

Solaris Water Midstream

Lea County NM (NAD83)

Sec 36, T 20-S , R 34-E

Okeanos SWD 1

HOBBS OCD

OCT 22 2018

RECEIVED

Wellbore #1

Survey: FINAL IDS SURVEYS

Standard Survey Report

05 October, 2018



INTEGRITY
DIRECTIONAL

Survey Report



Company:	Solaris Water Midstream	Local Co-ordinate Reference:	Well Okeanos SWD 1
Project:	Lea County NM (NAD83)	TVD Reference:	KB=20' @ 3555.00usft
Site:	Sec 36, T 20-S, R 34-E	MD Reference:	KB=20' @ 3555.00usft
Well:	Okeanos SWD 1	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	IDS MWD Surveys	Database:	EDM 5000.1

Project	Lea County NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Sec 36, T 20-S, R 34-E			
Site Position:		Northing:	555,500.30 usft	Latitude:	32.52450
From:	Map	Easting:	791,804.60 usft	Longitude:	-103.52070
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.44 °

Well	Okeanos SWD 1					
Well Position	+N/-S	0.00 usft	Northing:	555,500.30 usft	Latitude:	32.52450
	+E/-W	0.00 usft	Easting:	791,804.60 usft	Longitude:	-103.52070
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,535.00 usft

Wellbore	Wellbore #1
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/5/2018	6.65	60.43	48,152

Design	IDS MWD Surveys
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Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.00

Survey Program		Date: 10/5/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
179.00	16,393.00	FINAL IDS SURVEYS (Wellbore #1)		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
179.00	0.35	132.32	179.00	-0.37	0.40	-0.37	0.20	0.20	0.00
First MWD Survey @ 179'MD									
294.00	0.31	121.51	294.00	-0.77	0.93	-0.77	0.06	-0.03	-9.40
508.00	0.31	130.57	507.99	-1.45	1.86	-1.45	0.02	0.00	4.23
657.00	0.18	182.07	656.99	-1.94	2.16	-1.94	0.16	-0.09	34.56
841.00	0.26	221.18	840.99	-2.55	1.87	-2.55	0.09	0.04	21.26
996.00	0.35	206.94	995.99	-3.23	1.43	-3.23	0.08	0.06	-9.19
1,179.00	0.70	221.37	1,178.98	-4.57	0.44	-4.57	0.20	0.19	7.89
1,365.00	0.44	263.37	1,364.97	-5.50	-1.02	-5.50	0.26	-0.14	22.58
1,553.00	1.05	274.27	1,552.96	-5.46	-3.46	-5.46	0.33	0.32	5.80

Survey Report



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Site:	Sec 36, T 20-S, R 34-E	MD Reference:	KB=20' @ 3555.00usft
Well:	Okeanos SWD 1	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	IDS MWD Surveys	Database:	EDM 5000.1

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,648.00	1.01	298.09	1,647.94	-5.00	-5.07	-5.00	0.45	-0.04	25.07
1,738.00	1.23	292.72	1,737.92	-4.25	-6.66	-4.25	0.27	0.24	-5.97
1,845.00	1.54	303.97	1,844.89	-3.01	-8.91	-3.01	0.38	0.29	10.51
1,938.00	1.05	325.77	1,937.87	-1.60	-10.42	-1.60	0.74	-0.53	23.44
2,127.00	1.14	346.78	2,126.84	1.66	-11.83	1.66	0.22	0.05	11.12
2,316.00	1.14	334.21	2,315.80	5.18	-13.08	5.18	0.13	0.00	-6.65
2,504.00	1.19	345.63	2,503.76	8.76	-14.37	8.76	0.13	0.03	6.07
2,694.00	1.05	347.13	2,693.72	12.36	-15.25	12.36	0.08	-0.07	0.79
2,882.00	1.23	14.55	2,881.69	16.00	-15.13	16.00	0.30	0.10	14.59
3,070.00	1.41	36.08	3,069.64	19.82	-13.26	19.82	0.28	0.10	11.45
3,256.00	2.07	59.29	3,255.55	23.38	-9.02	23.38	0.51	0.35	12.48
3,445.00	0.53	84.07	3,444.50	25.22	-5.22	25.22	0.85	-0.81	13.11
3,634.00	0.75	199.21	3,633.49	24.14	-4.76	24.14	0.58	0.12	60.92
3,823.00	1.14	185.85	3,822.47	21.10	-5.35	21.10	0.24	0.21	-7.07
4,012.00	0.92	184.53	4,011.44	17.72	-5.67	17.72	0.12	-0.12	-0.70
4,200.00	0.97	166.60	4,199.41	14.67	-5.42	14.67	0.16	0.03	-9.54
4,389.00	1.27	170.91	4,388.38	11.04	-4.71	11.04	0.16	0.16	2.28
4,578.00	1.41	152.80	4,577.33	6.91	-3.32	6.91	0.23	0.07	-9.58
4,728.00	1.85	123.71	4,727.27	3.92	-0.46	3.92	0.62	0.29	-19.39
4,861.00	0.40	98.05	4,860.24	2.66	1.78	2.66	1.13	-1.09	-19.29
5,049.00	0.75	81.79	5,048.23	2.75	3.65	2.75	0.20	0.19	-8.65
5,228.00	0.92	133.11	5,227.21	1.93	5.86	1.93	0.41	0.09	28.67
5,322.00	0.75	122.04	5,321.20	1.09	6.93	1.09	0.25	-0.18	-11.78
5,511.00	0.88	133.73	5,510.18	-0.57	9.03	-0.57	0.11	0.07	6.19
5,605.00	0.88	163.61	5,604.17	-1.76	9.75	-1.76	0.48	0.00	31.79
5,783.00	0.66	138.92	5,782.16	-3.84	10.81	-3.84	0.22	-0.12	-13.87
5,971.00	0.66	150.34	5,970.14	-5.60	12.06	-5.60	0.07	0.00	6.07
6,160.00	0.66	162.47	6,159.13	-7.59	12.93	-7.59	0.07	0.00	6.42
6,349.00	0.53	163.79	6,348.12	-9.46	13.50	-9.46	0.07	-0.07	0.70
6,538.00	0.44	144.72	6,537.11	-10.89	14.16	-10.89	0.10	-0.05	-10.09
6,726.00	0.26	187.43	6,725.11	-11.91	14.52	-11.91	0.16	-0.10	22.72
6,915.00	0.44	226.45	6,914.11	-12.83	13.94	-12.83	0.15	0.10	20.65
7,104.00	0.48	248.52	7,103.10	-13.62	12.68	-13.62	0.10	0.02	11.68
7,293.00	0.62	254.14	7,292.09	-14.19	10.96	-14.19	0.08	0.07	2.97
7,483.00	0.70	242.36	7,482.08	-15.01	8.94	-15.01	0.08	0.04	-6.20
7,672.00	0.48	242.89	7,671.07	-15.91	7.22	-15.91	0.12	-0.12	0.28
7,861.00	0.44	261.26	7,860.06	-16.38	5.79	-16.38	0.08	-0.02	9.72
8,050.00	0.40	249.83	8,049.06	-16.72	4.46	-16.72	0.05	-0.02	-6.05
8,239.00	0.31	287.63	8,238.06	-16.79	3.35	-16.79	0.13	-0.05	20.00
8,427.00	0.48	319.18	8,426.05	-16.04	2.35	-16.04	0.14	0.09	16.78
8,616.00	0.75	326.30	8,615.04	-14.41	1.15	-14.41	0.15	0.14	3.77
8,804.00	0.97	318.65	8,803.02	-12.19	-0.59	-12.19	0.13	0.12	-4.07
8,993.00	0.97	314.70	8,991.99	-9.87	-2.78	-9.87	0.04	0.00	-2.09

Survey Report



Company: Solaris Water Midstream
Project: Lea County NM (NAD83)
Site: Sec 36, T 20-S, R 34-E
Well: Okeanos SWD 1
Wellbore: Wellbore #1
Design: IDS MWD Surveys

Local Co-ordinate Reference: Well Okeanos SWD 1
TVD Reference: KB=20' @ 3555.00usft
MD Reference: KB=20' @ 3555.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,182.00	0.70	300.72	9,180.97	-8.15	-4.91	-8.15	0.18	-0.14	-7.40
9,370.00	1.01	272.25	9,368.95	-7.50	-7.55	-7.50	0.27	0.16	-15.14
9,559.00	1.23	286.40	9,557.92	-6.86	-11.16	-6.86	0.19	0.12	7.49
9,748.00	0.79	291.67	9,746.89	-5.81	-14.32	-5.81	0.24	-0.23	2.79
9,935.00	0.75	276.73	9,933.87	-5.19	-16.73	-5.19	0.11	-0.02	-7.99
10,127.00	0.97	256.95	10,125.85	-5.41	-19.57	-5.41	0.19	0.11	-10.30
10,312.00	0.97	260.03	10,310.82	-6.03	-22.63	-6.03	0.03	0.00	1.66
10,501.00	0.84	220.74	10,499.80	-7.36	-25.11	-7.36	0.33	-0.07	-20.79
10,690.00	1.19	233.49	10,688.77	-9.58	-27.60	-9.58	0.22	0.19	6.75
10,877.00	1.14	210.90	10,875.73	-12.33	-30.11	-12.33	0.25	-0.03	-12.08
11,065.00	0.62	215.91	11,063.71	-14.76	-31.67	-14.76	0.28	-0.28	2.66
11,254.00	1.19	217.14	11,252.69	-17.15	-33.45	-17.15	0.30	0.30	0.65
11,443.00	0.97	200.70	11,441.65	-20.21	-35.20	-20.21	0.20	-0.12	-8.70
11,631.00	0.48	189.54	11,629.64	-22.48	-35.90	-22.48	0.27	-0.26	-5.94
11,664.00	0.40	166.95	11,662.64	-22.72	-35.89	-22.72	0.57	-0.24	-68.45
11,710.00	0.31	128.98	11,708.64	-22.96	-35.76	-22.96	0.54	-0.20	-82.54
11,898.00	0.18	46.98	11,896.63	-23.08	-35.15	-23.08	0.18	-0.07	-43.62
12,086.00	0.31	44.52	12,084.63	-22.51	-34.58	-22.51	0.07	0.07	-1.31
12,275.00	0.48	47.07	12,273.63	-21.61	-33.64	-21.61	0.09	0.09	1.35
12,464.00	0.84	51.46	12,462.61	-20.21	-31.97	-20.21	0.19	0.19	2.32
12,659.00	0.84	17.71	12,657.60	-17.95	-30.42	-17.95	0.25	0.00	-17.31
12,846.00	1.89	34.77	12,844.54	-14.12	-28.25	-14.12	0.60	0.56	9.12
13,063.00	1.76	38.63	13,061.43	-8.57	-24.13	-8.57	0.08	-0.06	1.78
13,251.00	1.32	28.35	13,249.36	-4.41	-21.29	-4.41	0.28	-0.23	-5.47
13,440.00	1.23	45.40	13,438.32	-1.07	-18.82	-1.07	0.21	-0.05	9.02
13,628.00	1.36	36.17	13,626.27	2.15	-16.06	2.15	0.13	0.07	-4.91
13,817.00	1.71	42.32	13,815.20	6.04	-12.84	6.04	0.20	0.19	3.25
14,005.00	1.10	68.16	14,003.14	8.79	-9.28	8.79	0.46	-0.32	13.74
14,193.00	1.41	68.43	14,191.10	10.31	-5.45	10.31	0.16	0.16	0.14
14,359.00	1.67	63.86	14,357.04	12.13	-1.38	12.13	0.17	0.16	-2.75
14,547.00	1.80	59.73	14,544.95	14.82	3.63	14.82	0.10	0.07	-2.20
14,735.00	2.15	64.65	14,732.84	17.82	9.37	17.82	0.21	0.19	2.62
14,830.00	2.20	61.04	14,827.77	19.47	12.57	19.47	0.15	0.05	-3.80
14,934.00	2.26	62.43	14,931.69	21.38	16.14	21.38	0.08	0.06	1.34
15,123.00	1.14	30.63	15,120.61	24.72	20.40	24.72	0.75	-0.59	-16.83
15,311.00	2.02	338.78	15,308.55	29.42	20.15	29.42	0.85	0.47	-27.58
15,499.00	2.42	12.62	15,496.41	36.38	19.82	36.38	0.72	0.21	18.00
15,689.00	2.64	14.46	15,686.23	44.54	21.79	44.54	0.12	0.12	0.97
15,877.00	2.90	23.16	15,874.01	53.10	24.74	53.10	0.26	0.14	4.63
16,065.00	2.42	31.34	16,061.81	60.86	28.67	60.86	0.32	-0.26	4.35
16,253.00	1.23	13.67	16,249.71	66.21	31.22	66.21	0.69	-0.63	-9.40
16,331.00	1.79	22.65	16,327.68	68.15	31.88	68.15	0.78	0.72	11.51

Final MWD Survey @ 16331'MD

Survey Report



Company:	Solaris Water Midstream	Local Co-ordinate Reference:	Well Okeanos SWD 1
Project:	Lea County NM (NAD83)	TVD Reference:	KB=20' @ 3555.00usft
Site:	Sec 36, T 20-S, R 34-E	MD Reference:	KB=20' @ 3555.00usft
Well:	Okeanos SWD 1	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	IDS MWD Surveys	Database:	EDM 5000.1

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,393.00	1.79	22.65	16,389.65	69.94	32.63	69.94	0.00	0.00	0.00
Projection to TD @ 16393'MD									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
179.00	179.00	-0.37	0.40	First MWD Survey @ 179'MD
16,331.00	16,327.68	68.15	31.88	Final MWD Survey @ 16331'MD
16,393.00	16,389.65	69.94	32.63	Projection to TD @ 16393'MD

Checked By: _____ Approved By: _____ Date: _____