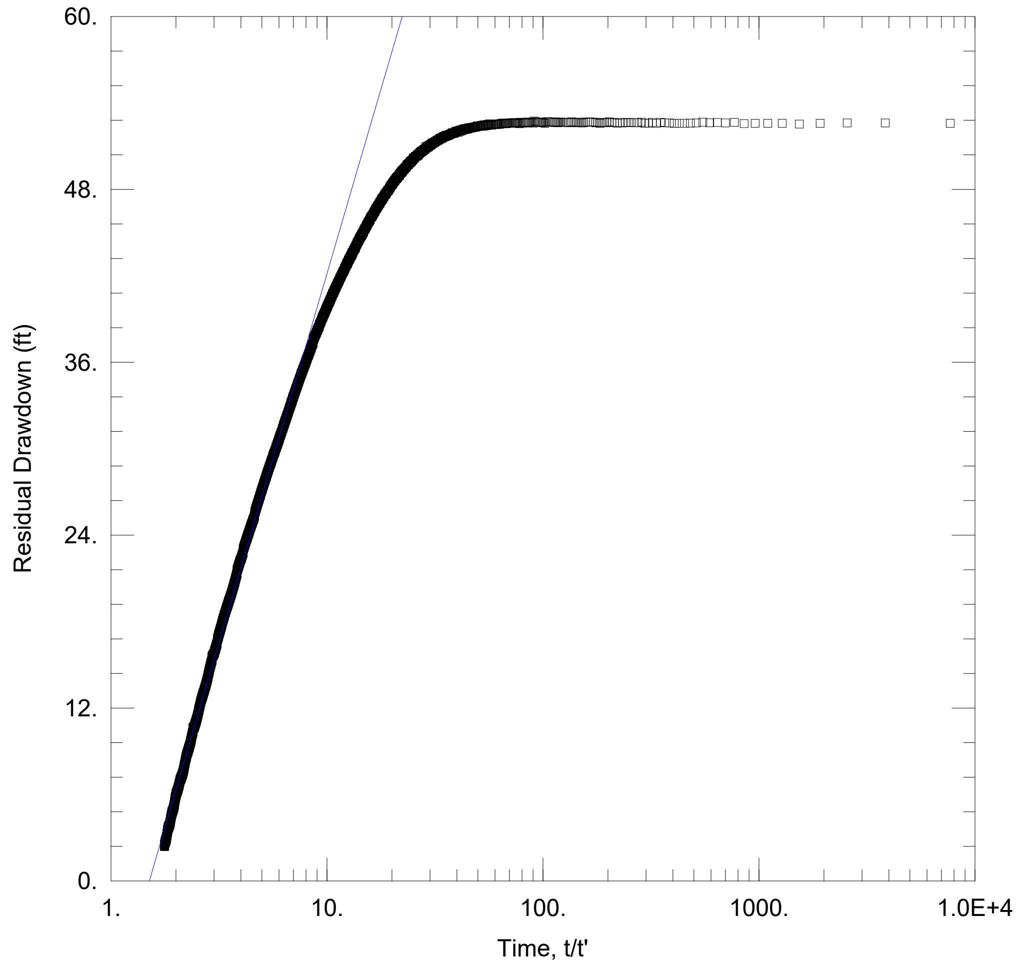
Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Ochoa	3026380.826	9989423.115

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 271.7 ft^2/day S/S' = 0.4048



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Bridges 4 PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:31:36

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

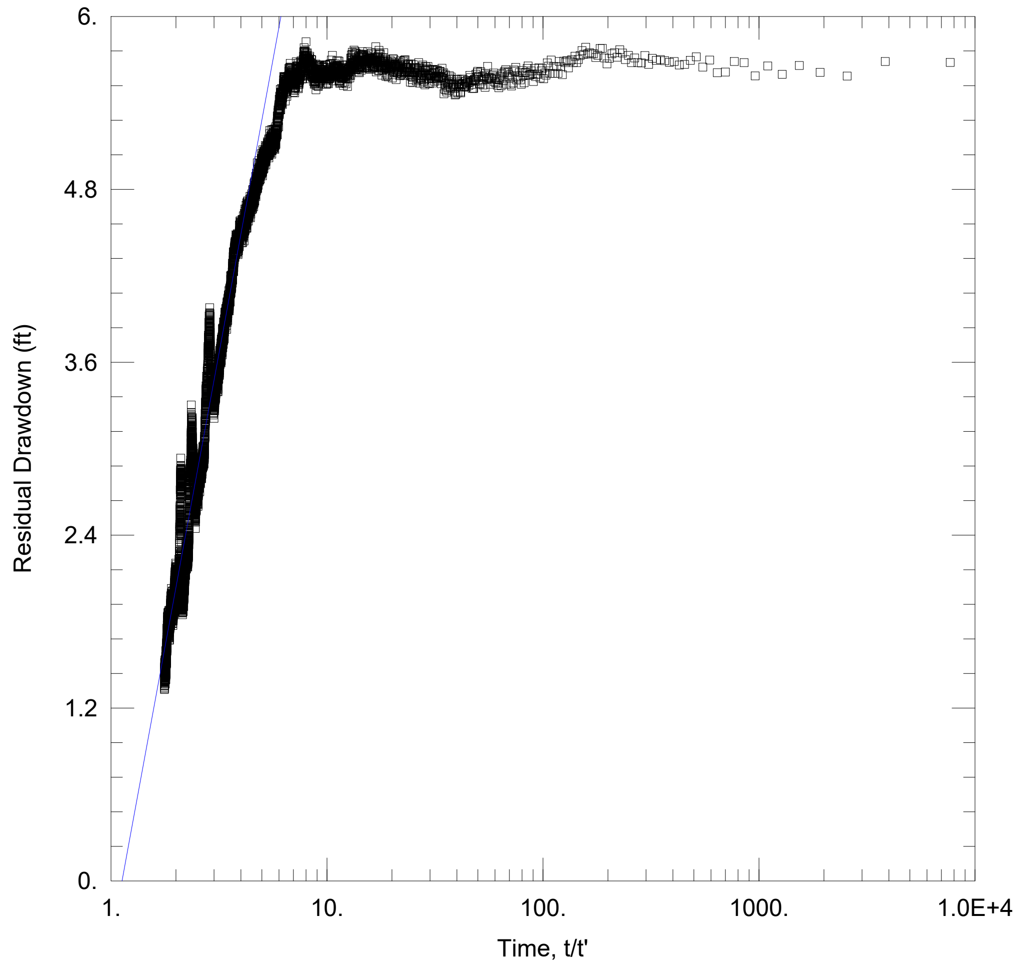
Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Bridges Well No. 4	3031942.06	9988018.475

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 210. ft^2/day S/S' = 1.506



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Bridges 3 PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:20:05

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

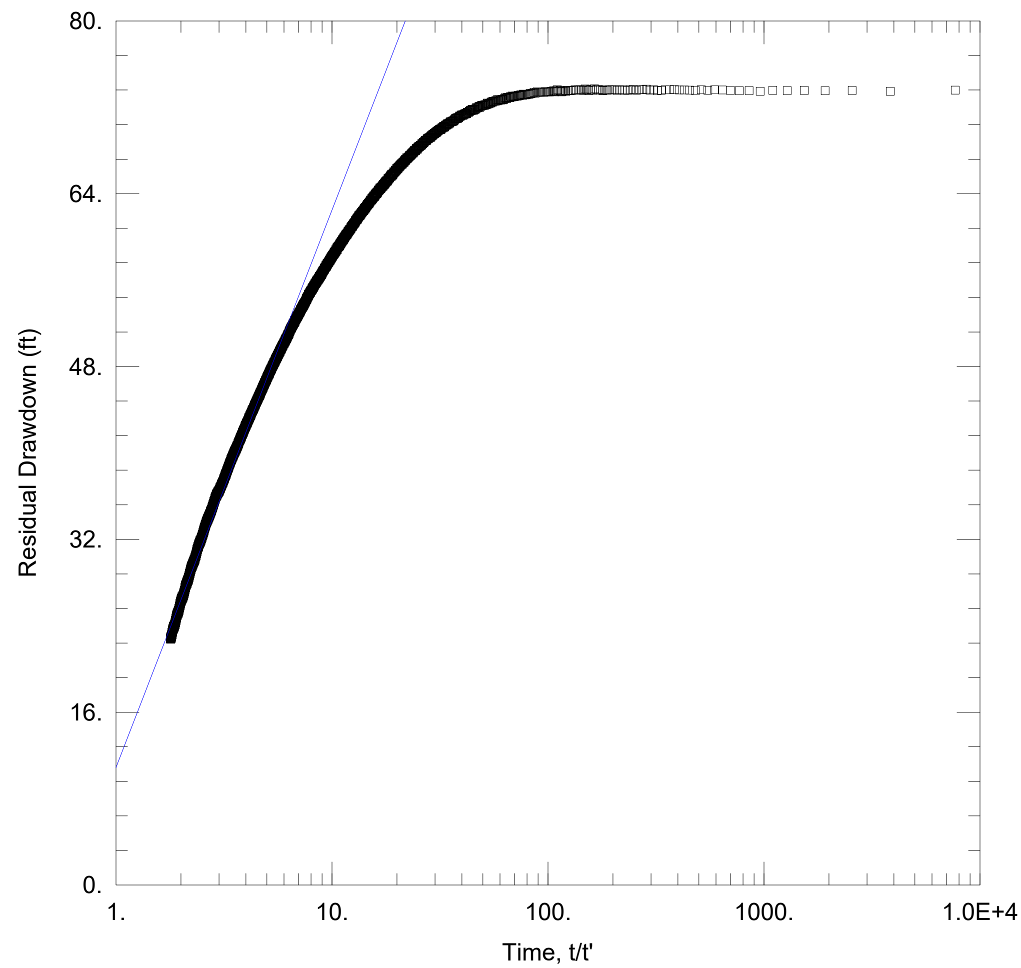
Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Bridges Well No. 3	3033087.321	9988094.825

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

T = 1319.7 ft^2/day
S/S' = 1.125



AQUIFER TEST - BRIDGES WELL NO. 2

Data Set: \...\OW Bridges 1 PW - Bridges Well No 2 - Theis Recovery.aqt
Date: 06/07/17 Time: 14:18:46

PROJECT INFORMATION

Company: Wet Rock Groundwater Services
Client: Electro Purification
Project: 100-001-16
Location: Hays, County
Test Well: Bridges Well No. 2
Test Date: 11/22/2016

AQUIFER DATA

Saturated Thickness: 79. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW Bridges Well No. 2	3030061.42	9988092.816

Observation Wells

Well Name	X (ft)	Y (ft)
□ OW Bridges Well No. 1	3027286.673	9988605.17

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

T = 208.5 ft^2/day
S/S' = 0.6161

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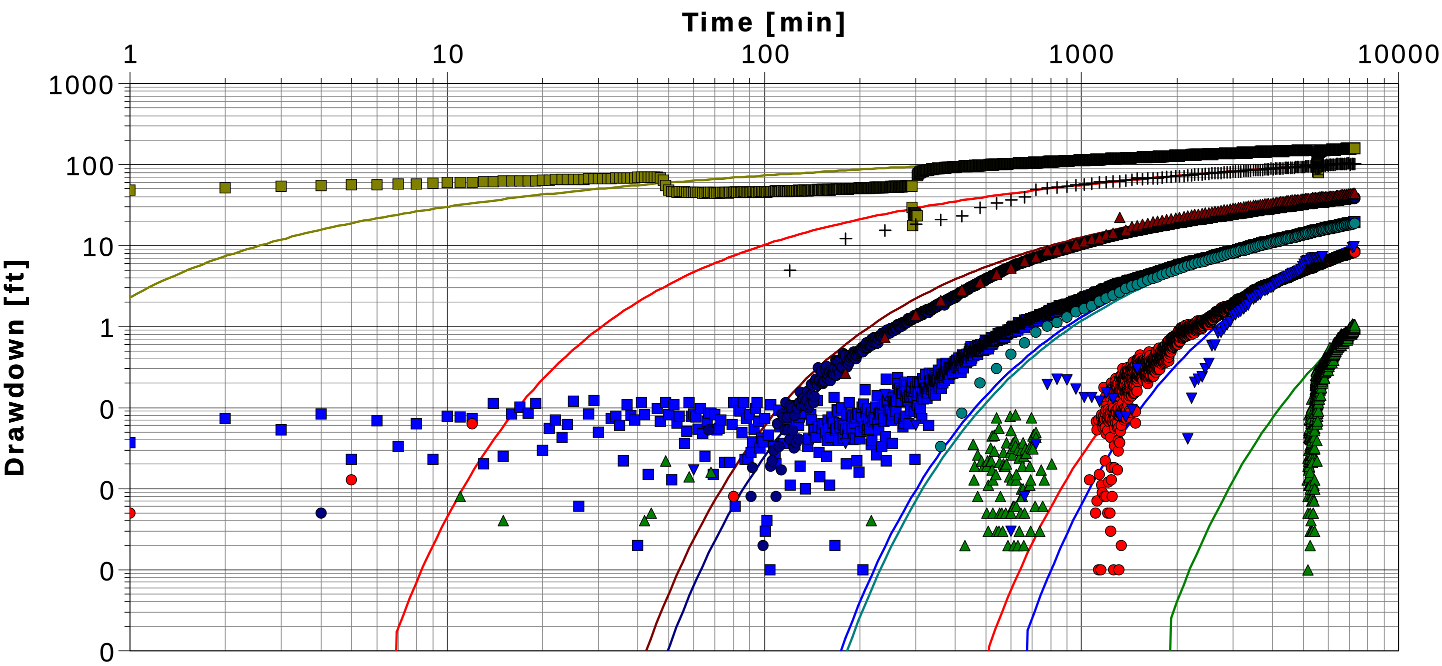
Pumping Test Analysis Report	
Project:	EP Aquifer Testing
Number:	100-001-16
Client:	Electro Purification

Location: Hays County, TX	Pumping Test: Odell Well No. 2	Pumping Well: Odell No. 2
Test Conducted by: AW		Test Date: 12/29/2016
Analysis Performed by: BWB	Theis	Analysis Date: 1/27/2017
Aquifer Thickness: 81.00 ft	Discharge: variable, average rate 578.98 [U.S. gal/min]	



Calculation using Theis

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	5.13×10^{2}	6.33×10^{0}	2.26×10^{-4}	3261.7	
Bridges No. 2	3.90×10^{2}	4.81×10^{0}	1.49×10^{-4}	6046.74	
Bridges No. 4	2.17×10^{2}	2.68×10^{0}	1.79×10^{-4}	7880.03	
Odell No. 2	4.50×10^{2}	5.56×10^{0}			
Odell No. 3	5.13×10^{2}	6.33×10^{0}	8.61×10^{-5}	2820.19	
Ochoa	4.80×10^{2}	5.93×10^{0}	1.20×10^{-4}	2144.9	
Escondida #1	2.10×10^{2}	2.59×10^{0}	5.50×10^{-5}	8467.15	
Lowe	3.50×10^{2}	4.32×10^{0}	1.50×10^{-5}	2071.81	
Wood #1	5.13×10^{2}	6.33×10^{0}	1.50×10^{-4}	4097.11	
Average	4.04×10^{2}	4.99×10^{0}	1.23×10^{-4}		

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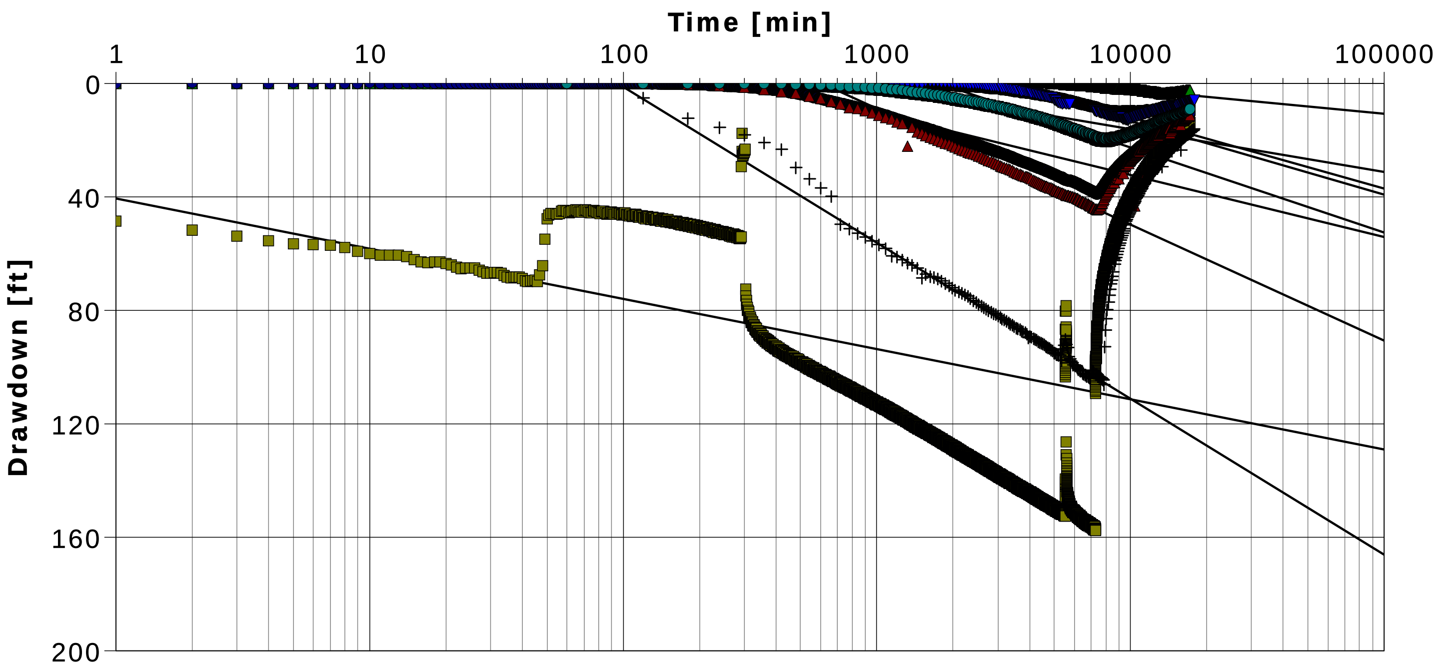
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Odell Well No. 2	Pumping Well: Odell No. 2
Test Conducted by: AW		Test Date: 12/29/2016
Analysis Performed by: BWB	Cooper-Jacob	Analysis Date: 1/27/2017
Aquifer Thickness: 81.00 ft	Discharge: variable, average rate 578.98 [U.S. gal/min]	



Calculation using COOPER & JACOB

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Storage coefficient	Radial Distance to PW [ft]	
Bridges No. 1	1.35×10^{3}	1.67×10^{1}	1.68×10^{-4}	3261.7	
Bridges No. 2	8.11×10^{2}	1.00×10^{1}	1.16×10^{-4}	6046.74	
Bridges No. 4	2.39×10^{3}	2.95×10^{1}	3.30×10^{-4}	7880.03	
Odell No. 2	1.15×10^{3}	1.42×10^{1}			
Odell No. 3	9.35×10^{2}	1.15×10^{1}	6.15×10^{-5}	2820.19	
Ochoa	4.99×10^{2}	6.16×10^{0}	1.03×10^{-4}	2144.9	
Escondida #1	7.88×10^{2}	9.73×10^{0}	5.29×10^{-5}	8467.15	
Lowe	3.71×10^{2}	4.58×10^{0}	1.29×10^{-5}	2071.81	
Wood #1	6.81×10^{2}	8.41×10^{0}	1.11×10^{-4}	4097.11	
Average	9.97×10^{2}	1.23×10^{1}	1.20×10^{-4}		

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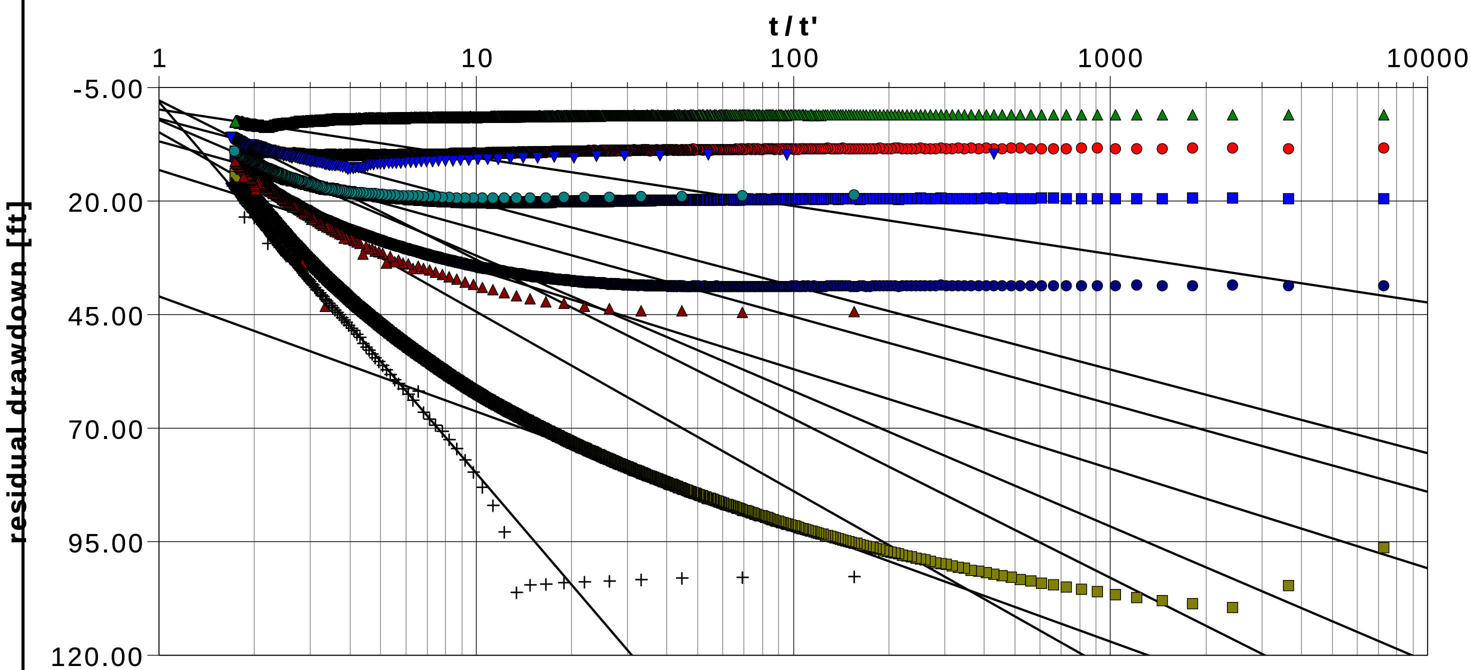
Pumping Test Analysis Report

Project: EP Aquifer Testing

Number: 100-001-16

Client: Electro Purification

Location: Hays County, TX	Pumping Test: Odell Well No. 2	Pumping Well: Odell No. 2
Test Conducted by: AW		Test Date: 12/29/2016
Analysis Performed by: BWB	Theis Recovery	Analysis Date: 2/1/2017
Aquifer Thickness: 81.00 ft	Discharge: variable, average rate 578.98 [U.S. gal/min]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [ft²/d]	Hydraulic Conductivity [ft/d]	Radial Distance to PW [ft]	
Bridges No. 1	1.06×10^{3}	1.31×10^{1}	3261.7	
Bridges No. 2	5.82×10^{2}	7.19×10^{0}	6046.74	
Bridges No. 4	1.93×10^{3}	2.38×10^{1}	7880.03	
Odell No. 2	8.06×10^{2}	9.95×10^{0}		
Odell No. 3	9.30×10^{2}	1.15×10^{1}	2820.19	
Ochoa	5.17×10^{2}	6.38×10^{0}	2144.9	
Escondida #1	1.11×10^{3}	1.37×10^{1}	8467.15	
Lowe	2.50×10^{2}	3.08×10^{0}	2071.81	
Wood #1	6.83×10^{2}	8.44×10^{0}	4097.11	
Average	8.73×10^{2}	1.08×10^{1}		

Appendix F

Water Quality Results

POLLUTION CONTROL SERVICES

Report of Sample Analysis Bridges Well No. 1

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridges Matrix: Drinking Water Date/Time Taken: 11/30/2016 1330	**PCS Sample #: 453369** **Page 1 of 3** Date/Time Received: 11/30/2016 14:05 Report Date: 12/02/2016 Approved by: [signature] Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
pH	!, I	7.2	S.U.	N/A	11/30/2016 15:25	SM 4500-H+ B	GWF
Conductivity, Specific		766	umhos/cm	1	11/30/2016 14:15	SM 2510B	JAS
Total Dissolved Solids		432	mg/L	10	11/30/2016 14:10	SM 2540C	JAS
Nitrate-N		<0.2	mg/L	0.1	12/01/2016 09:12	EPA 300.0	GWF
Chloride		21	mg/L	1	12/01/2016 09:12	EPA 300.0	GWF
Sulfate		108	mg/L	1	12/01/2016 09:12	EPA 300.0	GWF
Nitrite-N		<0.20	mg/L	0.1	12/01/2016 09:12	EPA 300.0	GWF

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
pH	N/A	N/A	N/A			N/A		
Conductivity, Specific	N/A	N/A	N/A			N/A		
Total Dissolved Solids	<1	10	N/A	N/A	N/A	N/A		
Nitrate-N	1	20	70	100	101	130	105	85 - 115
Chloride	<1	10	90	98	97	110	103	85 - 115
Sulfate	<1	10	89	97	97	108	105	85 - 115
Nitrite-N	1	10	85	105	106	119	104	85 - 115

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

! *Not NELAP Certifiable Parameter*
I *Informational purposes only*

These analytical results relate only to the sample tested.
All data is reported on an "As Is" basis unless designated as "Dry Wt."
RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

Report of Sample Analysis Bridges Well No. 1

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridges Matrix: Drinking Water Date/Time Taken: 11/30/2016 1330	**PCS Sample #: 453369** **Page 2 of 3** Date/Time Received: 11/30/2016 14:05 Report Date: 12/02/2016

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Fluoride		1.37	mg/L	0.10	12/01/2016 09:12	EPA 300.0	GWF
Alkalinity, Total	!	282	mg/L	10	11/30/2016 14:20	SM 2320 B	CRM
Arsenic/ICP (Total)		<0.010	mg/L	0.010	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Copper/ICP (Total)		<0.005	mg/L	0.005	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Calcium/ICP (Total)		79.4	mg/L	0.50	12/01/2016 11:09	EPA 200.7 / 6010 B	DJL
Lead/ICP (Total)		<0.005	mg/L	0.005	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Calcium Hardness as CaCO3		198.3	mg/L	N/A	12/01/2016 11:09	Calculated	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Fluoride	1	10	83	105	106	111	110	85 - 115
Alkalinity, Total	<1	10	95	100	100	107	102	85 - 115
Arsenic/ICP (Total)	<1	20	75	100	100	125	100	85 - 115
Copper/ICP (Total)	<1	20	75	96	96	125	100	85 - 115
Calcium/ICP (Total)	7	20	75	91	97	125	99	85 - 115
Lead/ICP (Total)	<1	20	75	93	93	125	105	85 - 115
Calcium Hardness as CaCO3	N/A	N/A	N/A			N/A		

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

! *Not NELAP Certifiable Parameter*

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

Report of Sample Analysis Bridges Well No. 1

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridges Matrix: Drinking Water Date/Time Taken: 11/30/2016 1330	**PCS Sample #: 453369** **Page 3 of 3** Date/Time Received: 11/30/2016 14:05 Report Date: 12/02/2016

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Iron/ICP (Total)	0.058	mg/L	0.010	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Aluminum/ICP (Total)	<0.010	mg/L	0.010	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Sodium/ICP (Total)	12.6	mg/L	0.50	12/01/2016 11:09	EPA 200.7 / 6010 B	DJL
Manganese/ICP (Total)	<0.010	mg/L	0.010	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Zinc/ICP (Total)	0.082	mg/L	0.010	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Iron/ICP (Total)	<1	20	75	95	95	125	105	85 - 115
Aluminum/ICP (Total)	<1	20	75	110	110	125	105	85 - 115
Sodium/ICP (Total)	6	20	75	107	114	125	99	85 - 115
Manganese/ICP (Total)	<1	20	75	94	94	125	105	85 - 115
Zinc/ICP (Total)	1	20	75	92	91	125	105	85 - 115

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

NELAP ACCREDITED TNI LABORATORY

Report of Sample Analysis Bridges Well No. 2

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridge #2 Well Head Matrix: Drinking Water Date/Time Taken: 11/15/2016 1310	**PCS Sample #: 452265** **Page 1 of 3** Date/Time Received: 11/16/2016 11:16 Report Date: 12/02/2016 Approved by: [signature] Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
pH	!, I	6.9	S.U.	N/A	11/16/2016 12:30	SM 4500-H+ B	GWF
Conductivity, Specific		1,237	umhos/cm	1	11/16/2016 15:30	SM 2510B	JAS
Total Dissolved Solids		732	mg/L	10	11/16/2016 14:00	SM 2540C	JAS
Nitrate-N		<0.5	mg/L	0.1	11/17/2016 08:52	EPA 300.0	GWF
Chloride		138	mg/L	1	11/17/2016 08:52	EPA 300.0	GWF
Sulfate		149	mg/L	1	11/17/2016 08:52	EPA 300.0	GWF
Nitrite-N		<0.20	mg/L	0.1	11/17/2016 08:52	EPA 300.0	GWF

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
pH	N/A	N/A	N/A			N/A		
Conductivity, Specific	N/A	N/A	N/A			N/A		
Total Dissolved Solids	3	10	N/A	N/A	N/A	N/A		
Nitrate-N	<1	20	70	98	97	130	96	85 - 115
Chloride	<1	10	90	98	99	110	103	85 - 115
Sulfate	<1	10	89	98	98	108	106	85 - 115
Nitrite-N	1	10	85	111	113	119	110	85 - 115

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

! *Not NELAP Certifiable Parameter*
I *Informational purposes only*

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

Report of Sample Analysis Bridges Well No. 2

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridge #2 Well Head Matrix: Drinking Water Date/Time Taken: 11/15/2016 1310	**PCS Sample #: 452265** **Page 2 of 3** Date/Time Received: 11/16/2016 11:16 Report Date: 12/02/2016

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Fluoride		1.73	mg/L	0.10	11/17/2016 08:52	EPA 300.0	GWF
Alkalinity, Total	!	332	mg/L	10	11/17/2016 16:00	SM 2320 B	CRM
Arsenic/ICP (Total)		<0.005	mg/L	0.005	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL
Copper/ICP (Total)		<0.005	mg/L	0.005	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL
Calcium/ICP (Total)		135	mg/L	0.50	11/21/2016 10:44	EPA 200.7 / 6010 B	DJL
Lead/ICP (Total)		<0.005	mg/L	0.005	12/01/2016 12:49	EPA 200.7 / 6010 B	DJL
Calcium Hardness as CaCO3		337.1	mg/L	N/A	11/21/2016 10:44	Calculated	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Fluoride	2	10	83	93	95	111	108	85 - 115
Alkalinity, Total	1	10	95	100	101	107	102	85 - 115
Arsenic/ICP (Total)	<1	20	75	100	100	125	105	85 - 115
Copper/ICP (Total)	<1	20	75	94	94	125	100	85 - 115
Calcium/ICP (Total)	4	20	75	106	102	125	103	85 - 115
Lead/ICP (Total)	<1	20	75	93	93	125	105	85 - 115
Calcium Hardness as CaCO3	N/A	N/A	N/A			N/A		

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

Report of Sample Analysis Bridges Well No. 2

Client Information	Sample Information	Laboratory Information
Pat Lyle Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Bridge #2 Well Head Matrix: Drinking Water Date/Time Taken: 11/15/2016 1310	**PCS Sample #: 452265** **Page 3 of 3** Date/Time Received: 11/16/2016 11:16 Report Date: 12/02/2016

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Iron/ICP (Total)	0.460	mg/L	0.010	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL
Aluminum/ICP (Total)	<0.010	mg/L	0.010	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL
Sodium/ICP (Total)	13.7	mg/L	0.50	11/21/2016 10:44	EPA 200.7 / 6010 B	DJL
Manganese/ICP (Total)	0.015	mg/L	0.010	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL
Zinc/ICP (Total)	0.057	mg/L	0.010	11/21/2016 11:51	EPA 200.7 / 6010 B	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Iron/ICP (Total)	<1	20	75	92	92	125	100	85 - 115
Aluminum/ICP (Total)	1	20	75	94	95	125	100	85 - 115
Sodium/ICP (Total)	2	20	75	105	102	125	103	85 - 115
Manganese/ICP (Total)	<1	20	75	92	92	125	100	85 - 115
Zinc/ICP (Total)	<1	20	75	91	91	125	100	85 - 115

Quality Statement: *All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX*

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QC Data Reported in %, Except BOD in mg/L

POLLUTION CONTROL SERVICES

Report of Sample Analysis Odell Well No. 2

Client Information	Sample Information	Laboratory Information
Chris Knox Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Odell #2 Matrix: Drinking Water Date/Time Taken: 01/03/2017 1450	**PCS Sample #: 456466** **Page 1 of 3** Date/Time Received: 01/03/2017 15:45 Report Date: 01/13/2017 Approved by: Chuck Wallgren Chuck Wallgren, President

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
pH	!, I	6.8	S.U.	N/A	01/03/2017 15:55	SM 4500-H+ B	GWF
Conductivity, Specific		907	umhos/cm	1	01/04/2017 07:50	SM 2510B	JAS
Total Dissolved Solids		484	mg/L	10	01/04/2017 13:30	SM 2540C	JAS
Nitrate-N		<0.2	mg/L	0.1	01/03/2017 11:47	EPA 300.0	GWF
Chloride		93	mg/L	1	01/03/2017 11:47	EPA 300.0	GWF
Sulfate		75	mg/L	1	01/03/2017 11:47	EPA 300.0	GWF
Nitrite-N		<0.20	mg/L	0.1	01/03/2017 11:47	EPA 300.0	GWF

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
pH	N/A	N/A	N/A			N/A		
Conductivity, Specific	N/A	N/A	N/A			N/A		
Total Dissolved Solids	4	10	N/A	N/A	N/A	N/A		
Nitrate-N	<1	20	70	98	98	130	104	85 - 115
Chloride	1	10	90	95	94	110	102	85 - 115
Sulfate	<1	10	89	98	99	108	102	85 - 115
Nitrite-N	3	10	85	98	100	119	99	85 - 115

Quality Statement: ***All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX***

! *Not NELAP Certifiable Parameter*
I *Informational purposes only*

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L

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POLLUTION CONTROL SERVICES

NELAP ACCREDITED TNI LABORATORY

Report of Sample Analysis Odell Well No. 2

Client Information	Sample Information	Laboratory Information
Chris Knox Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Odell #2 Matrix: Drinking Water Date/Time Taken: 01/03/2017 1450	**PCS Sample #: 456466** **Page 2 of 3** Date/Time Received: 01/03/2017 15:45 Report Date: 01/13/2017

Test Description	Flag	Result	Units	RL	Analysis Date/Time	Method	Analyst
Fluoride		1.06	mg/L	0.10	01/03/2017 11:47	EPA 300.0	GWF
Alkalinity, Total	!	278	mg/L	10	01/06/2017 13:00	SM 2320 B	CRM
Copper/ICP (Total)		<0.005	mg/L	0.005	01/05/2017 09:19	EPA 200.7 / 6010 B	DJL
Calcium/ICP (Total)		116	mg/L	0.05	01/12/2017 15:06	EPA 200.7 / 6010 B	DJL
Calcium Hardness as CaCO3		289.7	mg/L	N/A	01/12/2017 15:06	Calculated	DJL
Iron/ICP (Total)		0.140	mg/L	0.010	01/05/2017 09:19	EPA 200.7 / 6010 B	DJL
Aluminum/ICP (Total)		<0.010	mg/L	0.010	01/05/2017 09:19	EPA 200.7 / 6010 B	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Fluoride	1	10	83	95	96	111	103	85 - 115
Alkalinity, Total	<1	10	95	101	101	107	100	85 - 115
Copper/ICP (Total)	2	20	75	95	93	125	105	85 - 115
Calcium/ICP (Total)	10	20	75	*N/C	*N/C	125	100	85 - 115
Calcium Hardness as CaCO3	N/A	N/A	N/A			N/A		
Iron/ICP (Total)	<1	20	75	88	88	125	100	85 - 115
Aluminum/ICP (Total)	2	20	75	97	95	125	100	85 - 115

Quality Statement: *All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX*

! *Not NELAP Certifiable Parameter*
* *Approved for release per QA Plan, Exception to Limits - QAM Section 13-4*

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RL = Reporting Limits

QC Data Reported in %, Except BOD in mg/L
N/C = Not Calculated, Sample Concentration Greater than 5 Times the Spike Level

POLLUTION CONTROL SERVICES

Report of Sample Analysis Odell Well No. 2

Client Information	Sample Information	Laboratory Information
Chris Knox Hydro Resources-Mid Continent, Inc 31866 RR 12 Dripping Springs, TX 78620	Project Name: EP Sample ID: Odell #2 Matrix: Drinking Water Date/Time Taken: 01/03/2017 1450	**PCS Sample #: 456466** **Page 3 of 3** Date/Time Received: 01/03/2017 15:45 Report Date: 01/13/2017

Test Description	Result	Units	RL	Analysis Date/Time	Method	Analyst
Sodium/ICP (Total)	11.2	mg/L	0.05	01/12/2017 15:06	EPA 200.7 / 6010 B	DJL
Manganese/ICP (Total)	<0.010	mg/L	0.010	01/05/2017 09:19	EPA 200.7 / 6010 B	DJL
Zinc/ICP (Total)	0.034	mg/L	0.010	01/05/2017 09:19	EPA 200.7 / 6010 B	DJL
Arsenic/ICP MS	<0.0005	mg/L	0.0005	01/09/2017 09:02	EPA 200.8	DJL
Lead/ICP MS	<0.0005	mg/L	0.0005	01/09/2017 09:02	EPA 200.8	DJL

Quality Assurance Summary

Test Description	Precision	Limit	LCL	MS	MSD	UCL	LCS	LCS Limit
Sodium/ICP (Total)	11	20	75	*N/C	*N/C	125	100	85 - 115
Manganese/ICP (Total)	1	20	75	89	88	125	100	85 - 115
Zinc/ICP (Total)	<1	20	75	89	89	125	100	85 - 115
Arsenic/ICP MS	<1	20	70	96	97	130	97	85 - 115
Lead/ICP MS	3	20	70	103	106	130	105	85 - 115

Quality Statement: *All supporting quality control data adhered to data quality objectives and test results meet the requirements of NELAC unless otherwise noted as flagged exceptions or in a case narrative attachment. Reports with full quality data deliverables are available on request. TCEQ Certificate No. T104704361-08-TX*

* *Approved for release per QA Plan, Exception to Limits - QAM Section 13-4*

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N/C = Not Calculated, Sample Concentration Greater than 5 Times the Spike Level

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Appendix G

Digital Aquifer Testing Data