

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
September 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
9/26/2024 11:02	EAST 50	Ellis	2,311	N/T	N/T	N/A
9/26/2024 11:02	EAST 50	St. Rita	1,875	N/T	N/T	N/A
9/26/2024 11:02	EAST 50	Marquette	1,100	0.1175	45.5	118
9/26/2024 11:02	EAST 50	Berkeley	693	0.2675	41.7	114
9/25/2024 10:03	EAST 49	Ellis	2,342	N/T	N/T	N/A
9/25/2024 10:03	EAST 49	St. Rita	2,035	N/T	N/T	N/A
9/25/2024 10:03	EAST 49	Marquette	804	0.1275	38.5	115
9/25/2024 10:03	EAST 49	Berkeley	477	0.295	38.5	115
9/20/2024 9:50	EAST 48	Ellis	2,332	N/T	N/T	N/A
9/20/2024 9:50	EAST 48	St. Rita	1,968	N/T	N/T	N/A
9/20/2024 9:50	EAST 48	Marquette	933	0.1025	25	113
9/20/2024 9:50	EAST 48	Berkeley	549	0.195	45.5	115
9/17/2024 13:30	EAST 47	Ellis	2,281	N/T	N/T	N/A
9/17/2024 13:30	EAST 47	St. Rita	1,919	N/T	N/T	N/A
9/17/2024 13:30	EAST 47	Marquette	917	0.09	50	113
9/17/2024 13:30	EAST 47	Berkeley	594	0.22	31.3	110
9/17/2024 11:31	EAST 46	Ellis	2,290	N/T	N/T	N/A
9/17/2024 11:31	EAST 46	St. Rita	2,016	N/T	N/T	N/A
9/17/2024 11:31	EAST 46	Marquette	715	0.1625	20.8	118
9/17/2024 11:31	EAST 46	Berkeley	517	0.27	50	114
9/17/2024 9:45	EAST 45	Ellis	2,299	N/T	N/T	N/A
9/17/2024 9:45	EAST 45	St. Rita	1,892	N/T	N/T	N/A
9/17/2024 9:45	EAST 45	Marquette	1,027	0.065	55.6	114
9/17/2024 9:45	EAST 45	Berkeley	647	0.23	55.6	108
9/12/2024 13:32	EAST 44	Ellis	1,630	0.0525	11.6	109
9/12/2024 13:32	EAST 44	St. Rita	1,405	0.0475	15.6	118
9/12/2024 13:32	EAST 44	Marquette	802	0.2375	38.5	114
9/12/2024 13:32	EAST 44	Berkeley	1,180	0.1725	35.7	108
9/12/2024 11:14	EAST 43	Ellis	2,342	N/T	N/T	N/A
9/12/2024 11:14	EAST 43	St. Rita	2,035	N/T	N/T	N/A
9/12/2024 11:14	EAST 43	Marquette	804	0.1475	41.7	117
9/12/2024 11:14	EAST 43	Berkeley	477	0.275	41.7	113
9/12/2024 9:16	EAST 42	Ellis	2,330	N/T	N/T	N/A
9/12/2024 9:16	EAST 42	St. Rita	1,909	N/T	N/T	N/A
9/12/2024 9:16	EAST 42	Marquette	1,067	0.11	26.3	117
9/12/2024 9:16	EAST 42	Berkeley	647	0.35	45.5	114
9/10/2024 11:34	EAST 41	Ellis	2,332	N/T	N/T	N/A
9/10/2024 11:34	EAST 41	St. Rita	1,968	N/T	N/T	N/A
9/10/2024 11:34	EAST 41	Marquette	933	0.1625	45.5	123

9/10/2024 11:34	EAST 41	Berkeley	549	0.25	20	119
9/10/2024 9:19	EAST 40	Ellis	2,213	0.0225	38.5	116
9/10/2024 9:19	EAST 40	St. Rita	1,984	0.02	35.7	119
9/10/2024 9:19	EAST 40	Marquette	599	0.3425	71.4	122
9/10/2024 9:19	EAST 40	Berkeley	598	0.3375	33.3	117
9/5/2024 9:12	EAST 39	Ellis	2,191	N/T	N/T	N/A
9/5/2024 9:12	EAST 39	St. Rita	1,903	N/T	N/T	N/A
9/5/2024 9:12	EAST 39	Marquette	733	0.2475	83.3	120
9/5/2024 9:12	EAST 39	Berkeley	622	0.3225	38.5	116

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

<u>Lower Frequency Limit of Measuring System in Hz</u>	<u>Maximum Level in db</u>
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)

