

**Payne & Dolan, Inc.**  
**Racine Quarry - Village of Caledonia**  
**Recorded Ground Vibration and Airblast Levels for the East Quarry CUP (New) Area**  
**October 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
10/29/2020 11:25	102	St. Rita	1,260	0.07	14.3	112
10/29/2020 11:25	102	Marquette	1,002	0.135	13.5	106
10/29/2020 11:25	102	Ellis	1,590	0.075	13.9	104
10/29/2020 11:25	102	Berkeley	1,266	0.055	18.5	112
10/27/2020 9:59	101	St. Rita	1,470	0.035	16.7	110
10/27/2020 9:59	101	Marquette	885	0.233	31.3	107
10/27/2020 9:59	101	Ellis	1,793	0.038	9.8	107
10/27/2020 9:59	101	Berkeley	1,050	0.103	26.3	111
10/27/2020 9:57	100	St. Rita	1,088	0.053	16.7	112
10/27/2020 9:57	100	Marquette	1,094	0.115	10.9	98
10/27/2020 9:57	100	Ellis	1,388	0.078	14.3	106
10/27/2020 9:57	100	Berkeley	1,462	0.055	13.9	104
10/21/2020 12:05	99	St. Rita	1,052	N/T	N/T	N/A
10/21/2020 12:05	99	Marquette	1,095	0.085	20.8	121
10/21/2020 12:05	99	Ellis	1,276	N/T	N/T	N/A
10/21/2020 12:05	99	Berkeley	1,550	0.243	25	120
10/21/2020 12:00	98	St. Rita	1,998	0.028	19.2	111
10/21/2020 12:00	98	Marquette	965	0.178	33.3	108
10/21/2020 12:00	98	Ellis	2,371	0.03	35.7	107
10/21/2020 12:00	98	Berkeley	525	0.253	31.3	115
10/21/2020 11:57	97	St. Rita	1,449	0.058	17.2	114
10/21/2020 11:57	97	Marquette	895	0.09	13.2	101
10/21/2020 11:57	97	Ellis	1,773	0.075	26.3	107
10/21/2020 11:57	97	Berkeley	1,072	0.06	10.4	103
10/19/2020 9:02	96	St. Rita	1,386	0.03	19.2	111
10/19/2020 9:02	96	Marquette	940	0.18	33.3	108
10/19/2020 9:02	96	Ellis	1,722	0.04	23.8	106
10/19/2020 9:02	96	Berkeley	1,133	0.108	26.3	111
10/13/2020 10:34	95	St. Rita	1,652	0.023	18.5	114
10/13/2020 10:34	95	Marquette	932	0.148	27.8	107
10/13/2020 10:34	95	Ellis	2,026	0.053	25	111
10/13/2020 10:34	95	Berkeley	857	0.193	38.5	112
10/13/2020 10:31	94	St. Rita	1,345	0.045	16.1	111
10/13/2020 10:31	94	Marquette	975	0.133	21.7	116
10/13/2020 10:31	94	Ellis	1,692	0.045	9.1	108
10/13/2020 10:31	94	Berkeley	1,172	0.068	23.8	111
10/8/2020 10:02	93	St. Rita	1,660	0.02	14.3	114
10/8/2020 10:02	93	Marquette	957	0.11	35.7	106

10/8/2020 10:02	93	Ellis	2,046	0.035	20	101
10/8/2020 10:02	93	Berkeley	851	0.165	38.5	110
10/8/2020 9:59	92	St. Rita	1,511	0.028	15.2	111
10/8/2020 9:59	92	Marquette	902	0.158	35.7	109
10/8/2020 9:59	92	Ellis	1,854	0.05	11.1	107
10/8/2020 9:59	92	Berkeley	1,002	0.168	35.7	112
10/2/2020 10:32	91	St. Rita	1,955	N/T	N/T	N/A
10/2/2020 10:32	91	Marquette	801	0.133	35.7	111
10/2/2020 10:32	91	Ellis	2,268	N/T	N/T	N/A
10/2/2020 10:32	91	Berkeley	557	0.215	41.7	117
10/2/2020 10:28	90	St. Rita	1,464	0.035	15.6	111
10/2/2020 10:28	90	Marquette	963	0.165	27.8	106
10/2/2020 10:28	90	Ellis	1,834	0.043	12.8	103
10/2/2020 10:28	90	Berkeley	1,045	0.135	31.3	113

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)

