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Montpelier, Vermont 05602

STATE OF VERMONT
ENVIRONMENTAL BOARD
MONTPELIER, VERMONT 05602
802-828-3309

DATE: May 13, 1992

TO: Interested Persons

FROM: Elizabeth Courtney, Chair EC

RE: J. P. Carrara & sons - #1R0589-EB
Revocation

On May 6, 1992, the Board, on its own motion pursuant to Board Rule 31(A), determined to alter the Order issued with the April 23, 1992 decision concerning revocation. Accordingly, the order has been revised to accurately reflect the intent of the revocation decision.

c:carrara.rev(PC)

VERMONT ENVIRONMENTAL BOARD
10 V.S.A. Chapter 151

RE: J. P. Carrara & Sons, Inc.
Land Use Permit #1R0589-EB Revocation

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

This decision, dated April 23, 1992, pertains to a Petition for Revocation filed with the Environmental Board on September 12, 1990 by some residents of Clarendon, Vermont. The Petition alleges violations of Land Use Permit #1R0589-EB. That permit authorizes J. P. Carrara & Sons, Inc. (the Permittee) to operate a quarry on a 59-acre tract of land in Clarendon.

On November 6, 1990, the Chairman of the Environmental Board, sitting as an administrative hearing officer pursuant to Board Rule 41, convened a hearing in Clarendon. The following persons participated in the hearing:

The Permittee by James P. W. Goss, Esq.
Donald Churchill
Carroll Buffum, Jr.
Carroll Buffum, Sr.
Cheryl L. Morgan
Roy Seymour
Roland L. Pritchard
William Weeks
June Soine, co-administrator of the Estate of Suzanne Smith, and on behalf of herself and Margie Congdon

Following the hearing, the Chairman prepared a proposed decision. A proposed decision was sent to the parties on February 20, 1991, and the parties were provided an opportunity to file written objections and to request oral argument before the full Board. On March 7, 1991, the Permittee requested oral argument. Oral argument was held on April 4, 1991. Following oral argument, the Board conducted a deliberative session and voted to issue the proposed decision. This matter is now ready for decision. To the extent any proposed findings and conclusions are incorporated below, they are granted; otherwise, they are denied.

I. ISSUES IN THE PROCEEDING

A. Alleaations of Violations

The Petitioners allege the following violations of Land Use Permit #1R0589-EB:

1. Condition 5: "The noise level at the property lines shall not exceed 85 decibels at any time." The Petitioners allege that during July and August 1990 there were at least 18 "blast events" at the quarry that caused shaking of structures, trees, and vehicles at least 600 yards from the property lines. The Petitioners also claim that the blasting contractor's own instruments recorded 114 decibels on August 1 and 109 decibels on August 23, and that other blasts felt considerably stronger than the two recorded ones, particularly two events on August 14.

2. Condition 8: "The blasting shall be implemented in phases in accordance with a blast plan entitled 'Blasting Design and Vibration Control Plan for Joseph P. Carrara & Sons,' dated June 1, 1987, and prepared by Dunn Geoscience Corporation (Board Exhibit #11). U.S. Bureau of Mines safety standards shall be observed." The Petitionersclaim that ground vibration limits of the blasting plan have been exceeded.

3. Condition 11: "The permittee shall take all necessary actions to ensure that no sediment reaches any streams or adjacent properties during any phase of this project." The Petitioners claim that they have observed rock ejecta of up to 18 inches in diameter and over 20 pounds in weight thrown by explosive force into streams crossing the property up to 60 yards from the quarry face.

4. Condition 19: "All construction on this project must be completed by March 1, 1990." The Petitioners claim that during the weeks of August 13 and 20, 1990, the Permittee constructed a surfaced road on the property that is at least 50 feet wide and 100 yards long, and that construction of the road required the bulldozing of hundreds of trees and the transportation to the site of many truckloads of surfacing material with access through the driveway of a house on the East Road.

B. Partv Status

Donald Churchill, Carroll Buffum, Sr., Carroll Buffum, Jr., June Soine, Margie Congdon, Cheryl Morgan, and Roy Seymour seek party status. Carroll Buffum, Sr., Carroll Buffum, Jr., June Soine, Margie Congdon, Cheryl Morgan, and Roy Seymour either live or own property along the East Road that abuts the property on which the quarry is located. Donald Churchill rents a house on land across the East Road from the Permittee's property.

The Board generally applies the same rules for determining party status in revocation proceedings as in hearings on applications for Act 250 permits. See Re: Crushed Rock, Inc., #1R0489-EB, Findings of Fact, Conclusions of Law and Permit Revocation Order at 3 (Oct. 17, 1986). The Permittee does not object to the party status of those persons seeking it except with respect to alleged violations of Condition 11.

Properties of the adjoiners may be affected by the blasting. Accordingly, they are granted party status as adjoiners with respect to the allegations of violations of Conditions 5 and 8 of the Permit. See 10 V.S.A. § 6085(c) and Rule 14(B)(l)(a). Donald Churchill's interests are affected by the blasting and he is therefore granted party status with respect to the allegations of violations of Conditions 5 and 8, pursuant to Rule 14(B)(l)(a).

With regard to the allegations that a road was constructed on the Permittee's property in violation of Condition 19, and that trucks used the East Road for access to construct the road, all those petitioners present at the hearing, and Margie Congdon, live on East Road and have an interest which may be affected; they are granted party status with respect to the allegation of violation of Condition 19, pursuant to Rule 14(B)(l)(a). Additionally, Mr. Churchill, who provided all of the testimony in this regard (other than the Permittee's), is granted party status with respect to the allegation of violation of Condition 19 on the basis of material assistance to the Board, pursuant to Rule 14(B)(l)(b).

Condition 11 requires the Permittee to ensure that no sediment reaches any streams or adjacent properties during any phase of the project. There is no allegation that any of the petitioners may be affected by alleged violations of this condition. Mr. Churchill sought to provide information in this regard. While Mr. Churchill testified regarding the explosive ejectment of some rocks from the quarry face, with resultant damage to some trees, he did not testify as to knowledge regarding stream sedimentation, failure of erosion control, or any other violation of Condition 11. Other witnesses gave testimony as to the location of streams, and Mr. Buffum, Jr. testified about rock in a stream which he believes came from blasting, but no one demonstrated a violation of Condition 11. Accordingly, the requests for party status on Condition 11 are denied.

II. FINDINGS OF FACT

1. The Permittee operates a quarry located on a 59-acre tract of land in Clarendon. Richard Carrara is corporate secretary of J. P. Carrara & Sons and is responsible for the crushing activities at the Permittee's processing plant in North Clarendon, including the operation of the quarry. The land is bounded by Route 103 on the west and the East Road on the east.

2. On February 17, 1988, the Environmental Board issued Land Use Permit #1R0589-EB, which authorizes the operation of a rock quarry on approximately eight acres of the 59-acre tract. The operation involves blasting and removing ledge and stone, loading it onto trucks, and taking it off the property to a processing plant in North Clarendon via Routes 103 and 7.

3. The Permit contains the following relevant conditions:

   1. Condition 5: "The noise level at the property lines shall not exceed 85 decibels at any time."

   2. Condition 8: "The blasting shall be implemented in phases in accordance with a blast plan entitled 'Blasting Design and Vibration Control Plan for Joseph P. Carrara & Sons,' dated June 1, 1987, and prepared by

Dunn Geoscience Corporation (Board Exhibit #11). U.S. Bureau of Mines safety standards shall be observed."

3. Condition 11: "The permittee shall take all necessary actions to ensure that no sediment reaches any streams or adjacent properties during any phase of this project."

4. Condition 19: "All construction on this project must be completed by March 1, 1990."

4. The Findinqs of Fact which support the oermit contain the following findings: --

14. The maximum charge size will be 250 pounds per delay, with an eight millisecond delay between each charge. There will be no vibration or effect from the blasts beyond a 200 foot radius from the charge location.

19. The property is located between Route 103 and the East Road. The only access to the property is gained from Route 103. Trucks arriving at the site will turn left from the southbound lane onto the project access road. Trucks leaving the site will turn right onto the northbound lane and Route 103.

5. "Noise" refers to something that the human ear can detect; "sound" may be below the normal hearing level of human beings. Blasting noise is measured on the A-weighted scale which approximates the human hearing level. The linear scale includes sound which may be below or beyond the normal level of hearing. The Applicant's sound expert, Mr. Pritchard, gave testimony which at one point is confusing: In response to a question of what standard is typically used to measure noise while blasting, he testified that the A-weighted scale, which approximates the human hearing level, is the appropriate standard; in response to a question as to which standard he would use at a quarry site to measure noise from blasting, he testified he would use the linear scale, but then said he did an A-weighted scale evaluation on the Carrara blasting. Id.

Whatever confusion there may have been at one point in the questioning, what emerges from Mr. Pritchard's testimony as a whole is that the A-weighted scale measures noise within the human hearing level, while the linear scale includes sounds which are not within the human hearing level.

6. The acceptable method of measuring airborne vibration is with the linear scale. A seismograph which uses a linear scale will monitor higher than the A-weighted scale.

7. There have been 37 blasts since July 20, 1990 through November 6, 1990 (the date of this hearing). There have been no more than two blasts in any one day.

8. On August 1, 1990, the Permittee's blasting contractors put a truck into the parking lot of Carroll Buffum, Sr.'s shop with a seismograph that measured the decibel level. When a blast went off in the quarry, the seismograph amplitude meter measured 114 decibels. Because the microphone was oriented approximately 90 degrees from the direction of the blast, the amplitude was probably much higher. Other blasts have felt stronger than the one that was monitored at 114 decibels.

9. On August 23, 1990, Mr. Buffum, Jr. saw the reading on the seismograph at 109 decibels. Later in the day another blast went off that was much larger. He also observed the seismograph reading of 114 on August 1.

10. On October 15, 1990, Mr. Pritchard, the blasting expert hired by the Permittee, set up monitoring equipment on the Permittee's property line near the East Road, 1,350 feet from blast No. 32 and 1,300 feet from blast No. 33, which were detonated that day. Blast No. 32 used 2,068 pounds of total explosives, 191 pounds per delay, and registered a peak decibel level on the linear scale of 113 and 71.5 dBA on the A-weighted scale. Blast No. 33 used 1,487 pounds of total explosives, 122 pounds per delay, and registered a peak decibel reading on the linear scale of 107 and 71.2 or 72.2 dBA on the A-weighted scale [see Exhibit #7]. The instrument used

for testing was a Soundtector Continuous Monitoring strip Chart Recorder, set on the A-weighted sound network.

11. According to the blasting logs kept by the blasting contractor, the maximum amount of explosive per delay has been 216 pounds, with an average of 113 pounds, and the maximum amount of total explosive has been 2,500 pounds, with an average of 1955 pounds. Blasting logs do not contain information on the decibel level of the blasts.

12. The noise from a blast is audible for about two seconds.

13. The quarry is approximately 1,100 feet from Mr. Seymour's property, approximately 2,000 feet from Mrs. Morgan's house, and between 1,100 and 2,000 feet from the other houses of the parties along the East Road.

14. Mr. Churchill has a field stone chimney on the outside wall of his house which is about 50 years old. There were cracks in the chimney before blasting began, but some of those cracks have increased in length from a quarter of an inch to an inch and a half after individual blast events. A blast shook the porcelain and fixtures in his bathroom, which is located on the other side of the house from the quarry.

15. Mr. Churchill was in a house five or six miles away from the quarry at the north end of the East Road and the windows shook when a blast went off.

16. On one or two occasions, dust from quarry blasts covered the cars outside Mr. Buffum Jr.'s shop.

17. Since the blasting began, additional cracks have appeared in the mortar of the cement block foundation of Mr. Buffam, Sr.'s house as well as in its chimney, ceiling, and walls. The blasts have caused his windows to rattle.

18. On August 14, 1990, Mrs. Morgan was sleeping with earplugs and a blast woke her up. The light in her kitchen, which is on a chain, was swinging back and forth. On August 23 a blast shook her house such that knickknacks on a shelf on the wall fell off. Her daughter was frightened by the blast. Mr. Carrara had been there that morning and told her he would come back with a seismograph, but he did not.

19. Mrs. Soine, who lives up on a knoll, feels vibrations in the floor when blasts go off. She has observed large clouds of dust in the air after a blast. The dust usually blows to the southeast, which is not in the direction of her house.

20. Mrs. Soine has noticed more sediment in the water faucets and lower water pressure since the blasting began. She has a driven 300-foot well.

21. Sometimes the ground shakes at the Churchill residence before the blast is heard.

22. Mr. Seymour's water source consists of a culvert three feet around and 10 feet deep that captures water from a spring on top of a hill, and perhaps contributed to by a vein of water on his property. He had no water problem in the sixteen years he has lived there, until blasting began. He believes that the shaking up of the land caused by the blasts is stirring up the sediment. He has not been able to use the water for several months because the mud comes through his faucets. His house shakes when a blast occurs.

23. Blasts create both ground and air vibrations. A person cannot hear most of the components of air vibrations. Structural damage is most likely to be caused by ground vibrations, while air vibrations are most likely to bring complaints from people because of the secondary effects of rattling in the house. Any rattling of houses is likely caused by air and not ground vibrations.

24. If air vibration from blasting were to cause damage to a structure, there would first be window breakage in the structure. There was no window breakage caused by

the blasting in any of the houses of the Petitioners' witnesses. Foundation damage does not result from air vibrations. According to studies conducted by the United States Bureau of Mines, it takes approximately 150 decibels on the linear scale to crack a poorly set window pane. Air vibration could cause swaying of a light suspended from the ceiling or rattling of a fixture on a wall. The likelihood of a shelf falling off the wall from a blast of less than 130 decibels is remote.

A blast detonated at 250 pounds per delay or less could not cause structural damage to a house 1,100 feet or more away from the blast.

26. Ground vibrations travel much faster than air vibrations, so that when a blast occurs, it is felt in the ground before the blast is heard.

27. It is not likely that ground waves from blasting will go through the ground and loosen dirt that could get into a water system. However, blasting can open up some part of the water table and allow water to run out, causing a lowering of the water table.

28. The extent to which air vibration is felt depends on atmospheric conditions, such as wind direction and inversions. It is possible that rattling of windows and storm doors could occur in houses located up to 2,000 feet from the blast. The air vibration is always greater behind the face than in front of it.

29. The only monitoring of blasts at this quarry based on the A-weighted scale was on October 15. All the other monitoring that was done was on the linear scale, including the readings of 107, 109, 113 and 114 decibels referred to in findings above. The Bureau of Mines standard for sound on the linear scale is approximately 130 decibels. That standard was not exceeded. The maximum 85 dBA at the property line in the permit referred to a measurement on the A-weighted scale (audible to humans).

30. During the early part of the quarry operation, rock was thrown from the quarry into the stream approximately 50 to 60 feet from the quarry on the north side. Since then, the quarry face has been established and it is much further from the buffer area, so that rock is no longer thrown into it.

31. Mr. Carrara had a road constructed leading southerly from the quarry to the East Road in August of 1990. The road is approximately 50 feet wide and 300 feet long. Material for surfacing the road was brought in on construction trucks through the Burke property on the East Road. Some material spilled from the trucks onto the East Road.

32. The road was constructed where a trail or primitive road and utility line had been along the easterly part of the quarry. Construction of the road involved widening the trail from an average of approximately 15 feet to approximately 50 feet. A number of trees were removed, and gravel and top dressing were brought in.

33. Two-thirds of the road lies within an area that will be excavated as part of the quarry.

34. The purpose of the road that was constructed was to allow the drilling rigs and the powder company trucks access to the top of the quarry, and to allow trucks access to remove overburden, and not as access to or from the quarry.

III. CONCLUSIONS OF LAW

Revocation for violations of a permit is authorized at 10 V.S.A. § 6090(c), which states:

> A permit may be revoked by the board in the event of a violation of any conditions attached to any permit or the terms of any application, or violation of any rules of the board.

Board Rule 38(A)(2) further amplifies the grounds for permit revocation:

> Grounds for revocation. The board may after hearing revoke a permit if it finds that: (a) The applicant or his representative willfully or with gross negligence submitted inaccurate, erroneous, or materially incomplete information in connection with the permit application, and that accurate and complete information may have caused the district commission or board to deny the application or to require additional or different conditions on the permit; or (b) the applicant or his successor in interest has violated the terms of the permit or application, or the Rules of the board; or (c) the applicant or his successor in interest has failed to file an affidavit of compliance with respect to specific conditions of a permit, contrary to a request by the board or district commission.

Alleged Violations

Conditions 5 and 8: The Petitioners allege that the 85 decibel limit at the property lines has been violated. A number of witnesses testified that the blasts have been strong enough to shake their houses, rattle their windows, and cause a light on a chain to swing back and forth. Several people have observed cracks in their foundations, walls, and chimneys, although it is not clear that such cracks result from the blasting. Mr. Seymour is concerned about the effect of blasting on his water supply.

The only technical expert who testified did so on behalf of the Permittee. He was clearly qualified by his training and experience to evaluate the effects of the blasting. Based on two blasts that he monitored on October 15, and his review of the blasting logs, he concluded that the blasts could cause rattling of windows but that at the intensities recorded the blasting could not cause structural damage to the houses. His testimony, taken as a whole, indicates that it is at least unlikely, if not impossible, that Mr. Seymour's water problems are a result of the blasting. It is unclear whether vibrations strong enough to cause bathroom fixtures to shake could also cause damage to the house.

Based upon the testimony and evidence provided by the Permittee's expert witness, the blasting limits of the permit have not been exceeded. Moreover, there is evidence that the U. S. Bureau of Mines safety standards have been observed, and no evidence that they have been violated. Except for the October 15 blasts, the expert witness's knowledge of the blasts that were detonated was based upon his review of other people's logs. Although these logs contained a record of the amount of explosives used per blast and per delay, they did not record the decibel level of the blasts. No witnesses from the blasting company were at the hearing to present testimony or answer questions.

Even if no damage is occurring to people's property as a result of the blasting, the neighbors are being disturbed by the effects of the blasting. We note that Finding #14 of the Findings of Fact attached to the permit states:

> The maximum charge size will be 250 pounds per delay, with an eight millisecond delay between each charge. There will be no vibration or effect from the blasts beyond a 200 foot radius from the charge location. (Emphasis added.)

Condition #1 of the permit states:

> The project shall be completed and maintained as set forth in Findings of Fact and Conclusions of Law #1R0589 and #1R0589-EB, in accordance with the plans and exhibits stamped "Approved" and on file with the District Commission, and in accordance with the conditions of this permit. No changes shall be made in the project without the written approval of the District Commission.

As the Board stated in Re: Crushed Rock, Inc., #1R0489-EB, Findings of Fact, Conclusions of Law and Permit Revocation Order at lo-12 (Oct. 17, 1986), findings of fact are incorporated into the permit, and district commissions as well as other parties have to rely on the information presented by the applicant. See also In re Chester P. and Bertha G. Denio, No. 89-214 at 11-12 (April 3, 1992). Finding #14 stated that "[t]here will be no vibration or effect-from the blasts beyond a 200 foot radius from the charge location." The finding derived directly from the

statement of the Permittee's expert witness to the Environmental Board during the 1987 hearings. The Permittee did not request any change, correction, or reconsideration of that finding.

It now turns out that the blasting has had an impact up to 2,000 feet from the location of the blast, even though there apparently has been compliance with the decibel level permit condition. The blasts have been strong enough at least to wake people up and shake their houses, rattle windows, and, in one instance, cause a light on a chain to swing. Although the testimony of the expert witness that the blasts cannot cause structural damage to houses may be reassuring, the blasts are clearly having an effect beyond a 200 foot radius from the blast locations, contrary to the representation of the Permittee during the proceedings before the Board. Given the fact that vibration and effect have been found up to ten times the distance as had been found under criterion 1, the question arises whether such level of impact would constitute undue air pollution, and if so, what additional conditions for blasting may be appropriate. The Board will therefore remand this matter to the District Commission for such determination and permit amendment proceeding.

Accordingly, the Board will require the Permittee, if it wishes to continue blasting with vibration and effect beyond a 200 foot radius from the charge location, to file an application for an amendment so that the District Commission can make an appropriate determination based upon more accurate evidence of impact.

Condition 11: The. Petitioners allege that rocks have been thrown by the blasts into a nearby stream, in violation of a condition prohibiting sediment to reach any streams. While there is evidence that some rocks may have been ejected into the stream, the concerns addressed in the permit were soil erosion and stream sedimentation. Finding 16 and Condition 11. No evidence was presented concerning any failure of erosion control or stream sedimentation resulting from the project. Since the Permittee has asserted that the face of quarry is now far enough away from the stream that blasted rock will not reach the stream or the buffer area, the Board is satisfied that even if there were any violation, it has been corrected.

Condition 19: The Petitioners allege that the Permittee, by constructing a road, violated the condition that requires all construction to be completed by March 1, 1990. The Board notes that on March 1, 1990, Land Use Permit Amendment #1R0589-1 was issued. This amendment extended the permit expiration date, although not the construction completion date. Since the date of the hearing, the Permittee sought an Advisory Opinion from the District Coordinator. The Coordinator ruled that the road construction did not require a permit amendment because it was neither a material nor a substantial change.

IV. ORDER - Revised

The Permittee shall limit any blasting to a level which has no vibration or effect beyond a 200 foot radius from the charge location or shall obtain an amendment from the District #1 Environmental Commission, or both.

Dated at Montpelier, Vermont this 13th day of May, 1992.

ENVIRONMENTAL BOARD

Stephen Reynes, Acting Chair
Rebecca J. Day
Arthur Gibb
Samuel Lloyd
Charles F. Storrow
Steve E. Wright

C:Carrara (P)