Appendix J-1
Blasting Plan and Impact Analysis
Response to Comments

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April 23, 2008

Mr. David Jones
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County of Riverside
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Re: Blasting Plan and Impact Analysis, Liberty Quarry
Response to Comments

Dear Mr. Jones:

Vibra-Tech Engineers, Inc. is pleased to submit the following responses to comments you provided on February 19, 2008, for the Liberty Quarry Blast Plan and Impact Analysis, dated August 7, 2007. As detailed below, Vibra-Tech has revised the Blast Plan and Impact Analysis based on your comments. A revised redlined draft, dated February 22, 2008, has been previously submitted to your office.

Your February 19, 2008, comments addressed various elements of the Blast Plan and Impact Analysis, as well as Section 12.0 of the April, 2007, Liberty Quarry Project Description prepared by Lilburn, Corporation. Each comment will be addressed below.

Blasting Plan and Impact Analysis

1. **The subject report makes reference to a blasting plan by Stockwell and Nolen (Granite employees). However, it is not clear whether this plan is appended to the Vibra-Tech report. Please clarify.**

Response: The Granite Construction Company Liberty Quarry Blast Plan ("Liberty Quarry Blast Plan") is attached as Appendix C to the February 22, 2008, draft Blast Plan and Impact Analysis.

2. **The subject report states it is expected that there would be a maximum of one or two blasts per day and an average of 5 blasts per week. The actual limit (maximum allowable number) of blasts per day and blasts per week should be prescribed. Analysis of the maximum allowable blasts should be made accordingly.**

Response: The Blast Plan and Impact Analysis have been revised to indicate that there will be a maximum of two blasts per day, and a maximum of 10 blasts per week. See

page 2 of the February 22, 2008, draft. The Blast Plan and Impact Analysis discuss the maximum allowable limit for every blast. This limit is irrespective of the number of blasts.

3. **The subject report should provide additional discussion with regard to the argument that General Plan Policy 15.3 does not apply (continuous vibration sources versus intermittent ground vibrations).**

Response: The Blast Plan and Impact Analysis have been revised accordingly. See pages 5 and 8 of the February 22, 2008, draft.

4. **The subject report states the frequency character of vibration events resulting from quarry blasting is primarily the function of the local geologic conditions along with the particular blast design utilized. The report also states the frequency range for blasting at most quarrying applications is in the 10 to 100 Hz range. What is the anticipated frequency character/frequency range for the proposed mine? Also, how does this equate to the suggested "appropriate threshold . . . 0.75 inches/second" for this site?**

Response: Please see the general discussion contained on pages 7 and 8 of the February 22, 2008, draft. Given the granitic nature of the geology at and around the site, the frequency range for blasting at the Liberty quarry is expected to be concentrated in the 20 to 40 Hz range. Recent seismic data collected by Granite at their Rosemary quarry site located near the Liberty quarry site shows frequencies ranging from 24 to 73 Hz for the peak.

As shown in figure 2 of the draft, at a frequency range of 20 to 40 Hz, damage thresholds for all structures, including drywall and plaster-on-lath, range from 1.0 in/sec to 2.0 in/sec. Therefore, based on the USBM study, the appropriate threshold of significance for impacts to structures caused by blast-induced ground vibrations from Liberty Quarry is 0.75 inches/second. (See Figure 2) At the frequencies expected from Liberty Quarry, this ground vibration threshold can be expected to protect all structures, regardless of construction type.

5. **Please explain how it was determined that 0.75 inches/second is the appropriate threshold for impacts to structures when it appears, given the right frequency of the blast/site, this could apparently damage plaster and drywall.**

Response: Please see the general discussion contained on pages 7 and 8 of the February 22, 2008, draft, and the response to the previous comment. The USBM ground vibration criteria as shown in Figure 2 is a particle velocity vs. frequency based criteria. The 0.75 in/sec limit applies for vibrations with a frequency between 4 to 15 Hz. At frequencies greater than 15 Hz. the allowable vibration level is greater with a maximum of 2.0 in/sec for vibration frequencies 40 Hz. and greater. At the frequencies expected from Liberty

Quarry (20 to 40 Hz.), the 0.75 in/sec ground vibration threshold can be expected to protect all structures, regardless of construction type. In addition, the expected particle velocities calculated for each receptor location as shown in column 4 of tables 1 through 5 in Appendix B of the report indicates that the 0.75 in/sec level can be attained by significant margins at all locations with the exception of receptor location 19. Page 18 of the February 22, 2008 draft details how the blast design would be altered, if necessary, by adjusting the charge weight for the given distance to receptor 19 such that the 0.75 in/sec limit can be maintained.

6. Please explain how it was determined that 0.60 inches/second is the appropriate threshold for measuring the human reposes when this is still within the range of "strongly perceptible to mildly unpleasant". Also, please address this same issue for air overpressure (a percentage of the population would apparently still be annoyed by the blast currently proposed).

Response: The 0.60 inches/second human response threshold was derived primarily from the Wiss and Parmelee study and USBM RI-8507, described at pages 9 through 12 of the February 22, 2008, draft. The Wiss and Parmelee study was based on actual response experienced by people exposed to various vertical vibrations under laboratory conditions. The USBM RI-8507 correlated human response to ground vibrations based on annoyance curves developed through airblast exposure studies. Together, these studies represent the best available scientific examination of human response to blast-induced ground vibrations.

As shown in USBM RI-8507, ground vibrations of 0.60 in/sec would be acceptable to all but 5% of the population. The 95th percentile is a reasonable significance threshold given that, as shown in the studies, a small percentage of the population would be annoyed by blast-induced ground vibrations at any level. As shown in the Blast Plan and Impact Analysis, people living near Liberty Quarry would experience blast-induced ground vibrations at only a tiny fraction of the 0.60 in/sec threshold.

The 2004 Caltrans human response to ground vibration table (Table 2 of the February 22, 2008 draft) was not developed using the same scientific rigor employed by the Wiss and Parmelee and USBM RI-8507 reports. Based on conversations with the author of the Caltrans, 2004, report, it is my understanding that the human response table used in that report was developed from a limited sample of empirical responses taken in an uncontrolled environment. Therefore, the Caltrans table, by itself, does not provide appropriate significance criteria. Nevertheless, the 0.60 in/sec threshold falls at the lower end of the "strongly perceptible to mildly unpleasant" average response in the 2004 Caltrans table (e.g., it is reasonable to assume that most people would find that vibration level to be "strongly perceptible" rather than "mildly unpleasant"), while still encompassing the 95th percentile of responses discussed in the USBM report.

Similarly, the air overpressure significance threshold (0.01 psi) was developed from the best available scientific examination of human response to blast-induced air overpressure. This air overpressure would be acceptable to all but 5% of the population. As shown in

the Blast Plan and Impact Analysis, people living near Liberty Quarry would experience blast-induced air overpressures of only a tiny fraction of the 0.01 psi threshold.

7. Based on these structural and human response thresholds and the analyses provided in the subject report, it appears lower thresholds and relatively smaller blasts should be contemplated.

Response: Please see the response to the previous comment. As shown in columns 5 and 7 in tables 1 through 5 in appendix B of the Blast Plan and Impact Analysis, most receptor locations near Liberty Quarry would experience blast-induced ground vibrations and air overpressures of only a tiny fraction of the significance thresholds under the proposed Blast Plan. A smaller segment of those tables is reproduced below for receptor locations 3, 4, 13, and 17 which are the closest residential receptor locations in Rainbow.

Receptor Location	Distance Feet	Charge Weight Pounds	Predicted PPV	% Criteria (0.60 in/sec)	Predicted PSI	% Criteria (0.01 psi)
Phase 1 – Access Road						
3	3151	125.5	0.029	4.86	0.00083	8.34
4	3208	125.5	0.028	4.73	0.00082	8.18
13	2062	125.5	0.058	9.59	0.00133	13.30
17	863	125.5	0.232	38.63	0.00347	34.66
Phase 1 – Settling Pond						
3	1536	125.5	0.092	15.36	0.00184	18.39
4	2063	125.5	0.057	9.58	0.00133	13.29
13	3079	125.5	0.030	5.05	0.00086	8.56
17	3322	125.5	0.027	4.47	0.00079	7.87
Phase 1 – Bench Development						
3	3272	629	0.100	16.63	0.00144	14.45
4	2630	629	0.142	23.59	0.00184	18.37
13	4531	629	0.059	9.88	0.00101	10.10
17	2202	629	0.188	31.34	0.00223	22.34
Phase 2						
3	3676	629	0.083	13.80	0.00127	12.71
4	2989	629	0.115	19.22	0.00160	15.96
13	4702	629	0.056	9.31	0.00097	9.70
17	2302	629	0.175	29.19	0.00213	21.27
Phase 3						
3	1520	629	0.340	56.71	0.00336	33.58
4	2064	629	0.209	34.76	0.00240	23.99
13	3072	629	0.110	18.40	0.00155	15.49
17	1823	629	0.254	42.40	0.00275	27.50

Columns 5 and 7 in the above table show that during the development phase of the mining operation in Phase 1, the ground vibration and air overpressure amplitudes at the closest residential receptors are less than half the significance threshold of 0.60 in/sec and 0.01 psi. During Phase 2 of the mining operation the ground vibration and air overpressure amplitudes continue to be less than half the significance threshold at the closest residential receptors. In phase 3 of the mining operation, ground vibration and air overpressure amplitudes at the closest residential receptor locations are predicted to be higher than in Phase 1 or 2. The increase in amplitudes however will still be less than half the significance threshold at all locations except receptor location 3 where it is predicted to be slightly greater than half (56.71%) of the significance threshold.

Of the 35 receptors listed in tables 1 through 5 in appendix B of the Blast Plan and Impact Analysis, at least 25 of these receptors are located at a distance of 5000 feet or greater from the blasting operations. The table below is another way to present the ground vibration and air overpressure amplitudes illustrating the decrease in amplitude with distance from the site. By the time ground vibrations or air overpressures travel a distance of 5000 feet the levels are significantly diminished to less than 10 % of the significance criteria.

Distance Feet	Charge Weight Pounds	Predicted PPV	% Criteria (0.60 in/sec)	Predicted PSI	% Criteria (0.01 psi)
5000	629	0.051	8.43	0.0009064	9.06
6000	629	0.038	6.30	0.0007417	7.41
7000	629	0.030	4.92	0.0006260	6.26
8000	629	0.024	3.97	0.0005405	5.40
9000	629	0.020	3.29	0.0004748	4.74
10000	629	0.017	2.78	0.0004228	4.22
11000	629	0.014	2.39	0.0003808	3.80
12000	629	0.012	2.07	0.0003460	3.46
13000	629	0.011	1.82	0.0003168	3.16
14000	629	0.010	1.62	0.0002920	2.92
15000	629	0.009	1.45	0.0002707	2.70
16000	629	0.008	1.31	0.0002521	2.52
17000	629	0.007	1.19	0.0002359	2.35
18000	629	0.007	1.08	0.0002215	2.21
19000	629	0.006	0.99	0.0002087	2.08
20000	629	0.006	0.91	0.0001973	1.97

It should also be noted that monitoring of ground vibrations and air overpressures will occur for each blast. The normal industry practice is to adjust blast design parameters to mitigate any potential off site effects should the monitored levels begin to approach inappropriate levels. Page 18 of the February 22, 2008 draft discusses a mitigation measure to achieve reduction in vibration amplitudes for a given distance.

8. The consultant should address the potential impacts the proposed blasting program could have on the wildlife in the area and on the monitoring equipment and programs/studies underway within the Santa Margarita Ecological Reserve.

Response: The potential impacts of the proposed blasting program on wildlife in the area, as well as on monitoring equipment and studies in the Santa Margarita Ecological Reserve, are beyond the scope of the Blast Plan and Impact Analysis. It is my understanding that these issues have been addressed in the Determination of consistency with the Western Riverside County MSHCP prepared by CH2MHill (2008).

9. The consultant should address the blast hole drilling program and the noise and vibration to be created by the blast hole drilling program to be employed by the mine operation.

Response: It is my experience that blast hole drilling activities typically do not generate ground vibrations that are perceptible beyond, at most, a few yards from the drilling equipment. Given the structure of the geology around the Liberty Quarry site, any ground vibration caused by blast hole drilling activities will not be perceptible beyond the Quarry property boundaries.

The airborne noise caused by blast hole drilling activities is beyond the scope of the Blast Plan and Impact Analysis. It is my understanding that this issue has been addressed in the report Environmental Noise Analysis – Liberty Quarry by Brown-Buntin Associates, Inc. (2008).

10. The consultant should consider the variation in building types in the area of the proposed mine site. Specifically, the potential impact to the various types of construction (masonry, tilt-up, wood-framed, single-story, multi-story, new buildings, old/historic buildings, etc.) should be discussed and evaluated accordingly.

Response: Please see the general discussion on pages 5 through 8 of the February 22, 2008, draft. The USBM ground vibration criteria were developed to protect the weakest portion of the structure regardless of structure type. The weakest portion of the structure is the plaster interior. The damage threshold is considerably higher for load-bearing or other structural portions of a house, such as concrete foundation walls, concrete slabs, wood members, etc. In the development of these criteria the USBM studied newer structures utilizing modern drywall interiors as well as older structures with plaster-on-lath interiors. Data used to develop the criteria was gathered from the response of single story residential structures as well as multi-story residential structures. The criteria are applied to wood framed structures and would be considered conservative for masonry or tilt-up structures. The USBM ground vibration criteria or its OSM equivalent is applied in over 25 U.S. states, territories, and even some foreign countries.

11. The subject report should include a comprehensive list of references used to prepare the report.

Response: A reference list has been included at Appendix E of the February 22, 2008, draft.

Exhibit C Section 12.0 (Blasting)

1. Section 12.0 states proper blasting design by qualified experts is the best method for eliminating the potential impacts of blasting operations. Please identify the qualified expert and/or qualifications for this expert.

Response: Please see the Liberty Quarry Blast Plan, contained at Appendix C of the February 22, 2008, Blast Plan and Impact Analysis. The expert qualifications are described at Section 3.3 of the Blast Plan as follows:

> **3.3 USE and HANDLING**
>
> The blasting contractor shall possess the following:
>
> A. A current Explosive License or Permit issued by the BATF&E for the proper classification of operation.
> B. Current "Responsible Persons" and "Employee Possessor" forms for all applicable personnel.
> C. Current "Certificate of Eligibility" for all applicable personnel.
> D. A current MSHA Identification Number.
> E. Current Part-46 training and refresher training documentation.
> F. A current CAL-OSHA Identification Number.
> G. Current training documentation.
>
> The use and handling of all explosive materials shall be done by fully trained and experienced personnel. All Blasters shall possess a current blasting license issued by CAL-OSHA and be experienced in quarry blasting. All of the blasting contractor's employees must be trained in accordance with CAL-OSHA and MSHA requirements and possess certification of such training.
>
> The blasting contractor shall provide and maintain, on site, all required and necessary **Material Safety Data Sheets** for inspection and use in the event of an emergency.

All unused explosive material shall be removed from the blast site at the end of shift and secured in proper storage facilities or properly removed from the premises.

2. **Section 12.0 should indicate the type of blasting media (ANFO, Unimax, TNT, primers, detonation cord, etc.) to be used at the site. In addition, a detailed discussion of how the blasting media will be transported to the site, stored on the site, etc. should also be included. The location of the on-site storage of blasting media should be indicated on the mining plan, as appropriate.**

Response: Blaster and crew including explosive truck will arrive on site at designated time. Explosive materials shall be transported without undue delay to the blast site. Operators of explosives delivery vehicles are trained in the hazards of transporting and handling explosives and properly licensed by state and federal authorities to operate the vehicle. The explosives vehicle is properly licensed and permitted to haul explosives in the state of California. The explosives vehicle will depart immediately upon completion of blasting operations. There will be no explosives stored on site.

Prior to arrival the blast area will be prepped, stemming will be placed on the shot and readied for loading. The blaster-in-charge will discuss with the crew how the shot will be loaded and what the responsibilities of each crew member. Any safety hazards that may be present and what they can do to minimize the chance of an accident will also be discussed. The blaster will then start the loading of the blast holes in a safe and timely manner so as to be ready to shoot at the designated time. The Liberty Quarry Blast Plan describes a typical blast design to be utilized. In general, the blasting media will primarily consist of ANFO and/or other explosive medium, cast boosters, and initiators. At the time of the blast, clearing of and securing the blast area will be coordinated to prevent any unauthorized personnel from entering the site. When it is determined by the blaster-in-charge that the blast site is secure, warning signals stated in Section 4.4 of the Blasting Plan will be given. After the blast has been detonated the blaster-in-charge will determine if the site is safe to enter and will give the all clear signal. At that time the explosives truck and crew will leave the property and the blaster-in-charge will complete the blast report and all paper work for that day's blast.

3. **Section 12.0 should include a detailed description of the blasting plan (number of blasts per day & per week, number of holes per blast, depth of holes, area/volume of material to be blasted, etc.).**

Response: There will be a maximum of one or two blasts per day to facilitate removal of the rock and a maximum of 10 blasts per week. Blasting will occur Monday through Saturday, between the hours of 10:00am and 6:00pm. The specific drilling information is described in Section 4.3.2 of the Blast Plan as follows:

The drilling pattern shall be determined by the size and depth of area to be excavated, distance to adjacent developments, geology of the rock formations and the size of required equipment. See Appendix A for typical blast pattern calculations.

Typical drill pattern calculation:

- Hole burden= 20 to 40 times the hole diameter
- Hole spacing= 1 to 1.8 times the burden
- Subdrill= 0.2 to 0.5 times the burden
- Minimum Bench Height= 3 times the burden

Adjustments shall be made after each blast to achieve the optimum hole size/drill pattern ratio to maximize production while minimizing fly-rock and ground vibration.

Drilling Procedures:

- Driller is to drill clean holes with substantial collars to maintain the integrity of the hole.
- Driller shall complete a daily "drill log" and submit such log to their Supervisor.
- Driller is to check each hole for voids, water and any obstruction that might interfere with the loading of such hole. Driller is to notate such information on daily "drill log" and mark such hole for easy recognition.

4. Section 12.0 should include a detailed description of how the blast boreholes are drilled, how the holes are loaded and stemmed, etc. This description should also include details on the equipment to be employed for this task.

Response: The blast borehole drilling procedures are described in Section 4.3.2 of the Blast Plan, as discussed in the previous response. The hole loading procedures are described in Section 4.6 of the Blast Plan. The specific hole loading and stemming techniques are left to the discretion of the qualified blasting contractor in accordance with the applicable laws and regulations, and with the following considerations:

4.6.4. Loading Holes

All loading of explosives shall be under the direction and supervision of the blaster-in-charge. The blaster-in-charge shall be responsible for the following:

A. Type of explosive used,
B. Quantity of explosive used,
C. Actual placement of explosives in hole,
D. Delay timing of shot,
E. Back-filling or stemming of each hole,

F. Tie-in an/or hookup of the initiation system,
G. Coordination of personnel evacuated in blast area,
H. Blast area security,
I. Activation of the warning signals,
J. Detonation of the shot,
K. Post-blast inspection, and
L. Handle any unexpected or unusual events such as;
1. Fly-rock incidents,
2. Personal injuries,
3. Equipment or structure damage, or
4. Misfires or hangfires.

The blaster-in-charge shall make provisions in loading techniques to achieve a stable vertical back-wall face. The use of pre-splitting, post-splitting, decking, increased back-row delay timing and other acceptable methods shall be used to minimize back-break and heavy toe.

4.6.5. Initiation Systems

All down-hole-delay and surface-delay detonators used to initiate a blast shall be of a non-electric shock-tube system. Detonation cord shall not be used on the surface to tie-in or hook-up a shot.

5. Section 12.0 should include a detailed description of the information and notification program to be employed for the blasting program.

Response: The pre-blast information and notification program is described in Section 4 of the Blast Plan as follows:

4.6.7 Pre-Blast Notifications

The contractor shall be responsible for all required notifications. The blasting contractor shall notify the following;

A. All regulatory agencies requiring notification,
B. All law enforcement agencies requiring notification,
C. All emergency services requiring notification,
D. Designated quarry personnel requiring notification, and
E. All residents or owners requesting notification

4.6.8 Blasting Warning Signals

A pre-determined signaling system shall be established before blasting is to commence. All warning systems must meet CAL-OSHA, MSHA and quarry operator's requirements. A typical warning signal uses an air horn as follows;

WARNING SIGNAL	Five minutes prior to blast ***"A one-minute series of long audible signals"***
BLASTING SIGNAL	One minute prior to blast ***"A series of short audible signals"***
ALL CLEAR SIGNAL	Following blast site inspection ***"One prolonged audible signal"***

Sufficient security guards shall be stationed around the blast area to prevent access. Guards are to have direct communication with the blaster-in-charge, by direct line-of-sight or through radio communication. Guards must be able to notify the blaster-in-charge immediately if the secured area has been breeched. The blast will be aborted until the area has been cleared.

6. Section 12.0 should include a detailed description of the pre-blast and post-blast inspections and documentation program to be employed for this operation (onsite and offsite properties and structures).

Response: The pre-blast and post-blast inspections and documentation program is described in Section 4 of the Blast Plan as follows:

4.6.1 Blast Site Inspections

The blasting contractor shall inspect the blast area for potential hazards. Inspected areas include but are not limited to;

A. The immediate blast area,
B. The high-wall face, and
C. The geology of the rock to identify;
    1. Mud seams,
    2. Potential slide areas,
    3. Voids,
    4. Loose rocks,
    5. Fractures, or
    6. Any rock mass defects.

4.7.1 Post-Blast Re-Entry

A. Only the blasting contractor shall be allowed to re-enter the blast area.
B. Re-entry shall be allowed after the smoke, fumes and dust have cleared.
C. The shot shall be checked for any safety concerns or unusual occurrences such as a misfire, hangfire or unsafe geology.
D. The blaster-in-charge shall authorize the "All Clear" signal to be sounded, only after the area is deemed safe-to-enter.

4.7.4 Blasting Records

The blaster-in-charge shall complete a Blasting Record after each blast that identifies the following;

A. Customer Name,
B. Date/Time of blast,
C. Location of the blast,
D. Timing Diagram,
E. Drill pattern,
F. Hole diameter,
G. Stemming type and depth,
H. Sub-drill depth,
I. Total number of holes in blast,
J. Hole depths,
K. Distance and direction to nearest structure,
L. Scaled distance,
M. Maximum pounds per delay,
N. Typical hole diagram,
O. Description of products used in blast including;
    1. Manufacturer's name,
    2. Product name,
    3. Product size,
    4. Product quantity used, and
P. Location of seismometer (distance & direction from shot)
Q. Ground vibration and air overpressure results
R. Date of last Manufacturer's calibration
S. Blaster's signature

The Blast Record shall contain all the information required to re-create the blast site, locate blast holes and shot/loading details. The Blast Record is a legal document and must meet the Federal, State, and local regulation regarding the documentation of a blast.

7. Section 12.0 should include a detailed description of the blast warning system (equipment, procedures, etc.) to be employed for each blast.

Response: The blast warning system is described in Section 4.4 of the Blast Plan, as described in Response 5 above.

8. Section 12.0 should include a detailed description of the blast monitoring equipment/array that will be employed for this operation.

Response: Please see the Blast Vibration and Monitoring Plan, included as Appendix D to the February 22, 2008, draft Blast Plan and Impact Analysis. The blast monitoring equipment shall consist of seismographs which adhere to the specifications adopted by the International Society of Explosives Engineers on February 17, 2000, to monitor ground vibration and air overpressures resulting from blasting operations at the Liberty Quarry. The instruments shall have, at a minimum, the frequency response ranges described in Section A of the Blast Vibration and Monitoring Plan, in order to ensure that ground vibrations and air overpressures from the Liberty Quarry remain within the specified thresholds.

In order to ensure that the criteria set forth in the Blasting Plan and Impact Analysis are met across the range potentially sensitive nearby land uses, all blasts should be monitored from at least one residence, one SMER site, and one of the other receptor locations described in Appendix A of the Blasting Plan and Impact Analysis. While it would be preferable to monitor each blast from the closest receptor in each category (i.e., No. 19 "Project Boundary" (other), No. 3 "Rainbow Residence SW of Site" (residence), and No. 14 "SMER Site 1" (SMER), the actual monitoring locations should be determined based on site accessibility, the presence of sensitive receptors (human or structural), and location to the Project boundary.

9. Section 12.0 should include a table of the acceptable parameters/upper limits for blasting (peak particle velocity, air overpressure, etc.).

Response: The Blast Vibration and Monitoring Plan, included as Appendix D to the February 22, 2008, draft Blast Plan and Impact Analysis includes the following:

The ground vibration and air overpressure control limits for structures and human response are detailed in the Blasting Plan and Impact Analysis Report, and are summarized below. If the blasting operations at the Liberty Quarry exceed the referenced control limits for any single axis of any blast, Granite Construction and their blasting contractor shall cease all blasting activities and submit a report to the County. The report shall give the blast design parameters and seismographic data and include any necessary proposed corrective action, which in their opinion will reduce vibration intensity.

Ground Vibration and Air Overpressure Acceptable Limits			
Ground Vibration		**Air Overpressure**	
Structural	Human Response	Structural	Human Response
0.75 in/sec	0.6 in/sec	0.0129 psi	0.01 psi

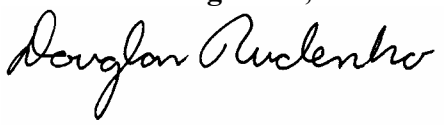
10. Section 12.0 should include a discussion on the potential environmental impacts (air, water, etc.) that could result from the blasting media (ANFO, primer, detonation cord, etc.) and/or how this is to be mitigated.

Response: An examination of the potential environmental impacts that could result from the blasting media is beyond the scope of the Blast Plan and Impact Analysis. It is my understanding that these impacts are analyzed in the Liberty Quarry Air Impact Analysis prepared by Kleinfelder (2008), and will be addressed in the environmental impact report.

11. Section 12.0 should include a discussion of the blast hole drilling program and the noise and vibration to be created by the blast hole drilling program to be employed by the mine operation.

Response: The blast hole drilling program is generally described in Section 4 of the Liberty Quarry Blast Plan, as described in Response 3 above. The noise and vibration to be created by the blast hole drilling program is described in the Brown-Buntin (2008) noise impact analysis for Liberty Quarry.

Respectfully submitted,
Vibra-Tech Engineers, Inc.



Douglas Rudenko
Vice President