

**Payne & Dolan, Inc.**  
**Racine Quarry - Village of Caledonia**  
**Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area**  
**November 2020**

**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
11/19/2020 11:35	108	Ellis	2,218	0.03	11.9	109
11/19/2020 11:35	108	St. Rita	1,838	0.023	25	115
11/19/2020 11:35	108	Marquette	949	0.125	29.4	119
11/19/2020 11:35	108	Berkeley	678	0.21	29.4	121
11/19/2020 11:30	107	Ellis	1,307	0.08	13.2	114
11/19/2020 11:30	107	St. Rita	1,047	0.073	29.4	117
11/19/2020 11:30	107	Marquette	1,109	0.16	26.3	111
11/19/2020 11:30	107	Berkeley	1,531	0.103	12.8	111
11/13/2020 12:02	106	Ellis	2,228	0.025	29.4	106
11/13/2020 12:02	106	St. Rita	1,838	N/T	N/T	N/A
11/13/2020 12:02	106	Marquette	974	0.115	27.8	106
11/13/2020 12:02	106	Berkeley	683	0.2	38.5	114
11/13/2020 11:58	105	Ellis	1,610	0.053	12.2	110
11/13/2020 11:58	105	St. Rita	1,298	0.068	17.2	113
11/13/2020 11:58	105	Marquette	960	0.185	29.4	108
11/13/2020 11:58	105	Berkeley	1,234	0.09	27.8	110
11/9/2020 10:05	104	Ellis	2,374	N/T	N/T	N/A
11/9/2020 10:05	104	St. Rita	2,023	N/T	N/T	N/A
11/9/2020 10:05	104	Marquette	914	0.103	31.3	113
11/9/2020 10:05	104	Berkeley	490	0.243	50	115
11/9/2020 9:58	103	Ellis	2,218	0.038	12.2	109
11/9/2020 9:58	103	St. Rita	1,817	0.023	14.7	119
11/9/2020 9:58	103	Marquette	998	0.14	27.8	108
11/9/2020 9:58	103	Berkeley	709	0.333	33.3	110

N/T - seismograph did not trigger

Ground Vibration (PPV) Limit - The Village of Caledonia explosives use ordinance states 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)

