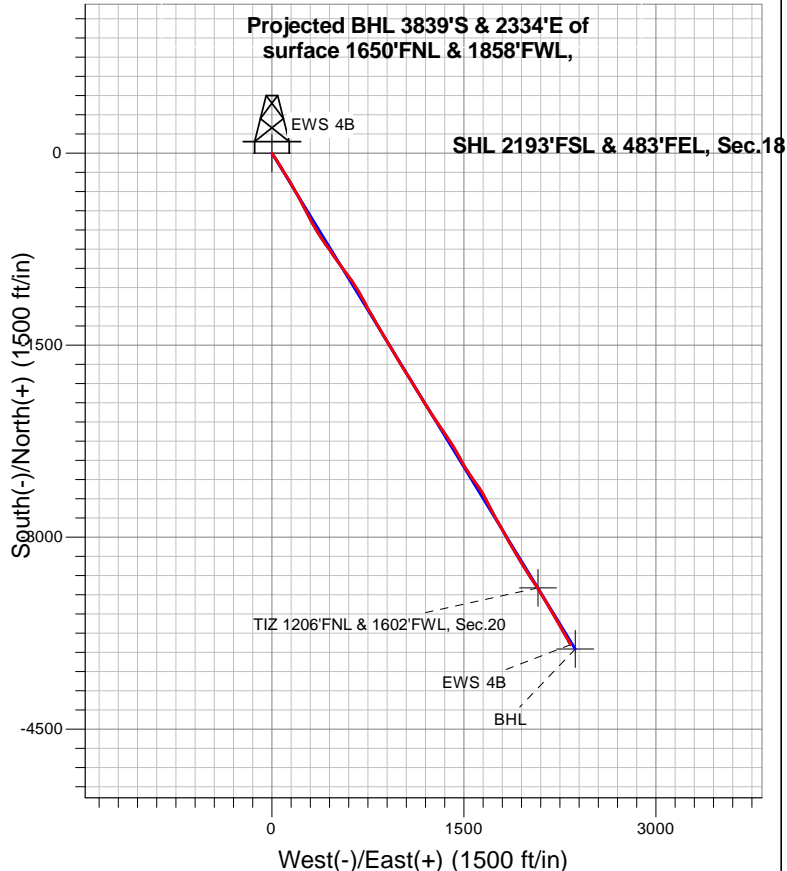
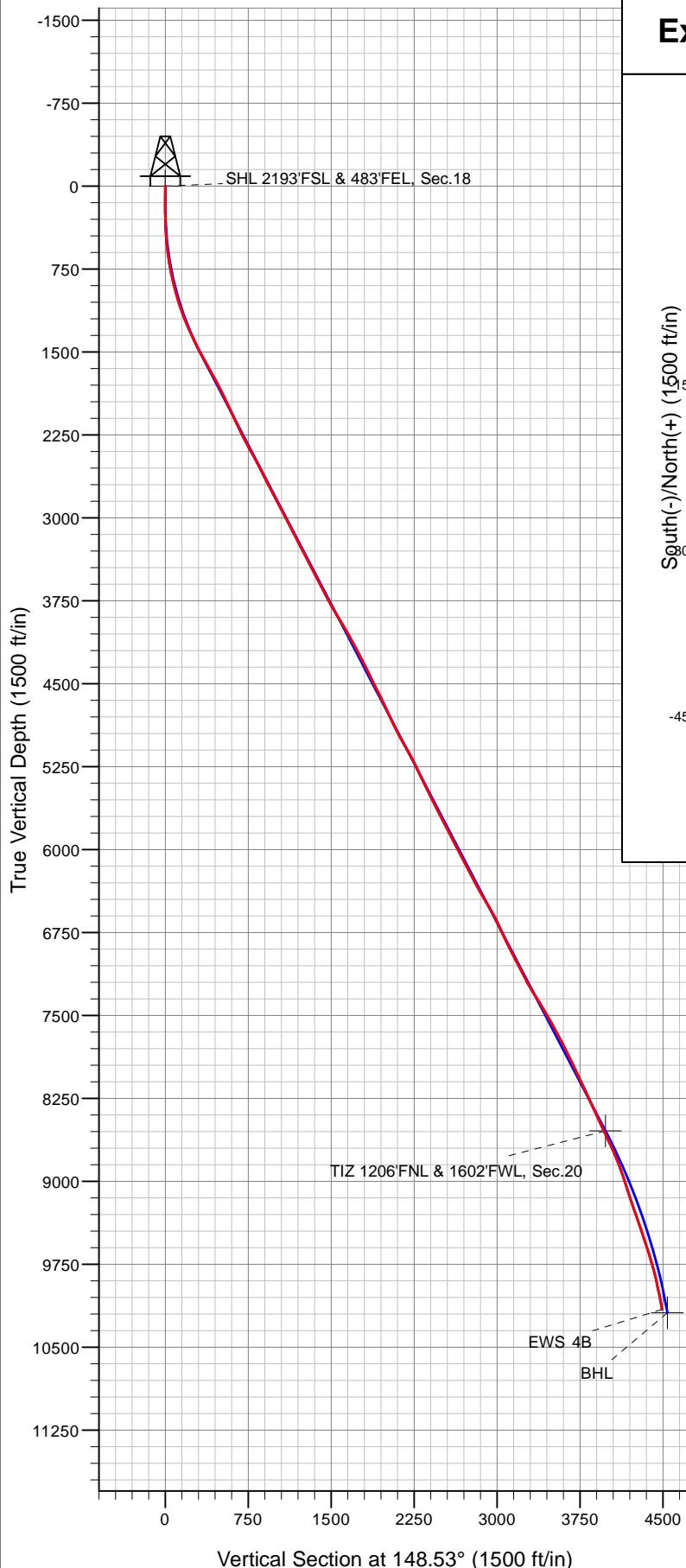


Expedition Water Solutions



LEGEND

- ✕ EWS 4B, Wellbore #1, Plan #1 (8-24-18) V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
11,196'MD & 10,160' TVD @ 4492.35'VS
10.5 deg Inc 150.1 deg AZ

Project: SEC.18-T2N-R63W
 Site: EWS 4B Pad Sec.18-T2N-R63W
 Well: EWS 4B
 Plan: Wellbore #1



Expedition Water Solutions

SEC.18-T2N-R63W

EWS 4B Pad Sec.18-T2N-R63W

EWS 4B

Wellbore #1

Survey: Survey #1

Standard Survey Report

21 March, 2019

Company:	Expedition Water Solutions	Local Co-ordinate Reference:	Well EWS 4B
Project:	SEC.18-T2N-R63W	TVD Reference:	WELL @ 4890.0ft (Original Well Elev)
Site:	EWS 4B Pad Sec.18-T2N-R63W	MD Reference:	WELL @ 4890.0ft (Original Well Elev)
Well:	EWS 4B	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Project	SEC.18-T2N-R63W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		EWS 4B Pad Sec.18-T2N-R63W							
Site Position:		Northing:	1,294,471.45	usft	Latitude:	40.137150			
From:	Lat/Long	Easting:	3,287,247.32	usft	Longitude:	-104.472590			
Position Uncertainty:		0.0	ft	Slot Radius:	13-3/16	"	Grid Convergence:	0.66	°

Well	EWS 4B					
Well Position	+N/-S	0.0 ft	Northing:	1,294,471.45 usft	Latitude:	40.137150
	+E/-W	0.0 ft	Easting:	3,287,247.32 usft	Longitude:	-104.472590
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,877.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/24/2018	8.23	66.58	52,216

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	148.53	

Survey Program	Date	3/21/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	11,196.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	1.90	1.0	0.0	0.0	0.0	0.28	0.28	0.00	
SHL 2193'FSL & 483'FEL, Sec.18										
144.0	0.40	1.90	144.0	0.5	0.0	-0.4	0.28	0.28	0.00	
235.0	0.70	164.00	235.0	0.3	0.2	-0.1	1.20	0.33	178.13	
327.0	1.60	160.30	327.0	-1.5	0.8	1.6	0.98	0.98	-4.02	
419.0	3.20	148.00	418.9	-4.9	2.6	5.5	1.82	1.74	-13.37	
511.0	5.30	143.90	510.6	-10.5	6.4	12.3	2.30	2.28	-4.46	
602.0	7.50	144.50	601.1	-18.7	12.4	22.4	2.42	2.42	0.66	
694.0	9.60	146.70	692.0	-30.0	20.1	36.1	2.31	2.28	2.39	
786.0	11.40	146.60	782.5	-44.0	29.3	52.8	1.96	1.96	-0.11	

Company:	Expedition Water Solutions	Local Co-ordinate Reference:	Well EWS 4B
Project:	SEC.18-T2N-R63W	TVD Reference:	WELL @ 4890.0ft (Original Well Elev)
Site:	EWS 4B Pad Sec.18-T2N-R63W	MD Reference:	WELL @ 4890.0ft (Original Well Elev)
Well:	EWS 4B	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

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)
877.0	12.80	146.70	871.5	-59.9	39.8	71.9	1.54	1.54	0.11
969.0	14.90	148.00	960.8	-78.5	51.6	93.9	2.31	2.28	1.41
1,058.0	17.40	148.20	1,046.3	-99.5	64.7	118.6	2.81	2.81	0.22
1,147.0	20.40	148.70	1,130.5	-124.1	79.8	147.5	3.38	3.37	0.56
1,237.0	21.90	148.20	1,214.4	-151.7	96.8	179.9	1.68	1.67	-0.56
1,327.0	23.50	147.80	1,297.4	-181.2	115.2	214.7	1.79	1.78	-0.44
1,417.0	25.30	149.70	1,379.4	-213.0	134.4	251.8	2.18	2.00	2.11
1,506.0	27.80	150.40	1,459.0	-247.5	154.3	291.6	2.83	2.81	0.79
1,596.0	28.70	150.10	1,538.3	-284.4	175.4	334.2	1.01	1.00	-0.33
1,686.0	29.10	151.00	1,617.1	-322.3	196.8	377.6	0.66	0.44	1.00
1,776.0	29.20	152.00	1,695.7	-360.8	217.7	421.4	0.55	0.11	1.11
1,865.0	28.10	152.20	1,773.8	-398.5	237.7	464.0	1.24	-1.24	0.22
1,955.0	27.10	152.40	1,853.5	-435.5	257.1	505.6	1.12	-1.11	0.22
2,044.0	25.80	152.50	1,933.2	-470.6	275.4	545.2	1.46	-1.46	0.11
2,133.0	25.10	152.00	2,013.6	-504.5	293.2	583.3	0.82	-0.79	-0.56
2,223.0	24.80	151.80	2,095.2	-537.9	311.1	621.2	0.35	-0.33	-0.22
2,313.0	25.50	149.90	2,176.6	-571.3	329.7	659.4	1.19	0.78	-2.11
2,402.0	26.60	148.20	2,256.6	-604.9	349.8	698.5	1.49	1.24	-1.91
2,490.0	28.80	146.90	2,334.5	-639.4	371.8	739.4	2.59	2.50	-1.48
2,530.0	29.00	147.10	2,369.5	-655.6	382.3	758.7	0.56	0.50	0.50
2,620.0	28.00	145.50	2,448.6	-691.3	406.2	801.7	1.40	-1.11	-1.78
2,710.0	27.10	143.60	2,528.4	-725.2	430.3	843.2	1.40	-1.00	-2.11
2,800.0	27.30	146.00	2,608.5	-758.8	454.0	884.2	1.24	0.22	2.67
2,890.0	27.50	146.20	2,688.4	-793.2	477.1	925.6	0.24	0.22	0.22
2,979.0	27.50	144.80	2,767.3	-827.1	500.4	966.6	0.73	0.00	-1.57
3,069.0	27.30	143.20	2,847.2	-860.6	524.7	1,007.9	0.85	-0.22	-1.78
3,159.0	28.10	144.30	2,926.9	-894.3	549.4	1,049.6	1.05	0.89	1.22
3,249.0	28.30	143.60	3,006.2	-928.7	574.5	1,092.0	0.43	0.22	-0.78
3,338.0	27.10	142.70	3,085.0	-961.8	599.3	1,133.2	1.43	-1.35	-1.01
3,428.0	27.30	146.90	3,165.1	-995.4	623.0	1,174.2	2.14	0.22	4.67
3,517.0	26.80	146.90	3,244.3	-1,029.3	645.1	1,214.7	0.56	-0.56	0.00
3,607.0	27.20	148.30	3,324.5	-1,063.8	667.0	1,255.5	0.83	0.44	1.56
3,697.0	27.30	150.30	3,404.5	-1,099.2	688.0	1,296.7	1.02	0.11	2.22
3,787.0	28.40	151.30	3,484.1	-1,135.9	708.5	1,338.7	1.33	1.22	1.11
3,877.0	28.00	152.20	3,563.4	-1,173.4	728.6	1,381.2	0.65	-0.44	1.00
3,967.0	26.30	150.80	3,643.5	-1,209.5	748.2	1,422.2	2.02	-1.89	-1.56
4,057.0	27.20	150.10	3,723.9	-1,244.7	768.2	1,462.7	1.06	1.00	-0.78
4,147.0	30.10	149.90	3,802.9	-1,282.1	789.8	1,505.8	3.22	3.22	-0.22
4,237.0	31.70	150.40	3,880.1	-1,322.2	812.8	1,552.0	1.80	1.78	0.56
4,327.0	31.00	149.90	3,956.9	-1,362.8	836.1	1,598.8	0.83	-0.78	-0.56
4,416.0	29.50	149.00	4,033.8	-1,401.4	858.9	1,643.7	1.76	-1.69	-1.01
4,506.0	28.80	148.30	4,112.4	-1,438.9	881.7	1,687.5	0.87	-0.78	-0.78
4,595.0	28.20	147.40	4,190.6	-1,474.8	904.3	1,730.0	0.83	-0.67	-1.01

Company:	Expedition Water Solutions	Local Co-ordinate Reference:	Well EWS 4B
Project:	SEC.18-T2N-R63W	TVD Reference:	WELL @ 4890.0ft (Original Well Elev)
Site:	EWS 4B Pad Sec.18-T2N-R63W	MD Reference:	WELL @ 4890.0ft (Original Well Elev)
Well:	EWS 4B	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

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)
4,685.0	26.80	151.70	4,270.5	-1,510.6	925.3	1,771.5	2.70	-1.56	4.78
4,774.0	26.30	151.30	4,350.1	-1,545.6	944.3	1,811.2	0.60	-0.56	-0.45
4,864.0	26.30	149.00	4,430.8	-1,580.1	964.2	1,851.1	1.13	0.00	-2.56
4,953.0	26.90	148.00	4,510.4	-1,614.1	985.0	1,890.9	0.84	0.67	-1.12
5,043.0	25.80	147.30	4,591.0	-1,647.9	1,006.4	1,930.8	1.27	-1.22	-0.78
5,132.0	26.70	148.00	4,670.8	-1,681.1	1,027.4	1,970.2	1.07	1.01	0.79
5,222.0	24.90	146.90	4,751.8	-1,714.1	1,048.5	2,009.4	2.07	-2.00	-1.22
5,312.0	25.10	148.30	4,833.4	-1,746.2	1,068.9	2,047.4	0.69	0.22	1.56
5,401.0	26.40	149.40	4,913.6	-1,779.3	1,088.8	2,086.1	1.56	1.46	1.24
5,491.0	29.00	149.40	4,993.3	-1,815.3	1,110.1	2,127.9	2.89	2.89	0.00
5,580.0	30.30	149.60	5,070.6	-1,853.3	1,132.5	2,171.9	1.46	1.46	0.22
5,670.0	28.90	148.70	5,148.9	-1,891.5	1,155.3	2,216.4	1.63	-1.56	-1.00
5,760.0	25.90	147.80	5,228.7	-1,926.7	1,177.1	2,257.8	3.36	-3.33	-1.00
5,850.0	25.20	146.70	5,309.9	-1,959.3	1,198.0	2,296.6	0.94	-0.78	-1.22
5,939.0	25.30	150.60	5,390.4	-1,991.7	1,217.8	2,334.5	1.87	0.11	4.38
6,029.0	25.90	145.70	5,471.6	-2,024.7	1,238.3	2,373.4	2.44	0.67	-5.44
6,119.0	28.70	146.60	5,551.6	-2,059.0	1,261.3	2,414.6	3.14	3.11	1.00
6,209.0	25.90	145.00	5,631.6	-2,093.2	1,284.5	2,455.8	3.22	-3.11	-1.78
6,298.0	27.10	145.30	5,711.2	-2,125.8	1,307.1	2,495.5	1.36	1.35	0.34
6,388.0	26.60	146.20	5,791.5	-2,159.3	1,330.0	2,536.1	0.72	-0.56	1.00
6,478.0	27.70	145.20	5,871.6	-2,193.3	1,353.2	2,577.1	1.32	1.22	-1.11
6,567.0	28.30	147.80	5,950.2	-2,228.1	1,376.2	2,618.8	1.53	0.67	2.92
6,657.0	27.20	147.40	6,029.8	-2,263.5	1,398.7	2,660.7	1.24	-1.22	-0.44
6,747.0	27.80	149.20	6,109.7	-2,298.8	1,420.5	2,702.3	1.14	0.67	2.00
6,836.0	28.80	150.10	6,188.0	-2,335.3	1,441.8	2,744.5	1.22	1.12	1.01
6,926.0	26.00	150.40	6,267.9	-2,371.2	1,462.4	2,785.9	3.11	-3.11	0.33
7,015.0	29.40	151.10	6,346.7	-2,407.3	1,482.6	2,827.2	3.84	3.82	0.79
7,104.0	29.80	149.40	6,424.1	-2,445.5	1,504.4	2,871.1	1.05	0.45	-1.91
7,194.0	31.30	146.20	6,501.6	-2,484.2	1,528.8	2,916.9	2.46	1.67	-3.56
7,283.0	29.00	145.70	6,578.5	-2,521.2	1,553.8	2,961.5	2.60	-2.58	-0.56
7,373.0	25.10	146.60	6,658.7	-2,555.2	1,576.6	3,002.4	4.36	-4.33	1.00
7,463.0	24.40	143.80	6,740.4	-2,586.1	1,598.1	3,040.0	1.52	-0.78	-3.11
7,553.0	25.60	144.10	6,822.0	-2,616.9	1,620.5	3,077.9	1.34	1.33	0.33
7,643.0	27.60	149.40	6,902.5	-2,650.6	1,642.5	3,118.2	3.45	2.22	5.89
7,733.0	27.00	152.50	6,982.4	-2,686.6	1,662.5	3,159.4	1.71	-0.67	3.44
7,822.0	27.70	152.90	7,061.5	-2,723.0	1,681.3	3,200.2	0.81	0.79	0.45
7,912.0	27.30	152.00	7,141.3	-2,759.8	1,700.5	3,241.6	0.64	-0.44	-1.00
8,002.0	29.30	152.90	7,220.6	-2,797.6	1,720.2	3,284.2	2.27	2.22	1.00
8,091.0	31.10	151.50	7,297.5	-2,837.2	1,741.1	3,328.9	2.17	2.02	-1.57
8,181.0	31.60	150.60	7,374.3	-2,878.2	1,763.8	3,375.7	0.76	0.56	-1.00
8,271.0	31.30	150.10	7,451.1	-2,919.0	1,787.0	3,422.6	0.44	-0.33	-0.56
8,360.0	30.40	149.60	7,527.5	-2,958.5	1,810.0	3,468.2	1.05	-1.01	-0.56
8,450.0	28.80	150.60	7,605.8	-2,997.0	1,832.1	3,512.6	1.86	-1.78	1.11

Company:	Expedition Water Solutions	Local Co-ordinate Reference:	Well EWS 4B
Project:	SEC.18-T2N-R63W	TVD Reference:	WELL @ 4890.0ft (Original Well Elev)
Site:	EWS 4B Pad Sec.18-T2N-R63W	MD Reference:	WELL @ 4890.0ft (Original Well Elev)
Well:	EWS 4B	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

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)
8,541.0	28.10	150.80	7,685.8	-3,034.8	1,853.3	3,556.0	0.78	-0.77	0.22
8,630.0	26.20	150.80	7,765.0	-3,070.3	1,873.1	3,596.5	2.13	-2.13	0.00
8,720.0	26.60	150.10	7,845.6	-3,105.1	1,892.9	3,636.5	0.56	0.44	-0.78
8,810.0	26.70	150.40	7,926.0	-3,140.1	1,912.9	3,676.9	0.19	0.11	0.33
8,900.0	25.50	150.30	8,006.9	-3,174.5	1,932.5	3,716.5	1.33	-1.33	-0.11
8,990.0	24.90	146.70	8,088.3	-3,207.2	1,952.5	3,754.8	1.83	-0.67	-4.00
9,080.0	24.60	146.60	8,170.0	-3,238.7	1,973.2	3,792.4	0.34	-0.33	-0.11
9,170.0	25.00	147.40	8,251.7	-3,270.3	1,993.8	3,830.2	0.58	0.44	0.89
9,260.0	24.10	146.00	8,333.6	-3,301.6	2,014.3	3,867.5	1.19	-1.00	-1.56
9,350.0	25.70	147.80	8,415.2	-3,333.3	2,035.0	3,905.4	1.97	1.78	2.00
9,370.0	25.60	148.00	8,433.3	-3,340.7	2,039.6	3,914.1	0.66	-0.50	1.00
9,436.0	25.60	148.00	8,492.8	-3,364.9	2,054.7	3,942.6	0.00	0.00	0.00
9,498.5	25.47	147.87	8,549.2	-3,387.7	2,069.0	3,969.5	0.23	-0.21	-0.21
TIZ 1206'FNL & 1602'FWL, Sec.20									
9,531.0	25.40	147.80	8,578.5	-3,399.5	2,076.4	3,983.5	0.23	-0.21	-0.21
9,625.0	24.60	148.70	8,663.7	-3,433.3	2,097.3	4,023.2	0.94	-0.85	0.96
9,720.0	23.00	148.30	8,750.6	-3,466.0	2,117.4	4,061.5	1.69	-1.68	-0.42
9,815.0	21.00	148.30	8,838.7	-3,496.2	2,136.1	4,097.1	2.11	-2.11	0.00
9,910.0	19.00	149.60	8,928.0	-3,524.1	2,152.8	4,129.6	2.16	-2.11	1.37
10,005.0	17.90	151.10	9,018.1	-3,550.2	2,167.7	4,159.7	1.26	-1.16	1.58
10,100.0	17.70	151.10	9,108.5	-3,575.6	2,181.7	4,188.7	0.21	-0.21	0.00
10,195.0	19.00	148.50	9,198.7	-3,601.4	2,196.8	4,218.6	1.62	1.37	-2.74
10,290.0	20.20	149.00	9,288.2	-3,628.7	2,213.3	4,250.4	1.28	1.26	0.53
10,385.0	18.70	150.30	9,377.8	-3,656.0	2,229.3	4,282.1	1.64	-1.58	1.37
10,480.0	18.60	149.90	9,467.8	-3,682.3	2,244.5	4,312.4	0.17	-0.11	-0.42
10,574.0	18.30	150.40	9,557.0	-3,708.1	2,259.3	4,342.2	0.36	-0.32	0.53
10,669.0	17.30	150.40	9,647.4	-3,733.4	2,273.6	4,371.2	1.05	-1.05	0.00
10,764.0	15.90	150.10	9,738.5	-3,756.9	2,287.1	4,398.3	1.48	-1.47	-0.32
10,859.0	14.10	150.10	9,830.2	-3,778.2	2,299.3	4,422.9	1.89	-1.89	0.00
10,954.0	12.70	150.60	9,922.6	-3,797.4	2,310.2	4,444.9	1.48	-1.47	0.53
11,048.0	11.50	150.80	10,014.5	-3,814.6	2,319.9	4,464.6	1.28	-1.28	0.21
11,143.0	10.50	150.10	10,107.8	-3,830.3	2,328.8	4,482.7	1.06	-1.05	-0.74
11,196.0	10.50	150.10	10,159.9	-3,838.7	2,333.6	4,492.4	0.00	0.00	0.00
BHL									

Checked By: _____ Approved By: _____ Date: _____