

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
April 2025

All Ground Vibrations (PPV) were below State of Wisconsin and Village of Caledonia Maximum Limits

All Airblasts (AO) were below State of Wisconsin and Village of Caledonia Maximum Limits

Time	Activity	Location	Distance	PPV	Freq	AO
4/30/2025 12:11	EAST 11	Ellis	1,868	0.03	16.7	109
4/30/2025 12:11	EAST 11	St. Rita	1,574	0.025	21.7	114
4/30/2025 12:11	EAST 11	Marquette	798	0.1625	14.3	115
4/30/2025 12:11	EAST 11	Berkeley	957	0.165	29.4	112
4/30/2025 10:01	EAST 10	Ellis	1,981	0.025	14.3	114
4/30/2025 10:01	EAST 10	St. Rita	1,680	0.03	21.7	126
4/30/2025 10:01	EAST 10	Marquette	779	0.2175	38.5	115
4/30/2025 10:01	EAST 10	Berkeley	844	0.16	27.8	114
4/23/2025 12:13	EAST 9	Ellis	2,198	0.025	15.2	113
4/23/2025 12:13	EAST 9	St. Rita	1,821	N/T	N/T	N/A
4/23/2025 12:13	EAST 9	Marquette	939	0.1575	23.8	118
4/23/2025 12:13	EAST 9	Berkeley	693	0.2225	16.1	114
4/23/2025 10:58	EAST 8	Ellis	1,905	0.025	12.8	112
4/23/2025 10:58	EAST 8	St. Rita	1,569	0.0275	20	121
4/23/2025 10:58	EAST 8	Marquette	871	0.14	20.8	114
4/23/2025 10:58	EAST 8	Berkeley	944	0.2175	31.3	110
4/16/2025 10:14	EAST 7	Ellis	2165	0.0275	13.5	111
4/16/2025 10:14	EAST 7	St. Rita	1,893	0.0225	21.7	112
4/16/2025 10:14	EAST 7	Marquette	695	0.1475	31.3	116
4/16/2025 10:14	EAST 7	Berkeley	644	0.325	22.7	112
4/1/2025 10:30	EAST 6	Ellis	2,155	0.0225	10	113
4/1/2025 10:30	EAST 6	St. Rita	1,843	0.0225	11.9	115
4/1/2025 10:30	EAST 6	Marquette	786	0.135	19.2	119
4/1/2025 10:30	EAST 6	Berkeley	672	0.21	31.3	117

N/T - seismograph did not trigger

Ground Vibration (PPV) Limit - The Village of Caledonia explosives use ordinance states that "The maximum ground vibration at the location of any dwelling, public building, place of employment, school, church or community or institutional building outside or beyond the permitted explosives use area shall have a maximum peak-particle-velocity limit as provided by the Department, the scaled-distance equation of paragraph (ii), or the blasting level chart of paragraph (iii), whichever is applicable hereunder. Notwithstanding this general requirement, an annual permit holder who is subject to the limitations of paragraph (iii)a (Figure A, incorporated by herein reference), below, may exceed the limitation of Figure A on up to five percent (5%) of the blasts it initiates during the six (6) month period from July 1 to December 31 and during the six (6) month period from January 1 to June 30 without violating this Section, provided that the ground vibration produced by such blasts does not exceed 0.65 inches per second or the limitations imposed by the Wisconsin Department of Industry, Labor and Human Relations in Section ILHR 7.64(4), Wis. Adm. Code, as amended from time to time, whichever is more stringent".

Airblast (AO) Limit - The Village of Caledonia explosives use ordinance states that "Airblast shall not exceed the maximum limits listed in Table A-1 at the location of any dwelling, public building, place of employment, school, church or community or institutional building outside and beyond the permitted explosives use area. Notwithstanding this general requirement, an annual permit holder subject to this limitation may exceed the limitation on up to five percent (5%) of the blasts it initiates during the six (6) month period from July 1 to December 31, and during the six (6) month period from January 1 to June 30, without violating this ordinance, provided that the airblast produced by such blasts does not exceed the limitations on airblast imposed by Wisconsin Department of Industry, Labor and Human Relations in Subsection ILHR 7.64(2), Wis. Adm. Code, as amended from time to time."

TABLE A-1 AIRBLAST

LIMITS

Lower Frequency Limit of
Measuring System in Hz
2 Hz or lower -- Flat response
6 Hz or lower -- Flat response

Maximum Level in db
123 peak
129 peak

PPV vs. Frequency

USBM Blasting Level Criteria
(RI 8507, 1980)

