

K. P. Kauffman Company, Inc.

Front Range #11-17-17

NESW section 17-T4N-R66W

Weld Co., Colorado

Directional plot

# Well Plan

Well Name	Vertical Section Azimuth	Units
Front Range #11-17-17	37.15	ft,°/100ft

www.makinhole.com

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	Vert. Sec.*	Description	Reference Note
0.00	0.00	0.0	0.00	0.00	0.00		0.00	tie point RKB	
100.00	0.00	0.0	100.00	0.00	0.00	0.00	0.00	vertical	
200.00	0.00	0.0	200.00	0.00	0.00	0.00	0.00	vertical	
300.00	0.00	0.0	300.00	0.00	0.00	0.00	0.00	vertical	
400.00	0.00	0.0	400.00	0.00	0.00	0.00	0.00	vertical	
500.00	0.00	0.0	500.00	0.00	0.00	0.00	0.00	vertical	
600.00	0.00	0.0	600.00	0.00	0.00	0.00	0.00	vertical	
700.00	0.00	0.0	700.00	0.00	0.00	0.00	0.00	vertical	
800.00	0.00	0.0	800.00	0.00	0.00	0.00	0.00	vertical	
900.00	0.00	0.0	900.00	0.00	0.00	0.00	0.00	vertical	
1000.00	0.00	0.0	1000.00	0.00	0.00	0.00	0.00	vertical	
1100.00	0.00	0.0	1100.00	0.00	0.00	0.00	0.00	vertical	
1200.00	0.00	0.0	1200.00	0.00	0.00	0.00	0.00	End vertical KOP	
1300.00	3.75	37.2	1299.93	2.61	1.98	3.75	3.27	build	
1400.00	7.50	37.2	1399.43	10.42	7.89	3.75	13.07	build	
1500.00	11.25	37.2	1498.08	23.40	17.73	3.75	29.36	build	
1600.00	15.00	37.2	1595.45	41.49	31.44	3.75	52.06	build	
1700.00	18.75	37.2	1691.12	64.63	48.97	3.75	81.08	build	
1800.00	22.50	37.2	1784.70	92.70	70.24	3.75	116.30	build	
1900.00	26.25	37.2	1875.77	125.59	95.16	3.75	157.57	build	
2000.00	30.00	37.2	1963.94	163.15	123.62	3.75	204.70	build	
2100.00	33.75	37.2	2048.85	205.23	155.51	3.75	257.50	build	
2200.00	37.50	37.2	2130.12	251.65	190.68	3.75	315.73	build	
2300.00	41.25	37.2	2207.41	302.21	228.99	3.75	379.16	build	
2400.00	45.00	37.2	2280.38	356.68	270.26	3.75	447.51	build	
2500.00	48.75	37.2	2348.73	414.84	314.33	3.75	520.48	build	
2600.00	52.50	37.2	2412.15	476.44	361.01	3.75	597.77	build	
2700.00	56.25	37.2	2470.39	541.22	410.09	3.75	679.04	build	
2800.00	60.00	37.2	2523.19	608.89	461.37	3.75	763.94	build	

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	Vert. Sec.*	Description	Reference Note
2900.00	63.75	37.2	2570.32	679.17	514.62	3.75	852.12	build	
3000.00	67.50	37.2	2611.58	751.76	569.62	3.75	943.19	build	
3100.00	71.25	37.2	2646.80	826.34	626.13	3.75	1036.76	build	
3200.00	75.00	37.2	2675.83	902.60	683.92	3.75	1132.44	build	
3300.00	78.75	37.2	2698.53	980.21	742.72	3.75	1229.81	build	
3400.00	82.50	37.2	2714.82	1058.83	802.30	3.75	1328.46	build	
3500.00	86.25	37.2	2724.62	1138.14	862.39	3.75	1427.96	build	
3600.00	90.00	37.2	2727.89	1217.78	922.74	3.75	1527.89	build	
3622.93	90.86	37.2	2727.72	1236.06	936.59	3.75	1550.82	End build	TOP OF BUILD
3700.00	86.74	37.2	2729.33	1297.46	983.11	5.34	1627.85	drop/right	
3800.00	81.40	37.2	2739.65	1376.69	1043.19	5.34	1727.28	drop/right	
3900.00	76.06	37.2	2759.18	1454.80	1102.43	5.34	1825.32	drop/right	
4000.00	70.72	37.2	2787.76	1531.10	1160.34	5.34	1921.11	drop/right	
4100.00	65.38	37.2	2825.13	1604.95	1216.41	5.34	2013.83	drop/right	
4200.00	60.04	37.2	2870.97	1675.68	1270.14	5.34	2102.66	drop/right	
4300.00	54.69	37.2	2924.88	1742.70	1321.09	5.34	2186.84	drop/right	
4400.00	49.35	37.3	2986.39	1805.42	1368.79	5.34	2265.64	drop/right	
4500.00	44.01	37.3	3054.98	1863.28	1412.85	5.34	2338.37	drop/right	
4600.00	38.67	37.3	3130.03	1915.80	1452.86	5.34	2404.39	drop/right	
4700.00	33.33	37.4	3210.90	1962.51	1488.50	5.34	2463.15	drop/right	
4800.00	27.99	37.4	3296.90	2003.02	1519.44	5.34	2514.12	drop/right	
4900.00	22.64	37.5	3387.26	2036.95	1545.43	5.34	2556.86	drop/right	
5000.00	17.30	37.6	3481.21	2064.03	1566.23	5.34	2591.00	drop/right	
5100.00	11.96	37.8	3577.94	2084.02	1581.66	5.34	2616.25	drop/right	
5200.00	6.62	38.3	3676.59	2096.74	1591.59	5.34	2632.39	drop/right	
5263.65	3.22	39.5	3740.00	2101.00	1595.00	5.34	2637.84	End drop/right	TOP OF DROP
5300.00	2.80	39.5	3776.29	2102.47	1596.22	1.16	2639.75	build/invert	
5400.00	1.64	39.5	3876.22	2105.46	1598.68	1.16	2643.62	build/invert	
5500.00	0.48	39.5	3976.20	2106.88	1599.86	1.16	2645.47	build/invert	
5600.00	0.68	219.5	4076.20	2106.75	1599.75	1.16	2645.29	build/invert	
5700.00	1.84	219.5	4176.17	2105.05	1598.34	1.16	2643.09	build/invert	

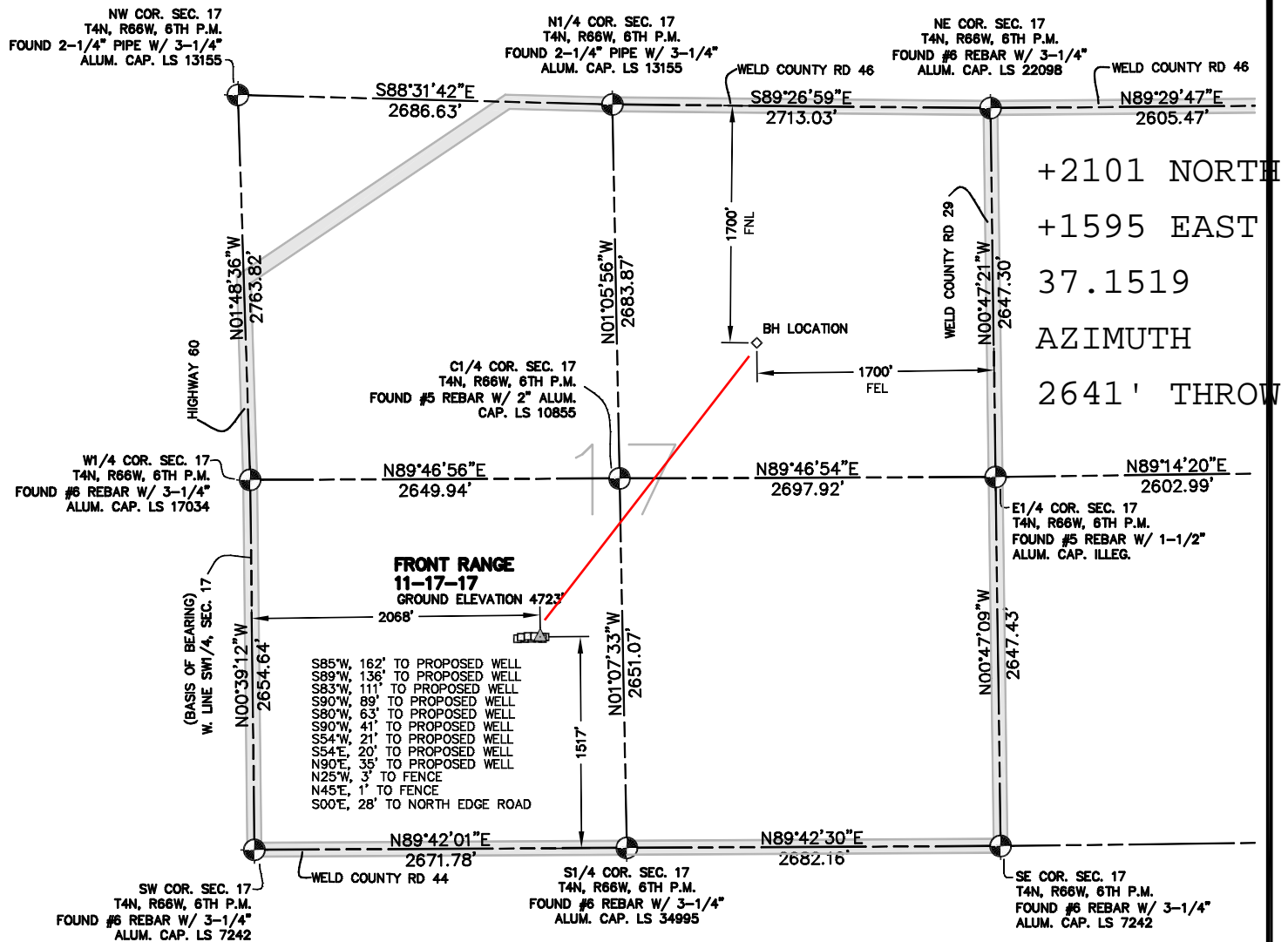
MD*	INC*	AZI*	TVD*	N*	E*	DLS*	Vert. Sec.*	Description	Reference Note
5800.00	3.00	219.5	4276.08	2101.79	1595.65	1.16	2638.87	build/invert	
5818.95	3.22	219.5	4295.00	2101.00	1595.00	1.16	2637.84	End build/invert	TOP OF SUSSEX
5900.00	1.88	219.5	4375.97	2098.22	1592.70	1.65	2634.24	build/invert	
6000.00	0.23	219.5	4475.95	2096.79	1591.53	1.65	2632.40	build/invert	
6100.00	1.42	39.5	4575.94	2097.59	1592.19	1.65	2633.43	build/invert	
6200.00	3.07	39.5	4675.86	2100.61	1594.68	1.65	2637.34	build/invert	
6209.15	3.22	39.5	4685.00	2101.00	1595.00	1.65	2637.84	End build/invert	TOP OF SHANNON
6300.00	2.95	39.5	4775.72	2104.77	1598.11	0.30	2642.73	build/invert	
6400.00	2.66	39.5	4875.60	2108.54	1601.23	0.30	2647.62	build/invert	
6500.00	2.36	39.5	4975.50	2111.92	1604.01	0.30	2651.99	build/invert	
6600.00	2.06	39.5	5075.43	2114.89	1606.47	0.30	2655.85	build/invert	
6700.00	1.77	39.5	5175.37	2117.47	1608.60	0.30	2659.19	build/invert	
6800.00	1.47	39.5	5275.33	2119.65	1610.40	0.30	2662.01	build/invert	
6900.00	1.18	39.5	5375.30	2121.43	1611.87	0.30	2664.32	build/invert	
7000.00	0.88	39.5	5475.29	2122.81	1613.01	0.30	2666.11	build/invert	
7100.00	0.58	39.5	5575.28	2123.80	1613.83	0.30	2667.39	build/invert	
7200.00	0.29	39.5	5675.27	2124.39	1614.31	0.30	2668.15	build/invert	
7300.00	0.01	219.5	5775.27	2124.57	1614.47	0.30	2668.39	build/invert	
7400.00	0.30	219.5	5875.27	2124.36	1614.29	0.30	2668.12	build/invert	
7500.00	0.60	219.5	5975.27	2123.76	1613.79	0.30	2667.33	build/invert	
7600.00	0.90	219.5	6075.26	2122.75	1612.96	0.30	2666.02	build/invert	
7700.00	1.19	219.5	6175.25	2121.34	1611.80	0.30	2664.20	build/invert	
7800.00	1.49	219.5	6275.22	2119.54	1610.31	0.30	2661.87	build/invert	
7900.00	1.78	219.5	6375.18	2117.34	1608.49	0.30	2659.01	build/invert	
8000.00	2.08	219.5	6475.12	2114.74	1606.34	0.30	2655.64	build/invert	
8100.00	2.38	219.5	6575.04	2111.74	1603.87	0.30	2651.76	build/invert	
8200.00	2.67	219.5	6674.95	2108.34	1601.06	0.30	2647.36	build/invert	
8300.00	2.97	219.5	6774.83	2104.55	1597.93	0.30	2642.44	build/invert	
8385.30	3.22	219.5	6860.00	2101.00	1595.00	0.30	2637.84	End build/invert	TOP OF NIOBRARA
8400.00	2.94	219.5	6874.68	2100.39	1594.50	1.92	2637.05	build/invert	
8500.00	1.02	219.5	6974.62	2097.73	1592.30	1.92	2633.61	build/invert	

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	Vert. Sec.*	Description	Reference Note
8600.00	0.91	39.5	7074.61	2097.66	1592.24	1.92	2633.51	build/invert	
8700.00	2.83	39.5	7174.55	2100.17	1594.31	1.92	2636.76	build/invert	
8720.48	3.22	39.5	7195.00	2101.00	1595.00	1.92	2637.84	End build/invert	TOP OF CODELL
8800.00	2.21	39.5	7274.43	2103.90	1597.40	1.27	2641.61	drop/invert	
8900.00	0.93	39.5	7374.40	2106.02	1599.14	1.27	2644.34	drop/invert	
9000.00	0.34	219.5	7474.39	2106.41	1599.47	1.27	2644.86	drop/invert	
9100.00	1.62	219.5	7574.38	2105.09	1598.38	1.27	2643.15	drop/invert	
9200.00	2.89	219.5	7674.30	2102.06	1595.87	1.27	2639.22	drop/invert	
9225.74	3.22	219.5	7700.00	2101.00	1595.00	1.27	2637.84	End drop/invert	TOP OF J-SD
9300.00	0.49	219.5	7774.21	2099.15	1593.47	3.68	2635.44	drop/invert	
9400.00	3.19	39.5	7874.17	2100.96	1594.97	3.68	2637.80	drop/invert	
9400.83	3.22	39.5	7875.00	2101.00	1595.00	3.68	2637.84	End drop/invert	TD

# DIRECTIONAL PLAN

## WELL LOCATION CERTIFICATE

THIS MAP IS A GIS EXHIBIT AND DOES NOT REPRESENT A BOUNDARY SURVEY.



+2101 NORTH  
+1595 EAST  
37.1519  
AZIMUTH  
2641' THROW

### FRONT RANGE 11-17-17 GROUND ELEVATION 4723'

S85°W, 162' TO PROPOSED WELL  
S89°W, 136' TO PROPOSED WELL  
S83°W, 111' TO PROPOSED WELL  
S90°W, 89' TO PROPOSED WELL  
S80°W, 63' TO PROPOSED WELL  
S90°W, 41' TO PROPOSED WELL  
S54°W, 21' TO PROPOSED WELL  
S54°E, 20' TO PROPOSED WELL  
N90°E, 35' TO PROPOSED WELL  
N25°W, 3' TO FENCE  
N45°E, 1' TO FENCE  
S00°E, 28' TO NORTH EDGE ROAD



EXHIBIT MAP



## WELL LOCATION CERTIFICATE

IN ACCORDANCE WITH A REQUEST FROM SHERRY GLASS OF KP KAUFFMAN INC., CIVIL ARTS-DREXEL GROUP, INC. HAS DETERMINED THE LOCATION OF FRONT RANGE 11-17-17 WELL SITE TO BE 2068' FWL AND 1517' FSL AS MEASURED AT NINETY (90) DEGREES FROM THE SECTION LINES OF SECTION 17, T4N, R66W, OF THE 6TH P.M., WELD COUNTY, CO.

## LEGEND

- = FOUND SURVEY MONUMENT
- = ROAD
- (C) = CALCULATED DIMENSION
- ▲ = PROPOSED WELL LOCATION
- ◇ = BOTTOM OF HOLE LOCATION
- = OTHER PROPOSED WELL LOCATION
- = EXISTING WELL LOCATION

## NOTES

1. BEARINGS SHOWN ON THIS MAP ARE BASED UPON GPS OBSERVATIONS MADE ON 03/01/2010 BY KIPPER GOLDSBERRY BETWEEN THE SOUTHWEST CORNER AND THE W1/4 CORNER OF SECTION 17, T4N, R66W, OF THE 6TH P.M., HAVING A BEARING OF N00°39'12"W, AS MONUMENTED AND SHOWN HEREON.
2. ELEVATIONS ARE BASED UPON NAVD 88 DATUM.
3. THE LOCATION FALLS IN AN AGRICULTURAL FIELD.

## PROPOSED SURFACE HOLE DATA

(NAD 83)  
LATITUDE: 40.30857 N  
LONGITUDE: 104.80366 W  
PDOP: <6

## NOTICE

ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVERED SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

I HEREBY CERTIFY THAT THIS WELL LOCATION CERTIFICATE WAS PREPARED UNDER MY RESPONSIBLE CHARGE ON 04/12/2010 FOR AND ON BEHALF OF KP KAUFFMAN, INC. THAT IT IS NOT A LAND SURVEY PLAT OR AN IMPROVEMENT SURVEY PLAT, AND THAT IT IS NOT TO BE RELIED UPON FOR ESTABLISHMENT OF FENCE, BUILDING, OR OTHER FUTURE IMPROVEMENT LINES.

PETER D. STEGER  
COLORADO REGISTERED PROFESSIONAL  
LAND SURVEYOR NO. 25379

DATE: APRIL 12, 2010



ENGINEERING  
PLANNING  
SURVEYING  
1860 Lefthand Circle, Suite A  
Longmont, CO 80501  
P 303.682.1131  
F 303.682.1149