

NGL WATER SOLUTIONS DJ

Location	DJ Basin	Slot	ROY SWD 5
Field	Wattenberg	Well	W ROY SWD 5
Installation	Roy SWD	Wellbore	W ROY SWD 5 (PWB)

N
GRID

Jul-10-2018
EMMA-2015 [2000.0-2020.0] Dip: 66.42 deg Field: 52040.6 nT
Lat: 140 1.42 8880 Long: 104 46 48.840 Elev: 8948.01 ft
Magnetic North is 8.15 deg East of True North
GRID North is 0.47 deg East of True North
To correct azimuth from True to GRID subtract 0.47 deg
To correct azimuth from Magnetic to GRID add 7.60 deg

Created by admin
Date plotted 29-Aug-2018

Plot reference is W ROY SWD 5 (PWB).
Ref wellpath is W ROY SWD 5 (PWP#1).
Coordinates are in Feet reference ROY SWD 5.
True Vertical Depths are reference Rig Datum.
Measured Depths are reference Rig Datum.
Rig Datum: Planned Datum #1
Rig Datum to Mean Sea Level: 5047.00 ft.
Plot North is aligned to GRID North.

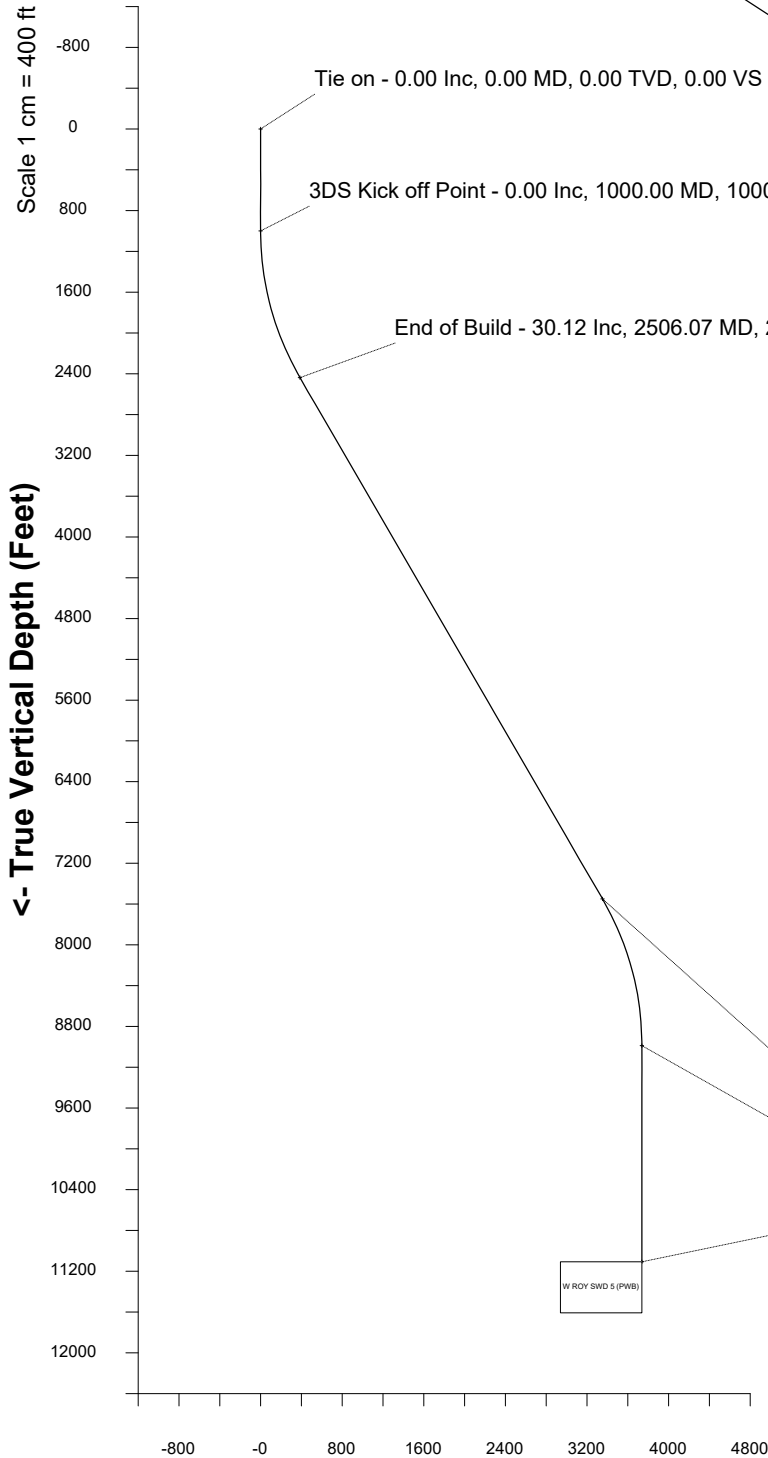
Scale 1 cm = 200 ft

East (Feet) ->

-3600 -3200 -2800 -2400 -2000 -1600 -1200 -800 -400 0 400

<- North(Feet)

Scale 1 cm = 200 ft



WELL PROFILE DATA

Point	MD	Inc	Azi	TVD	North	East	deg/100ft	V. Sect
Tie on	0.00	0.00	0.00	0.00	S 0.00	W 0.00		0.00
KOP	1000.00	0.00	303.00	1000.00	S 0.00	W 0.00	0.00	0.00
End of Build	2506.07	30.12	303.00	2437.65	N 210.70	W 324.44	2.00	386.85
End of Hold	8415.80	30.12	303.00	7549.35	N 1825.99	W 2811.66	0.00	3352.56
Target ROY SWD 5 - LY	9921.87	0.00	303.00	8987.00	N 2036.69	W 3136.09	2.00	3739.41
T.D. & Target ROY...BHL	12041.87	0.00	0.00	11107.00	N 2036.69	W 3136.09	0.00	3739.41

Scale 1 cm = 400 ft

Vertical Section (Feet) ->

Azimuth 303.00 with reference 0.00 N, 0.00 E from ROY SWD 5



SYSDRILL
Well Design Combined Report
Wellbore: W ROY SWD 5 (PWB)



Wellhead Details							
Name	Latitude	Longitude	Northing	Easting	North	East	Slot Elevation Above Ground
ROY SWD 5	40.02858000	-104.78033000	1254075.5938	3201531.4288	0.41S	50.41W	0.00

Declination		
Date	Source	Time
Jul-10-2018	EMM-2015 [2000.0-2020.0]	10:02

Installation Details						
Name	Installation Position (Latitude)	Installation Position (Longitude)	Northing	Easting	Coord System Name	North Alignment
Roy SWD	40.02858000	-104.78015000	1254076.0029	3201581.8336	CO83-NF on NORTH AMERICAN DATUM 1983 datum	Grid

Summary Wellpath								
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	Vertical Depth SS	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]
0.00	0.00	0.000	0.00	-5047.00	0.00N	0.00E		0.00
1000.00	0.00	303.000	1000.00	-4047.00	0.00N	0.00E	==>	0.00
2506.07	30.12	303.000	2437.65	-2609.35	210.70N	324.44W	2.00	386.85
8415.80	30.12	303.000	7549.35	2502.35	1825.99N	2811.66W	==>	3352.56
9921.87	0.00	303.000	8987.00	3940.00	2036.69N	3136.09W	2.00	3739.41
12041.87	0.00	0.000	11107.00	6060.00	2036.69N	3136.09W	==>	3739.41

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
0.00	0.00	0.000	0.00	0.00N	0.00E		0.00	40.02858000	-104.78033000
100.00	0.00	0.000	100.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
200.00	0.00	0.000	200.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
300.00	0.00	0.000	300.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
400.00	0.00	0.000	400.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
500.00	0.00	0.000	500.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
600.00	0.00	0.000	600.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
700.00	0.00	0.000	700.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
800.00	0.00	0.000	800.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
900.00	0.00	0.000	900.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
1000.00	0.00	303.000	1000.00	0.00N	0.00E	==>	0.00	40.02858000	-104.78033000
1100.00	2.00	303.000	1099.98	0.95N	1.46W	2.00	1.75	40.02858264	-104.78033520
1200.00	4.00	303.000	1199.84	3.80N	5.85W	2.00	6.98	40.02859056	-104.78035079
1300.00	6.00	303.000	1299.45	8.55N	13.16W	2.00	15.69	40.02860376	-104.78037675
1400.00	8.00	303.000	1398.70	15.18N	23.38W	2.00	27.88	40.02862220	-104.78041305
1500.00	10.00	303.000	1497.47	23.70N	36.50W	2.00	43.52	40.02864588	-104.78045965
1600.00	12.00	303.000	1595.62	34.10N	52.50W	2.00	62.60	40.02867476	-104.78051648
1700.00	14.00	303.000	1693.06	46.35N	71.37W	2.00	85.10	40.02870881	-104.78058349
1800.00	16.00	303.000	1789.64	60.44N	93.07W	2.00	110.98	40.02874799	-104.78066058
1900.00	18.00	303.000	1885.27	76.37N	117.59W	2.00	140.21	40.02879225	-104.78074767
2000.00	20.00	303.000	1979.82	94.10N	144.89W	2.00	172.77	40.02884153	-104.78084465
2100.00	22.00	303.000	2073.17	113.62N	174.95W	2.00	208.60	40.02889577	-104.78095140
2200.00	24.00	303.000	2165.21	134.90N	207.71W	2.00	247.67	40.02895491	-104.78106778
2300.00	26.00	303.000	2255.84	157.91N	243.16W	2.00	289.93	40.02901888	-104.78119367
2400.00	28.00	303.000	2344.94	182.64N	281.23W	2.00	335.33	40.02908760	-104.78132890
2500.00	30.00	303.000	2432.39	209.04N	321.89W	2.00	383.81	40.02916099	-104.78147331
2600.00	30.12	303.000	2518.89	236.37N	363.97W	==>	433.99	40.02923694	-104.78162279
2700.00	30.12	303.000	2605.39	263.71N	406.05W	==>	484.17	40.02931291	-104.78177228
2800.00	30.12	303.000	2691.89	291.04N	448.14W	==>	534.35	40.02938887	-104.78192177
2900.00	30.12	303.000	2778.38	318.37N	490.23W	==>	584.54	40.02946483	-104.78207126
3000.00	30.12	303.000	2864.88	345.70N	532.32W	==>	634.72	40.02954079	-104.78222075
3100.00	30.12	303.000	2951.38	373.04N	574.40W	==>	684.90	40.02961676	-104.78237025

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Vertical Section is from 0.00N 0.00E on azimuth 303.000 degrees
Bottom hole distance is 3739.41 Feet on azimuth 303.00 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Aug-2018

Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
3200.00	30.12	303.000	3037.87	400.37N	616.49W	==>	735.09	40.02969272	-104.78251974
3300.00	30.12	303.000	3124.37	427.70N	658.58W	==>	785.27	40.02976868	-104.78266923
3400.00	30.12	303.000	3210.86	455.03N	700.66W	==>	835.45	40.02984464	-104.78281873
3500.00	30.12	303.000	3297.36	482.37N	742.75W	==>	885.64	40.02992061	-104.78296822
3600.00	30.12	303.000	3383.86	509.70N	784.84W	==>	935.82	40.02999657	-104.78311771
3700.00	30.12	303.000	3470.35	537.03N	826.92W	==>	986.01	40.03007253	-104.78326721
3800.00	30.12	303.000	3556.85	564.36N	869.01W	==>	1036.19	40.03014849	-104.78341670
3900.00	30.12	303.000	3643.35	591.70N	911.10W	==>	1086.37	40.03022445	-104.78356620
4000.00	30.12	303.000	3729.84	619.03N	953.18W	==>	1136.56	40.03030041	-104.78371569
4100.00	30.12	303.000	3816.34	646.36N	995.27W	==>	1186.74	40.03037637	-104.78386519
4200.00	30.12	303.000	3902.84	673.70N	1037.36W	==>	1236.92	40.03045234	-104.78401469
4300.00	30.12	303.000	3989.33	701.03N	1079.44W	==>	1287.11	40.03052830	-104.78416418
4400.00	30.12	303.000	4075.83	728.36N	1121.53W	==>	1337.29	40.03060426	-104.78431368
4500.00	30.12	303.000	4162.32	755.69N	1163.62W	==>	1387.47	40.03068022	-104.78446318
4600.00	30.12	303.000	4248.82	783.03N	1205.71W	==>	1437.66	40.03075618	-104.78461268
4700.00	30.12	303.000	4335.32	810.36N	1247.79W	==>	1487.84	40.03083214	-104.78476217
4800.00	30.12	303.000	4421.81	837.69N	1289.88W	==>	1538.02	40.03090810	-104.78491167
4900.00	30.12	303.000	4508.31	865.02N	1331.97W	==>	1588.21	40.03098405	-104.78506117
5000.00	30.12	303.000	4594.81	892.36N	1374.05W	==>	1638.39	40.03106001	-104.78521067
5100.00	30.12	303.000	4681.30	919.69N	1416.14W	==>	1688.57	40.03113597	-104.78536017
5200.00	30.12	303.000	4767.80	947.02N	1458.23W	==>	1738.76	40.03121193	-104.78550967
5300.00	30.12	303.000	4854.30	974.35N	1500.31W	==>	1788.94	40.03128789	-104.78565917
5400.00	30.12	303.000	4940.79	1001.69N	1542.40W	==>	1839.12	40.03136385	-104.78580867
5500.00	30.12	303.000	5027.29	1029.02N	1584.49W	==>	1889.31	40.03143981	-104.78595817
5600.00	30.12	303.000	5113.78	1056.35N	1626.57W	==>	1939.49	40.03151576	-104.78610767
5700.00	30.12	303.000	5200.28	1083.69N	1668.66W	==>	1989.67	40.03159172	-104.78625717
5800.00	30.12	303.000	5286.78	1111.02N	1710.75W	==>	2039.86	40.03166768	-104.78640667
5900.00	30.12	303.000	5373.27	1138.35N	1752.84W	==>	2090.04	40.03174364	-104.78655617
6000.00	30.12	303.000	5459.77	1165.68N	1794.92W	==>	2140.22	40.03181959	-104.78670568
6100.00	30.12	303.000	5546.27	1193.02N	1837.01W	==>	2190.41	40.03189555	-104.78685518
6200.00	30.12	303.000	5632.76	1220.35N	1879.10W	==>	2240.59	40.03197151	-104.78700468
6300.00	30.12	303.000	5719.26	1247.68N	1921.18W	==>	2290.78	40.03204746	-104.78715419
6400.00	30.12	303.000	5805.76	1275.01N	1963.27W	==>	2340.96	40.03212342	-104.78730369
6500.00	30.12	303.000	5892.25	1302.35N	2005.36W	==>	2391.14	40.03219938	-104.78745319
6600.00	30.12	303.000	5978.75	1329.68N	2047.44W	==>	2441.33	40.03227533	-104.78760270
6700.00	30.12	303.000	6065.24	1357.01N	2089.53W	==>	2491.51	40.03235129	-104.78775220
6800.00	30.12	303.000	6151.74	1384.34N	2131.62W	==>	2541.69	40.03242724	-104.78790171
6900.00	30.12	303.000	6238.24	1411.68N	2173.70W	==>	2591.88	40.03250320	-104.78805121
7000.00	30.12	303.000	6324.73	1439.01N	2215.79W	==>	2642.06	40.03257916	-104.78820072
7100.00	30.12	303.000	6411.23	1466.34N	2257.88W	==>	2692.24	40.03265511	-104.78835022
7200.00	30.12	303.000	6497.73	1493.68N	2299.96W	==>	2742.43	40.03273107	-104.78849973
7300.00	30.12	303.000	6584.22	1521.01N	2342.05W	==>	2792.61	40.03280702	-104.78864924
7400.00	30.12	303.000	6670.72	1548.34N	2384.14W	==>	2842.79	40.03288297	-104.78879874
7500.00	30.12	303.000	6757.22	1575.67N	2426.23W	==>	2892.98	40.03295893	-104.78894825
7600.00	30.12	303.000	6843.71	1603.01N	2468.31W	==>	2943.16	40.03303488	-104.78909776
7700.00	30.12	303.000	6930.21	1630.34N	2510.40W	==>	2993.34	40.03311084	-104.78924727
7800.00	30.12	303.000	7016.70	1657.67N	2552.49W	==>	3043.53	40.03318679	-104.78939677
7900.00	30.12	303.000	7103.20	1685.00N	2594.57W	==>	3093.71	40.03326274	-104.78954628
8000.00	30.12	303.000	7189.70	1712.34N	2636.66W	==>	3143.89	40.03333870	-104.78969579
8100.00	30.12	303.000	7276.19	1739.67N	2678.75W	==>	3194.08	40.03341465	-104.78984530
8200.00	30.12	303.000	7362.69	1767.00N	2720.83W	==>	3244.26	40.03349060	-104.78999481
8300.00	30.12	303.000	7449.19	1794.33N	2762.92W	==>	3294.44	40.03356656	-104.79014432
8400.00	30.12	303.000	7535.68	1821.67N	2805.01W	==>	3344.63	40.03364251	-104.79029383
8500.00	28.44	303.000	7622.79	1848.41N	2846.19W	2.00	3393.74	40.03371683	-104.79044013
8600.00	26.44	303.000	7711.54	1873.51N	2884.83W	2.00	3439.81	40.03378657	-104.79057741
8700.00	24.44	303.000	7801.84	1896.90N	2920.85W	2.00	3482.76	40.03385157	-104.79070537
8800.00	22.44	303.000	7893.58	1918.56N	2954.21W	2.00	3522.53	40.03391177	-104.79082386
8900.00	20.44	303.000	7986.66	1938.47N	2984.86W	2.00	3559.08	40.03396708	-104.79093275

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Vertical Section is from 0.00N 0.00E on azimuth 303.000 degrees
Bottom hole distance is 3739.41 Feet on azimuth 303.00 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Aug-2018



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Well Design Combined Report
Wellbore: W ROY SWD 5 (PWB)



Interpolated Wellpath									
MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Station Position (Latitude)	Station Position (Longitude)
9000.00	18.44	303.000	8080.95	1956.59N	3012.77W	2.00	3592.36	40.03401744	-104.79103189
9100.00	16.44	303.000	8176.35	1972.91N	3037.90W	2.00	3622.32	40.03406279	-104.79112116
9200.00	14.44	303.000	8272.74	1987.41N	3060.22W	2.00	3648.94	40.03410308	-104.79120046
9300.00	12.44	303.000	8370.00	2000.07N	3079.71W	2.00	3672.18	40.03413825	-104.79126969
9400.00	10.44	303.000	8468.01	2010.87N	3096.34W	2.00	3692.01	40.03416826	-104.79132877
9500.00	8.44	303.000	8566.65	2019.80N	3110.09W	2.00	3708.40	40.03419307	-104.79137762
9600.00	6.44	303.000	8665.80	2026.85N	3120.95W	2.00	3721.35	40.03421266	-104.79141618
9700.00	4.44	303.000	8765.35	2032.01N	3128.89W	2.00	3730.82	40.03422700	-104.79144441
9800.00	2.44	303.000	8865.16	2035.27N	3133.92W	2.00	3736.82	40.03423608	-104.79146228
9900.00	0.44	303.000	8965.13	2036.64N	3136.02W	2.00	3739.32	40.03423987	-104.79146975
10000.00	0.00	303.000	9065.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10100.00	0.00	303.000	9165.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10200.00	0.00	303.000	9265.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10300.00	0.00	303.000	9365.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10400.00	0.00	303.000	9465.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10500.00	0.00	303.000	9565.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10600.00	0.00	303.000	9665.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10700.00	0.00	303.000	9765.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10800.00	0.00	303.000	9865.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
10900.00	0.00	303.000	9965.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11000.00	0.00	303.000	10065.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11100.00	0.00	303.000	10165.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11200.00	0.00	303.000	10265.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11300.00	0.00	303.000	10365.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11400.00	0.00	303.000	10465.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11500.00	0.00	303.000	10565.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11600.00	0.00	303.000	10665.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11700.00	0.00	303.000	10765.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11800.00	0.00	303.000	10865.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
11900.00	0.00	303.000	10965.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
12000.00	0.00	303.000	11065.13	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000
12041.87	0.00	0.000	11107.00	2036.69N	3136.09W	==>	3739.41	40.03424000	-104.79147000

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Bottom hole distance is 3739.41 Feet on azimuth 303.00 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by IPT
Date Printed: 29-Aug-2018



Targets							
Name	North[ft]	East[ft]	TVD[ft]	Latitude	Longitude	Northing	Easting
ROY SWD 5 - BHL	2036.69N	3136.09W	11107.00	40.03424000	-104.79147000	1256112.20	3198395.45
ROY SWD 5 - LY	2036.69N	3136.09W	8987.00	40.03424000	-104.79147000	1256112.20	3198395.45

Notes