

Introduction

The Drill and Service Rig noise analysis has been revised to:

- address the noise impact of the revised location of the proposed new storage wells at the Well Pad Site,
- reflect the elimination of the Zumwalt #1-36 observation well, and
- address the noise impact of the new Zumwalt #2 observation well.

The Temporary Compressor Unit noise analysis has been revised to address the noise impact of the revised location of the compressor unit at the Well Pad Site.

Figure 1 (p. 5) depicts the proposed Station and Well Pad Site and surrounding area. **Figure 3** (p. 6) depicts the proposed Well Pad Site plot plan which includes the proposed temporary compressor unit.

Drill Rig Activities for New Storage Wells at the Well Pad Site

Nine new storage wells will be drilled at the Well Pad Site. New well drilling will occur 24 hours/day, 7 days a week, and each new well is estimated to take approximately 5-7 days to drill. The following table summarizes the noise impact assessment for the closest NSAs (NSA #1, NSA #3A & NSA #3B) during drill rig operations at the new storage wells assuming standard drill rig equipment is employed.

NSAs	Distance/ Direction to Proposed Storage Wells at Well Pad Site	Meas'd Ambient Morning L _d (dBA)	Meas'd Ambient Afternoon L _d (dBA)	Meas'd Ambient Nighttime L _{dn} (dBA)	Calc'd Ambient L _{dn} (dBA)	Est'd L _{eq} of Storage Well Drill Rig Noise (dBA)	Calc'd L _{dn} of Storage Well Drill Rig Noise (dBA)	Meas'd Ambient L _{dn} + Est'd L _{dn} of Drill Rig Noise (dBA)	Potential Noise Increase (dB)
NSA #1 (House)	2,125 ft. NE	38.1	47.5	43.1	49.5	39.9	46.3	51.2	1.7
NSA #3A (House)	1,525 ft. S-SE	45.6	48.3	46.0	52.6	44.3	50.7	54.8	2.2
NSA #3B (House)	2,000 ft. SE	45.6	48.3	46.0	52.6	40.9	47.3	53.7	1.1

Drill Rig Noise Impact Assessment for Proposed Storage Wells at the Well Pad Site

The noise impact analysis indicates that the L_{dn} sound contribution of drill rig operations at NSA #1, NSA #3A and NSA #3B is 46.3, 50.7 and 47.3 dBA, respectively.

Drill Rig Activities for Zumwalt #2 Observation Well

One new observation well will be drilled. Well drilling will occur 24 hours/day, 7 days a week, and the new well is estimated to take approximately 5-7 days to drill. The following table summarizes the noise impact assessment at NSA #3A & NSA #3B during drill rig operations at the proposed observation well assuming standard drill rig equipment is employed.

NSAs	Distance/ Direction to Proposed Zumwalt #2 Observation Well	Meas'd Ambient Morning L_d (dBA)	Meas'd Ambient Afternoon L_d (dBA)	Meas'd Ambient Nighttime L_{dn}	Calc'd Ambient L_{dn} (dBA)	Est'd L_{eq} of Storage Well Drill Rig Noise (dBA)	Calc'd L_{dn} of Storage Well Drill Rig Noise (dBA)	Meas'd Ambient L_{dn} + Est'd L_{dn} of Drill Rig Noise (dBA)	Potential Noise Increase (dB)
NSA #3A (House)	400 ft. N	45.6	48.3	46.0	52.6	59.6	66.0	66.1	13.6
NSA #3B (House)	1,100 ft. NE	45.6	48.3	46.0	52.6	48.3	54.7	56.8	4.2

Drill Rig Noise Impact Assessment for Proposed Zumwalt #2 Observation Well

The noise impact analysis indicates that the L_{dn} sound contribution of drill rig operations at NSA #3A and NSA #3B is 66.0 and 54.7 dBA, respectively.

Service Rig Activities for Existing Wells

Four existing wells will be reworked with a service rig. Service rig activities will occur 12 hours/day, 7 days a week, and each existing well is estimated to take approximately 5-7 days to complete. The following table summarizes the noise impact assessment, at the closest NSAs, for the four existing well sites during service rig operations assuming standard service rig equipment is employed.

NSAs	Distance/ Direction to Closest Service Rig	Meas'd Ambient Morning L_d (dBA)	Meas'd Ambient Afternoon L_d (dBA)	Meas'd Ambient Nighttime L_{dn}	Calc'd Ambient L_{dn} (dBA)	Est'd L_{eq} of Service Rig Noise (dBA)	Calc'd L_{dn} of Service Rig Noise (dBA)	Meas'd Ambient L_{dn} + Est'd L_{dn} of Service Rig Noise (dBA)	Potential Noise Increase (dB)
NSA #3B (House)	650 ft. S of SaraLouise #1	45.6	48.3	46.0	52.6	50.7	48.7	54.1	1.5
NSA #3B (House)	1,200 ft. S-SW of Southam #2	45.6	48.3	46.0	52.6	43.4	41.4	52.9	0.3
NSA #1 (House)	1,250 ft. NE of Southam #3	38.1	47.5	43.1	49.5	42.9	40.9	50.1	0.6
NSA #1 (House)	925 ft. E-NE of Southam #4	38.1	47.5	43.1	49.5	46.6	44.6	50.7	1.2

Service Rig Noise Impact Assessment for Existing Wells

The noise impact assessment indicates that the L_{dn} sound contribution of service rig operations at NSA #1 and NSA #3B is estimated to range from 40.9 to 48.7 dBA.

Conclusion – Drill Rig and Service Rig Noise

In conclusion, our measurements, observations and analysis indicate that:

- the revised location of the proposed storage wells at the Well Pad Site has no change in impact,
- the proposed observation well 400 ft. S of the NSA #3A residence would result in a short term increase in sound levels from Drill Rig activities,
- the proposed observation well 1,100 ft. SW of the NSA #3B residence does not have a significant noise impact from Drill Rig activities, and
- the elimination of the Zumwalt #1-36 observation well would eliminate the associated Service Rig noise impact at the closest residence at NSA #3A.

Nonetheless, because of the potential variability of drill rig operations, it is recommended that Central Valley meet with the nearby NSAs prior to drill rig set up activities and prior to commencement of nighttime activities to explain the project schedule and planned well site activities. In the event that noise attributable to drill rig activities becomes objectionable and if it exceeds applicable criteria, Central Valley could offer temporary relocation or compensation as a mitigation measure for this relatively short term impact.

Temporary Compressor Unit

A 1,500 HP compressor unit may be temporarily located at the Well Pad Site for initial storage field injection while the permanent Station is being constructed. The following table depicts the noise impact assessment at the closest NSAs for the temporary compressor unit:

NSAs	Distance/ Direction to Temp. Comp. Unit	Meas'd Ambient Morning L_d (dBA)	Meas'd Ambient Afternoon L_d (dBA)	Meas'd Ambient Nighttime L_{dn}	Calc'd Ambient L_{dn} (dBA)	Est'd L_{eq} of Temp. Comp. Unit at Full Load (dBA)	Calc'd L_{dn} of Temp. Comp. Unit at Full Load (dBA)	Meas'd Ambient L_{dn} + Calc'd L_{dn} of Temp. Comp. Unit (dBA)	Potential Noise Increase (dB)
NSA #1 (House)	1,900 ft. NE	38.1	47.5	43.1	49.5	40.7	47.1	51.5	2.0
NSA #3A (House)	1,625 ft. S- SE	45.6	48.3	46.0	52.6	42.5	48.9	54.1	1.5
NSA #3B (House)	2,025 ft. S- SE	45.6	48.3	46.0	52.6	40.0	46.4	53.5	0.9

Short Term Noise Impact Assessment – Temporary Compressor Unit

The noise impact analysis indicates that the L_{dn} sound contribution of the proposed temporary compressor unit at NSA #1, NSA #3A and NSA #3B is 47.1, 48.9 and 46.4 dBA, respectively. In conclusion, our measurements, observations and analysis indicate that the revised location of the temporary compressor unit at the Well Pad Site has no change in impact.

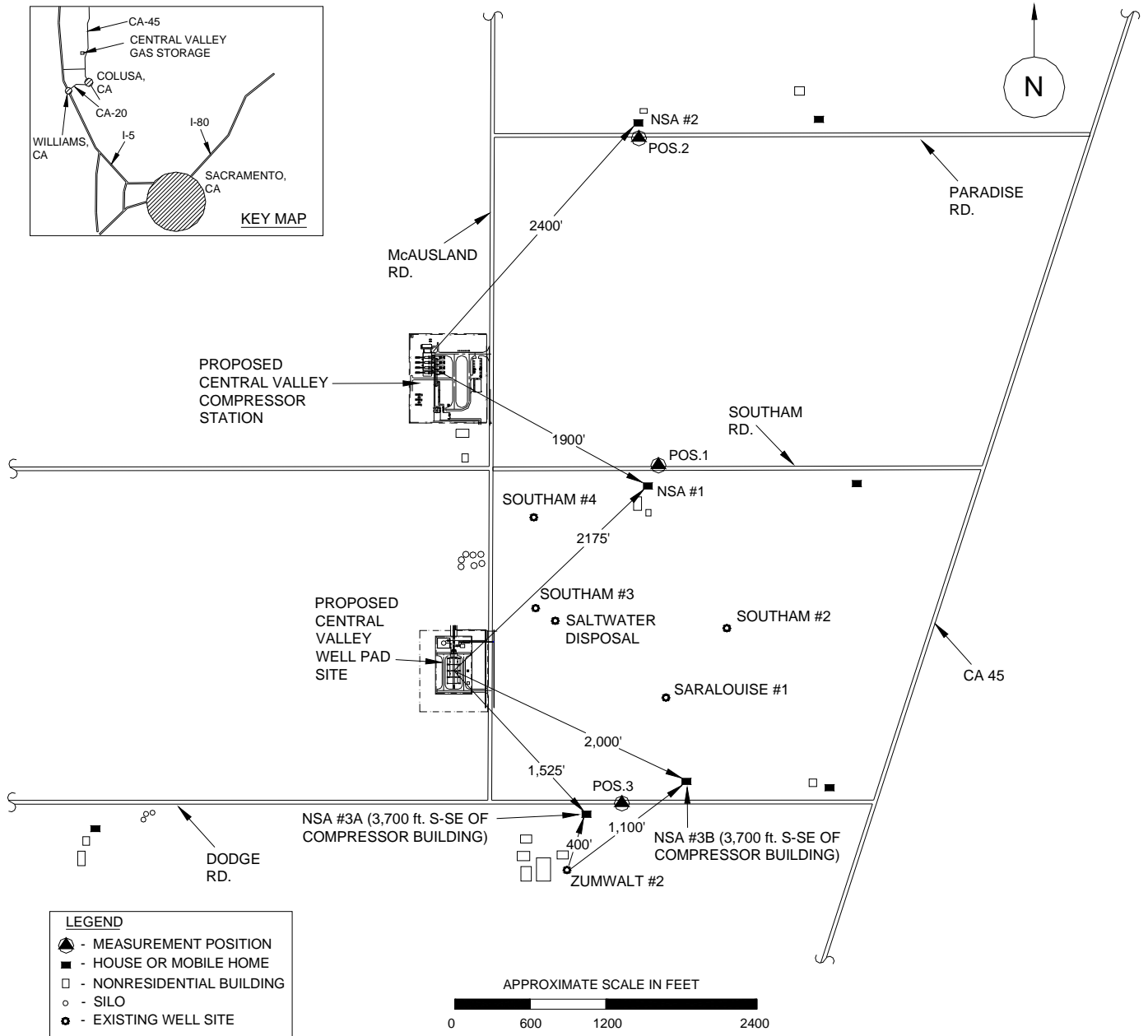


Figure 1: Proposed Central Valley Gas Storage Compressor Station and Remote Well Pad Site and Surrounding Area

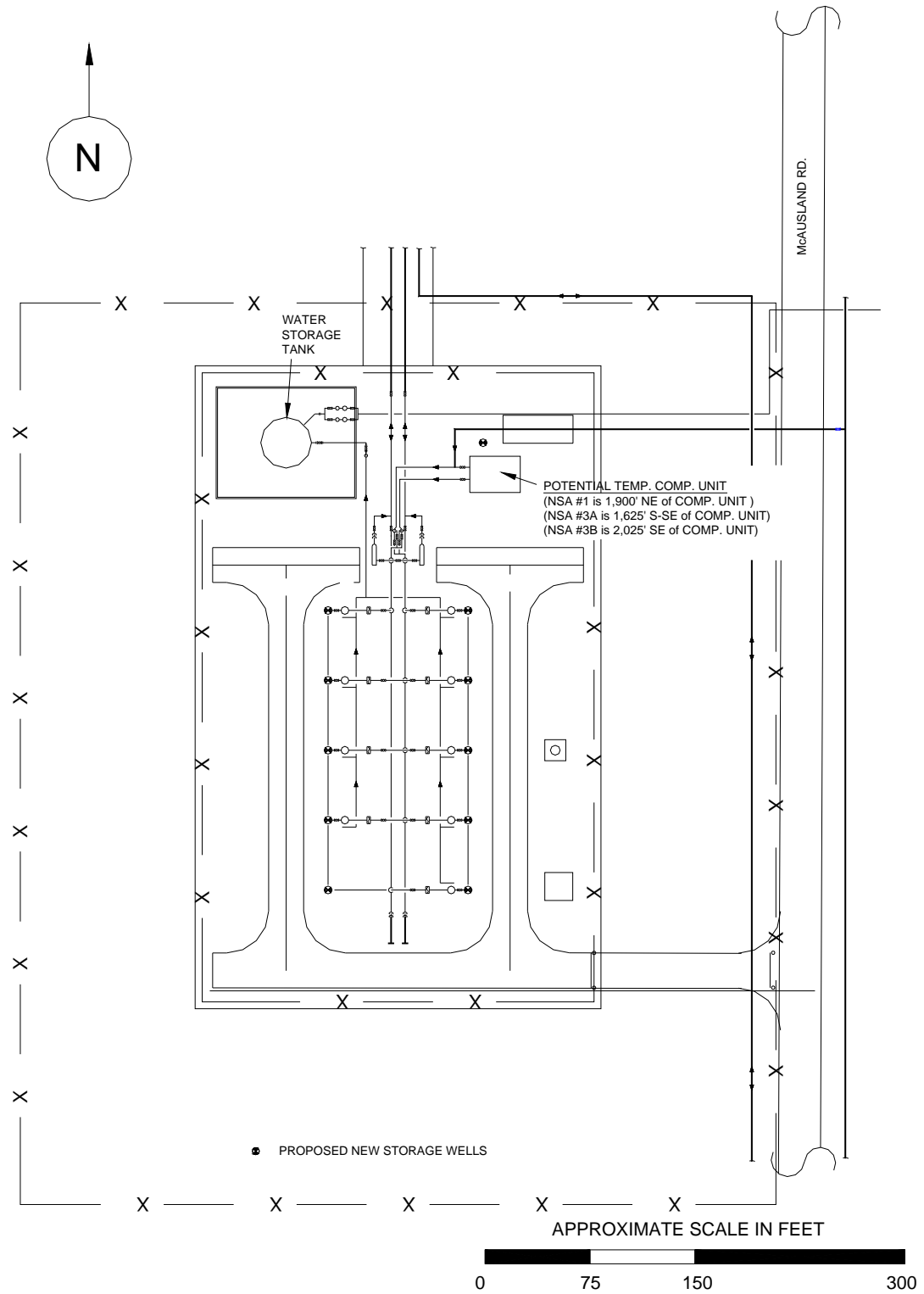


Figure 3: Proposed Central Valley Gas Storage Well Pad Site Plot Plan