

**Payne & Dolan, Inc.**  
**Racine Quarry - Village of Caledonia**  
**Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area**  
**October 2023**

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
10/30/2023 12:17	EAST 65	Ellis	1,730	N/T	N/T	N/A
10/30/2023 12:17	EAST 65	St. Rita	1,528	N/T	N/T	N/A
10/30/2023 12:17	EAST 65	Marquette	696	0.118	38.5	108
10/30/2023 12:17	EAST 65	Berkeley	1,076	0.086	22.7	108
10/30/2023 12:03	EAST 64	Ellis	1,930	0.036	13.2	111
10/30/2023 12:03	EAST 64	St. Rita	1,683	0.033	12.2	116
10/30/2023 12:03	EAST 64	Marquette	678	0.256	55.6	118
10/30/2023 12:03	EAST 64	Berkeley	878	0.143	23.8	110
10/30/2023 9:22	EAST 63	Ellis	2,375	N/T	N/T	N/A
10/30/2023 9:22	EAST 63	St. Rita	2,127	N/T	N/T	N/A
10/30/2023 9:22	EAST 63	Marquette	678	0.103	23.8	117
10/30/2023 9:22	EAST 63	Berkeley	436	0.166	55.6	115
10/17/2023 13:47	EAST 62	Ellis	2,346	N/T	N/T	N/A
10/17/2023 13:47	EAST 62	St. Rita	2,078	N/T	N/T	N/A
10/17/2023 13:47	EAST 62	Marquette	712	0.108	50.0	117
10/17/2023 13:47	EAST 62	Berkeley	461	0.185	55.6	118
10/17/2023 11:48	EAST 61	Ellis	1,138	0.108	19.2	111
10/17/2023 11:48	EAST 61	St. Rita	1,081	0.133	26.3	114
10/17/2023 11:48	EAST 61	Marquette	1,074	0.163	26.3	117
10/17/2023 11:48	EAST 61	Berkeley	1,668	0.055	21.7	120
10/17/2023 10:45	EAST 60	Ellis	1,920	0.06	18.5	113
10/17/2023 10:45	EAST 60	St. Rita	1,675	0.04	18.5	116
10/17/2023 10:45	EAST 60	Marquette	678	0.265	35.7	116
10/17/2023 10:45	EAST 60	Berkeley	888	0.285	33.3	108
10/11/2023 13:29	EAST 59	Ellis	2,311	N/T	N/T	N/A
10/11/2023 13:29	EAST 59	St. Rita	2,064	N/T	N/T	N/A
10/11/2023 13:29	EAST 59	Marquette	658	0.115	27.8	119
10/11/2023 13:29	EAST 59	Berkeley	497	0.115	50.0	108
10/11/2023 13:17	EAST 58	Ellis	1,904	0.037	29.4	115
10/11/2023 13:17	EAST 58	St. Rita	1,637	N/T	N/T	N/A
10/11/2023 13:17	EAST 58	Marquette	730	0.235	38.5	117
10/11/2023 13:17	EAST 58	Berkeley	909	0.19	26.3	109
10/11/2023 10:02	EAST 57	Ellis	1,084	0.125	14.3	109
10/11/2023 10:02	EAST 57	St. Rita	935	0.152	26.3	116
10/11/2023 10:02	EAST 57	Marquette	1,209	0.162	22.7	116
10/11/2023 10:02	EAST 57	Berkeley	1,735	0.042	26.3	116
10/5/2023 12:32	EAST 56	Ellis	1,181	0.095	35.7	109
10/5/2023 12:32	EAST 56	St. Rita	1,116	0.128	29.4	111
10/5/2023 12:32	EAST 56	Marquette	1,035	0.173	22.7	116

10/5/2023 12:32	EAST 56	Berkeley	1,626	0.065	22.7	115
10/5/2023 9:19	EAST 55	Ellis	1,115	0.10	22.7	107
10/5/2023 9:19	EAST 55	St. Rita	971	0.095	26.3	110
10/5/2023 9:19	EAST 55	Marquette	1,172	0.113	11.6	113
10/5/2023 9:19	EAST 55	Berkeley	1,701	0.043	35.7	117

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)

