

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
May 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
5/29/2025 11:32	EAST 15	Ellis	2,209	N/T	N/T	N/A
5/29/2025 11:32	EAST 15	St. Rita	1,845	N/T	N/T	N/A
5/29/2025 11:32	EAST 15	Marquette	911	0.095	23.8	118
5/29/2025 11:32	EAST 15	Berkeley	666	0.2425	33.3	112
5/9/2025 9:58	EAST 14	Ellis	1,971	0.0225	12.2	115
5/9/2025 9:58	EAST 14	St. Rita	1,701	0.025	15.2	123
5/9/2025 9:58	EAST 14	Marquette	715	0.1725	45.5	115
5/9/2025 9:58	EAST 14	Berkeley	841	0.2075	29.4	114
5/6/2025 12:03	EAST 13	Ellis	2,184	N/T	N/T	N/A
5/6/2025 12:03	EAST 13	St. Rita	1,866	N/T	N/T	N/A
5/6/2025 12:03	EAST 13	Marquette	803	0.135	22.7	118
5/6/2025 12:03	EAST 13	Berkeley	646	0.235	29.4	112
5/6/2025 9:56	EAST 12	Ellis	2,178	0.0225	11.6	111
5/6/2025 9:56	EAST 12	St. Rita	1,811	0.0325	16.7	115
5/6/2025 9:56	EAST 12	Marquette	915	0.1875	19.2	120
5/6/2025 9:56	EAST 12	Berkeley	700	0.2825	29.4	114

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	Maximum Level in db
2 Hz or lower -- Flat response	123 peak
6 Hz or lower -- Flat response	129 peak

PPV vs. Frequency

USBM Blasting Level Criteria
(RI 8507, 1980)

