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OCT 16 2018

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DISTRICT II-ARTESIA O.C.D.

MS Directional Survey Data Certification

MS Directional Job Number: DDMO-180606
Survey Type: MWD
Operating Company: Black River Water Management Co. LLC
Well Name & Number: Malaga SWD #4
Location: Eddy County, NM
API Number: ~~30-015-44514~~
Tie In Depth: Surface
Surveyed Depths: 600' – 14,878' MD
Projected TD Survey: 14,932' MD
Dates Performed: 06/27/2018 – 08/08/2018

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Directional; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Directional.

Digitally signed by:

MWD Surveyor Name: Ryan McMakin

Date: 08-24-2018

Email: rmcmakin@msdir.com

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SURVEY CALCULATION PROGRAM

8/24/18 15:26

DISTRICT II-ARTESIA O.C.D.

Company:	Black River Water Management Co. LLC		
Well Name:	Malaga SWD #4		
Location:	Eddy County, NM		
Rig:	Patterson #241	Magnetic Declination:	7.00
Job Number:	DDMO-180606		
API #:	30-015-44514		

Vertical Section Azimuth:	270.60	Proposed Direction:	270.60
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Survey Calculation Method:	Minimum Curvature
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PTB:	MD	INC	AZM	TVD	N/S	E/W	VS
	14,932	1.4	230.2	14920.59	-38.76	-365.55	365.12

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
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TIE IN	0	0.00	0.00	0.00	0.00	0.00		0.00			
1	600	1.40	339.50	599.94	6.87	-2.57	2.64	7.33	339.50	0.23	0.23
2	690	2.20	334.00	689.90	9.45	-3.71	3.81	10.15	338.57	0.91	0.89
3	781	2.20	335.70	780.83	12.61	-5.19	5.33	13.64	337.61	0.07	0.00
4	948	2.40	315.50	947.70	18.03	-8.96	9.15	20.13	333.56	0.50	0.12
5	1,145	3.20	287.20	1144.47	22.59	-17.11	17.34	28.34	322.87	0.80	0.41
6	1,321	3.10	274.10	1320.21	24.39	-26.55	26.80	36.05	312.57	0.41	-0.06
7	1,509	2.80	279.20	1507.96	25.48	-36.15	36.42	44.23	305.18	0.21	-0.16
8	1,699	2.40	281.70	1697.76	27.03	-44.63	44.91	52.18	301.21	0.22	-0.21
9	1,887	2.10	254.10	1885.62	26.89	-51.79	52.07	58.36	297.43	0.59	-0.16
10	2,076	2.30	258.00	2074.48	25.15	-58.83	59.09	63.98	293.15	0.13	0.11
11	2,264	2.00	214.30	2262.36	21.66	-64.37	64.60	67.92	288.59	0.86	-0.16
12	2,452	0.30	173.50	2450.32	18.46	-66.17	66.36	68.69	285.59	0.95	-0.90
13	2,729	0.80	193.30	2727.30	15.85	-66.53	66.69	68.39	283.40	0.19	0.18
14	2,917	2.90	248.40	2915.20	12.83	-71.25	71.38	72.40	280.20	1.35	1.12
15	3,106	4.90	259.20	3103.76	9.55	-83.63	83.73	84.17	276.52	1.12	1.06
16	3,294	4.80	260.30	3291.09	6.72	-99.27	99.33	99.50	273.87	0.07	-0.05
17	3,483	4.20	261.20	3479.50	4.33	-113.90	113.94	113.99	272.18	0.32	-0.32
18	3,671	3.80	262.10	3667.05	2.42	-126.88	126.90	126.90	271.09	0.22	-0.21
19	3,859	3.90	271.00	3854.62	1.68	-139.44	139.45	139.45	270.69	0.32	0.05
20	4,047	4.90	271.40	4042.07	1.99	-153.86	153.87	153.87	270.74	0.53	0.53
21	4,235	4.50	275.40	4229.43	2.88	-169.23	169.25	169.25	270.97	0.27	-0.21
22	4,423	4.10	272.90	4416.90	3.91	-183.28	183.32	183.33	271.22	0.23	-0.21
23	4,611	4.70	276.30	4604.35	5.09	-197.65	197.70	197.72	271.48	0.35	0.32
24	4,799	4.20	272.60	4791.78	6.25	-212.19	212.24	212.28	271.69	0.31	-0.27
25	4,988	3.60	275.20	4980.34	7.10	-225.01	225.07	225.12	271.81	0.33	-0.32
26	5,176	3.60	274.80	5167.97	8.13	-236.77	236.84	236.91	271.97	0.01	0.00
27	5,365	4.00	272.70	5356.56	8.94	-249.27	249.35	249.43	272.05	0.22	0.21
28	5,554	3.90	270.30	5545.11	9.28	-262.28	262.36	262.44	272.03	0.10	-0.05
29	5,742	3.50	272.20	5732.72	9.54	-274.41	274.49	274.57	271.99	0.22	-0.21
30	5,930	3.20	266.40	5920.40	9.43	-285.38	285.46	285.53	271.89	0.24	-0.16
31	6,118	3.00	270.10	6108.12	9.11	-295.53	295.61	295.67	271.77	0.15	-0.11
32	6,303	1.30	256.10	6292.98	8.61	-302.41	302.49	302.54	271.63	0.96	-0.92
33	6,491	1.00	230.00	6480.95	7.05	-305.74	305.80	305.82	271.32	0.32	-0.16

Company:		Black River Water Management Co. LLC										
Well Name:		Malaga SWD #4										
Location:		Eddy County, NM										
Rig:		Patterson #241					Magnetic Declination:		7.00		REFERENCED TO GRID NORTH ▼	
Job Number:		DDMO-180606										
API #:		30-015-44514										
Vertical Section Azimuth:			270.60			Proposed Direction:		270.60				
Survey Calculation Method:			Minimum Curvature									
PTB:	MD		INC		AZM	TVD	N/S	E/W		VS		
	14,932		1.4		230.2	14920.59	-38.76	-365.55		365.12		
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance Azm		DLS/ 100	BUR/ 100'	
34	6,679	0.70	244.50	6668.93	5.50	-308.03	308.07	308.08	271.02	0.20	-0.16	
35	6,868	1.20	229.20	6857.90	3.71	-310.57	310.59	310.60	270.68	0.29	0.26	
36	7,057	1.60	230.80	7046.84	0.75	-314.12	314.11	314.12	270.14	0.21	0.21	
37	7,244	1.60	226.40	7233.77	-2.71	-318.03	317.98	318.04	269.51	0.07	0.00	
38	7,433	1.50	224.20	7422.70	-6.30	-321.67	321.58	321.73	268.88	0.06	-0.05	
39	7,622	1.20	225.00	7611.65	-9.47	-324.79	324.67	324.93	268.33	0.16	-0.16	
40	7,810	1.20	182.30	7799.61	-12.83	-326.26	326.11	326.51	267.75	0.46	0.00	
41	7,998	1.40	194.30	7987.56	-17.02	-326.91	326.71	327.35	267.02	0.18	0.11	
42	8,187	1.70	197.70	8176.49	-21.93	-328.33	328.08	329.06	266.18	0.17	0.16	
43	8,374	1.40	202.40	8363.43	-26.69	-330.04	329.75	331.12	265.38	0.17	-0.16	
44	8,564	1.30	168.20	8553.38	-30.94	-330.49	330.14	331.93	264.65	0.42	-0.05	
45	8,751	1.40	159.90	8740.32	-35.16	-329.27	328.88	331.14	263.90	0.12	0.05	
46	8,939	0.80	186.80	8928.29	-38.62	-328.63	328.21	330.90	263.30	0.41	-0.32	
47	9,127	0.40	151.70	9116.28	-40.50	-328.48	328.04	330.97	262.97	0.28	-0.21	
48	9,316	0.40	113.80	9305.28	-41.35	-327.56	327.11	330.16	262.81	0.14	0.00	
49	9,504	0.30	158.30	9493.27	-42.07	-326.78	326.32	329.48	262.66	0.15	-0.05	
50	9,693	0.70	133.50	9682.27	-43.33	-325.76	325.29	328.63	262.42	0.24	0.21	
51	9,881	1.00	117.80	9870.24	-44.88	-323.47	322.99	326.57	262.10	0.20	0.16	
52	10,071	0.90	126.70	10060.22	-46.55	-320.81	320.31	324.17	261.74	0.09	-0.05	
53	10,259	0.70	158.50	10248.20	-48.50	-319.21	318.68	322.87	261.36	0.25	-0.11	
54	10,447	0.60	184.30	10436.19	-50.55	-318.86	318.31	322.84	260.99	0.16	-0.05	
55	10,635	0.50	217.10	10624.18	-52.18	-319.43	318.86	323.66	260.72	0.17	-0.05	
56	10,760	0.30	247.90	10749.18	-52.74	-320.06	319.49	324.38	260.64	0.23	-0.16	
57	10,928	0.00	333.80	10917.18	-52.91	-320.47	319.90	324.81	260.63	0.18	-0.18	
58	11,116	0.50	293.30	11105.17	-52.58	-321.22	320.65	325.50	260.70	0.27	0.27	
59	11,304	0.00	334.70	11293.17	-52.26	-321.98	321.41	326.19	260.78	0.27	-0.27	
60	11,493	0.50	322.60	11482.17	-51.60	-322.48	321.92	326.58	260.91	0.26	0.26	
61	11,682	0.60	308.00	11671.16	-50.34	-323.76	323.21	327.65	261.16	0.09	0.05	
62	11,870	0.20	289.60	11859.16	-49.62	-324.84	324.30	328.61	261.31	0.22	-0.21	
63	12,057	0.80	314.50	12046.15	-48.60	-326.08	325.55	329.68	261.52	0.33	0.32	
64	12,245	0.80	292.30	12234.13	-47.18	-328.23	327.72	331.60	261.82	0.16	0.00	
65	12,432	0.60	308.60	12421.12	-46.08	-330.20	329.70	333.40	262.06	0.15	-0.11	
66	12,620	0.70	295.80	12609.11	-44.96	-332.01	331.52	335.04	262.29	0.09	0.05	
67	12,809	0.80	324.80	12798.09	-43.38	-333.81	333.33	336.61	262.60	0.21	0.05	

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Well Name:		Malaga SWD #4												
Location:		Eddy County, NM												
Rig:		Patterson #241					Magnetic Declination:		7.00		REFERENCED TO GRID NORTH			
Job Number:		DDMO-180606												
API #:		30-015-44514												
Vertical Section Azimuth:					270.60			Proposed Direction:		270.60				
Survey Calculation Method:					Minimum Curvature									
PTB:	MD		INC		AZM		TVD		N/S		E/W		VS	
	14,932		1.4		230.2		14920.59		-38.76		-365.55		365.12	
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance Azm		DLS/ 100	BUR/ 100'			
68	12,997	0.60	325.30	12986.08	-41.50	-335.12	334.67	337.68	262.94	0.11	-0.11			
69	13,185	0.70	308.10	13174.06	-39.98	-336.59	336.15	338.95	263.23	0.12	0.05			
70	13,373	0.80	308.50	13362.05	-38.46	-338.52	338.10	340.70	263.52	0.05	0.05			
71	13,561	0.40	320.10	13550.04	-37.13	-339.97	339.56	341.99	263.77	0.22	-0.21			
72	13,655	0.50	291.20	13644.03	-36.73	-340.56	340.16	342.53	263.84	0.26	0.11			
73	13,750	0.60	299.90	13739.03	-36.34	-341.38	340.98	343.31	263.92	0.14	0.11			
74	13,844	0.60	312.50	13833.02	-35.76	-342.17	341.77	344.03	264.03	0.14	0.00			
75	13,950	0.80	314.70	13939.02	-34.86	-343.10	342.72	344.87	264.20	0.19	0.19			
76	14,044	0.90	302.70	14033.01	-34.00	-344.19	343.81	345.87	264.36	0.22	0.11			
77	14,138	1.30	304.90	14126.99	-32.99	-345.69	345.32	347.26	264.55	0.43	0.43			
78	14,232	1.80	299.60	14220.95	-31.66	-347.84	347.49	349.28	264.80	0.55	0.53			
79	14,326	1.80	283.80	14314.91	-30.57	-350.56	350.22	351.89	265.02	0.53	0.00			
80	14,420	2.30	222.80	14408.86	-31.61	-353.28	352.93	354.69	264.89	2.26	0.53			
81	14,514	3.80	259.90	14502.73	-33.54	-357.63	357.25	359.19	264.64	2.56	1.60			
82	14,608	0.60	196.70	14596.65	-34.55	-360.83	360.45	362.48	264.53	3.80	-3.40			
83	14,702	0.90	241.90	14690.65	-35.37	-361.63	361.24	363.35	264.41	0.68	0.32			
84	14,796	1.40	223.80	14784.63	-36.55	-363.07	362.67	364.91	264.25	0.65	0.53			
85	14,878	1.40	230.20	14866.60	-37.91	-364.54	364.12	366.50	264.06	0.19	0.00			
PTB:	14,932	1.40	230.20	14920.59	-38.76	-365.55	365.12	367.60	263.95	0.00	0.00			