

**Payne & Dolan, Inc.**  
**Racine Quarry - Village of Caledonia**  
**Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area**  
**March 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
3/25/2025 12:37	EAST 5	Ellis	1,836	0.0275	18.5	118
3/25/2025 12:37	EAST 5	St. Rita	1,532	0.03	20.8	120
3/25/2025 12:37	EAST 5	Marquette	829	0.2275	50	115
3/25/2025 12:37	EAST 5	Berkeley	995	0.1825	27.8	112
3/25/2025 9:29	EAST 4	Ellis	1,905	0.03	20.8	111
3/25/2025 9:29	EAST 4	St. Rita	1,523	0.035	15.6	119
3/25/2025 9:29	EAST 4	Marquette	968	0.2175	17.2	114
3/25/2025 9:29	EAST 4	Berkeley	986	0.19	23.8	112
3/18/2025 10:27	EAST 3	Ellis	1,783	0.03	12.8	118
3/18/2025 10:27	EAST 3	St. Rita	1,538	0.03	26.3	123
3/18/2025 10:27	EAST 3	Marquette	741	0.2225	18.5	119
3/18/2025 10:27	EAST 3	Berkeley	1,027	0.175	35.7	111
3/13/2025 11:28	EAST 2	Ellis	1,925	0.0325	11.6	112
3/13/2025 11:28	EAST 2	St. Rita	1,572	0.0275	15.2	115
3/13/2025 11:28	EAST 2	Marquette	902	0.17	20.8	109
3/13/2025 11:28	EAST 2	Berkeley	938	0.1625	25	107
3/12/2025 10:01	EAST 1	Ellis	1,826	0.0375	15.2	111
3/12/2025 10:01	EAST 1	St. Rita	1,524	0.035	13.2	121
3/12/2025 10:01	EAST 1	Marquette	830	0.2275	19.2	113
3/12/2025 10:01	EAST 1	Berkeley	1,004	0.1425	17.9	111

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)

