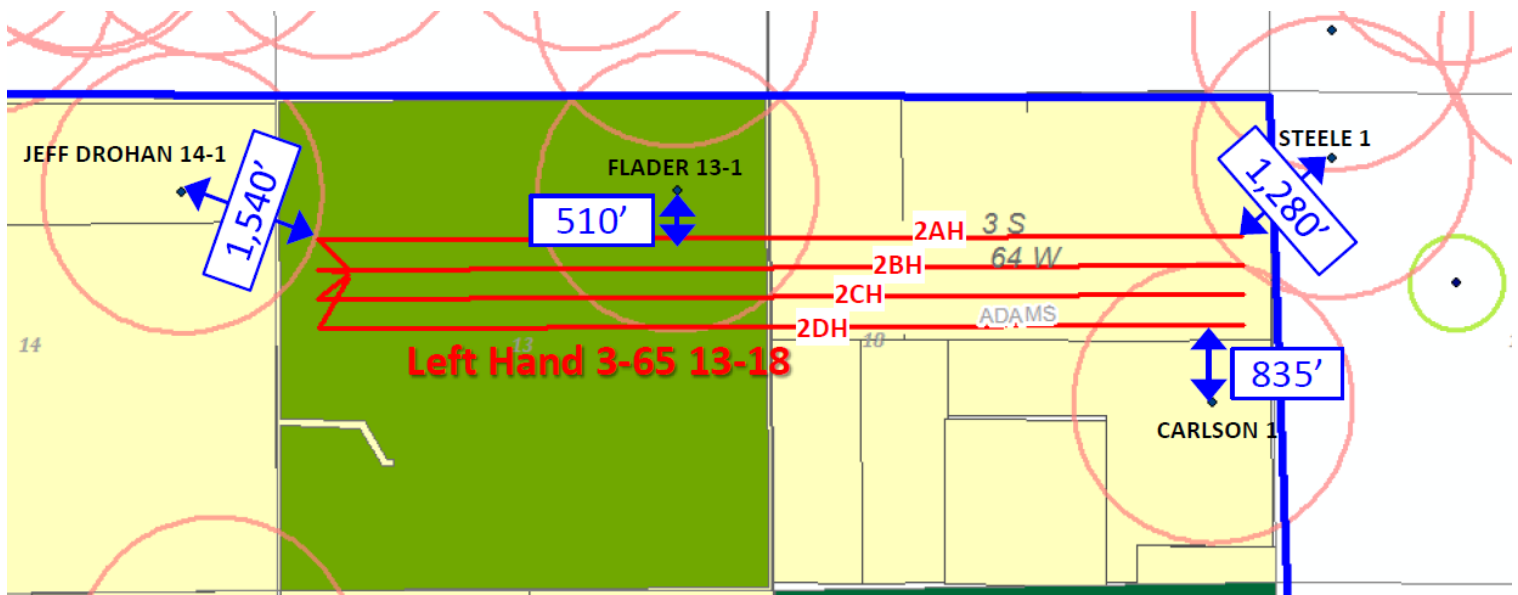


Left hand quad pad reduced frac plan for improperly isolated wells. (Red circles represent 1,500')



Reduced designs based on a standard completion size of 35,000 pounds of proppant per cluster and 910 barrels of fluid per cluster.

Stages are configured at 10 clusters per stage and 25' between clusters.

Maximum pump rate for the well is 85 bpm

For lateral footage that falls within the following distance of the wells shown above we propose the following maximum job sizes.

1,500' or greater – 35,000 pounds of proppant per cluster pumped at 85 bpm (100%)

1,000' – 1,500' – 28,000 pounds of proppant per cluster pumped at 75 bpm (80%)

500' – 1,000' – 21,000 pounds of proppant per cluster pumped at 65 bpm (60%)

Less than 500' – no frac pumped

Example pump schedules shown below:

Standard completion (Pumped on lateral footage outside of 1,500')

Stage 3			Flush	
Plug	15,211'		321 bbls	2
Cluster 1	15,201'		321 bbls	3
Cluster 2	15,176'		320 bbls	4
Cluster 3	15,151'		320 bbls	5
Cluster 4	15,126'		319 bbls	6
Cluster 5	15,101'		319 bbls	7
Cluster 6	15,076'		318 bbls	8
Cluster 7	15,051'		318 bbls	9
Cluster 8	15,026'		317 bbls	10
Cluster 9	15,001'		317 bbls	11
Cluster 10	14,976'		316 bbls	12

Design	
Anticipated F.G.	1 psi/ft
Overall Pad %	11.2 %

Cluster Shots
3,3,3,3,3,3,3,3,3,3

Stage	Fluid	Prop	PPA	BPM	Gallons			Barrels	
			Prop Con	Rate	Clean	Dirty	Cum Dirty	Dirty	Cum Dirty
Acid	15% HCl	NA	0.00	15	4000	4000.0	4000.0	95.2	95.2
Pre Pad	FR	NA	0.00	85	16000	16000.0	20000.0	381.0	476.2
Prop 1	FR	100 mesh	0.25	85	3500	3539.6	23539.6	84.3	560.5
Pad	FR	NA	0.00	85	16000	16000.0	39539.6	381.0	941.4
Prop 1	FR	100 mesh	0.25	85	18000	18203.6	57743.2	433.4	1374.8
Prop 1	FR	100 mesh	0.50	85	18000	18407.3	76150.5	438.3	1813.1
Prop 1	FR	100 mesh	0.75	85	20000	20678.8	96829.2	492.4	2305.5
Prop 2	FR	40/70 white	0.50	85	19250	19685.5	116514.8	468.7	2774.2
Prop 2	FR	40/70 white	0.75	85	20000	20678.8	137193.5	492.4	3266.5
Prop 2	FR	40/70 white	1.00	85	30000	31357.5	168551.0	746.6	4013.1
Prop 2	FR	40/70 white	1.25	85	45000	47545.3	216096.3	1132.0	5145.2
Prop 2	FR	40/70 white	1.50	85	64000	68344.0	284440.3	1627.2	6772.4
Prop 2	FR	40/70 white	1.75	85	65000	70147.2	354587.5	1670.2	8442.6
Prop 2	FR	40/70 white	2.00	85	0	0.0	354587.5	0.0	8442.6
Flush	linear	NA	0.00	85	0	0.0	354587.5	0.0	8442.6
Flush	FR	NA	0.00	85	13272	13272.0	367859.5	316.0	8758.6

Stage Requirements - Fluid				
15% HCL	4,000	gallons	95	bbls
FR	334,750	gallons	7,970	bbls
Total Clean	338,750	gallons	8,065	bbls

Stage Requirements - Proppant				
40/70 white	29,375	lbs	294	sks
20/40 white	320,625	lbs	3,206	sks
20/40 CRC	-	lbs	-	sks
Total Prop	350,000	lbs	3,500	sks

80% of Standard Completion (Pumped on lateral footage between 1,000' – 1,500')

Stage 3	80% Design	Flush
Plug	15,211'	321 bbls
Cluster 1	15,201'	321 bbls
Cluster 2	15,176'	320 bbls
Cluster 3	15,151'	320 bbls
Cluster 4	15,126'	319 bbls
Cluster 5	15,101'	319 bbls
Cluster 6	15,076'	318 bbls
Cluster 7	15,051'	318 bbls
Cluster 8	15,026'	317 bbls
Cluster 9	15,001'	317 bbls
Cluster 10	14,976'	316 bbls

Design	
Anticipated F.G.	1 psi/ft
Overall Pad %	10.8 %

Cluster Shots

3,3,3,3,3,3,3,3,3

Stage	Fluid	Prop	PPA	BPM	Gallons			Barrels	
			Prop Con	Rate	Clean	Dirty	Cum Dirty	Dirty	Cum Dirty
Acid	15% HCl	NA	0.00	15	4000	4000.0	4000.0	95.2	95.2
Pre Pad	FR	NA	0.00	75	12800	12800.0	16800.0	304.8	400.0
Prop 1	FR	100 mesh	0.25	75	2800	2831.7	19631.7	67.4	467.4
Pad	FR	NA	0.00	75	12800	12800.0	32431.7	304.8	772.2
Prop 1	FR	100 mesh	0.25	75	14400	14562.9	46994.6	346.7	1118.9
Prop 1	FR	100 mesh	0.50	75	14400	14725.8	61720.4	350.6	1469.5
Prop 1	FR	100 mesh	0.75	75	16000	16543.0	78263.4	393.9	1863.4
Prop 2	FR	40/70 white	0.50	75	15400	15748.4	94011.8	375.0	2238.4
Prop 2	FR	40/70 white	0.75	75	16000	16543.0	110554.8	393.9	2632.3
Prop 2	FR	40/70 white	1.00	75	23300	24354.3	134909.1	579.9	3212.1
Prop 2	FR	40/70 white	1.25	75	37000	39092.8	174001.9	930.8	4142.9
Prop 2	FR	40/70 white	1.50	75	56000	59801.0	233802.9	1423.8	5566.7
Prop 2	FR	40/70 white	1.75	75	61000	65830.4	299633.4	1567.4	7134.1
Prop 2	FR	40/70 white	2.00	75	0	0.0	299633.4	0.0	7134.1
Flush	linear	NA	0.00	75	0	0.0	299633.4	0.0	7134.1
Flush	FR	NA	0.00	75	13272	13272.0	312905.4	316.0	7450.1

Stage Requirements - Fluid				
15% HCL	4,000	gallons	95	bbls
FR	281,900	gallons	6,712	bbls
Total Clean	285,900	gallons	6,807	bbls

Stage Requirements - Proppant				
40/70 white	-	lbs	-	sks
20/40 white	280,000	lbs	2,800	sks
20/40 CRC	-	lbs	-	sks
Total Prop	280,000	lbs	2,800	sks

60% of Standard Completion (Pumped on lateral footage between 500' – 1,000')

Stage 3	60% Design	Flush
Plug	15,211'	321 bbls
Cluster 1	15,201'	321 bbls
Cluster 2	15,176'	320 bbls
Cluster 3	15,151'	320 bbls
Cluster 4	15,126'	319 bbls
Cluster 5	15,101'	319 bbls
Cluster 6	15,076'	318 bbls
Cluster 7	15,051'	318 bbls
Cluster 8	15,026'	317 bbls
Cluster 9	15,001'	317 bbls
Cluster 10	14,976'	316 bbls

Design	
Anticipated F.G.	1 psi/ft
Overall Pad %	12.8 %

Cluster Shots

3,3,3,3,3,3,3,3,3,3

Stage	Fluid	Prop	PPA	BPM	Gallons			Barrels	
			Prop Con	Rate	Clean	Dirty	Cum Dirty	Dirty	Cum Dirty
Acid	15% HCl	NA	0.00	15	4000	4000.0	4000.0	95.2	95.2
Pre Pad	FR	NA	0.00	65	12800	12800.0	16800.0	304.8	400.0
Prop 1	FR	100 mesh	0.25	65	2800	2831.7	19631.7	67.4	467.4
Pad	FR	NA	0.00	65	12800	12800.0	32431.7	304.8	772.2
Prop 1	FR	100 mesh	0.25	65	14400	14562.9	46994.6	346.7	1118.9
Prop 1	FR	100 mesh	0.50	65	14400	14725.8	61720.4	350.6	1469.5
Prop 1	FR	100 mesh	0.75	65	16000	16543.0	78263.4	393.9	1863.4
Prop 2	FR	40/70 white	0.50	65	15000	15339.4	93602.8	365.2	2228.6
Prop 2	FR	40/70 white	0.75	65	16000	16543.0	110145.8	393.9	2622.5
Prop 2	FR	40/70 white	1.00	65	20250	21166.3	131312.1	504.0	3126.5
Prop 2	FR	40/70 white	1.25	65	28000	29583.8	160895.8	704.4	3830.9
Prop 2	FR	40/70 white	1.50	65	40000	42715.0	203610.8	1017.0	4847.9
Prop 2	FR	40/70 white	1.75	65	43000	46405.1	250015.9	1104.9	5952.8
Prop 2	FR	40/70 white	2.00	65	0	0.0	250015.9	0.0	5952.8
Flush	linear	NA	0.00	65	0	0.0	250015.9	0.0	5952.8
Flush	FR	NA	0.00	65	13272	13272.0	263287.9	316.0	6268.8

Stage Requirements - Fluid				
15% HCL	4,000	gallons	95	bbls
FR	235,450	gallons	5,606	bbls
Total Clean	239,450	gallons	5,701	bbls

Stage Requirements - Proppant				
40/70 white	-	lbs	-	sks
20/40 white	210,000	lbs	2,100	sks
20/40 CRC	-	lbs	-	sks
Total Prop	210,000	lbs	2,100	sks