



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 11H

Sub-Division DELAWARE BASIN		Region LEA COUNTY CORE		Field Name RATTLESNAKE DBBU		County LEA		State/Province NM					
Surface Legal Location 20-28S-34E		API/WMI 3002546018		Latitude (°) 32° 1' 46.452" N		Longitude (°) 103° 29' 35.659" W		Orig KB Elevation (ft) 3,375.10		Ground Elev MSL (ft) 3,345.10		KB - GL (ft) 30.00	
Wellbore Name OH		Parent Wellbore		SAP Well ID		Vertical Section Direction (°) 359.50							
Kick Offs & Key Depths													
Date 6/6/2019		Type CURVE		Top Depth (ftKB) 12,409.4									
Date 7/12/2019		Type CURVE		Top Depth (ftKB) 12,420.0									
Actual Deviation Survey COMPOSITE OH, Proposed? No				Definitive? No		Proposed? No		Proposed Deviation Survey COMPOSITE WELL PLAN - OH, Proposed? Yes					
Deviation Survey													
Date 6/3/2019		Description COMPOSITE OH											
MD Tie In (ftKB) 0.00		TVD Tie In (ftKB) 0.00		Inclination Tie In (°) 0.00		Azimuth Tie In (°) 0.00		NS Tie In (ft) 0.00		EW Tie In (ft) 0.00			
Survey Data													
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Survey Tool	Survey Company			
6/3/2019	180.00	0.10	187.70	180.00	-0.16	-0.16	-0.02	0.06	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	275.00	0.10	253.58	275.00	-0.26	-0.26	-0.11	0.11	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	365.00	0.30	265.10	365.00	-0.30	-0.30	-0.42	0.23	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	456.00	0.30	297.10	456.00	-0.21	-0.22	-0.87	0.18	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	547.00	0.50	305.70	547.00	0.14	0.12	-1.41	0.23	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	637.00	0.50	308.70	636.99	0.62	0.60	-2.03	0.03	MWD	TOTAL DIRECTIONAL SERV...			
6/3/2019	760.00	0.70	313.50	759.99	1.48	1.45	-2.99	0.17	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	866.00	0.48	290.61	865.98	2.09	2.05	-3.88	0.30	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	956.00	0.57	143.39	955.98	1.86	1.83	-3.97	1.12	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,047.00	1.27	127.13	1,046.97	0.88	0.86	-2.89	0.81	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,138.00	1.85	121.50	1,137.93	-0.51	-0.52	-0.84	0.66	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,230.00	3.12	121.33	1,229.84	-2.62	-2.60	2.57	1.38	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,324.00	4.22	120.01	1,323.65	-5.73	-5.66	7.75	1.17	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,418.00	4.75	120.54	1,417.36	-9.49	-9.37	14.10	0.57	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,512.00	5.98	117.99	1,510.95	-13.83	-13.64	21.77	1.33	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,607.00	7.21	117.20	1,605.32	-18.96	-18.69	31.44	1.30	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,701.00	8.13	117.64	1,698.48	-24.84	-24.47	42.58	0.98	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,795.00	8.13	119.04	1,791.53	-31.25	-30.78	54.28	0.21	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,889.00	8.00	119.92	1,884.60	-37.84	-37.27	65.76	0.19	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	1,983.00	7.78	119.04	1,977.71	-44.29	-43.62	76.99	0.27	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,078.00	7.65	119.13	2,071.85	-50.59	-49.82	88.14	0.14	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,172.00	7.69	118.69	2,165.01	-56.75	-55.88	99.12	0.08	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,266.00	7.38	118.52	2,258.20	-62.74	-61.79	109.94	0.33	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,360.00	7.38	119.22	2,351.42	-68.66	-67.62	120.51	0.10	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,455.00	7.96	121.24	2,445.57	-75.15	-74.01	131.48	0.67	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,549.00	7.96	121.33	2,538.66	-82.01	-80.77	142.59	0.01	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,643.00	7.91	120.89	2,631.76	-88.81	-87.47	153.70	0.08	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,737.00	7.82	121.68	2,724.88	-95.58	-94.15	164.69	0.15	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,832.00	7.60	120.89	2,819.02	-102.30	-100.77	175.58	0.26	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	2,926.00	7.43	120.45	2,912.21	-108.66	-107.04	186.16	0.19	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	3,020.00	7.43	118.87	3,005.42	-114.77	-113.05	196.72	0.22	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	3,114.00	7.38	117.81	3,098.64	-120.61	-118.81	207.38	0.15	MWD	TOTAL DIRECTIONAL SERV...			
7/2/2019	3,209.00	7.78	119.83	3,192.81	-126.75	-124.85	218.35	0.51	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,303.00	8.13	117.20	3,285.91	-133.05	-131.05	229.79	0.54	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,397.00	8.13	116.58	3,378.96	-139.17	-137.07	241.64	0.09	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,491.00	8.04	115.88	3,472.03	-145.12	-142.91	253.50	0.14	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,585.00	7.69	120.36	3,565.14	-151.28	-148.96	264.84	0.75	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,680.00	7.74	118.08	3,659.28	-157.58	-155.18	275.97	0.33	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,774.00	7.43	116.58	3,752.46	-163.38	-160.88	286.99	0.39	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,868.00	7.34	118.43	3,845.68	-169.05	-166.46	297.71	0.27	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	3,962.00	7.34	115.44	3,938.91	-174.58	-171.90	308.41	0.41	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,056.00	7.34	122.91	4,032.14	-180.51	-177.74	318.87	1.01	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,151.00	6.59	120.45	4,126.44	-186.66	-183.80	328.67	0.85	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,245.00	6.81	118.87	4,219.80	-192.17	-189.22	338.20	0.31	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,339.00	7.16	124.76	4,313.10	-198.28	-195.25	347.89	0.85	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,434.00	6.55	125.90	4,407.42	-204.92	-201.81	357.14	0.66	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,528.00	5.93	127.57	4,500.87	-211.09	-207.91	365.34	0.69	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,622.00	6.59	121.33	4,594.31	-216.93	-213.68	373.79	1.01	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,716.00	7.12	117.20	4,687.64	-222.48	-219.14	383.58	0.77	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,810.00	5.67	123.61	4,781.05	-227.80	-224.38	392.63	1.72	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,905.00	5.19	122.03	4,875.62	-232.74	-229.25	400.18	0.53	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	4,999.00	4.62	130.82	4,969.28	-237.52	-233.98	408.65	1.00	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,093.00	4.53	134.51	5,062.98	-242.65	-239.06	412.18	0.33	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,187.00	2.99	149.10	5,156.78	-247.39	-243.77	416.07	1.92	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,281.00	1.54	157.98	5,250.70	-250.68	-247.04	417.80	1.58	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,375.00	1.45	147.08	5,344.67	-252.86	-249.21	418.92	0.32	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,470.00	0.66	53.39	5,439.66	-253.55	-249.89	420.01	1.72	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,564.00	1.14	28.69	5,533.65	-252.41	-248.75	420.90	0.65	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,658.00	0.97	317.59	5,627.63	-251.01	-247.34	420.81	1.31	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,752.00	0.97	308.10	5,721.62	-249.92	-246.26	419.65	0.17	MWD	TOTAL DIRECTIONAL SERV...			
7/3/2019	5,846.00	1.01	334.38	5,815.61	-248.67	-245.03	418.66	0.48	MWD	TOTAL DIRECTIONAL SERV...			

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Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 11H

Sub-Division		Region	Field Name				County		State/Province	
DELAWARE BASIN		LEA COUNTY CORE	RATTLESLAKE DBBU				LEA		NM	
Surface Legal Location		APU/UMI	Latitude (°)	Longitude (°)		Orig KB Elevation (ft)		Ground Elev MSL (ft)		KB - GL (ft)
20-26S-34E		3002546018	32° 1' 46.452" N	103° 29' 35.659" W		3,375.10		3,345.10		30.00
Survey Data										
Date	MD (RKB)	Ind (°)	Azm (°)	TVD (RKB)	VS (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/3/2019	5,940.00	0.66	16.12	5 909.60	-247.40	-243.76	418.45	0.72	MWD	TOTAL DIRECTIONAL SERV...
7/3/2019	6,034.00	0.66	38.36	6,003.59	-246.46	-242.81	418.94	0.27	MWD	TOTAL DIRECTIONAL SERV...
7/3/2019	6,129.00	0.62	62.62	6 098.59	-245.80	-242.15	419.74	0.29	MWD	TOTAL DIRECTIONAL SERV...
7/3/2019	6,222.00	0.92	36.34	6,191.58	-244.98	-241.32	420.63	0.49	MWD	TOTAL DIRECTIONAL SERV...
7/3/2019	6,317.00	0.70	28.96	6,286.57	-243.86	-240.19	421.36	0.26	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,411.00	0.04	199.46	6,380.57	-243.39	-239.72	421.63	0.79	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,505.00	0.31	263.71	6,474.56	-243.45	-239.78	421.36	0.31	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,599.00	0.35	228.03	6,568.56	-243.67	-240.00	420.90	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,694.00	0.22	157.98	6,663.56	-244.03	-240.36	420.75	0.36	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,788.00	0.40	188.83	6,757.56	-244.52	-240.86	420.77	0.25	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,882.00	0.57	185.66	6,851.56	-245.31	-241.65	420.67	0.18	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	6,976.00	0.57	200.43	6,945.55	-246.21	-242.55	420.46	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,070.00	0.48	172.74	7 039.55	-247.04	-243.38	420.35	0.28	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,164.00	0.88	190.76	7,133.54	-248.14	-244.48	420.26	0.48	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,259.00	0.75	185.75	7 228.53	-249.47	-245.81	420.06	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,353.00	1.01	179.07	7,322.52	-250.91	-247.25	420.02	0.30	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,447.00	0.92	173.71	7,416.51	-252.49	-248.83	420.11	0.14	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,541.00	1.19	175.38	7,510.49	-254.21	-250.56	420.27	0.29	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,636.00	1.14	163.87	7,605.47	-256.11	-252.45	420.61	0.25	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,730.00	1.05	179.42	7,699.46	-257.87	-254.21	420.88	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,824.00	0.92	174.77	7,793.44	-259.48	-255.82	420.96	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	7,918.00	0.79	227.15	7,887.43	-260.67	-257.01	420.55	0.81	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,012.00	0.84	229.17	7,981.42	-261.55	-257.90	419.56	0.06	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,106.00	1.14	216.95	8 075.41	-262.74	-259.10	418.47	0.39	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,201.00	1.32	226.80	8,170.39	-264.23	-260.60	417.11	0.29	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,295.00	1.23	221.52	8,264.36	-265.72	-262.10	415.65	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,389.00	1.49	215.46	8,358.34	-267.46	-263.85	414.27	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,483.00	1.14	219.33	8,452.31	-269.16	-265.57	412.97	0.38	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,578.00	1.23	213.97	8,547.29	-270.73	-267.15	411.80	0.15	MWD	TOTAL DIRECTIONAL SERV...
7/4/2019	8,671.00	0.97	219.06	8,640.28	-272.16	-268.59	410.75	0.30	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	8,765.00	0.97	214.14	8,734.26	-273.43	-269.86	409.80	0.09	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	8,860.00	1.19	215.37	8,829.24	-274.89	-271.33	408.78	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	8,954.00	1.01	215.55	8,923.23	-276.35	-272.80	407.73	0.19	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,048.00	0.92	229.70	9,017.21	-277.50	-273.96	406.67	0.27	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,142.00	0.97	232.33	9,111.20	-278.47	-274.94	405.47	0.07	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,236.00	1.10	226.27	9,205.19	-279.57	-276.05	404.19	0.18	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,330.00	1.05	237.61	9,299.17	-280.64	-277.13	402.81	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,425.00	1.19	233.39	9,394.15	-281.68	-278.19	401.28	0.17	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,519.00	1.01	240.60	9,488.13	-282.65	-279.18	399.78	0.24	MWD	TOTAL DIRECTIONAL SERV...
7/5/2019	9,613.00	1.27	250.97	9,582.12	-283.39	-279.92	398.07	0.35	MWD	TOTAL DIRECTIONAL SERV...
7/6/2019	9,707.00	1.27	245.25	9,676.09	-284.15	-280.70	396.14	0.13	MWD	TOTAL DIRECTIONAL SERV...
7/6/2019	9,802.00	1.14	252.81	9,771.07	-284.85	-281.42	394.28	0.22	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	9,896.00	0.66	299.57	9,865.06	-284.85	-281.43	392.92	0.89	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	9,991.00	0.66	313.55	9,960.05	-284.19	-280.78	392.04	0.17	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,084.00	1.23	318.20	10,053.04	-283.07	-279.67	390.99	0.62	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,179.00	2.02	346.50	10,148.00	-280.67	-277.28	389.92	1.16	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,273.00	2.11	356.52	10,241.94	-277.33	-273.94	389.43	0.40	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,367.00	1.83	18.06	10,335.89	-274.33	-270.94	389.74	0.90	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,461.00	1.41	27.37	10,429.86	-272.04	-268.65	390.68	0.35	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,555.00	1.23	40.03	10,523.84	-270.26	-266.85	391.86	0.36	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,649.00	0.79	30.45	10,617.82	-268.93	-265.51	392.84	0.50	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,743.00	0.79	40.56	10,711.81	-267.89	-264.46	393.59	0.15	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,837.00	0.79	9.44	10,805.80	-266.76	-263.33	394.12	0.45	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	10,932.00	0.40	327.08	10,900.80	-265.84	-262.41	394.05	0.59	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,026.00	0.75	265.21	10,984.80	-265.61	-262.18	393.25	0.71	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,120.00	0.70	262.83	11,088.79	-265.72	-262.31	392.07	0.06	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,214.00	0.48	236.03	11,182.78	-266.00	-262.60	391.18	0.37	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,309.00	0.62	266.08	11,277.78	-266.25	-262.86	390.33	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,403.00	1.41	272.15	11,371.76	-266.23	-262.85	388.67	0.85	MWD	TOTAL DIRECTIONAL SERV...
7/7/2019	11,497.00	2.20	272.32	11,465.72	-266.09	-262.73	385.71	0.84	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	11,592.00	2.15	268.55	11,560.65	-266.03	-262.70	382.11	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	11,686.00	1.80	264.50	11,654.59	-266.18	-262.89	378.88	0.40	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	11,780.00	1.45	264.50	11,748.55	-266.42	-263.14	376.22	0.37	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	11,873.00	1.67	268.11	11,841.52	-266.55	-263.30	373.70	0.26	MWD	TOTAL DIRECTIONAL SERV...
7/8/2019	11,967.00	1.71	274.35	11,935.48	-266.47	-263.24	370.93	0.20	MWD	TOTAL DIRECTIONAL SERV...
7/9/2019	12,062.00	1.71	296.06	12,030.44	-265.71	-262.51	368.24	0.68	MWD	TOTAL DIRECTIONAL SERV...
7/9/2019	12,156.00	2.24	309.85	12,124.38	-263.90	-260.72	365.57	0.75	MWD	TOTAL DIRECTIONAL SERV...
7/9/2019	12,235.00	2.81	317.06	12,203.30	-261.47	-258.31	363.07	0.82	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	12,311.00	3.21	321.10	12,279.20	-258.43	-255.29	360.48	0.60	MWD	TOTAL DIRECTIONAL SERV...
7/11/2019	12,342.00	3.25	314.78	12,310.15	-257.12	-254.00	359.29	1.16	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	12,359.00	2.81	316.71	12,327.13	-256.47	-253.35	358.67	2.66	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	12,436.00	2.46	351.43	12,404.05	-253.45	-250.34	357.13	2.09	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	12,483.00	2.81	35.37	12,451.00	-251.52	-248.41	357.64	4.25	MWD	TOTAL DIRECTIONAL SERV...
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Report Printed: 12/9/2019										



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 11H

Sub-Division	Region	Field Name	County	State/Province						
DELAWARE BASIN	LEA COUNTY CORE	RATTLESNAKE DBBU	LEA	NM						
Surface Legal Location	APR/UMI	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)				
20-26S-34E	3002546018	32° 1' 46.452" N	103° 29' 35.659" W	3,375.10	3,345.10	30.00				
Survey Data										
Date	MD (ft/KB)	Incl (°)	Azm (°)	TVD (ft/KB)	VS (ft)	N/S (ft)	EW (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/12/2019	12,531.00	7.82	11.29	12,498.79	-247.37	-244.24	358.96	11.20	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	12,578.00	10.51	1.01	12,545.19	-239.95	-236.82	359.66	6.68	MWD	TOTAL DIRECTIONAL SERV...
7/12/2019	12,625.00	15.96	7.69	12,590.92	-229.26	-226.12	360.61	12.02	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	12,666.00	19.43	2.94	12,629.98	-216.87	-213.72	361.71	9.16	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	12,719.00	24.97	7.33	12,679.04	-196.97	-193.80	363.59	10.90	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	12,766.00	29.27	10.41	12,720.86	-175.85	-172.65	366.93	9.62	MWD	TOTAL DIRECTIONAL SERV...
7/13/2019	12,813.00	34.81	7.16	12,760.69	-151.25	-148.02	370.69	12.34	MWD	TOTAL DIRECTIONAL SERV...
7/14/2019	12,861.00	41.71	6.46	12,798.36	-121.79	-118.52	374.19	14.40	MWD	TOTAL DIRECTIONAL SERV...
7/15/2019	12,907.00	52.44	4.08	12,829.64	-88.32	-85.03	377.22	23.63	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	12,962.00	64.04	3.29	12,858.54	-41.76	-38.44	380.20	21.13	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	13,001.00	69.49	1.80	12,873.92	-5.99	-2.66	381.78	14.41	MWD	TOTAL DIRECTIONAL SERV...
7/16/2019	13,048.00	78.11	359.34	12,887.02	39.09	42.43	382.21	19.02	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,102.00	85.54	357.14	12,894.70	92.49	95.81	380.56	14.34	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,134.00	86.55	357.40	12,896.91	124.39	127.70	379.04	3.26	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,181.00	88.84	357.32	12,898.80	171.32	174.61	376.88	4.88	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,228.00	90.02	357.75	12,899.26	218.28	221.56	374.86	2.67	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,323.00	90.59	357.93	12,898.76	313.24	316.49	371.28	0.63	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,417.00	90.68	357.32	12,897.72	407.19	410.41	367.38	0.66	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,511.00	91.03	357.93	12,896.31	501.12	504.32	363.49	0.75	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,605.00	90.59	357.32	12,894.98	595.06	598.23	359.59	0.80	MWD	TOTAL DIRECTIONAL SERV...
7/17/2019	13,699.00	91.08	357.14	12,893.61	688.98	692.11	355.05	0.56	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	13,794.00	91.52	357.23	12,891.46	783.88	786.97	350.38	0.47	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	13,888.00	90.55	358.55	12,889.76	877.82	880.88	346.92	1.74	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	13,982.00	91.21	359.42	12,888.32	971.81	974.86	345.26	1.16	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,076.00	90.81	0.57	12,886.66	1,065.79	1,068.84	345.25	1.30	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,170.00	90.68	0.65	12,885.44	1,159.76	1,162.83	346.25	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,264.00	89.54	358.99	12,885.26	1,253.75	1,256.82	345.96	2.14	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,359.00	90.59	359.60	12,885.15	1,348.75	1,351.81	344.79	1.28	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,453.00	90.95	359.34	12,883.89	1,442.74	1,445.80	343.92	0.47	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,547.00	89.49	0.92	12,883.53	1,536.73	1,539.79	344.13	2.29	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,641.00	88.57	359.78	12,885.12	1,630.70	1,633.78	344.71	1.56	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,736.00	90.02	359.78	12,886.29	1,725.69	1,728.76	344.34	1.53	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,830.00	91.69	2.85	12,884.88	1,819.62	1,822.71	346.50	3.72	MWD	TOTAL DIRECTIONAL SERV...
7/18/2019	14,924.00	91.87	2.15	12,881.96	1,913.45	1,916.58	350.60	0.77	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,018.00	89.49	359.34	12,880.85	2,007.40	2,010.55	351.82	3.92	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,113.00	91.08	355.29	12,880.37	2,102.31	2,105.42	347.37	4.58	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,207.00	88.62	353.89	12,880.62	2,195.95	2,198.99	338.51	3.01	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,301.00	90.24	0.83	12,881.56	2,289.82	2,292.83	334.18	7.58	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,395.00	89.80	1.62	12,881.52	2,383.78	2,386.80	336.19	0.96	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,490.00	88.92	357.05	12,882.59	2,478.75	2,481.77	335.09	4.90	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,584.00	90.33	358.28	12,883.20	2,572.69	2,575.68	331.26	1.99	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,678.00	88.31	359.42	12,884.32	2,666.67	2,669.65	329.37	2.47	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,772.00	89.98	1.62	12,885.72	2,760.64	2,763.63	330.23	2.94	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,867.00	90.11	1.45	12,885.64	2,855.58	2,858.59	332.77	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	15,961.00	88.79	3.03	12,886.55	2,949.46	2,952.51	336.44	2.18	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	16,055.00	88.49	4.52	12,887.96	3,043.19	3,046.29	342.63	1.75	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	16,149.00	89.93	1.45	12,888.43	3,137.00	3,140.15	347.53	3.30	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	16,243.00	89.45	355.12	12,888.94	3,230.93	3,234.06	344.71	6.75	MWD	TOTAL DIRECTIONAL SERV...
7/19/2019	16,337.00	90.55	355.29	12,888.94	3,324.66	3,327.73	336.86	1.18	MWD	TOTAL DIRECTIONAL SERV...
7/20/2019	16,431.00	89.27	357.58	12,889.09	3,418.52	3,421.64	331.01	2.79	MWD	TOTAL DIRECTIONAL SERV...
7/20/2019	16,525.00	90.86	358.28	12,888.98	3,512.48	3,515.48	327.62	1.85	MWD	TOTAL DIRECTIONAL SERV...
7/20/2019	16,619.00	90.33	356.17	12,888.01	3,606.40	3,609.36	323.07	2.31	MWD	TOTAL DIRECTIONAL SERV...
7/20/2019	16,714.00	89.98	352.22	12,887.75	3,700.97	3,703.85	313.46	4.17	MWD	TOTAL DIRECTIONAL SERV...
7/20/2019	16,808.00	92.92	356.44	12,885.37	3,794.53	3,797.33	304.18	5.47	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	16,855.00	89.01	355.47	12,884.58	3,841.42	3,844.19	300.86	8.57	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	16,901.00	89.36	356.88	12,885.23	3,887.34	3,890.09	297.79	3.16	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	16,948.00	90.15	1.62	12,885.43	3,934.32	3,937.07	297.18	10.22	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	16,995.00	90.77	4.35	12,885.06	3,981.23	3,984.00	299.63	5.96	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,042.00	90.33	3.64	12,884.61	4,028.08	4,030.88	302.90	1.78	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,089.00	90.42	2.94	12,884.30	4,074.98	4,077.80	305.60	1.50	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,136.00	91.34	5.66	12,883.58	4,121.80	4,124.66	309.12	6.11	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,183.00	92.35	7.95	12,882.06	4,168.40	4,171.30	314.69	5.32	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,231.00	90.95	7.07	12,880.68	4,215.91	4,218.87	320.96	3.44	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,278.00	90.73	6.72	12,879.99	4,262.51	4,265.52	326.60	0.88	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,325.00	91.56	6.72	12,879.05	4,309.13	4,312.19	332.10	1.77	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,372.00	91.60	6.90	12,877.76	4,355.73	4,358.84	337.67	0.39	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,466.00	91.60	6.37	12,875.13	4,448.98	4,452.17	348.53	0.56	MWD	TOTAL DIRECTIONAL SERV...
7/22/2019	17,561.00	89.41	3.91	12,874.30	4,543.49	4,546.77	357.03	3.47	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	17,655.00	89.76	4.52	12,874.98	4,637.16	4,640.52	363.94	0.75	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	17,749.00	89.89	4.79	12,875.26	4,730.78	4,734.21	371.57	0.32	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	17,843.00	89.01	2.50	12,876.17	4,824.53	4,828.01	377.55	2.61	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	17,937.00	88.92	2.85	12,877.86	4,918.37	4,921.89	381.93	0.38	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,032.00	88.62	0.39	12,879.90	5,013.27	5,016.82	384.62	2.61	MWD	TOTAL DIRECTIONAL SERV...

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Report Printed: 12/9/2019



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 11H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU	County LEA	State/Province NM
Surface Legal Location 20-26S-34E	API/UMI 3002546018	Latitude (°) 32° 1' 46.452" N	Longitude (°) 103° 29' 35.659" W	Orig KB Elevation (ft) 3,375.10
			Ground Elev MSL (ft) 3,345.10	KB - GL (ft) 30.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	EW (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/23/2019	18,126.00	89.85	1.36	12,881.16	5,107.23	5,110.80	386.05	1.67	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,220.00	90.81	0.65	12,880.62	5,201.20	5,204.78	387.70	1.27	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,314.00	91.16	359.25	12,879.00	5,295.18	5,298.76	387.62	1.53	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,408.00	88.84	357.23	12,879.00	5,389.15	5,392.71	384.73	3.27	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,502.00	88.97	359.34	12,880.80	5,483.10	5,486.64	381.92	2.25	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,597.00	89.32	0.48	12,882.21	5,578.09	5,581.63	381.77	1.26	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,691.00	90.46	1.27	12,882.40	5,672.06	5,675.62	383.21	1.48	MWD	TOTAL DIRECTIONAL SERV...
7/23/2019	18,785.00	88.97	4.87	12,882.86	5,765.86	5,769.46	388.24	4.14	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	18,879.00	88.44	4.52	12,884.99	5,859.45	5,863.12	395.93	0.68	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	18,973.00	89.76	359.07	12,886.47	5,953.32	5,957.03	398.88	5.96	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,067.00	89.80	357.05	12,886.83	6,047.29	6,050.97	395.69	2.15	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,161.00	89.19	356.26	12,887.65	6,141.16	6,144.80	390.21	1.06	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,256.00	90.37	357.40	12,888.02	6,236.06	6,239.65	384.96	1.73	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,350.00	90.95	358.46	12,886.94	6,330.01	6,333.59	381.56	1.29	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,444.00	89.10	355.73	12,886.90	6,423.92	6,427.45	376.80	3.51	MWD	TOTAL DIRECTIONAL SERV...
7/24/2019	19,538.00	89.76	0.74	12,887.83	6,517.86	6,521.37	373.90	5.38	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	19,633.00	90.59	358.02	12,887.54	6,612.85	6,616.36	372.88	2.99	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	19,727.00	90.99	357.84	12,886.24	6,706.81	6,710.29	369.48	0.47	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	19,821.00	90.86	0.65	12,884.73	6,800.78	6,804.26	368.24	2.99	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	19,915.00	89.05	352.48	12,884.80	6,894.58	6,898.00	362.62	8.90	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,010.00	89.01	352.48	12,886.41	6,988.85	6,992.17	350.18	0.04	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,104.00	91.74	354.24	12,885.79	7,082.30	7,085.53	339.32	3.46	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,198.00	90.55	350.99	12,883.92	7,175.59	7,178.72	327.24	3.68	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,292.00	90.33	347.03	12,883.19	7,267.99	7,270.97	309.32	4.22	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,387.00	91.25	347.47	12,881.88	7,360.82	7,363.62	288.36	1.07	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,481.00	91.08	343.52	12,879.97	7,451.99	7,454.58	264.82	4.21	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,575.00	91.43	342.11	12,877.91	7,542.01	7,544.36	237.06	1.55	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,631.00	92.75	343.69	12,875.87	7,595.64	7,597.85	220.60	3.68	MWD	TOTAL DIRECTIONAL SERV...
7/25/2019	20,684.00	92.75	343.69	12,873.33	7,646.57	7,648.66	205.74	0.00	BIT	