



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 15H

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 3002546019	Latitude (°) 32° 1' 46.453" N	Longitude (°) 103° 29' 36.356" W	Orig KB Elevation (ft) 3,374.00
				Ground Elev MSL (ft) 3,344.00
				KB - GL (ft) 30.00

Wellbore Name OH	Parent Wellbore	SAP Well ID	Vertical Section Direction (°) 359.50
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Kick Offs & Key Depths			
Date 6/6/2019	Type CURVE	Top Depth (ftKB) 12,463.1	
Date 8/8/2019	Type CURVE	Top Depth (ftKB) 12,349.0	

Actual Deviation Survey COMPOSITE OH, Proposed? No	Definitive? No	Proposed? No	Proposed Deviation Survey COMPOSITE WELL PLAN - OH, Proposed? Yes
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Deviation Survey					
Date 6/1/2019	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)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
6/1/2019	183.00	0.30	124.80	183.00	-0.28	-0.27	0.39	0.16	MWD	TOTAL DIRECTIONAL SERV...
6/1/2019	275.00	0.35	110.96	275.00	-0.52	-0.51	0.85	0.10	MWD	TOTAL DIRECTIONAL SERV...
6/1/2019	365.00	0.31	92.59	365.00	-0.63	-0.62	1.35	0.13	MWD	TOTAL DIRECTIONAL SERV...
6/1/2019	456.00	0.13	54.53	456.00	-0.59	-0.57	1.68	0.24	MWD	TOTAL DIRECTIONAL SERV...
6/1/2019	547.00	0.22	6.02	547.00	-0.35	-0.34	1.79	0.18	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	637.00	0.26	7.33	636.99	0.02	0.04	1.83	0.04	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	727.00	0.35	345.36	726.99	0.49	0.50	1.79	0.16	MWD	TOTAL DIRECTIONAL SERV...
6/1/2019	765.00	0.35	350.28	764.99	0.72	0.73	1.74	0.08	MWD	TOTAL DIRECTIONAL SERV...
7/29/2019	866.00	0.31	9.88	865.99	1.29	1.30	1.73	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/29/2019	956.00	0.84	281.11	955.99	1.66	1.67	1.13	0.99	MWD	TOTAL DIRECTIONAL SERV...
7/29/2019	1,047.00	1.54	277.95	1,046.97	1.98	1.97	-0.74	0.77	MWD	TOTAL DIRECTIONAL SERV...
7/29/2019	1,138.00	2.46	271.97	1,137.91	2.24	2.21	-3.90	1.04	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,230.00	2.77	266.70	1,229.81	2.22	2.15	-8.09	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,324.00	3.52	258.97	1,323.67	1.58	1.46	-13.19	0.91	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,418.00	4.09	260.11	1,417.47	0.50	0.33	-19.33	0.61	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,512.00	5.23	260.99	1,511.15	-0.68	-0.91	-26.86	1.22	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,606.00	6.55	258.44	1,604.65	-2.34	-2.66	-36.35	1.43	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,701.00	7.43	257.21	1,698.95	-4.69	-5.10	-47.65	0.94	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,795.00	8.44	255.89	1,792.05	-7.60	-8.13	-60.26	1.09	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,889.00	8.44	253.69	1,885.03	-11.11	-11.75	-73.57	0.34	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	1,983.00	8.92	259.40	1,977.95	-14.26	-15.03	-87.36	1.05	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,078.00	8.97	260.28	2,071.80	-16.74	-17.63	-101.90	0.15	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,172.00	8.88	259.84	2,164.66	-19.13	-20.15	-116.26	0.12	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,266.00	8.84	260.02	2,257.54	-21.54	-22.68	-130.52	0.05	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,360.00	8.70	260.64	2,350.44	-23.83	-25.09	-144.65	0.18	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,454.00	8.35	260.20	2,443.40	-26.02	-27.41	-158.39	0.38	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,549.00	8.31	259.67	2,537.40	-28.31	-29.81	-171.94	0.09	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,643.00	8.92	263.27	2,630.34	-30.26	-31.88	-185.86	0.87	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,737.00	8.79	263.18	2,723.22	-31.84	-33.59	-200.23	0.14	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,831.00	8.79	263.36	2,816.11	-33.40	-35.27	-214.49	0.03	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	2,926.00	8.48	263.71	2,910.04	-34.88	-36.88	-228.66	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,020.00	8.04	264.68	3,003.06	-36.14	-38.25	-242.10	0.49	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,114.00	8.04	263.10	3,096.14	-37.42	-39.65	-255.17	0.24	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,208.00	8.84	261.78	3,189.12	-39.12	-41.47	-268.84	0.88	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,303.00	8.57	260.20	3,283.03	-41.25	-43.72	-283.04	0.38	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,397.00	8.31	260.20	3,376.01	-43.48	-46.07	-298.64	0.28	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,491.00	8.88	260.55	3,468.95	-45.70	-48.42	-310.49	0.61	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,585.00	9.05	263.36	3,561.80	-47.62	-50.46	-324.99	0.50	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,680.00	8.79	262.92	3,655.65	-49.26	-52.22	-339.62	0.28	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,774.00	8.31	264.41	3,748.61	-50.68	-53.77	-353.50	0.56	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,868.00	7.03	266.52	3,841.77	-51.58	-54.78	-366.01	1.39	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	3,962.00	7.12	261.87	3,935.05	-52.66	-55.95	-377.51	0.62	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,056.00	7.21	260.28	4,028.32	-54.37	-57.77	-389.10	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,151.00	8.04	259.14	4,122.48	-56.52	-60.03	-401.50	0.89	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,245.00	8.57	261.34	4,215.49	-58.70	-62.32	-414.88	0.66	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,339.00	8.31	261.95	4,308.47	-60.59	-64.33	-428.53	0.29	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,434.00	7.74	264.15	4,402.54	-62.09	-65.94	-441.69	0.68	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,528.00	7.47	261.78	4,495.72	-63.50	-67.46	-454.03	0.44	MWD	TOTAL DIRECTIONAL SERV...
7/30/2019	4,622.00	7.52	256.07	4,588.91	-65.75	-69.82	-466.05	0.79	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	4,716.00	7.78	252.11	4,682.08	-69.08	-73.25	-478.08	0.63	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	4,810.00	8.18	256.07	4,775.17	-72.53	-76.82	-490.62	0.72	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	4,905.00	6.61	252.29	4,869.35	-75.77	-80.16	-502.55	1.53	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	4,999.00	7.30	246.13	4,962.64	-79.79	-84.27	-513.32	0.96	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,093.00	7.91	243.50	5,055.82	-84.99	-89.57	-524.57	0.75	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,187.00	8.22	243.76	5,148.89	-90.74	-95.43	-536.38	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,281.00	8.70	247.19	5,241.86	-96.36	-101.15	-548.96	0.74	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,375.00	7.98	245.69	5,334.87	-101.69	-106.59	-561.45	0.82	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,470.00	8.48	249.47	5,428.90	-106.74	-111.75	-574.00	0.79	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,564.00	9.49	256.33	5,521.75	-110.88	-116.02	-588.02	1.56	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,658.00	9.71	257.38	5,614.43	-114.31	-119.58	-603.29	0.30	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,752.00	9.27	255.80	5,707.14	-117.77	-123.17	-618.36	0.54	MWD	TOTAL DIRECTIONAL SERV...

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12/9/2019

HOBBS OCD



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Well Name: GREEN WAVE 20-17 FED 15H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU	County LEA	State/Province NM
Surface Legal Location 20-26S-34E	APRN# 3002546019	Latitude (°) 32° 1' 46.453" N	Longitude (°) 103° 29' 36.356" W	Orig KB Elevation (ft) 3,374.00
			Ground Elev MSL (ft) 3,344.00	KB - GL (ft) 30.00

Survey Data										
Date	MD (ftKB)	Incl (°)	Aztn (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
7/31/2019	5,846.00	9.10	255.01	5,799.94	-121.42	-126.95	-632.89	0.23	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	5,941.00	8.70	254.13	5,893.79	-125.21	-130.86	-647.05	0.44	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,035.00	9.32	258.00	5,986.63	-128.61	-134.38	-661.34	0.92	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,129.00	9.45	263.89	6,079.38	-130.88	-136.79	-676.46	1.03	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,223.00	9.10	263.89	6,172.15	-132.36	-138.40	-691.52	0.37	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,317.00	8.57	263.01	6,265.03	-133.88	-140.04	-705.86	0.58	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,411.00	7.65	262.66	6,358.09	-135.42	-141.70	-719.02	0.98	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,505.00	8.18	264.50	6,451.20	-136.74	-143.14	-731.88	0.62	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,600.00	9.41	266.08	6,545.08	-137.80	-144.31	-746.36	1.32	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,694.00	9.01	266.26	6,637.87	-138.67	-145.32	-761.37	0.43	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,788.00	8.88	265.82	6,730.72	-139.55	-146.33	-775.95	0.16	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,882.00	8.84	266.17	6,823.60	-140.44	-147.34	-790.39	0.07	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	6,976.00	8.53	264.85	6,916.52	-141.42	-148.45	-804.54	0.39	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	7,070.00	8.13	263.80	7,009.53	-142.65	-149.79	-818.09	0.46	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	7,165.00	8.40	264.94	7,103.54	-143.87	-151.13	-831.68	0.33	MWD	TOTAL DIRECTIONAL SERV...
7/31/2019	7,259.00	7.91	263.80	7,196.59	-145.05	-152.43	-844.95	0.55	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,353.00	7.38	263.71	7,289.76	-146.31	-153.79	-857.38	0.56	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,447.00	8.13	265.73	7,382.90	-147.35	-154.95	-870.01	0.85	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,542.00	9.45	266.26	7,476.78	-148.23	-155.96	-884.50	1.39	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,636.00	9.23	266.00	7,569.53	-149.13	-156.99	-899.72	0.24	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,730.00	8.31	264.15	7,662.43	-150.22	-158.21	-913.99	1.02	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,824.00	8.79	262.74	7,755.39	-151.70	-159.81	-927.88	0.56	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	7,918.00	8.31	262.39	7,848.34	-153.39	-161.61	-941.73	0.51	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,013.00	8.09	262.57	7,942.37	-155.05	-163.39	-955.17	0.23	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,107.00	8.66	262.74	8,035.37	-156.68	-165.14	-968.75	0.61	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,201.00	8.09	261.07	8,128.37	-158.48	-167.06	-982.30	0.66	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,295.00	8.22	261.07	8,221.42	-160.43	-169.13	-995.47	0.14	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,389.00	9.41	259.84	8,314.30	-162.71	-171.53	-1,009.68	1.28	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,484.00	9.14	259.23	8,408.06	-165.36	-174.31	-1,024.73	0.30	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,578.00	8.97	259.49	8,500.89	-167.96	-177.04	-1,039.27	0.19	MWD	TOTAL DIRECTIONAL SERV...
8/1/2019	8,672.00	8.53	258.70	8,593.80	-170.54	-179.74	-1,053.31	0.49	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	8,766.00	8.97	259.93	8,686.70	-173.07	-182.39	-1,067.37	0.51	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	8,860.00	8.40	259.40	8,779.62	-175.49	-184.93	-1,081.33	0.61	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	8,954.00	8.92	258.70	8,872.55	-178.06	-187.62	-1,095.22	0.56	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	9,049.00	8.48	258.00	8,966.46	-180.84	-190.52	-1,109.30	0.48	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	9,143.00	7.78	256.42	9,059.51	-183.66	-193.46	-1,122.26	0.78	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	9,237.00	8.22	256.68	9,152.60	-186.59	-196.50	-1,134.99	0.47	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	9,331.00	8.97	256.94	9,245.54	-189.67	-199.70	-1,148.66	0.80	MWD	TOTAL DIRECTIONAL SERV...
8/2/2019	9,425.00	8.79	256.50	9,338.42	-192.88	-203.04	-1,162.79	0.20	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,519.00	7.82	254.31	9,431.43	-196.17	-206.44	-1,175.93	1.09	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,613.00	7.87	254.22	9,524.55	-199.55	-209.92	-1,188.28	0.05	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,707.00	7.87	257.91	9,617.66	-202.53	-213.02	-1,200.76	0.54	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,801.00	7.34	255.89	9,710.84	-205.24	-215.83	-1,212.88	0.63	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,896.00	6.55	253.87	9,805.14	-208.13	-218.82	-1,223.97	0.87	MWD	TOTAL DIRECTIONAL SERV...
8/3/2019	9,990.00	5.93	247.36	9,898.58	-211.40	-222.18	-1,233.60	1.00	MWD	TOTAL DIRECTIONAL SERV...
8/4/2019	10,083.00	6.68	247.45	9,991.02	-215.24	-226.10	-1,243.03	0.81	MWD	TOTAL DIRECTIONAL SERV...
8/4/2019	10,177.00	7.30	244.99	10,084.32	-219.77	-230.72	-1,253.49	0.73	MWD	TOTAL DIRECTIONAL SERV...
8/4/2019	10,271.00	6.86	245.69	10,177.60	-224.52	-235.56	-1,264.02	0.48	MWD	TOTAL DIRECTIONAL SERV...
8/4/2019	10,365.00	6.90	243.76	10,270.93	-229.24	-240.36	-1,274.20	0.25	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,459.00	6.95	239.72	10,364.24	-234.51	-245.73	-1,284.18	0.52	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,554.00	5.27	231.37	10,458.70	-240.06	-251.35	-1,292.55	2.00	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,648.00	5.36	227.41	10,552.30	-245.67	-257.02	-1,299.15	0.40	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,742.00	4.88	240.86	10,645.93	-250.53	-261.94	-1,305.88	1.37	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,836.00	4.75	252.55	10,739.60	-253.58	-265.05	-1,313.08	1.05	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	10,930.00	4.92	254.40	10,833.26	-255.77	-267.30	-1,320.68	0.25	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	11,024.00	4.53	254.31	10,926.94	-257.79	-269.39	-1,328.14	0.41	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	11,119.00	3.60	244.02	11,021.70	-260.05	-271.71	-1,334.43	1.24	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	11,213.00	3.25	244.11	11,115.54	-262.47	-274.17	-1,339.48	0.37	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	11,307.00	3.12	247.89	11,209.39	-264.55	-276.29	-1,344.25	0.28	MWD	TOTAL DIRECTIONAL SERV...
8/5/2019	11,402.00	4.18	255.71	11,304.20	-266.33	-278.12	-1,350.00	1.23	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,496.00	3.47	261.43	11,397.99	-267.54	-279.39	-1,356.13	0.86	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,590.00	3.12	259.40	11,491.83	-268.39	-280.28	-1,361.46	0.39	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,684.00	3.43	256.07	11,585.68	-269.49	-281.43	-1,366.70	0.39	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,779.00	3.82	249.30	11,680.49	-271.25	-283.23	-1,372.42	0.61	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,873.00	3.21	236.38	11,774.31	-273.77	-285.80	-1,377.54	1.08	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	11,967.00	3.34	233.48	11,868.16	-276.81	-288.89	-1,381.93	0.22	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	12,061.00	2.68	222.32	11,962.03	-280.04	-292.14	-1,385.61	0.94	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	12,156.00	2.15	224.25	12,056.94	-282.93	-295.06	-1,388.35	0.56	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	12,250.00	1.63	209.83	12,150.89	-285.34	-297.48	-1,390.25	0.75	MWD	TOTAL DIRECTIONAL SERV...
8/6/2019	12,297.00	1.49	213.09	12,197.88	-286.42	-298.57	-1,390.91	0.35	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,368.00	1.93	190.06	12,268.85	-288.37	-300.52	-1,391.63	1.14	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,434.00	2.33	259.05	12,334.81	-289.70	-301.87	-1,393.14	3.69	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,528.00	15.47	339.03	12,427.62	-278.24	-290.46	-1,399.54	16.21	MWD	TOTAL DIRECTIONAL SERV...



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 15H

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 3002546019	Latitude (°) 32° 1' 46.453" N	Longitude (°) 103° 29' 36.356" W	Orig KB Elevation (ft) 3,374.00
		Ground Elev MSL (ft) 3,344.00	KB - GL (ft) 30.00	

Survey Data										
Date	MD (ftKB)	Incl (°)	Azrn (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
8/9/2019	12,622.00	24.88	351.34	12,515.79	-246.84	-259.12	-1,407.02	10.93	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,717.00	35.30	347.74	12,597.88	-200.05	-212.41	-1,415.88	11.13	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,811.00	47.82	345.36	12,668.08	-139.44	-151.93	-1,430.51	13.42	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,905.00	57.41	354.06	12,725.16	-65.99	-78.59	-1,443.46	12.56	MWD	TOTAL DIRECTIONAL SERV...
8/9/2019	12,999.00	65.23	357.84	12,770.24	16.24	3.60	-1,449.18	9.03	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,093.00	73.01	356.44	12,803.72	103.93	91.24	-1,453.58	8.39	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,187.00	77.32	355.91	12,827.79	194.62	181.89	-1,459.65	4.62	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,282.00	86.24	356.61	12,841.35	288.40	275.61	-1,465.77	9.42	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,376.00	92.92	357.75	12,842.04	382.26	369.44	-1,470.39	7.21	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,470.00	89.63	357.75	12,839.95	476.18	463.34	-1,474.08	3.50	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,564.00	89.41	359.07	12,840.74	570.16	557.29	-1,476.69	1.42	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,658.00	89.89	358.63	12,841.31	664.15	651.27	-1,478.57	0.69	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,753.00	90.59	358.19	12,840.92	759.13	746.23	-1,481.21	0.87	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,847.00	89.67	358.81	12,840.70	853.12	840.20	-1,483.67	1.18	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	13,941.00	89.58	357.05	12,841.32	947.07	934.13	-1,487.06	1.87	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,036.00	89.14	357.23	12,842.38	1,041.99	1,029.01	-1,491.80	0.50	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,130.00	89.54	356.26	12,843.46	1,135.87	1,122.85	-1,497.14	1.12	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,224.00	90.33	357.93	12,843.57	1,229.78	1,216.72	-1,501.91	1.97	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,318.00	91.52	358.98	12,842.05	1,323.75	1,310.68	-1,504.43	1.70	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,413.00	91.30	358.37	12,839.71	1,418.71	1,405.62	-1,506.62	0.69	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,507.00	90.20	0.30	12,838.48	1,512.70	1,499.60	-1,507.71	2.36	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,601.00	89.58	355.47	12,838.66	1,606.63	1,593.51	-1,511.18	5.18	MWD	TOTAL DIRECTIONAL SERV...
8/10/2019	14,695.00	88.97	354.15	12,839.85	1,700.31	1,687.11	-1,519.68	1.55	MWD	TOTAL DIRECTIONAL SERV...
8/11/2019	14,789.00	89.05	355.82	12,841.48	1,794.00	1,780.74	-1,527.90	1.78	MWD	TOTAL DIRECTIONAL SERV...
8/11/2019	14,884.00	90.02	359.69	12,842.25	1,888.93	1,875.64	-1,531.62	4.20	MWD	TOTAL DIRECTIONAL SERV...
8/11/2019	14,978.00	90.20	356.88	12,842.07	1,982.90	1,969.59	-1,534.43	3.00	MWD	TOTAL DIRECTIONAL SERV...
8/11/2019	15,072.00	91.69	358.37	12,840.52	2,076.84	2,063.49	-1,538.32	2.24	MWD	TOTAL DIRECTIONAL SERV...
8/11/2019	15,166.00	89.93	0.39	12,839.19	2,170.82	2,157.47	-1,539.34	2.85	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,205.00	91.08	0.65	12,838.84	2,209.81	2,196.46	-1,538.99	3.02	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,299.00	88.66	0.92	12,839.06	2,303.78	2,290.45	-1,537.70	2.59	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,393.00	88.13	1.62	12,841.69	2,397.70	2,384.39	-1,535.62	0.93	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,488.00	87.21	1.18	12,845.55	2,492.56	2,479.28	-1,533.30	1.07	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,582.00	91.65	2.50	12,846.49	2,586.45	2,573.20	-1,530.28	4.93	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,676.00	91.30	3.56	12,844.07	2,680.24	2,667.03	-1,525.31	1.19	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,770.00	89.41	1.36	12,843.49	2,774.11	2,760.94	-1,521.28	3.09	MWD	TOTAL DIRECTIONAL SERV...
8/12/2019	15,865.00	89.58	10.50	12,844.32	2,868.41	2,855.32	-1,511.47	9.62	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	15,959.00	89.45	13.31	12,845.12	2,962.20	2,949.29	-1,492.09	2.99	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,053.00	90.33	8.48	12,845.30	3,056.32	3,043.57	-1,474.32	5.22	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,147.00	90.37	3.38	12,844.73	3,145.69	3,133.03	-1,464.62	5.43	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,241.00	89.41	0.92	12,844.91	3,239.58	3,226.96	-1,461.09	2.81	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,335.00	89.14	358.81	12,846.10	3,333.57	3,320.94	-1,461.31	2.26	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,429.00	90.24	358.19	12,846.60	3,427.55	3,414.91	-1,463.77	1.34	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,523.00	89.49	358.98	12,846.83	3,521.54	3,508.88	-1,466.08	1.17	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,617.00	92.40	357.67	12,845.28	3,615.49	3,602.81	-1,468.82	3.40	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,711.00	93.14	357.67	12,840.73	3,709.34	3,696.62	-1,472.64	0.79	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,806.00	90.11	358.72	12,838.04	3,804.26	3,791.53	-1,475.63	3.38	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,900.00	89.27	358.28	12,838.55	3,898.24	3,885.49	-1,478.09	1.01	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	16,994.00	88.86	358.37	12,840.25	3,992.21	3,979.44	-1,480.84	0.68	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,088.00	90.29	358.72	12,841.11	4,086.19	4,073.40	-1,483.22	1.77	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,182.00	90.73	0.22	12,840.27	4,180.18	4,167.39	-1,484.09	1.66	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,277.00	88.97	356.00	12,840.52	4,275.13	4,262.31	-1,487.23	4.81	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,371.00	90.86	355.47	12,840.66	4,368.92	4,356.05	-1,494.22	2.09	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,465.00	88.62	353.89	12,841.09	4,462.58	4,449.63	-1,502.93	2.92	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,560.00	88.53	355.56	12,843.45	4,557.21	4,544.20	-1,511.66	1.76	MWD	TOTAL DIRECTIONAL SERV...
8/13/2019	17,654.00	87.74	355.03	12,846.51	4,650.91	4,637.83	-1,519.37	1.01	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	17,748.00	90.24	357.40	12,848.16	4,744.73	4,731.60	-1,525.57	3.66	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	17,842.00	89.93	356.08	12,848.03	4,838.62	4,825.44	-1,530.92	1.44	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	17,936.00	90.11	357.67	12,847.99	4,932.51	4,919.30	-1,536.04	1.70	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,031.00	90.86	357.05	12,847.19	5,027.44	5,014.19	-1,540.42	1.02	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,125.00	90.20	357.84	12,846.32	5,121.38	5,108.09	-1,544.61	1.10	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,219.00	90.02	348.35	12,846.14	5,214.68	5,201.31	-1,555.89	10.10	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,313.00	90.02	356.88	12,846.10	5,307.92	5,294.44	-1,567.97	9.07	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,407.00	90.77	359.51	12,845.46	5,401.89	5,388.38	-1,570.93	2.91	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,501.00	91.52	0.92	12,843.58	5,495.86	5,482.36	-1,570.57	1.70	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,596.00	89.71	358.90	12,842.56	5,590.84	5,577.34	-1,570.72	2.85	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,690.00	91.25	357.84	12,841.77	5,684.81	5,671.30	-1,573.40	1.99	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,784.00	86.73	359.86	12,843.43	5,778.78	5,765.24	-1,575.28	5.27	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,878.00	87.89	358.46	12,848.00	5,872.65	5,859.11	-1,576.66	1.80	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	18,972.00	89.98	0.39	12,849.91	5,966.62	5,953.08	-1,577.60	3.19	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	19,066.00	91.03	357.84	12,849.09	6,060.60	6,047.05	-1,579.05	2.93	MWD	TOTAL DIRECTIONAL SERV...
8/14/2019	19,160.00	90.11	356.00	12,848.15	6,154.50	6,140.91	-1,584.10	2.19	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,255.00	90.11	353.71	12,847.97	6,249.18	6,235.52	-1,592.62	2.41	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,349.00	90.90	353.27	12,847.14	6,342.66	6,328.91	-1,603.28	0.96	MWD	TOTAL DIRECTIONAL SERV...



Directional Survey

DELAWARE BASIN UNRESTRICTED

Well Name: GREEN WAVE 20-17 FED 15H

Sub-Division DELAWARE BASIN	Region LEA COUNTY CORE	Field Name RATTLESNAKE DBBU	County LEA	State/Province NM
Surface Legal Location 20-26S-34E	APRNMI 3002546019	Latitude (°) 32° 1' 46.453" N	Longitude (°) 103° 29' 36.356" W	Orig KB Elevation (ft) 3,374.00
				Ground Elev MSL (ft) 3,344.00
				KB - GL (ft) 30.00

Survey Data										
Date	MD (ftKB)	Incl (°)	Azrn (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
8/15/2019	19,443.00	92.13	358.81	12,844.65	6,436.41	6,422.81	-1,609.77	6.04	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,537.00	92.35	3.64	12,840.98	6,530.27	6,516.49	-1,607.76	5.14	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,631.00	92.09	3.64	12,837.34	6,623.96	6,610.23	-1,601.80	0.28	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,726.00	92.48	4.08	12,833.55	6,718.61	6,704.94	-1,595.41	0.62	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,820.00	92.00	4.35	12,829.87	6,812.22	6,798.61	-1,588.50	0.59	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	19,914.00	90.29	2.94	12,828.00	6,905.95	6,892.40	-1,582.53	2.36	MWD	TOTAL DIRECTIONAL SERV...
8/15/2019	20,008.00	91.08	3.12	12,826.87	6,999.76	6,986.26	-1,577.56	0.86	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,103.00	88.57	3.82	12,827.16	7,094.52	7,081.08	-1,571.81	2.74	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,197.00	88.31	4.96	12,829.72	7,188.14	7,174.76	-1,564.62	1.24	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,291.00	88.31	4.08	12,832.49	7,281.74	7,268.43	-1,557.21	0.94	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,385.00	88.13	4.96	12,835.41	7,375.34	7,362.09	-1,549.81	0.96	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,480.00	87.87	4.26	12,838.73	7,469.90	7,456.73	-1,542.18	0.79	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,574.00	87.96	4.43	12,842.15	7,563.50	7,550.39	-1,535.06	0.20	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,655.00	87.47	3.82	12,845.38	7,644.17	7,631.12	-1,529.24	0.97	MWD	TOTAL DIRECTIONAL SERV...
8/16/2019	20,703.00	87.47	3.82	12,847.50	7,691.99	7,678.97	-1,526.05	0.00	BIT	