

Payne & Dolan, Inc.
Racine Quarry - Village of Caledonia
Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area
October 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
10/24/2024 13:28	EAST 61	Ellis	2,041	0.04	20	121
10/24/2024 13:28	EAST 61	St. Rita	1,775	0.0425	31.3	120
10/24/2024 13:28	EAST 61	Marquette	690	0.3275	35.7	117
10/24/2024 13:28	EAST 61	Berkeley	769	0.245	35.7	112
10/24/2024 11:30	EAST 60	Ellis	2,033	0.03	12.8	115
10/24/2024 11:30	EAST 60	St. Rita	1,735	0.0375	25	117
10/24/2024 11:30	EAST 60	Marquette	763	0.2875	27.8	119
10/24/2024 11:30	EAST 60	Berkeley	789	0.1925	21.7	111
10/24/2024 9:14	EAST 59	Ellis	2,028	0.025	13.2	113
10/24/2024 9:14	EAST 59	St. Rita	1,697	0.035	20	116
10/24/2024 9:14	EAST 59	Marquette	837	0.225	25	115
10/24/2024 9:14	EAST 59	Berkeley	815	0.1325	19.2	111
10/16/2024 13:59	EAST 58	Ellis	2,410	N/T	N/T	N/A
10/16/2024 13:59	EAST 58	St. Rita	2,169	N/T	N/T	N/A
10/16/2024 13:59	EAST 58	Marquette	677	0.135	25	120
10/16/2024 13:59	EAST 58	Berkeley	406	0.3025	27.8	117
10/16/2024 11:02	EAST 57	Ellis	1,984	0.0475	16.7	116
10/16/2024 11:02	EAST 57	St. Rita	1,700	0.03	20	116
10/16/2024 11:02	EAST 57	Marquette	742	0.285	20	115
10/16/2024 11:02	EAST 57	Berkeley	833	0.2475	21.7	113
10/16/2024 9:16	EAST 56	Ellis	1,986	0.04	25	117
10/16/2024 9:16	EAST 56	St. Rita	1,647	0.03	12.8	121
10/16/2024 9:16	EAST 56	Marquette	861	0.235	20.8	114
10/16/2024 9:16	EAST 56	Berkeley	864	0.23	31.3	116
10/10/2024 10:00	EAST 55	Ellis	2,028	0.03	14.7	113
10/10/2024 10:00	EAST 55	St. Rita	1,697	0.03	26.3	120
10/10/2024 10:00	EAST 55	Marquette	837	0.2325	22.7	112
10/10/2024 10:00	EAST 55	Berkeley	815	0.1825	35.7	109
10/8/2024 12:30	EAST 54	Ellis	2,346	N/T	N/T	N/A
10/8/2024 12:30	EAST 54	St. Rita	2,078	N/T	N/T	N/A
10/8/2024 12:30	EAST 54	Marquette	712	0.1525	71.4	117
10/8/2024 12:30	EAST 54	Berkeley	461	0.2775	45.5	118
10/8/2024 10:31	EAST 53	Ellis	2,391	N/T	N/T	N/A
10/8/2024 10:31	EAST 53	St. Rita	2,103	N/T	N/T	N/A
10/8/2024 10:31	EAST 53	Marquette	772	0.1325	71.4	116
10/8/2024 10:31	EAST 53	Berkeley	418	0.36	50	117
10/3/2024 13:29	EAST 52	Ellis	2,351	N/T	N/T	N/A
10/3/2024 13:29	EAST 52	St. Rita	2,072	N/T	N/T	N/A
10/3/2024 13:29	EAST 52	Marquette	742	0.145	33.3	115

10/3/2024 13:29	EAST 52	Berkeley	456	0.2575	38.5	113
10/3/2024 11:06	EAST 51	Ellis	2,342	N/T	N/T	N/A
10/3/2024 11:06	EAST 51	St. Rita	2,035	N/T	N/T	N/A
10/3/2024 11:06	EAST 51	Marquette	804	0.1	26.3	116
10/3/2024 11:06	EAST 51	Berkeley	477	0.195	38.5	115

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)

