



Aggregate Resource Drilling, LLC
4080 Commercial Ave
Springfield, OR 97478

BLAST REPORT

Blast No.: 7009.01	Blast Type: Quarry	Permittee: 7009.01
Raging River Quarry	Pit/Permit: RAGING RIVER (EASTSIDE ROCK)	Customer: Eastside Rock Products, Inc.
Date: 01/16/2017	Weather: Rain	Location: Fall City, WA
Time: 1557	Temperature: 55 °F	Material Type: Rock and Stone
	Wind From: C	Site Lat/Long: 47.548100 / -121.905300
	Wind Velocity: 0 mph	Blast Lat/Long: 47.548017 / -121.905961

SUMMARY

Bit Diameter (in)	Pattern	No Holes (ea)	Total Bore Footage (ft)	Min Depth (ft)	Max Depth (ft)	Material Produced	Max Wt. of Explosives Per Hole (lb)
3.50	08x08	53	1,046	15	22	4,958.81 TON	58
TOTALS:		53	1,046	15	22	4,958.81	58

No. of Rows: 13	Subdrilling: 0.00 ft	Back Fill Depth: 0.00 ft	Stem Length Min.: 5.00 ft
Holes per Row Min.: 1	Face Height Min.: 22.00 ft	Water Depth Min.: 1.00 ft	Stem Length Max.: 17.00 ft
Holes per Row Max.: 8	Face Height Max.: 22.00 ft	Water Depth Max.: 7.00 ft	Stemming Type: Cuttings
	Product Density: 0.82 g/cc		

WEIGHTS

Max. No. of Holes Per 8 ms Interval: 4.00	Powder Factor: 0.43 lb/TON
Max. Wt. of Explosives Per Hole: 58.15 lb	Rock Density: 2.00 t/yd ³
Max. Wt. of Explosives Per 8 ms Interval: 232.58 lb	



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PRODUCTS AND SERVICES

	Units	UM	Weight Per Unit	Total Weight of Explosives
Blasting Agent				
Austinite 15 50# Per Bag	39.00	BG	50.00	1,950.00
Hydromite 880 2 1/2 X 16 V -Stk	36.00	ST	3.33	119.99
High Explosives				
Black Cap 3/4# Booster	53.00	EA	0.75	39.75
Non Electric Detonators				
Lead In Line, 2500 Ft SHOCK*STAR	1.00	SP	0.03	0.03
24 Ft SHOCK*STAR Dual-Delay	1.00	EA	0.00	0.00
30 Ft SHOCK*STAR Dual-Delay	50.00	EA	0.00	0.15
20 Ft SHOCK*STAR Quick Relay 17ms	14.00	EA	0.00	0.01
Services				
Mileage Charge	1.00	EA	0.00	
Taxes				
State Tax	1.00	EA	0.00	
TOTAL WEIGHT OF EXPLOSIVES (INCLUDING PRIMERS)				2,109.94

CREW

Blaster In Charge: Tobias Wallace. WA Blasting Lic#: EXUS00021352
Blaster Helper: James Strawbridge

SEISMOGRAPH(S)

Seismograph	Location	Latitude	Longitude	Distance from Blast (ft)
410-06-615	30' East of Quarry Scale Shack	47.547349	-121.903209	720.14
410-06-616	5610 SE 324th PL (placed at gate)	47.550636	-121.906873	981.48
410-06-617	32415 SE 58th St (placed at driveway entrance)	47.548772	-121.908342	647.76
410-06-618	Cul-de-sac at end of 329th Ave SE	47.548407	-121.902666	823.73

GENERAL COMMENTS

Good looking shot, decent breakage and pulled off of the highwall wall.
Adjustment

No flyrock or damage to the crusher. - tw

ARII Drill Log

Job Name: 7009.01 Raging River Quarry
Driller Name: James Strawbridge

Location: Fall City, WA
Drill #: 008-01-026

Start Date: 01/12/17
Finish Date: 01/16/17

																								Burden	Spacing
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Notes	
1	/	/	/	/	/	/	/	/	/	22	/	/	/	/	/	/	/	/	/	/	/	/	/	08	08
2	/	/	/	/	/	/	1	1	/	1	/	/	/	/	/	/	/	/	/	/	/	/	/	08	08
3	/	/	/	/	/	/	1	1	1	1	1	/	/	/	/	/	/	/	/	/	/	/	/	08	08
4	10 17	6 19	4 21	1 19	1 19	1 20	1 20	1 19	1 21	1 22	/	/	/	/	/	/	/	/	/	/	/	/	/	08	08
5	/	/	/	/	1 19	1 20	1 21	1 22	2 22	1 21	1 20	1 19	1 17	/	/	/	/	/	/	/	/	/	/	08	08
6	/	/	/	/	/	1 19	1 20	1 21	1 22	1 21	1 20	1 18	1 16	/	/	/	/	/	/	/	/	/	/	08	08
7	/	/	/	/	/	1 18	1 19	1 20	1 21	1 20	1 19	1 18	2 16	/	/	/	/	/	/	/	/	/	/	08	08
8	/	/	/	/	/	22	22	1 20	1 22	1 19	1 18	1 17	2 15	/	/	/	/	/	/	/	/	/	/	08	08

SUMMARY:

	08x08	Total
Bit Diameter	3.50	3.50
Burden	08	08
Spacing	08	08
Hole Count	53	53
No. Rows	8	8
Holes Per Row Min (ea)	1	1-1
Holes Per Row Max (ea)	10	10-10
Min Depth (ft)	15	15
Max Depth (ft)	22	22
Footage (lf)	1046	1046
Overburden (LF)	63	63
Overburden (SCY)	149	149
Volume (SCY)	2479	2479
Material Produced	4959TON	4959TON



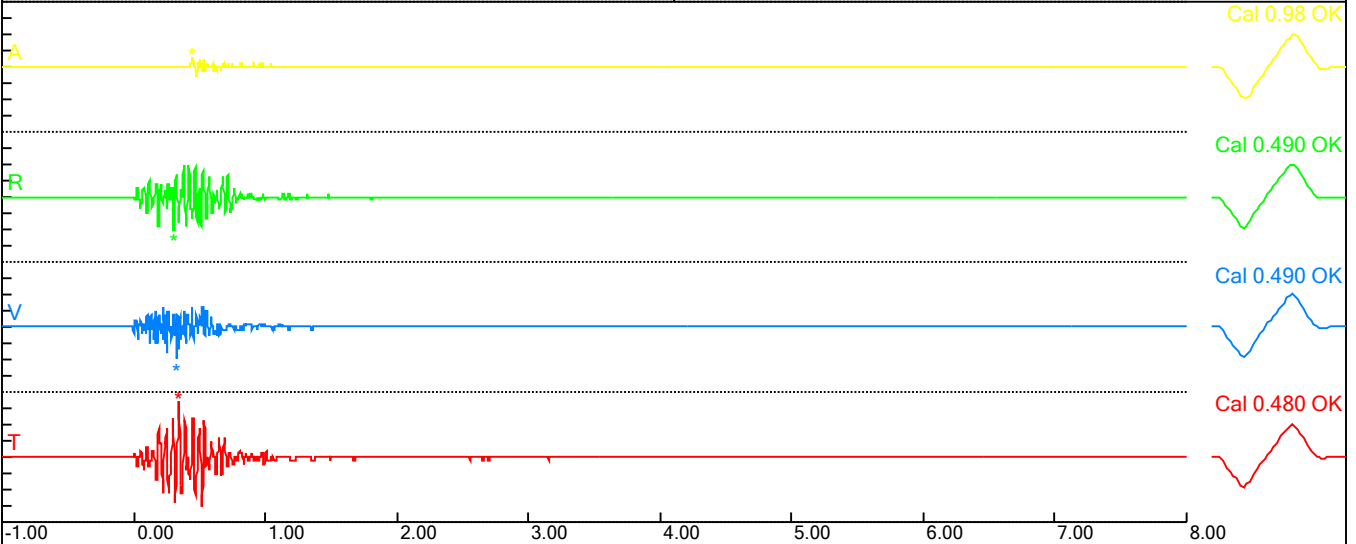
AGGREGATE RESOURCE DRILLING, LLC

Job: 7009.01 Raging River Quarry
 30' East of Quarry Scale Shack
 GPS of Seismograph: N47.547349, W-121.903209
 GPS of Shot: N47.548017, W-121.905961
 Hole Diameter: 3.5 in. / Hole Depth: 10 - 22 ft
 Hole Count: 53 @ Spacing 8x8 ft.
 Stemming: 5 - 17 ft. / Water Depth: 1 - 7 ft.
 Weather: 55, wind 0 mph C, Rain
 BIC: Toby Wallace
 Seismograph Set Up: Toby Wallace

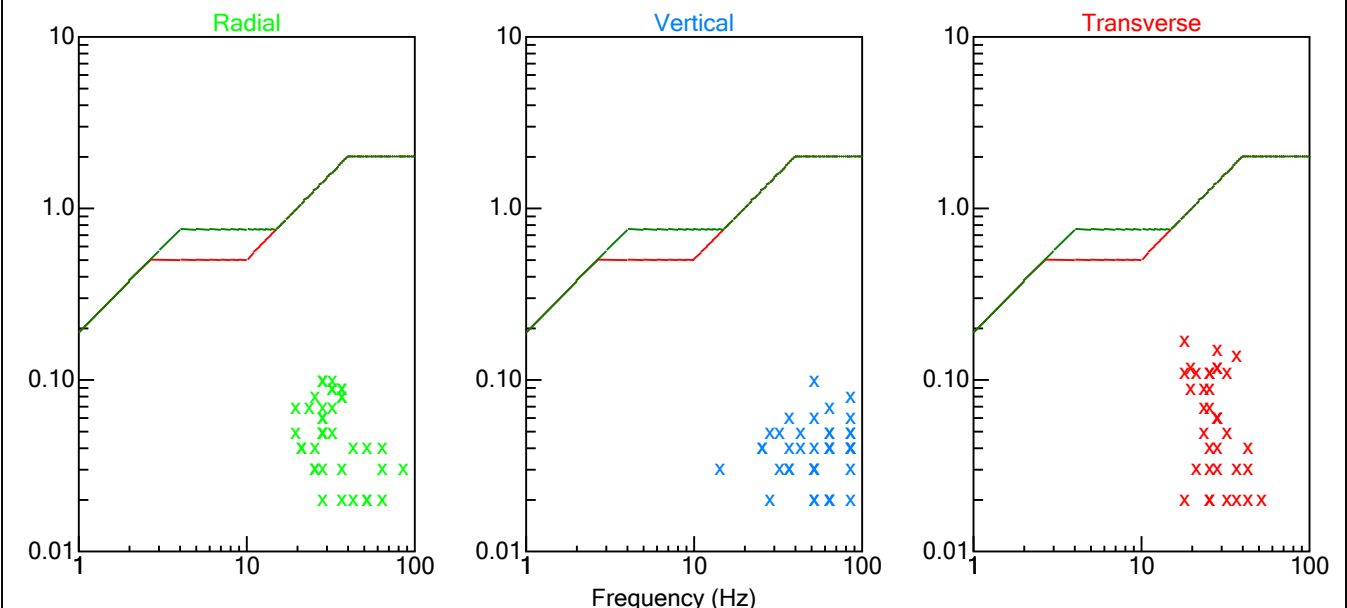
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 Number: 001
 Date and Time: 1/16/2017 3:50:00 PM
 SN: 3615
 Seismic Trigger: 0.0200 in/sec
 Air Trigger: 124 dBL
 Sample Rate: 512
 Duration: 8 Seconds
 Pre-Trigger: 1.0 Second
 Seismic Range: 5.00 in/s
 Acoustic Range: 142 dBL
 Gain: 2.0x
 Voltage: 5.80

Peaks and Frequencies
 PPV Maximum: 0.170 in/sec (0.3418 sec)
 Acoustic: 110 dBL @ 42.6 Hz (0.4453 sec)
 Radial: 0.100 in/sec @ 28.4 Hz (0.3047 sec)
 Vertical: 0.100 in/sec @ 51.2 Hz (0.3262 sec)
 Transverse: 0.170 in/sec @ 18.2 Hz (0.3418 sec)
 Last Calibration Date: 4/26/2016

Graph Information
 Duration: -1.000 s To: 8.000 s
 Acoustic Scale: 126 dBL
 Seismic Scale: 0.200 in/sec (0.0500 in/sec/div)
 Time Intervals: 1.00 sec



Particle Velocity Versus Frequency - USBM Limits (RI 8507, 1980)



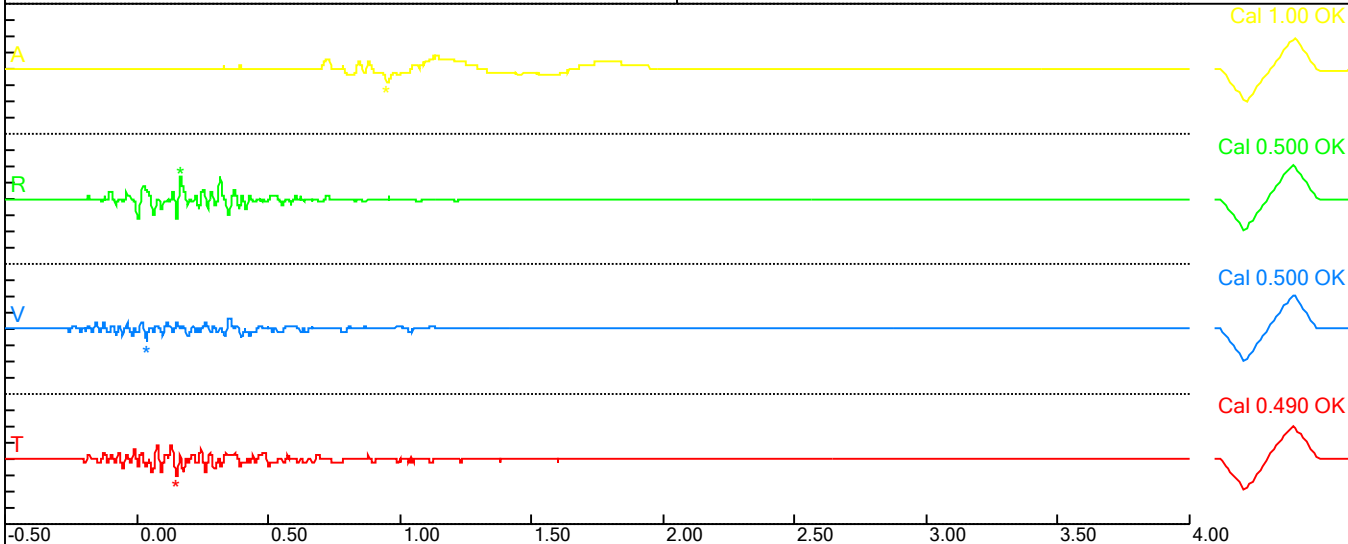


AGGREGATE RESOURCE DRILLING, LLC

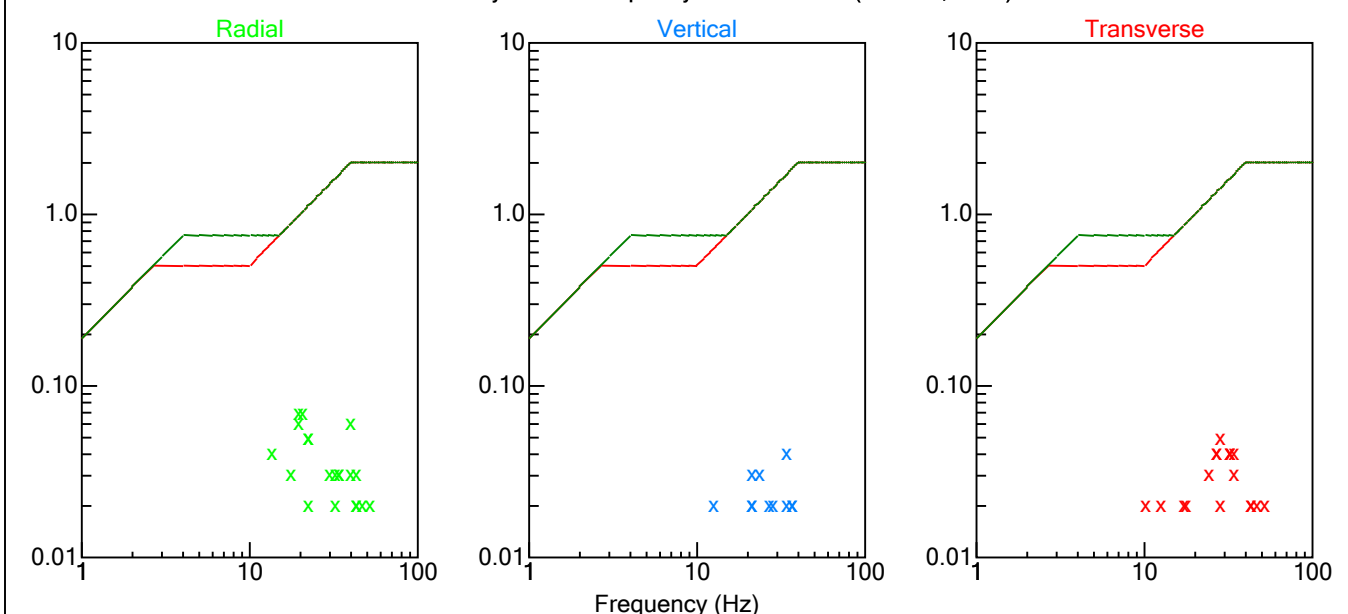
Job: 7009.01 Raging River Quarry
 5610 SE 324 PL (placed at gate)
 GPS of Seismograph: N47.550636, W-121.906873
 GPS of Shot: N47.548017, W-121.905961
 Hole Diameter: 3.5 in. / Hole Depth: 10 - 22 ft
 Hole Count: 53 @ Spacing 8x8 ft.
 Stemming: 5 - 17 ft. / Water Depth: 1 - 7 ft.
 Weather: 55, wind 0 mph C, Rain
 BIC: Toby Wallace
 Seismograph Set Up: Toby Wallace

File: 3616201701161554002.dtb
 Number: 002
 Date and Time: 1/16/2017 3:54:00 PM
 SN: 3616
 Seismic Trigger: 0.0500 in/sec
 Air Trigger: 124 dBL
 Sample Rate: 1024
 Duration: 4 Seconds
 Pre-Trigger: 0.5 Second
 Seismic Range: 5.00 in/s
 Acoustic Range: 142 dBL
 Gain: 2.0x
 Voltage: 6.30

Peaks and Frequencies	Graph Information
PPV Maximum: 0.0700 in/sec (0.1660 sec)	Duration: -0.500 s To: 4.000 s
Acoustic: 112 dBL @ 2.4 Hz (0.9482 sec)	Acoustic Scale: 126 dBL
Radial: 0.0700 in/sec @ 19.6 Hz (0.1660 sec)	Seismic Scale: 0.200 in/sec (0.0500 in/sec/div)
Vertical: 0.0400 in/sec @ 34.1 Hz (0.0371 sec)	Time Intervals: 0.50 sec
Transverse: 0.0500 in/sec @ 28.4 Hz (0.1484 sec)	
Last Calibration Date: 9/21/2016	



Particle Velocity Versus Frequency - USBM Limits (RI 8507, 1980)



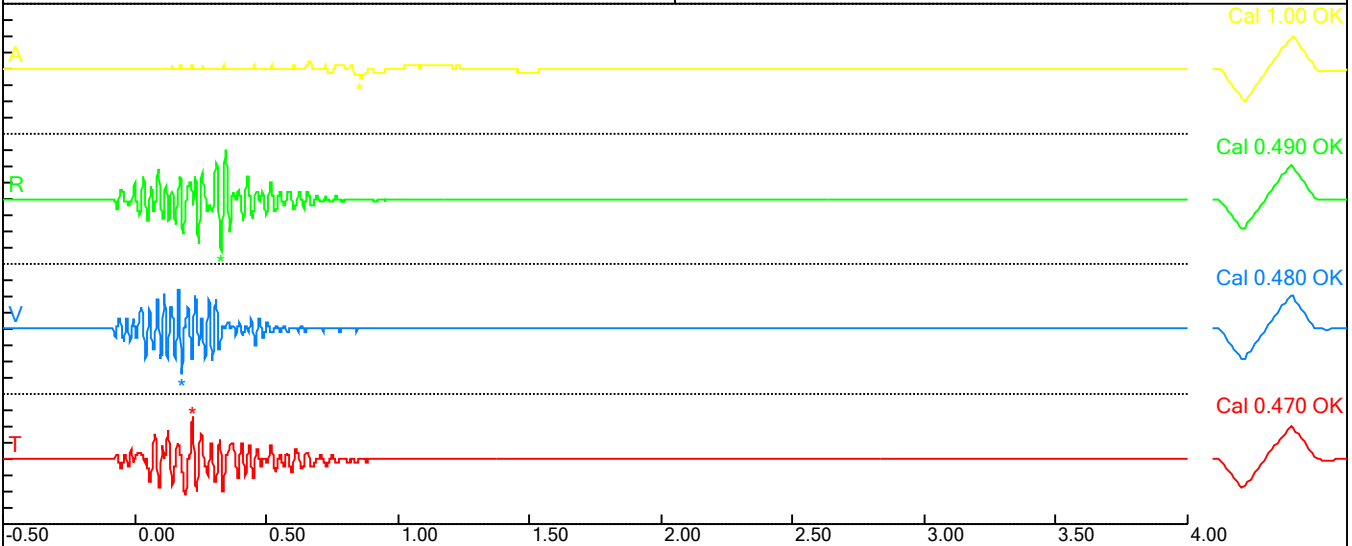


AGGREGATE RESOURCE DRILLING, LLC

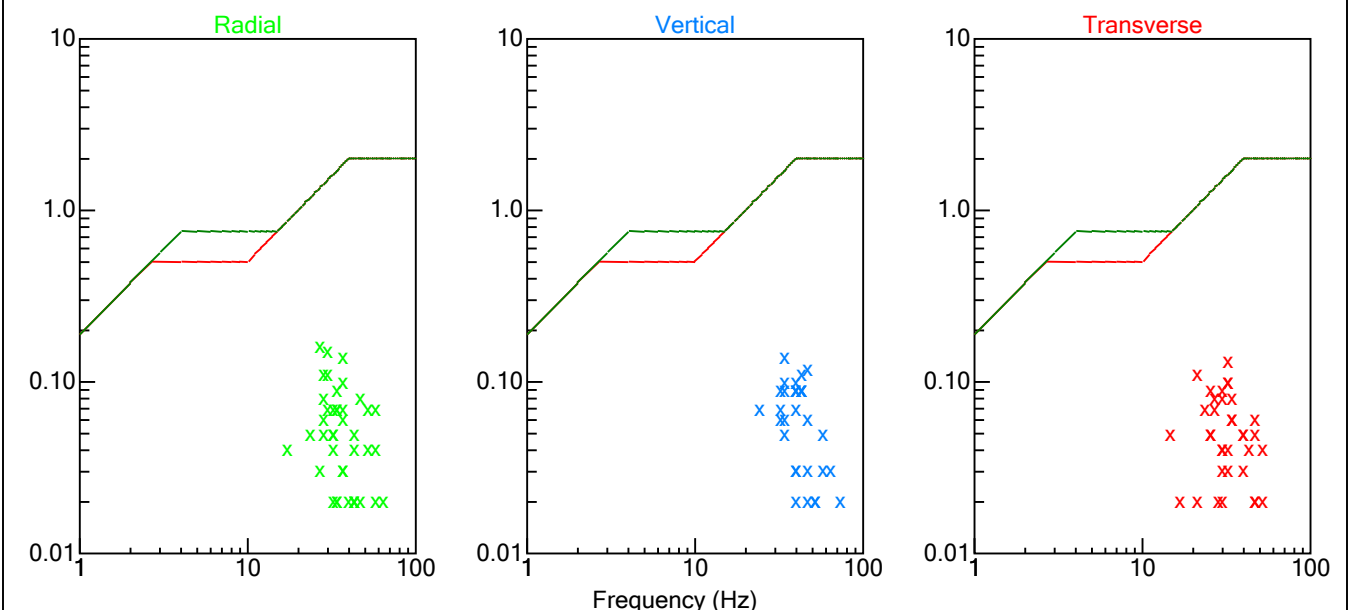
Job: 7009.01 Raging River Quarry
 32415 SE 58th St (placed at driveway entrance)
 GPS of Seismograph: N47.548772, W-121.908342
 GPS of Shot: N47.548017, W-121.905961
 Hole Diameter: 3.5 in. / Hole Depth: 10 - 22 ft
 Hole Count: 53 @ Spacing 8x8 ft.
 Stemming: 5 - 17 ft. / Water Depth: 1 - 7 ft.
 Weather: 55, wind 0 mph C, Rain
 BIC: Toby Wallace
 Seismograph Set Up: Toby Wallace

File: 3617201701161553006.dtb
 Number: 006
 Date and Time: 1/16/2017 3:53:00 PM
 SN: 3617
 Seismic Trigger: 0.0500 in/sec
 Air Trigger: 124 dBL
 Sample Rate: 1024
 Duration: 4 Seconds
 Pre-Trigger: 0.5 Second
 Seismic Range: 5.00 in/s
 Acoustic Range: 142 dBL
 Gain: 2.0x
 Voltage: 6.20

Peaks and Frequencies	Graph Information
PPV Maximum: 0.160 in/sec (0.3281 sec) Acoustic: 110 dBL @ 10.6 Hz (0.8555 sec) Radial: 0.160 in/sec @ 26.9 Hz (0.3281 sec) Vertical: 0.140 in/sec @ 34.1 Hz (0.1787 sec) Transverse: 0.130 in/sec @ 32.0 Hz (0.2197 sec) Last Calibration Date: 6/14/2016	Duration: -0.500 s To: 4.000 s Acoustic Scale: 126 dBL Seismic Scale: 0.200 in/sec (0.0500 in/sec/div) Time Intervals: 0.50 sec



Particle Velocity Versus Frequency - USBM Limits (RI 8507, 1980)





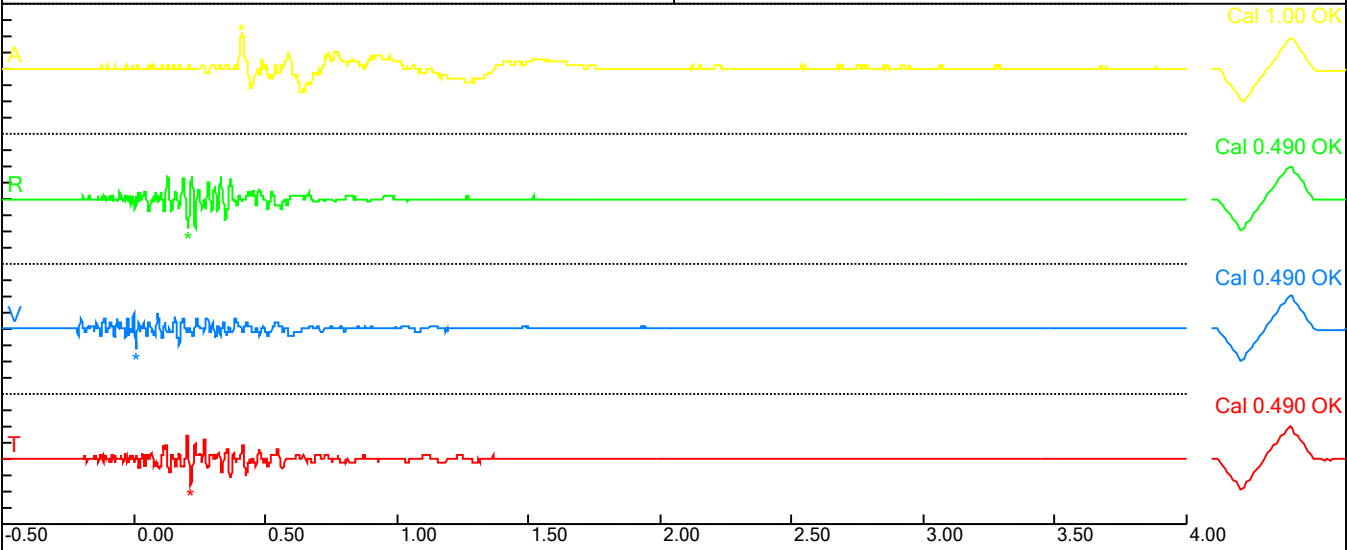
AGGREGATE RESOURCE DRILLING, LLC

Job: 7009.01 Raging River Quarry
 Cul-de-sac at end of 329th Ave SE
 GPS of Seismograph: N47.548407, W-121.902666
 GPS of Shot: N47.548017, W-121.905961
 Hole Diameter: 3.5 in. / Hole Depth: 10 - 22 ft
 Hole Count: 53 @ Spacing 8x8 ft.
 Stemming: 5 - 17 ft. / Water Depth: 1 - 7 ft.
 Weather: 55, wind 0 mph C, Rain
 BIC: Toby Wallace
 Seismograph Set Up: Toby Wallace

File: 3618201701161545001.dtb
 Number: 001
 Date and Time: 1/16/2017 3:45:00 PM
 SN: 3618
 Seismic Trigger: 0.0500 in/sec
 Air Trigger: 124 dBL
 Sample Rate: 1024
 Duration: 4 Seconds
 Pre-Trigger: 0.5 Second
 Seismic Range: 5.00 in/s
 Acoustic Range: 142 dBL
 Gain: 2.0x
 Voltage: 6.30

Peaks and Frequencies
 PPV Maximum: 0.0900 in/sec (0.2070 sec)
 Acoustic: 121 dBL @ 14.2 Hz (0.4092 sec)
 Radial: 0.0900 in/sec @ 30.1 Hz (0.2070 sec)
 Vertical: 0.0600 in/sec @ 64.0 Hz (0.0098 sec)
 Transverse: 0.0800 in/sec @ 32.0 Hz (0.2168 sec)
 Last Calibration Date: 7/26/2016

Graph Information
 Duration: -0.500 s To: 4.000 s
 Acoustic Scale: 126 dBL
 Seismic Scale: 0.200 in/sec (0.0500 in/sec/div)
 Time Intervals: 0.50 sec



Particle Velocity Versus Frequency - USBM Limits (RI 8507, 1980)

