



**Scientific
Drilling**

Survey Certification

7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Operator	<u>Williams Production Co.</u>
Well Name & No.	<u>RWF 432-35</u>
County & State	<u>Garfield County, CO</u>
SDI Job No.	<u>42DEFK1007700</u>
Rig	<u>H&P 280</u>
Survey Date	<u>30-Jun-10</u>

I, Julie Cruse, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 7935 feet is true and correct as determined from all available records.

Julie Cruse
Signature

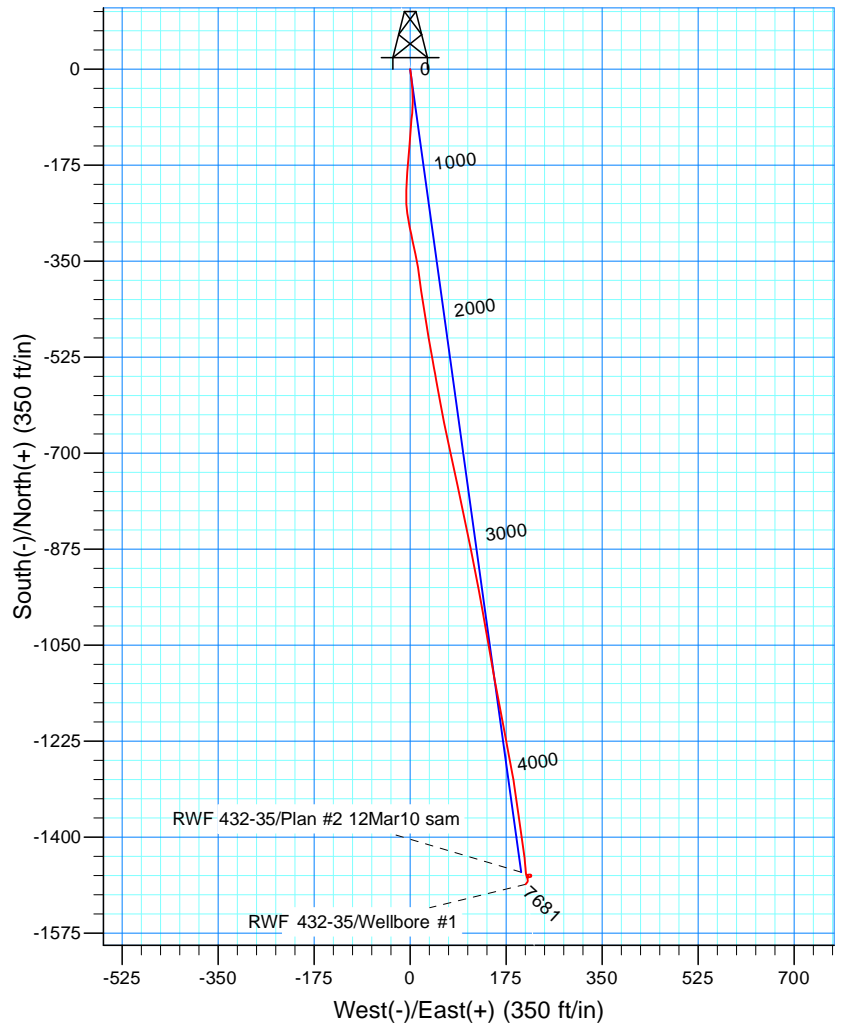
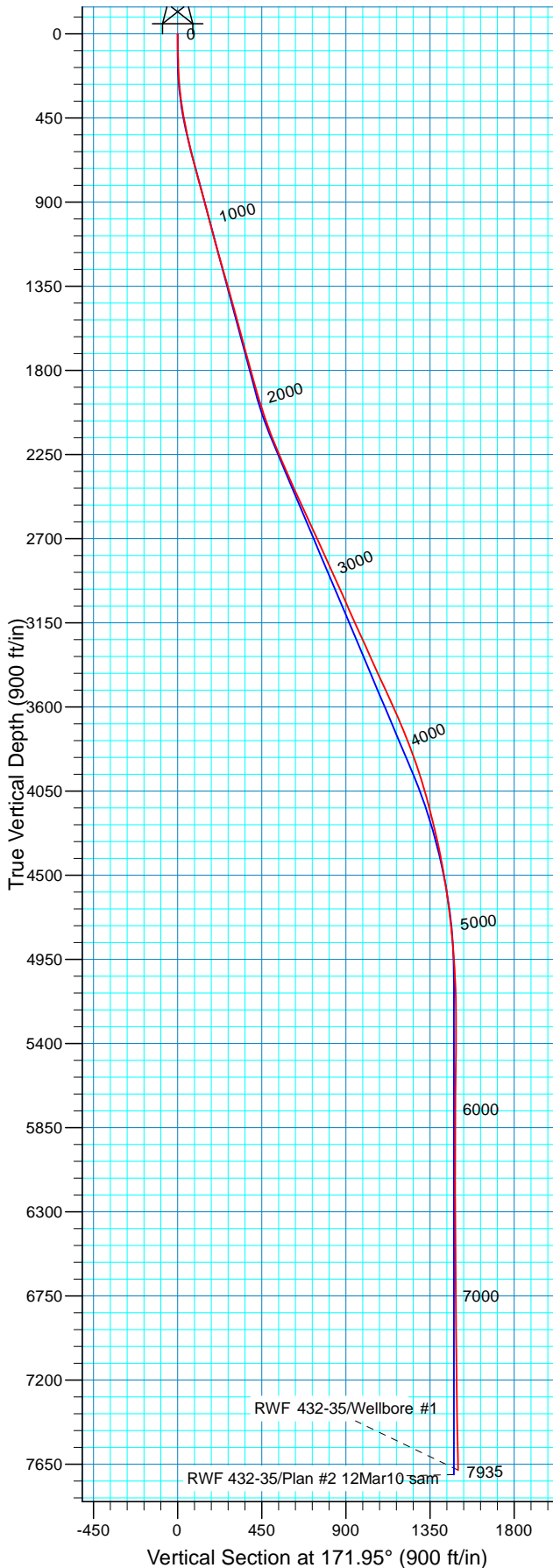
13-Aug-10
Date

Julie Cruse
Rockies Region Engineer
Scientific Drilling - Rocky Mountain District



Project: Garfield County, CO NAD83
 Site: RMV 22-35 Pad
 Well: RWF 432-35
 Wellbore: Wellbore #1
 Design: Wellbore #1

Williams Production Co.



WELL DETAILS: RWF 432-35

Ground Level: WELL @ 5467.01ft (H&P 272 (24' KB) kjs)					
0.00	0.00	1610891.97	2335904.32	39° 29' 13.413 N	107° 51' 11.666 W A11
Northing	Easting	Latitude	Longitude		

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well RWF 432-35 - Slot A11, True North
 Vertical (TVD) Reference: WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
 Section (VS) Reference: Slot - A11(0.00N, 0.00E)
 Measured Depth Reference: WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
 Calculation Method: Minimum Curvature
 Local North: True
 Location:

PROJECT DETAILS: Garfield County, CO NAD83

Design: Wellbore #1 (RWF 432-35/Wellbore #1)

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

Created By: Julie Cruse Date: 2010-08-13



Scientific Drilling

Williams Production Co.

Garfield County, CO NAD83

RMV 22-35 Pad

RWF 432-35 - Slot A11

Wellbore #1

Design: Wellbore #1

Standard Survey Report

13 August, 2010



Company:	Williams Production Co.	Local Co-ordinate Reference:	Well RWF 432-35 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Site:	RMV 22-35 Pad	MD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Well:	RWF 432-35	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Rockies-R5000.1

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	RMV 22-35 Pad				
Site Position:		Northing:	1,610,944.40 usft	Latitude:	39° 29' 13.931 N
From:	Map	Easting:	2,335,901.70 usft	Longitude:	107° 51' 11.717 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.48 °

Well	RWF 432-35 - Slot A11					
Well Position	+N/-S	0.00 ft	Northing:	1,610,891.96 usft	Latitude:	39° 29' 13.413 N
	+E/-W	0.00 ft	Easting:	2,335,904.33 usft	Longitude:	107° 51' 11.666 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,443.01 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2010-07-08	10.41	65.78	52,363

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	171.95	

Survey Program	Date	2010-08-13			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
82.00	449.00	Survey #1 - Surface Gyro (Wellbore #1)	Standard Keeper	Standard Wireline Keeper ver 1.0.2	
463.00	1,113.00	Survey #2 - Surface MWD (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	
1,198.00	7,935.00	Survey #3 - Production (Wellbore #1)	MWD SDI	MWD - Standard ver 1.0.1	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	0.00
82.00	1.32	171.47	81.99	-0.93	0.14	0.94	1.61	1.61	0.00	
111.00	1.41	169.80	110.98	-1.62	0.25	1.64	0.34	0.31	-5.76	
142.00	1.76	180.62	141.97	-2.47	0.32	2.49	1.48	1.13	34.90	
173.00	2.29	177.63	172.95	-3.56	0.34	3.57	1.74	1.71	-9.65	
204.00	3.17	173.41	203.92	-5.03	0.46	5.05	2.91	2.84	-13.61	
235.00	3.70	174.38	234.86	-6.88	0.66	6.90	1.72	1.71	3.13	
265.00	4.75	168.66	264.78	-9.06	1.00	9.11	3.77	3.50	-19.07	
296.00	5.54	167.87	295.66	-11.78	1.56	11.88	2.56	2.55	-2.55	

Company:	Williams Production Co.	Local Co-ordinate Reference:	Well RWF 432-35 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Site:	RMV 22-35 Pad	MD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Well:	RWF 432-35	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Rockies-R5000.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
327.00	6.25	173.85	326.49	-14.92	2.06	15.06	3.03	2.29	19.29	
357.00	7.57	174.99	356.27	-18.51	2.40	18.67	4.42	4.40	3.80	
388.00	8.36	174.90	386.97	-22.79	2.78	22.96	2.55	2.55	-0.29	
418.00	9.24	172.71	416.62	-27.36	3.28	27.55	3.14	2.93	-7.30	
449.00	10.03	169.01	447.18	-32.47	4.11	32.73	3.24	2.55	-11.94	
Last Gyro Survey										
463.00	10.60	176.12	460.96	-34.96	4.43	35.23	9.96	4.07	50.79	
First SDI MWD Survey										
494.00	11.51	178.11	491.38	-40.89	4.73	41.15	3.18	2.94	6.42	
524.00	11.95	179.92	520.76	-46.99	4.83	47.20	1.91	1.47	6.03	
555.00	12.79	182.79	551.04	-53.63	4.67	53.75	3.36	2.71	9.26	
616.00	14.51	182.24	610.31	-68.01	4.04	67.90	2.83	2.82	-0.90	
708.00	15.42	184.84	699.19	-91.71	2.56	91.17	1.23	0.99	2.83	
799.00	14.54	184.33	787.10	-115.16	0.68	114.12	0.98	-0.97	-0.56	
891.00	15.48	184.29	875.96	-138.92	-1.12	137.39	1.02	1.02	-0.04	
982.00	15.33	185.93	963.69	-162.99	-3.27	160.93	0.51	-0.16	1.80	
1,074.00	15.44	182.89	1,052.39	-187.32	-5.14	184.75	0.88	0.12	-3.30	
1,113.00	15.68	182.90	1,089.96	-197.77	-5.67	195.02	0.62	0.62	0.03	
Last Survey in 13 1/2" Hole										
1,198.00	15.57	183.65	1,171.82	-220.62	-6.98	217.47	0.27	-0.13	0.88	
First Survey in 7 7/8" Hole										
1,290.00	15.92	175.82	1,260.38	-245.53	-6.84	242.15	2.34	0.38	-8.51	
1,354.00	15.65	172.66	1,321.97	-262.85	-5.10	259.54	1.41	-0.42	-4.94	
1,448.00	16.26	167.50	1,412.35	-288.27	-0.63	285.34	1.64	0.65	-5.49	
1,542.00	15.21	169.10	1,502.83	-313.23	4.55	310.78	1.21	-1.12	1.70	
1,637.00	14.99	167.08	1,594.55	-337.44	9.65	335.47	0.60	-0.23	-2.13	
1,731.00	15.03	170.02	1,685.34	-361.30	14.48	359.76	0.81	0.04	3.13	
1,826.00	14.98	174.60	1,777.11	-385.65	17.77	384.34	1.25	-0.05	4.82	
1,920.00	15.95	171.12	1,867.70	-410.51	20.91	409.39	1.43	1.03	-3.70	
2,014.00	16.97	171.60	1,957.85	-436.84	24.91	436.02	1.09	1.09	0.51	
2,109.00	18.82	169.49	2,048.25	-465.62	29.73	465.20	2.06	1.95	-2.22	
2,203.00	21.28	169.67	2,136.55	-497.32	35.55	497.39	2.62	2.62	0.19	
2,298.00	21.83	170.85	2,224.90	-531.72	41.45	532.28	0.74	0.58	1.24	
2,392.00	23.91	169.58	2,311.51	-567.71	47.68	568.79	2.27	2.21	-1.35	
2,486.00	24.84	169.76	2,397.13	-605.88	54.63	607.55	0.99	0.99	0.19	
2,581.00	24.27	168.35	2,483.54	-644.63	62.12	646.98	0.86	-0.60	-1.48	
2,675.00	24.97	168.39	2,568.99	-682.99	70.02	686.06	0.74	0.74	0.04	
2,770.00	24.72	167.49	2,655.20	-722.02	78.36	725.88	0.48	-0.26	-0.95	
2,864.00	24.16	167.37	2,740.78	-759.98	86.82	764.65	0.60	-0.60	-0.13	
2,958.00	24.71	168.26	2,826.36	-797.99	95.02	803.43	0.70	0.59	0.95	
3,053.00	23.94	168.65	2,912.92	-836.33	102.86	842.49	0.83	-0.81	0.41	
3,147.00	24.41	168.85	2,998.68	-874.09	110.37	880.93	0.51	0.50	0.21	
3,241.00	23.65	168.53	3,084.53	-911.62	117.87	919.14	0.82	-0.81	-0.34	
3,336.00	24.62	169.05	3,171.23	-949.72	125.42	957.93	1.05	1.02	0.55	

Company:	Williams Production Co.	Local Co-ordinate Reference:	Well RWF 432-35 - Slot A11
Project:	Garfield County, CO NAD83	TVD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Site:	RMV 22-35 Pad	MD Reference:	WELL @ 5467.01ft (H&P 272 (24' KB) kjs)
Well:	RWF 432-35	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Rockies-R5000.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,430.00	24.68	170.66	3,256.66	-988.31	132.33	997.10	0.72	0.06	1.71	
3,525.00	23.85	169.88	3,343.27	-1,026.79	138.92	1,036.13	0.94	-0.87	-0.82	
3,619.00	24.36	170.37	3,429.07	-1,064.61	145.50	1,074.50	0.58	0.54	0.52	
3,723.00	25.06	169.76	3,523.55	-1,107.43	153.00	1,117.95	0.72	0.67	-0.59	
3,808.00	24.53	169.14	3,600.71	-1,142.48	159.53	1,153.56	0.69	-0.62	-0.73	
3,902.00	23.64	168.90	3,686.53	-1,180.14	166.83	1,191.87	0.95	-0.95	-0.26	
4,006.00	21.28	170.02	3,782.63	-1,219.19	174.12	1,231.56	2.31	-2.27	1.08	
4,091.00	19.21	168.59	3,862.38	-1,248.09	179.56	1,260.94	2.50	-2.44	-1.68	
4,185.00	18.03	169.32	3,951.46	-1,277.55	185.32	1,290.91	1.28	-1.26	0.78	
4,279.00	16.18	172.04	4,041.30	-1,304.82	189.83	1,318.54	2.14	-1.97	2.89	
4,374.00	14.77	171.87	4,132.85	-1,329.91	193.37	1,343.89	1.48	-1.48	-0.18	
4,468.00	13.81	170.81	4,223.94	-1,352.85	196.86	1,367.09	1.06	-1.02	-1.13	
4,563.00	12.57	172.57	4,316.43	-1,374.30	200.01	1,388.76	1.37	-1.31	1.85	
4,657.00	10.57	173.06	4,408.52	-1,393.00	202.37	1,407.61	2.13	-2.13	0.52	
4,752.00	10.26	172.29	4,501.95	-1,410.03	204.56	1,424.78	0.36	-0.33	-0.81	
4,846.00	8.40	170.49	4,594.71	-1,425.10	206.82	1,440.02	2.00	-1.98	-1.91	
4,940.00	6.86	173.71	4,687.87	-1,437.45	208.57	1,452.50	1.70	-1.64	3.43	
5,035.00	5.93	176.11	4,782.28	-1,447.99	209.52	1,463.06	1.02	-0.98	2.53	
5,129.00	5.01	174.59	4,875.85	-1,456.92	210.24	1,472.00	0.99	-0.98	-1.62	
5,224.00	3.96	172.74	4,970.56	-1,464.30	211.04	1,479.43	1.12	-1.11	-1.95	
5,318.00	2.55	168.17	5,064.40	-1,469.57	211.88	1,484.76	1.52	-1.50	-4.86	
5,412.00	1.85	129.50	5,158.34	-1,472.58	213.48	1,487.97	1.70	-0.74	-41.14	
5,507.00	0.81	79.17	5,253.31	-1,473.43	215.32	1,489.07	1.55	-1.09	-52.98	
5,601.00	1.09	73.19	5,347.30	-1,473.05	216.83	1,488.90	0.32	0.30	-6.36	
5,695.00	1.23	91.88	5,441.28	-1,472.82	218.70	1,488.94	0.43	0.15	19.88	
5,790.00	1.23	38.53	5,536.26	-1,472.06	220.35	1,488.41	1.16	0.00	-56.16	
5,884.00	1.06	351.34	5,630.25	-1,470.41	220.85	1,486.85	0.99	-0.18	-50.20	
5,979.00	0.79	336.92	5,725.23	-1,468.94	220.46	1,485.34	0.37	-0.28	-15.18	
6,073.00	1.21	282.67	5,819.22	-1,468.12	219.24	1,484.36	1.05	0.45	-57.71	
6,167.00	1.58	260.90	5,913.19	-1,468.11	216.99	1,484.03	0.68	0.39	-23.16	
6,262.00	1.41	258.88	6,008.16	-1,468.54	214.55	1,484.12	0.19	-0.18	-2.13	
6,356.00	0.40	213.68	6,102.15	-1,469.04	213.23	1,484.43	1.24	-1.07	-48.09	
6,451.00	0.18	85.73	6,197.15	-1,469.31	213.20	1,484.68	0.56	-0.23	-134.68	
6,545.00	0.53	84.59	6,291.15	-1,469.25	213.78	1,484.71	0.37	0.37	-1.21	
6,639.00	0.53	178.63	6,385.14	-1,469.65	214.22	1,485.16	0.82	0.00	100.04	
6,734.00	0.44	213.17	6,480.14	-1,470.39	214.03	1,485.88	0.32	-0.09	36.36	
6,828.00	0.70	172.22	6,574.14	-1,471.26	213.91	1,486.72	0.50	0.28	-43.56	
6,922.00	0.18	187.77	6,668.13	-1,471.98	213.97	1,487.44	0.56	-0.55	16.54	
7,017.00	0.34	164.67	6,763.13	-1,472.40	214.02	1,487.86	0.20	0.17	-24.32	
7,111.00	0.42	172.73	6,857.13	-1,473.01	214.14	1,488.48	0.10	0.09	8.57	
7,205.00	0.70	202.80	6,951.13	-1,473.88	213.96	1,489.32	0.42	0.30	31.99	
7,300.00	0.53	186.72	7,046.12	-1,474.85	213.69	1,490.24	0.25	-0.18	-16.93	
7,394.00	0.97	164.48	7,140.11	-1,476.05	213.85	1,491.45	0.55	0.47	-23.66	

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Well:	RWF 432-35	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Rockies-R5000.1

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,488.00	0.70	161.76	7,234.10	-1,477.36	214.24	1,492.81	0.29	-0.29	-2.89	
7,583.00	0.70	181.09	7,329.10	-1,478.49	214.41	1,493.95	0.25	0.00	20.35	
7,677.00	1.02	178.10	7,423.09	-1,479.90	214.43	1,495.35	0.34	0.34	-3.18	
7,771.00	1.49	214.49	7,517.06	-1,481.75	213.76	1,497.08	0.96	0.50	38.71	
7,878.00	2.12	222.43	7,624.01	-1,484.35	211.64	1,499.36	0.63	0.59	7.42	
Last SDI MWD Survey										
7,935.00	2.12	222.43	7,680.97	-1,485.91	210.22	1,500.71	0.00	0.00	0.00	
Projection to TD										

Checked By: _____ Approved By: _____ Date: _____