

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
August 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
8/29/2024 12:34	EAST 38	Ellis	2,269	N/T	N/T	N/A
8/29/2024 12:34	EAST 38	St. Rita	1,870	N/T	N/T	N/A
8/29/2024 12:34	EAST 38	Marquette	1,002	0.1525	33.3	117
8/29/2024 12:34	EAST 38	Berkeley	660	0.27	50	113
8/29/2024 10:45	EAST 37	Ellis	1,574	0.0425	26.3	113
8/29/2024 10:45	EAST 37	St. Rita	1,333	0.0475	15.2	119
8/29/2024 10:45	EAST 37	Marquette	869	0.25	17.2	110
8/29/2024 10:45	EAST 37	Berkeley	1,241	0.1125	14.3	110
8/12/2024 12:30	EAST 36	Ellis	1,639	0.055	38.5	105
8/12/2024 12:30	EAST 36	St. Rita	1,455	0.045	25	110
8/12/2024 12:30	EAST 36	Marquette	733	0.1325	23.8	108
8/12/2024 12:30	EAST 36	Berkeley	1,167	0.1075	31.3	104
8/12/2024 9:49	EAST 35	Ellis	1,522	0.0875	20	109
8/12/2024 9:49	EAST 35	St. Rita	1,280	0.1375	29.4	111
8/12/2024 9:49	EAST 35	Marquette	909	0.145	27.8	110
8/12/2024 9:49	EAST 35	Berkeley	1,296	0.1475	21.7	110
8/8/2024 13:03	EAST 34	Ellis	1,902	0.0225	20	100
8/8/2024 13:03	EAST 34	St. Rita	1,807	N/T	N/T	N/A
8/8/2024 13:03	EAST 34	Marquette	388	0.23	62.5	113
8/8/2024 13:03	EAST 34	Berkeley	960	0.0575	35.7	108
8/8/2024 11:00	EAST 33	Ellis	1,709	0.025	15.2	96
8/8/2024 11:00	EAST 33	St. Rita	1,670	N/T	N/T	N/A
8/8/2024 11:00	EAST 33	Marquette	471	0.27	62.5	112
8/8/2024 11:00	EAST 33	Berkeley	1,162	0.075	33.3	109
8/8/2024 9:01	EAST 32	Ellis	1,519	0.0375	21.7	111
8/8/2024 9:01	EAST 32	St. Rita	1,233	0.0325	17.2	117
8/8/2024 9:01	EAST 32	Marquette	978	0.1175	21.7	108
8/8/2024 9:01	EAST 32	Berkeley	1,316	0.0625	35.7	107
8/5/2024 9:48	EAST 31	Ellis	2,025	0.0225	23.8	101
8/5/2024 9:48	EAST 31	St. Rita	1,875	0.02	16.1	102
8/5/2024 9:48	EAST 31	Marquette	438	0.29	50	114
8/5/2024 9:48	EAST 31	Berkeley	814	0.09	31.3	110
8/1/2024 12:28	EAST 30	Ellis	1,709	0.035	33.3	102
8/1/2024 12:28	EAST 30	St. Rita	1,670	0.03	23.8	103
8/1/2024 12:28	EAST 30	Marquette	471	0.26	45.5	112
8/1/2024 12:28	EAST 30	Berkeley	1,162	0.0925	27.8	109
8/1/2024 9:31	EAST 29	Ellis	1,902	0.02	22.7	106
8/1/2024 9:31	EAST 29	St. Rita	1,807	N/T	N/T	N/A
8/1/2024 9:31	EAST 29	Marquette	388	0.2425	50	111
8/1/2024 9:31	EAST 29	Berkeley	960	0.0825	45.5	110

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)

