

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
December 2024

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
12/13/2024 13:57	EAST 76	Ellis	1,794	0.035	14.3	111
12/13/2024 13:57	EAST 76	St. Rita	1,478	0.03	15.6	118
12/13/2024 13:57	EAST 76	Marquette	870	0.3125	27.8	120
12/13/2024 13:57	EAST 76	Berkeley	1,045	0.18	15.2	119
12/13/2024 11:57	EAST 75	Ellis	2,168	0.0275	15.2	108
12/13/2024 11:57	EAST 75	St. Rita	1,777	0.0325	16.7	112
12/13/2024 11:57	EAST 75	Marquette	969	0.24	12.5	119
12/13/2024 11:57	EAST 75	Berkeley	741	0.1675	33.3	112
12/10/2024 9:58	EAST 74	Ellis	1,671	0.04	17.9	115
12/10/2024 9:58	EAST 74	St. Rita	1,441	0.0475	27.8	118
12/10/2024 9:58	EAST 74	Marquette	782	0.2475	19.2	113
12/10/2024 9:58	EAST 74	Berkeley	1,139	0.145	29.4	110
12/9/2024 9:57	EAST 73	Ellis	2,321	0.04	11.4	116
12/9/2024 9:57	EAST 73	St. Rita	1,576	0.0325	26.3	116
12/9/2024 9:57	EAST 73	Marquette	3,580	0.155	26.3	118
12/9/2024 9:57	EAST 73	Berkeley	3,650	0.1525	33.3	117
12/3/2024 10:02	EAST 72	Ellis	2,148	0.0225	11.6	112
12/3/2024 10:02	EAST 72	St. Rita	1,781	N/T	N/T	N/A
12/3/2024 10:02	EAST 72	Marquette	913	0.1675	26.3	116
12/3/2024 10:02	EAST 72	Berkeley	730	0.255	38.5	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
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)

