February 2019 Discrete Interval Water Quality Sampling

Northwest Florida Water Management District

E219090101

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Document Information

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Acronyms

bls	below land surface
dtw	depth to water
mg/L	milligrams per liter
SP	spontaneous potential
SPR	single point resistance
TDS	total dissolved solids
µS/cm	microsiemens per centimeter

1 Introduction

The Northwest Florida Water Management District (District) contracted Cardno to oversee geophysical logging and discrete interval groundwater quality sampling at 11 monitoring wells located in the District's Planning Region II (Santa Rosa, Okaloosa and Walton Counties). The purpose of the geophysical logging and discrete interval groundwater quality sampling is to identify the extent of the potable-water interface along coastal areas of the District's Planning Region II.

The potable-water interface for this analysis is defined as the depth within the open-hole interval of a monitoring well with chloride concentrations ≤ 250 mg/L, sodium ≤ 160 mg/L and/or total dissolved solids (TDS) ≤ 500 mg/L. The District selected 11 wells for this evaluation with depths ranging from 600 feet to 1,150 feet below land surface (bls). Of the 11 wells selected by the District only ten wells were accessible for sampling, Monitoring well NWF ID 7751 was unable to be sampled during this evaluation due to construction preventing site access.

Figure 1-1. Location Map for Discrete Interval Water Quality Sampling Sites

2 Tasks

The following tasks were completed at each of the 10 District selected monitoring wells to determine the presence and depth of the potable-water interface in coastal Okaloosa, Santa Rosa and Walton Counties that comprise the District's Region II Planning Area.

2.1 Geophysical Logging

Prior to initiating geophysical logging at each well to determine the location of the potable-water interface, static water levels were obtained from an established measuring point for each well upon arrival at the site. Once the static depth to water at each well was obtained, geophysical logging commenced. Geophysical logging conducted at the 10 sites consisted of the following: fluid conductivity, temperature, specific conductivity, differential temperature and conductivity, natural gamma, deep and shallow resistivity/conductivity, 8/16/32/64-inch resistivity, spontaneous potential (SP), and single point resistance (SPR). The wells were logged twice for each tool; once as the tool is lowered down the open-hole interval and once as the tool is brought back up to land surface. Upon completion of the open-hole interval logging, the logs were evaluated by Cardno, RMBaker, LLC (Subconsultant) and the District to cooperatively determine the location of the potable-water interface and to select the depths at which the discrete samples would be collected for water quality analysis. The associated logs completed by the Subconsultant are attached as Appendix A.

2.2 Discrete Interval Groundwater Quality Sampling

The sample interval for each well was selected by the District, Cardno and the Subconsultant based on the results of the geophysical logging. Sampling of wells in which the potable-water interface is believed to exist consisted of a sample collected both above and below the identified potable-water interface. In wells in which it did not appear that the potable-water interface existed a single sample was collected based on the highest monitored fluid or specific conductivity readings. Two monitoring wells, Well NWF ID 7183 and Well NWF ID 12848, were selected for the collection of three separate water quality samples at three unique intervals (above the interface, at the interface and below the interface). A YSI Pro Plus was used to collect field water quality parameters consisting of pH, specific conductance, temperature and salinity from the water collected at the selected depths. The collected water quality samples were analyzed by a National Environmental Laboratory Accreditation Program (NELAP) laboratory for sodium, chloride and total dissolved solids concentrations. The quality control measures and methodology used by the Subconsultant are provided in Appendix A.

2.3 Reporting

The discrete interval laboratory groundwater quality results are presented in Table 1 of this report along with individual well water quality result summaries. The laboratory results for chloride, sodium, and total dissolved solids were used in the identification of the potable-water interface in each well. The attached Appendix A prepared by the Subconsultant contains detailed field parameter and laboratory water quality results for each well that was sampled. The Subconsultant report also includes all geophysical well logs run to determine the potable-water interface for each well, laboratory results and laboratory chain of custody forms for the water quality samples.

3 Summary of Discrete Interval Sampling Results

Groundwater quality samples were collected at 10 of the 11 selected monitoring wells located in Okaloosa, Santa Rosa and Walton Counties. The eleventh well (NWF7751) was visited on February 20, 2019, however, the well was unable to be logged or sampled due to site access restrictions caused by construction. The 10 wells that were logged had samples collected based on the location of the potable-water interface within the monitoring well open-hole interval. The laboratory results for chloride, sodium and TDS are presented in Table 1. Table 2 provides water quality and maximum depth of the potable-water interface recorded during the past three discrete interval sampling events.

Table 1. Summary of Discrete Water Quality Sampling Laboratory Results

NWFWMD Well ID	Date	Sample Depth	Chloride (mg/L)	Sodium (mg/L)	TDS (mg/L)
NWF12811	2/18/2019	610	2,690.0	1,350.0	4,420.0
NWF12811	2/18/2019	690	2,300.0	1,280.0	4,040.0
NWF12838	2/19/2019	660	4.0	4.9	164.0
NWF1376	2/20/2019	640	182.0	138.0	536.0
NWF1696	2/21/2019	665	60.2	114.0	370.0
NWF1696	2/21/2019	840	60.6	117.0	324.0
NWF7349	2/22/2019	440	27.7	27.2	188.0
NWF7349	2/22/2019	595	252.0	172.0	630.0
NWF7183	2/25/2019	520	18.7	23.4	184.0
NWF7183	2/25/2019	585	148.0	146.0	938.0
NWF7183	2/25/2019	660	250.0	284.0	1,760.0
NWF9137	2/26/2019	500	7.5	22.8	160.0
NWF9137	2/26/2019	640	30.4	62.7	460.0
NWF12840	2/27/2019	745	35.5	34.0	196.0
NWF12840	2/27/2019	875	86.6	70.9	264.0
NWF7174	2/28/2019	955	1,130.0	643.0	2,260.0
NWF7174	2/28/2019	1,070	4,160.0	2,070.0	6,850.0
NWF12848	3/1/2019	1,060	58.5	130.0	336.0
NWF12848	3/1/2019	1,125	396.0	427.0	888.0
NWF12848	3/1/2019	1,145	566.0	402.0	1,130.0

3.1 NWF ID 12811

Log data for well NWF ID 12811 (NWFWMD A-4), a lower Floridan aquifer monitor well, indicate high fluid conductivity values at the top of the open hole-interval with a slight lowering transition to the tagged depth of 701.85 feet bls. Two samples were collected in the open-hole interval; a sample was collected at 610 feet bls (highest conductivity value) and 690 feet bls (lowest conductivity value).

The sample collected at 610 feet bls had a field conductivity value of 8,149 µS/cm and laboratory analysis results include chloride concentrations of 2,690 mg/L, sodium concentrations of 1,350 mg/L and TDS concentrations of 4,420 mg/L. All three parameters exceed drinking water standards and TDS concentrations exceed freshwater standards (3,000 mg/L). The second sample collected at 690 feet bls had a field conductivity value of 7,321 µS/cm and laboratory analysis results include chloride concentrations of 2,300 mg/L, sodium concentrations of 1,280 mg/L and TDS concentrations of 4,040 mg/L. The water quality at the bottom of the borehole is slightly fresher than water just below the top of casing. However, all of the parameters exceed drinking water standards with TDS concentrations exceeding the freshwater standard.

The water quality results from both samples collected in well NWF ID 12811 indicate that the potable-water interface is above the casing depth of 600 feet bls. The water quality results at 610 feet bls mimic those of the August 2018 sampling event. However, the slight decrease in water quality parameter concentrations at the bottom of the open-hole interval were not identified during the previous sampling event.

3.2 NWF ID 12838

Log data for well NWF ID 12838 (NWFWMD A-3), a lower Floridan aquifer monitor well, indicate relatively consistent fluid conductivity values throughout the entire open hole-interval with a slight increasing inflection beginning around 620 feet bls to the tagged depth of 674.7 feet bls. A single sample was collected in the open-hole interval at a depth of 660 feet bls (highest conductivity value).

The sample collected at 660 feet bls had a field conductivity value of 205.4 µS/cm and laboratory analysis results include chloride concentrations of 4.0 mg/L, sodium concentrations of 4.9 mg/L and TDS concentrations of 164 mg/L. All three parameters meet drinking water standards. The values from this sampling event are slightly higher than the concentrations identified in the August 2018 sampling event, however, they are still well below the maximum drinking water standard. The results from this sampling event indicate that the maximum depth of the potable-water interface is deeper than the total depth of the open-hole interval of the monitoring well at 674.7 feet bls.

3.3 NWF ID 1376

Log data for well NWF ID 1376 (NWFWMD West Hewett), an upper Floridan aquifer monitor well, indicate relatively consistent fluid conductivity values throughout the entire open hole-interval with a slight decreasing inflection beginning around 640 feet bls to the tagged depth of 704.6 feet bls. The magnitude and trend of the fluid conductivity response were similar to the response from the August 2018 logging event. In August 2018, a sample was collected at 690 feet bls and for comparability, an attempt was made to collect a sample at the same depth. During the sampling process the discrete interval sampler became clogged with clays and silty sediment making the sample very turbid. Another sample collected at 680 feet bls was also cloudy with clay and silt. Ultimately, a single sample was collected in the open-hole interval at a depth of 640 feet bls (highest conductivity value).

The sample collected at 640 feet bls had a field conductivity value of 947 µS/cm and laboratory analysis results include chloride concentrations of 182 mg/L, sodium concentrations of 138 mg/L and TDS concentrations of 536 mg/L. Chloride and sodium concentrations were below drinking water standards and TDS concentrations just exceeded the drinking water standards of 500 mg/L. The values from this sampling event are slightly lower than the evaluated concentrations from the August 2018 sampling event except TDS concentrations which were slightly higher. As noted above, the discrete interval sampler became clogged with clays and silty sediment during the sampling process. The sampler was cleaned and lowered back down the open-hole interval between sampling attempts. The water that was collected at 640 feet bls did appear slightly turbid. This may have resulted in the higher concentration of TDS values. Due to slightly turbid water collected during this event it appears the potable-water interface had shifted to 640 feet bls. However, it is our professional opinion that the

potable-water interface depth is consistent with the October 2017 and August 2018 findings at a depth of 704 feet bls. At this depth the there is a sharp decrease in the resistivity log indicating water with higher electrical conductance values.

3.4 NWF ID 1696

Log data for monitoring well NWF ID 1696 (OCWS ISL-1), an upper Floridan well, indicate slightly increasing fluid conductivity trend from the start of the open-hole interval to the tagged depth of 863 feet bls. Two samples were collected in the open-hole interval; a sample was collected at 665 feet bls (lowest apparent conductivity value) and 840 feet bls (highest apparent conductivity value).

The sample collected at 665 feet bls had a field conductivity value of 662 µS/cm and laboratory analysis results include chloride concentrations of 60.2 mg/L, sodium concentrations of 114 mg/L and TDS concentrations of 370 mg/L. All three parameters are below drinking water standards. The second sample collected at 840 feet bls had a field conductivity value of 612 µS/cm and laboratory analysis results include chloride concentrations of 60.6 mg/L, sodium concentrations of 117 mg/L and TDS concentrations of 324 mg/L. The water quality at 840 feet bls is very nearly identical to the water quality at 665 feet bls and all of the parameters are below the drinking water.

The logs and water quality results from both samples collected in monitoring well NWF ID 1696 indicate that the potable-water interface is below the well total depth of 863 feet bls. The water quality results collected at 665 feet and 840 feet bls are similar to the results of the October 2017 and August 2018 sampling events.

3.5 NWF ID 7349

Log data for well NWF ID 7349 (SWUC East Monitor), an upper Floridan monitor well, indicate an increasing fluid conductivity trend with depth that begins at 440 feet bls with a major shift at 587 feet bls to the tagged well depth of 601 feet bls. Two samples were collected in the open-hole interval; a sample was collected at 440 feet bls (lowest conductivity value) and 595 feet bls (highest conductivity value).

The sample collected at 440 feet bls had a field conductivity value of 407.7 µS/cm and laboratory analysis results include chloride concentrations of 27.7 mg/L, sodium concentrations of 27.2 mg/L and TDS concentrations of 188 mg/L. All three parameters are below drinking water standards. The second sample collected at 595 feet bls had a field conductivity value of 1,188 µS/cm and laboratory analysis results include chloride concentrations of 252 mg/L, sodium concentrations of 172 mg/L and TDS concentrations of 630 mg/L. The water quality results at 595 feet bls exceed the drinking water standards for all three parameters.

The logs and water quality results from both samples collected in monitoring well NWF ID 7349 indicate that the maximum extent of potable-water interface occurs in the open-hole interval just above the 595 feet sampling location. According to the fluid conductivity log the maximum extent of the potable-water interface appears to be located at 587 feet bls. The logs from this sampling event appear to be very similar to the logs from the August 2018 sampling event as they both show an abrupt change in water quality near 580 feet bls. The logs collected in March 2019 indicate that the maximum extent of the potable-water interface may be migrating further down the open-hole interval a result of water in the formation becoming fresher.

3.6 NWF ID 7183

Log data for well NWF ID 7183 (SWUC West Monitor), an upper Floridan well, indicate a significant increasing fluid conductivity trend with depth that begins at 555 feet bls to the tagged well depth of 702.2 feet bls. Fluid conductivity values begin to increase after a high resistivity segment in the logs that starts at 530 feet bls and

extends to 555 feet bls. Three samples were collected in the open-hole interval; a sample was collected at 520 feet bls (lowest conductivity value), 585 feet bls (approximate median conductivity value) and 660 feet bls (highest conductivity value).

The sample collected at 520 feet bls had a field conductivity value of 350.3 µS/cm and laboratory analysis results include chloride concentrations of 18.7 mg/L, sodium concentrations of 23.4 mg/L and TDS concentrations of 184 mg/L. All three parameters are below drinking water standards. The second sample collected at 585 feet bls had a field conductivity value of 1,393 µS/cm and laboratory analysis results include chloride concentrations of 148 mg/L, sodium concentrations of 146 mg/L and TDS concentrations of 938 mg/L. The chloride and sodium concentrations were below the drinking water standard but the TDS concentrations are approximately double the drinking water standards at this depth. The third sample collected at 660 feet bls had a field conductivity value of 2,394 µS/cm and laboratory analysis results include chloride concentrations of 250 mg/L, sodium concentrations of 284 mg/L and TDS concentrations of 1,760 mg/L. The water quality results at 660 feet bls indicate that chloride concentrations are at the maximum drinking water standard threshold and the drinking water standards for sodium and TDS concentrations are exceeded.

The logs and water quality results from all three samples collected in monitoring well NWF ID 7183 indicate that the maximum extent of potable-water interface occurs in the open-hole interval between the upper (520 feet bls) and middle (585 feet bls) sampling locations. Using the TDS approximation which is calculated by multiplying the specific conductance value by 0.65 (750 µS/cm *0.65 = 488 mg/L), the maximum extent of the potable-water interface occurs at approximately 555 feet bls. This is similar to the depth determined during the August 2018 sampling event.

3.7 NWF ID 9137

Log data for well NWF ID 9137 (DWU MO#1), an upper Floridan monitor well, indicate an increasing fluid conductivity trend with depth that begins at 600 feet bls with tiered increases at approximately 605 feet bls and again at 625 feet bls to the tagged well depth of 649.7 feet bls. Two samples were collected in the open-hole interval; a sample was collected at 500 feet bls (lowest conductivity value) and 640 feet bls (highest conductivity value).

The sample collected at 500 feet bls had a field conductivity value of 293.7 µS/cm and laboratory analysis results include chloride concentrations of 7.5 mg/L, sodium concentrations of 22.8 mg/L and TDS concentrations of 160 mg/L. All three parameters are below drinking water standards. The second sample collected at 640 feet bls had a field conductivity value of 754 µS/cm and laboratory analysis results include chloride concentrations of 30.4 mg/L, sodium concentrations of 62.7 mg/L and TDS concentrations of 460 mg/L. The water quality results at 640 feet bls are below the drinking water standards for all three parameters.

The logs and water quality results from both samples collected in monitoring NWF ID 9137 indicate that the maximum extent of potable-water interface occurs just below the 640-foot sampling point near the bottom of the open-hole interval (~650 feet bls). During the October 2017 sampling event the TDS values exceeded drinking water standards at a depth of 640 feet. The TDS values were at the maximum threshold of the drinking water standards in August 2018 and were just below drinking water standards in this sampling event. Based on this analysis the maximum extent of the potable-water interface appears to be extending deeper into the surrounding formation.

3.8 NWF ID 12840

Log data for well NWF ID 12840 (NWFWMD A-2), a lower Floridan aquifer monitor well, indicate an increasing fluid conductivity trend with depth that begins at 750 feet bls and extends to the tagged well depth of 887.6 feet

bls. Two samples were collected in the open-hole interval; a sample was collected at 745 feet bls (lowest conductivity value) and 875 feet bls (highest conductivity value).

The sample collected at 745 feet bls had a field conductivity value of 358.2 µS/cm and laboratory analysis results include chloride concentrations of 35.5 mg/L, sodium concentrations of 34.0 mg/L and TDS concentrations of 196 mg/L. All three parameters are below drinking water standards. The second sample collected at 875 feet bls had a field conductivity value of 492.7 µS/cm and laboratory analysis results include chloride concentrations of 86.6 mg/L, sodium concentrations of 70.9 mg/L and TDS concentrations of 264 mg/L. The water quality results at 875 feet bls are below the drinking water standards for all three parameters.

The logs and water quality results from both samples collected in monitoring well NWF ID 12840 indicate that the maximum extent of potable-water interface occurs below of the open-hole interval of the well that extends to a depth of 887.6 feet bls. These results are similar to those collected during the August 2018 sampling events.

3.9 NWF ID 7174

Log data for well NWF ID 7174 (DWU MO#2), a lower Floridan aquifer monitor well, indicate an increasing fluid conductivity trend with depth that begins at 974 feet bls and extends to the tagged well depth of 1,086.5 feet bls. Two samples were collected in the open-hole interval; a sample was collected at 955 feet bls (lowest observed conductivity value) and 1,070 feet bls (highest conductivity value).

The sample collected at 955 feet bls had a field conductivity value of 3,646 µS/cm and laboratory analysis results include chloride concentrations of 1,130 mg/L, sodium concentrations of 643 mg/L and TDS concentrations of 2,260 mg/L. All three parameters exceed drinking water standards. The second sample collected at 1,070 feet bls had a field conductivity value of 11,575 µS/cm and laboratory analysis results include chloride concentrations of 4,160 mg/L, sodium concentrations of 2,070 mg/L and TDS concentrations of 6,850 mg/L. The water quality results at 1,070 feet bls also exceed the drinking water standards for all three parameters.

The logs and water quality results from both samples collected in monitoring well NWF ID 7174 indicate that the maximum extent of potable-water interface occurs above the casing depth of 920 feet bls. In comparison to the October 2017 and August 2018 sampling events, the parameter concentrations values collected at the lower sampling location (1,070 feet bls) during this event are similar to the October 2017 results and not the lower concentrations reported for the August 2018 event.

3.10 NWF ID 12848

Log data for well NWF ID 1284 (NWFWMD B-2), an upper Floridan aquifer monitor well, indicate an increasing fluid conductivity trend with depth that begins at 1,090 feet bls with tiered increases to the tagged well depth of 1,154 feet bls. Three samples were collected in the open-hole interval; a sample was collected at 1,060 feet bls (lowest conductivity value), 1,125 feet bls (approximate median conductivity value) and 1,145 feet bls (highest conductivity value).

The sample collected at 1,060 feet bls had a field conductivity value of 638 µS/cm and laboratory analysis results include chloride concentrations of 58.5 mg/L, sodium concentrations of 130 mg/L and TDS concentrations of 336 mg/L. All three parameters are below drinking water standards. The second sample collected at 1,125 feet bls had a field conductivity value of 1,668 µS/cm and laboratory analysis results include chloride concentrations of 396 mg/L, sodium concentrations of 427 mg/L and TDS concentrations of 888 mg/L. At this sampling interval, all three parameters exceeded the drinking water standards. The third sample collected at 1,145 feet bls had a field conductivity value of 2,102 µS/cm and laboratory analysis results include chloride concentrations of 566 mg/L, sodium concentrations of 402 mg/L and TDS concentrations of 1,130

mg/L. The water quality results at 1,145 feet bls indicate drinking water standards are exceeded for all three parameters.

The logs and water quality results from all three samples collected in monitoring well NWF ID 12848 indicate that the maximum extent of potable-water interface occurs in the open-hole interval between the upper (1,060 feet bls) and middle (1,125 feet bls) sampling locations. Using the TDS approximation which is calculated by multiplying the specific conductance value by 0.65 (750 µS/cm *0.65=488 mg/L), the maximum vertical extent of the potable-water interface occurs at approximately 1,092 feet bls. This is similar to the depth determined during the August 2018 sampling event.

Table 2. Summary of Each Discrete Water Quality Sampling Event with Estimated Interface Depths

NWFWMD Well ID	Date	Tagged Well Bottom (feet)	DTW BLS (feet)	Sample Depth	Cond. (µS/cm)	Laboratory Results			Depth of Interface (feet)
						Chloride (mg/L)	Sodium (mg/L)	TDS (mg/L)	
NWF12811	8/8/2018	699	8.97	640	7,990	2,690.0	1,480.0	4,540.0	<600
	2/18/2019	701.9	9.27	610	8,149	2,690.0	1,350.0	4,420.0	<600
				690	7,321	2,300.0	1,280.0	4,040.0	
NWF12838	8/7/2018	673.0	43.95	570	238	3.2	5.6	117.0	>670
				660	195	3.3	6.0	122.0	
	2/19/2019	674.7	44.98	660	205	4.0	4.9	164.0	>670
NWF1376	10/25/2017	707.0	23.87	690	869	171.0	142.0	478.0	>707
	8/13/2018	704.0	22.88	690	930	192.0	151.0	499.0	~704
	2/20/2019	704.6	22.40	640	947	182.0	138.0	536.0	~704
NWF1696	10/30/2017	860.0	64.40	580	531	63.1	131.0	334.0	>860
				840	559	62.7	126.0	345.0	
	8/12/2018	860.0	62.86	580	620	65.8	119.0	355.0	>860
				840	620	65.0	118.0	354.0	
	2/21/2019	863.1	61.19	665	662	60.2	114.0	370.0	>863
				840	612	60.6	117.0	324.0	
NWF7349	11/8/2017	600.0	18.58	440	325	24.8	28.1	188.0	~588
				590	971	201.0	167.0	530.0	
	8/15/2018	599.0	No Data	440	363	31.4	28.0	198.0	~580
				590	1,225	271.0	183.0	622.0	
	2/22/2019	601.0	15.97	440	408	27.7	27.2	188.0	~587
				595	1,188	252.0	172.0	630.0	

Table 2. (Continued)

NWFWMD Well ID	Date	Tagged Well Bottom (feet)	DTW BLS (feet)	Sample Depth	Cond. (µS/cm)	Laboratory Results			Depth of Interface (feet)
						Chloride (mg/L)	Sodium (mg/L)	TDS (mg/L)	
NWF7183	10/20/2017	698.0	42.20	520	313	18.1	25.6	160.0	~698
				575	1,345	112.0	121.0	173.0	
				660	4,342	25.6	33.0	192.0	
	8/20/2018	699.0	43.69	520	342	19.8	21.9	184.0	~554
				575	1,285	131.0	129.0	776.0	
				660	2,579	273.0	285.0	1,660.0	
	2/25/2019	702.2	33.35	520	350	18.7	23.4	184.0	~554
				585	1,393	148.0	146.0	938.0	
				660	2,394	250.0	284.0	1,760.0	
NWF9137	10/26/2017	648.0	46.71	495	308	8.1	25.9	163.0	~640
				640	910	30.5	66.9	556.0	
	8/21/2018	648.0	51.07	495	298	10.7	23.7	161.0	~640
				640	783	34.6	61.5	500.0	
	2/26/2019	649.7	38.57	500	294	7.5	22.8	160.0	>640
				640	754	30.4	62.7	460.0	
NWF12840	8/3/2018	885.0	68.02	755	443	57.3	48.6	245.0	>885
				875	540	89.7	71.7	298.0	
	2/27/2019	887.6	66.60	745	358	35.5	34.0	196.0	>887
				875	493	86.6	70.9	264.0	
NWF7174	10/27/2017	1083.0	31.30	955	3,495	708.0	738.0	1,340.0	<920
				1,070	11,574	4,240.0	2,540.0	7,700.0	
	8/12/2018	1079.0	30.50	955	3,909	1,150.0	704.0	1,890.0	<920
				1,070	6,046	1,910.0	1,090.0	3,300.0	
	2/28/2019	1086.5	30.59	955	3,646	1,130.0	643.0	2,260.0	<920
				1,070	11,575	4,160.0	2,070.0	6,850.0	
NWF12848	7/31/2018	1149.0	31.30	1,060	590	53.0	124.0	356.0	~1,095
				1,134	1,940	497.0	402.0	1,110.0	
	3/1/2019	1154.0	49.16	1,060	638	58.5	130.0	336.0	~1092
				1,125	1,668	396.0	427.0	888.0	
				1,145	2,102	566.0	402.0	1,130.0	

Northwest Florida Water Management District
February 2019 Discrete Interval Water Quality Sampling

APPENDIX

A

GEOPHYSICAL LOGGING AND WATER QUALITY RESULTS REPORT

RMBAKER *Geology and Geophysics*
Water – Earth - History

Robert M. Baker, CPG, PG

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April 11, 2019

Joshua Yates, PG
Project Scientist / Geologist IV
Cardno
3905 Crescent Park Drive
Riverview, Florida 33578

Re: Northwest Florida Water Management District (District) Region II Discrete Interval Water Quality Sampling

Dear Mr. Yates,

RMBAKER LLC (RMBAKER) was retained by Cardno to perform geophysical well logging and water quality sampling at discrete intervals in 11 monitor wells in Walton, Okaloosa and Santa Rosa Counties according to a work plan established by the District. Refer to Figure 1 for the general location of each well in the monitoring network.

The field work was performed from February 18 to March 1, 2019.

Well NWF7751 could not be logged due to construction activities that prevented access.

Geophysical logging, water sampling and water quality field testing were performed in conformance with standard operating procedures (SOP) outlined in:

- ASTM D5753-05 *Standard Guide for Planning and Conducting Borehole Geophysical Logging*
- Florida Department of Environmental Protection (FDEP) QA Rule 62-160 FAC

Figure 1. Location of District monitoring wells.

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Equipment

The equipment used for the geophysical logging and water quality sampling work was listed in Table 1, with the logging trailer setup shown in Figure 2.

RMBAKER performed logging and discrete sampling using Robertson Geologging, Ltd (RG) sondes with a MicroLogger transceiver connected by way of a 4000 foot coaxial logging cable. The logging winch was powered by a hydraulic motor system and a portable 13.5kW generator mounted within a 16 foot box trailer.

Figure 2. RMBAKER logging setup.

The RG discrete water sampler is 6.2 feet long, with the intake ports about 1.5 feet below the top of the sonde. After rinsing with tap water and deionized water, a vacuum was set by closing the sample isolation valve and pulling the purging piston to the end of the sonde and locking it in place. A water sample entered the sonde through the screened ports after activation of an internal motor, thereby opening the isolation valve and allowing the vacuum to pull the water sample in.

Figure 3. RMBAKER water sampling sonde.

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Two (2) different types of jigs were used to aid in the collection of water quality samples. For blanks, a set of rubber flanges was used to seal the base of a 3-inch PVC column just below the sampler intake ports (Figure 3 Photo A). Deionized water was poured into the PVC pipe to near the top, and the sampler isolation valve was opened to allow the water into the sample chamber. The blank sample was then collected in the same way as regular well samples. The second jig was simply a plastic cup used to hold the sample bottles below the discharge point below the isolation valve.

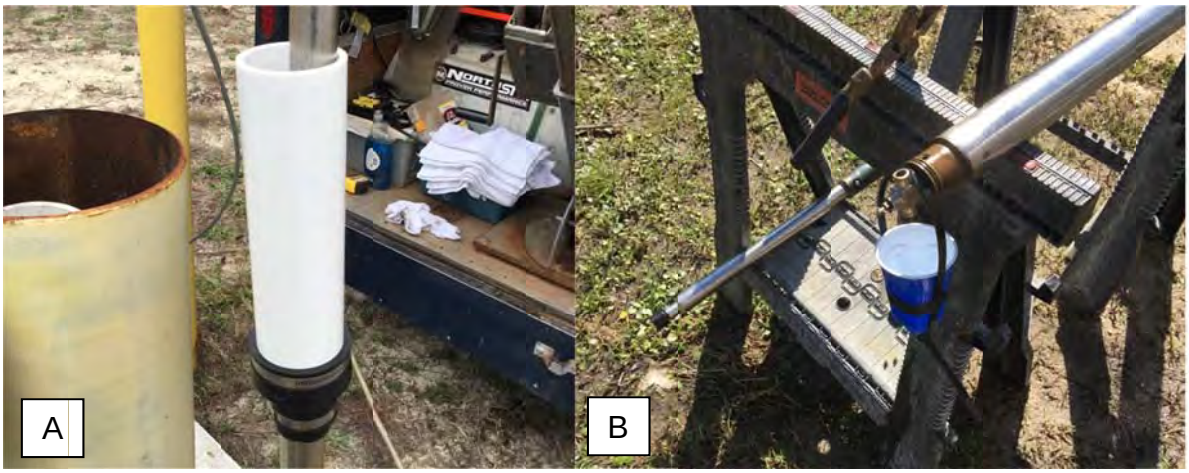

Figure 4. RMBAKER water sampling jigs. Photo A shows the jig for capturing sample blanks. Photo B shows the jig for holding sample bottles while discharging the sample from the vacuum chamber.

The RG TCDS water quality sonde is 5.35 feet long. The temperature (TEU) and conductivity (FLCU) sensors are at the tip in a chamber ideally suited for trolling downward into the water column. Specific conductance (C25U) was calculated in real-time using the measured temperature and conductivity readings. Natural gamma (GAMM) was measured by this sonde as counts-per-second.

The RG DUIN dual induction sonde is 7.45 feet long. Two (2) dipoles were measured with spacings of 20 (ILM) and 32 (ILD) -inches providing shallow and deep resistivity (or conductivity) log traces. Natural gamma (GAMM) was also measured by this sonde as counts-per-second.

The RG ELOG sonde is 9.48 feet long. The logs from this poly tool were single point resistance (RES), spontaneous potential (ESP), 8-inch normal resistivity (R8), 16-inch normal resistivity (RSN), 32-inch normal resistivity (R32), and 64-inch normal resistivity (RLN). The ELOG used a 10-meter insulated bridle to supply the remote electrode. This sonde had a natural gamma sensor that was not operating.

Field parameters were measured using a YSI Professional Plus meter with sensors for temperature, conductivity and pH. The meter output also provided calculated parameters for total dissolved solids (TDS) and salinity using standard field conversion techniques.

Water levels were measured in each well using a Solinst Model 101 meter.

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Table 1. Field Equipment

Equipment	Parameters Measured	Sonde Length (ft)	Notes
Solinst Model 101	depth to water		
YSI Professional Plus	specific conductivity, temperature, pH		
RG TCDS Water Quality Sonde	fluid conductivity, temperature, specific conductivity, differential temperature and conductivity, natural gamma	5.35	range 50 to 50000 uS/cm
RG DUIN Dual Induction Sonde	deep and shallow resistivity/conductivity, natural gamma	7.45	range 0.3 to 300 ohm-m
RG ELOG Electric Sonde	8/16/32/64 inch normal resistivities, SP, SPR, natural gamma	9.48	range 1 to 10,000 ohm-m
RG Water Sampler	1-liter discrete samples		
NOTE: "RG" refers to Robertson Geologging, Ltd.			

Daily Logging and Sampling Procedure

Table 2 contains the basic site information, dates, times and tasks, and water level recordings for the entire monitoring project.

The following steps were followed on a daily basis with little variation.

1. The casing diameter, material type and stick-up height were recorded.
2. The water level was measured and recorded. This was performed prior to removal of monitoring equipment if present.
3. RG TCDS water quality logs (including temperature and specific conductance) were logged first, with runs performed down then up through the open-hole section.
4. The second log set was composed of down and up runs with a RG DUIN dual induction sonde. The total depth of the well was determined by touching bottom with this sonde and noting line weight changes using an inline three-wheel weight indicator.
5. The third log set was composed of down and up runs with an RG ELOG electric sonde.
6. All data were exported to LAS, and imported into WellCAD for editing and interpretation. WellCAD files, LAS files and PDF documents were then emailed to Cardno and the District for review of recommended sampling depths. Final sampling depths were confirmed by Cardno and the District.
7. The YSI Pro Plus water meter was calibrated for specific conductance and pH daily. The calibrations were typically performed after the geophysical logging was completed. The calibration steps included an initial calibration (IC), and immediate initial calibration verification (ICV) and a continuing calibration verification (CCV) at the end of the sampling work to bracket the measured values with standards at both ends of the measured range. The IC for specific conductance was performed with a single standard, while the IC for pH was performed each day using standards of 4, 7 and 10.
8. The shallowest discrete water samples were collected first, with each successive sample deeper in the profile.
9. Two duplicate samples were collected. One was a duplicate set of sample bottles taken from the same 1-liter sample volume. One was a duplicate set taken from the same depth, but with a separate sampler run.
10. Four equipment blanks were collected. Each blank was collected using the jig built to hold deionized water for the sampler to collect. One blank was collected between a set of regular well samples.

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11. Samples were collected using a jig to hold the sample bottle at the discharge point of the sampler. Care was taken not to touch the lip of the sample bottle, or to overfill the bottles.
12. Sample bottles were labeled, acid preserved if necessary, and then preserved in a wet ice bath within 15 minutes of the sample arriving at the surface on the wireline. The ice bath was consistently measured at temperatures less than 2.5 degrees Celsius.
13. After all samples were collected a CCV was performed to bracket the measured field values.
14. The water level of the well was measured at the end of the day, with the monitoring equipment replaced into the well wherever present.

Logging and Sampling Quality Checks

Depth encoder errors –

Recorded depth encoder errors are shown in Table 2.

Ultimately each log was referenced to ground surface (which was often a concrete pad), but the measurement locations were at the top of the casing stick-up. For each initial downlog the top of the sonde was referenced to the top of the casing, some distance above the ground surface as a negative depth. To initiate an uplog, the depth reference was changed by adding the length of the sonde to the active depth of the sonde. We recorded the position of the sonde at the casing top after winching out of the well in order to detect any depth reference errors between the up and down logging runs caused by cable tension differences, hung sondes, and software issues.

The TCDS sonde was hung inside the casing on two occasions (NWF 1376 and NWF 12838). This presumably occurred where a joint and/or scale caught the tip of the sonde and momentarily held it from advancing. For these two sonde runs the depth reference error was near 2-feet. We made corrections to the log depths using the DUIN gamma curves as a reference, and have removed those errors from our overall average.

The overall average depth reference errors were 0.12, 0.11 and 0.14 -feet for TCDS, DUIN and ELOG runs, respectively.

The maximum depth reference error recorded during water sample runs was 0.22-feet, with an overall average error of 0.09-feet.

Note that because a downlog was referenced to the top of the sonde, the data at the end of the sonde run was clipped by the length of the sonde. This was a feature of the data collection software. The uplogs included this data for reference.

RG TCDS logging sonde -

We performed a single bench test of our specific conductance logging sonde using a 2764 µS standard. The measured value was 3042 µS, which was within 9.9% of the standard value. The FDEP acceptance criterion was lower at 5% (according to FT 1200). Note that accurate bench tests were difficult to obtain and the best measurement environment included sample fluid flowing freely across the conductivity sensors within the sonde. We were not able to reproduce the ideal measurement conditions at land surface.

We compared the RG TCDS log value for specific conductance and found a strong relationship to the YSI measured values of the samples. These comparisons were reported in Table 3 for each

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sample (column RPD YSI & Log). The average relative percent difference (RPD) between the sonde measurement and the YSI measurement, with the YSI treated as a "standard", was 5.4% with a standard deviation of 3.0%.

We logged each well at speeds ranging from 5 to 7 feet-per-minute for the TCDS sonde in order to optimize the measurement of temperature. We believe this approach helped establish the precisions of the RG TCDS specific conductance calculation. Based on the RPD of the TCDS sonde relative to the YSI sample values, we did not perform any secondary re-calibrations of the TCDS log traces.

RG ELOG logging sonde –

The ELOG sonde used an electrode bridle to provide the needed remote electrode for normal resistivity measurements. This bridle was 10-meters (32.8 feet) long, while the sonde itself was 9.48-feet long. In total with connections the entire assembly was 42.8-feet long. When the electrode at the top of this 42.8-foot array was inside PVC casing, the measurements were invalid. This was not true for the steel casings where an electrical connection with the remote electrode could be maintained.

The ELOG gamma sensor failed on the second day of logging and was not functional thereafter. This had no influence on the logging results or the work product, as all other sondes also had gamma sensors.

Repeat sections –

The repeat sections were generally in good agreement between up and down trolling runs for each geophysical sonde. Each TCDS downlog was treated as the main run, with the uplog as a repeat. Each DUIN and ELOG uplog was treated as the main run, with the downlog as a repeat.

There were notable differences between the down and up TCDS sonde runs, with the up log often showing more gradual transitions likely caused by subtle mixing or less optimal fluid flow across the sonde sensors.

ELOG downlogs tended to be show more irregular or stochastic data. Very strong DUIN spikes were occasionally noted (typically a high resistivity spike for the shallow ILM trace) and were repeated.

The TCDS sonde was temporarily plugged with silts in NWF1376. This well had a soft bottom, and suspended solids in the water column upward within the openhole section.

YSI Pro Plus calibrations –

As shown in Tables 4 and 5, all ICV and most CCV measurements were consistently below the FDEP 5% RPD acceptance criteria for specific conductance and the 0.2 buffer units for pH.

The CCV bracketing performed at the end of the day failed only once for specific conductance on February 28 at well NWF7174. The CCV RPD was 7.4% using a standard solution of 12880 µS.

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Laboratory measurements –
Flowers Chemical Laboratories (FCL) in Altamonte Springs performed all laboratory analyses. They also provided bottles, labels, coolers, deionized water, acid and chain-of-custody (COC) forms.
Tables 8 and 9 provide an easy correlation between the sample names assigned by the laboratory, the RMBAKER sample names and the wells and depths sampled. The dates, times and names on these tables match the COC forms. The only error was a miss-labeled sample name on the COC form for NWF1696.

Quality Control using duplicates –

Two types of duplicates were collected. One type used the same sample volume as the original, and the other came from an entirely separate sampler run. The testing results for duplicates are shown in Table 6.

NWF7349 595 DUP1 was a duplicate laboratory sample from the same water volume as the original sample taken at 595-feet. DUP1 was preserved a few minutes after the original, but the COC forms reflected time differences based on a mixing of the CST and EST time zones. The YSI measurements of a duplicate for this sample were delayed, and may reflect changes due to an elevated temperature.

NWF7174 1070 DUP2 was a duplicate laboratory sample from the same depth in the well, but from a second sampler run.

For DUP1, in comparison to the original sample, the RPD for chlorides, TDS and sodium were 0.00, 3.5%, and 3.5%, respectively.

For DUP2, in comparison to the original sample, the RPD for chlorides, TDS and sodium were 2.4%, 1.6%, and 3.9%, respectively.

Quality Control using blanks –

Four (4) equipment blanks were collected even though only two (2) were required by the District. Three (3) blanks were taken either at the start or end of well sampling, while one (1) blank was collected between a shallow and deep well sample (intermediate blank). The testing results for blanks are shown in Table 7.

The goal for equipment blanks was to trace potential contamination of the samples from field and laboratory sources, and ultimately to produce laboratory results that fell below the MDL for that parameter.

All blanks were successfully measured at or below the MDL for chloride and sodium.

The TDS value for the standard equipment blank at NWF12838 collected on Feb 19 was 1.5 mg/L *above* the laboratory MDL. The TDS value for the intermediate blank at NWF9137 collected on Feb 26 was 21.5 mg/L *above* the laboratory MDL. The TDS value for the standard equipment blank at NWF12848 collected on Mar 1 was 323.5 mg/L *above* the MDL.

We cannot eliminate the possibility that the TDS values elevated above the MDL may reflect the presence of residual solids in parts of the sampler that could not be adequately cleaned, although this explanation seems unlikely. As per personnel communication with the FDEP, a successful

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SOP-compliant cleaning program will be judged on the laboratory results of the equipment blanks. Based on a cross-plot and linear regression of specific conductance versus TDS for this project, a laboratory TDS value of 326 mg/L would have corresponded to a field measured specific conductance value near 550 to 600 uS/cm (Figure 5). The field measured specific conductance for this anomalous blank was actually 2.0 uS/cm and additionally there was no detectable laboratory measured chloride or sodium. Overall, it is our opinion that the sample blanks indicated acceptable levels of decontamination between sampling events for a sampler of this type and structural complexity, and that the elevated TDS value for NWF12848 was most likely *not* related to our cleaning process.

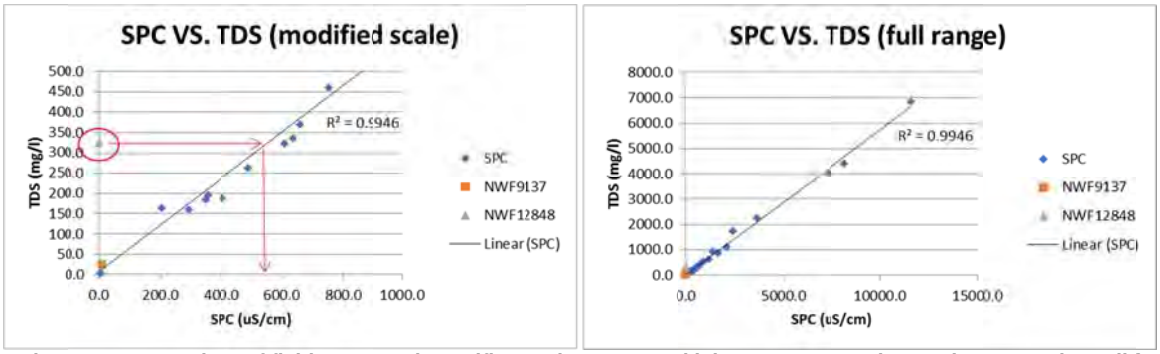

Figure 5. Cross-plots of field measured specific conductance and laboratory TDS values. The regressions did not include the elevated TDS values from the anomalous blanks.

Geophysical Logs

RMBAKER named log traces according to a scheme consistent with the shared SJRWMD and SFWMD DBHydro geophysical logging database. A legend for the log names was included within each log header.

Logs are provided as attachments in an 8.5 x 11 -inch format, with no margins to enhance the electronic review of the plots (although they can be printed on standard paper).

As main logs the TCDS downlog, DUIN uplog and ELOG uplog were used. Selected logs were chosen for the composite suite with comments and sampled depths noted. YSI values for C25U (log derived specific conductance) were plotted as points.

Main logs and repeat logs are shown simultaneously on 11 x 17 -inch formatted plots.

All logs and spreadsheets are provided in electronic formats.

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Limitations

While due care has been exercised in the performance of these measurements and observations, in accordance with methodologies utilized by the general practitioner, RMBAKER LLC can make no representations, warranties, or guarantees with respect to latent or concealed conditions that may exist, which may be beyond the detection capabilities of the methodologies used, or that may extend beyond the areas and depths explored. The analyses and conclusions contained in our report are based on site conditions as they existed at the time of our exploration. If, at any time, different subsurface conditions from those interpreted herein are observed to be present, we reserve the right to modify our analyses and conclusions as warranted by the new information.

ELECTRONIC VERSION

SIGNED AND SEALED
HARDCOPY ON FILE

RMBAKER LLC
Robert M. Baker, CPG, PG
Managing Member
Fla. Reg. Geologist No. 2186

Attachments included

Table 2. Site Data and Tasks

NWFWMD WELL ID	ALIAS	GEOPHYSICAL& SAMPLING DATE	SAMPLE DEPTH #1	SAMPLE DEPTH #2	SAMPLE DEPTH #3	EQUIPMENT BLANK	DUPLICATE	LOGGING TOTAL DEPTH	CASING DEPTH	WATER LEVEL (FT)	TIME (CST)	WATER LEVEL (FT)	TIME (CST)	TCDS DOWN & UP	DEPTH ENCODER ERROR	DUIN DOWN & UP	DEPTH ENCODER ERROR	ELOG DOWN & UP	DEPTH ENCODER ERROR
NWF12811	A-4	2/18/2019	610	690				701.85	600	9.27	8:06 AM	9.30	3:30 PM	Y	0.08	Y	0.08	Y	0.18
NWF12838	A-3	2/19/2019	660			Y		674.70	560	44.98	7:32 AM	44.94	2:17 PM	Y	2.00	Y	0.10	Y	0.18
NWF1376	West Hewett Floridan	2/20/2019	640					704.60	550	22.40	9:49 AM	22.33	5:59 PM	Y	2.53	Y	0.10	Y	0.07
NWF1696	OCWS ISL-1	2/21/2019	665	840				863.05	540	61.19	8:26 AM	61.21	4:45 PM	Y	0.03	Y	0.12	Y	0.07
NWF7349	SWUC East Monitor	2/22/2019	440	595		Y	Y	601.00	425	15.97	8:50 AM	15.96	3:48 PM	Y	0.17	Y	0.12	Y	0.07
NWF7183	SWUC West Monitor	2/25/2019	520	585	660			702.20	498	33.35	8:38 AM	33.5	4:46 PM	Y	0.17	Y	0.07	Y	0.43
NWF9137	DWU-4048 Indian River Trail	2/26/2019	500	640		Y		649.70	496	38.57	8:40 AM	38.22	2:35 PM	Y	0.15	Y	0.1	Y	0.06
NWF12840	A-2	2/27/2019	745	875				887.6	740	66.60	8:45 AM	66.54	3:33 PM	Y	0.13	Y	0.2	Y	0.22
NWF7174	WRP Lower Floridan	2/28/2019	955	1070			Y	1086.50	920	30.70	8:53 AM	30.59	5:02 PM	Y	0.05	Y	0.05	Y	0.05
NWF12848	B-2	3/1/2019	1060	1125	1145	Y		1154.05	1050	49.26	8:42 AM	49.16	4:48 PM	Y	0.21	Y	0.16	Y	0.04

Table 3. YSI and Laboratory Results

YSI SERIAL NUMBER:	19A104561																
ANALYST:	ROBERT BAKER																
				YSI MEASUREMENTS								FCL LAB MEASUREMENTS					
												SM4500-Cl E		SM2540 C		EPA200.7	
NWFWMD WELL ID	DATE	TIME (EST)	SAMPLE DEPTH	TEMP	SPC	COND	TDS	SAL	pH	C25U	RPD YSI & LOG	Cl (mg/L)	MDL	TDS (mg/L)	MDL	Na (mg/L)	MDL
NWF12811	2/18/2019	3:04:48 PM	610	19.0	8149.0	7213.0	5297.0	4.54	7.49	8353	2.5%	2690.0	48.0	4420.0	2.5	1350.0	0.5
NWF12811	2/18/2019	4:07:49 PM	690	19.1	7321.0	6500.0	4758.0	4.05	7.83	7495	2.4%	2300.0	40.0	4040.0	2.5	1280.0	0.5
NWF12838	2/19/2019	1:45:57 PM	660	22.3	205.4	195.0	133.3	0.10	7.89	193	5.9%	4.0	4.0	164.0	2.5	4.9	0.5
NWF1376	2/20/2019	6:32:54 PM	640	21.5	928.0	866.0	604.5	0.46	8.49	947	2.1%	182.0	4.0	536.0	2.5	138.0	0.5
NWF1696	2/21/2019	4:21:24 PM	665	23.0	662.0	637.0	429.0	0.32	6.54	602	9.1%	60.2	4.0	370.0	2.5	114.0	0.5
NWF1696	2/21/2019	5:24:32 PM	840	22.6	612.0	584.0	396.5	0.30	8.65	605	1.1%	60.6	4.0	324.0	2.5	117.0	0.5
NWF7349	2/22/2019	2:43:27 PM	440	22.7	407.7	389.5	265.2	0.20	7.82	360	11.8%	27.7	4.0	188.0	2.5	27.2	0.5
NWF7349	2/22/2019	3:36:11 PM	595	22.4	1188.0	1130.0	773.5	0.59	7.81	1271	7.0%	252.0	4.0	630.0	2.5	172.0	0.5
NWF7183	2/25/2019	3:13:55 PM	520	21.7	350.3	328.5	227.5	0.17	7.26	335	4.5%	18.7	4.0	184.0	2.5	23.4	0.5
NWF7183	2/25/2019	4:06:52 PM	585	22.2	1393.0	1317.0	903.5	0.70	7.66	1488	6.8%	148.0	4.0	938.0	2.5	146.0	0.5
NWF7183	2/25/2019	5:02:43 PM	660	21.9	2394.0	2251.0	1553.5	1.23	7.43	2573	7.5%	250.0	4.0	1760.0	2.5	284.0	0.5
NWF9137	2/26/2019	2:06:53 PM	500	21.9	293.7	276.5	191.1	0.14	7.79	293	0.2%	7.5	4.0	160.0	2.5	22.8	0.5
NWF9137	2/26/2019	3:22:14 PM	640	21.6	754.0	706.0	487.5	0.37	7.72	775	2.8%	30.4	4.0	460.0	2.5	62.7	0.5
NWF12840	2/27/2019	3:21:54 PM	745	23.4	358.2	347.0	232.7	0.17	7.81	381	6.2%	35.5	4.0	196.0	2.5	34.0	0.5
NWF12840	2/27/2019	4:22:30 PM	875	23.0	492.7	473.9	320.4	0.24	8.74	543	10.2%	86.6	4.0	264.0	2.5	70.9	0.5
NWF7174	2/28/2019	3:23:04 PM	955	22.7	3646.0	3483.0	2372.5	1.92	7.97	3824	4.9%	1130.0	24.0	2260.0	2.5	643.0	0.5
NWF7174	2/28/2019	4:30:06 PM	1070	22.7	11575	11065	7520.5	6.60	7.62	12458	7.6%	4160.0	280.0	6850.0	2.5	2070.0	0.5
NWF12848	3/1/2019	3:08:09 PM	1060	23.4	638.0	619.0	416.0	0.31	8.96	606	5.1%	58.5	4.0	336.0	2.5	130.0	0.5
NWF12848	3/1/2019	4:20:23 PM	1125	22.0	1668.0	1573.0	1085.5	0.84	8.76	1585	4.9%	396.0	8.0	888.0	2.5	427.0	0.5
NWF12848	3/1/2019	5:29:32 PM	1145	21.4	2102.0	1956.0	1365.0	1.08	8.78	2231	6.1%	566.0	16.0	1130.0	2.5	402.0	0.5
											average	5.4%					
											std dev	3.0%					

Table 4. Daily YSI Specific Conductance Calibration Results

YSI SERIAL NUMBER:		19A104561									
ANALYST:		ROBERT BAKER									
		SPECIFIC CONDUCTANCE									
NWFWMD WELL ID	DATE	IC TIME (EST)	IC STD (uS/cm)	ICV TIME (EST)	ICV STD (uS/cm)	ICV (uS/cm)	RPD (<5%)	CCV TIME (EST)	CCV STD (uS/cm)	CCV (uS/cm)	RPD (<5%)
NWF12811	2/18/2019	1:29:18 PM	1413	1:34:12 PM	2764	2896	4.8%	4:17:21 PM	12880	12558	2.5%
NWF12838	2/19/2019	12:24:47 PM	447.1	12:25:26 PM	84	86	2.4%	2:49:54 PM	447.1	446	0.2%
NWF1376	2/20/2019	3:14:26 PM	447.1	3:15:30 PM	447.1	445.1	0.4%	6:37:24 PM	1413	1438	1.8%
NWF1696	2/21/2019	3:42:57 PM	1413	3:46:19 PM	447.1	457.4	2.3%	5:28:47 PM	1413	1417	0.3%
NWF7349	2/22/2019	2:09:54 PM	1413	2:10:57 PM	1413	1406	0.5%	4:51:32 PM	2764	2863	3.6%
NWF7183	2/25/2019	2:38:16 PM	1413	2:39:18 PM	1413	1414	0.1%	5:07:31 PM	12880	12549	2.6%
NWF7183	2/25/2019	1:40:00 PM		2:42:32 PM	447.1	425.4	4.9%				
NWF9137	2/26/2019	1:36:40 PM	447.1	1:39:13 PM	84	85.5	1.8%	3:36:39 PM	1413	1424	0.8%
NWF12840	2/27/2019	2:31:02 PM	447.1	2:32:20 PM	447.1	449.5	0.5%	4:46:21 PM	2764	2726	1.4%
NWF12840	2/27/2019	1:31:00 PM		2:37:27 PM	2764	2723	1.5%				
NWF7174	2/28/2019	2:04:55 PM	2764	2:05:47 PM	2764	2759	0.2%	5:42:24 PM	12880	11927	7.4%
NWF12848	3/1/2019	2:34:14 PM	1413	2:35:04 PM	1413	1414	0.1%	5:54:36 PM	2764	2804	1.4%
NWF12848	3/1/2019			2:36:57 PM	447.1	430.5	3.9%				

IC - initial calibration.

ICV - initial calibration verification.

CCV - continuing calibration verification intended to bracket the measured values at the high or low end of the range.

RPD - relative percent difference acceptance criteria is 5% for specific conductance and 0.2 standard units for pH.

RED - RPD of CCV exceeded the FDEP acceptance criteria.

Table 5. Daily YSI pH Calibration Results

YSI SERIAL NUMBER:		19A104561									
ANALYST:		ROBERT BAKER									
		pH									
NWFWMD WELL ID	DATE	IC TIME (EST)	IC STANDARDS	ICV TIME (EST)	ICV STD	ICV	DIFF (<0.2)	CCV TIME (EST)	CCV STD	CCV	DIFF (<0.2)
NWF12811	2/18/2019	1:47:42 PM	4, 7, 10	1:48:32 PM	4	4.04	0.04		none		
NWF12838	2/19/2019	12:41:03 PM	4, 7, 10	12:41:41 PM	4	3.92	0.08	2:54:20 PM	10	10.02	0.02
NWF1376	2/20/2019	3:21:20 PM	4, 7, 10	3:21:44 PM	4	3.97	0.03	6:39:15 PM	10	9.97	0.03
NWF1696	2/21/2019	3:49:48 PM	4, 7, 10	3:50:17 PM	4	3.95	0.05	5:29:25 PM	10	9.97	0.03
NWF7349	2/22/2019	2:20:35 PM	4, 7, 10	2:22:01 PM	4	3.94	0.06	4:54:16 PM	10	9.96	0.04
NWF7183	2/25/2019	2:53:50 PM	4, 7, 10	2:54:13 PM	4	3.94	0.06	5:08:29 PM	10	9.94	0.06
NWF9137	2/26/2019	1:47:47 PM	4, 7, 10	1:48:07 PM	4	3.96	0.04	3:37:21 PM	10	9.99	0.01
NWF12840	2/27/2019	2:45:01 PM	4, 7, 10	2:45:25 PM	4	3.95	0.05	4:37:00 PM	10	9.91	0.09
NWF7174	2/28/2019	2:35:36 PM	4, 7, 10	2:35:52 PM	4	3.97	0.03	5:43:16 PM	10	9.95	0.05
NWF12848	3/1/2019	2:42:14 PM	4, 7, 10	2:42:30 PM	10	9.97	0.03	5:55:25 PM	4	3.98	0.02

IC - initial calibration.

ICV - initial calibration verification.

CCV - continuing calibration verification intended to bracket the measured values at the high or low end of the range.

DIFF - calibration verification must be within 0.2 standard units of the measured pH standard.

pH IC - daily calibrations for pH were performed using standards 4, 7 and 10 to form a linear regression.

Table 6. Quality Control from Duplicates

YSI SERIAL NUMBER:	19A104561														
ANALYST:	ROBERT BAKER														
				YSI MEASUREMENTS						FCL LAB MEASUREMENTS					
										SM4500-Cl E		SM2540 C		EPA200.7	
NWFWMD WELL ID	DATE	TIME (EST)	SAMPLE TYPE	TEMP	SPC	COND	TDS	SAL	pH	Cl (mg/L)	MDL	TDS (mg/L)	MDL	Na (mg/L)	MDL
NWF7174	2/28/2019	5:39:57 PM	1070 DUP2	22.7	11585.0	11086.0	7533.5	6.6	7.57	4260.0	280.0	6960.0	2.5	2150.0	0.5
NWF7174	2/28/2019	4:30:06 PM	1070 ORIG	22.7	11575.0	11065.0	7520.5	6.6	7.62	4160.0	280.0	6850.0	2.5	2070.0	0.5
NWF7349	2/22/2019	4:00:42 PM	595 DUP1	23.6	1177.0	1146.0	767.0	0.6	7.97	252.0	4.0	652.0	2.5	178.0	0.5
NWF7349	2/22/2019	3:36:11 PM	595 ORIG	22.4	1188.0	1130.0	773.5	0.6	7.81	252.0	4.0	630.0	2.5	172.0	0.5

DUP1 - duplicate sample taken from the same sample volume as the original.

DUP2 - duplicate sample taken from a second sampler run to the same depth.

Table 7. Quality Control from Blanks

YSI SERIAL NUMBER:	19A104561														
ANALYST:	ROBERT BAKER														
				YSI MEASUREMENTS						FCL LAB MEASUREMENTS					
										SM4500-Cl E		SM2540 C		EPA200.7	
NWFWMD WELL ID	DATE	TIME (EST)	SAMPLE TYPE	TEMP	SPC	COND	TDS	SAL	pH	Cl (mg/L)	MDL	TDS (mg/L)	MDL	Na (mg/L)	MDL
NWF12838	2/19/2019	2:37:31 PM	STD BLANK	22.1	7.1	6.7	4.6	0.0	7.34	4.0	4.0	4.0	2.5	0.5	0.5
NWF7349	2/22/2019	4:37:07 PM	STD BLANK	24.1	6.5	6.4	4.6	0.0	7.96	4.0	4.0	2.5	2.5	0.5	0.5
NWF9137	2/26/2019	2:35:24 PM	INT BLANK	19.8	10.1	9.1	6.5	0.0	7.51	4.0	4.0	24.0	2.5	0.5	0.5
NWF12848	3/1/2019	5:38:09 PM	STD BLANK	22.5	2.0	1.9	1.3	0.0	7.75	4.0	4.0	326.0	2.5	0.5	0.5

STD BLANK - standard blank collected at end of sampling.

INT BLANK - intermediate blank collected between shallow and deep samples.

Table 8. Sample Identification on COC Forms and Lab Reports

NWFWMD WELL ID	DATE	TIME	TIME ZONE	SAMPLE DEPTH	RMBAKER SAMPLE ID	LAB NO	HNO_3 ACID	PARAMETERS
NWF12811	2/18/2019	2:01 PM	CST	610	12811-610A-021819	392757GW1		Cl+TDS
					12811-610B-021819	392757GW2	X	Na
NWF12811	2/18/2019	3:01 PM	CST	690	12811-690A-021819	392757GW3		Cl+TDS
					12811-690B-021819	392757GW4	X	Na
NWF12838	2/19/2019	1:45 PM	EST	660	12838-660A-021919	392757GW5		Cl+TDS
					12838-660B-021919	392757GW6	X	Na
NWF1376	2/20/2019	5:32 PM	CST	640	12838-640A-021919	392757GW9		Cl+TDS
					12838-640B-021919	392757GW10	X	Na
NWF1696	2/21/2019	3:20 PM	CST	665	1696-665A-021919	392757GW11		Cl+TDS
					1696-665B-021919	392757GW12	X	Na
NWF1696	2/21/2019	4:15 PM	CST	840	1696-840A-021919	392757GW13		Cl+TDS
					1696-840B-021919	392757GW14	X	Na
NWF7349	2/22/2019	1:40 PM	CST	440	7349-440A	392783GW1		Cl+TDS
					7349-440B	392783GW2	X	Na
NWF7349	2/22/2019	2:31 PM	CST	595	7349-595A	392783GW3		Cl+TDS
					7349-595B	392783GW4	X	Na
NWF7183	2/25/2019	2:12 PM	CST	520	7183-520A	393341GW1		Cl+TDS
					7183-520B	393341GW2	X	Na
NWF7183	2/25/2019	3:03 PM	CST	585	7183-585A	393341GW5		Cl+TDS
					7183-585B	393341GW6	X	Na
NWF7183	2/25/2019	3:58 PM	CST	660	7183-660A	393341GW3		Cl+TDS
					7183-660B	393341GW4	X	Na
NWF9137	2/26/2019	1:04 PM	CST	500	9137-500A	393341GW7		Cl+TDS
					9137-500B	393341GW8	X	Na
NWF9137	2/26/2019	2:19 PM	CST	640	9137-640A	393341GW9		Cl+TDS
					9137-640B	393341GW10	X	Na
NWF12840	2/27/2019	2:20 PM	CST	745	12840-745A	393341GW13		Cl+TDS
					12840-745B	393341GW14	X	Na
NWF12840	2/27/2019	3:20 PM	CST	875	12840-875A	393341GW15		Cl+TDS
					12840-875B	393341GW16	X	Na
NWF7174	2/28/2019	2:20 PM	CST	955	7174-955A	393369GW1		Cl+TDS
					7174-955B	393369GW2	X	Na
NWF7174	2/28/2019	3:26 PM	CST	1070	7174-1070A	393369GW3		Cl+TDS
					7174-1070B	393369GW4	X	Na
NWF12848	3/1/2019	2:05 PM	CST	1060	12848-1060A	393370GW1		Cl+TDS
					12848-1060B	393370GW2	X	Na
NWF12848	3/1/2019	3:18 PM	CST	1125	12848-1125A	393370GW3		Cl+TDS
					12848-1125B	393370GW4	X	Na
NWF12848	3/1/2019	4:28 PM	CST	1145	12848-1145A	393370GW5		Cl+TDS
					12848-1145B	393370GW6	X	Na

RED- miss-labeled on COC form.

TIME - Times are shown as listed on COC form. Most are CST, but some were recored relative to EST.

Table 9. Blank and Duplicate Identification on COC Forms and Lab Reports

NWFWMD WELL ID	DATE	TIME	TIME ZONE	SAMPLE DEPTH	RMBAKER SAMPLE ID	LAB NO	HNO_3 ACID	PARAMETERS
NWF12838	2/19/2019	2:45 PM	EST	BLANK	12838-0C-021919	392757GW7		Cl+TDS
					12838-0C-021919	392757GW8	X	Na
NWF7349	2/22/2019	3:35 PM	EST	DUPL	7349-595AR	392783GW5		Cl+TDS
					7349-595BR	392783GW6	X	Na
NWF7349	2/22/2019	4:34 PM	CST	BLANK	7349-0C	392783GW7		Cl+TDS
					7349-0D	392783GW8	X	Na
NWF9137	2/26/2019	1:32 PM	CST	BLANK	9137-0A	393341GW1		Cl+TDS
					9137-0B	393341GW2	X	Na
NWF7174	2/28/2019	4:37 PM	CST	DUPL	7174-1070RA	393369GW5		Cl+TDS
					7174-1070RB	393369GW6	X	Na
NWF12848	3/1/2019	4:37 PM	CST	BLANK	12488-0C	393370GW7		Cl+TDS
					12848-0D	393370GW8	X	Na

TIME - Times are shown as listed on COC form. Most are CST, but some were recorded relative to EST.

Table 10. YSI Field Measurements

NWFWMD WELL ID	DATE & TIME	SPC	pH	TEMP	MEASUREMENT TYPE	YSI UNIT	YSI SERIAL
12811	2/18/19 1:34 PM	2896	5.86	19.9	SPC ICV	RMBYSIPRO1	19A104561
12811	2/18/19 1:48 PM	4703	4.04	20.4	pH ICV	RMBYSIPRO1	19A104561
12811	2/18/19 3:04 PM	8149	7.49	19	610	RMBYSIPRO1	19A104561
12811	2/18/19 4:07 PM	7321	7.83	19.1	690	RMBYSIPRO1	19A104561
12811	2/18/19 4:17 PM	12558	7.45	20.2	SPC CCV	RMBYSIPRO1	19A104561
12838	2/19/19 12:25 PM	446.2	6.28	17.4	SPC ICV	RMBYSIPRO1	19A104561
12838	2/19/19 12:41 PM	5031	3.92	17.6	pH ICV	RMBYSIPRO1	19A104561
12838	2/19/19 1:45 PM	205.4	7.89	22.3	660	RMBYSIPRO1	19A104561
12838	2/19/19 2:37 PM	7.1	7.34	22.1	BLANK	RMBYSIPRO1	19A104561
12838	2/19/19 2:49 PM	446	6.26	21.1	SPC CCV	RMBYSIPRO1	19A104561
12838	2/19/19 2:54 PM	5040	10.02	22.3	pH CCV	RMBYSIPRO1	19A104561
1376	2/20/19 3:15 PM	445.2	6.36	20	SPC ICV	RMBYSIPRO1	19A104561
1376	2/20/19 3:21 PM	3175	3.98	20.4	pH ICV	RMBYSIPRO1	19A104561
1376	2/20/19 6:32 PM	928	8.49	21.5	640	RMBYSIPRO1	19A104561
1376	2/20/19 6:37 PM	1438	7.77	22.2	SPC CCV	RMBYSIPRO1	19A104561
1376	2/20/19 6:39 PM	9860	9.97	21.8	pH CCV	RMBYSIPRO1	19A104561
1696	2/21/19 3:46 PM	457.4	7.24	24.7	SPC ICV	RMBYSIPRO1	19A104561
1696	2/21/19 3:50 PM	4808	3.95	25.5	pH ICV	RMBYSIPRO1	19A104561
1696	2/21/19 4:21 PM	662	6.54	23	665	RMBYSIPRO1	19A104561
1696	2/21/19 5:24 PM	612	8.65	22.6	840	RMBYSIPRO1	19A104561
1696	2/21/19 5:28 PM	1417	6.12	25.3	SPC CCV	RMBYSIPRO1	19A104561
1696	2/21/19 5:29 PM	5853	9.97	23.5	pH CCV	RMBYSIPRO1	19A104561
7349	2/22/19 2:10 PM	1406	6.32	27	SPC ICV	RMBYSIPRO1	19A104561
7349	2/22/19 2:22 PM	2466	3.94	26.5	pH ICV	RMBYSIPRO1	19A104561
7349	2/22/19 2:43 PM	407.7	7.82	22.7	440	RMBYSIPRO1	19A104561
7349	2/22/19 3:36 PM	1188	7.81	22.4	595	RMBYSIPRO1	19A104561
7349	2/22/19 4:00 PM	1177	7.97	23.6	595 DUP1	RMBYSIPRO1	19A104561
7349	2/22/19 4:37 PM	6.5	7.96	24.1	BLANK	RMBYSIPRO1	19A104561
7349	2/22/19 4:51 PM	2863	6.58	27.3	SPC CCV	RMBYSIPRO1	19A104561
7349	2/22/19 4:54 PM	4522	9.96	25.4	pH CCV	RMBYSIPRO1	19A104561
7183	2/25/19 2:39 PM	1414	6.93	18.3	SPC ICV	RMBYSIPRO1	19A104561
7183	2/25/19 2:42 PM	425.4	6.77	17.6	SPC ICV	RMBYSIPRO1	19A104561
7183	2/25/19 2:54 PM	4751	3.93	18.1	pH ICV	RMBYSIPRO1	19A104561
7183	2/25/19 3:13 PM	350.3	7.26	21.7	520	RMBYSIPRO1	19A104561
7183	2/25/19 4:06 PM	1393	7.66	22.2	585	RMBYSIPRO1	19A104561
7183	2/25/19 5:02 PM	2394	7.43	21.9	660	RMBYSIPRO1	19A104561
7183	2/25/19 5:07 PM	12549	6.59	22	SPC CCV	RMBYSIPRO1	19A104561
7183	2/25/19 5:08 PM	8858	9.94	21.6	pH CCV	RMBYSIPRO1	19A104561
9137	2/26/19 1:39 PM	85.5	5.25	21.6	SPC ICV	RMBYSIPRO1	19A104561
9137	2/26/19 1:48 PM	5055	3.96	23.2	pH ICV	RMBYSIPRO1	19A104561
9137	2/26/19 2:06 PM	293.7	7.79	21.9	500	RMBYSIPRO1	19A104561
9137	2/26/19 2:35 PM	10.1	7.51	19.8	BLANK	RMBYSIPRO1	19A104561
9137	2/26/19 3:22 PM	754	7.72	21.6	640	RMBYSIPRO1	19A104561
9137	2/26/19 3:36 PM	1424	6.93	24.3	SPC CCV	RMBYSIPRO1	19A104561
9137	2/26/19 3:37 PM	9767	9.99	22.2	pH CCV	RMBYSIPRO1	19A104561
12840	2/27/19 2:32 PM	449.5	7.23	23	SPC ICV	RMBYSIPRO1	19A104561
12840	2/27/19 2:37 PM	2723	6.15	23	SPC ICV	RMBYSIPRO1	19A104561
12840	2/27/19 2:45 PM	2372	3.95	24	pH ICV	RMBYSIPRO1	19A104561
12840	2/27/19 3:21 PM	358.2	7.81	23.4	745	RMBYSIPRO1	19A104561

Table 10. YSI Field Measurements

NWFWMD WELL ID	DATE & TIME	SPC	pH	TEMP	MEASUREMENT TYPE	YSI UNIT	YSI SERIAL
12840	2/27/19 4:22 PM	492.7	8.74	23	875	RMBYSIPRO1	19A104561
12840	2/27/19 4:37 PM	7660	9.91	26.5	pH CCV	RMBYSIPRO1	19A104561
12840	2/27/19 4:46 PM	2726	5.95	25.8	SPC CCV	RMBYSIPRO1	19A104561
7174	2/28/19 2:05 PM	2759	6.1	23.1	SPC ICV	RMBYSIPRO1	19A104561
7174	2/28/19 2:35 PM	4547	3.97	22.9	pH ICV	RMBYSIPRO1	19A104561
7174	2/28/19 3:23 PM	3646	7.97	22.7	955	RMBYSIPRO1	19A104561
7174	2/28/19 4:30 PM	11575	7.62	22.7	1070	RMBYSIPRO1	19A104561
7174	2/28/19 5:39 PM	11585	7.57	22.7	1070 DUP2	RMBYSIPRO1	19A104561
7174	2/28/19 5:42 PM	11927	6.9	24.6	SPC CCV	RMBYSIPRO1	19A104561
7174	2/28/19 5:43 PM	9030	9.95	23.9	pH CCV	RMBYSIPRO1	19A104561
12848	3/1/19 2:35 PM	1414	6.54	24.2	SPC ICV	RMBYSIPRO1	19A104561
12848	3/1/19 2:36 PM	430.5	6.14	25.2	SPC ICV	RMBYSIPRO1	19A104561
12848	3/1/19 2:42 PM	9334	9.97	24.5	pH ICV	RMBYSIPRO1	19A104561
12848	3/1/19 3:08 PM	638	8.96	23.4	1060	RMBYSIPRO1	19A104561
12848	3/1/19 4:20 PM	1668	8.76	22	1125	RMBYSIPRO1	19A104561
12848	3/1/19 5:29 PM	2102	8.78	21.4	1145	RMBYSIPRO1	19A104561
12848	3/1/19 5:38 PM	2	7.75	22.5	BLANK	RMBYSIPRO1	19A104561
12848	3/1/19 5:54 PM	2804	6.2	25.7	SPC CCV	RMBYSIPRO1	19A104561
12848	3/1/19 5:55 PM	4761	3.98	23.5	pH CCV	RMBYSIPRO1	19A104561

TIME - Times are referenced to EST.

SPC - specific conductance.

ICV - initial calibration verification

CCV - continuing calibration verification.

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WELL NWF1376
UWI NWF1376

LOG STAGE EXPLORATORY

HEADER NOTES:
WEST HEWITT FLORIDAN

COMP	NWFWMD
LOC	TOPSAIL PRESERVE STATE PARK
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

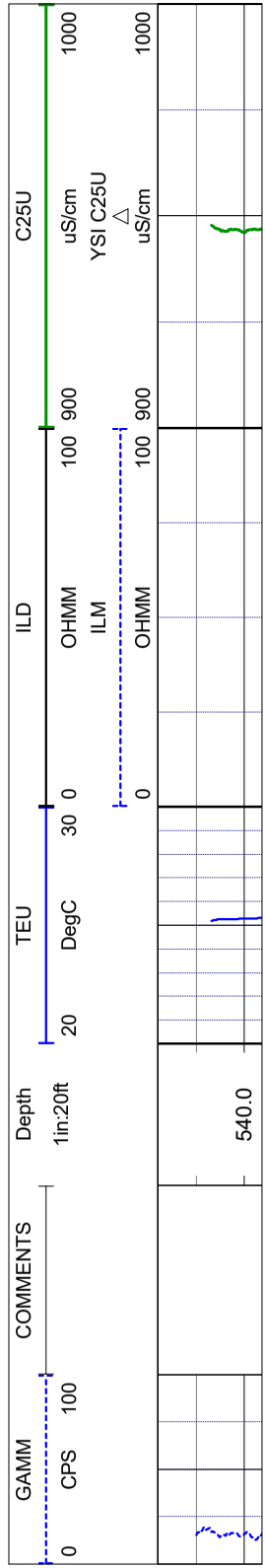
DATE	20 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	720		
DEPTH-LOGGER	704.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

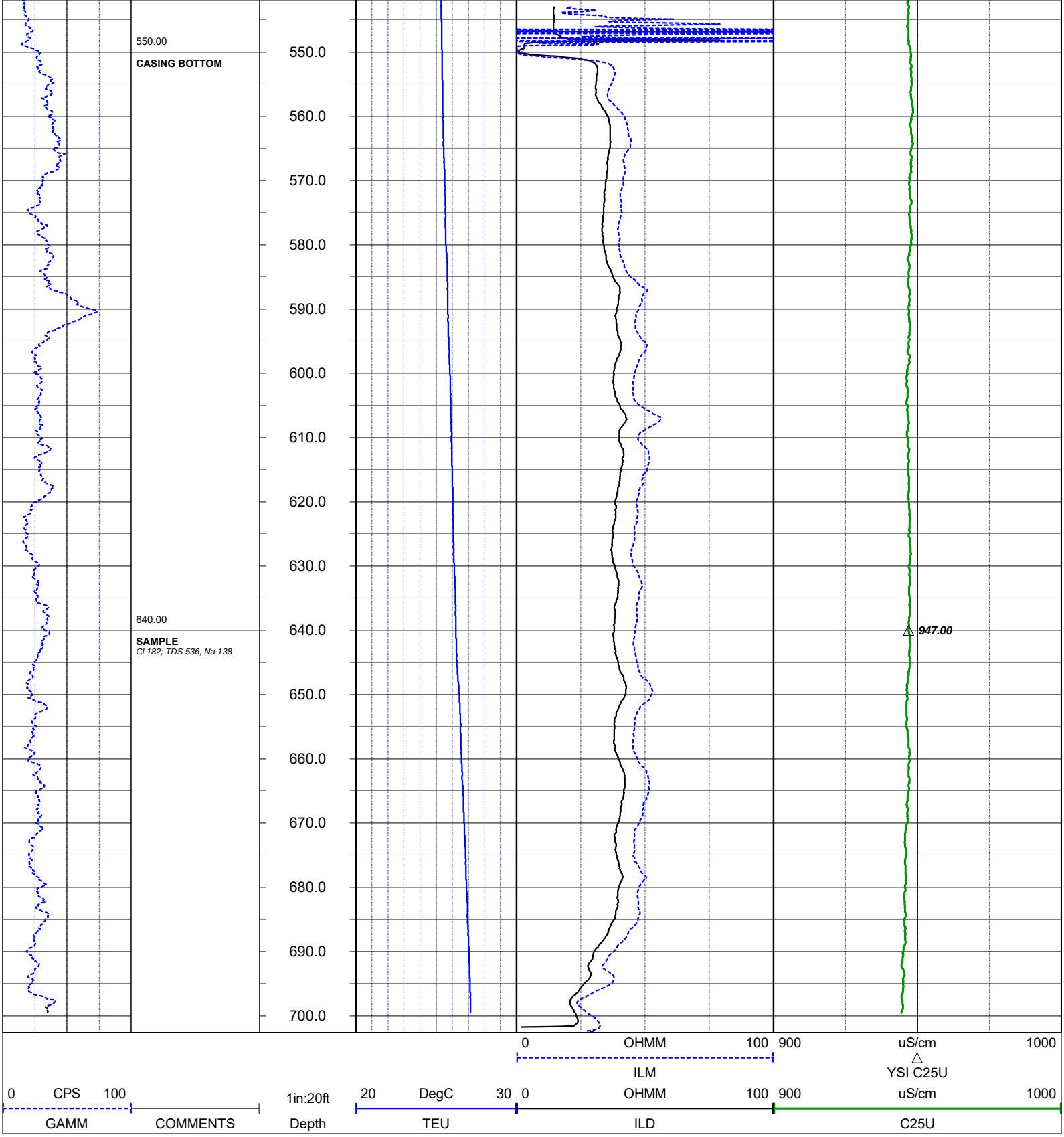
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	3.875	550	720	6	STEEL	0	273
				4	STEEL	273	550

PROJECT NOTES:
-Well bottom was very soft and silted; solids were collected in an inital sample at 680 feet that was discarded; a final sample depth of 640 feet still gave a sample that was cloudy and turbid with fine silts.

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





NOTES:
While due care has been exercised in the performance of these measurements and observations, in accordance with methodologies utilized by the general practitioner, RMBAKER LLC can make no representations, warranties, or guarantees with respect to latent or concealed conditions that may exist, which may be beyond the detection capabilities of the methodologies used, or that may extend beyond the areas and depths surveyed.
The geophysical well logs show subsurface conditions as they existed at the dates and locations shown, and it is not warranted that they are representative of subsurface conditions at other locations and times.
If, at any time, different subsurface conditions from those observed are determined to be present, we must be advised and allowed to review and revise our observations if necessary.

Florida Licensed Geology Business GB 458

END OF LOG

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WELL NWF1376
UWI NWF1376

LOG STAGE EXPLORATORY

HEADER NOTES:
WEST HEWITT FLORIDAN

COMP	NWFWMD
LOC	TOPSAIL PRESERVE STATE PARK
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

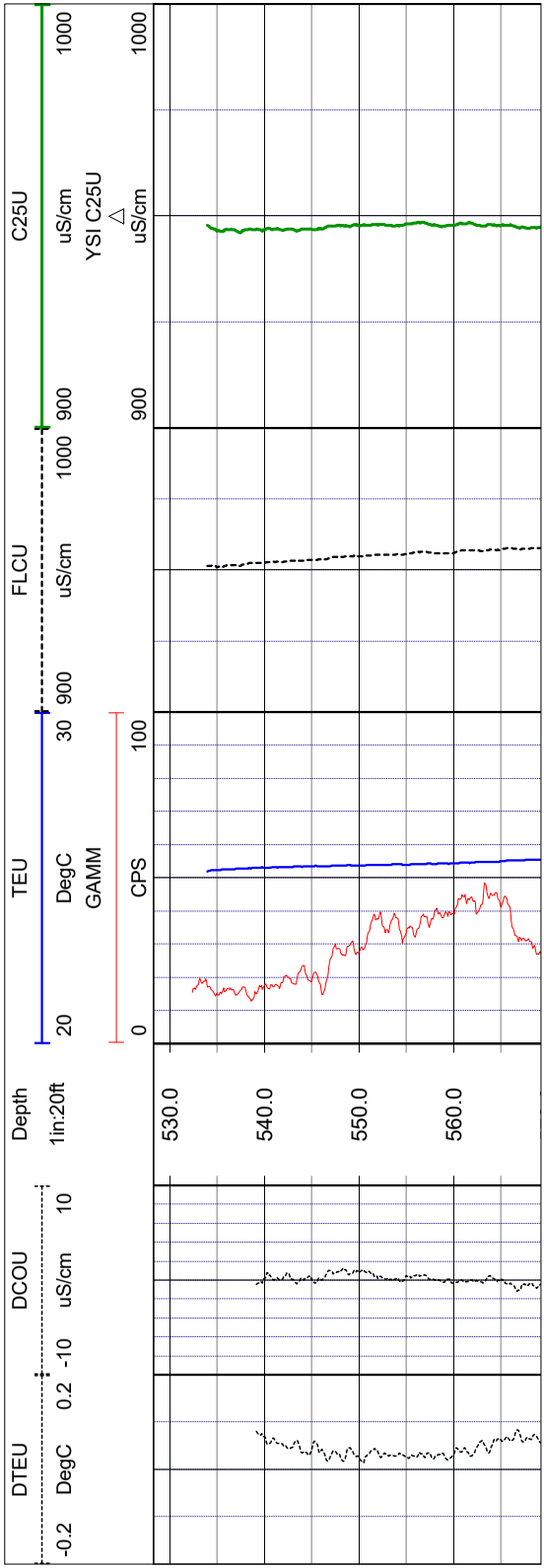
DRILLING MEASURED FROM:

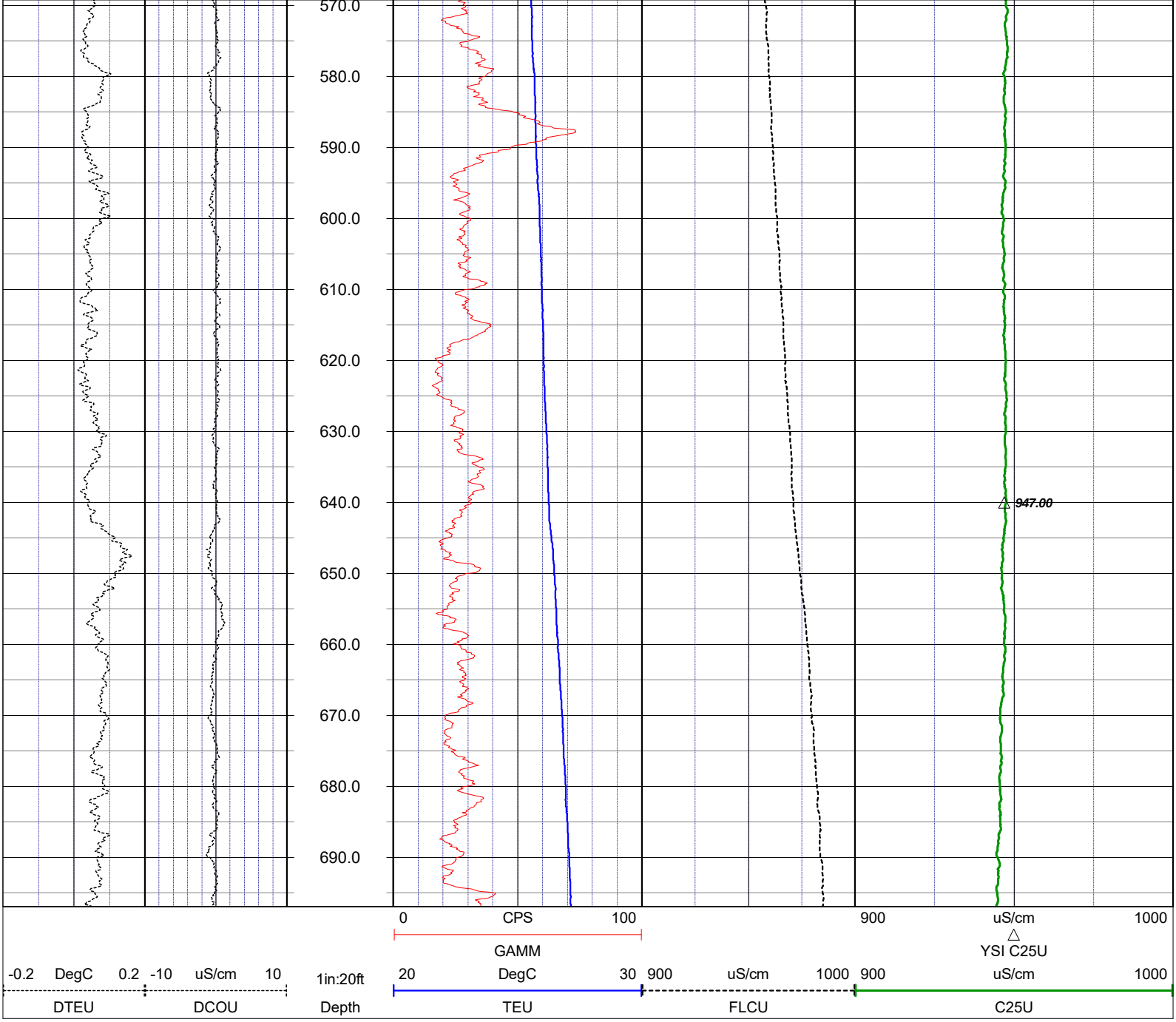
DATE	20 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	720		
DEPTH-LOGGER	704.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	3.875	550	720	6	STEEL	0	273
				4	STEEL	273	550

WATER QUALITY LOG CODES

static fluid temperature	TEU	dynamic fluid conductivity	FLCP	caliper	CAL
dynamic fluid temperature	TEP	static differential cond.	DCOU	repeat designation	R
static differential temperature	DTEU	dynamic differential cond.	DCOP	natural gamma	GAMM
dynamic differential temp.	DTEP	static specific conductance	C25U		
static fluid conductivity	FLCU	dynamic specific conductance	C25P		





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Florida Licensed Geology Business GB 458

END OF LOG

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Geology and Geophysics

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Orlando, FL 32819
mobile ph 407-733-8958
rob@rmbaker.com
www.rmbaker.com

WELL NWF1376
UWI NWF1376

LOG STAGE EXPLORATORY

HEADER NOTES:
WEST HEWITT FLORIDAN

COMP	NWFWMD
LOC	TOPSAIL PRESERVE STATE PARK
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

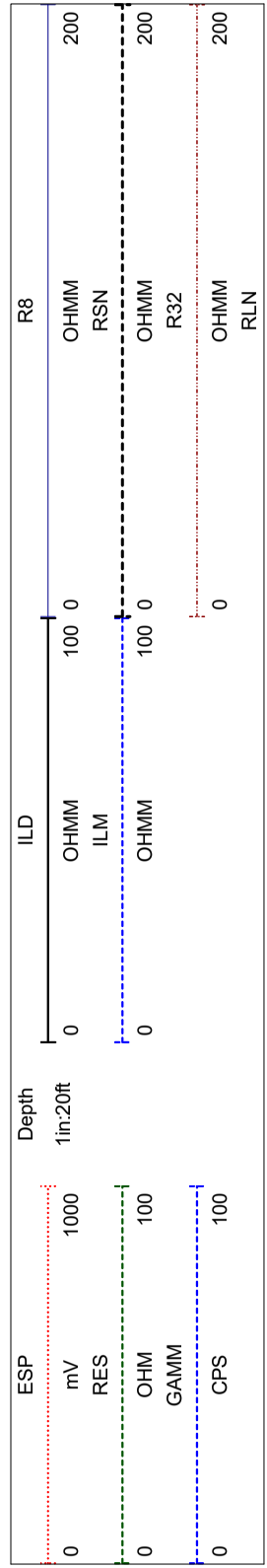
DATE	20 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	720		
DEPTH-LOGGER	704.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

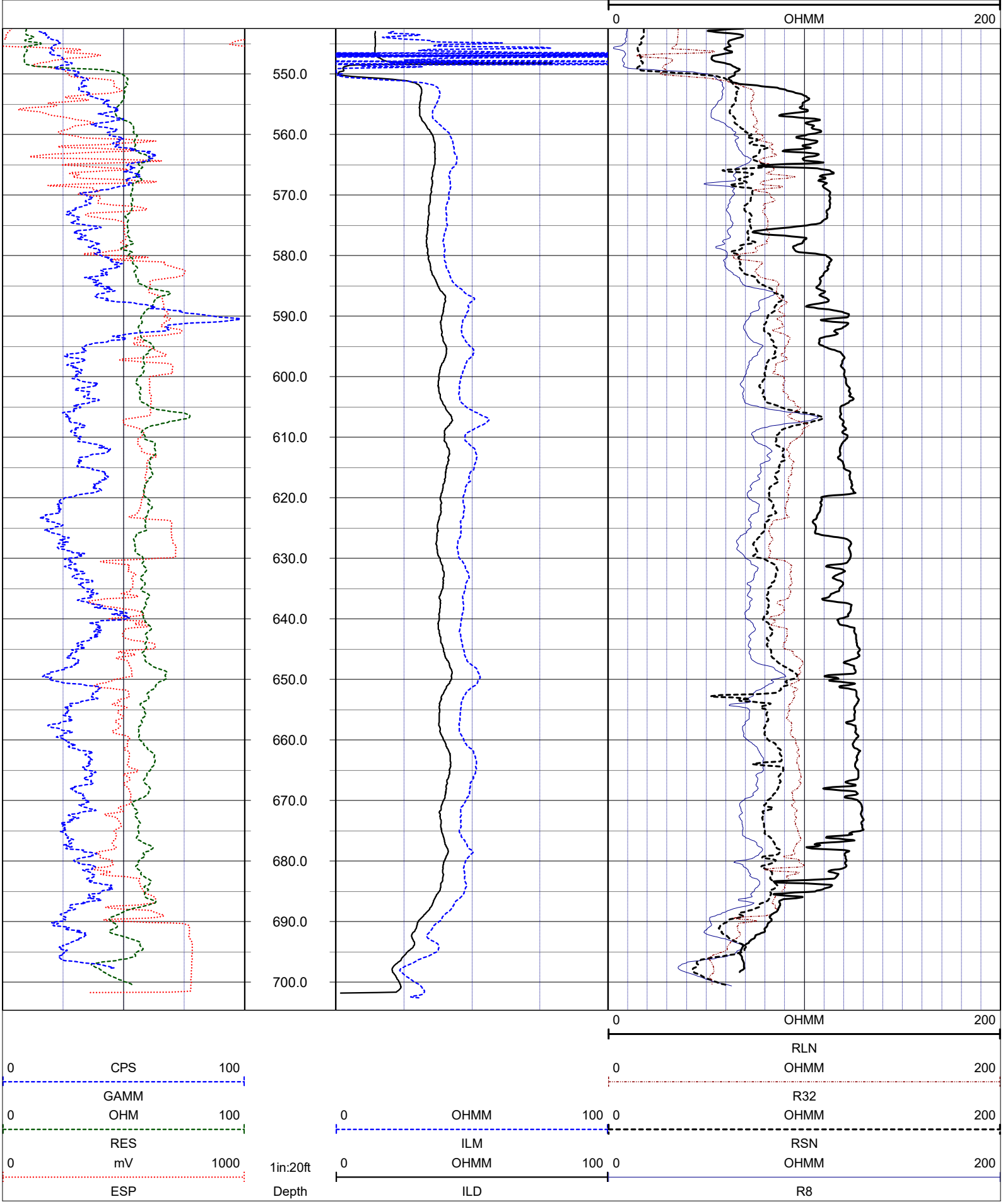
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	3.875	550	720	6	STEEL	0	273
				4	STEEL	273	550

PROJECT NOTES:
-Based on the electric log response, we believe that the 4-inch interval of casing from the reduction at 273 to 550 feet is composed of steel (not PVC).

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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END OF LOG

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407-733-8958

Location:	Topsail Pres. State Pk.	Casing Depth:	550
County:	Walton	Total Depth:	704.6
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	West Hewitt Floridan

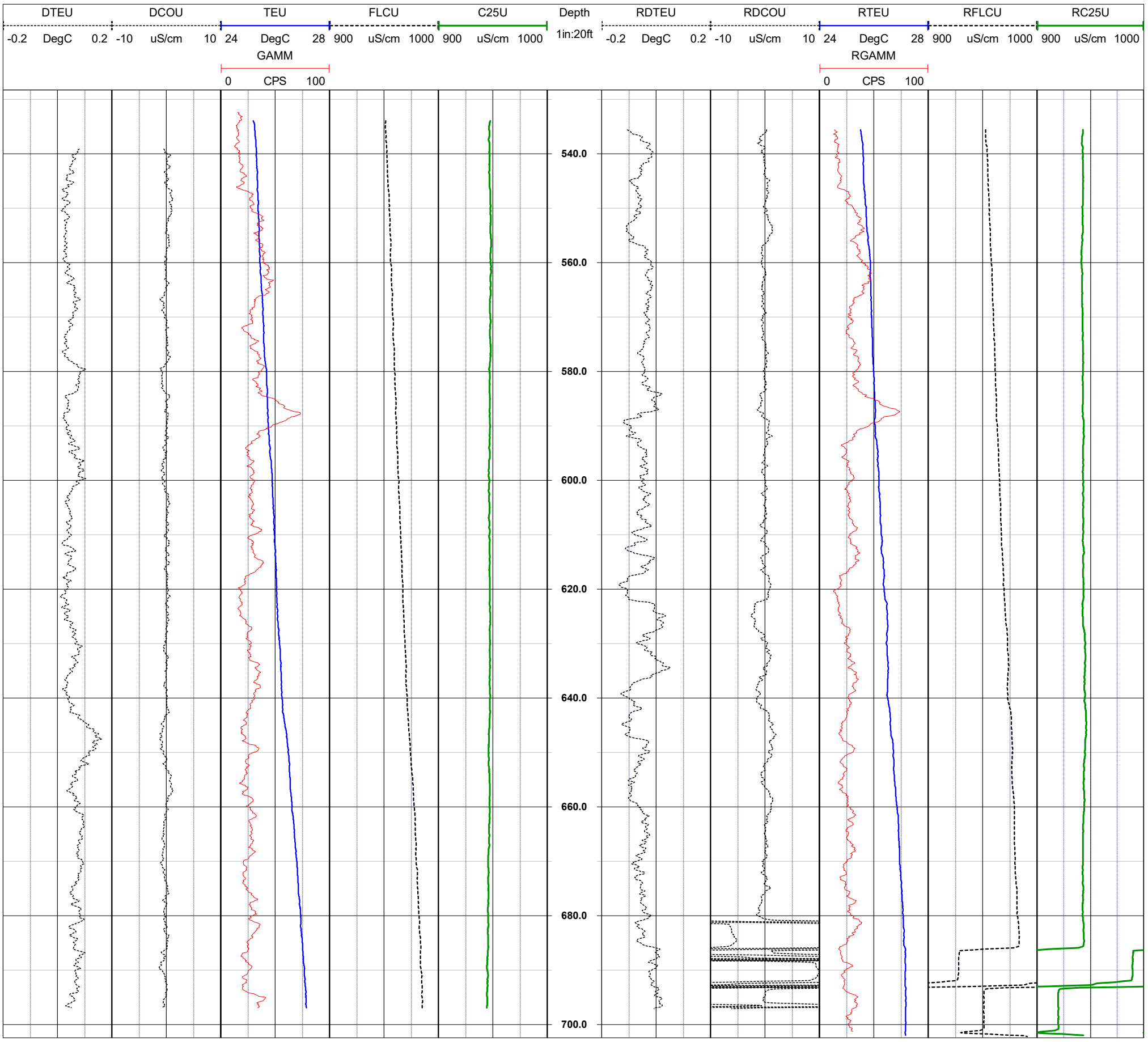
WELL ID: **NWF1376**
Date(s): **20 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

-The TCDS sonde became clogged with silts after the downlog. It became unclogged with cable jerks on the uplog by 685.5 feet.

MAIN

REPEAT



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County:	Walton	Total Depth:	704.6
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	West Hewitt Floridan

WELL ID: **NWF1376**
Date(s): **20 FEB 2019**

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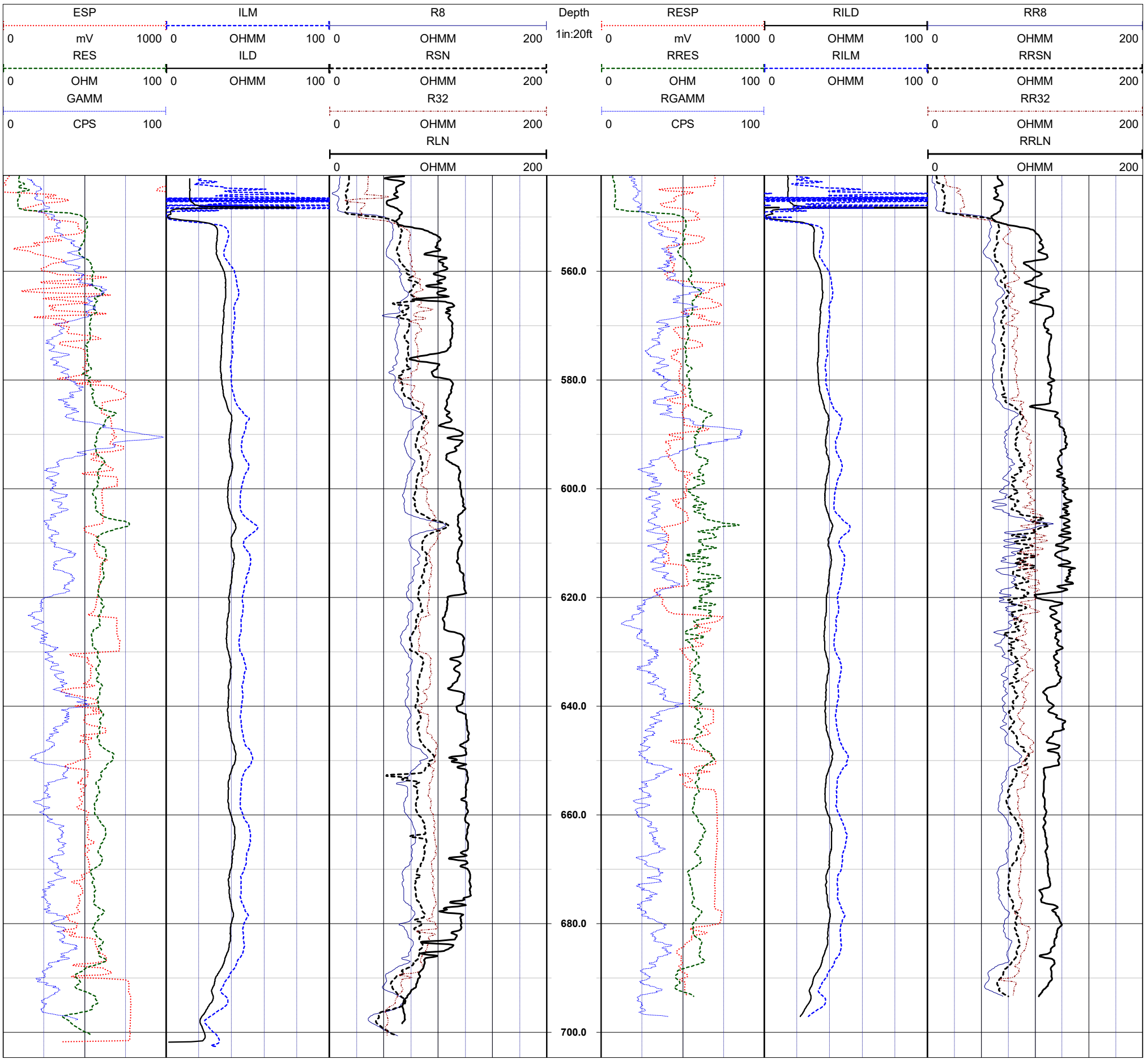
MAIN

REPEAT



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WELL NWF1696
UWI NWF1696

LOG STAGE EXPLORATORY

HEADER NOTES:
OCWS ISL

COMP	NWFWMD
LOC	OKALOOSA ISLAND
FLD	OKALOOSA ISLAND
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 0.17 FT ABOVE BERM; BERM 2.5 FT ABOVE GRADE

LOG MEASURED FROM: GROUND SURFACE - TOP OF BERM

DRILLING MEASURED FROM:

DATE	21 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	861		
DEPTH-LOGGER	863.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

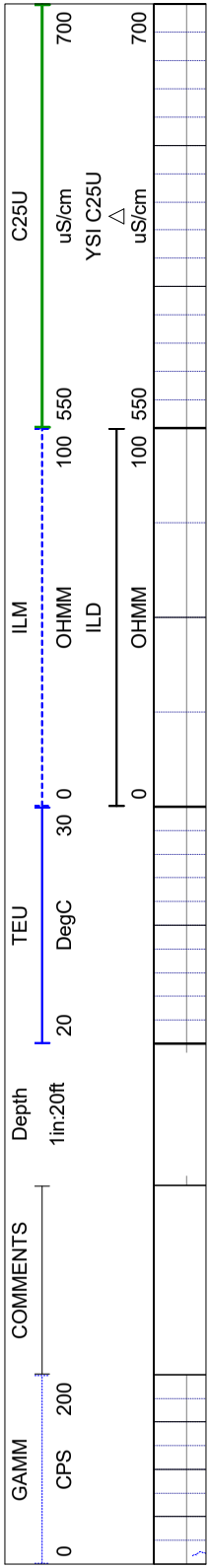
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	10-15	540	861	6	STEEL	0	540

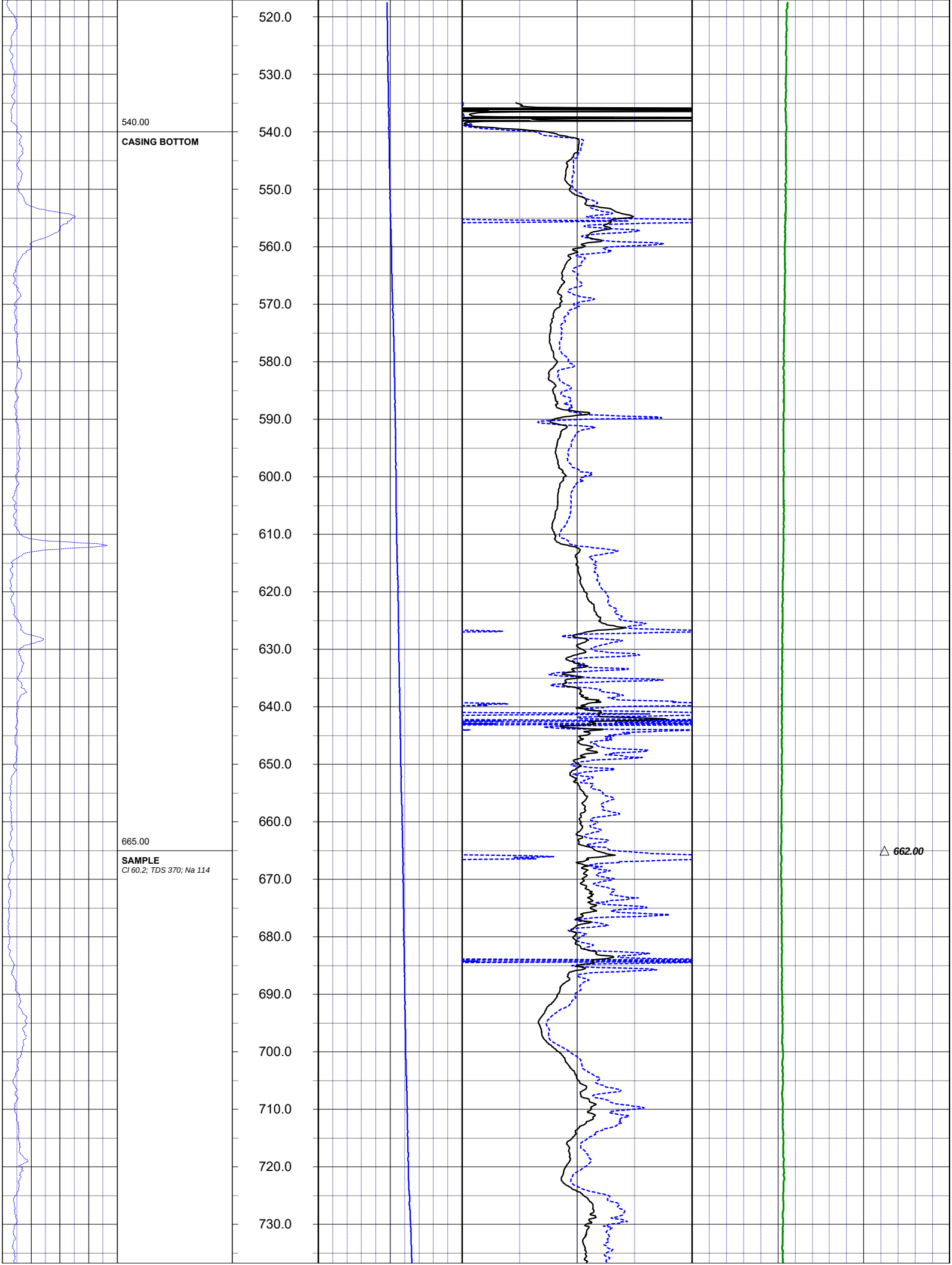
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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SAMPLE
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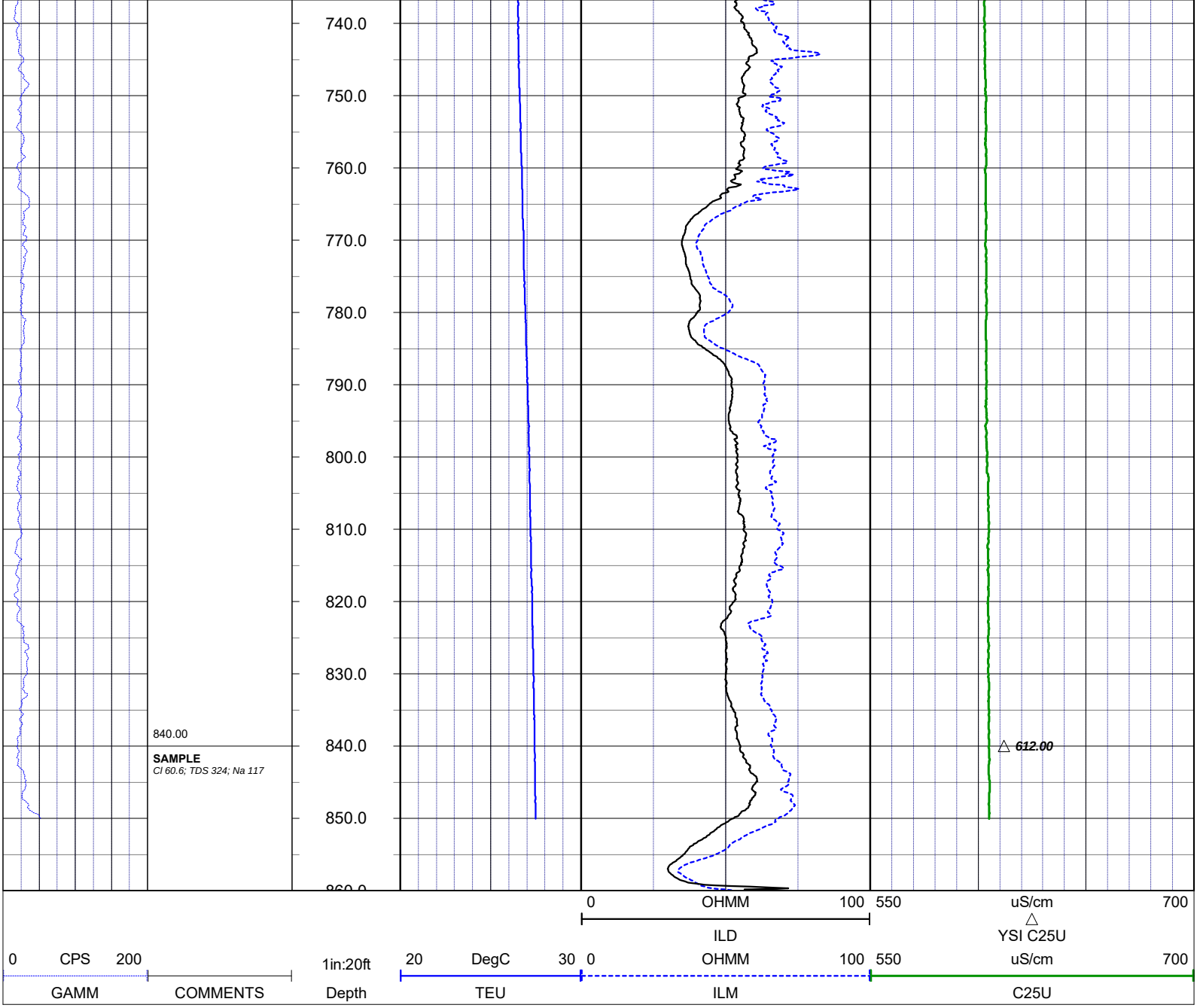
△ 662.00



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WELL NWF1696
UWI NWF1696

LOG STAGE EXPLORATORY

HEADER NOTES:
OCWS ISL

COMP	NWFWMD
LOC	OKALOOSA ISLAND
FLD	OKALOOSA ISLAND
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 0.17 FT ABOVE BERM; BERM 2.5 FT ABOVE GRADE

LOG MEASURED FROM: GROUND SURFACE - TOP OF BERM

DRILLING MEASURED FROM:

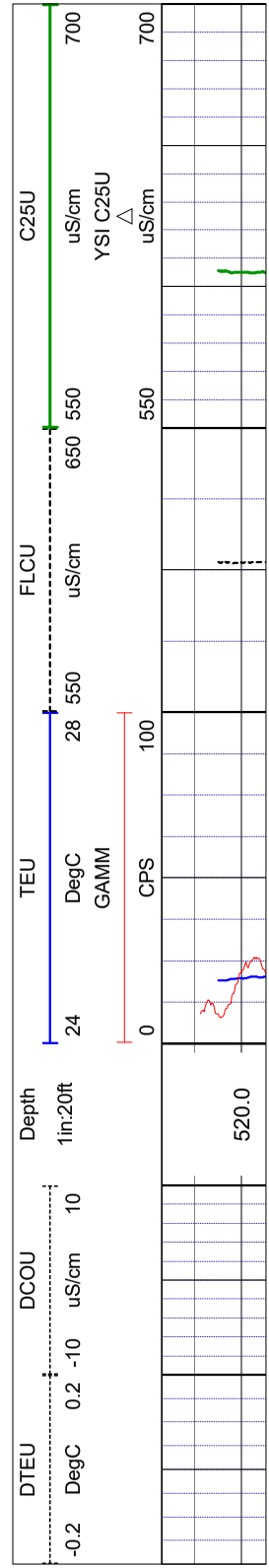
DATE	21 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	861		
DEPTH-LOGGER	863.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

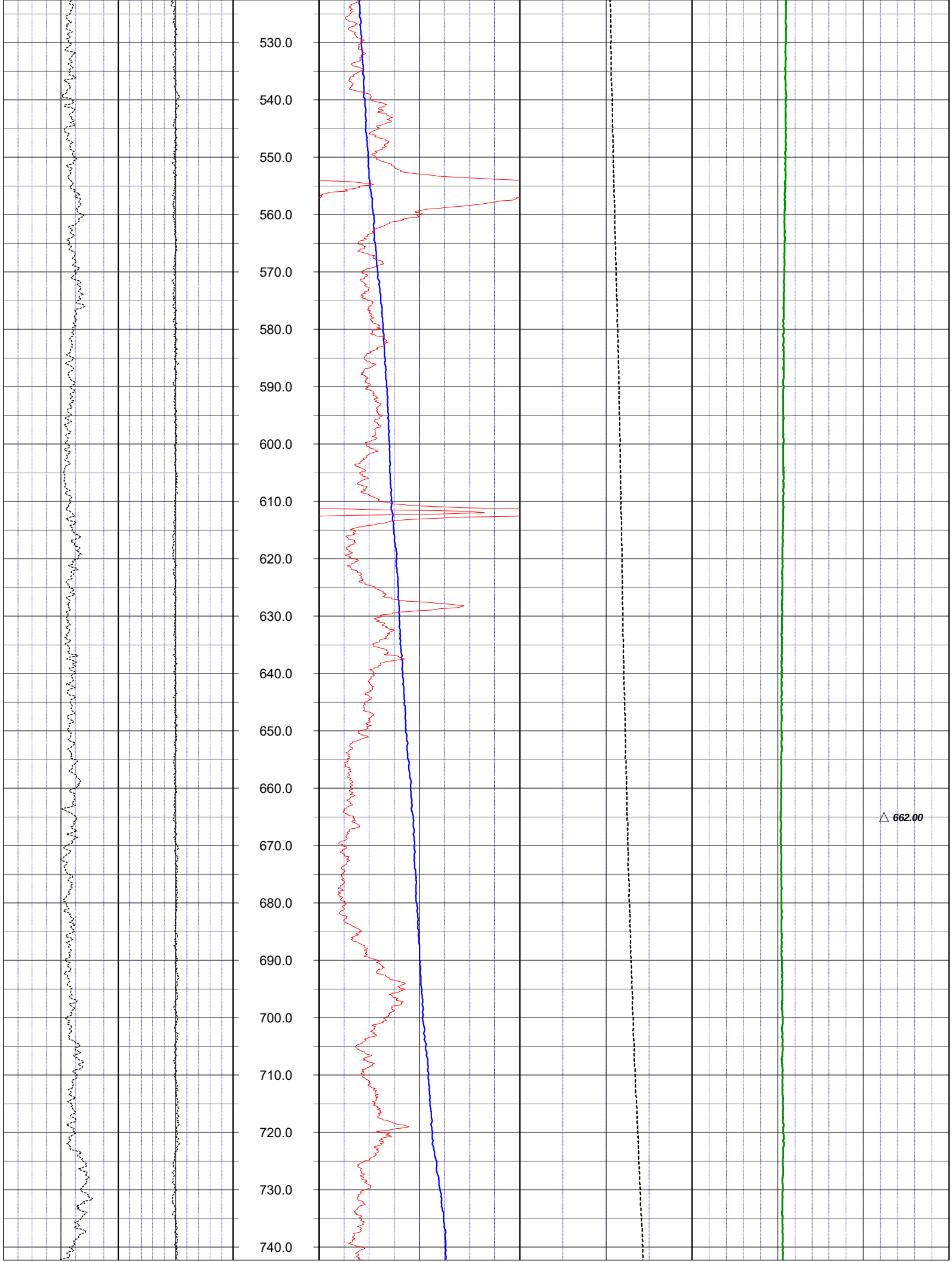
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	10-15	540	861	6	STEEL	0	540

PROJECT NOTES:

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

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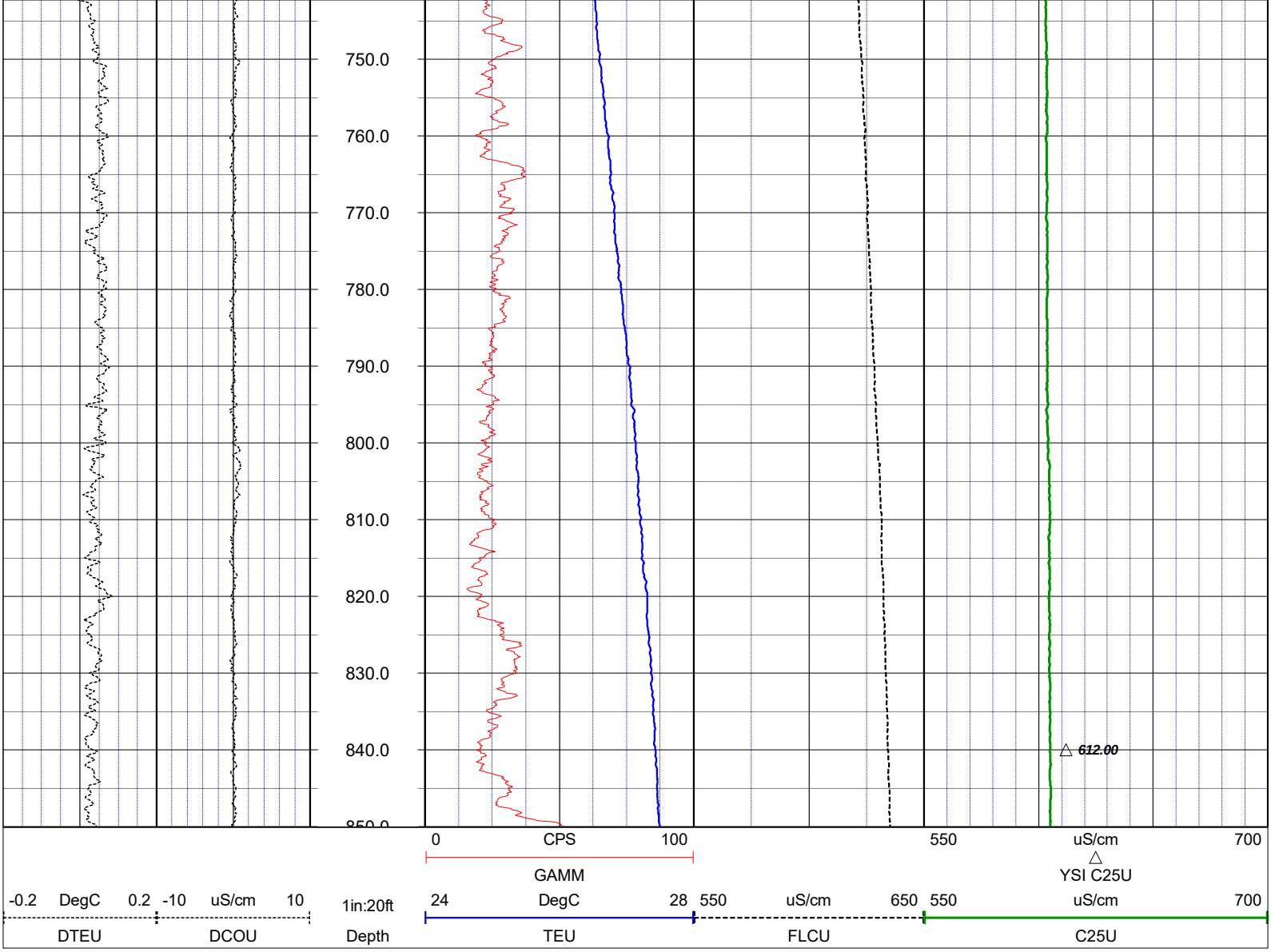

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FLD	OKALOOSA ISLAND
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LATI		X	
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GDAT	WGS84	H DAT	
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TWP		V DAT	
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ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 0.17 FT ABOVE BERM; BERM 2.5 FT ABOVE GRADE

LOG MEASURED FROM: GROUND SURFACE - TOP OF BERM

DRILLING MEASURED FROM:

DATE	21 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	861		
DEPTH-LOGGER	863.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	10-15	540	861	6	STEEL	0	540

PROJECT NOTES:

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
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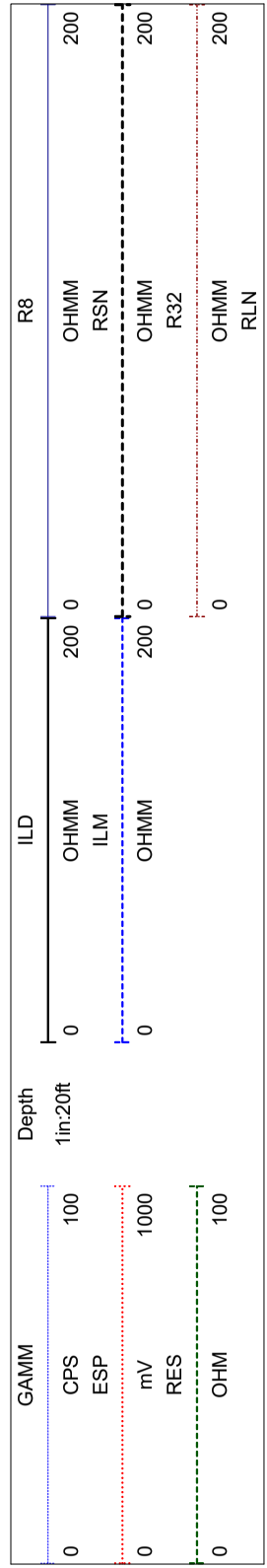
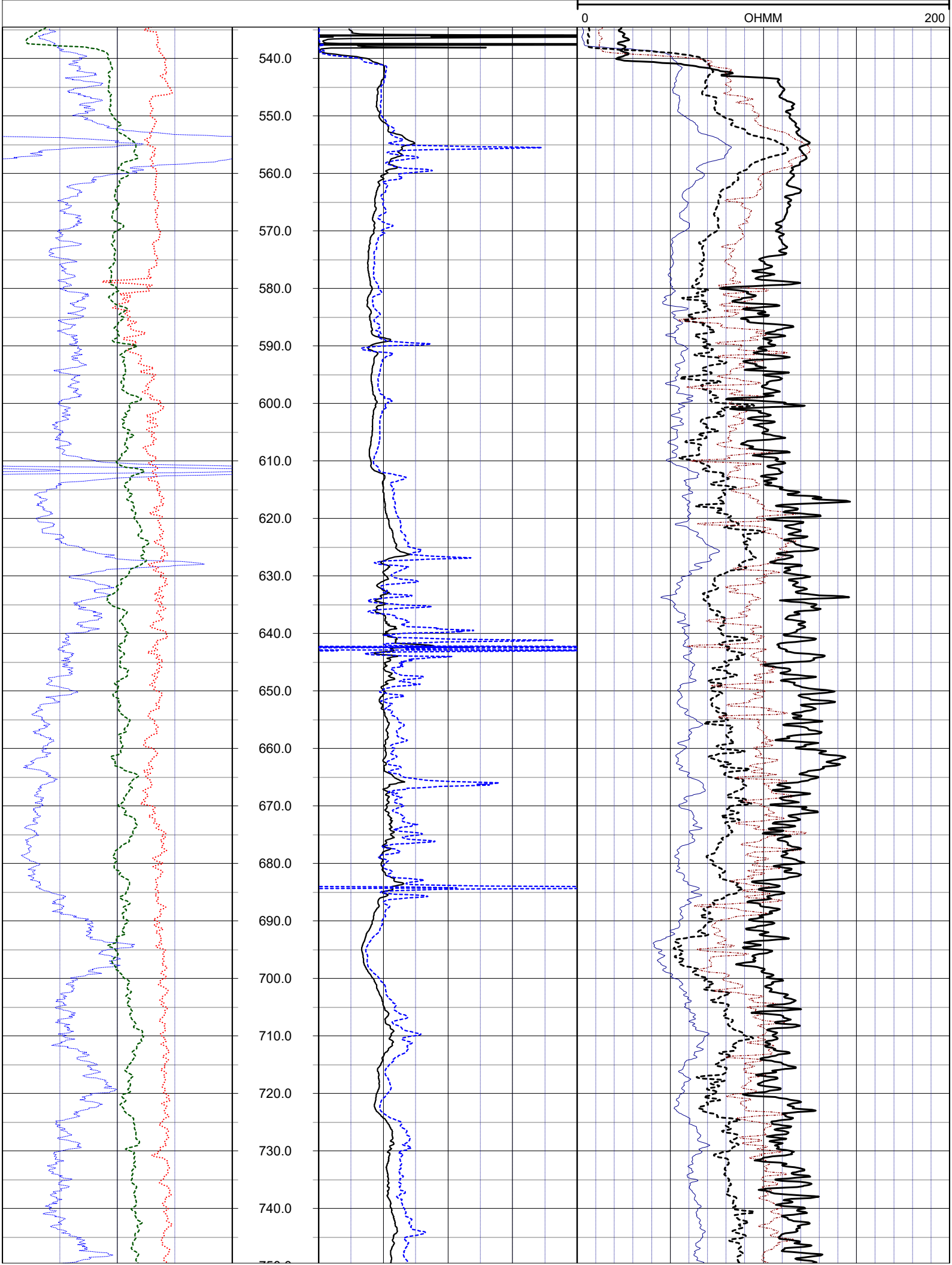
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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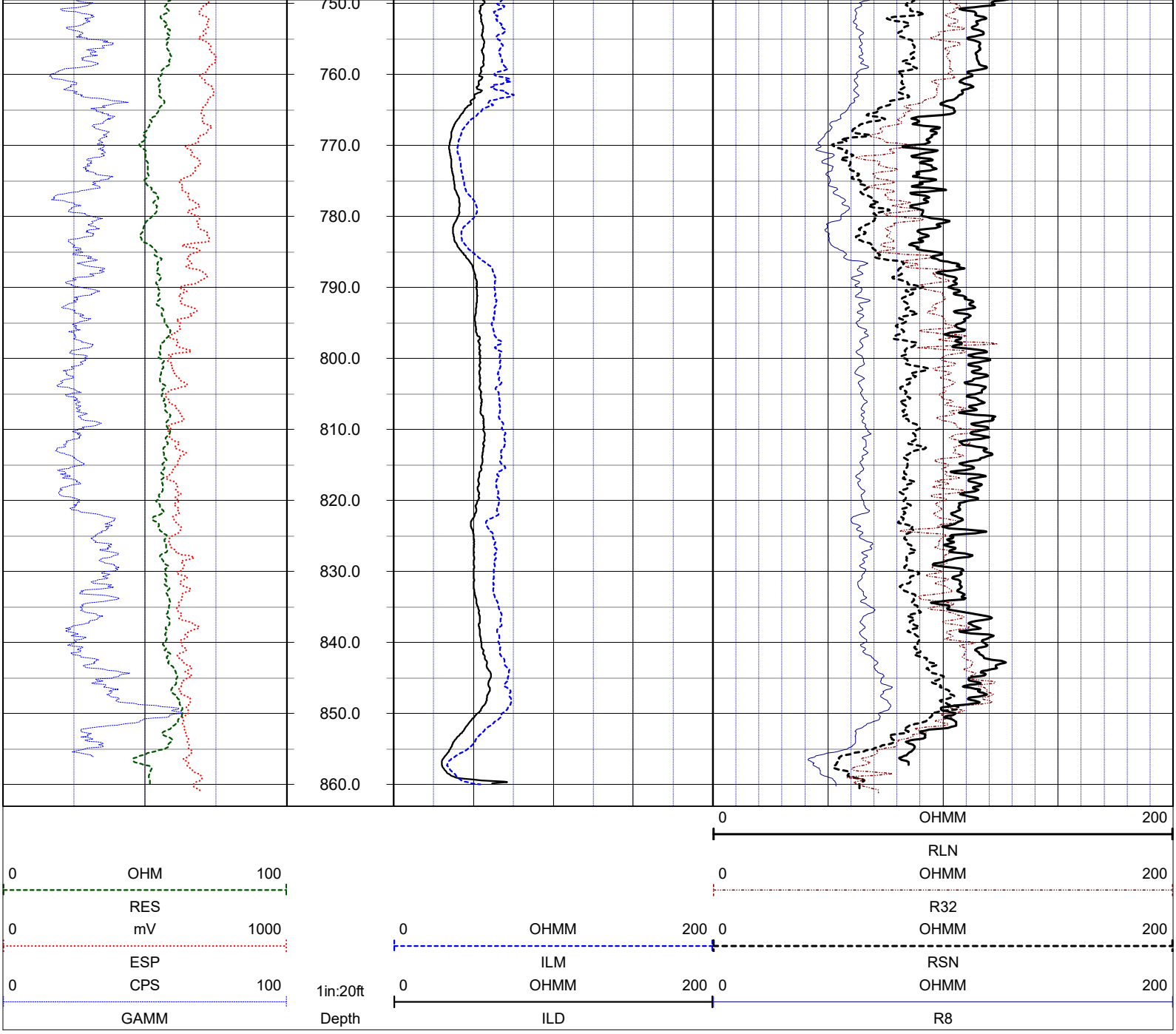

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407-733-8958

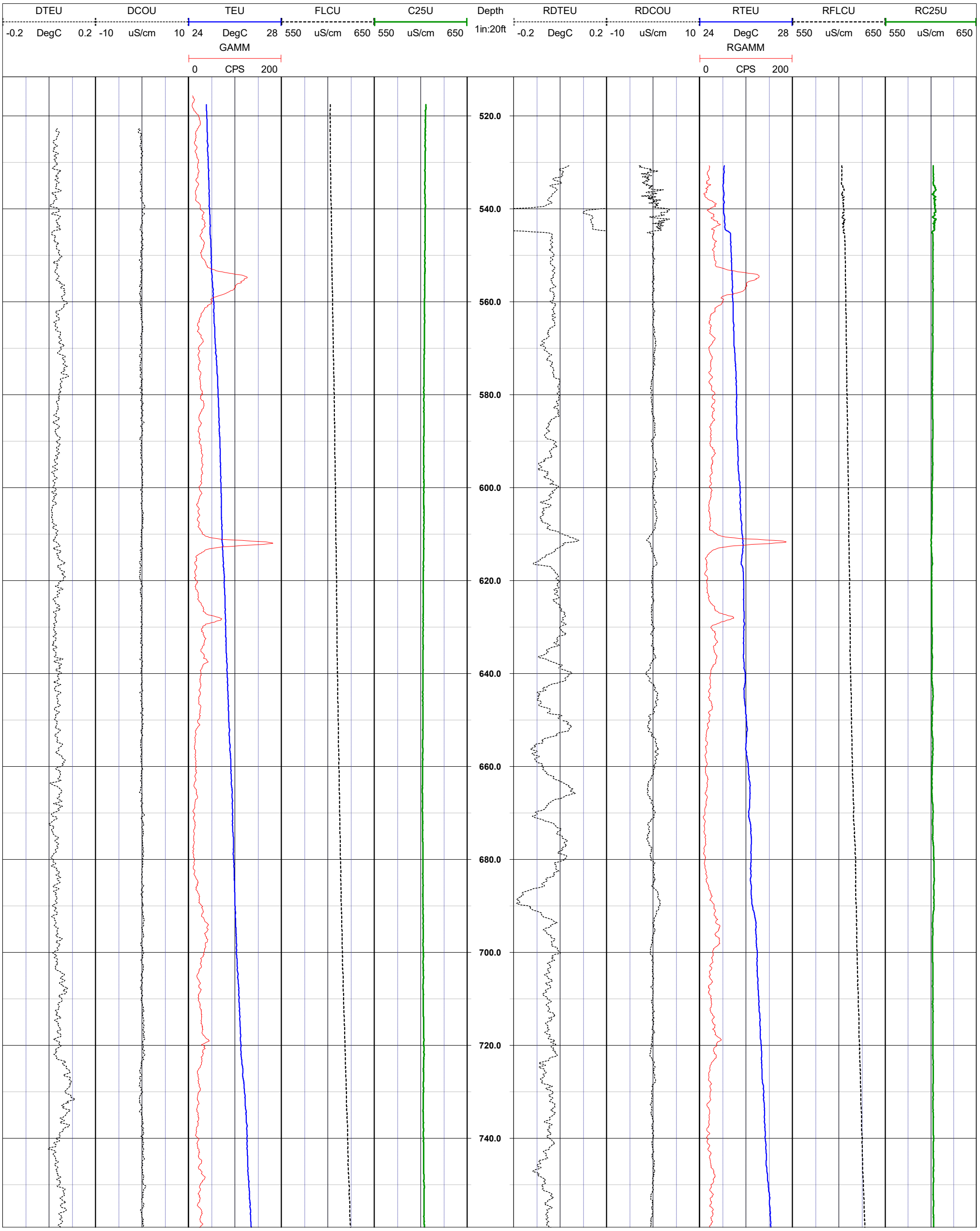
Location:	Okaloosa Island	Casing Depth:	540
County:	Okaloosa	Total Depth:	863.05
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	OCWS ISL

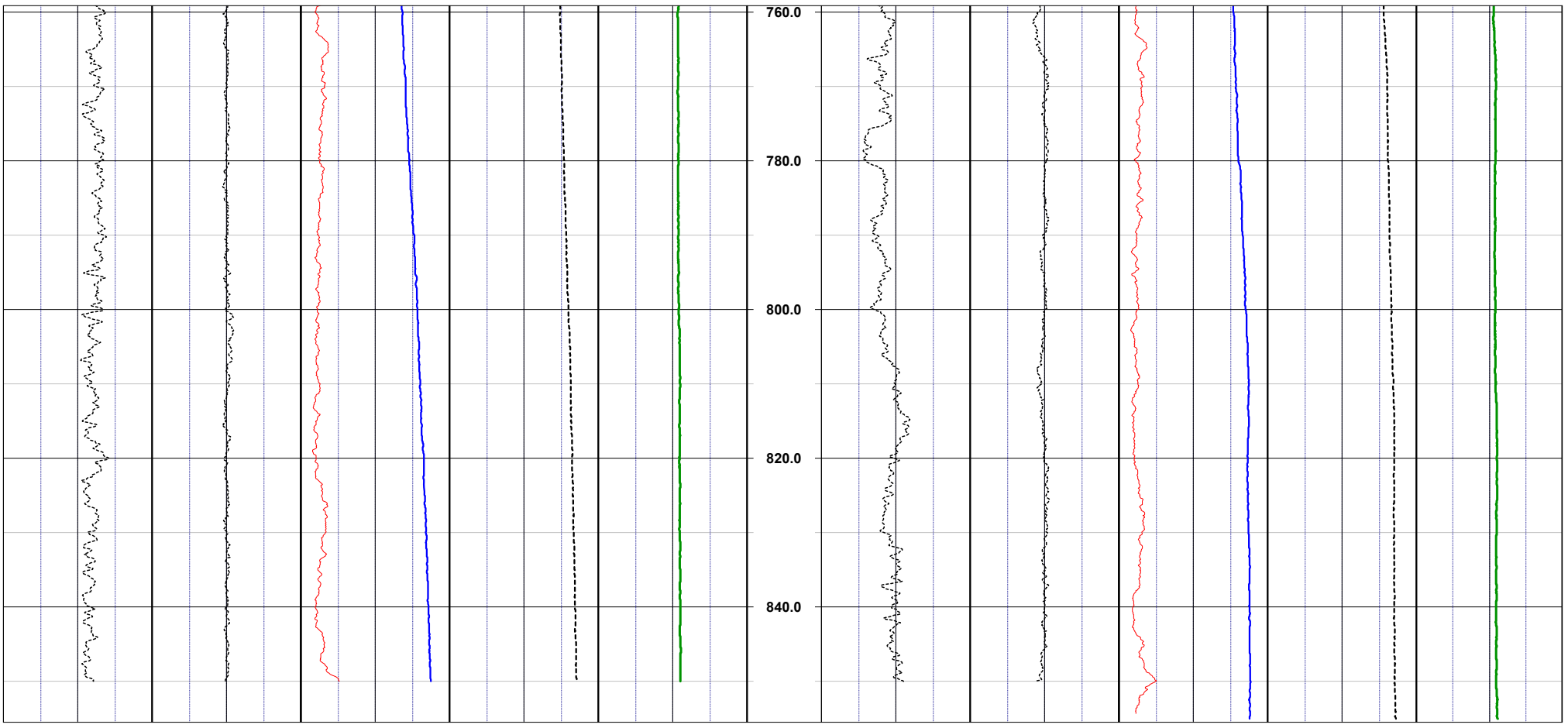
WELL ID: **NWF1696**
Date(s): **21 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT





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Location:	Okaloosa Island	Casing Depth:	540
County:	Okaloosa	Total Depth:	863.05
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Country:	USA	Alias:	OCWS ISL

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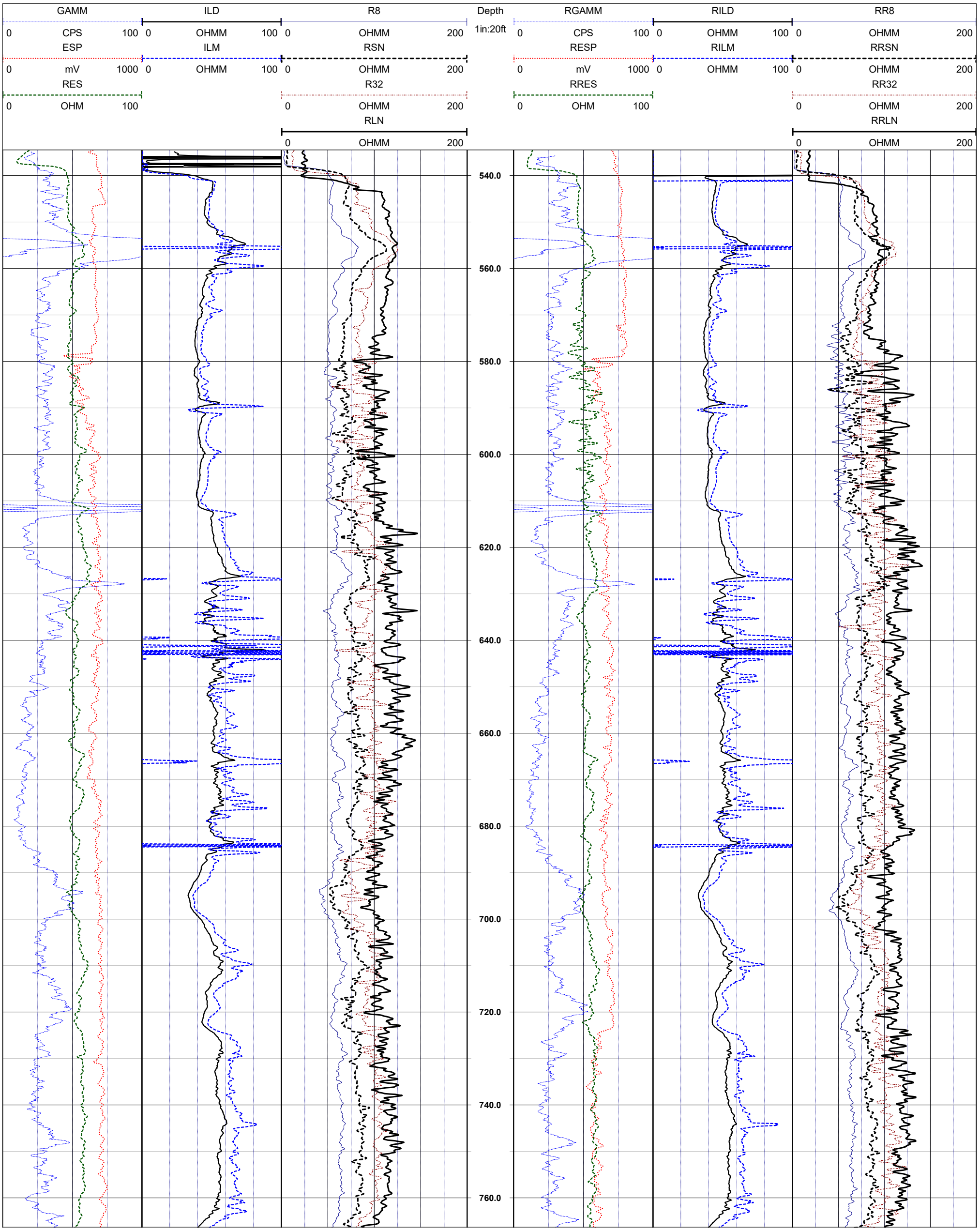
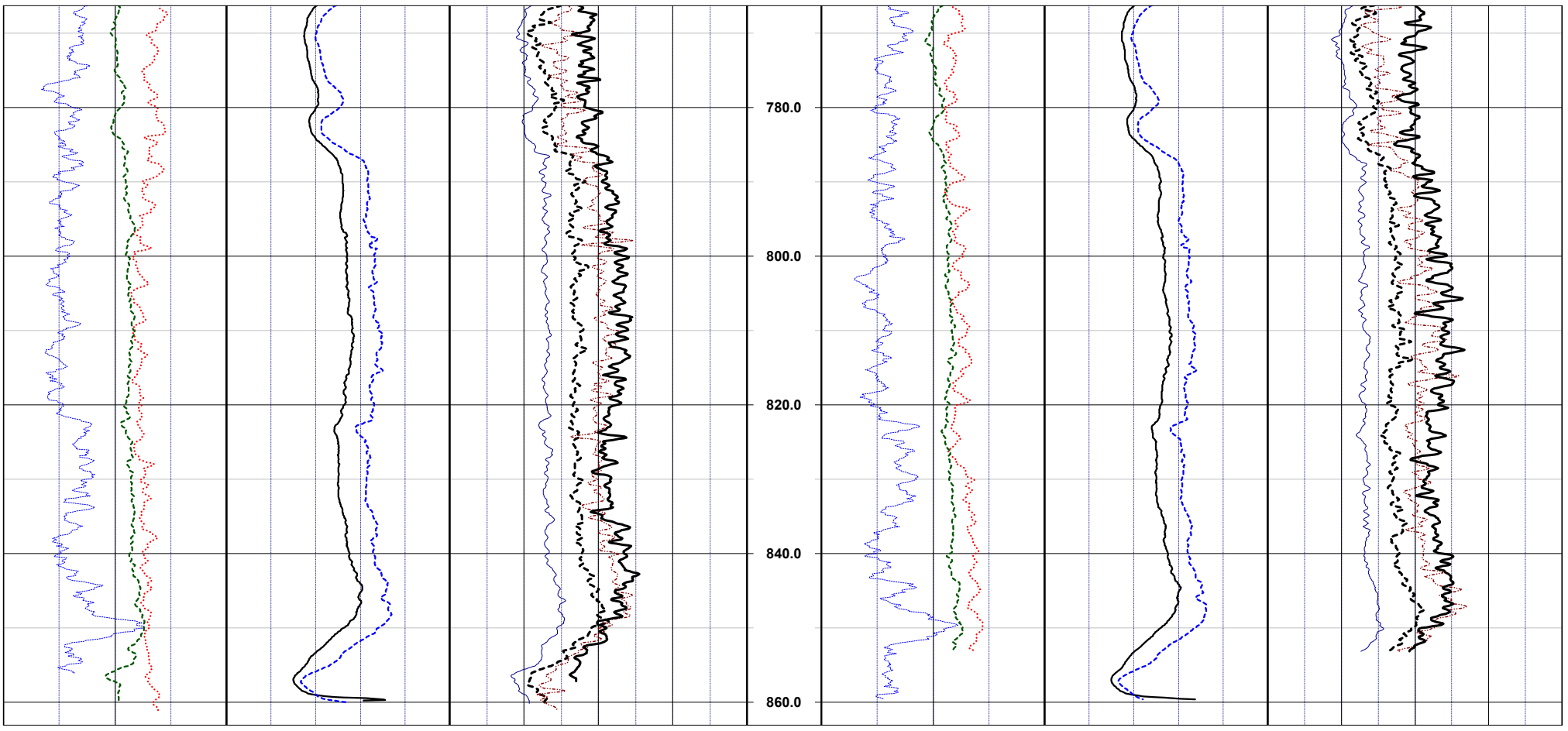
MAIN

REPEAT





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FL Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
Geology and Geophysics

8600 Oldbridge Lane
Orlando, FL 32819
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rob@rmbaker.com
www.rmbaker.com

WELL NWF7174
UWI NWF7174

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU LOWER FLORIDAN MW

COMP	NWFWMD
LOC	DWU DESTIN WTP
FLD	DESTIN
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.0 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

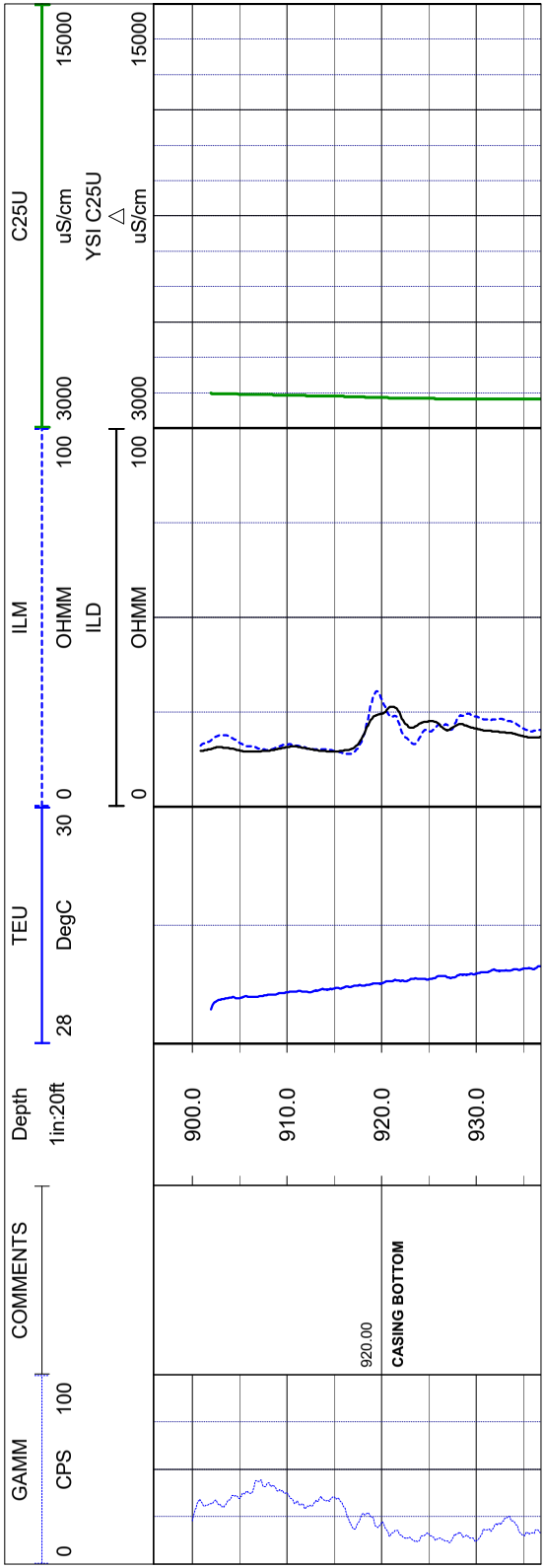
DRILLING MEASURED FROM:

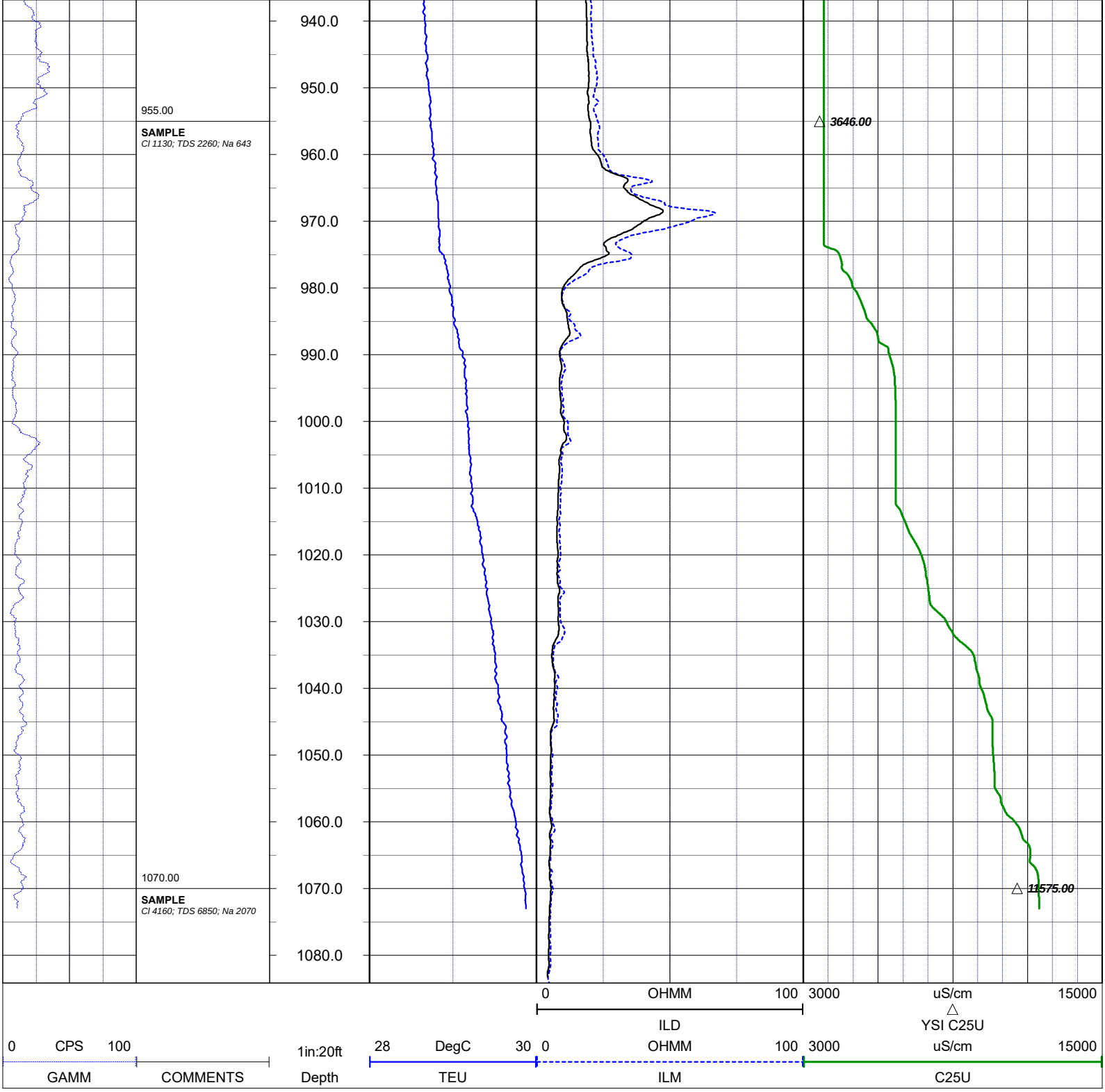
DATE	28 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1083		
DEPTH-LOGGER	1086.5		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	7.875	920	1083	8	PVC	0	920

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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WELL NWF7174
UWI NWF7174

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU LOWER FLORIDAN MW

COMP	NWFWMD
LOC	DWU DESTIN WTP
FLD	DESTIN
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.0 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

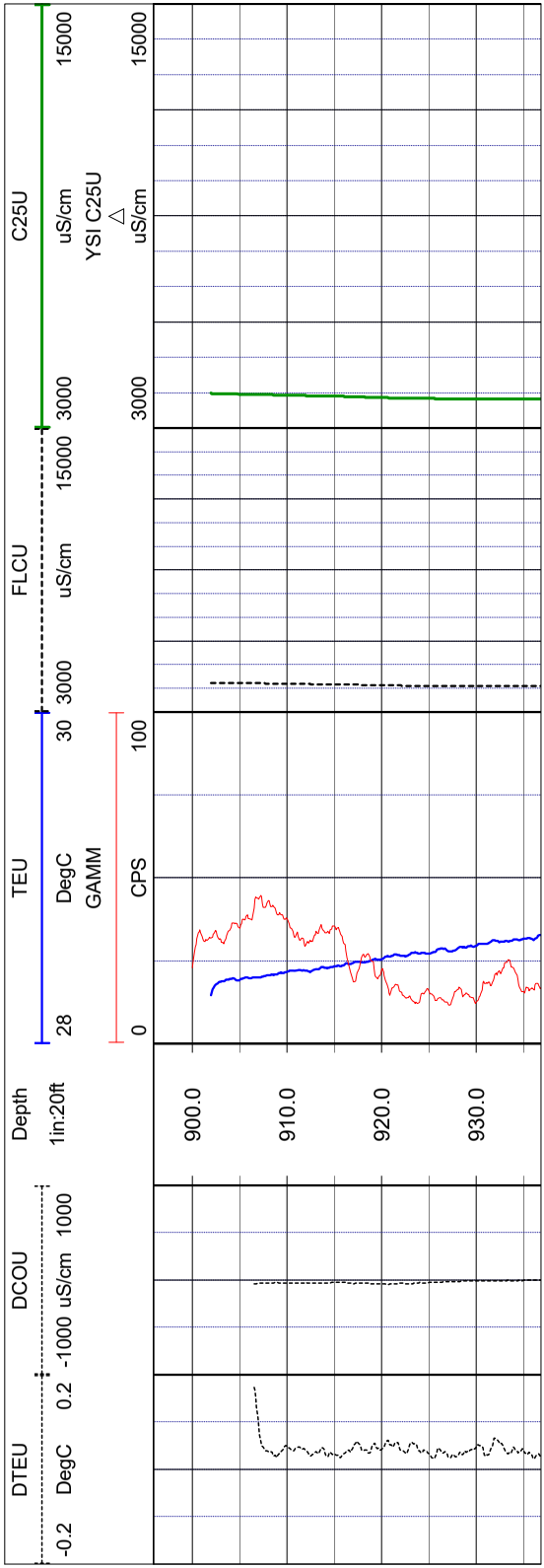
DRILLING MEASURED FROM:

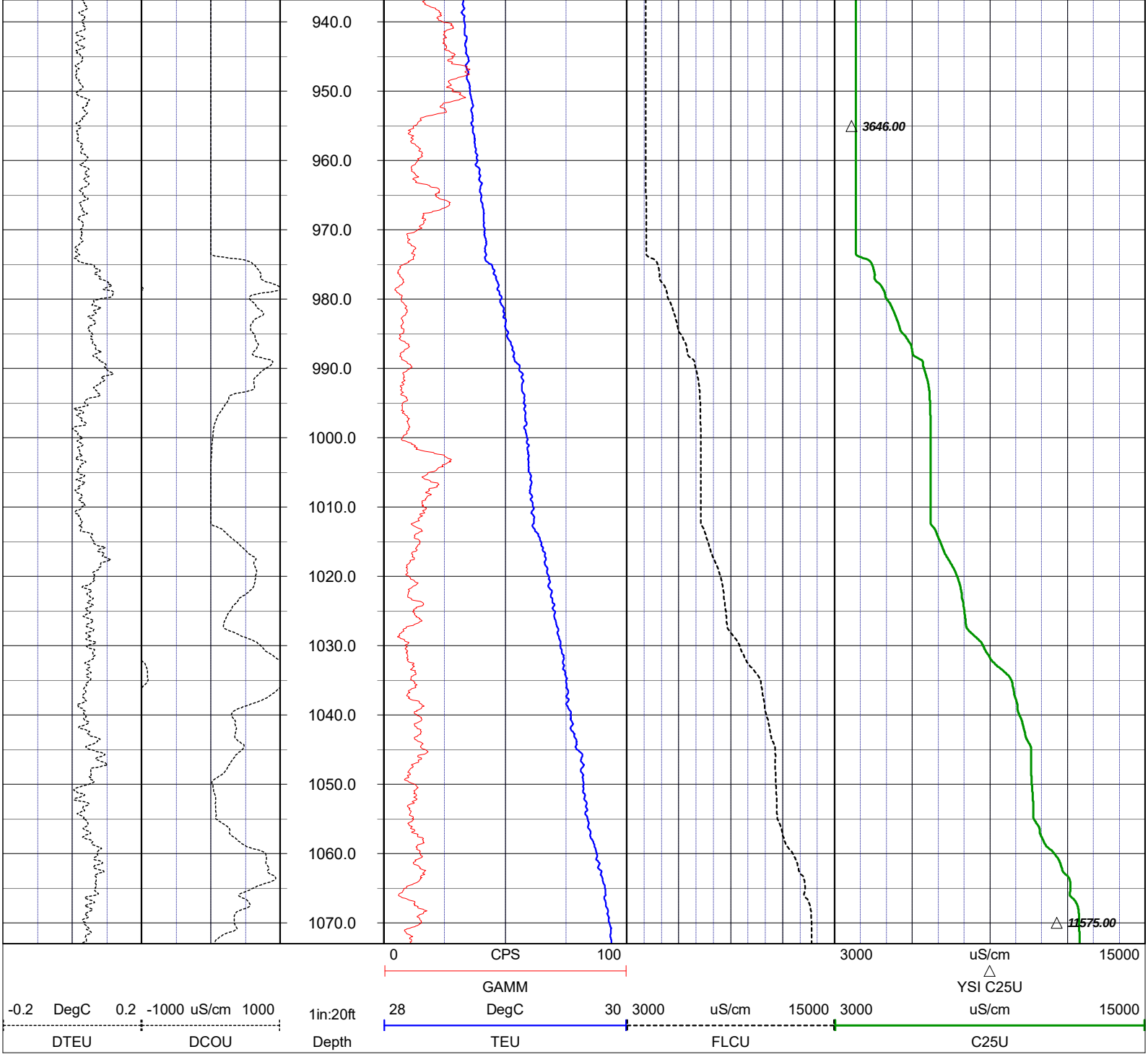
DATE	28 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1083		
DEPTH-LOGGER	1086.5		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	7.875	920	1083	8	PVC	0	920

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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WELL NWF7174
UWI NWF7174

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU LOWER FLORIDAN MW

COMP	NWFWMD
LOC	DWU DESTIN WTP
FLD	DESTIN
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.0 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

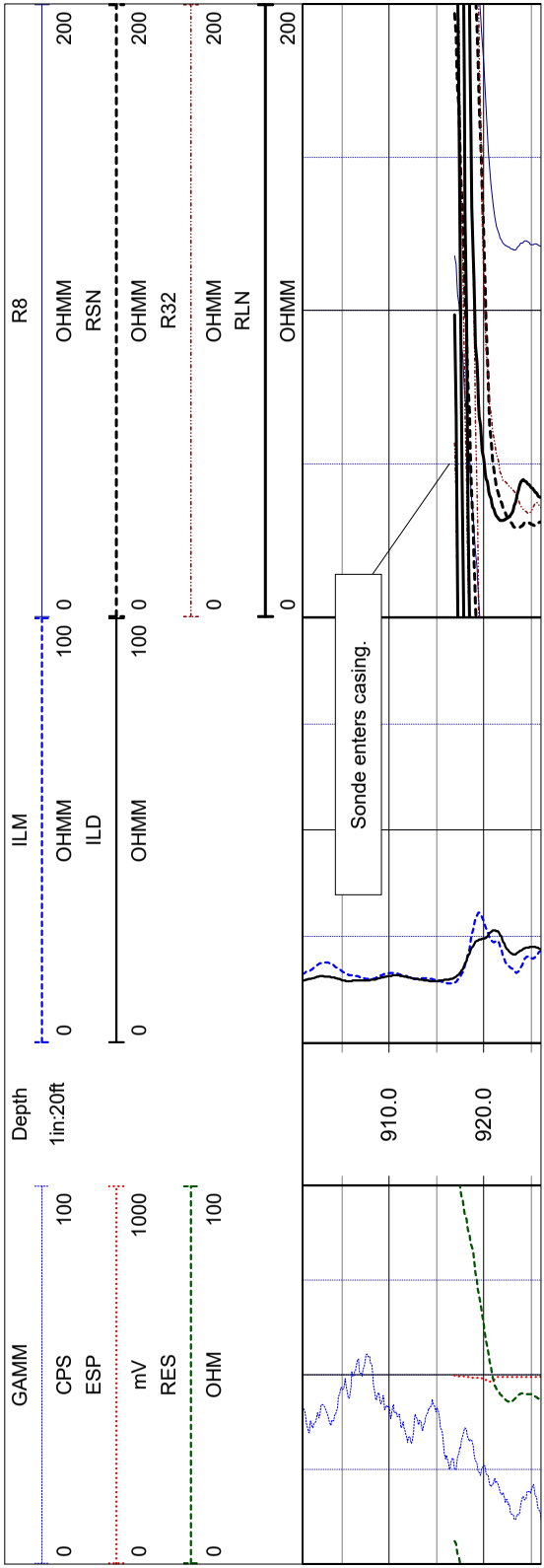
DRILLING MEASURED FROM:

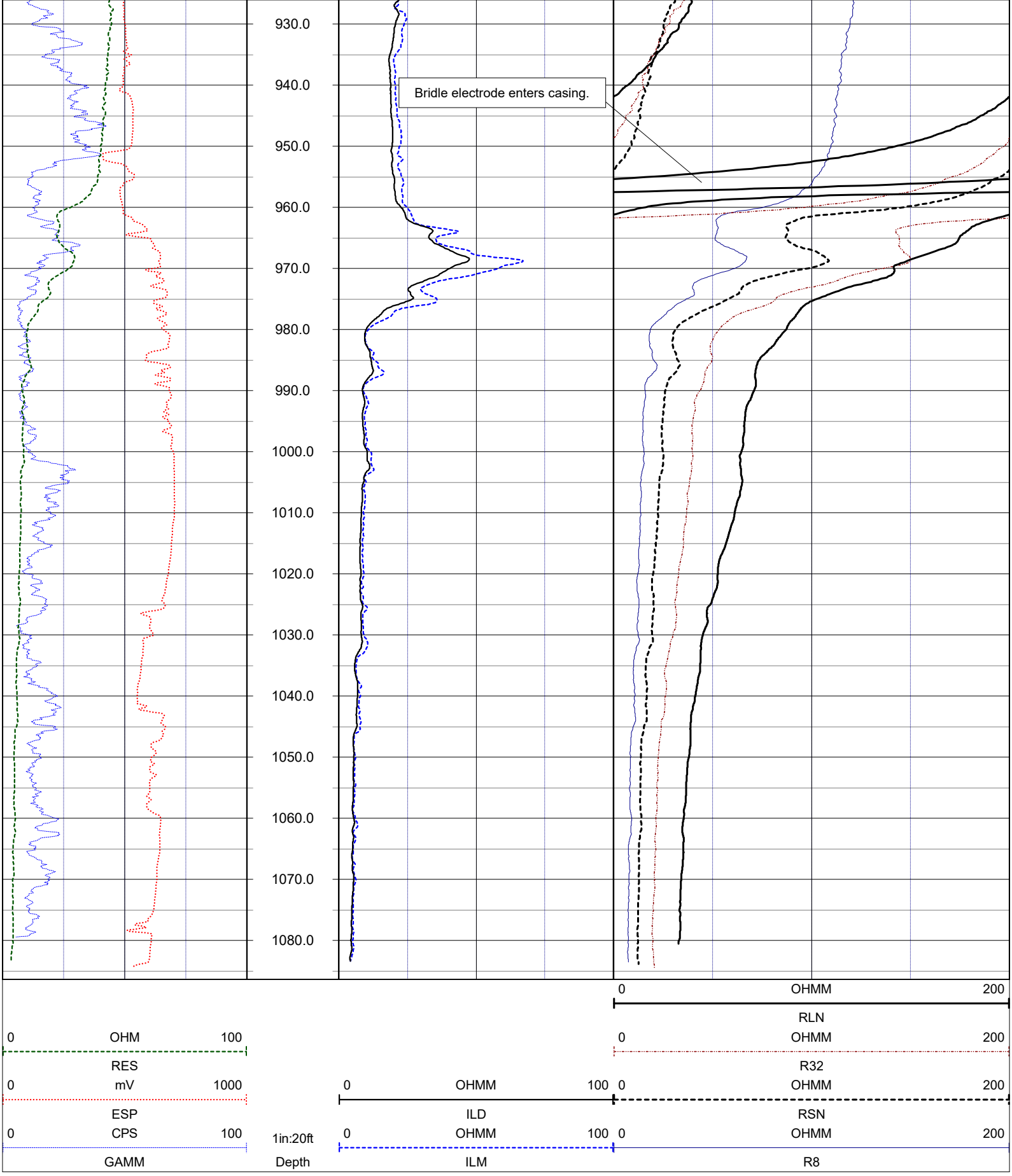
DATE	28 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1083		
DEPTH-LOGGER	1086.5		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	7.875	920	1083	8	PVC	0	920

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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Florida Licensed Geology Business GB 458

END OF LOG

END OF LOG

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rob@rmbaker.com
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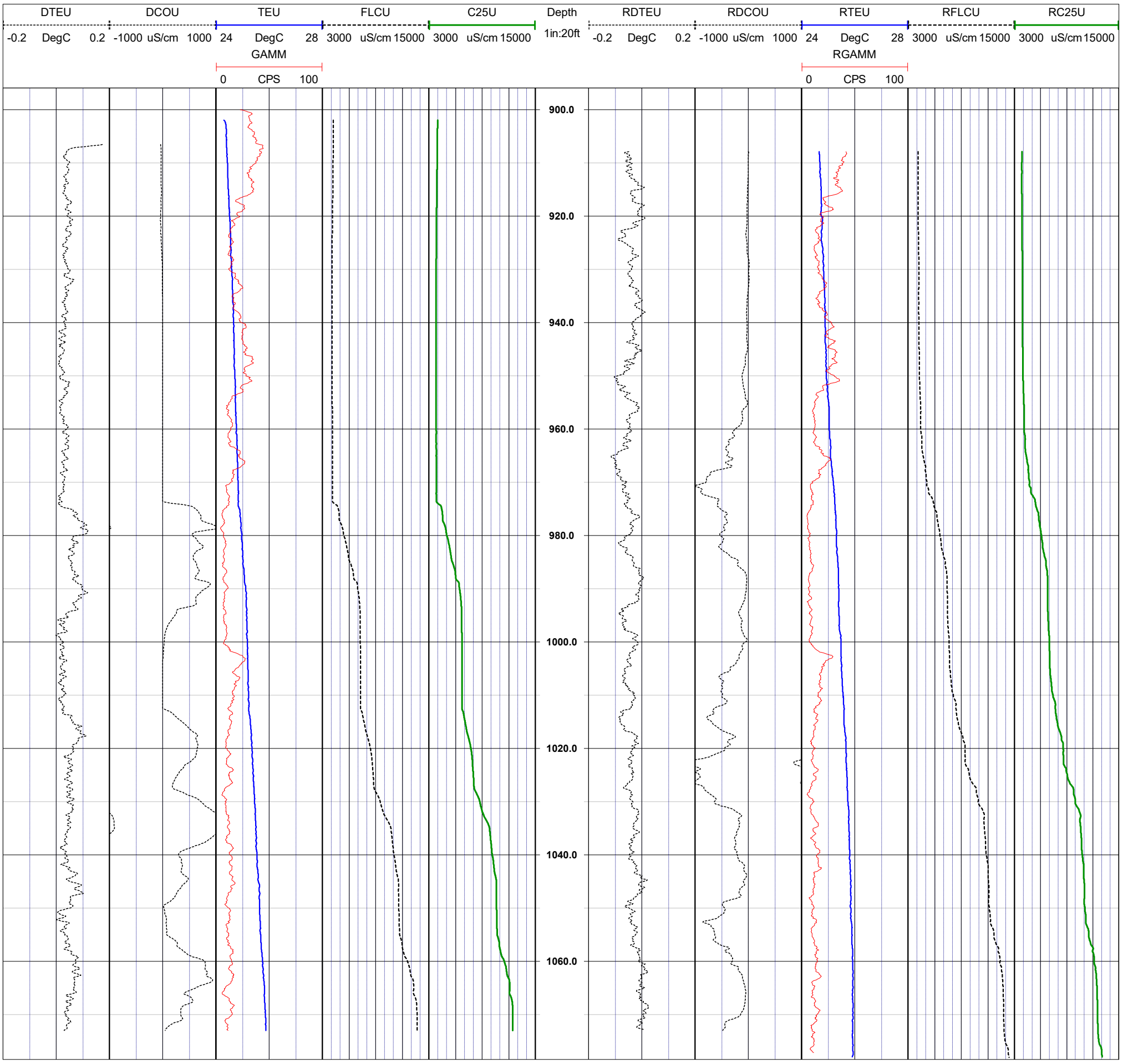
Location:	DWU DESTIN WTP	Casing Depth:	920
County:	Okaloosa	Total Depth:	1086.5
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	DWU Lower Floridan

WELL ID: **NWF7174**
Date(s): **28 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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Location:	DWU Destin WTP	Casing Depth:	920
County:	Okaloosa	Total Depth:	1086.5
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	DWU Lower Floridan

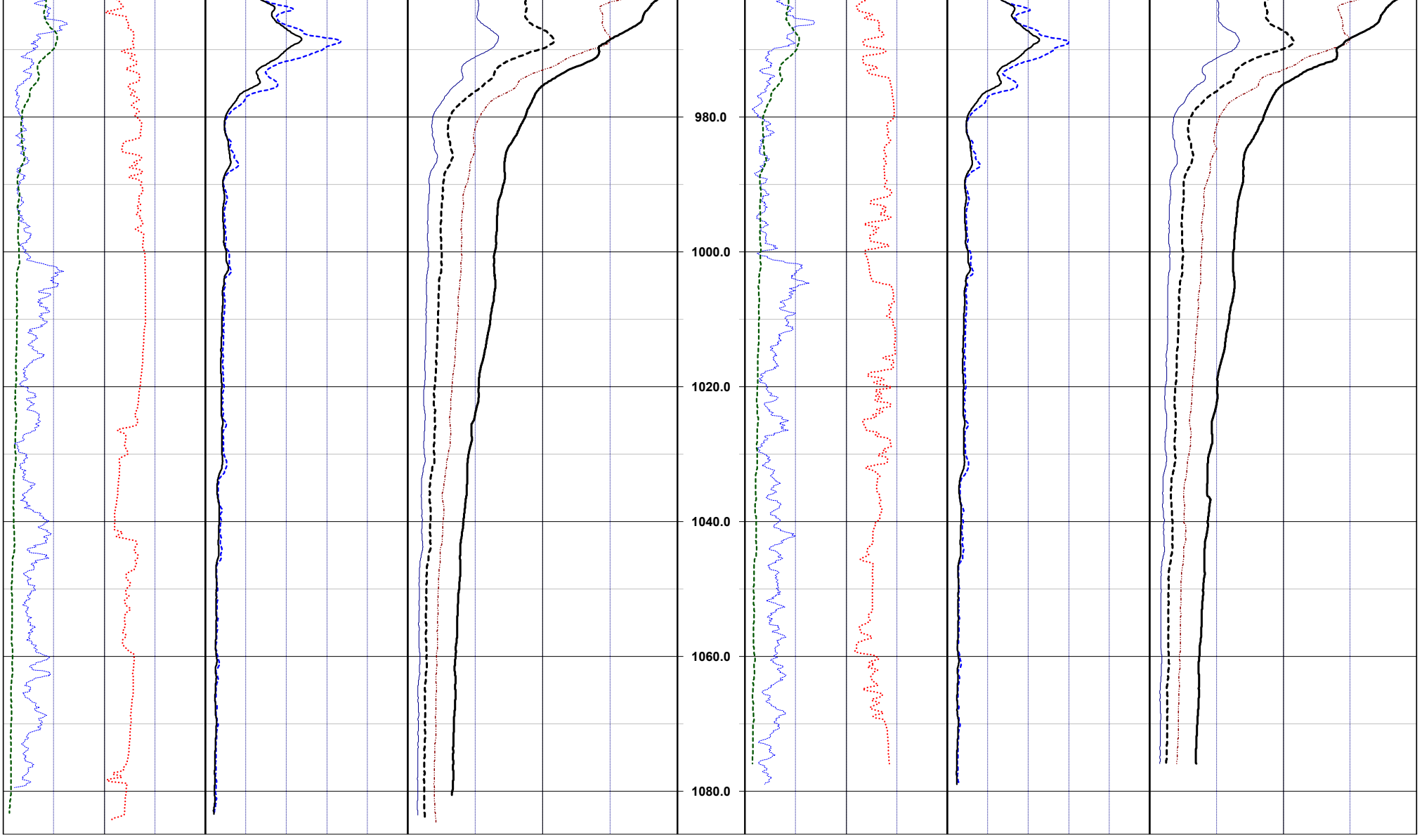
WELL ID: **NWF7174**
Date(s): **28 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

-The ELOG traces include sections where the bridle electrode entered the casing and where the sonde itself entered the casing. All data above the deeper disturbance related to the bridle being in the casing is invalid.

MAIN

REPEAT



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WELL NWF7183
UWI NWF7183

LOG STAGE EXPLORATORY

HEADER NOTES:
SWU WEST MW

COMP	NWFWMD
LOC	END OF WALTON WAY
FLD	MIRAMAR
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.92 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	25 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	702.2		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

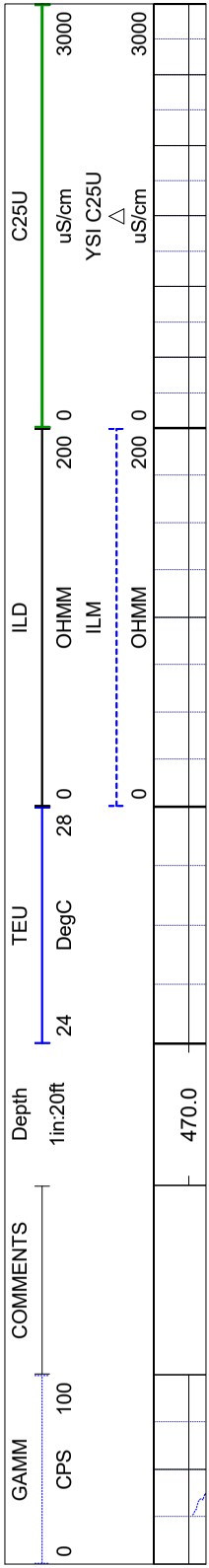
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	498	700	6	PVC	0	498

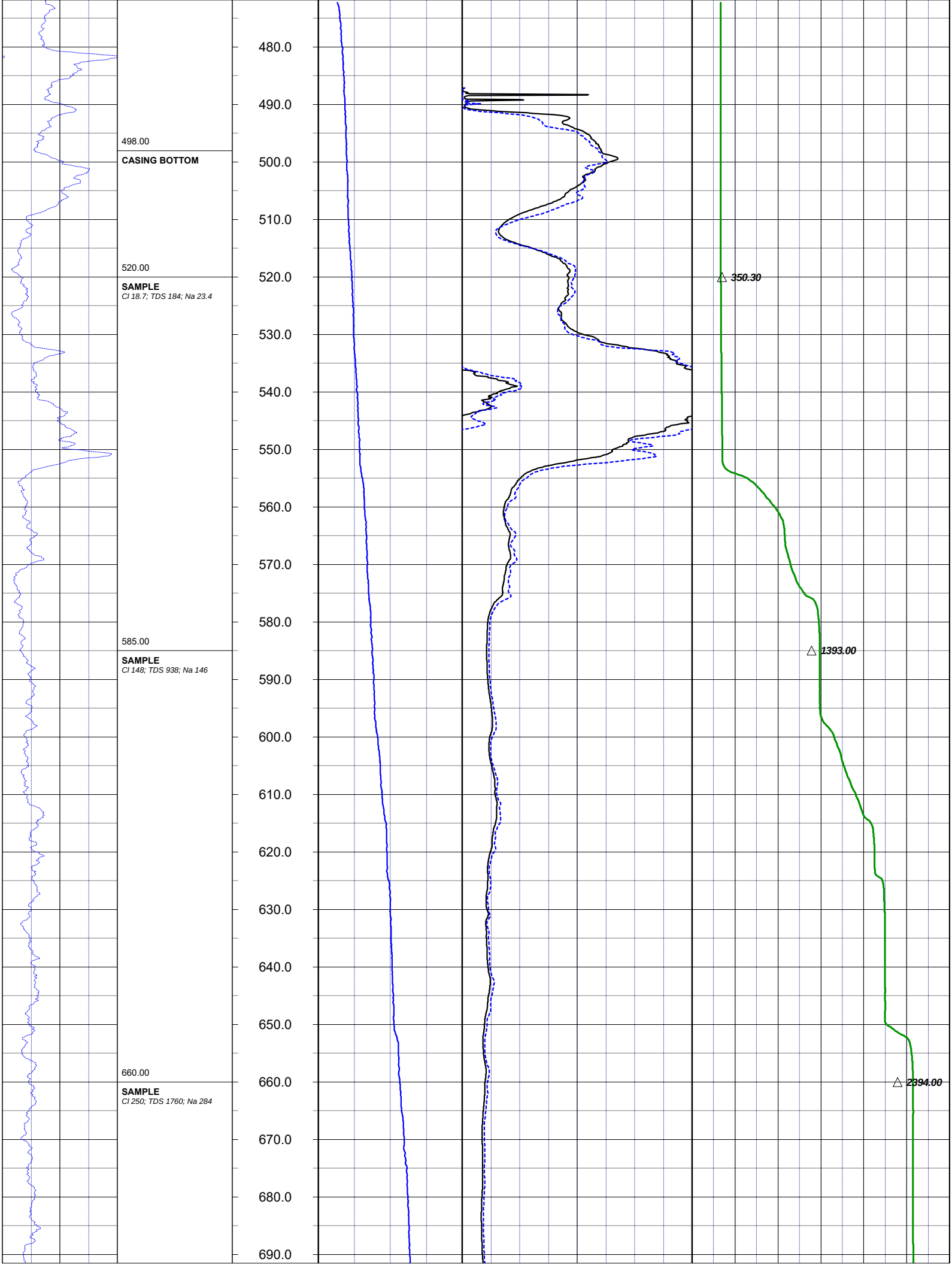
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**

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630.0
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670.0
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498.00
CASING BOTTOM
520.00
SAMPLE
Cl 18.7; TDS 184; Na 23.4
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Cl 148; TDS 938; Na 146
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SAMPLE
Cl 250; TDS 1760; Na 284
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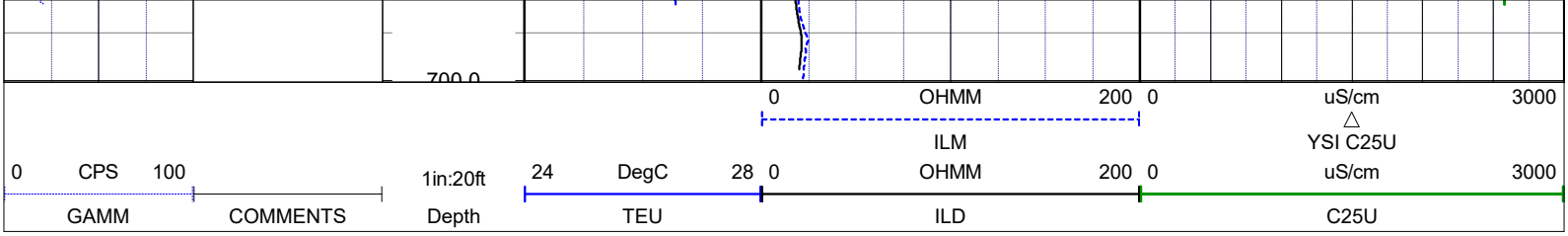
1393.00
2394.00



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WELL NWF7183
UWI NWF7183

LOG STAGE EXPLORATORY

HEADER NOTES:
SWU WEST MS

COMP	NWFWMD
LOC	WALTON WAY
FLD	MIRAMAR
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.92 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

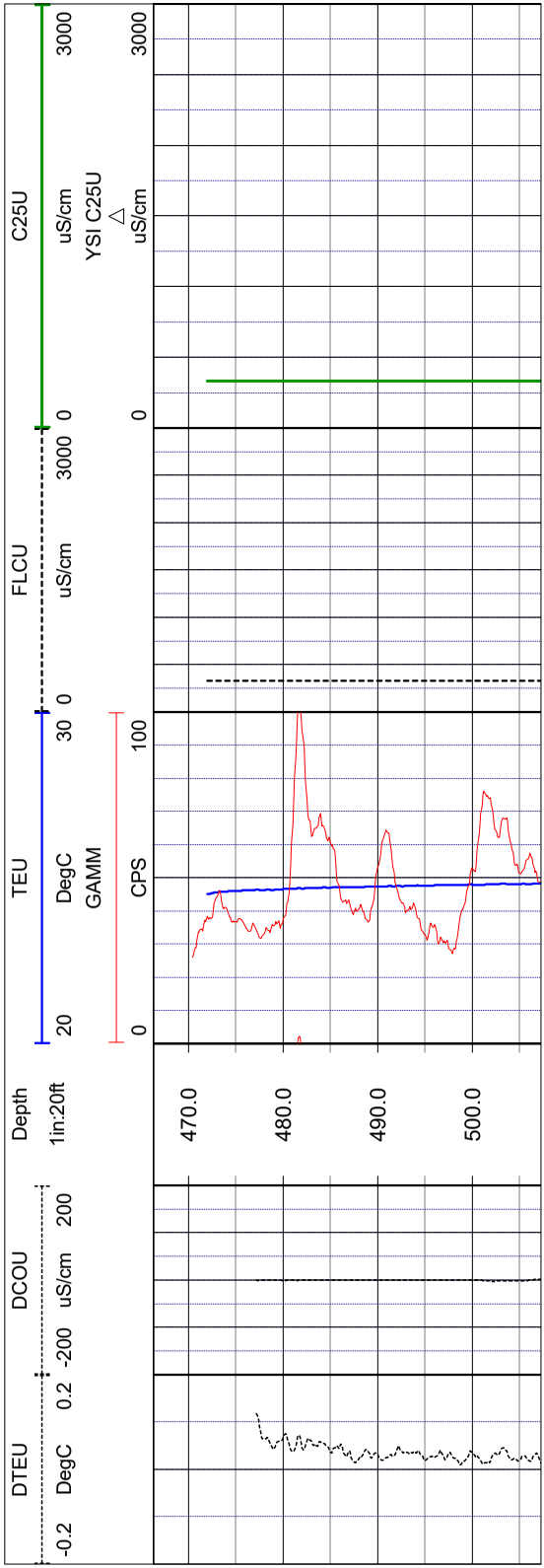
DRILLING MEASURED FROM:

DATE	25 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	702.2		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	498	700	6	PVC	0	498

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		



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UWI NWF7183

LOG STAGE EXPLORATORY

HEADER NOTES:
SWU WEST MS

COMP	NWFWMD
LOC	WALTON WAY
FLD	MIRAMAR
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.92 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

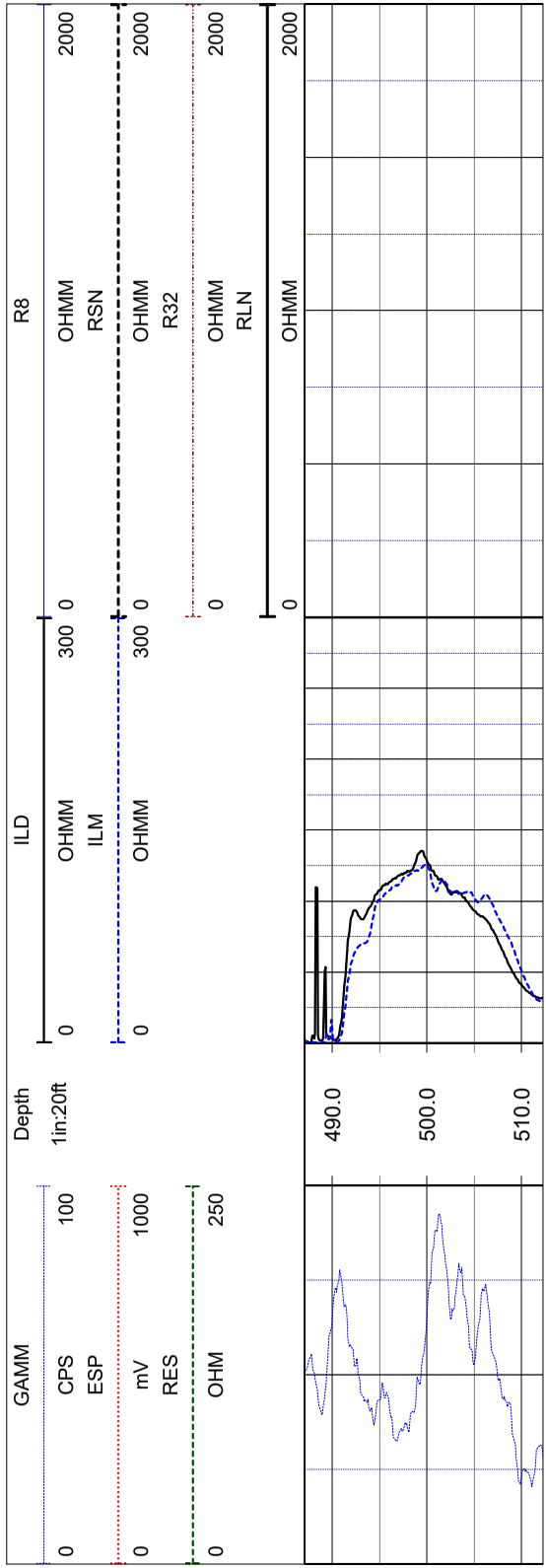
DRILLING MEASURED FROM:

DATE	25 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	702.2		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	498	700	6	PVC	0	498

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**




520.0
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670.0
680.0
690.0
700.0
0 OHMM 2000
RLN
0 OHMM 2000
R32
0 OHMM 2000
RSN
0 OHM 250
RES
0 mV 1000
ESP
0 CPS 100
0 OHMM 300
ILM
0 OHMM 300
1in:20ft
0 OHMM 2000

GAMM	Depth	ILD	Rs

NOTES:
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END OF LOG

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rob@rmbaker.com
407-733-8958

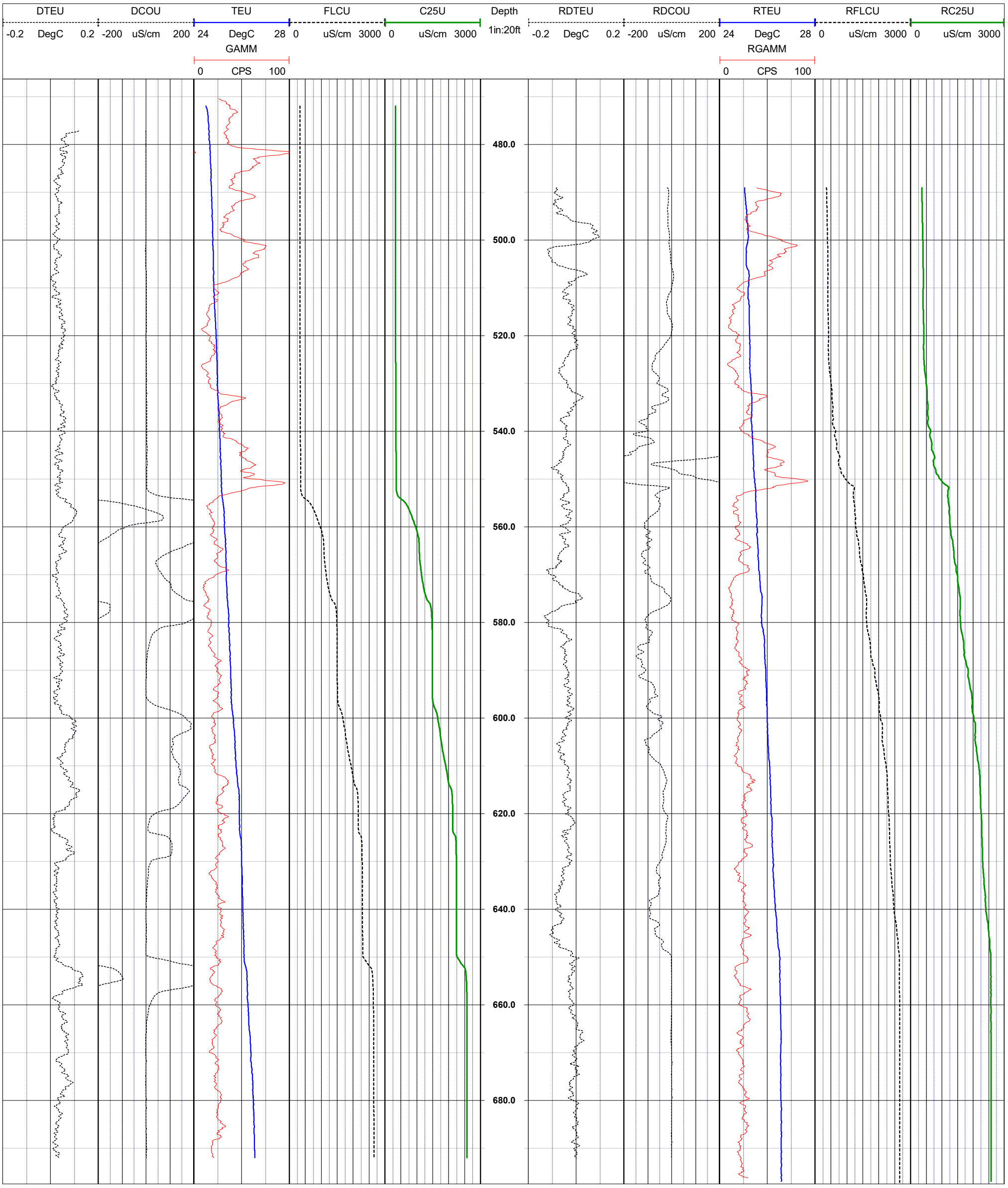
Location:	Walton Way	Casing Depth:	498
County:	Walton	Total Depth:	702.2
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	WSU West MW

WELL ID: **NWF7183**
Date(s): **25 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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FL Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
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rob@rmbaker.com
407-733-8958

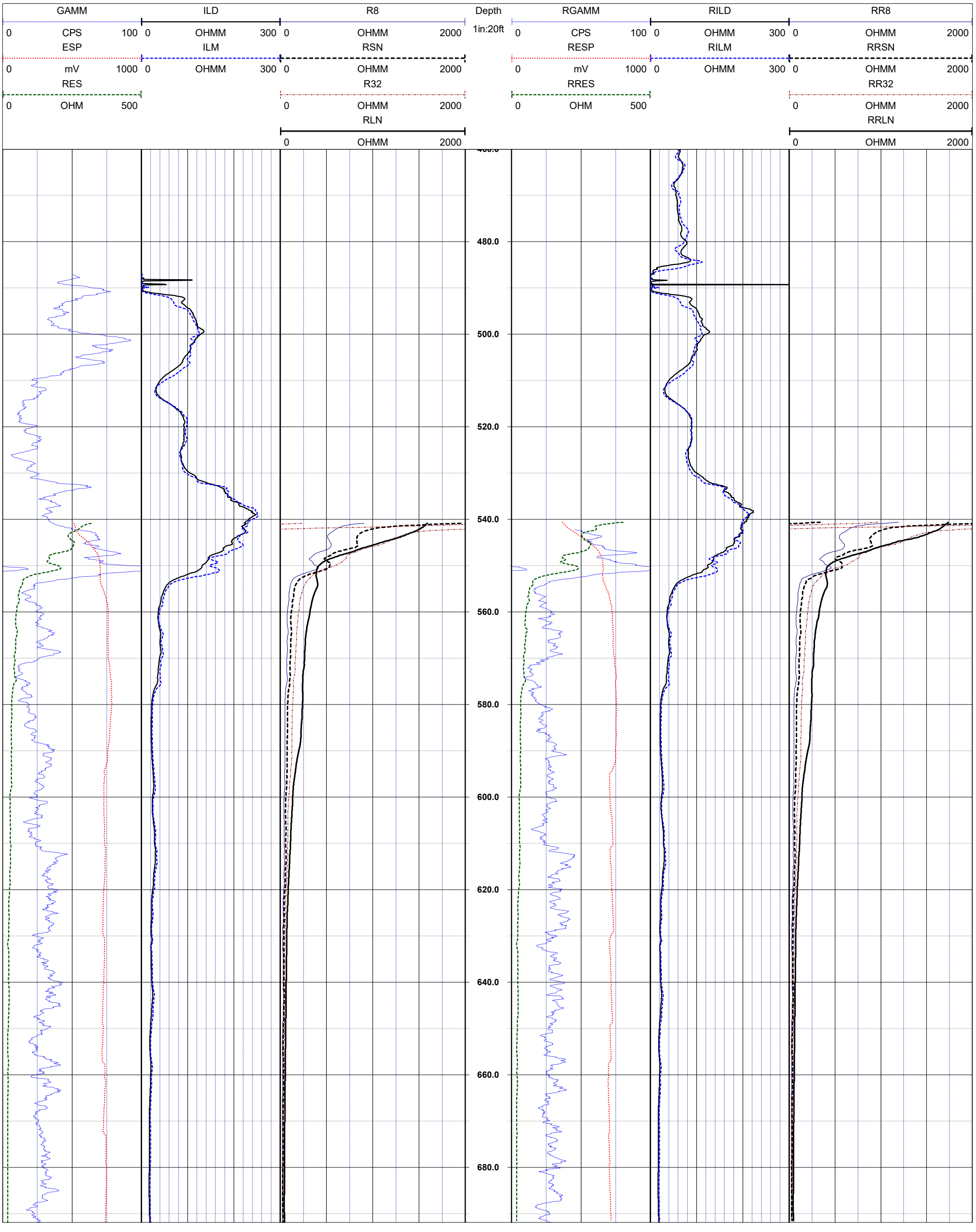
Location:	Walton Way	Casing Depth:	498
County:	Walton	Total Depth:	702.2
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	WSU West MW

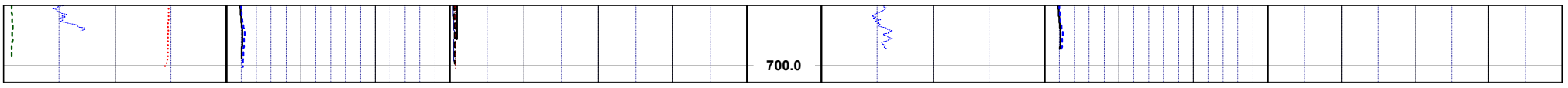
WELL ID: **NWF7183**
Date(s): **25 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT





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FL Licensed Geology Business GB 458

END OF LOG

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Geology and Geophysics

8600 Oldbridge Lane
Orlando, FL 32819
mobile ph 407-733-8958
rob@rmbaker.com
www.rmbaker.com

WELL NWF7349
UWI NWF7349

LOG STAGE EXPLORATORY

HEADER NOTES:

COMP	NWFWMD
LOC	SOUTH WALTON UTILITIES EAST MONITOR WELL
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	22 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	600		
DEPTH-LOGGER	601		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

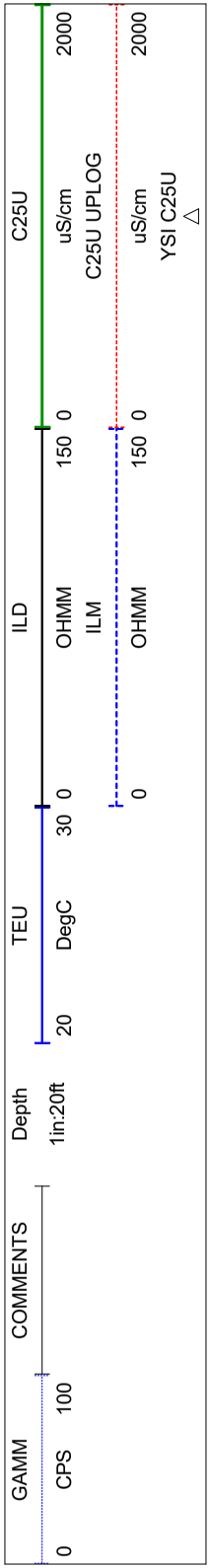
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	425	600	6	PVC	0	425

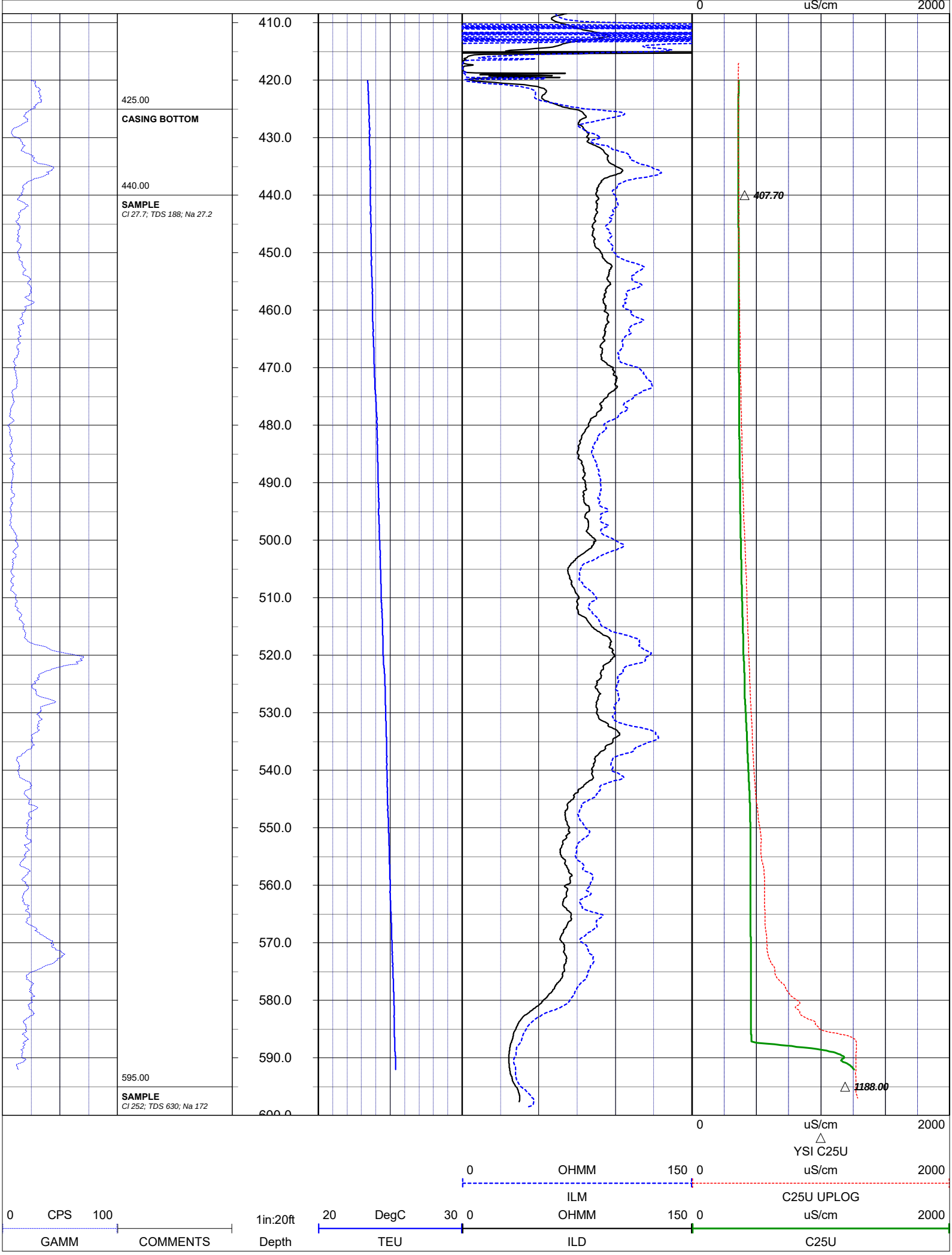
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**




425.00
CASING BOTTOM
440.00
SAMPLE
Cl 27.7; TDS 188; Na 27.2
595.00
SAMPLE
Cl 252; TDS 630; Na 172
410.0
420.0
430.0
440.0
450.0
460.0
470.0
480.0
490.0
500.0
510.0
520.0
530.0
540.0
550.0
560.0
570.0
580.0
590.0
0 uS/cm 2000
407.70
1188.00
0 uS/cm 2000
YSI C25U
0 OHMM 150
ILM
0 uS/cm 2000
C25U UPLOG
0 CPS 100
GAMM
COMMENTS
1in:20ft
Depth
20 DegC 30
TEU
0 OHMM 150
ILD
0 uS/cm 2000
C25U

NOTES:
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Florida Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
Geology and Geophysics

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mobile ph 407-733-8958
rob@rmbaker.com
www.rmbaker.com

WELL NWF7349
UWI NWF7349

LOG STAGE EXPLORATORY

HEADER NOTES:

COMP	NWFWMD
LOC	SOUTH WALTON UTILITIES EAST MONITOR WELL
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

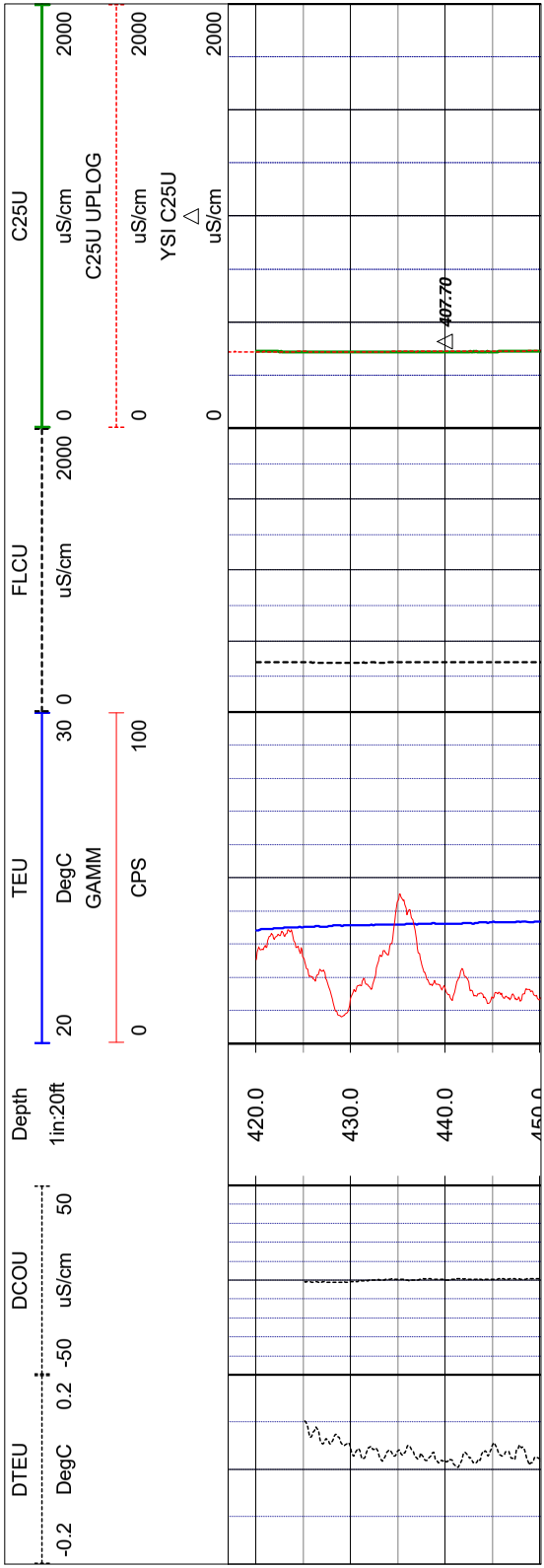
DRILLING MEASURED FROM:

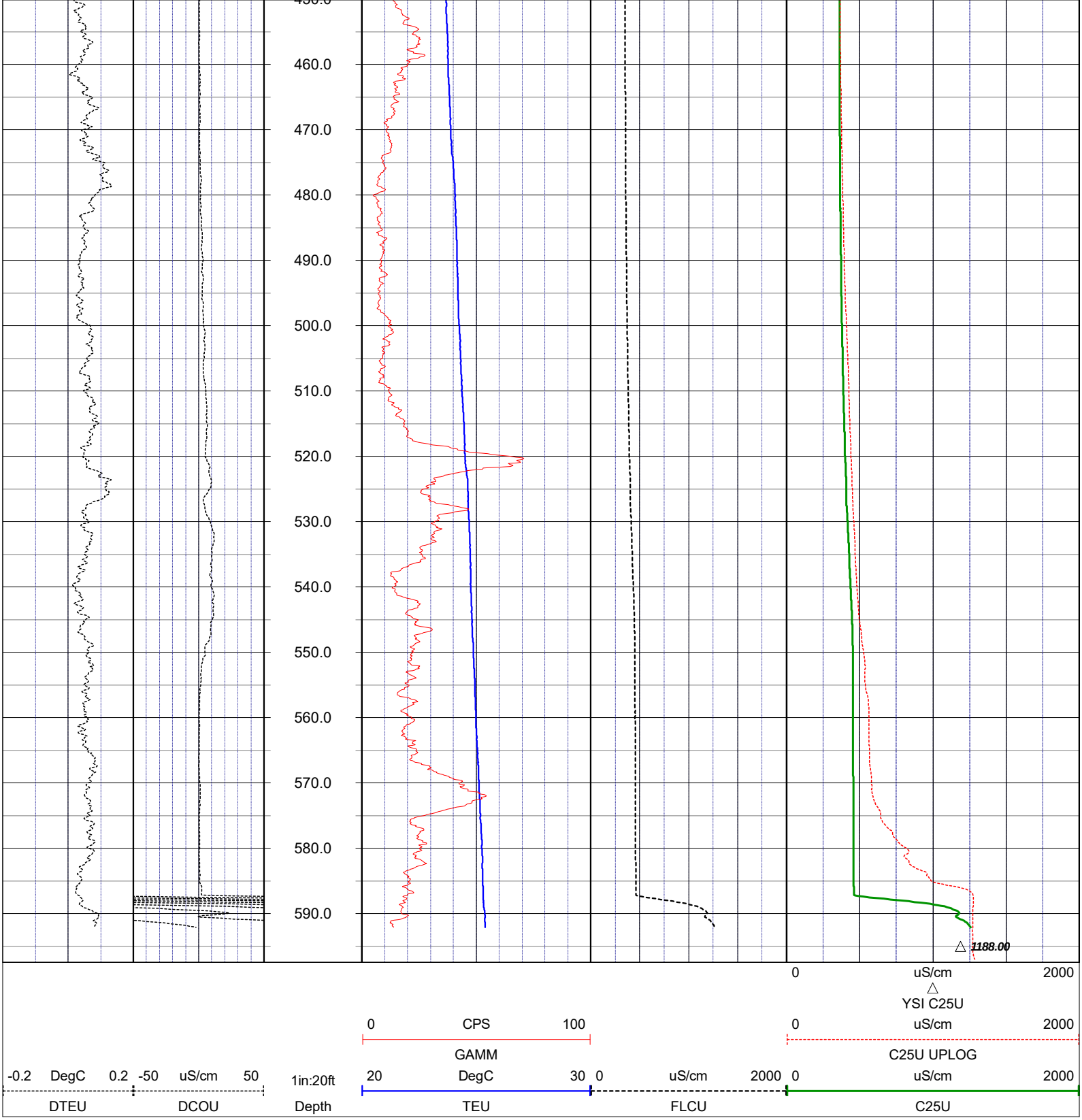
DATE	22 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	600		
DEPTH-LOGGER	601		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	425	600	6	PVC	0	425

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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WELL NWF7349
UWI NWF7349

LOG STAGE EXPLORATORY

HEADER NOTES:

COMP	NWFWMD
LOC	SOUTH WALTON UTILITIES EAST MONITOR WELL
FLD	SANTA ROSA BEACH
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.42 FT ABOVE GROUND

LOG MEASURED FROM: GROUND SURFACE

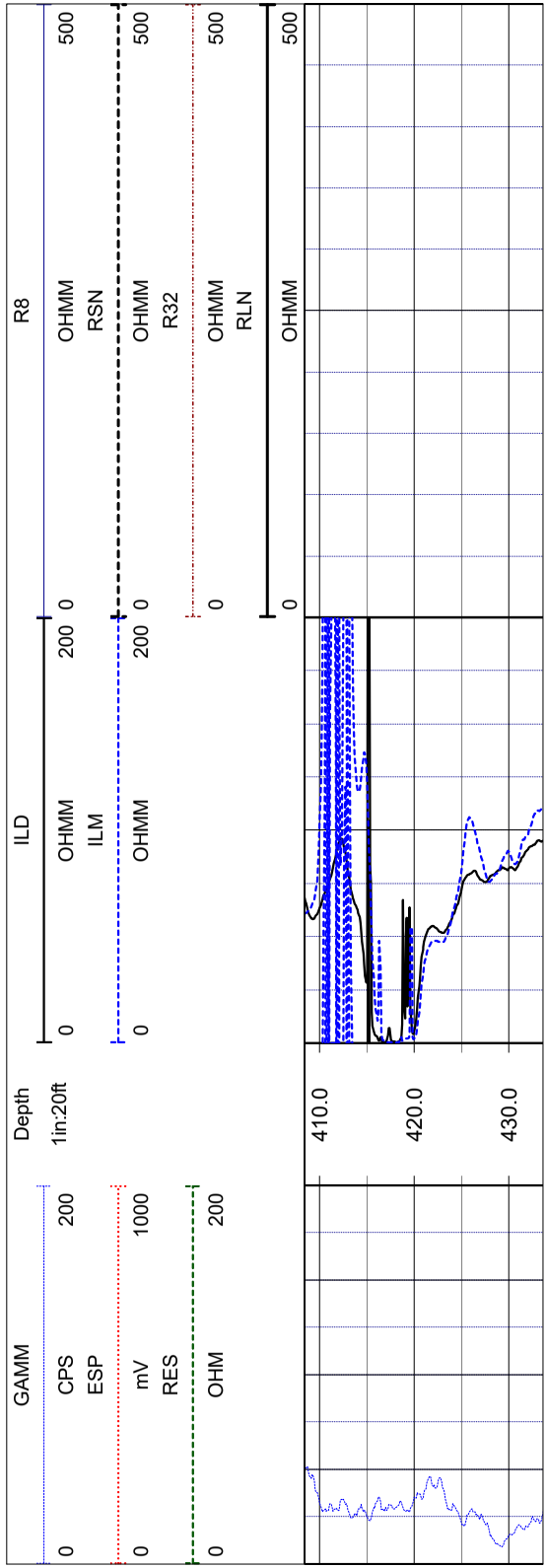
DRILLING MEASURED FROM:

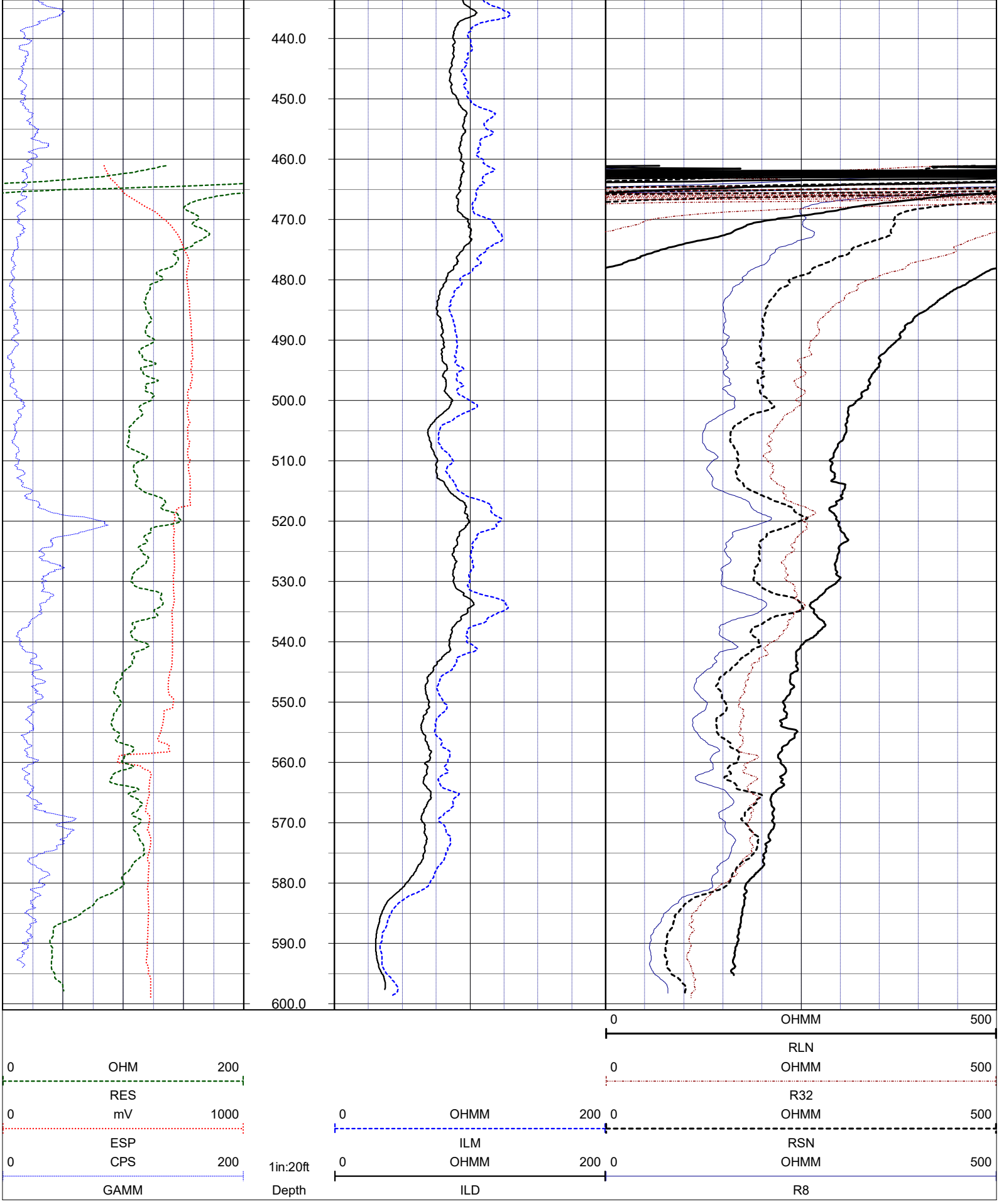
DATE	22 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	600		
DEPTH-LOGGER	601		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	425	600	6	PVC	0	425

LOG CODES

CAL	**GAMM**	**ESP**	**RES**	**RSN**
3-arm caliper	natural gamma (CPS)	spontaneous potential	single point resistance	short normal resistivity
RLN	**R8**	**R32**	**ILD**	**ILM**
long normal resistivity	8 inch resistivity	32 inch resistivity	deep induction resistivity	shallow induction resistivity
IDC	**ISC**	**DT**	**SPHI**	**R**
deep induction conductivity	shallow induction conductivity	sonic interval velocity	sonic porosity (RHG method)	repeat designation





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END OF LOG

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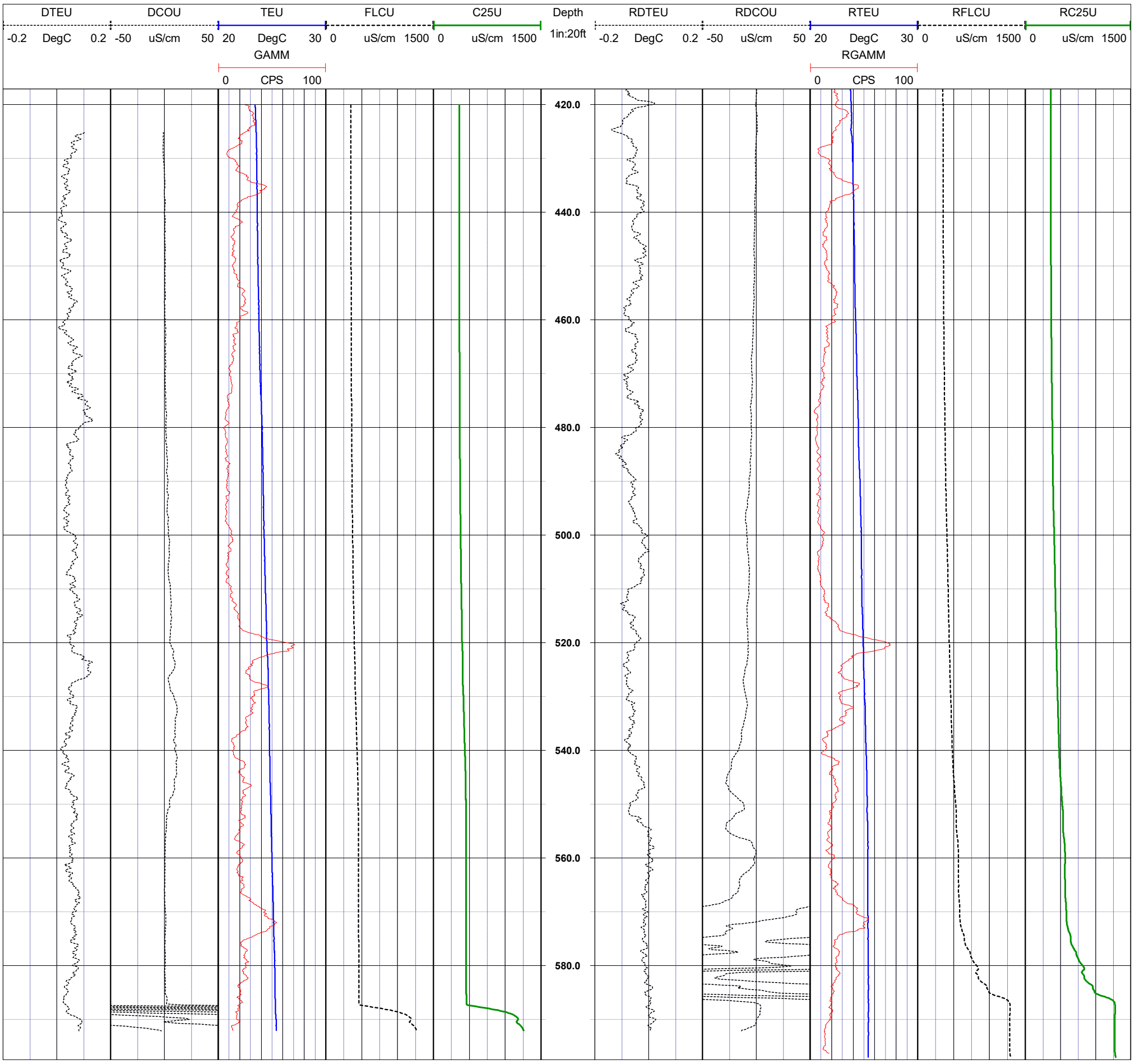
Location:	SWU East MW	Casing Depth:	425
County:	Walton	Total Depth:	601
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	East MW

WELL ID: **NWF7349**
Date(s): **22 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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Location:	SWU East MW	Casing Depth:	425
County:	Walton	Total Depth:	601
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	East MW

WELL ID: **NWF7349**
Date(s): **22 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
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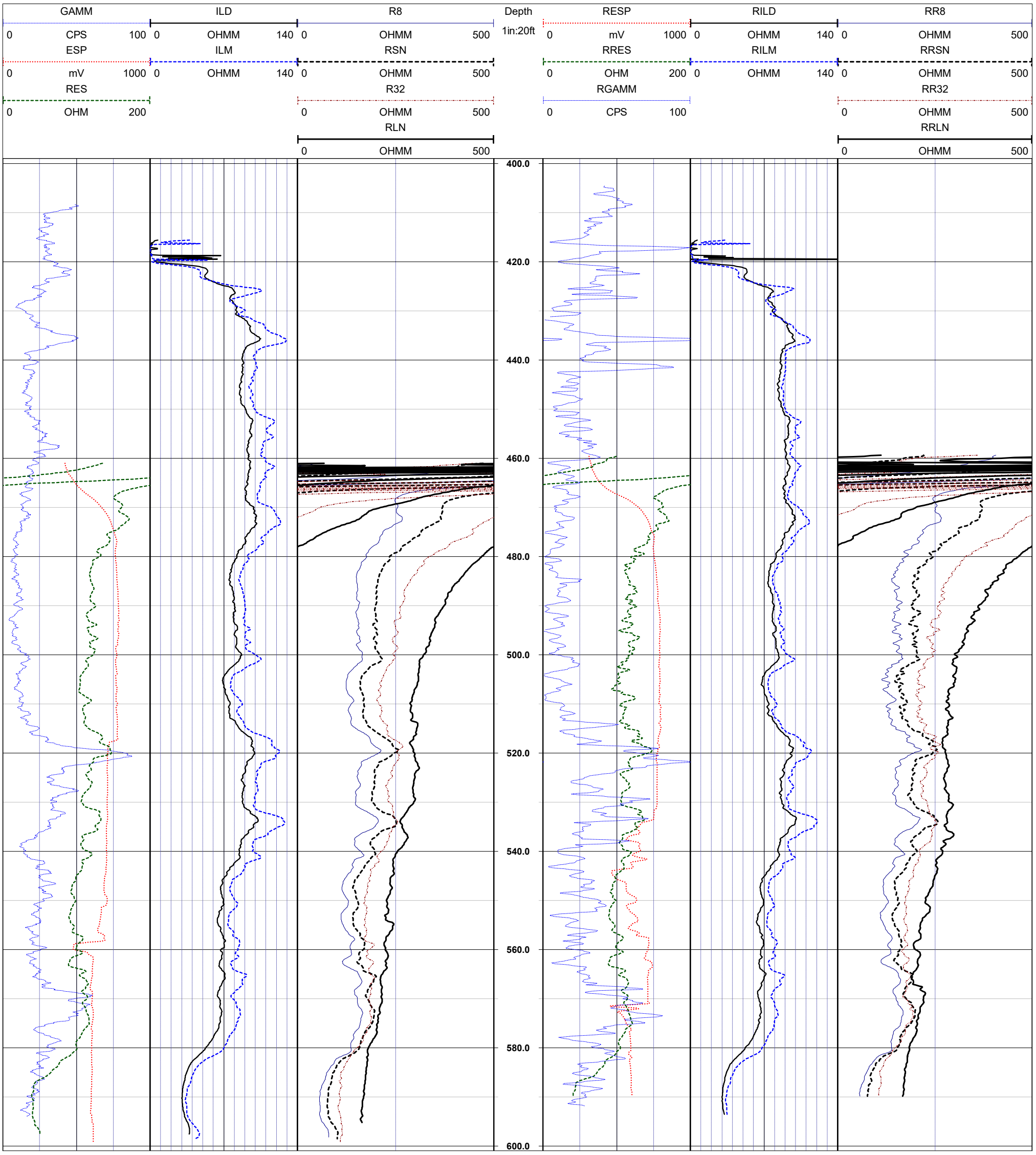
REPEAT



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WELL NWF9137
UWI NWF9137

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU INDIAN RIVER TRAIL MW

COMP	NWFWMD
LOC	DWU INDIAN RIVER TRAIL MW
FLD	DESTIN WATER UTILITIES
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.04 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	26 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	650		
DEPTH-LOGGER	649.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

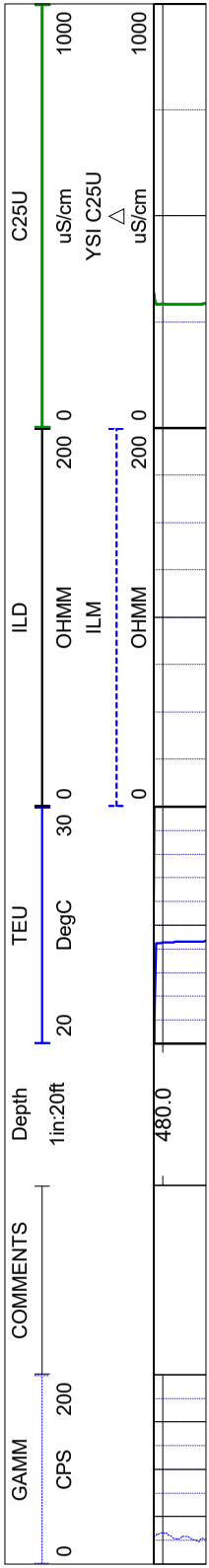
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	496	650	6	STEEL	0	496

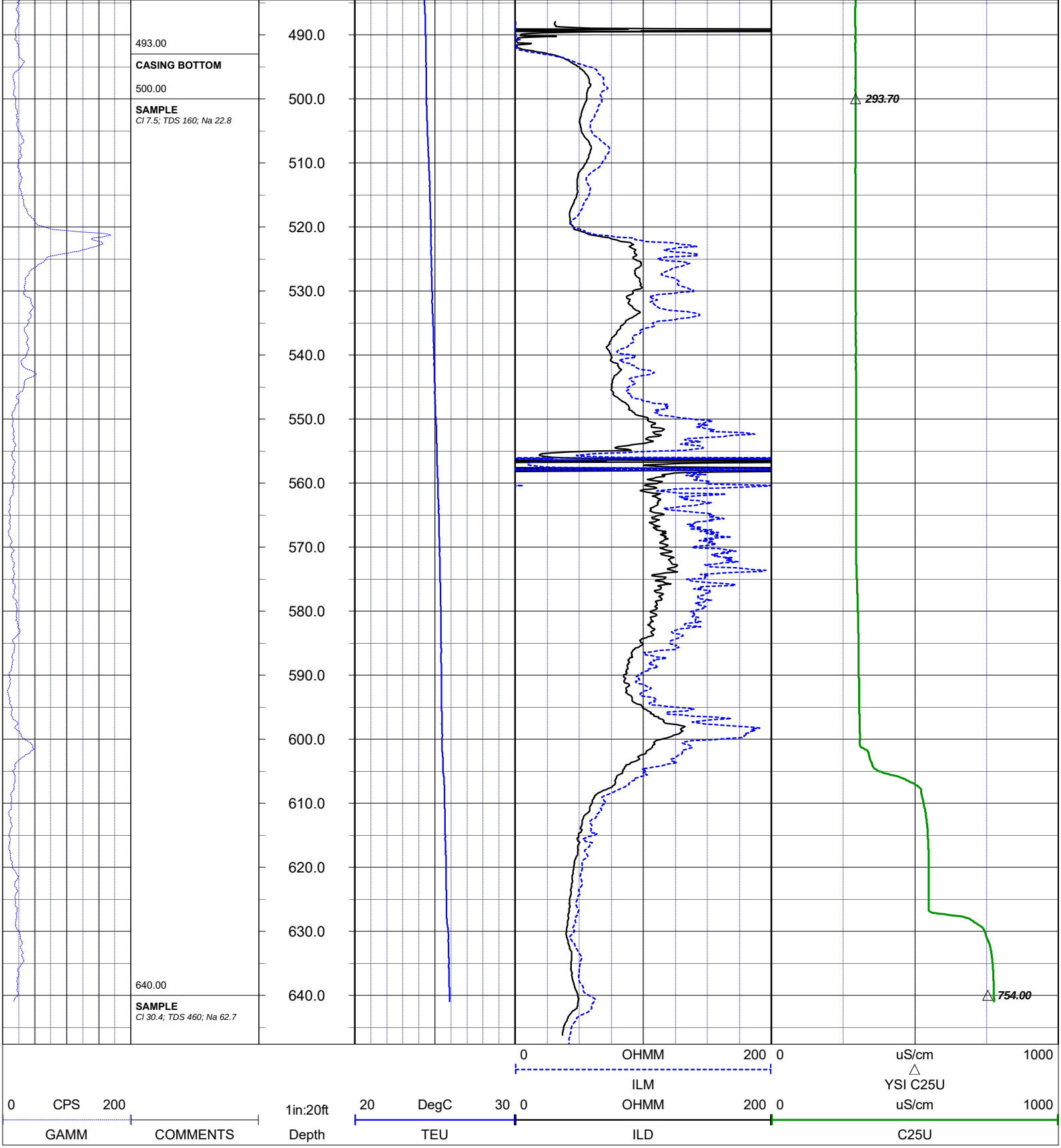
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**	
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**	

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation





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UWI NWF9137

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU INDIAN RIVER TRAIL MW

COMP	NWFWMD
LOC	DWU INDIAN RIVER TRAIL MW
FLD	DESTIN WATER UTILITIES
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.04 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

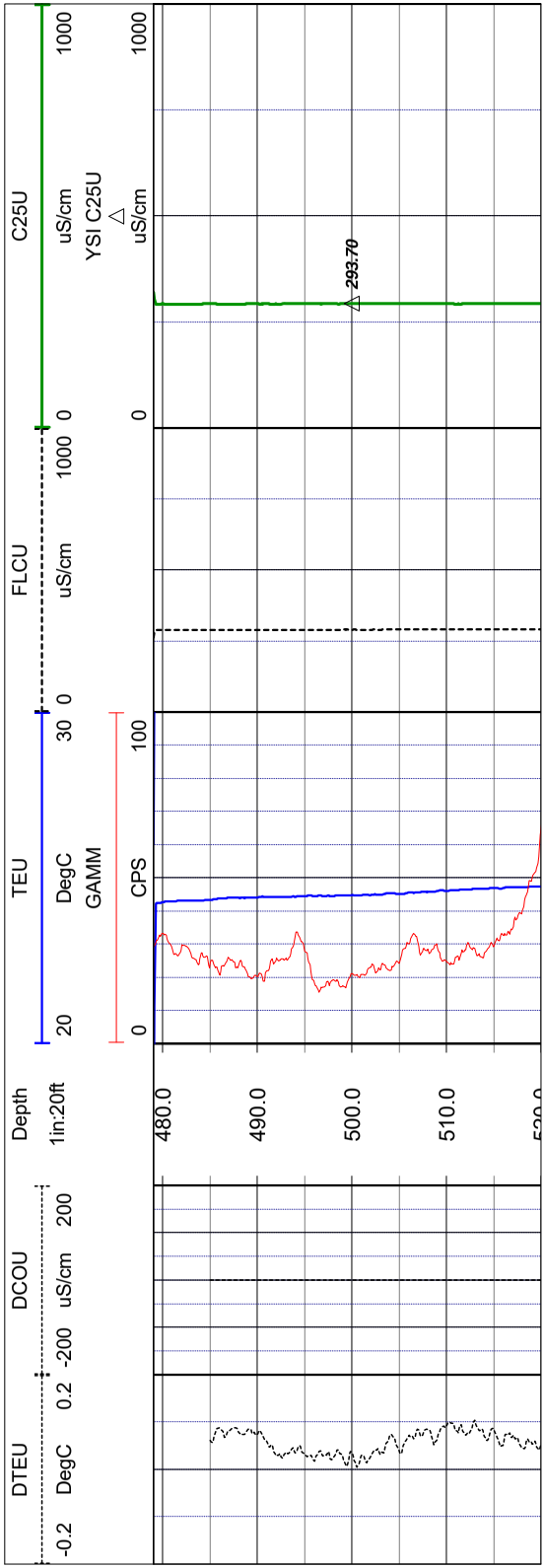
DRILLING MEASURED FROM:

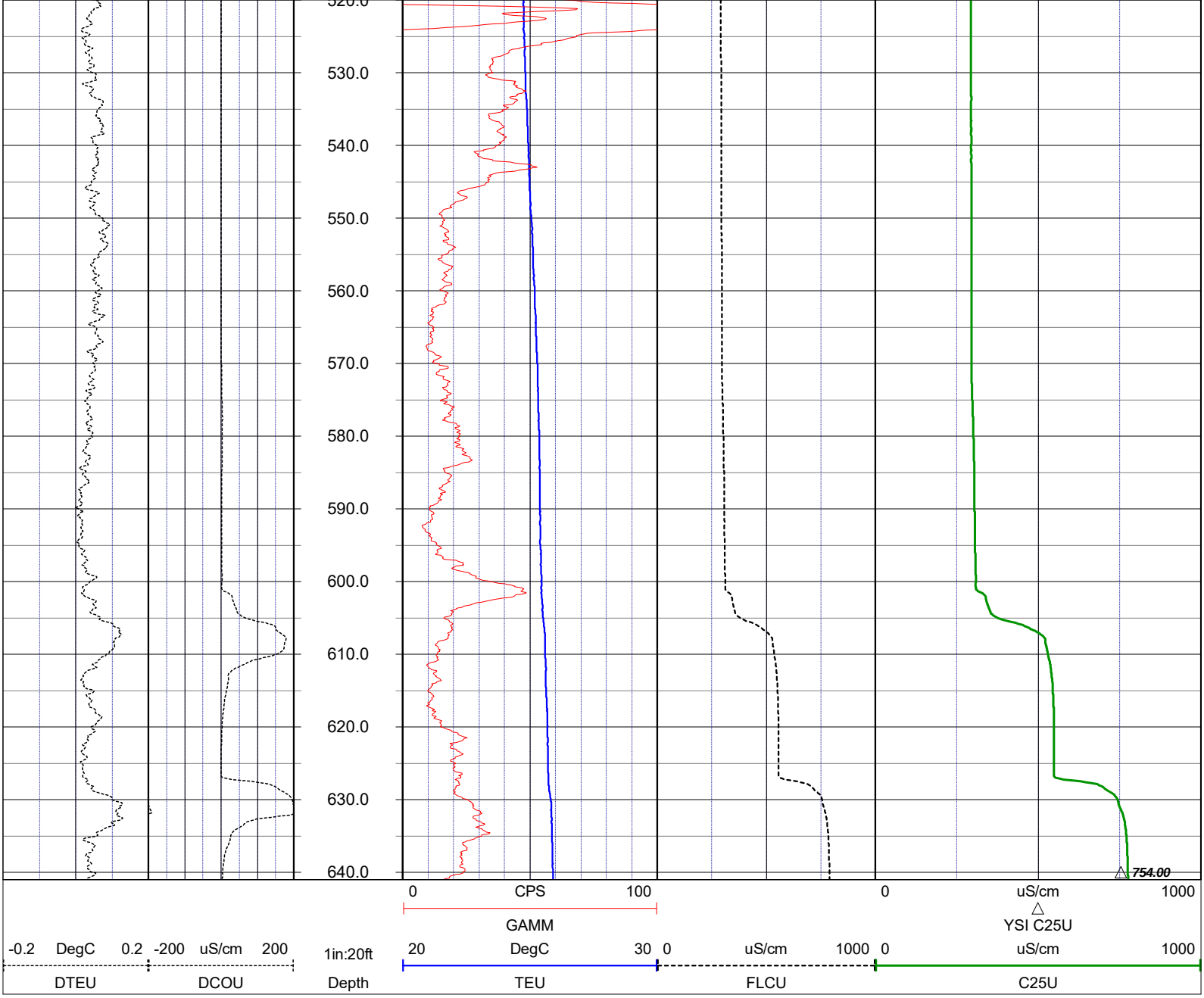
DATE	26 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	650		
DEPTH-LOGGER	649.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	496	650	6	STEEL	0	496

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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END OF LOG

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WELL NWF9137
UWI NWF9137

LOG STAGE EXPLORATORY

HEADER NOTES:
DWU INDIAN RIVER TRAIL MW

COMP	NWFWMD
LOC	DWU INDIAN RIVER TRAIL MW
FLD	DESTIN WATER UTILITIES
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.04 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

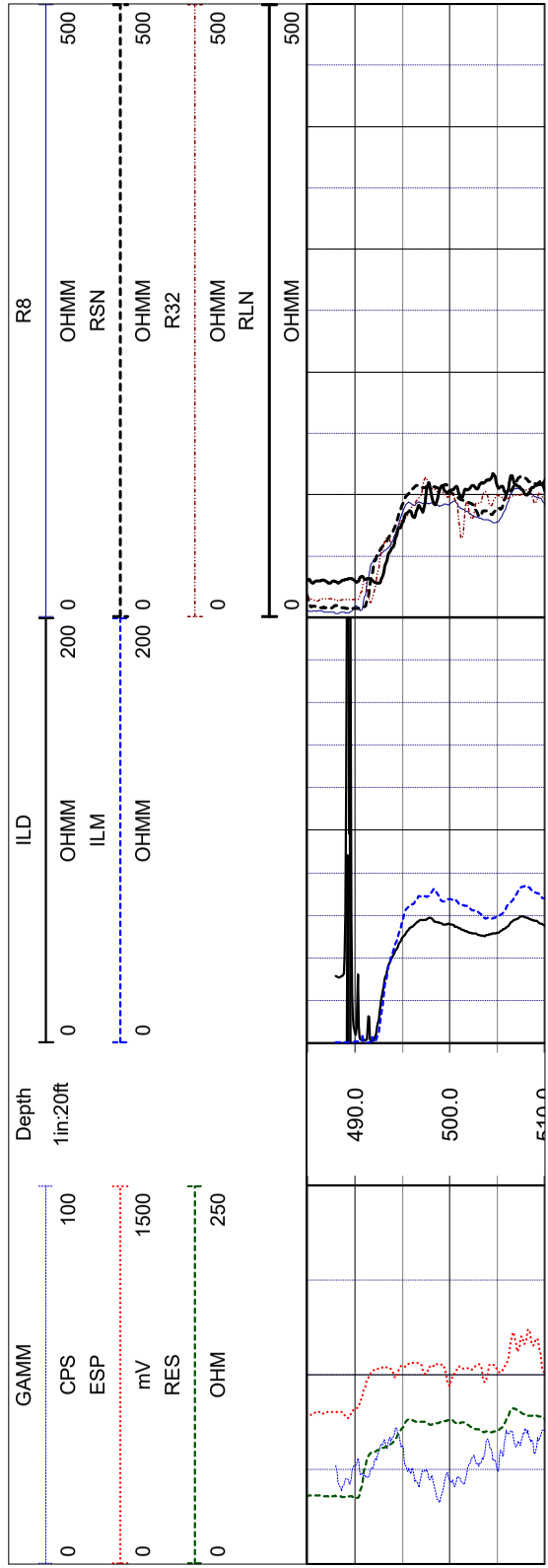
DRILLING MEASURED FROM:

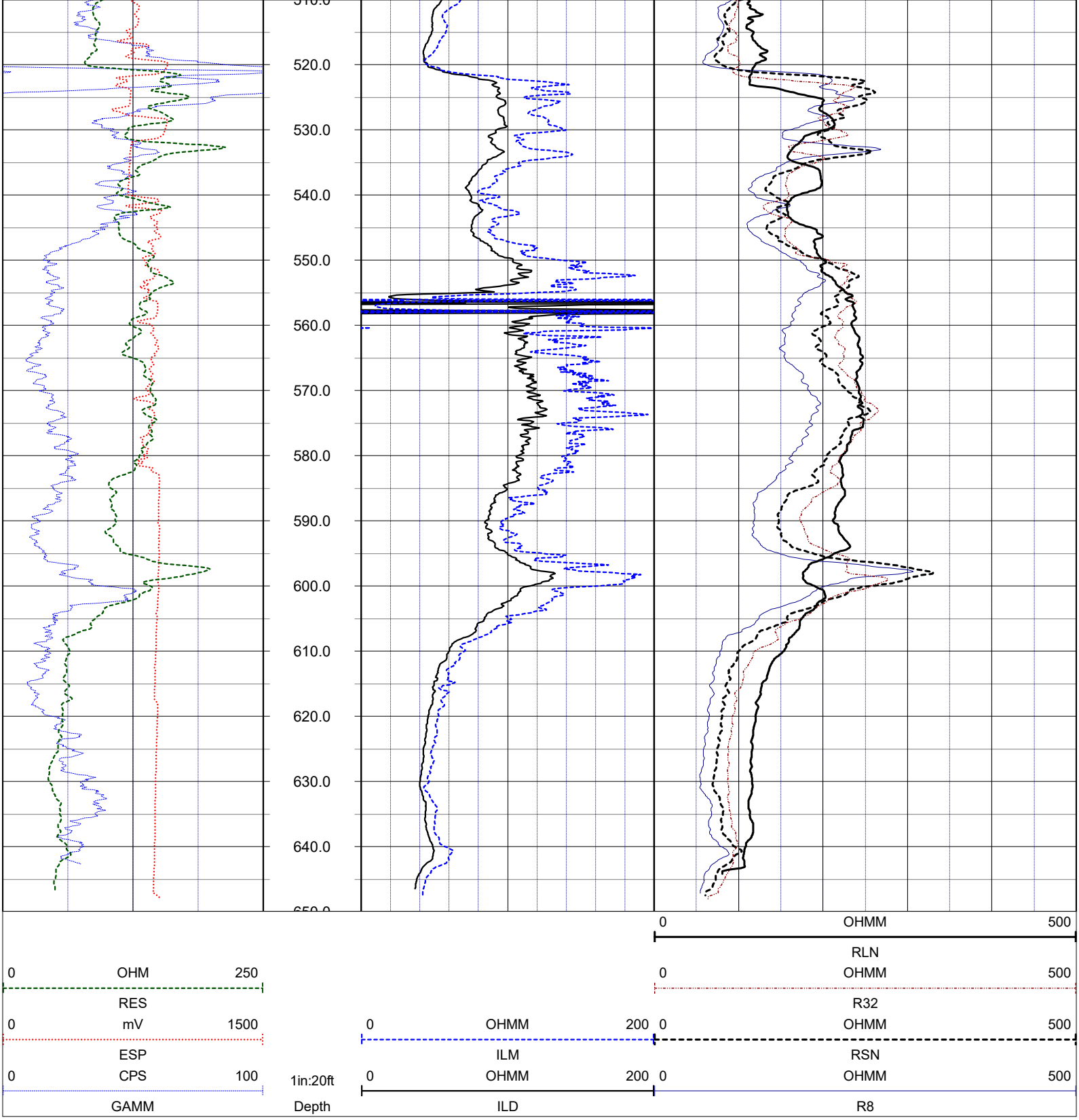
DATE	26 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	650		
DEPTH-LOGGER	649.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	496	650	6	STEEL	0	496

LOG CODES

CAL	GAMM	ESP	RES	RSN	3-arm caliper
					natural gamma (CPS)
					spontaneous potential
					single point resistance
					short normal resistivity
RLN	R8	R32	ILD	ILM	long normal resistivity
					8 inch resistivity
					32 inch resistivity
					deep induction resistivity
					shallow induction resistivity
IDC	ISC	DT	SPHI	R	deep induction conductivity
					shallow induction conductivity
					sonic interval velocity
					sonic porosity (RHG method)
					repeat designation





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Florida Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
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rob@rmbaker.com
407-733-8958

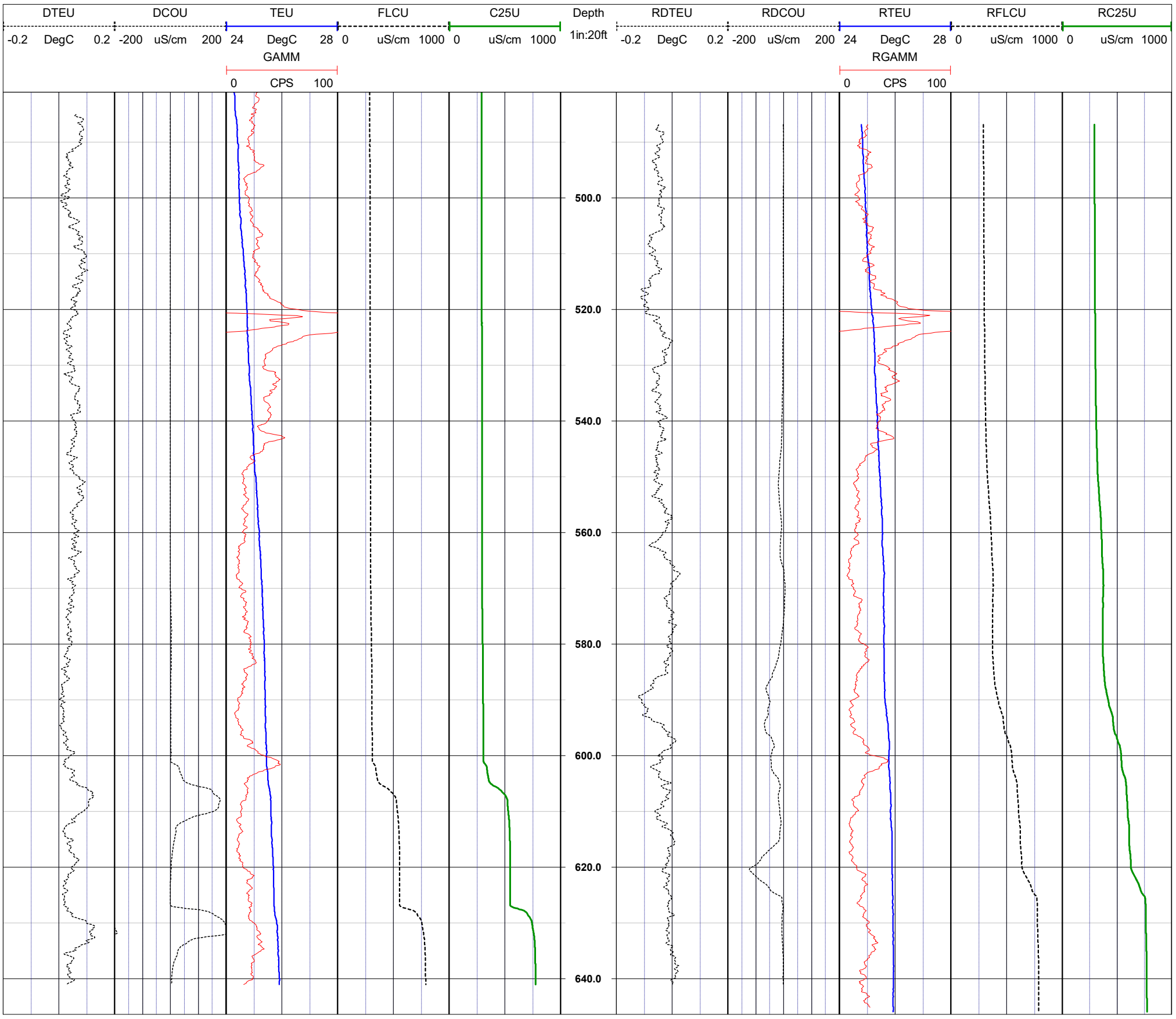
Location:	DWU Indian Riv. Trail MW	Casing Depth:	492
County:	Okaloosa	Total Depth:	649.7
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	DWU Ind. Riv. Trail MW

WELL ID: **NWF9137**
Date(s): **26 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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FL Licensed Geology Business GB 458

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rob@rmbaker.com
407-733-8958

Location:	DWU Indian Riv Trail MW	Casing Depth:	492
County:	Okaloosa	Total Depth:	649.7
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	DWU Ind. Riv. Trail MW

WELL ID: **NWF9137**
Date(s): **26 FEB 2019**

PROJECT NOTES:
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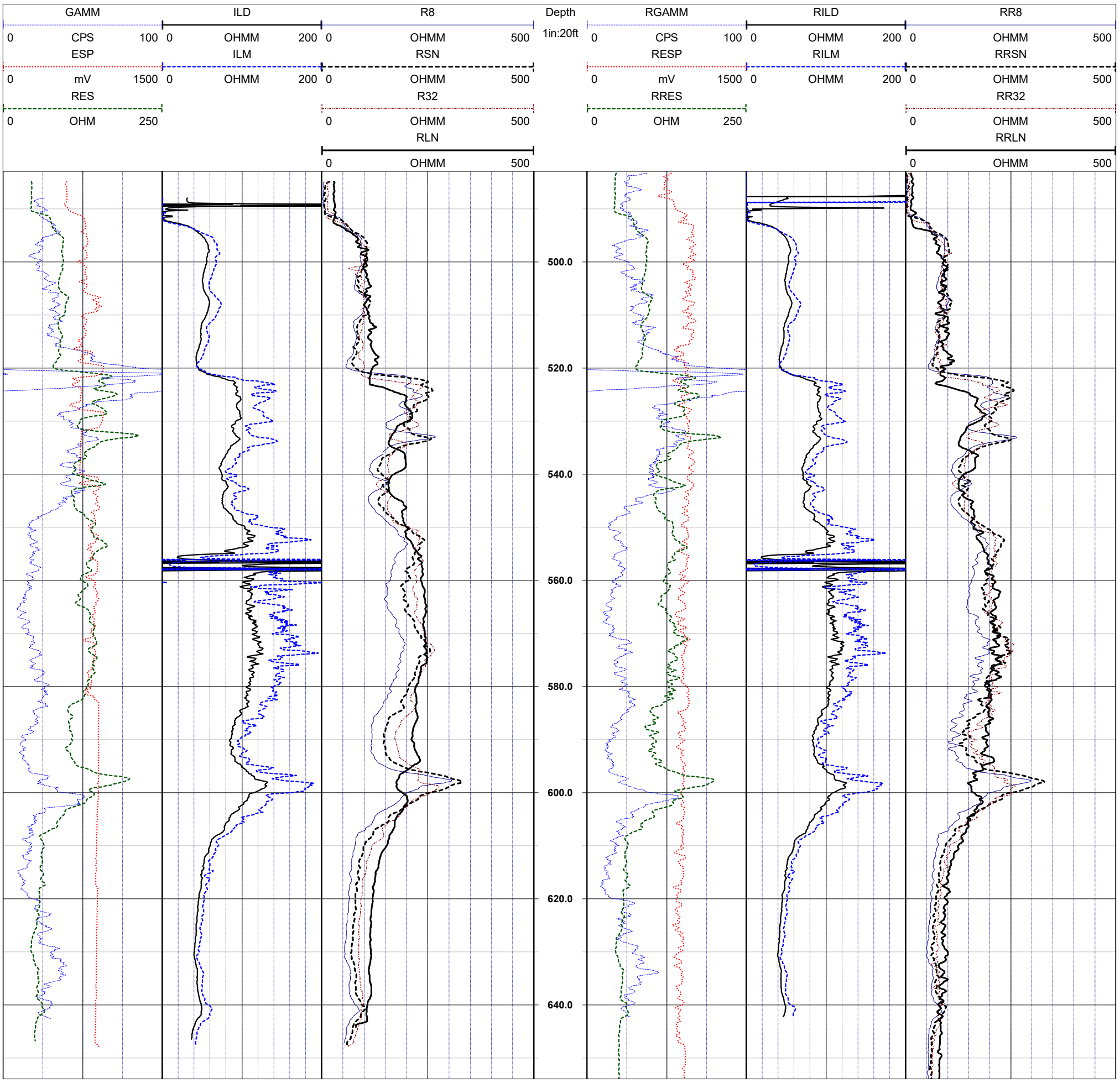
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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FL Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
Geology and Geophysics

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www.rmbaker.com

WELL NWF12811
UWI NWF12811

LOG STAGE EXPLORATORY

HEADER NOTES:
A-4

COMP	NWFWMD
LOC	CR 3280
FLD	CHOCTAWHATCHEE RIVER WMA
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.63 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	18 FEB 2019	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	701.85		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

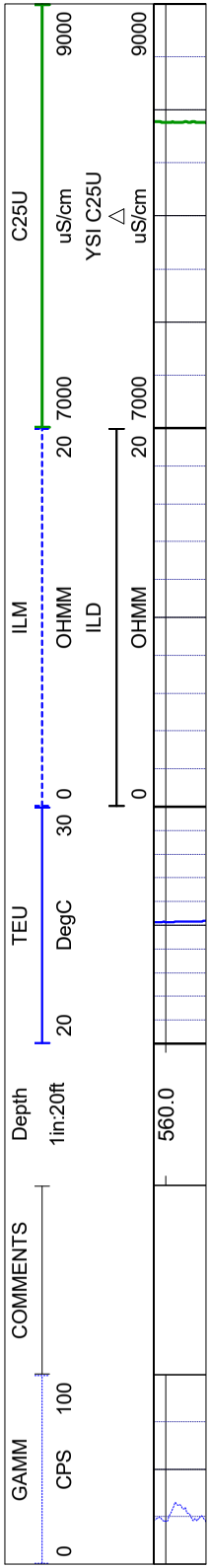
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	600	700	6	PVC	0	600

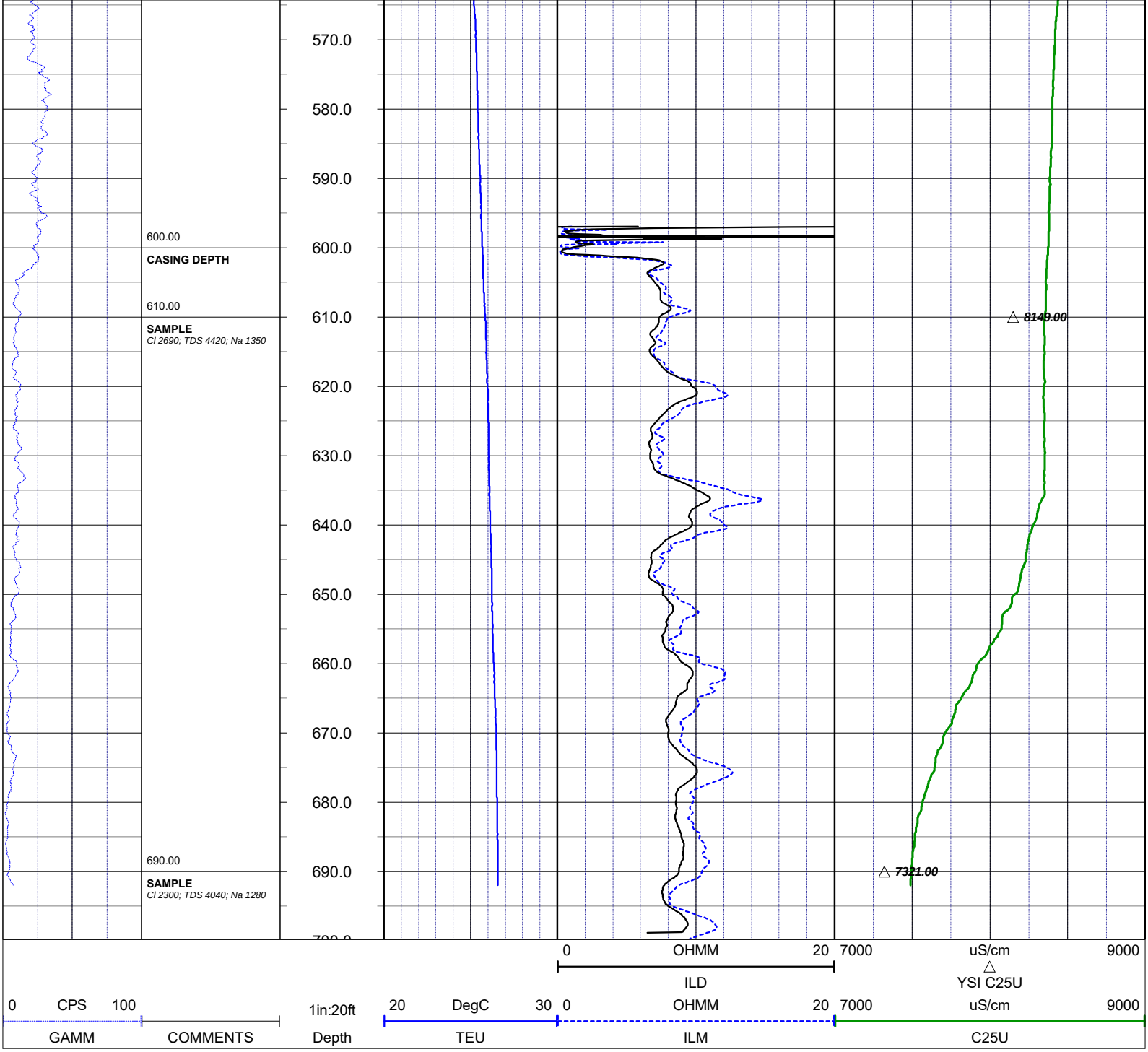
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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WELL NWF12811
UWI NWF12811

LOG STAGE EXPLORATORY

HEADER NOTES:
A-4

COMP	NWFWMD
LOC	CR 3280
FLD	CHOCTAWHATCHEE RIVER WMA
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 2.63 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

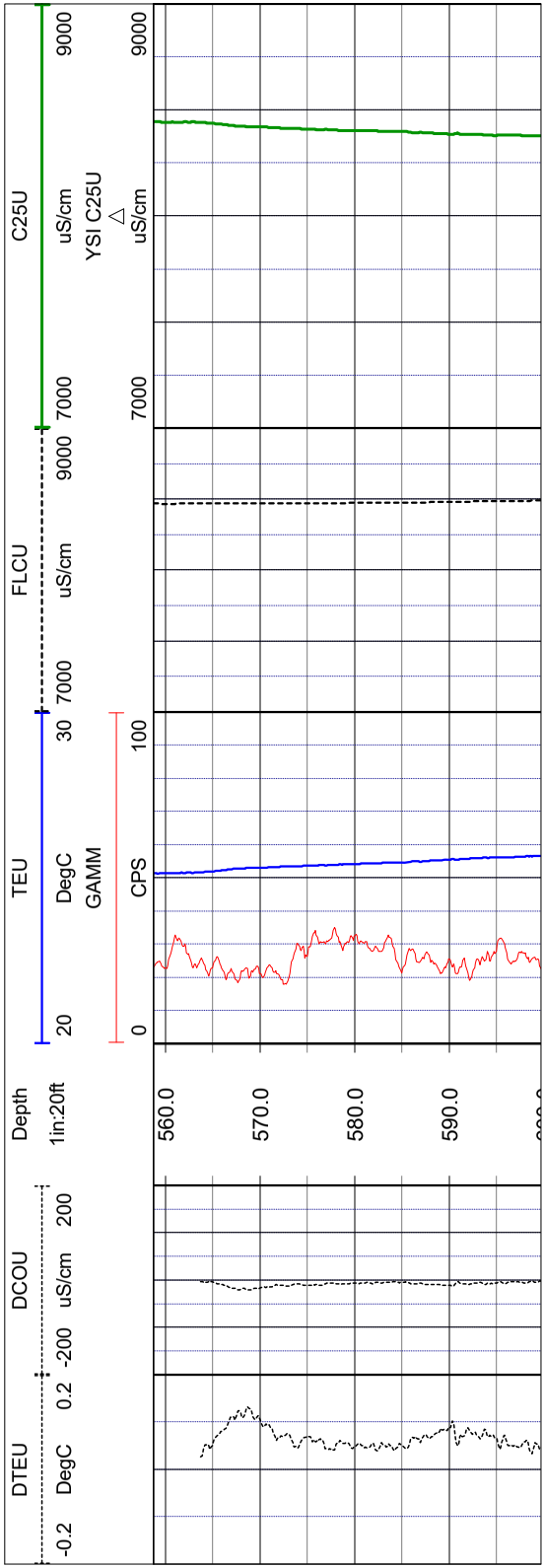
DRILLING MEASURED FROM:

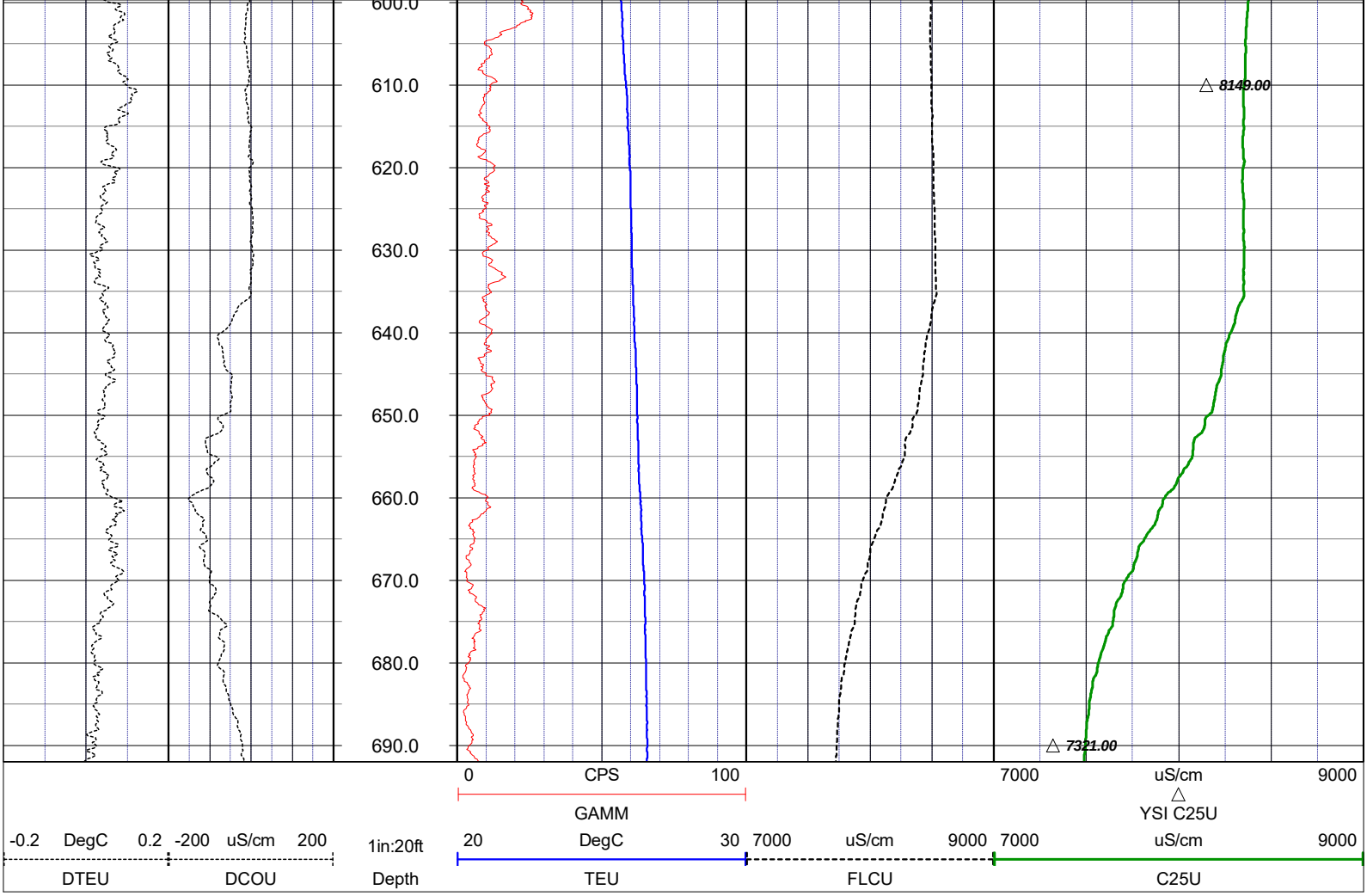
DATE	18 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	701.85		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	600	700	6	PVC	0	600

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**	
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**	
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**	
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**			
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**			





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WELL NWF12811
UWI NWF12811

LOG STAGE EXPLORATORY

HEADER NOTES:
A-4

COMP	NWFWMD
LOC	CR 3280
FLD	CHOCTAWHATCHEE RIVER WMA
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM:

LOG MEASURED FROM: GROUND SURFACE

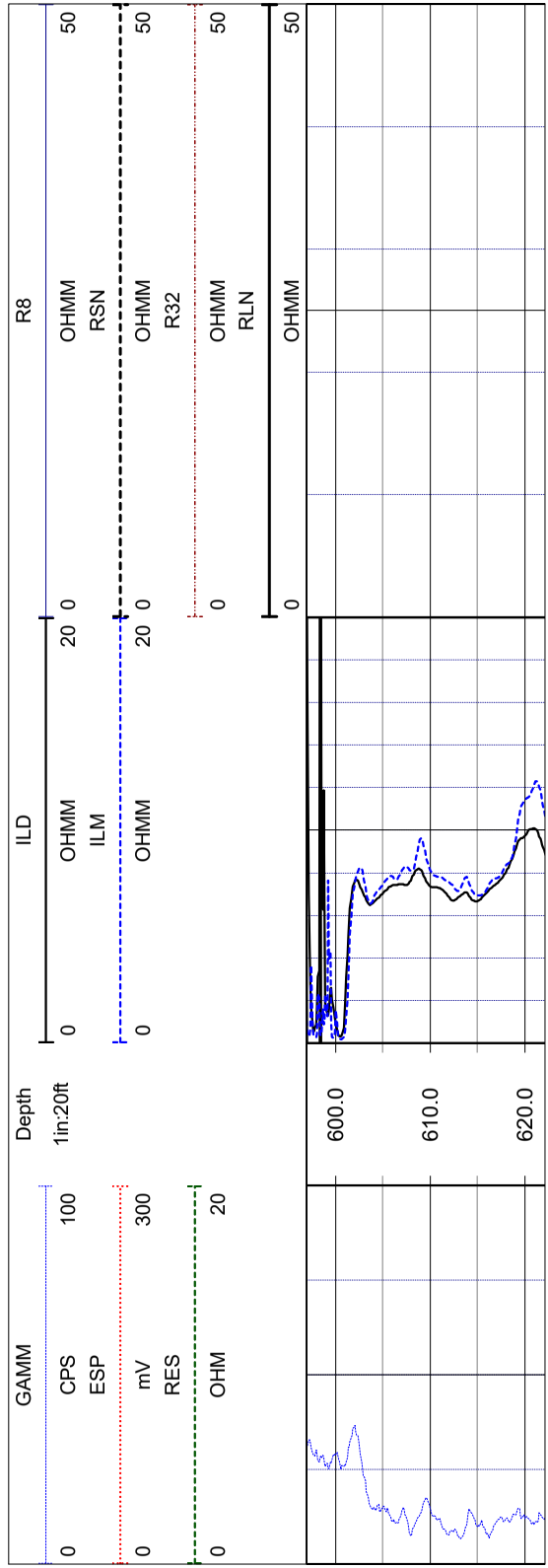
DRILLING MEASURED FROM:

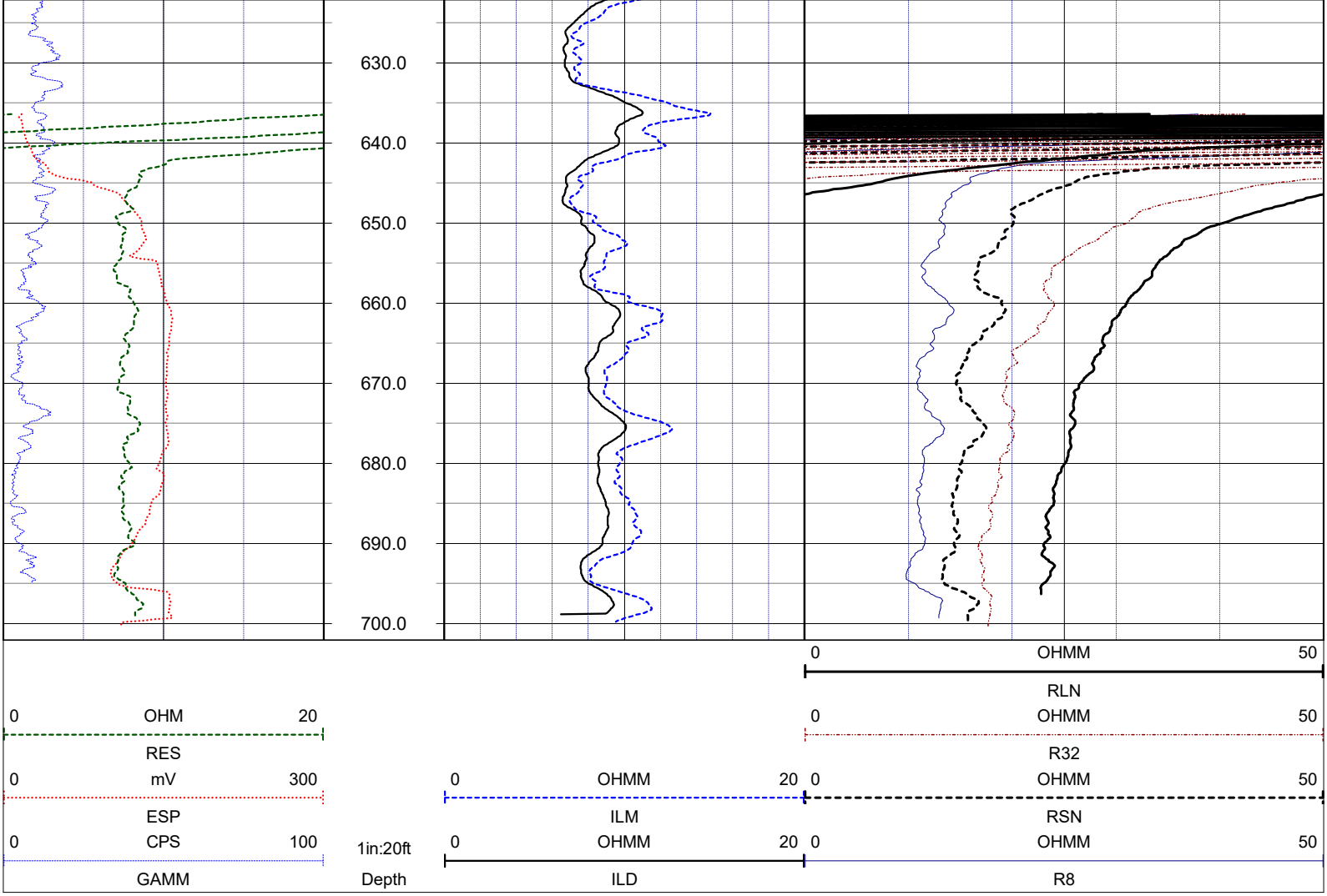
DATE	18 FEB 2019	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC+DUIN**	TROLLING DIRECTION	UP
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	700		
DEPTH-LOGGER	701.85		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	600	700	6	PVC	0	600

LOG CODES

CAL	GAMM	ESP	RES	RSN	
3-arm caliper	natural gamma (CPS)	spontaneous potential	single point resistance	short normal resistivity	
RLN	R8	R32	ILD	ILM	
long normal resistivity	8 inch resistivity	32 inch resistivity	deep induction resistivity	shallow induction resistivity	
IDC	ISC	DT	SPHI	R	
deep induction conductivity	shallow induction conductivity	sonic interval velocity	sonic porosity (RHG method)	repeat designation	





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END OF LOG

RMBAKER LLC
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407-733-8958

Location:	Choc. River WMA	Casing Depth:	600
County:	Walton	Total Depth:	701.85
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-4

WELL ID: **NWF12811**
Date(s): **18 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
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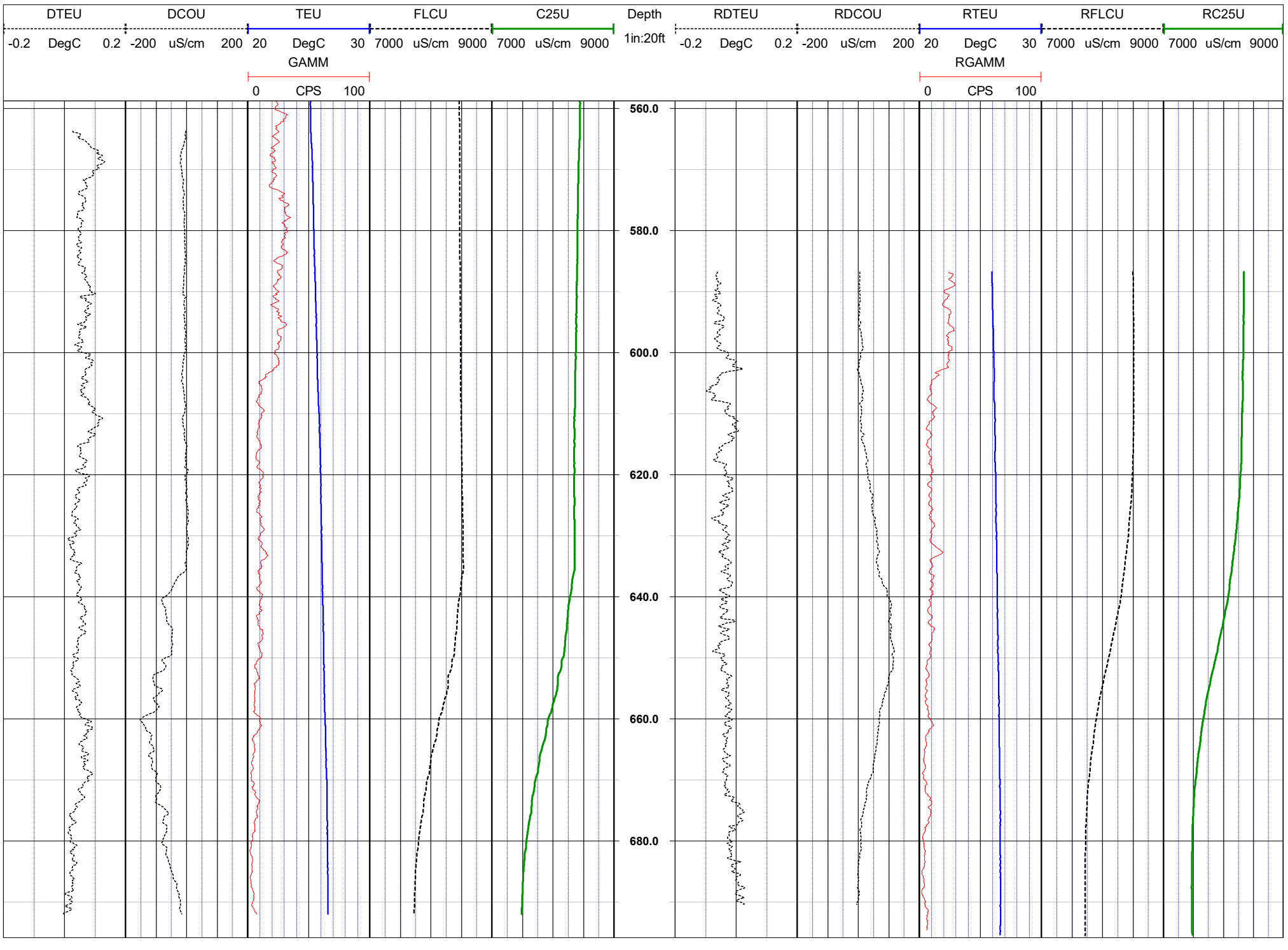
MAIN

REPEAT



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Location:	Choc. Riv. WMA	Casing Depth:	600
County:	Walton	Total Depth:	701.85
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-4

WELL ID: **NWF12811**
Date(s): **18 FEB 2019**

PROJECT NOTES:
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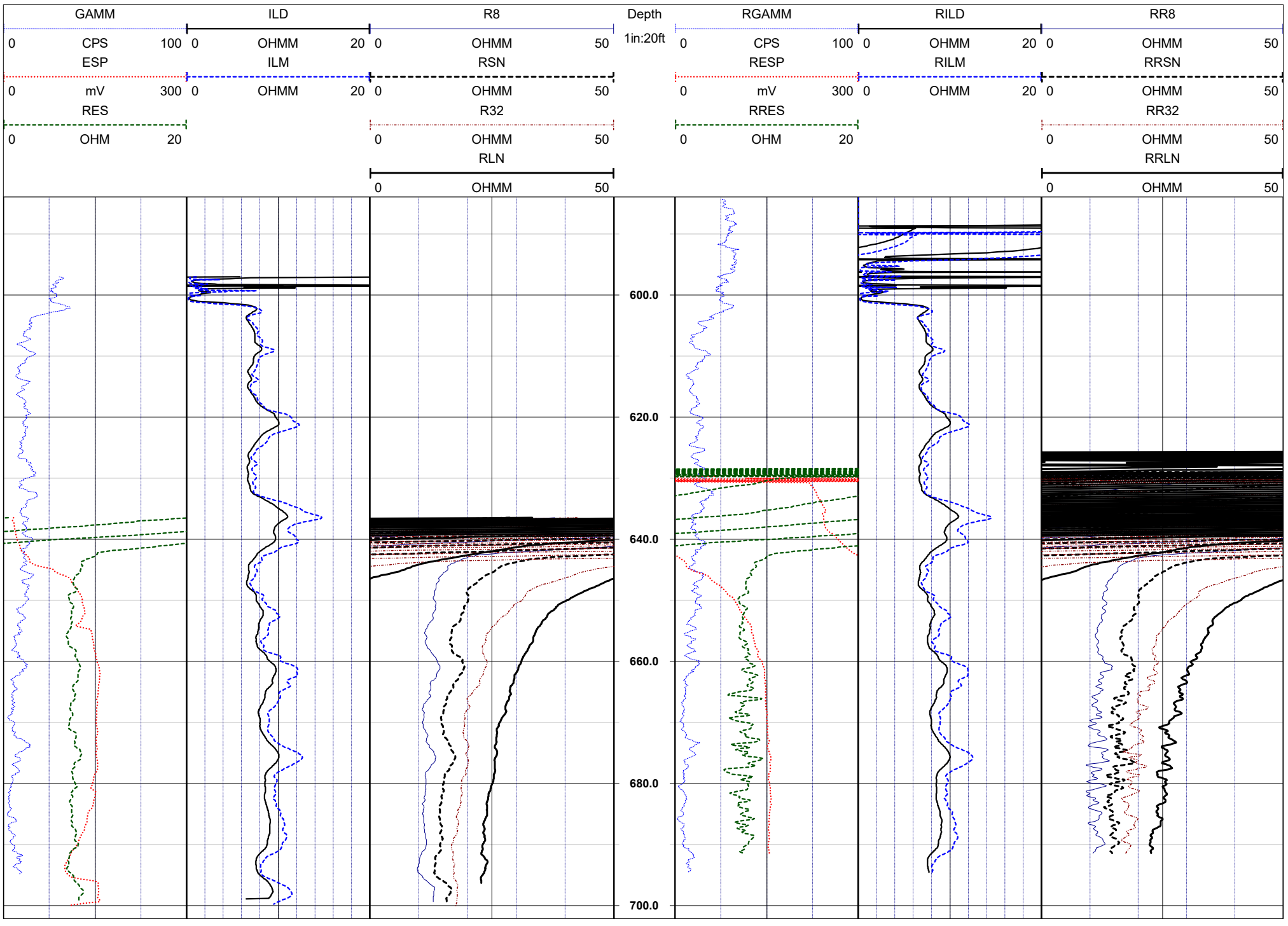
MAIN

REPEAT



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WELL NWF12838
UWI NWF12838

LOG STAGE EXPLORATORY

HEADER NOTES:
A-3

COMP	NWFWMD
LOC	FREEPORT WWTP
FLD	FREEPORT
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	19 FEB 2019	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	670		
DEPTH-LOGGER	674.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

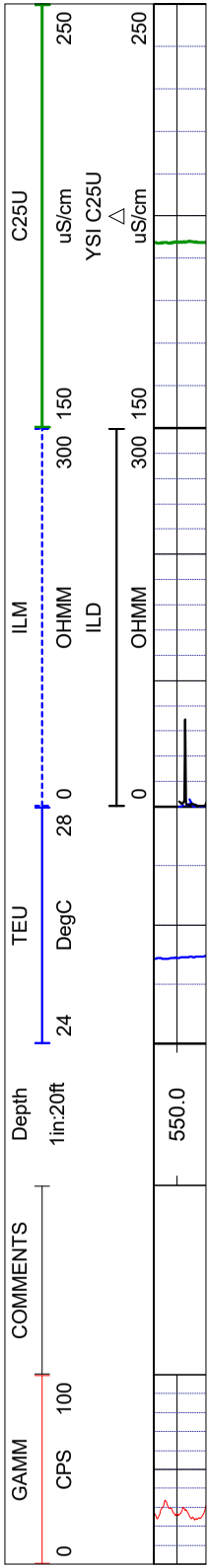
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	560	670	6	PVC	0	560

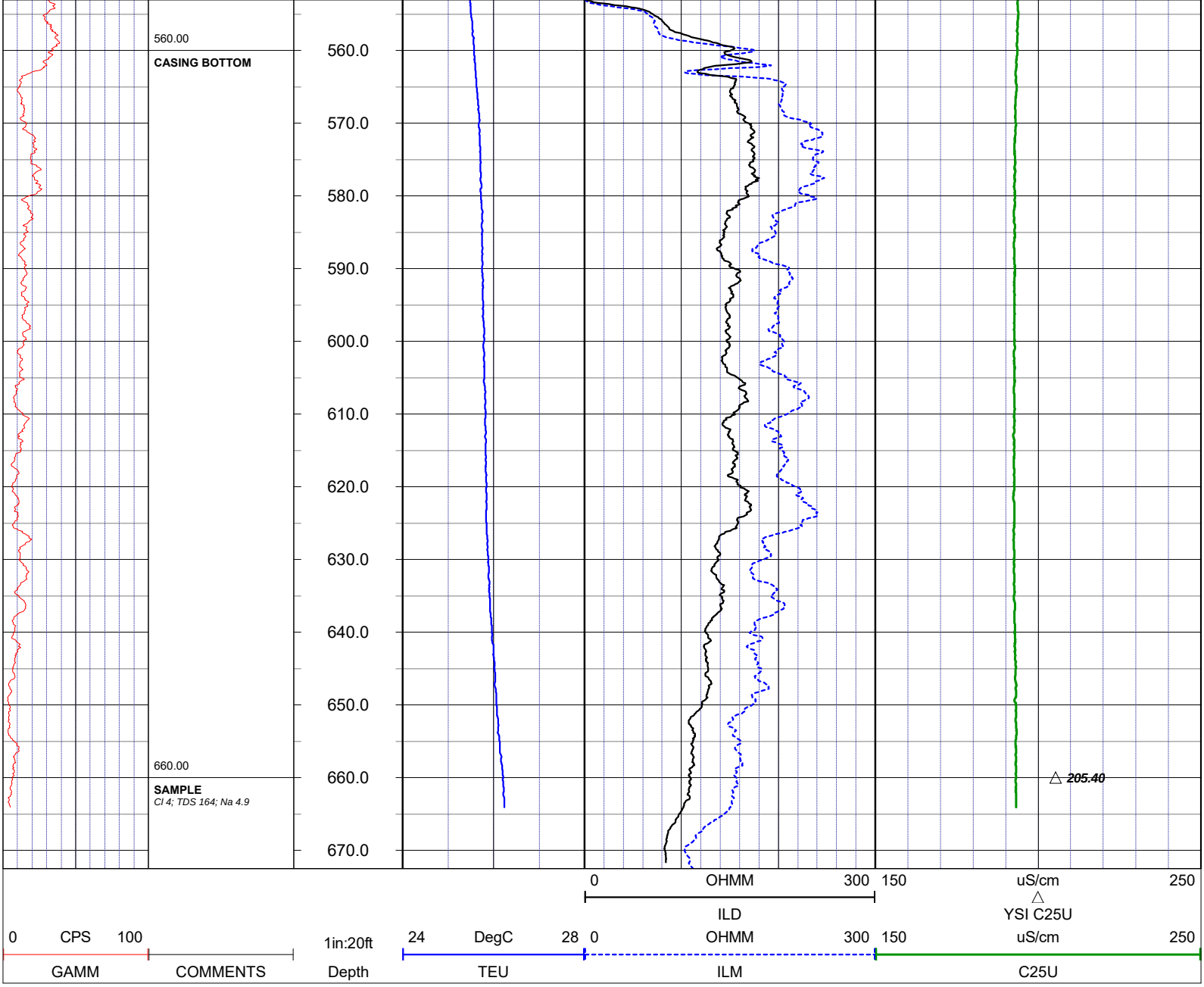
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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WELL NWF12838
UWI NWF12838

LOG STAGE EXPLORATORY

HEADER NOTES:
A-3

COMP	NWFWMD
LOC	FREEPORT WWTP
FLD	FREEPORT
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

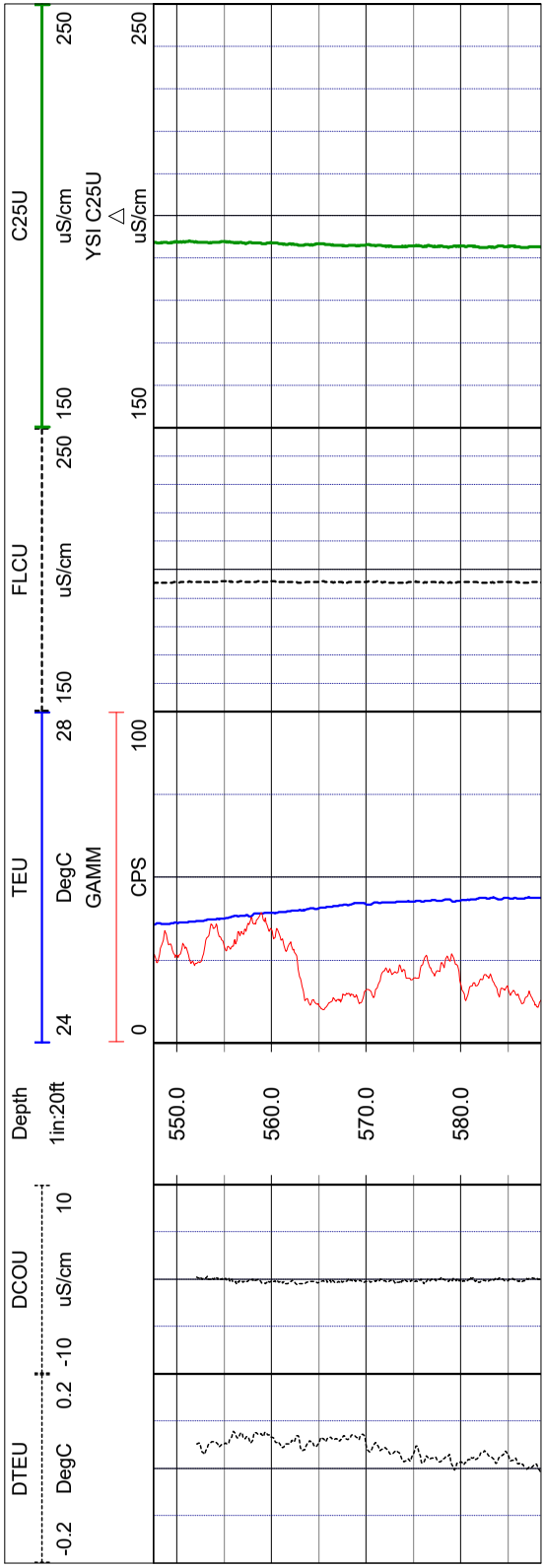
DRILLING MEASURED FROM:

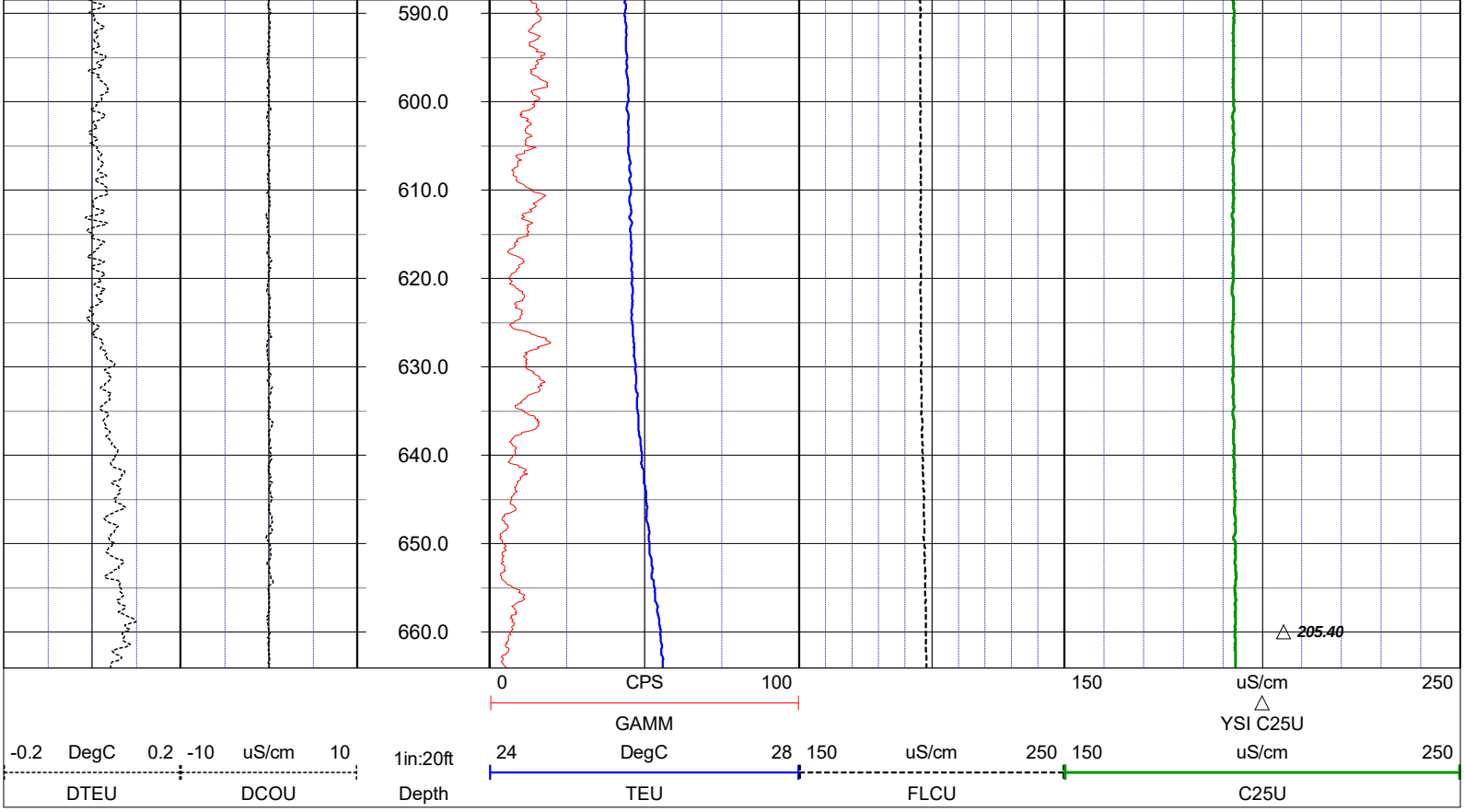
DATE	19 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	670		
DEPTH-LOGGER	674.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	560	670	6	PVC	0	560

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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Florida Licensed Geology Business GB 458

END OF LOG

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WELL NWF12838
UWI NWF12838

LOG STAGE EXPLORATORY

HEADER NOTES:
A-3

COMP	NWFWMD
LOC	FREEPORT WWTP
FLD	FREEPORT
CNTY	WALTON
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

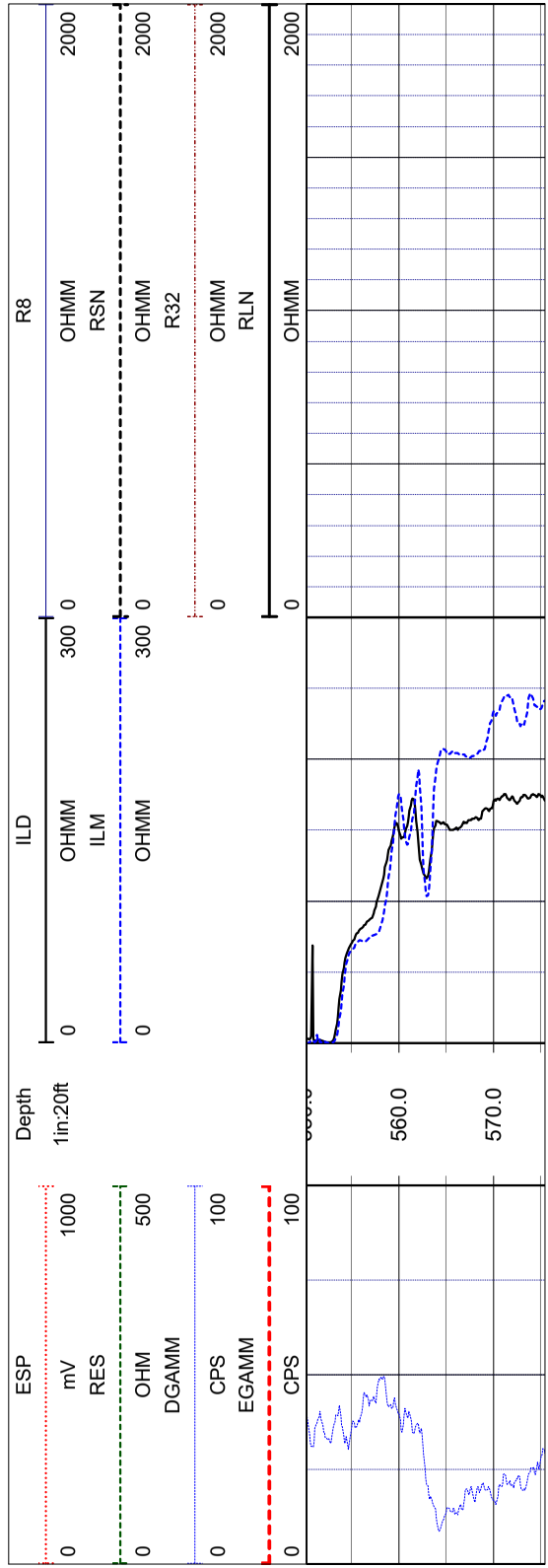
DRILLING MEASURED FROM:

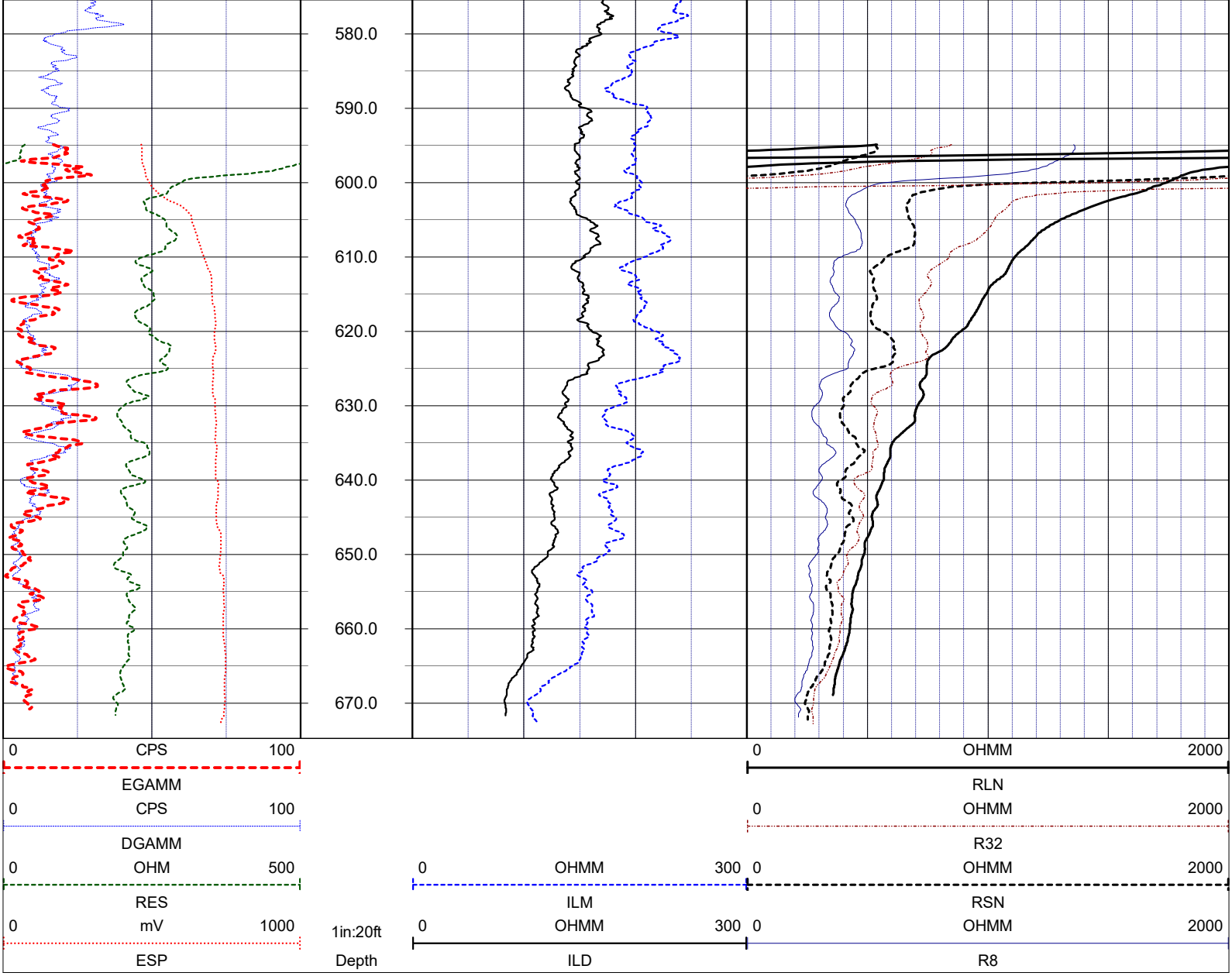
DATE	18 FEB 2019	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC+DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	670		
DEPTH-LOGGER	674.7		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	560	670	6	PVC	0	560

LOG CODES

CAL	**RLN**			**IDC**
3-arm caliper	long normal resistivity			deep induction conductivity
GAMM	**R8**			**ISC**
natural gamma (CPS)	8 inch resistivity			shallow induction conductivity
ESP	**R32**			**DT**
spontaneous potential	32 inch resistivity			sonic interval velocity
RES	**ILD**			**SPHI**
single point resistance	deep induction resistivity			sonic porosity (RHG method)
RSN	**ILM**			**R**
short normal resistivity	shallow induction resistivity			repeat designation





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Florida Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
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rob@rmbaker.com
407-733-8958

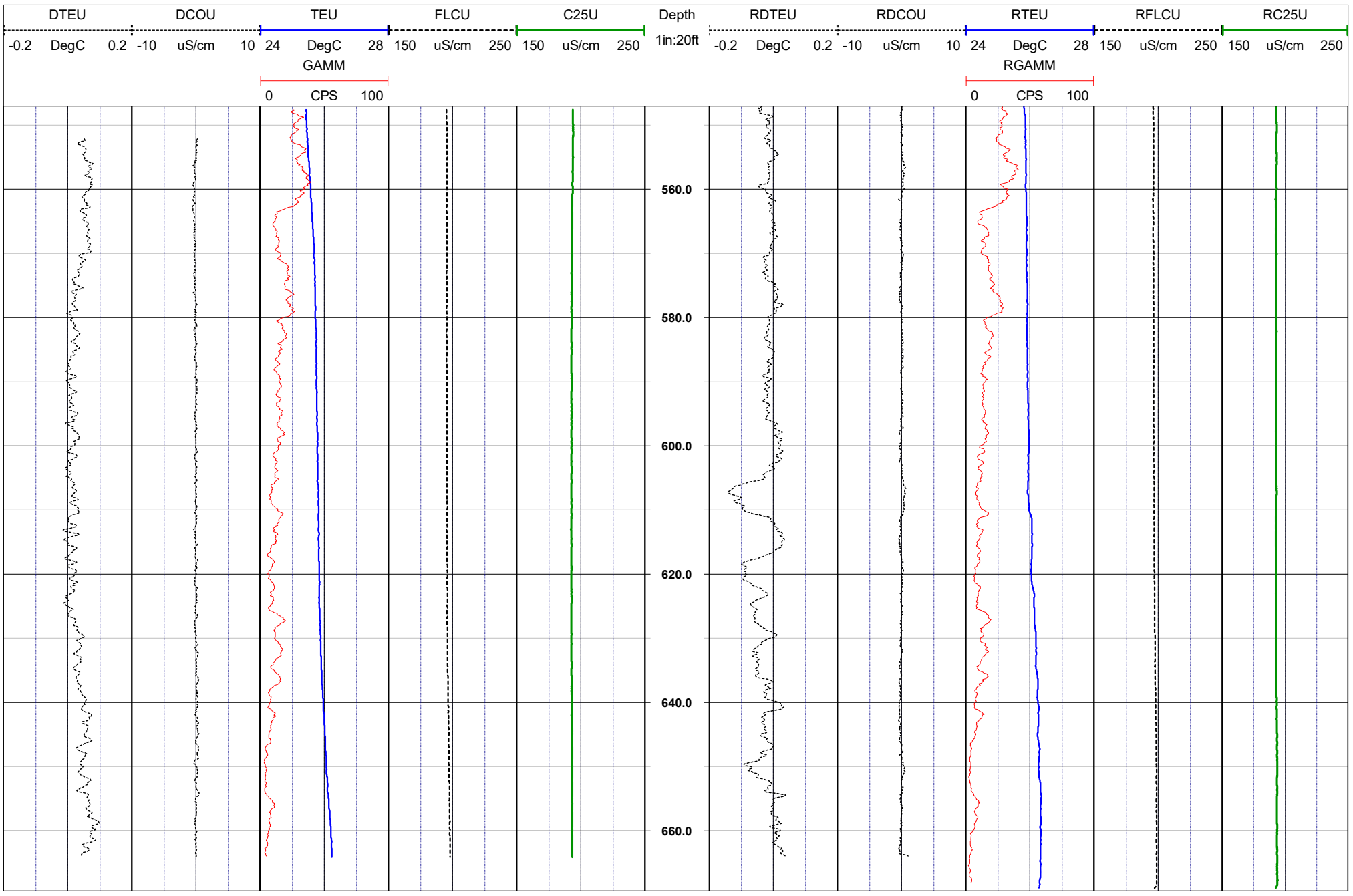
Location:	Freeport WWTP	Casing Depth:	560
County:	Walton	Total Depth:	674.7
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-4

WELL ID: **NWF12811**
Date(s): **19 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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FL Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
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rob@rmbaker.com
407-733-8958

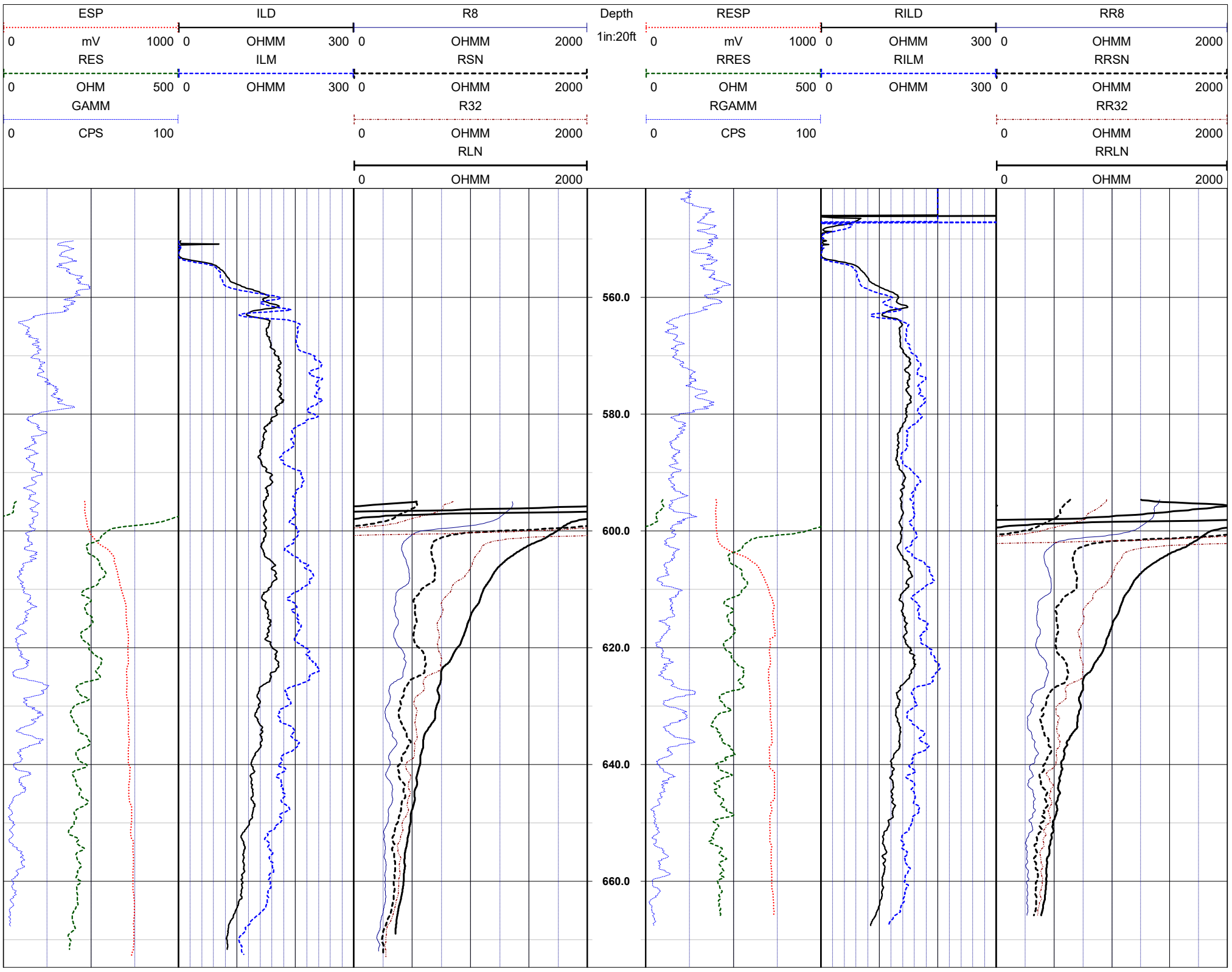
Location:	Freeport WWTP	Casing Depth:	560
County:	Walton	Total Depth:	674.7
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-4

WELL ID: **NWF12838**
Date(s): **19 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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WELL NWF12840
UWI NWF12840

LOG STAGE EXPLORATORY

HEADER NOTES:
A-2

COMP	NWFWMD
LOC	FRED GANNON ROCKY BAYOU STATE PARK
FLD	NICEVILE/BLUEWATER BAY
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	27 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	885		
DEPTH-LOGGER	887.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

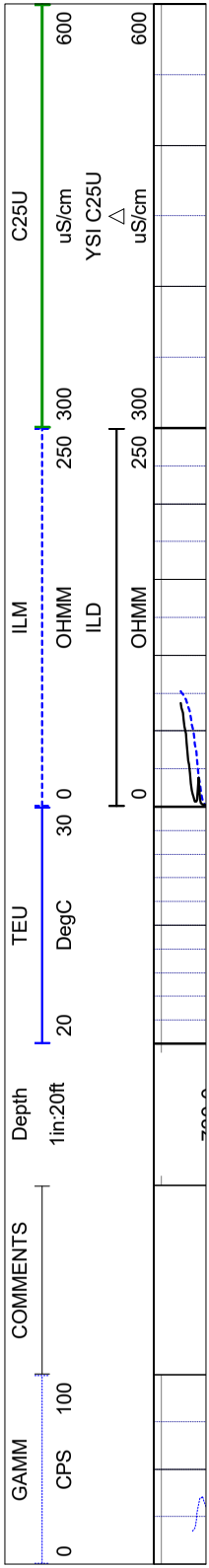
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	740	885	6	PVC	0	740

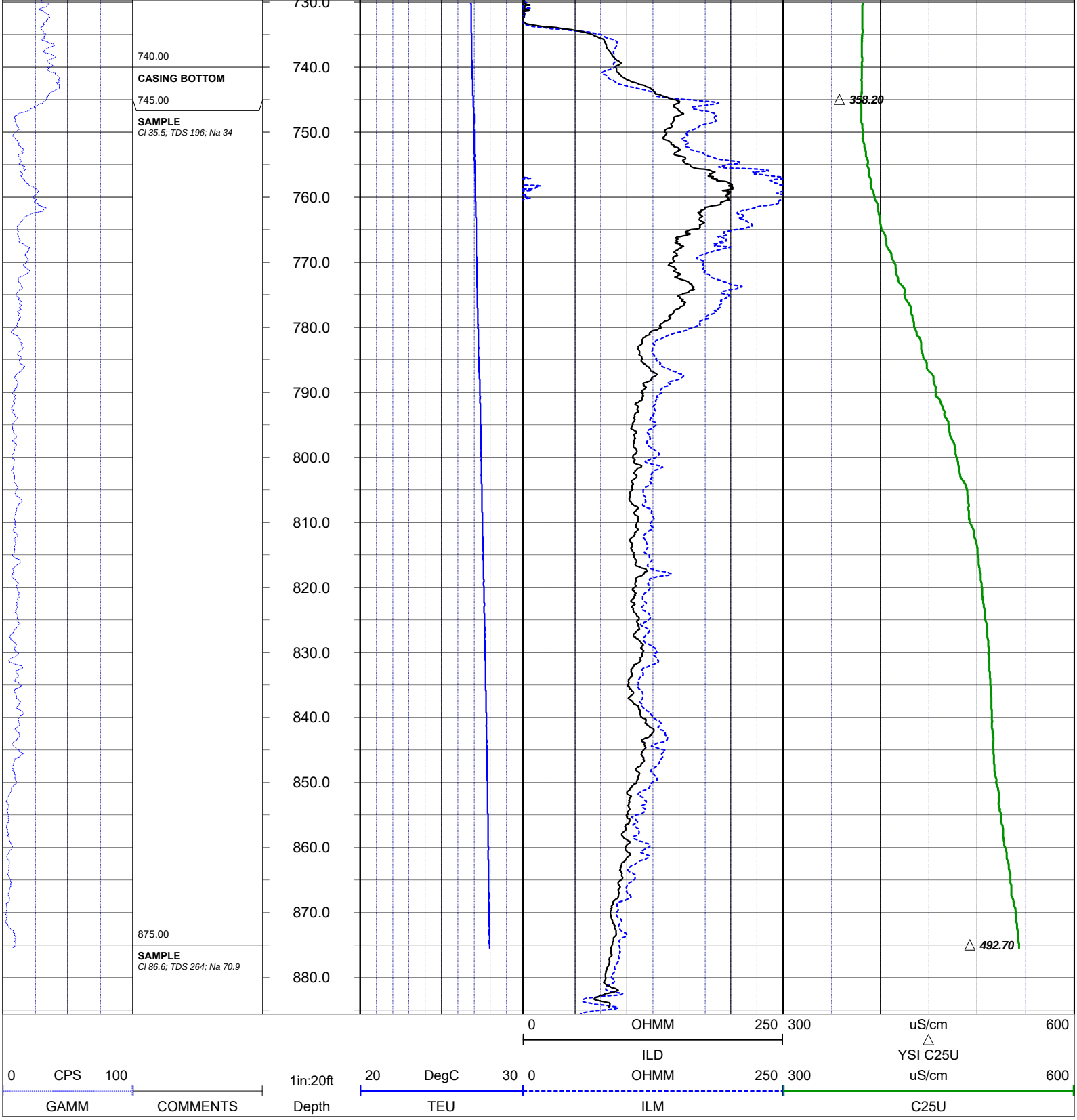
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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WELL NWF12840
UWI NWF12840

LOG STAGE EXPLORATORY

HEADER NOTES:
A-2

COMP	NWFWMD
LOC	FRED GANNON ROCKY BAYOU STATE PARK
FLD	NICEVILE/BLUEWATER BAY
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

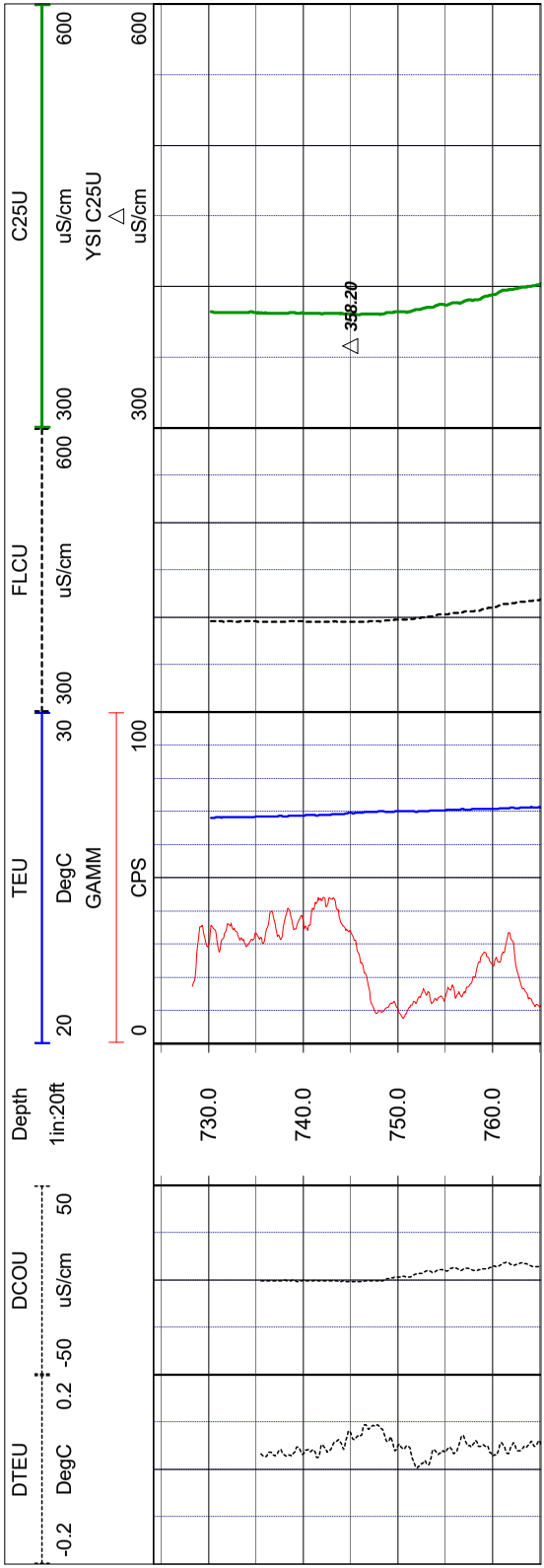
DRILLING MEASURED FROM:

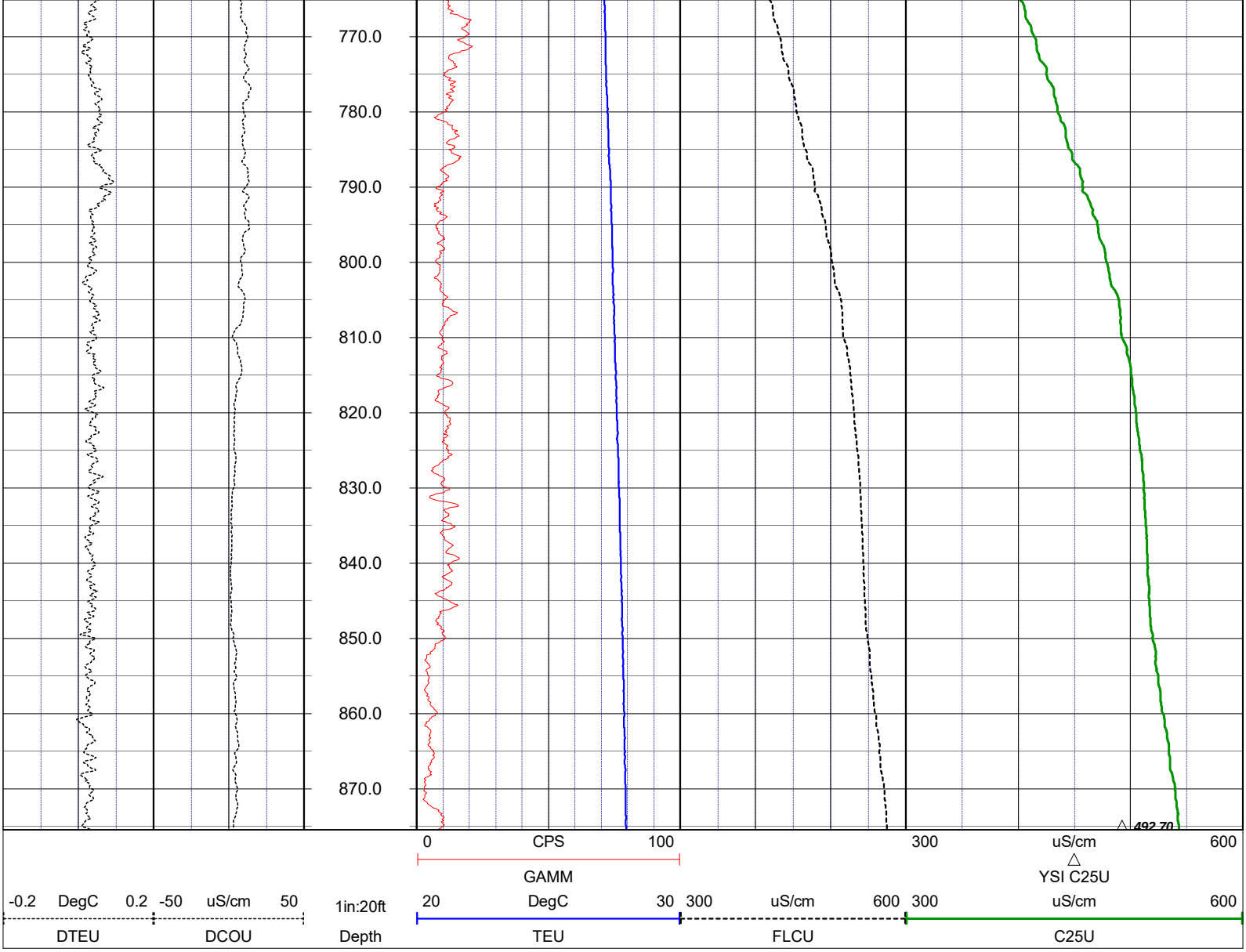
DATE	27 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	885		
DEPTH-LOGGER	887.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	740	885	6	PVC	0	740

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





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WELL NWF12840
UWI NWF12840

LOG STAGE EXPLORATORY

HEADER NOTES:
A-2

COMP	NWFWMD
LOC	FRED GANNON ROCKY BAYOU STATE PARK
FLD	NICEVILE/BLUEWATER BAY
CNTY	OKALOOSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.33 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

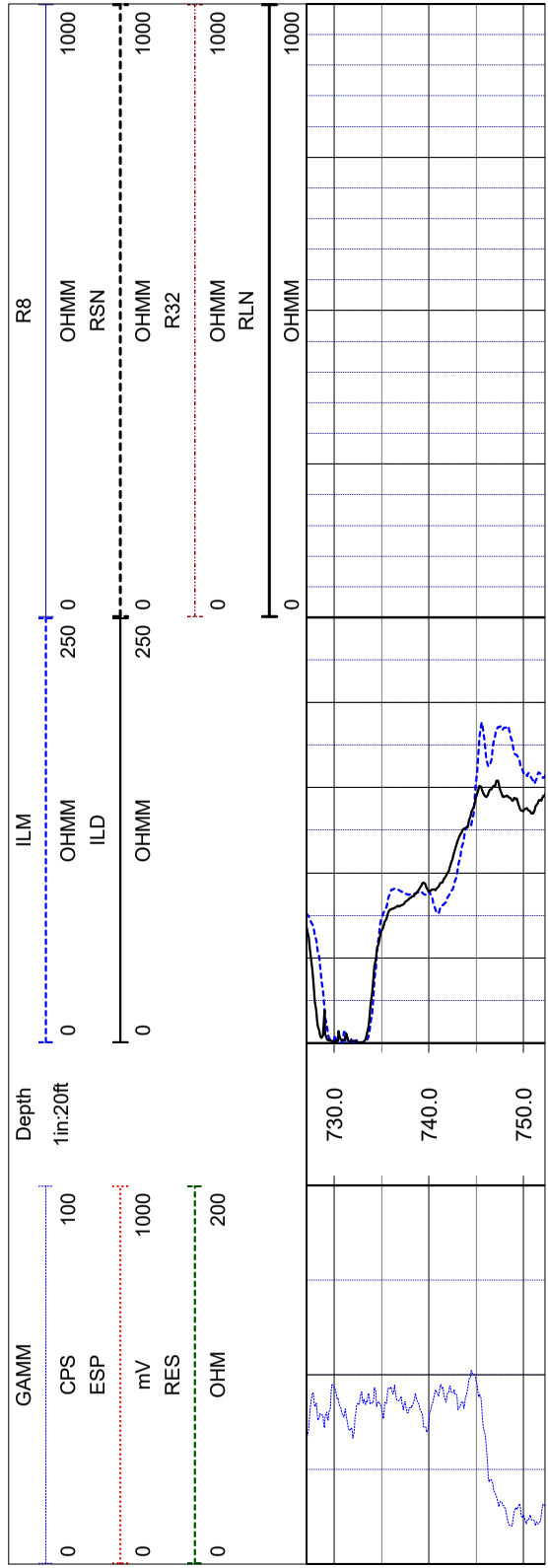
DRILLING MEASURED FROM:

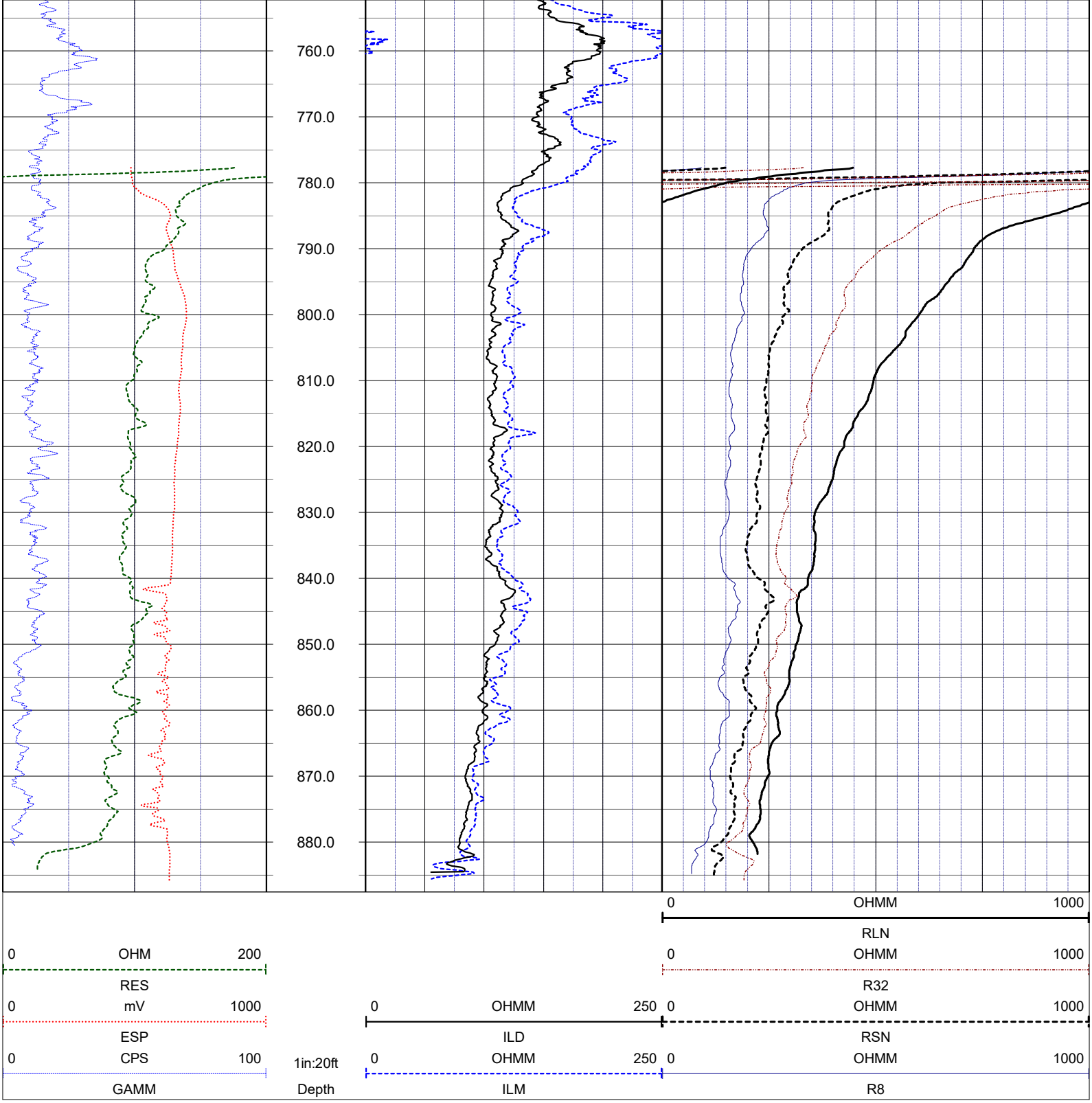
DATE	27 FEB 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	885		
DEPTH-LOGGER	887.6		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	740	885	6	PVC	0	740

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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END OF LOG

RMBAKER LLC
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407-733-8958

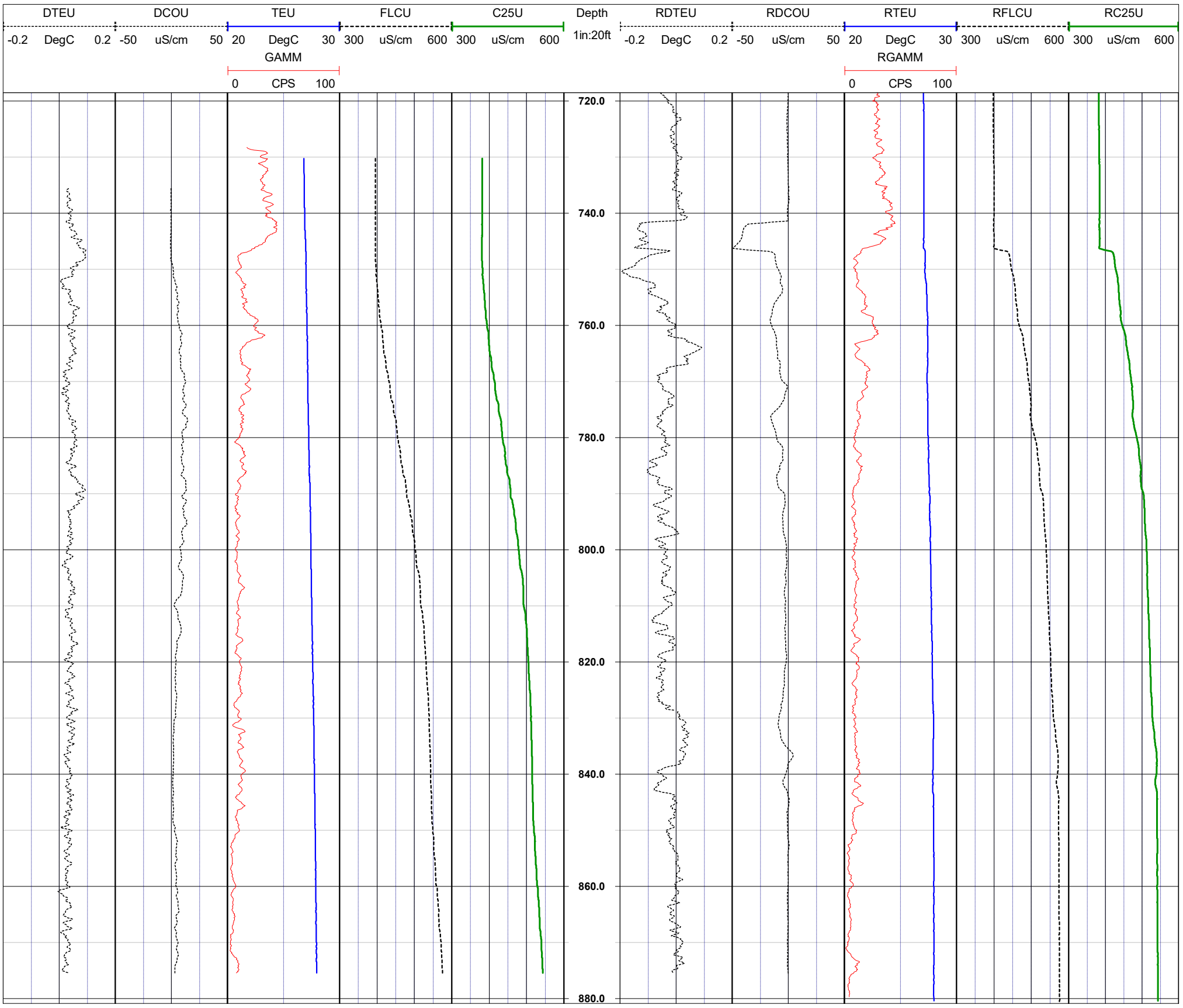
Location:	Rocky Bayou State Park	Casing Depth:	740
County:	Okaloosa	Total Depth:	887.6
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-2

WELL ID: **NWF12840**
Date(s): **27 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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FL Licensed Geology Business GB 458

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407-733-8958

Location:	Rocky Bayou State Park	Casing Depth:	740
County:	Okaloosa	Total Depth:	887.6
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	A-2

WELL ID: **NWF12840**
Date(s): **27 FEB 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
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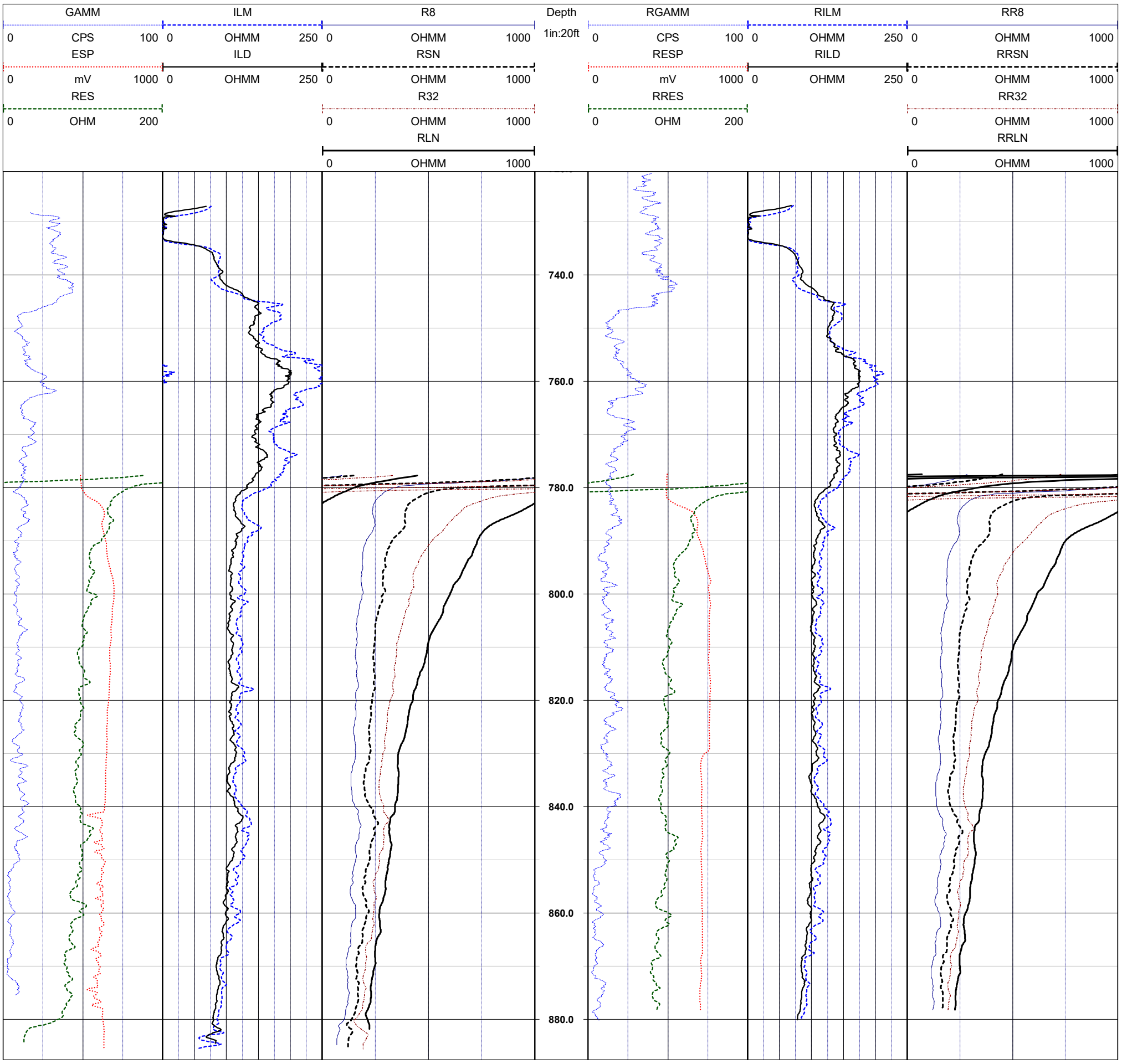
MAIN

REPEAT



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WELL NWF12848
UWI NWF12848

LOG STAGE EXPLORATORY

HEADER NOTES:
B-2

COMP	NWFWMD
LOC	HOLLEY-NAVARRE WWTP
FLD	SANTA ROSA
CNTY	SANTA ROSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X		ALL SERVICES: NATURAL GAMMA FLUID COND & TEMP ELECTRIC DUAL INDUCTION
LONG		Y		
GDAT	WGS84	H DAT		
SEC		ELEV		
TWP		V DAT		
RGE				

PERMANENT DATUM: 3.46 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

DRILLING MEASURED FROM:

DATE	01 MAR 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	
TYPE LOG	**COMPOSITE**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1160		
DEPTH-LOGGER	1154.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

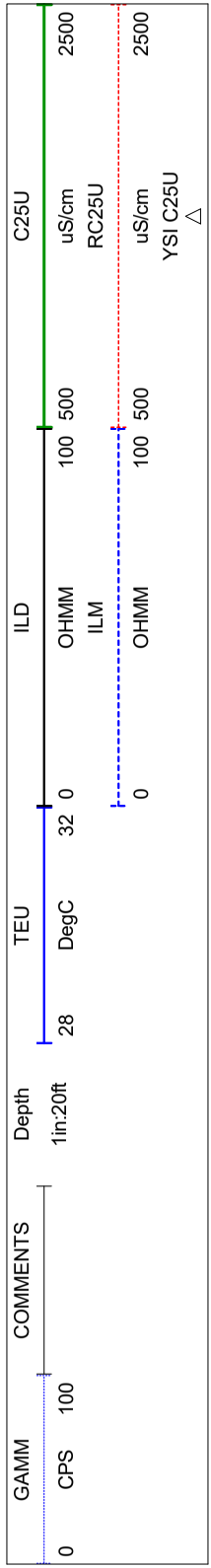
RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	1050	1160	6	PVC	0	1050

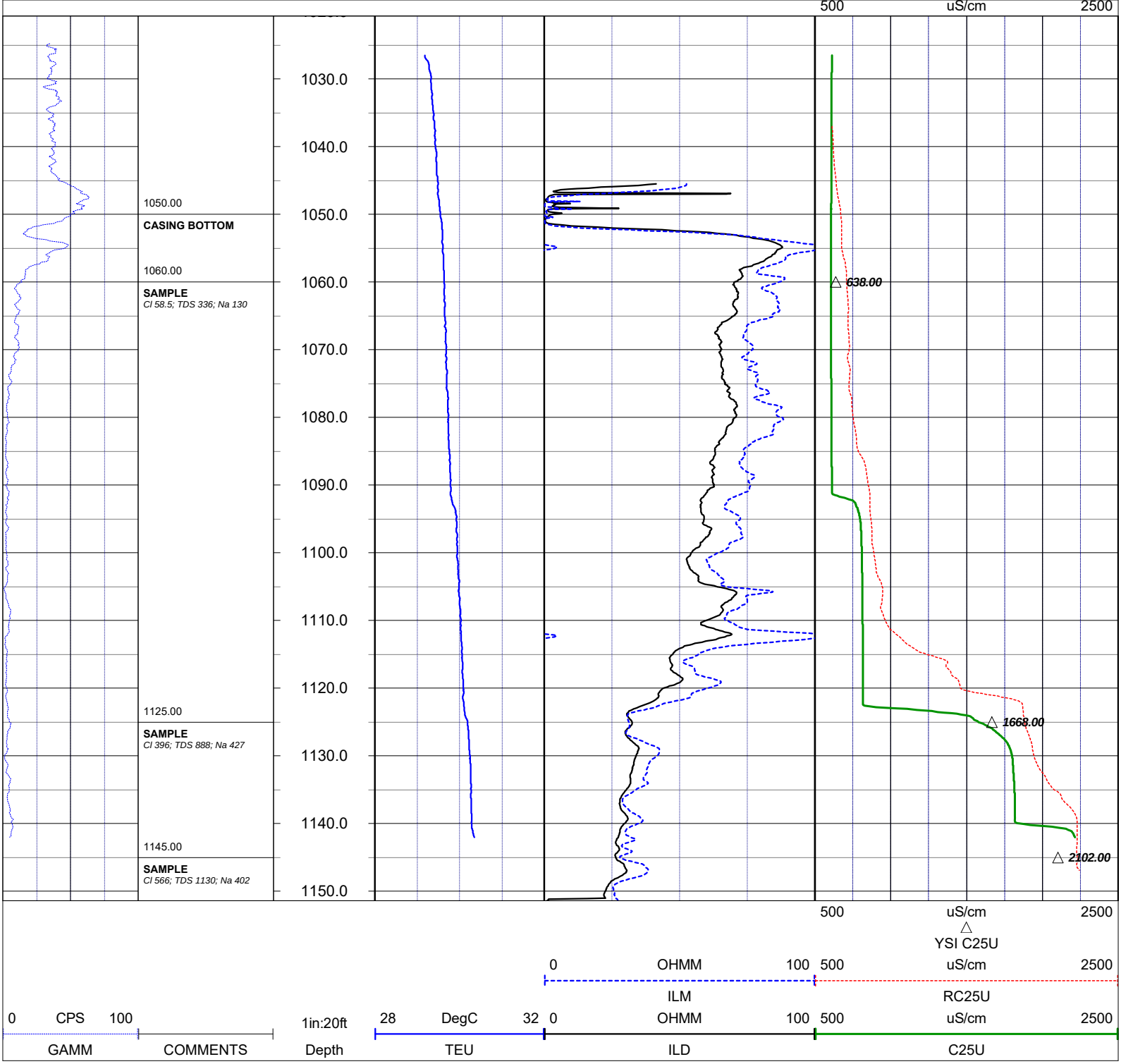
WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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Florida Licensed Geology Business GB 458

END OF LOG

RMBAKER LLC
Geology and Geophysics

8600 Oldbridge Lane
Orlando, FL 32819
mobile ph 407-733-8958
rob@rmbaker.com
www.rmbaker.com

WELL NWF12848
UWI NWF12848

LOG STAGE EXPLORATORY

HEADER NOTES:
B-2

COMP	NWFWMD
LOC	HOLLEY-NAVARRE WWTP
FLD	SANTA ROSA
CNTY	SANTA ROSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
LONG		Y	
GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.46 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

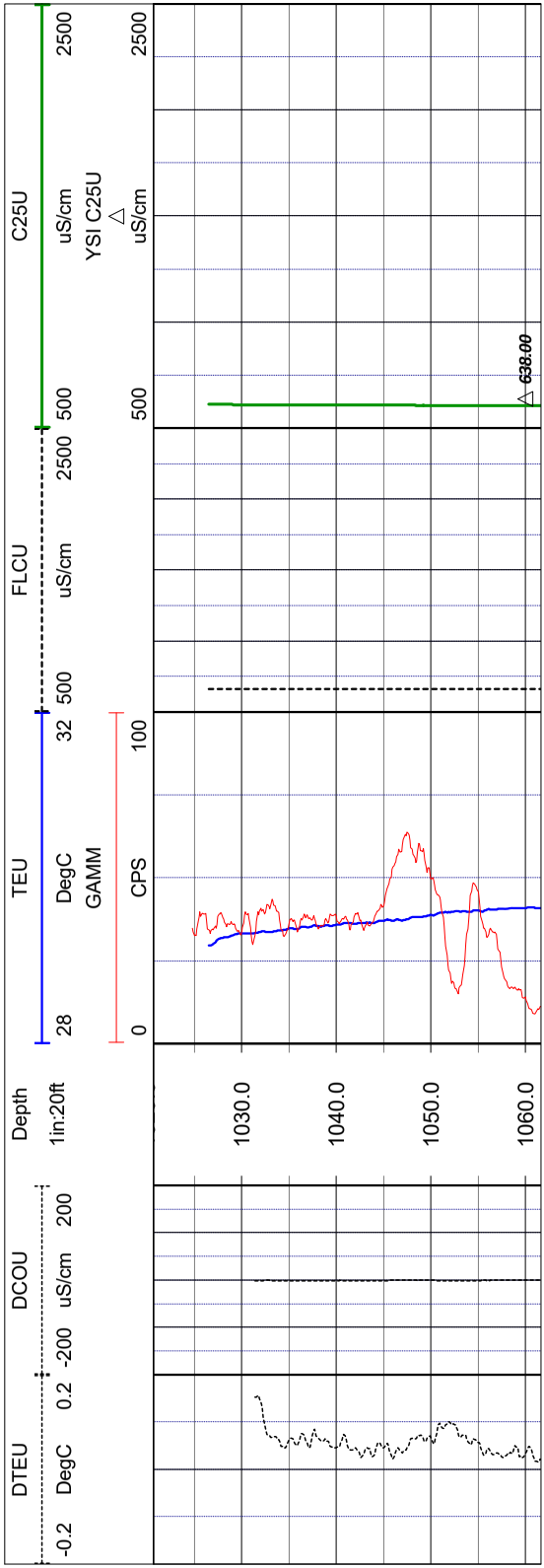
DRILLING MEASURED FROM:

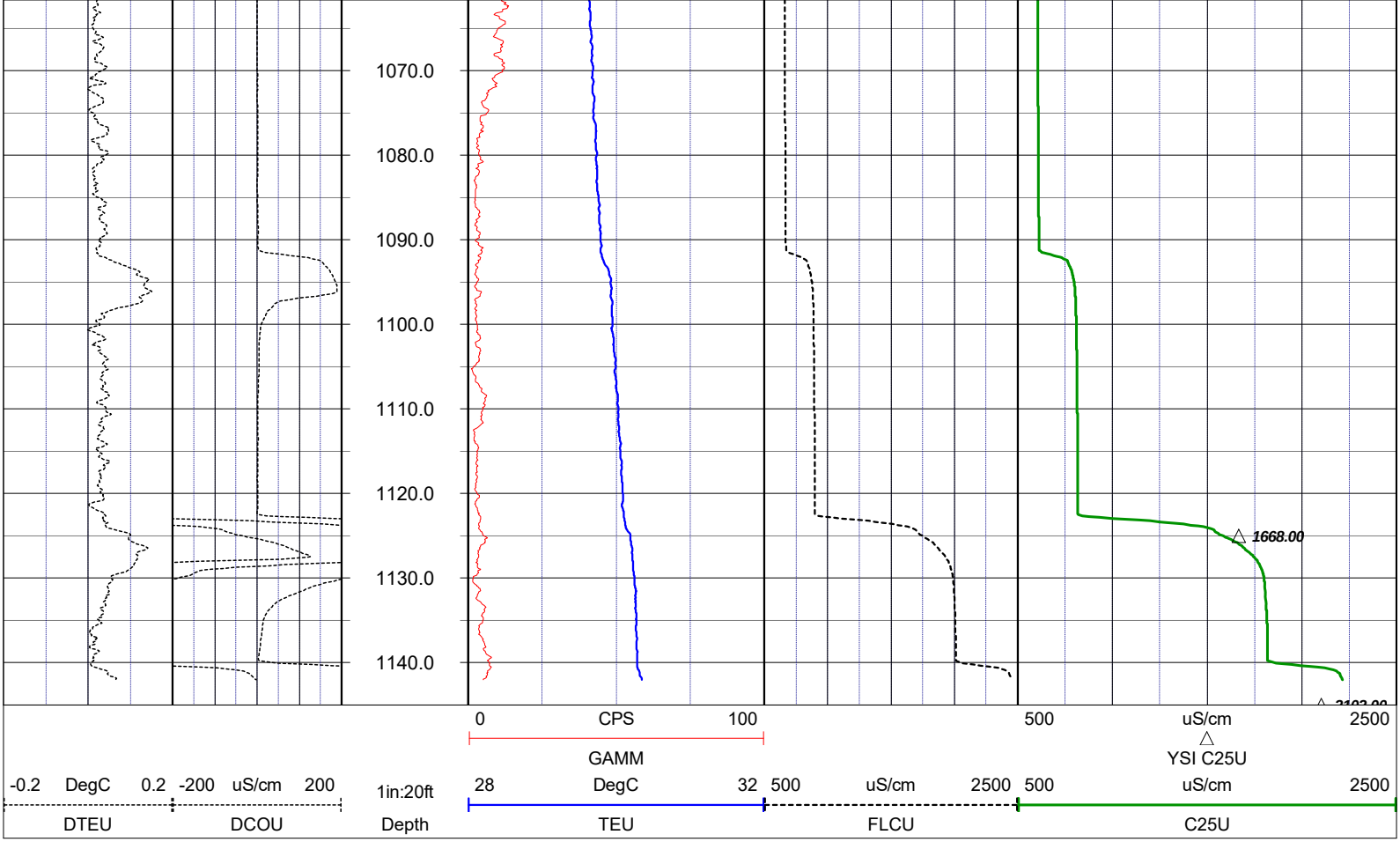
DATE	01 MAR 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	6
TYPE LOG	**FLUID COND & TEMP**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1160		
DEPTH-LOGGER	1154.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	1050	1160	6	PVC	0	1050

WATER QUALITY LOG CODES

static fluid temperature	**TEU**	dynamic fluid conductivity	**FLCP**	caliper	**CAL**
dynamic fluid temperature	**TEP**	static differential cond.	**DCOU**	repeat designation	**R**
static differential temperature	**DTEU**	dynamic differential cond.	**DCOP**	natural gamma	**GAMM**
dynamic differential temp.	**DTEP**	static specific conductance	**C25U**		
static fluid conductivity	**FLCU**	dynamic specific conductance	**C25P**		





NOTES:
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WELL NWF12848
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LOG STAGE EXPLORATORY

HEADER NOTES:
B-2

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LOC	HOLLEY-NAVARRE WWTP
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CNTY	SANTA ROSA
STAT	FL
PROV	FL
CTRY	USA

LATI		X	
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GDAT	WGS84	H DAT	
SEC		ELEV	
TWP		V DAT	
RGE			

ALL SERVICES:
NATURAL GAMMA
FLUID COND & TEMP
ELECTRIC
DUAL INDUCTION

PERMANENT DATUM: 3.46 FT ABOVE PAD

LOG MEASURED FROM: GROUND SURFACE

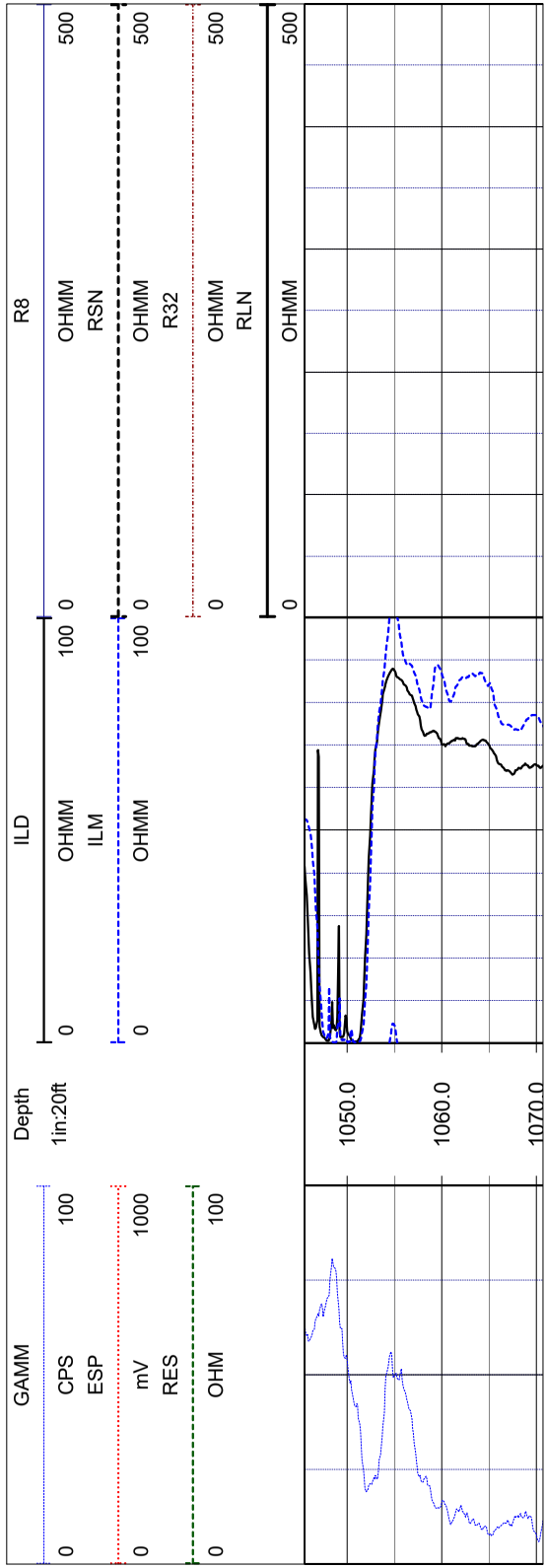
DRILLING MEASURED FROM:

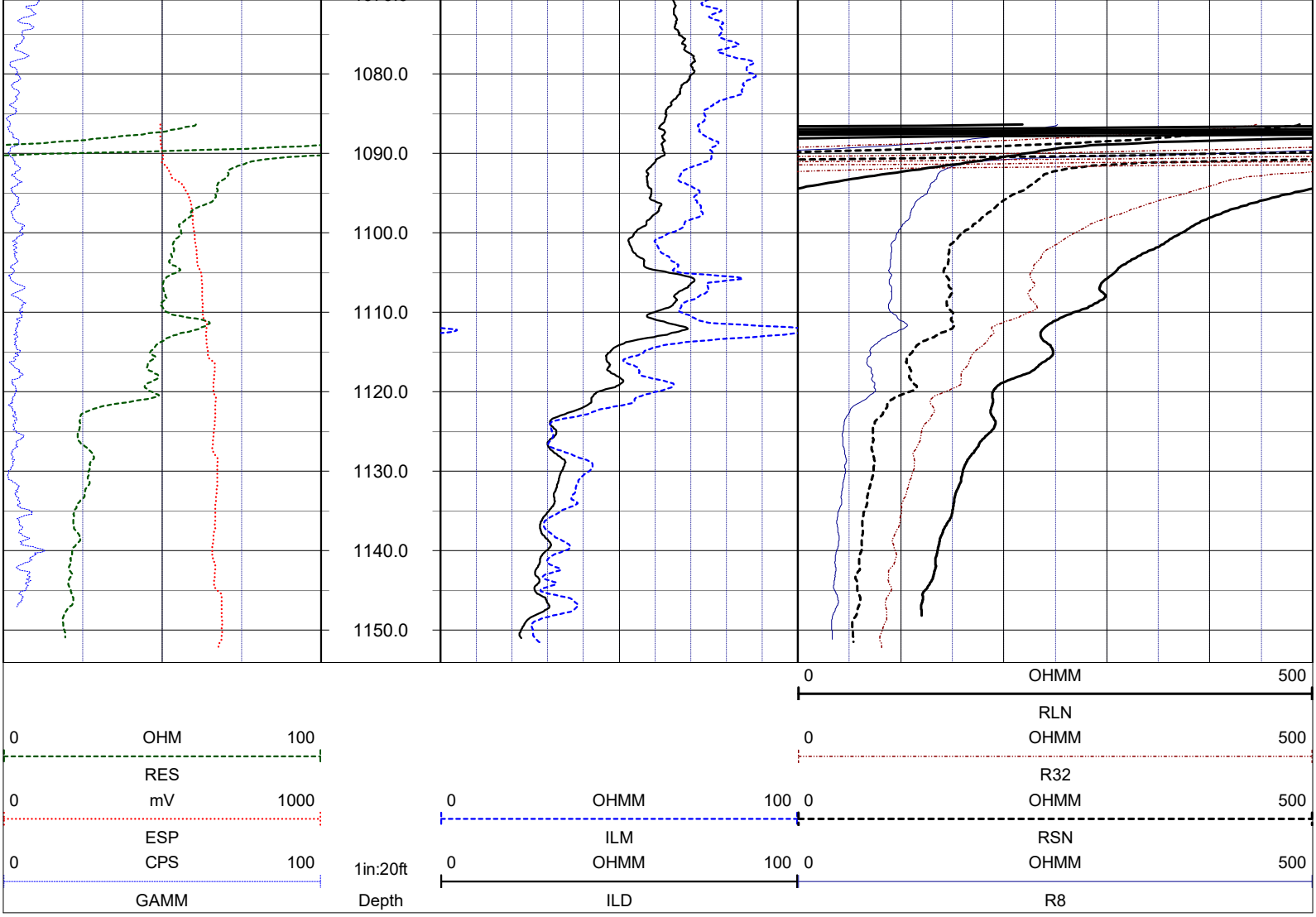
DATE	01 MAR 19	TYPE FLUID IN HOLE	WATER
RUN No	1	LOGGING SPEED (FT/MIN)	11
TYPE LOG	**ELECTRIC + DUIN**	TROLLING DIRECTION	BOTH
		PUMPING RATE (GPM)	N/A
DEPTH-DRILLER	1160		
DEPTH-LOGGER	1154.05		
DRILLER			
RECORDED BY	RMB		
SRVC	RMBAKER LLC	API	N/A
WITNESSED BY		LIC	N/A

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	MAT.	FROM	TO
1	5.875	1050	1160	6	PVC	0	1050

LOG CODES

3-arm caliper	**CAL**	long normal resistivity	**RLN**	deep induction conductivity	**IDC**
natural gamma (CPS)	**GAMM**	8 inch resistivity	**R8**	shallow induction conductivity	**ISC**
spontaneous potential	**ESP**	32 inch resistivity	**R32**	sonic interval velocity	**DT**
single point resistance	**RES**	deep induction resistivity	**ILD**	sonic porosity (RHG method)	**SPHI**
short normal resistivity	**RSN**	shallow induction resistivity	**ILM**	repeat designation	**R**





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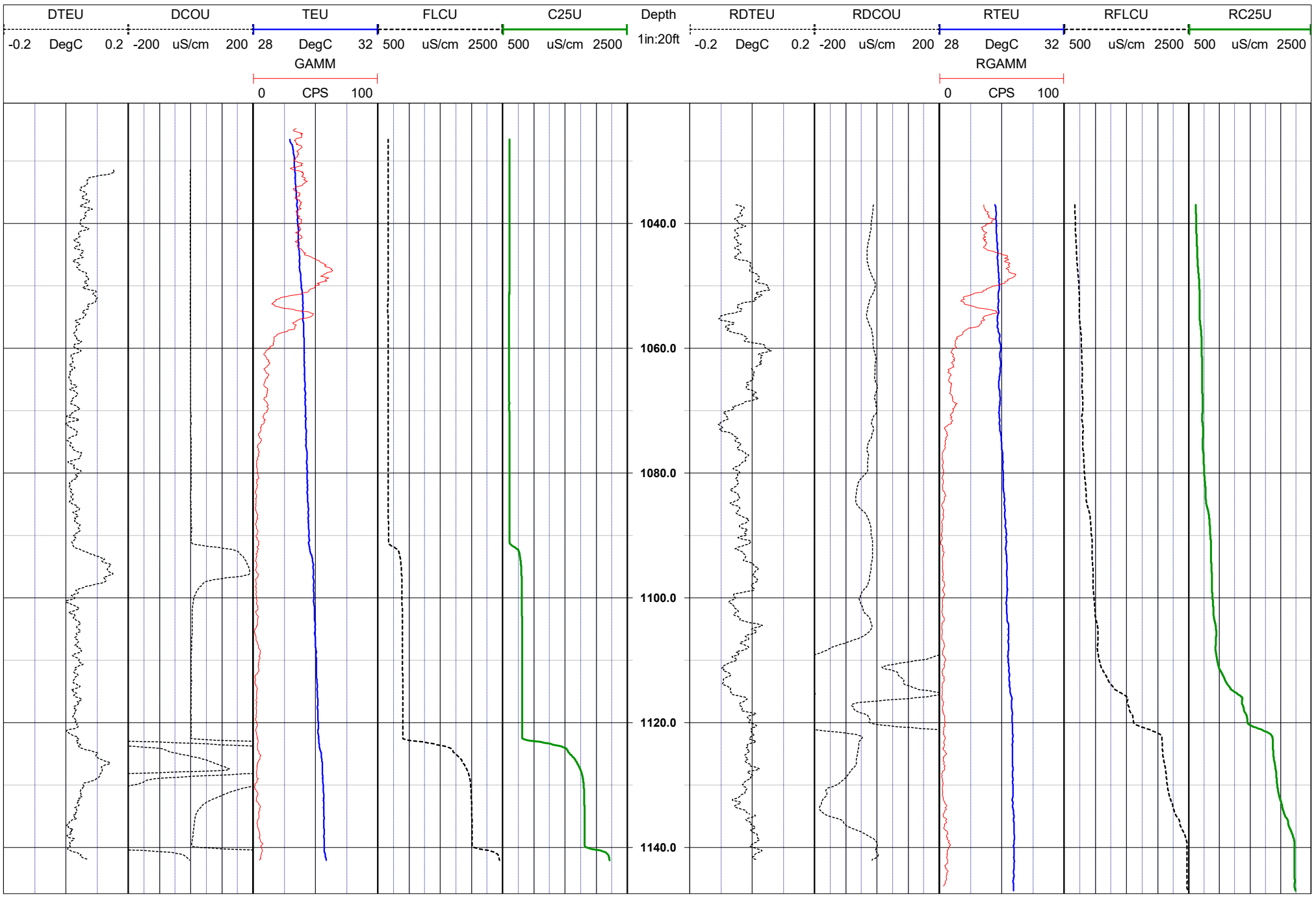
Location:	Holley-Navarre WWTP	Casing Depth:	1050
County:	Santa Rosa	Total Depth:	1154.05
State:	Florida	Logger:	RMBAKER LLC
Country:	USA	Alias:	b-2

WELL ID: **NWF12848**
Date(s): **01 MAR 2019**

PROJECT NOTES:
-Each well was logged in the following sequence: TCDS, DUIN and ELOG. Each dataset was composed of a downlog and an uplog under non-pumping conditions.
-The downlog for TCDS was chosen as the "main" set of log traces. The uplogs for DUIN and ELOG were chosen as "main" log traces. All other runs are "repeats."

MAIN

REPEAT



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County:	Santa Rosa	Total Depth:	1154.05
State:	Florida	Logger:	RMBAKER LLC
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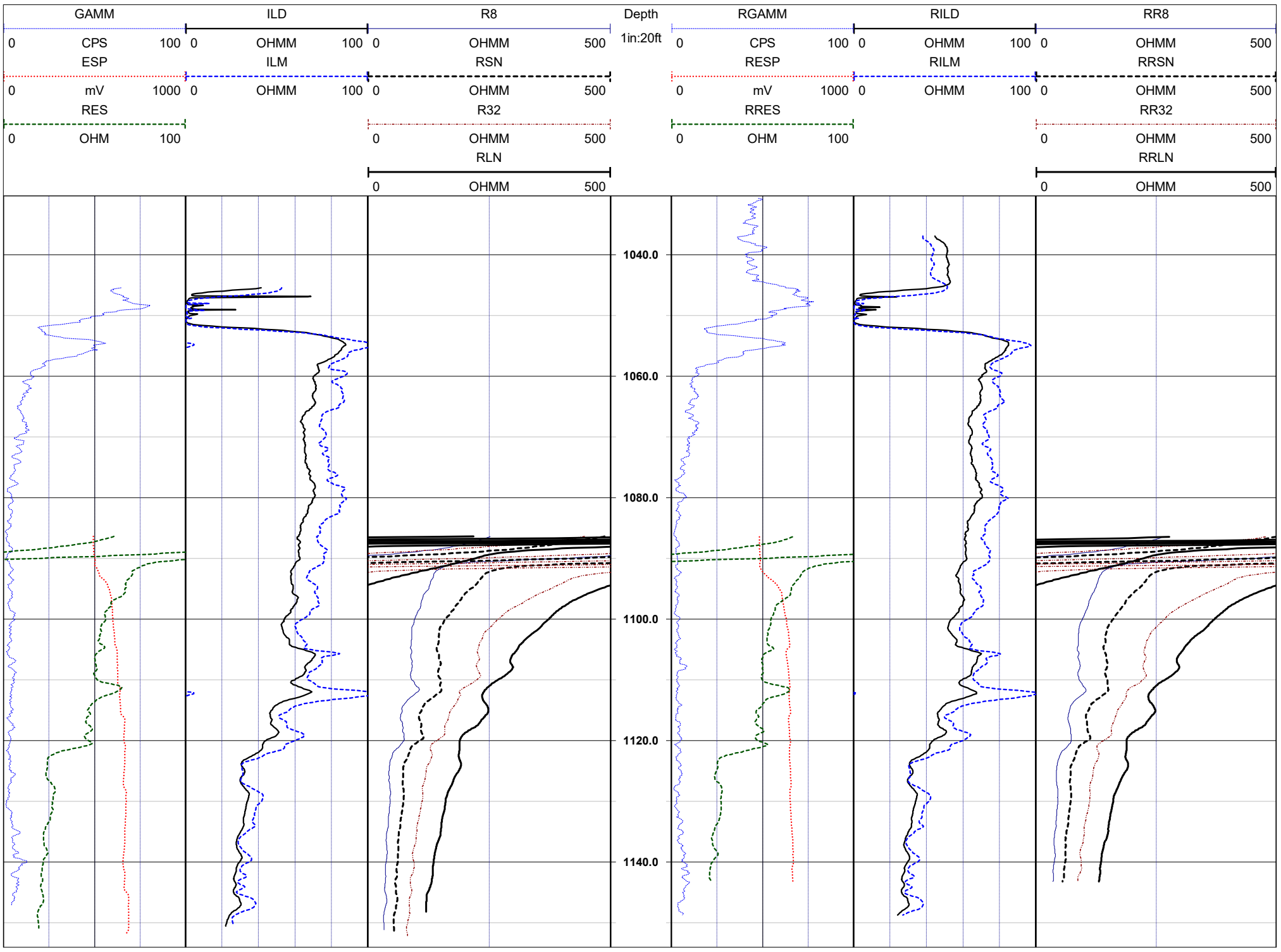
REPEAT



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FLOWERS CHEMICAL LABORATORIES INC.

P.O. Box 150597, Altamonte Springs, FL 32715-0597 Phone: 407-339-5984 E83018 (Main Lab)
571 NW Mercantile Pl, Suite 111, Port St. Lucie, FL 34986 Phone: 772-343-8006 E86562 (South Lab)
812 SW Harvey Green Dr, Madison, FL 32340 Phone: 850-973-6878 E82405 (North Lab)
3980 Overseas Hwy, Suite 103, Marathon, FL 33050 Phone: 305-743-8598 E35834 (Keys Lab)

RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 18, 2019
Feb 27, 2019; Invoice: 392757

Invoice

Description	Amount	Units	Extension
Cl	15.00	7	105.00
EPA200.7Na	15.00	7	105.00
Paid	-315.00	1	-315.00
TDS	15.00	7	105.00
TOTAL			0.00

This invoice is due upon receipt.

Please remit to: P.O. Box 150597
Altamonte Springs, FL 32715-0597

VISA, MasterCard, and American Express cards will be accepted.

There will be a 1.5% service charge per month on all unpaid balances.

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 18, 2019
Feb 27, 2019; Invoice: 392757

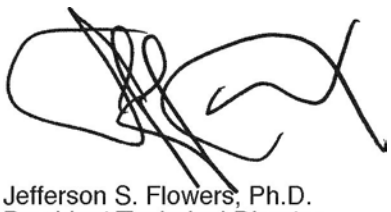
Report Summary

Date Received: Feb 22, 2019 FCL Project Manager: Michael D. Conner

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
392757GW1	12811-610A-021819	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW2	12811-610B-021819	EPA200.7	EVB	Main Lab	Ground Water
392757GW3	12811-690A-021819	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW4	12811-690B-021819	EPA200.7	EVB	Main Lab	Ground Water
392757GW5	12838-660A-021919	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW6	12838-660B-021919	EPA200.7	EVB	Main Lab	Ground Water
392757GW7	12838-0C-021919	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW8	12838-0C-021919	EPA200.7	EVB	Main Lab	Ground Water
392757GW9	1376-640A-022019	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW10	1376-640B-022019	EPA200.7	EVB	Main Lab	Ground Water
392757GW11	1696-665a-022119	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW12	1696-665B-022119	EPA200.7	EVB	Main Lab	Ground Water
392757GW13	1696-680A-022119	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392757GW14	1696-680b-022119	EPA200.7	EVB	Main Lab	Ground Water

Certificate of Results

Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.



Jefferson S. Flowers, Ph.D.
President/Technical Director

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 18, 2019
Feb 27, 2019; Invoice: 392757

Analysis Report

Lab #: 392757GW1 **Sampled:** 02/18/19 02:01 PM **Desc:** 12811-610A-021819

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	2690	mg/L	12.0	48.0	96.0	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	4420	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW2 **Sampled:** 02/18/19 02:01 PM **Desc:** 12811-610B-021819

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	1350	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW3 **Sampled:** 02/18/19 03:01 PM **Desc:** 12811-690A-021819

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	2300	mg/L	10.0	40.0	80.0	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	4040	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW4 **Sampled:** 02/18/19 03:01 PM **Desc:** 12811-690B-021819

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	1280	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW5 **Sampled:** 02/19/19 01:45 PM **Desc:** 12838-660A-021919

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	4.00 U	mg/L	1.00	4.00	8.00	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	164	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW6 **Sampled:** 02/19/19 01:45 PM **Desc:** 12838-660B-021919

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	4.93	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW7 **Sampled:** 02/19/19 01:45 PM **Desc:** 12838-0C-021919

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed

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Lab #: 392757GW7 **Sampled:** 02/19/19 01:45 PM **Desc:** 12838-0C-021919

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	4.00 U	mg/L	1.00	4.00	8.00	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	4.00 I	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW8 **Sampled:** 02/19/19 02:45 PM **Desc:** 12838-0C-021919

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	0.500 U	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW9 **Sampled:** 02/20/19 05:32 PM **Desc:** 1376-640A-022019

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	182	mg/L	1.00	4.00	8.00	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	536	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW10 **Sampled:** 02/20/19 05:32 PM **Desc:** 1376-640B-022019

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	138	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW11 **Sampled:** 02/21/19 03:20 PM **Desc:** 1696-665a-022119

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	60.2	mg/L	1.00	4.00	8.00	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	370	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

Lab #: 392757GW12 **Sampled:** 02/21/19 03:20 PM **Desc:** 1696-665B-022119

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	114	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

Lab #: 392757GW13 **Sampled:** 02/21/19 04:15 PM **Desc:** 1696-680A-022119

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	60.6	mg/L	1.00	4.00	8.00	10396690	SM4500-Cl E	16887-00-6	02/23/19
TDS	324	mg/L	1.00	2.50	5.00	10396905	SM2540 C	10-33-3	02/23/19

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Lab #: 392757GW14 **Sampled:** 02/21/19 04:15 PM **Desc:** 1696-680b-022119

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	117	mg/L	1.00	0.500	1.00	10396875	EPA200.7	7440-23-5	02/25/19

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Quality Report

Quality Control Batch: 10396690 **Analyst:** VLB

Blank	**Result**	**Units**
Chloride	4.00U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Chloride	153	mg/L	150	102.26	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Chloride	109	mg/L	100	105.47	80.00-120.00	3.51	392279GW1

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	108	mg/L	100	104.93	80.00-120.00	3.51	0.49	20.00

Quality Control Batch: 10396875 **Analyst:** EVB

Blank	**Result**	**Units**
Sodium	0.500U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Sodium	4.96	mg/L	5.00	99.24	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Sodium	143	mg/L	5.00	98.67	80.00-120.00	138	392748WW1

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	144	mg/L	5.00	103.27	80.00-120.00	138	0.16	20.00

Quality Control Batch: 10396905 **Analyst:** PLB

Blank	**Result**	**Units**
TDS	2.50U	mg/L

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Feb 27, 2019; Invoice: 392757

Quality Control Batch: 10396905 **Analyst:** PLB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
TDS	1500	mg/L	1500	99.73	80.00-120.00

Duplicate	**Result**	**Units**	**Sample**	**RPD**	**RPD Lim**	**Lab Number**
TDS	188	mg/L	180	4.35	20.00	392731DW1

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 18, 2019
Feb 27, 2019; Invoice: 392757

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Invoice

Description	Amount	Units	Extension
Cl	15.00	4	60.00
EPA6010Na - Sodium	15.00	4	60.00
Paid	-180.00	1	-180.00
TDS	15.00	4	60.00
TOTAL			0.00

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Report Summary

Date Received: Feb 25, 2019 FCL Project Manager: Michael D. Conner

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
392783GW1	7349-440A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392783GW2	7349-440B	EPA6010	EVB	Main Lab	Ground Water
392783GW3	7349-595A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392783GW4	7349-595B	EPA6010	EVB	Main Lab	Ground Water
392783GW5	7349-595AR	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392783GW6	7349-595BR	EPA6010	EVB	Main Lab	Ground Water
392783GW7	7349-0C	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
392783GW8	7349-0B	EPA6010	EVB	Main Lab	Ground Water

Certificate of Results
Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

Jefferson S. Flowers, Ph.D.
President/Technical Director

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8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Analysis Report

Lab #: 392783GW1 **Sampled:** 02/22/19 01:40 PM **Desc:** 7349-440A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	188	mg/L	1.00	2.50	5.00	10397093	SM2540 C	10-33-3	02/27/19
Chloride	27.7	mg/L	1.00	4.00	8.00	10397220	SM4500-Cl E	16887-00-6	03/02/19

Lab #: 392783GW2 **Sampled:** 02/22/19 01:40 PM **Desc:** 7349-440B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	27.2	mg/L	1.00	0.500	1.00	10396872	EPA6010	7440-23-5	02/25/19

Lab #: 392783GW3 **Sampled:** 02/22/19 02:31 PM **Desc:** 7349-595A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	630	mg/L	1.00	2.50	5.00	10397093	SM2540 C	10-33-3	02/27/19
Chloride	252	mg/L	1.00	4.00	8.00	10397220	SM4500-Cl E	16887-00-6	03/02/19

Lab #: 392783GW4 **Sampled:** 02/22/19 02:31 PM **Desc:** 7349-595B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	172	mg/L	1.00	0.500	1.00	10396872	EPA6010	7440-23-5	02/25/19

Lab #: 392783GW5 **Sampled:** 02/22/19 03:35 PM **Desc:** 7349-595AR

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	652	mg/L	1.00	2.50	5.00	10397093	SM2540 C	10-33-3	02/27/19
Chloride	252	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19

Lab #: 392783GW6 **Sampled:** 02/22/19 03:35 PM **Desc:** 7349-595BR

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	178	mg/L	1.00	0.500	1.00	10396872	EPA6010	7440-23-5	02/25/19

Lab #: 392783GW7 **Sampled:** 02/22/19 04:34 PM **Desc:** 7349-0C

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Lab #: 392783GW7 **Sampled:** 02/22/19 04:34 PM **Desc:** 7349-0C

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	2.50 U	mg/L	1.00	2.50	5.00	10397093	SM2540 C	10-33-3	02/27/19
Chloride	4.00 U	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19

Lab #: 392783GW8 **Sampled:** 02/22/19 04:34 PM **Desc:** 7349-0B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	0.500 U	mg/L	1.00	0.500	1.00	10396872	EPA6010	7440-23-5	02/25/19

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Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Quality Report

Quality Control Batch: 10396872	**Analyst:** EVB							
Blank	**Result**	**Units**						
Sodium	0.500U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Sodium	4.72	mg/L	5.00	94.43	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Sodium	24.8	mg/L	5.00	78.98	75.00-125.00	20.8	392761GW1	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	25.3	mg/L	5.00	90.21	75.00-125.00	20.8	2.24	20.00
Quality Control Batch: 10397093	**Analyst:** PLB							
Blank	**Result**	**Units**						
TDS	2.50U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
TDS	1470	mg/L	1500	97.73	80.00-120.00			
Duplicate	**Result**	**Units**	**Sample**	**RPD**	**RPD Lim**	**Lab Number**		
TDS	496	mg/L	486	2.04	20.00	392809WW2		
Quality Control Batch: 10397220	**Analyst:** VLB							
Blank	**Result**	**Units**						
Chloride	4.00U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			

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Date Sampled: Feb 22, 2019
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Quality Control Batch: 10397220 **Analyst:** VLB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Chloride	160	mg/L	150	107.00	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Chloride	117	mg/L	100	112.48	80.00-120.00	4.34	392843GW2	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	116	mg/L	100	111.69	80.00-120.00	4.34	0.68	20.00

Quality Control Batch: 10397223 **Analyst:** VLB

Blank	**Result**	**Units**						
Chloride	4.00U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Chloride	157	mg/L	150	104.96	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Chloride	125	mg/L	100	117.10	80.00-120.00	7.57	393086GW2	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	123	mg/L	100	115.50	80.00-120.00	7.57	1.29	20.00

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 22, 2019
Mar 2, 2019; Invoice: 392783

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Invoice

Description	Amount	Units	Extension
Cl	15.00	8	120.00
EPA6010Na - Sodium	15.00	8	120.00
Paid	-360.00	1	-360.00
TDS	15.00	8	120.00
TOTAL			0.00

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

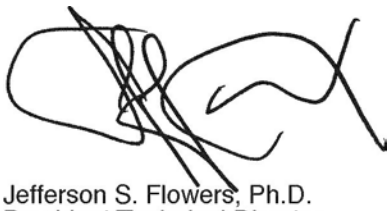
PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Report Summary

Date Received: Mar 1, 2019 FCL Project Manager: Michael D. Conner

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
393341GW1	7183-520A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW2	7183-520B	EPA6010	EVB	Main Lab	Ground Water
393341GW3	7183-660A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW4	7183-660B	EPA6010	EVB	Main Lab	Ground Water
393341GW5	7183-585A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW6	7183-585B	EPA6010	EVB	Main Lab	Ground Water
393341GW7	9137-500A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW8	9137-500B	EPA6010	EVB	Main Lab	Ground Water
393341GW9	9137-640A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW10	9137-640B	EPA6010	EVB	Main Lab	Ground Water
393341GW11	9137-0A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW12	9137-0B	EPA6010	EVB	Main Lab	Ground Water
393341GW13	12840-745A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW14	12840-745B	EPA6010	EVB	Main Lab	Ground Water
393341GW15	12840-875A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393341GW16	12840-875B	EPA6010	EVB	Main Lab	Ground Water

Certificate of Results
Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.



Jefferson S. Flowers, Ph.D.
President/Technical Director

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Analysis Report

Lab #: 393341GW1 **Sampled:** 02/25/19 02:11 PM **Desc:** 7183-520A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	18.7	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	184	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW2 **Sampled:** 02/25/19 02:11 PM **Desc:** 7183-520B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	23.4	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW3 **Sampled:** 02/25/19 03:58 PM **Desc:** 7183-660A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	250	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	1760	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW4 **Sampled:** 02/25/19 03:58 PM **Desc:** 7183-660B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	284	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW5 **Sampled:** 02/25/19 03:03 PM **Desc:** 7183-585A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	148	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	938	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW6 **Sampled:** 02/25/19 03:03 PM **Desc:** 7183-585B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	146	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW7 **Sampled:** 02/26/19 01:04 PM **Desc:** 9137-500A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed

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Orlando,FL 32819

PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Lab #: 393341GW7 **Sampled:** 02/26/19 01:04 PM **Desc:** 9137-500A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	7.48 I	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	160	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW8 **Sampled:** 02/26/19 01:04 PM **Desc:** 9137-500B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	22.8	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW9 **Sampled:** 02/26/19 02:19 PM **Desc:** 9137-640A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	30.4	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	460	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW10 **Sampled:** 02/26/19 02:19 PM **Desc:** 9137-640B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	62.7	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW11 **Sampled:** 02/26/19 01:32 PM **Desc:** 9137-0A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	4.00 U	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	24.0	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW12 **Sampled:** 02/26/19 01:32 PM **Desc:** 9137-0B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	0.500 U	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW13 **Sampled:** 02/27/19 02:20 PM **Desc:** 12840-745A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	35.5	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	196	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

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Orlando,FL 32819

PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Lab #: 393341GW14 **Sampled:** 02/27/19 02:20 PM **Desc:** 12840-745B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	34.0	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393341GW15 **Sampled:** 02/27/19 03:20 PM **Desc:** 12840-875A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Chloride	86.6	mg/L	1.00	4.00	8.00	10397223	SM4500-Cl E	16887-00-6	03/02/19
TDS	264	mg/L	1.00	2.50	5.00	10397457	SM2540 C	10-33-3	03/02/19

Lab #: 393341GW16 **Sampled:** 02/27/19 03:20 PM **Desc:** 12840-875B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	70.9	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

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PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Quality Report

Quality Control Batch: 10397223	**Analyst:** VLB							
Blank	**Result**	**Units**						
Chloride	4.00U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Chloride	157	mg/L	150	104.96	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Chloride	125	mg/L	100	117.10	80.00-120.00	7.57	393086GW2	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	123	mg/L	100	115.50	80.00-120.00	7.57	1.29	20.00

Quality Control Batch: 10397457	**Analyst:** PLB						
Blank	**Result**	**Units**					
TDS	2.50U	mg/L					
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**		
TDS	1480	mg/L	1500	98.80	80.00-120.00		
Duplicate	**Result**	**Units**	**Sample**	**RPD**	**RPD Lim**	**Lab Number**	
TDS	138	mg/L	138	0.00	20.00	393350GW1	

Quality Control Batch: 10397635	**Analyst:** EVB					
Blank	**Result**	**Units**				
Sodium	0.500U	mg/L				
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	

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PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Quality Control Batch: 10397635 **Analyst:** EVB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Sodium	4.72	mg/L	5.00	94.37	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Sodium	26.2	mg/L	5.00	102.68	75.00-125.00	21.1	393341GW2

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	26.2	mg/L	5.00	103.55	75.00-125.00	21.1	0.17	20.00

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PO #: n/a
Client Project #: n/a
Date Sampled: Feb 25, 2019
Mar 7, 2019; Invoice: 393341

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 28, 2019
Mar 9, 2019; Invoice: 393369

Invoice

Description	Amount	Units	Extension
Cl	15.00	3	45.00
EPA6010Na - Sodium	15.00	3	45.00
Paid	-135.00	1	-135.00
TDS	15.00	3	45.00
TOTAL			0.00

This invoice is due upon receipt.

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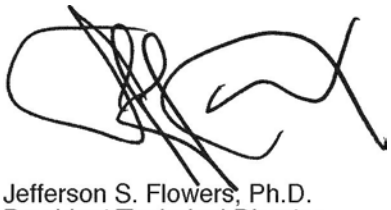
Client Project #: NWFWMD
Date Sampled: Feb 28, 2019
Mar 9, 2019; Invoice: 393369

Report Summary

Date Received: Mar 4, 2019 FCL Project Manager: Michael D. Conner

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
393369GW1	7174-955A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393369GW2	7174-955B	EPA6010	EVB	Main Lab	Ground Water
393369GW3	7174-1070A	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393369GW4	7174-1070B	EPA6010	EVB	Main Lab	Ground Water
393369GW5	7174-1070RA	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393369GW6	7174-1070RB	EPA6010	EVB	Main Lab	Ground Water

Certificate of Results
Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.



Jefferson S. Flowers, Ph.D.
President/Technical Director

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 28, 2019
Mar 9, 2019; Invoice: 393369

Analysis Report

Lab #: 393369GW1 **Sampled:** 02/28/19 02:20 AM **Desc:** 7174-955A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	2260	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	1130	mg/L	6.00	24.0	48.0	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393369GW2 **Sampled:** 02/28/19 02:20 AM **Desc:** 7174-955B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	643	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393369GW3 **Sampled:** 02/28/19 03:26 AM **Desc:** 7174-1070A

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	6850	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	4160	mg/L	70.0	280	560	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393369GW4 **Sampled:** 02/28/19 03:26 AM **Desc:** 7174-1070B

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	2070	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393369GW5 **Sampled:** 02/28/19 04:37 AM **Desc:** 7174-1070RA

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	6960	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	4260	mg/L	70.0	280	560	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393369GW6 **Sampled:** 02/28/19 04:37 AM **Desc:** 7174-1070RB

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	2150	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 28, 2019
Mar 9, 2019; Invoice: 393369

Quality Report

Quality Control Batch: 10397635	**Analyst:** EVB							
Blank	**Result**	**Units**						
Sodium	0.500U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Sodium	4.72	mg/L	5.00	94.37	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Sodium	26.2	mg/L	5.00	102.68	75.00-125.00	21.1	393341GW2	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	26.2	mg/L	5.00	103.55	75.00-125.00	21.1	0.17	20.00

Quality Control Batch: 10397708	**Analyst:** PLB						
Blank	**Result**	**Units**					
TDS	2.50U	mg/L					
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**		
TDS	1450	mg/L	1500	96.80	80.00-120.00		
Duplicate	**Result**	**Units**	**Sample**	**RPD**	**RPD Lim**	**Lab Number**	
TDS	1580	mg/L	1570	0.51	20.00	393335GW1	

Quality Control Batch: 10397866	**Analyst:** VLB				
Blank	**Result**	**Units**			
Chloride	4.00U	mg/L			
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**

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Date Sampled: Feb 28, 2019
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Quality Control Batch: 10397866 **Analyst:** VLB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Chloride	159	mg/L	150	105.79	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Chloride	124	mg/L	100	110.28	80.00-120.00	14.2	393998GW1

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	123	mg/L	100	109.19	80.00-120.00	14.2	0.88	20.00

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Feb 28, 2019
Mar 9, 2019; Invoice: 393369

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Invoice

Description	Amount	Units	Extension
Cl	15.00	4	60.00
EPA6010Na - Sodium	15.00	4	60.00
Paid	-180.00	1	-180.00
TDS	15.00	4	60.00
TOTAL			0.00

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8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Report Summary

Date Received: Mar 4, 2019 FCL Project Manager: Michael D. Conner

Laboratory #	Sample Description	Analysis	Chemist	Location	SampleMatrix
393370GW1	12848-1060a	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393370GW2	12848-1060b	EPA6010	EVB	Main Lab	Ground Water
393370GW3	12848-1125a	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393370GW4	12848-1125b	EPA6010	EVB	Main Lab	Ground Water
393370GW5	12848-1145a	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393370GW6	12848-1145b	EPA6010	EVB	Main Lab	Ground Water
393370GW7	12848-0c	SM2540 C	PLB	Main Lab	Ground Water
		SM4500-Cl E	VLB	Main Lab	
393370GW8	12848-0d	EPA6010	EVB	Main Lab	Ground Water

Certificate of Results
Sample integrity was certified prior to analysis. Test results meet all requirements of the NELAC Standards except as noted in the Quality Control Report. Uncertainties for these data are available on request. This report may not be reproduced in part; results relate only to items tested.

Jefferson S. Flowers, Ph.D.
President/Technical Director

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Analysis Report

Lab #: 393370GW1 **Sampled:** 03/01/19 02:05 AM **Desc:** 12848-1060a

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	336	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	58.5	mg/L	1.00	4.00	8.00	10397862	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393370GW2 **Sampled:** 03/01/19 03:18 AM **Desc:** 12848-1060b

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	130	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393370GW3 **Sampled:** 03/01/19 03:18 AM **Desc:** 12848-1125a

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	888	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	396	mg/L	2.00	8.00	16.0	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393370GW4 **Sampled:** 03/01/19 04:28 AM **Desc:** 12848-1125b

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	427	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393370GW5 **Sampled:** 03/01/19 04:28 AM **Desc:** 12848-1145a

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	1130	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	566	mg/L	4.00	16.0	32.0	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393370GW6 **Sampled:** 03/01/19 04:28 AM **Desc:** 12848-1145b

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	402	mg/L	1.00	0.500	1.00	10397635	EPA6010	7440-23-5	03/06/19

Lab #: 393370GW7 **Sampled:** 03/01/19 04:37 AM **Desc:** 12848-0c

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed

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RM Baker
8600 Oldbridge Lane
Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Lab #: 393370GW7 **Sampled:** 03/01/19 04:37 AM **Desc:** 12848-0c

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
TDS	326	mg/L	1.00	2.50	5.00	10397708	SM2540 C	10-33-3	03/05/19
Chloride	4.00 U	mg/L	1.00	4.00	8.00	10397866	SM4500-Cl E	16887-00-6	03/09/19

Lab #: 393370GW8 **Sampled:** 03/01/19 04:37 AM **Desc:** 12848-0d

Parameter	Result	Units	DF	MDL	PQL	QC Batch	Method	CAS #	Analyzed
Sodium	0.500 U	mg/L	1.00	0.500	1.00	10398063	EPA6010	7440-23-5	03/11/19

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Orlando,FL 32819

PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Quality Report

Quality Control Batch: 10397635 **Analyst:** EVB

Blank	**Result**	**Units**
Sodium	0.500U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
Sodium	4.72	mg/L	5.00	94.37	80.00-120.00

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Sodium	26.2	mg/L	5.00	102.68	75.00-125.00	21.1	393341GW2

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	26.2	mg/L	5.00	103.55	75.00-125.00	21.1	0.17	20.00

Quality Control Batch: 10397708 **Analyst:** PLB

Blank	**Result**	**Units**
TDS	2.50U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**
TDS	1450	mg/L	1500	96.80	80.00-120.00

Duplicate	**Result**	**Units**	**Sample**	**RPD**	**RPD Lim**	**Lab Number**
TDS	1580	mg/L	1570	0.51	20.00	393335GW1

Quality Control Batch: 10397862 **Analyst:** VLB

Blank	**Result**	**Units**
Chloride	4.00U	mg/L

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**

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Date Sampled: Mar 1, 2019
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Quality Control Batch: 10397862 **Analyst:** VLB

Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Chloride	156	mg/L	150	104.05	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Chloride	163	mg/L	100	104.84	80.00-120.00	58.5	393370GW1	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	164	mg/L	100	105.36	80.00-120.00	58.5	0.32	20.00

Quality Control Batch: 10397866 **Analyst:** VLB

Blank	**Result**	**Units**						
Chloride	4.00U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Chloride	159	mg/L	150	105.79	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	
Chloride	124	mg/L	100	110.28	80.00-120.00	14.2	393998GW1	
Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Chloride	123	mg/L	100	109.19	80.00-120.00	14.2	0.88	20.00

Quality Control Batch: 10398063 **Analyst:** EVB

Blank	**Result**	**Units**						
Sodium	0.500U	mg/L						
Laboratory Control Sample	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**			
Sodium	5.01	mg/L	5.00	100.27	80.00-120.00			
Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**	

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Date Sampled: Mar 1, 2019
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Quality Control Batch: 10398063 **Analyst:** EVB

Matrix Spike	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**Lab Number**
Sodium	9.47	mg/L	5.00	101.07	75.00-125.00	4.42	393793GW1

Matrix Spike Duplicate	**Result**	**Units**	**Spike**	**%REC**	**%REC Lim**	**Sample**	**RPD**	**RPD Lim**
Sodium	9.16	mg/L	5.00	94.92	75.00-125.00	4.42	3.30	20.00

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PO #: n/a
Client Project #: NWFWMD
Date Sampled: Mar 1, 2019
Mar 12, 2019; Invoice: 393370

Narrative Report

Sample Handling
Sample handling and holding time criteria were met for all samples. Samples collected by submitter. No unusual events occurred during analysis. Results are reported on a wet weight basis for aqueous matrices and on a dry weight basis for sludge and soil matrices unless otherwise noted.

Quality Control
Enclosed analyses met method or FCL criteria, unless otherwise denoted on the sample results. Applied data qualifiers are defined below.

Attachments
Chain of Custody

Qualifier	Meaning
U	Compound was analyzed for but not detected.
J	Estimated value; one or more QC components associated with this data value exceed current QC limits.
Q	Sample held beyond the accepted holding time.
L	Off-scale high; reported concentration exceeds the highest standard.
V	Analyte was detected in both the sample and the associated method blank.
W	The dissolved oxygen blank was above 0.2 mg/L but less than the MDL.
Z	Too numerous to count colonies on plate.
A	Absent
P	Present
T	Value reported is less than the statistical method detection limit. Reported for informational purposes only.
M	Value reported is greater than the statistical method detection limit, but less than the reported MDL.
G	The greatest of the dilutions performed did not yield sufficient oxygen depletion for valid data.
S	The least of the dilutions performed did not yield sufficient oxygen residual for valid data.
O	Result is greater than (over) the specified value.
I	Reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
B	Results based upon colony plate count outside ideal range.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.

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Client: RMBAKER LLC	Project Name: NWFWMD	P.O. #	
Address: 8600 OLDBRIDGE LANE	Client Contact: ROB BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager: MICHAEL	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): ROB BAKER 2/18-2/19 2019	Pick-Up Fee $	Vehicle Surcharge $	Sampling Fee $
Sampler Signature:	Date Sampled		

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	12811-610A-021819	2/18/19	2:01PM	GW	392757GW1	X					X			1
2	12811-610B-021819	2/18/19	2:01PM	GW	GW2			X				X		1
3	12811-690A-021819	2/18/19	3:01PM	GW	GW3	X					X			1
4	12811-690B-021819	2/18/19	3:01PM	GW	GW4			X				X		1
5	12838-660A-021919	2/19/19	1:45PM	GW	GW5	X					X			1
6	12838-660B-021919	2/19/19	1:45PM	GW	GW6			X				X		1
7	12838-ØC-021919	2/19/19	2:45PM	GW	GW7	X					X			1
8	12838-ØC-021919	2/19/19	2:45PM	GW	GW8			X				X		1
9	1376-640A-022019	2/20/19	5:32PM	GW	GW9	X					X			1
10	1376-640B-022019	2/20/19	5:32PM	GW	GW10			X				X		1

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RMB / RMBAKER	2/21	5PM		2/22						2/22	10:30

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Client: RM BAKER LLC	Project Name: NWFWMD	P.O. #	
Address: 8600 OLDBRIDGE LANE	Client Contact: ROB BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): ROB BAKER 2-21-19	Pick-Up Fee $	Vehicle Surcharge $	Sampling Fee $
Sampler Signature: Robert M. Re	Date Sampled		

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	1696-665A-022119	2-21-19	3:20PM	GW	392757GW11	X					X			1
2	1696-665B-022119	2-21-19	3:20PM	GW	GW12			X				X		1
3	1696-680A-022119	2-21-19	4:15PM	GW	GW13	X					X			1
4	1696-680B-022119	2-21-19	4:15PM	GW	GW14			X				X		1
5														
6														
7														
8														
9														
10														

SHOULD BE 840A AND 840B

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
RMB/ RMBAKER	2/21/19	5PM								2/22	10:30

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Address: 8600 OLDBRIDGE LN	Client Contact: R. BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): ROB BAKER 2-22-19	Pick-Up Fee $	Vehicle Surcharge $	Sampling Fee $
Sampler Signature: Rob M. Re	Date Sampled		

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	7349-440A	2-22-19	1:40PM	GW	392783 GW1	X					X			1
2	7349-440B	2-22-19	1:40PM	GW				X				X		1
3	7349-595A	2-22-19	2:31PM	GW		X					X			1
4	7349-595B	2-22-19	2:31PM	GW				X				X		1
5	7349-595AR	2-22-19	3:35PM	GW		X					X			1
6	7349-595BR	2-22-19	3:35PM	GW				X				X		1
7	7349-DUP C	2-22-19	4:34PM	GW		X					X			1
8	7349-DUP D	2-22-19	4:34PM	GW				X				X		1
9														
10														

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RMB/RM BAKER	2-23	9 AM								2/24	8:00
										2/25	

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Address: 8600 OLDBRIDGE LN	Client Contact: ROB BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager: MICHAEL	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): RMB	2/25 - 2/26 2019 Date Sampled	Pick-Up Fee $	Vehicle Surcharge $ / Sampling Fee $
Sampler Signature: Robert M. Baker			

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	7183-520 A	2/25/19	2:11 PM	GW	393341 GW1	X					X			1
2	7183-520 B	2/25/19	2:11 PM	GW	2		~~X~~	X				X		1
3	7183-660 A	2/25/19	3:58 PM	GW	3	X					X			1
4	7183-660 B	2/25/19	3:58 PM	GW	4		~~X~~	X				X		1
5	7183-585 A	2/25/19	3:03 PM	GW	5	X					X			1
6	7183-585 B	2/25/19	3:03 PM	GW	6			X				X		1
7	9137-500 A	2/26/19	1:04 PM	GW	7	X					X			1
8	9137-500 B	2/26/19	1:04 PM	GW	8			X				X		1
9	9137-640 A	2/26/19	2:19 PM	GW	9	X					X			1
10	9137-640 B	2/26/19	2:19 PM	GW	10			X				X		1

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RMB/RMBAKER	2/28	8AM							[illegible]	3/1	09:00

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Address: 8600 OLDBRIDGE LN	Client Contact: ROB BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager: MICHAEL	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): RMB	2/26 - 2/27 2019 (Date Sampled)	Pick-Up Fee $	Vehicle Surcharge $ / Sampling Fee $
Sampler Signature: Robert M. Baker			

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	9137 - ΦA	2/26/19	1:32PM	GW	39334 1 GW11	X					X			1
2	9137 - ΦB	2/26/19	1:32PM	GW	12			X				X		1
3	12840 - 745A	2/27/19	2:20PM	GW	13	X					X			1
4	12840 - 745B	2/27/19	2:20PM	GW	14			X				X		1
5	12840 - 875A	2/27/19	3:20PM	GW	15	X					X			1
6	12840 - 875B	2/27/19	3:20PM	GW	16			X				X		1
7														
8														
9														
10														

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
RMB/RMBAKER	2/28	9AM							FLC	3/1	09:00

FINANCE CHARGES APPLIED TO PAST DUE INVOICES

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Rev 04-08

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481 Newburyport Ave.
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Fax: 407-260-6110

☐ **Flowers Chemical Labs-South**
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571 N.W. Mercantile Pl., Ste. 111
Port St. Lucie, FL 34986
Bus: 772-343-8006
Fax: 772-343-8089

☐ **Flowers Chemical Labs-North**
812 S.W. Harvey Greene Dr.
Madison, FL 32340
Bus: 850-973-6878
Fax: 850-973-6878

☐ **Flowers Chemical Labs-Keys**
3980 Overseas Highway, Ste. 103
Marathon, FL 33050
Bus: 305-743-8598
Fax: 305-743-8598

FLOWERS CHEMICAL LABORATORIES INCORPORATED

DOWNLOAD REPORTS, INVOICES AND CHAINS OF CUSTODY www.flowerslabs.com

Client: RMBAKER LLC	Project Name: NWFWMD	P.O. #
Address: 8600 OLDBRIDGE LANE	Client Contact: ROB BAKER	FAX
ORLANDO FL 32819	FCL Project Manager: MICHAEL	E-MAIL: rob@rmbaker.com
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply
Sampled By (PRINT): ROB BAKER 2-28-19	Pick-Up Fee $	Vehicle Surcharge $
Sampler Signature: Robert M. Baker Date Sampled		Sampling Fee $

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	7174-955A	2-28-19	2:20PM	GW	393369GW1	X					X			1
2	7174-955B	2-28-19	2:20PM	GW	2			X				X		1
3	7174-1070A	2-28-19	3:26PM	GW	3	X					X			1
4	7174-1070B	2-29-19	3:26PM	GW	4			X				X		1
5	7174-1070RA	2-28-19	4:37PM	GW	5	X					X			1
6	7174-1070RB	2-28-19	4:37PM	GW	6			X				X		1
7														
8														
9														
10														

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
RMB/RMBAKER	3-3	8AM								3/4	8:00

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FLOWERS CHEMICAL LABORATORIES INCORPORATED

DOWNLOAD REPORTS, INVOICES AND CHAINS OF CUSTODY www.flowerslabs.com

Client: RMBAKER LLC	Project Name: NWFWMD	P.O. #	
Address: 8600 OLDBRIDGE LANE	Client Contact: ROB BAKER	FAX	
ORLANDO FL 32819	FCL Project Manager: MICHAEL	E-MAIL: rob@rmbaker.com	
Phone: 407-733-8958	Requested Due Date 10 Day Standard OR MM DD YY	Rush Charges May Apply	
Sampled By (PRINT): ROB BAKER 3-1-19	Pick-Up Fee $	Vehicle Surcharge $	Sampling Fee $
Sampler Signature: Robert M. Baker Date Sampled			

GW - ground water DW - drinking water WW - wastewater
SW - surface water SO - soil/solid SL - sludge HW - waste

ITEM NO.	SAMPLE ID	DATE	TIME	MATRIX	(LAB USE ONLY) LAB NO.	PRESERVATIVES: NONE	H_2SO_4	HNO_3	HCl	$Na_2S_2O_3$	ANALYSES REQUEST: Cl + TDS	Na	COMMENTS	Total # Containers
1	12848-1060A	3-1-19	2:05PM	GW	393370GW1	X					X			1
2	12849-1060B	3-1-19	2:05PM	GW	2			X				X		1
3	12847-1125A	3-1-19	3:18PM	GW	3	X					X			1
4	12747-1125B	3-1-19	3:19PM	GW	4			X				X		1
5	12848-1145A	3-1-19	4:28PM	GW	5	X					X			1
6	12848-1145B	3-1-19	4:28PM	GW	6			X				X		1
7	12848-ØC	3-1-19	4:37PM	GW	7	X					X			1
8	12847-ØD	3-1-19	4:37PM	GW	8			X				X		1
9														
10														

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
RMB/RMBAKER	3-3	9AM								3/4	8:00

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1.6°C

Rev 04-08

WELL ID

NWF12811

ALIAS	A-4
GEOPHYSICAL TEST DATE	2-18-19
SAMPLE COLLECTION DATE	2-18-19
CASING STICK-UP HEIGHT (FT)	38.5 - 7 = 31.5 = 2.63'
CASING DIAMETER (IN)	6
CASING MATERIAL	PVC
CASING DEPTH	600 PVC
TOTAL DEPTH	700 (699)
DEPTH TO WATER	9.27 8:06 AM CST 9.3 3:30 PM CST
REFERENCE	TOP OF PVC MARK
LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	3042/3039
ERROR wrt STANDARD (138.2)	9.9 %
RE-CALIBRATION REQUIRED (Y/N)	
TCDS 447.1	
TCDS 2764	
TCDS 12880	
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF (5.35)	-2.63 STOP 692 ~~690~~
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	697.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	2.8 - 5.35 = -2.55 Δ -0.08
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	-2.63
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	-
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	40.35 - 42.8 = -2.45 Δ -0.18
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	702.35
DUIN DOWN DEPTH REF (7.45)	-2.63
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	701.85 reset
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	4.9 - 7.45 = -2.55 Δ -0.08
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	701.85

12811

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2/18/19 12:25 PM	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	~~4473~~ 2764	Hanna value
ICV SPEC COND	2896 ~~4.7%~~ 4.7%	
ICV TEMP		
ICV pH	~~4.00~~ 4.04	
RPD ICV SPEC COND	~~4.7%~~ 4.7%	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.04	
ACCEPTANCE CRITERIA	0.2 standard pH units	
√ BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME		
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	12880	
FINAL CCV SPEC COND	~~12558~~ A323	
FINAL CCV TEMP		
FINAL CCV pH		
RPD FINAL CCV SPEC COND	2.5%	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR		
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR		
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 1413 µS FSI# 76115 2/18/19 CST 12:26 PM

12811

			SPCO
SAMPLING			LOG
SAMPLE DEPTH 1	610		8353.05
SAMPLE DEPTH 2	690		7494.93
REPEAT (Y/N)	N		
BLANK (Y/N)	N		
SAMPLE 1	12811-610-021819		
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-2.63 + 1.46 = -1.17		
LINE UP ERROR	-1.15 => 0.02	2:43 PM	ICE 3:01pm
			2:01 CST
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	Y	12811-610A-021819	
SODIUM BOTTLE COLLECTED (Y/N)	Y	12811-610B-021819	
LAB SAMPLES PRESERVED (Y/N)	Y	18 min	
ICE BATH TEMPERATURE (DEG C)	2.6°C		
YSI SPECIFIC CONDUCTIVITY	~~8355~~ 8149	(8353.05)	
YSI CONDUCTIVITY	~~7276~~ 7213		
YSI TEMPERATURE	~~18.9~~ 19.0		
YSI pH	~~7.69~~ 7.49		
SAMPLE 2	12811-690-021819		
PRE-RUN SAMPLER RINSE (Y/N)	Y	TAP + DI	3:01 CST
SAMPLER DOWN DEPTH REF	-1.17		
LINE UP ERROR	1.15 => 0.02	2:53	3:01pm
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12811-690A-021819		
SODIUM BOTTLE COLLECTED (Y/N)	12811-690B-021819		
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)	2.5°C		
YSI SPECIFIC CONDUCTIVITY	~~7318~~ 7321	(7494.93)	
YSI CONDUCTIVITY	~~6429~~ 6500		
YSI TEMPERATURE	19.1		
YSI pH	~~7.71~~ 7.83		

R - repeat

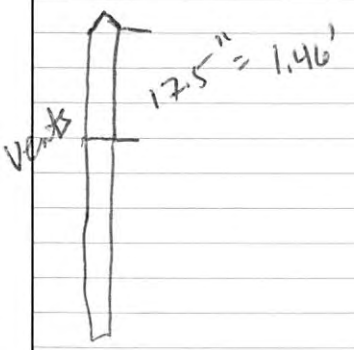
A - Chloride + TDS

B - Sodium w/ HNO_3

C - Equip Blank A

D - " " B

NOTES:



WELL ID

	NWF 12 838
ALIAS	A-3
GEOPHYSICAL TEST DATE	3-19-19
SAMPLE COLLECTION DATE	
CASING STICK-UP HEIGHT (FT)	40" (above pad) ⇒ 3.33'
CASING DIAMETER (IN)	6"
CASING MATERIAL	PVC
CASING DEPTH	560
TOTAL DEPTH	670 (Trinity 672.2)
DEPTH TO WATER	44.98 @ 7:32 AM CST 44.94 @ 2:17 PM CST
REFERENCE	mark @ TOC 40" ABOVE PAD
LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	
ERROR wrt STANDARD (138.2)	
RE-CALIBRATION REQUIRED (Y/N)	
TCDS 447.1	
TCDS 2764	
TCDS 12880	
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF	-3.33 7:52 AM CST
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	664.05 + 5.35 = 669.4
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	4.05 - 5.35 = -1.3 Δ 2 FT (SOFTWARE FAILURE)
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	42.7 - 3.33 - 9.48 = 29.99
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+ 9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	39.65 - 9.48 = 30.17 Δ 0.18
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	
DUIN DOWN DEPTH REF	-3.33 9:05
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	6 + 7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	4.25 - 7.45 = -3.2 Δ 0.1
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	674.7

12838

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2-19 11:27 AM	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	447.1 / 84	Hanna value
ICV SPEC COND	446.2 86	
ICV TEMP		
ICV pH	3.92 in 4	
RPD ICV SPEC COND	0.2 % / 2.3 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.08	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	1:49 pm CST 2-19-19	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 447.1	
FINAL CCV SPEC COND	446	
FINAL CCV TEMP	~~[illegible]~~ 21.1	
FINAL CCV pH	~~[illegible]~~ 10.02	
RPD FINAL CCV SPEC COND	0.25 %	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.02	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 447.1 µS FSI# 76105
pH 4.0 buffer

FCV 447.1 µS 446
pH 10.0 buffer 10.02

1. Rinse jig w/ DI, then Iso, then wipe
2. Rinse sampler w/ tap thoroughly
   w/ 1 round of DI

3. Assemble jig onto cable.
4. Load DI into jig & open vents
5. Collect sample as usual.
   1x 125mL for Cl
   1x 125mL for Na

✓

12838

SAMPLING	
SAMPLE DEPTH 1	660
SAMPLE DEPTH 2	—
REPEAT (Y/N)	N
BLANK (Y/N)	Y
SAMPLE 1	12838-660
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	-3.33
LINE UP ERROR	-3.25 Δ 0.08
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12838-660A-021919
SODIUM BOTTLE COLLECTED (Y/N)	12838-660B-021919
LAB SAMPLES PRESERVED (Y/N)	1:32 - 1:45pm
ICE BATH TEMPERATURE (DEG C)	2.4°C
	Log
YSI SPECIFIC CONDUCTIVITY	205.4 (193.25)
YSI CONDUCTIVITY	195
YSI TEMPERATURE	22.3
YSI pH	7.89
SAMPLE 2 BLANK	
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	0
LINE UP ERROR	0
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12838-DC-021919
SODIUM BOTTLE COLLECTED (Y/N)	12838-DD-021919
LAB SAMPLES PRESERVED (Y/N)	Y <15 MIN
ICE BATH TEMPERATURE (DEG C)	2.4°C
YSI SPECIFIC CONDUCTIVITY	7.1 0 ppt salinity
YSI CONDUCTIVITY	6.7
YSI TEMPERATURE	22.1
YSI pH	7.34

1:45 pm EST

2:45 pm EST

A - chloride Cl+TDS

B - sodium ~~TDS~~ Na +HNO_3 ~~TDS~~

C - blank A

R - repeat

D - blank B

NOTES:

7:47 AM - ice bath 3.4°C

- CAS 550' steel entire way
- elong response not great, but not consistent w/ PVC.

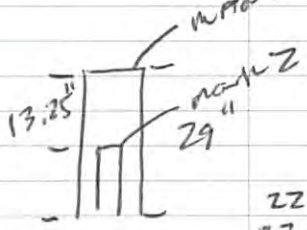
Walton Co

WELL ID

NWF 1376

ALIAS	West Hewitt Floridan
GEOPHYSICAL TEST DATE	2-20-19
SAMPLE COLLECTION DATE	2-20-19
CASING STICK-UP HEIGHT (FT)	2.42 — 6" steel then reduction @ 273
CASING DIAMETER (IN)	4"
CASING MATERIAL	PVC steel
CASING DEPTH	~~547~~ (530)
TOTAL DEPTH	720 704 =
DEPTH TO WATER	
REFERENCE	TOC MARK1 — 22.4' 9:49AM; 22.33 5:59pm

FIX



LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	
ERROR wrt STANDARD (138.2)	
RE-CALIBRATION REQUIRED (Y/N)	
TCDS 447.1	
TCDS 2764	
TCDS 12880	
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF	-2.42
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	+5.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	0.4 - 5.35 = -4.95 Δ2.53
TOUCH BOTTOM (Y/N)	Y - SOFT @ 701-702
ELOG DOWN DEPTH REF	42.8 - 2.42 - 9.48 = 30.9
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	40.45 - 9.48 = 30.97 Δ0.07'
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	
DUIN DOWN DEPTH REF	-2.42
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	+7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	5.15 - 7.45 = -2.3 Δ0.1
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	704.6 - SOFT

Senior clogged in salts @ bottom - cleared by 685 on upjog

Δ2.53 - line spool issue

↳ Hung on casing @ reduction.

Dible electrode dragging on BH wall - weight high

GAMMA
590 - DOWN
590.5 ref

1376

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2-20-19 2:12 PM	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	447.1	Hanna value
ICV SPEC COND	445.1	
ICV TEMP	—	
ICV pH	3.97	
RPD ICV SPEC COND	0.45 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.03	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	2-20-19 5:38 PM	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 1413	
FINAL CCV SPEC COND	1438	
FINAL CCV TEMP	—	
FINAL CCV pH	9.97	
RPD FINAL CCV SPEC COND	1.8 % ✓	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.03 ✓	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 447.1 µS FS # 76105 2:12 PM

1376

SAMPLING		
SAMPLE DEPTH 1	~~690~~ 680	
SAMPLE DEPTH 2	repeat	
REPEAT (Y/N)	Y	
BLANK (Y/N)	N	
SAMPLE 1	1376 - 680	
PRE-RUN SAMPLER RINSE (Y/N)	Y	
SAMPLER DOWN DEPTH REF	-2.42	
LINE UP ERROR	-2.20 Δ 0.22	SAMPLE DISCARDED
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	1376-680A-022019	
SODIUM BOTTLE COLLECTED (Y/N)	1376-680B-022019	
LAB SAMPLES PRESERVED (Y/N)	Y	4:05PM - 4:30PM
ICE BATH TEMPERATURE (DEG C)	2.4°C	
YSI SPECIFIC CONDUCTIVITY	920.0 (09 (945.54)	
YSI CONDUCTIVITY	850.0	
YSI TEMPERATURE	21.0	
YSI pH	8.35	
SAMPLE 2	640	5:32 CST 5:21PM
PRE-RUN SAMPLER RINSE (Y/N)	Y	
SAMPLER DOWN DEPTH REF	-2.42	
LINE UP ERROR	-2.21 Δ 0.21	
	640A	
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	1376-640A-022019	No bottle much clearer
SODIUM BOTTLE COLLECTED (Y/N)	1376-640B-022019	
LAB SAMPLES PRESERVED (Y/N)	Y 640B	
ICE BATH TEMPERATURE (DEG C)	2.40C	
	(09 (947.45)	
YSI SPECIFIC CONDUCTIVITY	928 - Turbid- dk gray	5:22pm
YSI CONDUCTIVITY	866	
YSI TEMPERATURE	21.5	
YSI pH	8.49	

N

NOTES:

FIRST SAMPLE RUN TO 690' CAME BACK W/ 200 ML OF VERY TURBID SILTY WATER - REF 680' -

NOTE YSI SET TO EST NOT CST

WELL ID

WELL ID	NWF 1696		
ALIAS	OCWS FSL		
GEOPHYSICAL TEST DATE	2-21-19		
SAMPLE COLLECTION DATE			
CASING STICK-UP HEIGHT (FT)	2" = 0.17	Berm ~ 30" A.G. = 2.5'	
CASING DIAMETER (IN)	8" OD 6" ID		
CASING MATERIAL	steel		
CASING DEPTH	536 steel – CAS DEPTH ~540		
TOTAL DEPTH	861 12-15" OH ☆ 859.5		
	☆ TOOLS HUNG ENTERING CASING		
DEPTH TO WATER	61.19 @ 9:26 /		
REFERENCE	TOC / 61.21 5PM		
LOGGING	GAMMA		
TCDS SERIAL NUMBER	11364	DUIN	ELog DS VS
TCDS BENCH TEST 2764 us	TCDS DS VS	DS VS	DS VS
ERROR wrt STANDARD (138.2)	612 611.6	611.9 611.6	
RE-CALIBRATION REQUIRED (Y/N)			
TCDS 447.1			
TCDS 2764			
TCDS 12880			
REGRESSION FORMULA			
REGRESSION R2			
TCDS DOWN DEPTH REF	TOC -0.17 8:39AM		
OPENHOLE LOGGING SPEED	5-7		
TCDS UP DEPTH REF CHANGE	+5.35		
OPENHOLE LOGGING SPEED	5-7		
LINE UP ERROR	5.55-5.35= 0.2 Δ 0.03		
TOUCH BOTTOM (Y/N)	N		
ELOG DOWN DEPTH REF	TOC -0.17 42.8-0.17-9.48 = 33.15		
OPENHOLE LOGGING SPEED	10-12		
ELOG UP DEPTH REF CHANGE	+9.48		
OPENHOLE LOGGING SPEED	10-12		
LINE UP ERROR	42.7-9.47= 33.22 Δ0.07'		
TOUCH BOTTOM (Y/N)	Y		
BOTTOM DEPTH (FT)	863.05		
DUIN DOWN DEPTH REF	TOC -0.17 uplog hung going into casing		
OPENHOLE LOGGING SPEED	10-12		
DUIN UP DEPTH REF CHANGE	+7.45		
OPENHOLE LOGGING SPEED	10-12		
LINE UP ERROR	7.4- 7.45= -0.05 Δ 0.12		
TOUCH BOTTOM (Y/N)	Y		
BOTTOM DEPTH (FT)	863.05		

775
690
VOWS

1696

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2-21-19 2:40 PM	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	447.1	Hanna value
ICV SPEC COND	457.4	
ICV TEMP	—	
ICV pH	3.95 (4)	
RPD ICV SPEC COND	2.3 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.05	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	2-21-19	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ ~~2764~~ 1413	
FINAL CCV SPEC COND	1417	
FINAL CCV TEMP	—	
FINAL CCV pH	9.97 (10)	
RPD FINAL CCV SPEC COND	0.28 %	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.03	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC ~~4800~~ 1413 µS FSIH 76115 2/21/19 2:41 PM

IC pH w/ 10.0 sdn. 1" 1"

1696

SAMPLING	
SAMPLE DEPTH 1	665
SAMPLE DEPTH 2	840
REPEAT (Y/N)	N
BLANK (Y/N)	
SAMPLE 1	1696 - 665AB
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	-0.17
LINE UP ERROR	-0.15 ⇒ 0.02
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	1696 - 665A - 022119
SODIUM BOTTLE COLLECTED (Y/N)	1696 - 665B - 022119
LAB SAMPLES PRESERVED (Y/N)	Y
ICE BATH TEMPERATURE (DEG C)	2.4°C
YSI SPECIFIC CONDUCTIVITY	662.0 (Log 601.73)
YSI CONDUCTIVITY	637.0
YSI TEMPERATURE	23.0
YSI pH	6.54
SAMPLE 2	1696 - 840AB
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	-0.17
LINE UP ERROR	
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	1696 - 840A - 022119
SODIUM BOTTLE COLLECTED (Y/N)	1696 - 840B - 022119
LAB SAMPLES PRESERVED (Y/N)	Y
ICE BATH TEMPERATURE (DEG C)	2.4°C
YSI SPECIFIC CONDUCTIVITY	612.0 (Log 605.09)
YSI CONDUCTIVITY	584.0
YSI TEMPERATURE	22.6
YSI pH	8.65

3:20 PM CST

4:24 PM

4:15 PM CST

ODD

NOTES:

WELL ID NWF 7349

ALIAS	SWV EAST MONITOR
GEOPHYSICAL TEST DATE	2-22-19
SAMPLE COLLECTION DATE	2-22-19
CASING STICK-UP HEIGHT (FT)	29" = 2.42'
CASING DIAMETER (IN)	6
CASING MATERIAL	PVC
CASING DEPTH	425 425 elog → ~~[illegible]~~
TOTAL DEPTH	600 (~~598.7~~) 601
DEPTH TO WATER	15.97' 8:50 AM / 15.96 ~~3~~ 4 8PM
REFERENCE	TOP OF PVC 29" A.G.
LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	GAMMA
ERROR wrt STANDARD (138.2)	TCDS DS
RE-CALIBRATION REQUIRED (Y/N)	US 520.3
TCDS 447.1	DUIP DS 520.3
TCDS 2764	✓ US 520.4
TCDS 12880	Elog DS 522??
REGRESSION FORMULA	US
REGRESSION R2	
TCDS DOWN DEPTH REF	-2.42
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	+5.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	3.1 - 5.35 = -2.25 ⇒ Δ 0.17
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	-2.42 42.7 - 2.42 - 9.48 = 30.9
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	40.45 - 9.49 = 30.97 Δ 0.07
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	601.0
DUIN DOWN DEPTH REF	-2.42
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	+7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	~~[illegible]~~ 5.15 - 7.45 = -2.3 Δ 0.12 CASING 2420
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	601

440
590

7349

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME		
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	~~447.1~~ 1413	Hanna value
ICV SPEC COND	~~[illegible]~~ 1406	
ICV TEMP	—	
ICV pH	3.94	
RPD ICV SPEC COND	~~[illegible]~~ 0.5 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.06	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV	9:55 PM	
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME		
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 2764	
FINAL CCV SPEC COND	~~2[illegible]~~ 2663	
FINAL CCV TEMP	—	
FINAL CCV pH	9.96 (10)	
RPD FINAL CCV SPEC COND	3.6 %	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.04	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 1413 µS FSI # 76115 2/22 1:09 CST

~~IC~~ pH 4 FSI # 76126 2/22 1:22 CST

7349

SAMPLING				
SAMPLE DEPTH 1	440			
SAMPLE DEPTH 2	595			
REPEAT (Y/N)	Y	595		
BLANK (Y/N)				
SAMPLE 1	440			
PRE-RUN SAMPLER RINSE (Y/N)	Y			
SAMPLER DOWN DEPTH REF	-2.42			
LINE UP ERROR	-2.3	A 0.12	1:25:32 - 1:40 PM	
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	7349-440A		clear / No color	
SODIUM BOTTLE COLLECTED (Y/N)	7349-440B			
LAB SAMPLES PRESERVED (Y/N)	Y 1:40pm			
ICE BATH TEMPERATURE (DEG C)				
		LOG		
YSI SPECIFIC CONDUCTIVITY	407.7	(359.66)	1:44:43	
YSI CONDUCTIVITY	389.5			
YSI TEMPERATURE	22.7			
YSI pH	7.82			
SAMPLE 2			2:31 PM	
PRE-RUN SAMPLER RINSE (Y/N)	Y			
SAMPLER DOWN DEPTH REF	-2.42			
LINE UP ERROR	-2.35 => 0.07		2:22 - 2:31	
			3:26 - 3:35	
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	7349-595A		7349-595AR	
SODIUM BOTTLE COLLECTED (Y/N)	7349-595B		7349-595AR	
LAB SAMPLES PRESERVED (Y/N)	Y 2:31 PM		Y 3:35 PM	
ICE BATH TEMPERATURE (DEG C)				
		LOG		
YSI SPECIFIC CONDUCTIVITY 2:36PM	1188	(1271.22)	3:35PM 1177	
YSI CONDUCTIVITY	1130		1146	- may have spent too much time in sampler
YSI TEMPERATURE	22.4		23.6	
YSI pH	7.81		7.97	

A cl +TDS
B Na w/ HNO_3
C blank A
D blank B
R duplicate/ repeat

Blank 1:22 PM
Time 4:34 PM

24.1 T
6.5 SpCO
6.4 CO
4.6 TDS
0 SAL
7.96 pH

7349

NOTES:

WELL ID

NWF 7183

ALIAS	SWD West MW			
GEOPHYSICAL TEST DATE	2-25-19			
SAMPLE COLLECTION DATE	2-25-19			
CASING STICK-UP HEIGHT (FT)	35" = 2.92			
CASING DIAMETER (IN)	6			
CASING MATERIAL	PVC			
CASING DEPTH	498			
TOTAL DEPTH	700	698.7		
DEPTH TO WATER	33.35' @ 8:38 CST AM / 33.51 @ 4:46 CST			
REFERENCE	TOC			
LOGGING				
TCDS SERIAL NUMBER	11364			
TCDS BENCH TEST 2764 us				GRAPH
ERROR wrt STANDARD (138.2)		TCDS	DS	501.3
RE-CALIBRATION REQUIRED (Y/N)			US	
TCDS 447.1		DUIN	DS	501.1
TCDS 2764			US	501.2
TCDS 12880		FLOW	DS	
REGRESSION FORMULA			US	
REGRESSION R2				
TCDS DOWN DEPTH REF	-2.92			
OPENHOLE LOGGING SPEED	5-7			
TCDS UP DEPTH REF CHANGE	+5.35			
OPENHOLE LOGGING SPEED	5-7			
LINE UP ERROR	2.6 - 5.35 = 2.75 => Δ 0.17			
TOUCH BOTTOM (Y/N)	N			
ELOG DOWN DEPTH REF	42.8 - 2.92 - 9.48 = 30.4			
OPENHOLE LOGGING SPEED	10-12			
ELOG UP DEPTH REF CHANGE	+9.48			
OPENHOLE LOGGING SPEED	10-12			
LINE UP ERROR	39.95 - 30.4 = 9.91 Δ 0.43			
TOUCH BOTTOM (Y/N)	Y			
BOTTOM DEPTH (FT)	702.0			
DUIN DOWN DEPTH REF	-2.92			
OPENHOLE LOGGING SPEED	10-12			
DUIN UP DEPTH REF CHANGE	+ 7.45			
OPENHOLE LOGGING SPEED	10-12			
LINE UP ERROR	4.6 - 7.45 = -2.85 Δ 0.07			
TOUCH BOTTOM (Y/N)	Y			
BOTTOM DEPTH (FT)	702.2			

520
575
660

7183

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2.25 1:40 pm CST	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	~~447.1~~ 1413 / 447.1	Hanna value
ICV SPEC COND	1414 / 425.4	
ICV TEMP	—	
ICV pH	3.94 (4)	
RPD ICV SPEC COND	0.1 / 4.9	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.06	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME		
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	12880	
FINAL CCV SPEC COND	12549	
FINAL CCV TEMP	—	
FINAL CCV pH	9.94	
RPD FINAL CCV SPEC COND	2.6	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.06	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 1413 µS FS1# 76115 1:40 PM CST

7183

TIMES ARE CST

SAMPLING			
SAMPLE DEPTH 1	520		
SAMPLE DEPTH 2	585		
REPEAT (Y/N)	—		
BLANK (Y/N)	—		
SAMPLE 1			
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-2.92		→ 2:04 START
LINE UP ERROR	-2.9	Δ0.02	
			2:11 PM
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	Y	7183-520A	
SODIUM BOTTLE COLLECTED (Y/N)	Y	7183-520B	
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)		2.4°C	
	- clear sample		
YSI SPECIFIC CONDUCTIVITY	350.3		log (334.5) 2:13 PM
YSI CONDUCTIVITY	~~350.5~~	328.5	
YSI TEMPERATURE	21.7		
YSI pH	7.26		
SAMPLE 2	585		
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-2.92		→ 2:57 START
LINE UP ERROR	-2.85	Δ0.07	
	- clear sample		
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)		7183-585A	3:03 PM
SODIUM BOTTLE COLLECTED (Y/N)		7183-585B	
LAB SAMPLES PRESERVED (Y/N)		Y	
ICE BATH TEMPERATURE (DEG C)		2.4°C	
			log (1488.06) 3:06 PM
YSI SPECIFIC CONDUCTIVITY	1393		
YSI CONDUCTIVITY	1317		
YSI TEMPERATURE	22.2		
YSI pH	7.66		

Sample 3 660

RINSE Y

REF -2.92

ERROR -2.90 Δ0.02

- sample cloudy

CHLORIDE BOTTLE Y 7183-660A

SODIUM BOTTLE Y 7183-660B

PRESERVED Y

TIME 3:51 PM

TIME 3:58 PM

YSI SPCO - 2394

YSI COND - 2251

YSI TEMP - 21.9

YSI pH - 7.43

TIME 4:02 PM

7183

NOTES:

495
640

WELL ID

NWF 9137

ALIAS	DWU INDIAN RUN TRAIL MW		
GEOPHYSICAL TEST DATE	2-26-19	OKALOOSA CO.	
SAMPLE COLLECTION DATE	2-26-19		
CASING STICK-UP HEIGHT (FT)	36.5" ABOVE PAD = 3.04'		
CASING DIAMETER (IN)	6		
CASING MATERIAL	STEEL		
CASING DEPTH	496		
TOTAL DEPTH	650 (648)		
DEPTH TO WATER	38.57' @ 8:40 AM CST / 38.22' @ 2:35 EST		
REFERENCE	TOC		
LOGGING			
TCDS SERIAL NUMBER	11364		GAMMA
TCDS BENCH TEST 2764 us		TCDS DS	521.3
ERROR wrt STANDARD (138.2)		US	521.0
RE-CALIBRATION REQUIRED (Y/N)		DUIN DS	521
TCDS 447.1		US	521
TCDS 2764		FLOG DS	
TCDS 12880		US	
REGRESSION FORMULA			
REGRESSION R2			
TCDS DOWN DEPTH REF	-3.04 => -3.0		
OPENHOLE LOGGING SPEED	5-7		
TCDS UP DEPTH REF CHANGE	+5.35		
OPENHOLE LOGGING SPEED	5-7		
LINE UP ERROR	2.5 - 5.75 = -2.85	Δ 0.15	
TOUCH BOTTOM (Y/N)	N		
ELOG DOWN DEPTH REF	-3.04	42.8 - 3.04 - 9.48 = 30.28	
OPENHOLE LOGGING SPEED	10-12		
ELOG UP DEPTH REF CHANGE	+9.48		
OPENHOLE LOGGING SPEED	10-12		
LINE UP ERROR	39.7 - 9.48 = 30.22	Δ 0.06	
TOUCH BOTTOM (Y/N)	Y		
BOTTOM DEPTH (FT)			
DUIN DOWN DEPTH REF	-3.04 => -3		
OPENHOLE LOGGING SPEED	10-12	CASING PVC?	
DUIN UP DEPTH REF CHANGE	+7.45	OR	
OPENHOLE LOGGING SPEED	10-12	498?	
LINE UP ERROR	4.55 - 7.45 = -2.9	Δ 0.1	
TOUCH BOTTOM (Y/N)	Y		
BOTTOM DEPTH (FT)	@49.7		

9137

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2/26/19 12:41 pm CST	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	~~447.1~~ 84 µS/cm	Hanna value
ICV SPEC COND	~~85.5~~	
ICV TEMP	—	
ICV pH	3.96 (4)	
RPD ICV SPEC COND	1.8 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.04	
ACCEPTANCE CRITERIA	0.2 standard pH units	
	~~ANSA~~	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	2/20/19 2:37 pm CST	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 1413	
FINAL CCV SPEC COND	1424	
FINAL CCV TEMP	—	
FINAL CCV pH	9.99	
RPD FINAL CCV SPEC COND	0.78 %	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.01	
ACCEPTANCE CRITERIA	0.2 standard pH units	

300-700

IC 447.1 µS FSI #76105 2/26 12:39 pm (CST)

IC pH 4,7,10 2/26 12:45 pm

9137

SAMPLING			
SAMPLE DEPTH 1	500		
SAMPLE DEPTH 2	640		
REPEAT (Y/N)	N		
BLANK (Y/N)	Y	INTERMEDIATE - see below	
SAMPLE 1			
PRE-RUN SAMPLER RINSE (Y/N)	Y	- sample clear	
SAMPLER DOWN DEPTH REF	-3.04		
LINE UP ERROR	-2.95	Δ0.09	12:55 - 1:06
			TIME: 1:04
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	9137-500A		
SODIUM BOTTLE COLLECTED (Y/N)	9137-500B		
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)	2.4°C		
		109	
YSI SPECIFIC CONDUCTIVITY	293.7	(293.07)	TIME: 1:06 PM
YSI CONDUCTIVITY	276.5		
YSI TEMPERATURE	21.9		
YSI pH	7.79		
SAMPLE 2			
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-3.04		
LINE UP ERROR	-3	Δ=0	2:11 - 2:20
			TIME: 2:19
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	9137-640A		
SODIUM BOTTLE COLLECTED (Y/N)	9137-640B		
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)	2.4°C		
		109	
YSI SPECIFIC CONDUCTIVITY		(775.23)	TIME: 2:24
YSI CONDUCTIVITY			
YSI TEMPERATURE			
YSI pH			

Intermediate equipment blank - after 500' sample

RINSE - Y
DOWN REF - -3
LINE UP ERROR -

CL + TDS BOTTLE 9137-0A
Na BOTTLE 9137-0B

TIME: 1:32 PM

(2:35 EST)

YSI SPCL - 10.1
COND - 9.1
TEMP - 19.8
pH - 7.51

9137

NOTES:

755 - raise to 745 "low"
-875
OK "high"

WELL ID

NWF 12840

ALIAS	A-2
GEOPHYSICAL TEST DATE	2-27-19
SAMPLE COLLECTION DATE	2-27-19
CASING STICK-UP HEIGHT (FT)	40" ABOVE PAD = 3.33
CASING DIAMETER (IN)	6
CASING MATERIAL	PVC
CASING DEPTH	740
TOTAL DEPTH	885 (882)
DEPTH TO WATER	66.60' @ 8:45am / 66.54' @ 3:33PM
REFERENCE	TOC
	pulled sensor ~10 min before measuring wl ~8:20
LOGGING	
TCDS SERIAL NUMBER	11364 GAMMA
TCDS BENCH TEST 2764 us	T DS
ERROR wrt STANDARD (138.2)	T US
RE-CALIBRATION REQUIRED (Y/N)	D DS
TCDS 447.1	D US
TCDS 2764	N DS
TCDS 12880	N US
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF	-3.33
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	+5.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	2.15 - 5.35 = -3.2 Δ 0.13
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	-3.33
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	42.8 - 3.33 - 9.48 = 29.99
TOUCH BOTTOM (Y/N)	Y 39.25 - 9.48 = Δ 0.22
BOTTOM DEPTH (FT)	887.6
DUIN DOWN DEPTH REF	-3.33
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	+7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	4.35 - 7.45 = -3.1 Δ 0.2
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	887.6

* uplog glitch w/ weight indicator caused stoppage and odd data blip.

12840

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2/27/19 1:30 pm CST	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	447.1 / 2764	Hanna value
ICV SPEC COND	449.5 / 2723	
ICV TEMP	—	
ICV pH	3.95	
RPD ICV SPEC COND	0.54% / 1.5%	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.05	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	2/27/19 3:37PM	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 1413 / 1413 / 2764	
FINAL CCV SPEC COND	1327 / 1316 / 2726	
FINAL CCV TEMP	—	
FINAL CCV pH	9.91 (10)	
RPD FINAL CCV SPEC COND	6.1% / / 1.4%	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.09	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 447.4uS FSI #76105 2-27 1:31 pm

4-7-10 pH buffer 2-27 1:35 pm

12840

SAMPLING			
SAMPLE DEPTH 1	745		
SAMPLE DEPTH 2	875		
REPEAT (Y/N)	N		
BLANK (Y/N)	N		
SAMPLE 1	12840 - 745A		
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-3.33		
LINE UP ERROR	-3.25	Δ 0.08	2:13 - 2:20pm
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12840 - 745A		2:20pm
SODIUM BOTTLE COLLECTED (Y/N)	12840 - 745B		
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)	2.4°C		
	- sample clear		
YSI SPECIFIC CONDUCTIVITY	358.2	log (380.54)	
YSI CONDUCTIVITY	347		
YSI TEMPERATURE	23.4		
YSI pH	7.81		
SAMPLE 2	- sample clear		
PRE-RUN SAMPLER RINSE (Y/N)	Y		
SAMPLER DOWN DEPTH REF	-3.33		
LINE UP ERROR	-3.2	Δ 0.13	3:14 - 3:20
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12840 - 875A		3:20
SODIUM BOTTLE COLLECTED (Y/N)	12840 - 875B		
LAB SAMPLES PRESERVED (Y/N)	Y		
ICE BATH TEMPERATURE (DEG C)	2.4°C		
YSI SPECIFIC CONDUCTIVITY	492.7	log (542.93)	
YSI CONDUCTIVITY	473.9		
YSI TEMPERATURE	23		
YSI pH	7.74		

12840

NOTES:

Okaloosa Co. WFP Lower Floridan Destin

955
1070

WELL ID

ALIAS	NWF 7174 DUU Lower Floridan
GEOPHYSICAL TEST DATE	2-28-19
SAMPLE COLLECTION DATE	2-28-19
CASING STICK-UP HEIGHT (FT)	24" above pad - 2'
CASING DIAMETER (IN)	8
CASING MATERIAL	PVC
CASING DEPTH	920
TOTAL DEPTH	1083 (1079.3) [1086.5]
DEPTH TO WATER	30.70 @ 8:53 AM / 70.59 @ 5:02 PM
REFERENCE	TOC
LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	
ERROR wrt STANDARD (138.2)	
RE-CALIBRATION REQUIRED (Y/N)	
TCDS 447.1	
TCDS 2764	
TCDS 12880	
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF	-2
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	+5.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	3.4-5.35 = -1.95 Δ0.05
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	-2 42.8-2-9.48=31.32
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	40.75 - 9.48 = 71.27 Δ0.05
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	
DUIN DOWN DEPTH REF	-2
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	+7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	5.5-7.45 = -1.95 Δ0.05
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	1086.5

7/74

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	2-28-19 1:05pm	
ANALYST NAME	ROBERT BAKER CST	
LOW STANDARD USED	~~447.1~~ 2764 1:05 pm	Hanna value
ICV SPEC COND	2759	
ICV TEMP	—	
ICV pH	3.97 (4) 1:35 pm	
RPD ICV SPEC COND	0.18 %	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.03	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	2-28-19	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	12880	
FINAL CCV SPEC COND	11927 11873	
FINAL CCV TEMP	—	
FINAL CCV pH	9.95	
RPD FINAL CCV SPEC COND	7.4 % 7.8 %	FLAG
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	—	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.05	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 2764 µS FSI# 76218 2/28/19 1:08 pm

pH 4-7-10 2/28/19

1.42

7174

SAMPLING	
SAMPLE DEPTH 1	955
SAMPLE DEPTH 2	1070
REPEAT (Y/N)	—
BLANK (Y/N)	—
SAMPLE 1	
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	-Z
LINE UP ERROR	-2.1 Δ0.1 3:14 - 2:20 PM
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	7174-955A
SODIUM BOTTLE COLLECTED (Y/N)	7174-955B
LAB SAMPLES PRESERVED (Y/N)	Y
ICE BATH TEMPERATURE (DEG C)	2.4°c
	- sample clear log
YSI SPECIFIC CONDUCTIVITY	3640 (382359)
YSI CONDUCTIVITY	3483
YSI TEMPERATURE	22.7
YSI pH	7.97
SAMPLE 2	- sample clear [illegible]
PRE-RUN SAMPLER RINSE (Y/N)	Y
SAMPLER DOWN DEPTH REF	-Z
LINE UP ERROR	-2.05 Δ0.05 1070
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	7174-[illegible]A
SODIUM BOTTLE COLLECTED (Y/N)	7174-[illegible]B
LAB SAMPLES PRESERVED (Y/N)	Y 1020
ICE BATH TEMPERATURE (DEG C)	2.4°c
	log
YSI SPECIFIC CONDUCTIVITY	11575 (12458)
YSI CONDUCTIVITY	11065
YSI TEMPERATURE	22.7
YSI pH	@ 7.62

2:20PM

3:26 PM

Repeat Run ==

SAMPLE 3 -R

RINSE Y
REF -Z
ERROR -2.1 Δ0.1

CL+TDS BOTTLE 7174-1070RA
Na BOTTLE 7174-1070RB
PHCS Y
ICE T 2.4°c

YSI SPEC 11585
YSI COND 11086
YSI TEMP 22.7
YSI pH 7.57

4:37pm

NOTES:

1060 1060
1134 → 1145

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WELL ID	NWF 12848
ALIAS	B-2
GEOPHYSICAL TEST DATE	3-1-19
SAMPLE COLLECTION DATE	3-1-19
CASING STICK-UP HEIGHT (FT)	41.5 = 3.46
CASING DIAMETER (IN)	6
CASING MATERIAL	PVC
CASING DEPTH	1050
TOTAL DEPTH	1160 (1149.2)
DEPTH TO WATER	49.26' @ 8:42pm / 49.16' @ 4:48 pm
REFERENCE	TOC 3.46' A.G.
LOGGING	
TCDS SERIAL NUMBER	11364
TCDS BENCH TEST 2764 us	
ERROR wrt STANDARD (138.2)	
RE-CALIBRATION REQUIRED (Y/N)	
TCDS 447.1	
TCDS 2764	
TCDS 12880	
REGRESSION FORMULA	
REGRESSION R2	
TCDS DOWN DEPTH REF	-3.46
OPENHOLE LOGGING SPEED	5-7
TCDS UP DEPTH REF CHANGE	+5.35
OPENHOLE LOGGING SPEED	5-7
LINE UP ERROR	2.[illegible] -5.35 = 3.25 Δ 0.21
TOUCH BOTTOM (Y/N)	N
ELOG DOWN DEPTH REF	-3.46 42.7-3.46-9.48= 29.86
OPENHOLE LOGGING SPEED	10-12
ELOG UP DEPTH REF CHANGE	+9.48
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	39.3-9.48= 29.82 Δ 0.04
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	
DUIN DOWN DEPTH REF	-3.46
OPENHOLE LOGGING SPEED	10-12
DUIN UP DEPTH REF CHANGE	+7.45
OPENHOLE LOGGING SPEED	10-12
LINE UP ERROR	4.15-7.45= -3.3 Δ 0.16
TOUCH BOTTOM (Y/N)	Y
BOTTOM DEPTH (FT)	1154.05 SOFT

12848

YSI CALIBRATION - DAILY		
YSI SERIAL NUMBER	19A104561	
PERFORM IC (Y/N)	Y	
DATE AND TIME	3-1-19 1:30 PM	
ANALYST NAME	ROBERT BAKER	
LOW STANDARD USED	1413 / 447.1	Hanna value
ICV SPEC COND	1414 / 470.5	
ICV TEMP	———	
ICV pH	9.97 (10)	
RPD ICV SPEC COND	~~1413 / 470.5~~ 0.07% / 3.7%	
ACCEPTANCE CRITERIA	5 percent of standard	
ICV TEMP ERROR	———	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
ICV Ph ERROR	0.03	
ACCEPTANCE CRITERIA	0.2 standard pH units	
BRACKET CCV		
PERFORM FINAL CCV (Y/N)	Y	
DATE AND TIME	3-1-19	
ANALYST NAME	ROBERT BAKER	
HIGH STANDARD USED	~~12880~~ 2764	
FINAL CCV SPEC COND	2804	
FINAL CCV TEMP	———	
FINAL CCV pH	3.98 (4)	
RPD FINAL CCV SPEC COND	1.4%	
ACCEPTANCE CRITERIA	5 percent of standard	
FINAL CCV TEMP ERROR	———	
ACCEPTANCE CRITERIA	0.5 deg C of NIST traceable value	
FINAL CCV Ph ERROR	0.02	
ACCEPTANCE CRITERIA	0.2 standard pH units	

IC 1413 µS FSI #76115 3/1/19 1:34 PM CST

IC pH 4-7-10 3/1/19 1:44 PM CST

SAMPLE 3 1145
- clear to sl. cloudy -

RINSE Y
REF -3.46
ERROR 3.35 Δ0.11 TIME 4:19

TIME: 4:28 PM

CL + TDS	12848-1145A 12848-1145B
Na	
Preserved	Y
Temp	2.4°C

log
(2230.95)

YSI	SPOC	- 2102
YSI	COND	- 1956
YSI	TEMP	- 264
YSI	pH	- 8.78

12848

SAMPLING		
SAMPLE DEPTH 1	1060	#3 1145
SAMPLE DEPTH 2	1125	
REPEAT (Y/N)	N	
BLANK (Y/N)	Y	
SAMPLE 1 1060	clear	
PRE-RUN SAMPLER RINSE (Y/N)	Y	
SAMPLER DOWN DEPTH REF	-3.46	
LINE UP ERROR	-3.4 Δ0.06	1:57PM - 2:06PM
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12848 - 1060A	TIME: 2:05PM
SODIUM BOTTLE COLLECTED (Y/N)	12848 - 1060B	
LAB SAMPLES PRESERVED (Y/N)	Y	
ICE BATH TEMPERATURE (DEG C)	2.7°C	
		log
YSI SPECIFIC CONDUCTIVITY	638	(1605.54)
YSI CONDUCTIVITY	619	
YSI TEMPERATURE	23.4	
YSI pH	8.96	
SAMPLE 2 1125	clear	
PRE-RUN SAMPLER RINSE (Y/N)	Y	
SAMPLER DOWN DEPTH REF	~3.46	
LINE UP ERROR	-3.4	Δ0.06 3:11 - 3:18
CHLORIDE-TDS BOTTLE COLLECTED (Y/N)	12848 - 1125A	TIME: 3:18PM
SODIUM BOTTLE COLLECTED (Y/N)	12848 - 1125B	
LAB SAMPLES PRESERVED (Y/N)	Y	
ICE BATH TEMPERATURE (DEG C)	2.4°C	
YSI SPECIFIC CONDUCTIVITY	1668.0	(1525.48)
YSI CONDUCTIVITY	1573.0	
YSI TEMPERATURE	22.0	
YSI pH	8.76	

SAMPLE #4 BLANK
RINSE Y
REF -3.46
ERROR

CL + TDS 12848 - ØC
Na 12848 - ØD
Preserved Y
Temp 2.4°C

TIME: 4:37PM

YSI SPDC 2.0
YSI COND 1.9
YSI TEMP 22.5
YSI pH 7.75

NOTES:

***** Calibrate: pH

Date 03/01/19 MM/DD/YY
Time 02:42:14PM 12-hour
User ID: RMB

Buffer Value 4.004984 pH
Sensor Value: 171.300003 pH mV
Temperature 24.550013 °C

Buffer Value 7.006316 pH
Sensor Value: -7.500000 pH mV
Temperature 24.249994 °C

Buffer Value 10.006441 pH
Sensor Value: -173.800003 pH mV
Temperature 24.450006 °C

Slope 57.624247 mV/pH
Slope 97.469970 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 03/01/19 MM/DD/YY
Time 02:34:14PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 1413.000000 SPC-uS/cm
Sensor Value: 1364.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 24.100000 °C
Cal Cell Constant: 4.897640
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/28/19 MM/DD/YY
Time 02:35:36PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -173.699997 pH mV
Temperature 23.350000 °C

Buffer Value 7.000000 pH

Sensor Value: -7.100000 pH mV
Temperature 22.749994 °C

Buffer Value 4.003531 pH
Sensor Value: 170.699997 pH mV
Temperature 22.850000 °C

Slope 57.823400 mV/pH
Slope 97.806834 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/28/19 MM/DD/YY
Time 02:04:55PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 2764.000000 SPC-uS/cm
Sensor Value: 2721.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 23.100000 °C
Cal Cell Constant: 4.727801
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/27/19 MM/DD/YY
Time 02:45:01PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -172.800003 pH mV
Temperature 23.249994 °C

Buffer Value 7.000000 pH
Sensor Value: -7.900000 pH mV
Temperature 23.450006 °C

Buffer Value 4.004303 pH
Sensor Value: 170.699997 pH mV
Temperature 23.749994 °C

Slope 57.611246 mV/pH
Slope 97.447980 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/27/19 MM/DD/YY
Time 02:31:02PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 447.100006 SPC-uS/cm
Sensor Value: 490.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 22.700001 °C
Cal Cell Constant: 4.654252
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/26/19 MM/DD/YY
Time 01:47:47PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -167.800003 pH mV
Temperature 23.749994 °C

Buffer Value 7.000000 pH
Sensor Value: -4.900000 pH mV
Temperature 23.149988 °C

Buffer Value 4.003753 pH
Sensor Value: 172.500000 pH mV
Temperature 23.149988 °C

Slope 57.084567 mV/pH
Slope 96.557117 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/26/19 MM/DD/YY
Time 01:36:40PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 447.100006 SPC-uS/cm
Sensor Value: 437.399994 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 23.299999 °C
Cal Cell Constant: 5.100835
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/25/19 MM/DD/YY
Time 02:53:50PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -165.500000 pH mV
Temperature 18.550013 °C

Buffer Value 7.000000 pH
Sensor Value: -11.200000 pH mV
Temperature 17.450006 °C

Buffer Value 4.001053 pH
Sensor Value: 170.100006 pH mV
Temperature 17.950006 °C

Slope 57.364358 mV/pH
Slope 97.030376 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/25/19 MM/DD/YY
Time 02:38:16PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 1413.000000 SPC-uS/cm
Sensor Value: 1398.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 18.100000 °C
Cal Cell Constant: 4.990169
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/22/19 MM/DD/YY
Time 02:20:35PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -168.000000 pH mV
Temperature 26.649988 °C

Buffer Value 7.000166 pH
Sensor Value: -8.600000 pH mV
Temperature 26.149988 °C

Buffer Value 4.000000 pH
Sensor Value: 174.500000 pH mV
Temperature 26.550013 °C

Slope 56.869404 mV/pH
Slope 96.193174 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/22/19 MM/DD/YY
Time 02:09:54PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 1413.000000 SPC-uS/cm
Sensor Value: 1475.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 27.000000 °C
Cal Cell Constant: 4.937194
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/21/19 MM/DD/YY
Time 03:49:48PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -168.399994 pH mV
Temperature 25.950006 °C

Buffer Value 7.001101 pH
Sensor Value: -5.700000 pH mV
Temperature 25.950006 °C

Buffer Value 4.000000 pH
Sensor Value: 173.899994 pH mV
Temperature 25.450006 °C

Slope 56.963052 mV/pH
Slope 96.351576 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/21/19 MM/DD/YY
Time 03:42:57PM 12-hour

User ID: RMB

Method Sp. Conductance
Cal Value: 1413.000000 SPC-uS/cm
Sensor Value: 1410.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 25.700001 °C
Cal Cell Constant: 5.153832
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/20/19 MM/DD/YY
Time 03:21:20PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -167.600006 pH mV
Temperature 20.350000 °C

Buffer Value 7.000000 pH
Sensor Value: -3.800000 pH mV
Temperature 20.249994 °C

Buffer Value 4.002048 pH
Sensor Value: 173.100006 pH mV
Temperature 20.450006 °C

Slope 57.721397 mV/pH
Slope 97.634298 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/20/19 MM/DD/YY
Time 03:14:26PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 447.100006 SPC-uS/cm
Sensor Value: 441.899994 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 20.000000 °C
Cal Cell Constant: 5.142890
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/19/19 MM/DD/YY
Time 12:41:03PM 12-hour
User ID: RMB

Buffer Value 10.088099 pH
Sensor Value: -167.300003 pH mV
Temperature 17.649988 °C

Buffer Value 7.000000 pH
Sensor Value: -3.500000 pH mV
Temperature 17.450006 °C

Buffer Value 4.000946 pH
Sensor Value: 169.399994 pH mV
Temperature 17.450006 °C

Slope 56.751957 mV/pH
Slope 95.994515 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/19/19 MM/DD/YY
Time 12:24:47PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 447.100006 SPC-uS/cm
Sensor Value: 437.299988 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 17.299999 °C
Cal Cell Constant: 5.083076
Calibrate Status Calibrated

***** Calibrate: pH

Date 02/18/19 MM/DD/YY
Time 01:47:42PM 12-hour
User ID: RMB

Buffer Value 10.000000 pH
Sensor Value: -167.699997 pH mV
Temperature 20.450006 °C

Buffer Value 7.000000 pH
Sensor Value: -4.000000 pH mV
Temperature 20.550013 °C

Buffer Value 4.002100 pH

Sensor Value: 173.600006 pH mV
Temperature 20.450006 °C

Slope 57.817312 mV/pH
Slope 97.796536 % of Ideal pH Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 02/18/19 MM/DD/YY
Time 01:29:18PM 12-hour
User ID: RMB

Method Sp. Conductance
Cal Value: 1413.000000 SPC-uS/cm
Sensor Value: 1328.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 20.900000 °C
Cal Cell Constant: 4.971658
Calibrate Status Calibrated