

# **Town of Merrimack New Hampshire Administrative Code**



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**Chapter 102, BLASTING AND EXPLOSIVES ORDINANCE**

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**Office of the Fire Marshal**

## Chapter 102, BLASTING AND EXPLOSIVES ORDINANCE

### § 102-01. Purpose

- A. The Blasting and Explosives Ordinance is established to promote the health, safety, fire protection, and general welfare of the residents of the Town of Merrimack.
- B. This ordinance outlines specific requirements governing blasting, explosives demolition or other use of explosives within the Town of Merrimack.

### § 102-02. Authority

- A. This ordinance is enacted pursuant to the statutory authority granted to the Town of Merrimack by RSA 31:39 and Town Charter Article 5 §4.

### § 102-03. Definitions

**Airblast** - An airblast is an airborne shock wave resulting from the detonation of explosives. The movement of overburden or release of expanding gas in the air resulting from the detonation of explosives may also cause airblast. Airblast may or may not be audible.

**Applicant** - The person, company or corporation, or the employee of any person, company or corporation, responsible and accountable for managing and conducting the blasting operations.

**Blast Area** - The area of a blast within the influence of flying rock missiles, gases, and concussion. The area including the blast site and the immediate adjacent area that is owned leased or controlled by the blast operation.

**Blast Site** - The area in which explosive materials are being or have been loaded and include all holes loaded or to be loaded for the same blast and for a distance of 50 feet in all directions.

**Blasting** - The detonation of an explosive device as defined by the National Fire Protection Association (NFPA) 495 Explosive Materials Code.

**Blasting Mat** - A rubber or steel mat used to protect personnel, dampen sound, keep the charge in the hole, prevent flyrock and contain debris.

**Blasting Operation** - All blasting anticipated to be undertaken during the completion of a contract or series of contracts, for demolition, excavation, construction, and development. A blasting operation includes all work involving the preparation, drilling, loading and detonation as well as the excavation and clean up of the blasted area, the location of blasting magazine, and quantity of explosives.

**Department** – The Town of Merrimack Fire Department

**Explosives** - Those materials as defined in New Hampshire Code of Administrative Rules Saf-C 1600 and RSA 158:29, XI and any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is with substantially instantaneous release of gas and heat, unless such compound, mixture or device is otherwise specifically classified by the U.S. Department of Transportation. All material which is classified as Class 1, Explosives by the U.S. Department of Transportation (49 CFR 173.50,) Classification of explosives by the U.S. Department of Transportation is as follows:

*Division 1.1 Explosives* Consists of explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously. Examples: dynamite, detonator (cap) sensitive emulsions, slurries, water gels, cast boosters, and mass detonating detonators.

*Division 1.2 Explosives* Consists of explosives that have a projection hazard but not a mass explosion hazard. Examples: certain types of ammunition, mines, and grenades.

*Division 1.3 Explosives* Consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or, both but not a mass explosion hazard. Examples: certain types of fireworks, propellants, and pyrotechnics.

*Division 1.4* Consists of explosives that present a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. Examples: safety fuse and certain electric, electronic, and nonelectric detonators.

*Division 1.5* Consists of very insensitive explosives. This division is comprised of substances which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport. Examples: blasting agents, ANFO, non-cap sensitive emulsions, blends, slurries, water gels, and other explosives that require a booster for initiation.

*Division 1.6* Consists of extremely insensitive articles which do not have a mass explosive hazard. This division is comprised of articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

**Fire Chief** - The Chief of the Merrimack Fire Department or a named and authorized designee.

**Fly Rock** - Any rock or material that is propelled through the air or has the potential to be propelled through the air beyond the blast area.

**Ground Vibrations** - The shaking of ground that is registered and documented by a seismograph caused by the blast wave emanating from the detonation of an explosive.

**Habitable Structure** - A structure, which persons are occupying or may occupy, including residential dwellings, commercial and industrial buildings, garages, sheds, barns, and storage buildings.

**Hertz** - A term used to express the frequency of ground vibrations and airblast. One hertz is one cycle per second.

**NFPA** – The National Fire Protection Association

**Particle Velocity** - A measure of ground vibration. Particle velocity describes the velocity at which a particle of ground vibrates when excited by a force producing ground motion such as an earthquake or an explosion, measured in inches per second.

**Peak Particle Velocity (PPV)** - A measurement of maximum ground vibration, in any of the three mutually perpendicular components of particle velocity.

**Preblast Administrator** – The person and/or company conducting the preblast survey.

**Preblast Survey** – An evaluation of a structure within the required distance to identify any structural problem before the commencement of the blasting operation.

**Seismic Measuring Equipment** - That equipment utilized to measure ground effects of blasting and/or explosive detonation which may include but is not limited to: creepmeters, seismographs, seismometers, strainmeters, or magnetometers. These meters shall always be placed on undisturbed soil and not placed on sand or heavy sand soils.

**Seismograph** - An instrument that measures and records earthborn vibration. The instrument shall produce a direct printout of ground motion frequency, acceleration, particle velocity and amplitude, or produce a record from which any of these parameters can be calculated.

**Site** – The area as outlined by the boundaries which are identified as a Map and Lot number by the Town.

**Structure** - Anything which is built or constructed on a property (i.e., property improvements) including activity for which a building permit or site permit is required such as foundations, driveways, roadbeds, parking lots, swimming pools, wells, waste disposal systems, and utility installations.

**Town** – The Town of Merrimack, New Hampshire

#### **§ 102-04. Permit Required**

- A. No blasting or Explosives detonation shall be conducted within the Town unless a permit has first been obtained for that purpose.

#### **§ 102-05. Administrative Responsibility**

- A. The Fire Chief shall administer this ordinance, conduct appropriate oversight of all blasting and explosives, in cooperation with other officials, Police Department or agencies to enforce the provisions of this ordinance.

#### **§ 102-06. Adoption of Blasting and Explosives Codes**

- A. The Town adopts the following codes for the purpose of establishing rules and regulations for blasting and explosives, including permits and penalties:
  - 1) State of New Hampshire Chapter Saf-1600 Explosives, RSA 160-C, Saf-C 5003, Saf-C 6018 as amended;
  - 2) National Fire Protection Association (NFPA) No 70, National Electric Code, as amended;
  - 3) National Fire Protection Association (NFPA) No. 498, Standard for Safe Havens, Interchange Lots for Vehicles Transporting Explosives, as amended;
  - 4) National Fire Protection Association (NFPA) No. 495, Explosives Materials Code, as amended.

#### **§ 102-07. Fee Required**

- A. No permit shall be issued unless the non-refundable fee of one hundred dollars (\$100.00) for the first week (defined as Monday through Friday) and \$20.00 for each weekday thereafter.
- B. The fees shall be collected at the time of application.
- C. The Town Council has the authority to waive any fees outlined in this section.

#### **§ 102-08. Permit Application**

- A. Applications for a permit shall be made to the Merrimack Fire Department, 432 Daniel Webster Highway in Merrimack, NH during normal working hours as identified by the Fire Department (Posted on the Web Site, excluding Holidays and weekends.)
- B. Permits will be issued no more than seven (7) calendar days in advance of the blast and will be valid for no more than five (5) calendar days as identified by the dates listed on the permit. In the event that Monday is a holiday, permits will be valid for four days.
- C. The application form (OFM-FRM-101) shall be submitted seven (7) business days (exceptions on case-by-case basics as determined by the Fire Chief prior to the issuance of a permit.)
- D. The following requirements must be appended to the application:
  - 1) A copy of license issued by the State Police to the applicant allowing use, purchasing, transportation, and license along with proof of identification, under RSA 158:9-b, if applicable.
  - 2) A copy of blasting supervisor's Certificate of Competency issued by the State Police pursuant to RSA 158:9-h, if applicable.
  - 3) Written evidence of the licensing, experience, and qualifications of the blaster who shall be directly responsible for the loading and firing of explosives.
  - 4) A list of owners of all such properties identified, together with a notation as to whether such properties are improved by a structure and the type of occupancy (i.e., residential, commercial, industrial) where applicable.

- 5) A letter of permission from the property owner of the blasting or explosives discharge site.
- 6) Evidence of general liability and property damage insurance where applicable issued by a carrier authorized by the State of New Hampshire Insurance Commissioner to do business in New Hampshire in an amount of not less than One Million (\$1,000,000) Dollars combined single limit per occurrence. Proof of proper insurance will be kept on file with the Department for a period of one year and shall be updated by the applicant on an annual basis.

#### **§ 102-09. Authority to Issue**

- A. Permit applications shall be received, reviewed and the information contained therein verified as necessary by the Fire Chief.
- B. Prior to acting on any permit the Fire Chief may consult with such federal, state and/or Town officials and employees whose area(s) of responsibility are, or may be, affected by the proposed blasting operation.
- C. After review and verification, the Fire Chief shall act on the application and either issue the permit, with any condition(s) necessary to achieve the purposes of this ordinance, or deny the permit application, along with the reason(s.)

#### **§ 102-10. Amendments for Adopted Code**

- A. In addition to any other requirements of State Law, the codes adopted by reference in § 102-02 are hereby amended in the following particulars along with additions for Local Requirements and the following additional requirements shall apply to blasting activity within the Town of Merrimack.
- B. All blasting operations, including the storage and handling of explosives and blasting agents, shall be performed in accordance with the applicable provisions of this ordinance and all other pertinent federal, state, and local regulations, as may be amended or superseded by other similar regulations from time to time, to include:
  - 1) NFPA 1 Fire Prevention Code
  - 2) NFPA 101 Life Safety Code
  - 3) NFPA 495 Explosive Materials Code
  - 4) New Hampshire State Building Code
  - 5) New Hampshire Code of Administrative Rules Saf-C 1600, RSA 160-C, Saf-C 5003, Saf-C 6018.
- C. Whenever explosives are used, they shall be of such character and in such amount as are permitted by the state and local laws and ordinances, and all respective agencies having jurisdiction over them.

## **§ 102-11. Pre-Blast Condition Survey Requirements, Amendments to Saf-C 1607.05**

- A. Property owners are not obliged to accept a preblast/post blast inspection offer.
- B. Prior to conducting any pre-blast survey the applicant or their agent shall register with the Merrimack Fire Department utilizing the Pre-Blast Survey Registration Form number OFM-FRM-102 and a copy of this form will accompany the persons conducting the pre-blast survey.
- C. Pre-Blast Inspections are hereby amended in the following particulars:
  - 1) Prior to conducting any blasting, the applicant or their agent shall conduct a pre-blast structural condition survey of all structures/habitable structures, and conditions on the site, adjacent to the site, or in the vicinity of the site.
  - 2) This survey shall extend to such structures or conditions as may be affected by the applicant's construction operations. At a minimum, pre-blast condition surveys shall be performed on all structures/habitable structures within five hundred (500') feet from the site of the proposed blast or such extended distance as may be specified by the Fire Chief or actions of the Town.
  - 3) The individual person conducting the survey shall give written notice, not less than ten (10) days in advance, to the owner of the property concerned, as well as to any tenants of the property.
  - 4) The written notification must describe, at a minimum:
    - a. The blasting that will take place.
    - b. When blasting may occur, including dates and times, or a range of dates and times.
    - c. A five (5) business-day window for a property owner to request pre-blast/post-blast inspection.
    - d. The mailing address, e-mail address and telephone number that property owners can use to obtain information regarding the blasting or inspections, and to request at no cost, pre-blast inspections.
    - e. The mailing address, e-mail address and telephone number and instructions about how and where to contact the applicant, or his/her representative concerning blast-related complaints or claims.
    - f. The ability to receive notification, one hour before each impending blast, to an e-mail or telephone number supplied by the resident or property owner.
- D. The applicant must provide to the Fire Chief a list of all parties and property owners notified indicating whether or not a pre-blast inspection request was received by the applicant in each case.
- E. The applicant shall make at least three in-person attempts and at least one certified mail notice over a 14-day period to notify the owner of the need for such surveys.
- F. The pre-blast structural inspection condition survey shall consist of a written description of the interior and exterior condition of each of the structures examined.
- G. Descriptions shall locate any existing cracks, damage, or other defects, and shall include such information so as to make it possible to determine the effect, if any, of the blasting operations on the defect.

- H. Where significant cracks or damage exists, or for defects too complicated to describe in words, photographs shall be taken.
- I. The applicant or their agent shall utilize an audio/video survey, in a format approved by the Fire Department, with appropriate audio descriptions of locations, conditions, and defects. The applicant or agent taking the survey shall notify the property owner when the audio or video recordings are active and inactive.
- J. An audio/video survey cannot be used in lieu of a written form.
- K. The applicant, as well as the owner of the property being surveyed, shall sign all such surveys once completed.
- L. A property owner refusal, for whatever reason, to allow the execution of a pre-blast survey, or to sign a pre-blast survey form, shall be noted on the pre-blast survey form and that form filed with the Fire Department.
- M. This survey shall be kept by the blaster and be made available to the town, upon request, for a minimum of seven (7) years.
- N. The preblast administrator and/or permit applicant shall provide copies of the completed audio/video survey to each property owner who requests a copy of the preblast survey within 14 working days (Monday through Friday) from the time of the property owners request. The preblast administrator may charge the property owner a fee not to exceed the cost of materials used to make the copies.

#### **§ 102-12. Blasting Damage Complaints**

- A. Any person or firm alleging damage as a result of blasting operations shall make a complaint to the firm performing the blasting Operation.
- B. Upon receipt of a Blasting Damage Complaint the permit holder and the blaster in charge, shall notify the Fire Chief of the complaint within 24 hours and provide a copy of the Blasting Complaint and the investigation findings when completed to the Fire Chief.

#### **§ 102-13. Seismic Measuring Devices**

- A. Prior to conducting any blasting, the applicant or their agent shall identify the two closest structures to the blasting site not owned by the owner of the blast site, that are within 500 feet or such distance as designated by the Fire Chief, and request written permission from the owner(s) thereof to install and monitor seismic measuring equipment.
- B. The applicant shall make four (4) attempts to obtain such permission.
- C. The fourth and final attempt shall be made in writing via certified mail and, if unsuccessful, the seismic measuring equipment shall be installed between the structure and the blast location as close as reasonable to the structure.
- D. An explanation of the reason for such location shall be made on the vibration monitoring report for such structure and the ppv/(in/sec.) shall be extrapolated to the structure using standard relations.
- E. Prior to conducting any blasting, seismic measuring equipment shall be installed as described above and shall always be placed on undisturbed soil and not placed on sand or heavy sand soils.
- F. The Fire Chief may require additional measuring devices when necessary to protect property.



- G. If an owner refuses to allow for or waives the placement of seismic measuring equipment, the applicant shall note this on the vibration monitoring report.
- H. Documentation of any such refusal shall be filed with the Fire Department to include the date, time and, if available, the names of the persons giving the refusal.

#### **§ 102-14. Blast Plan**

- A. The applicant shall provide a detailed map and plan (unless waived by the Fire Chief,) accurate to a scale of not greater than 1" = 200' in a format outlined by the Merrimack Fire Department, locating the blast site, blast area, all buildings and structures within 500' feet of the blast area or such extended distance as may be specified by the Fire Chief, access roads, the location of all measuring devices required hereunder (include device serial number and distance from shot corner to device) and any other specific requirements identified by the Fire Chief.
- B. Additionally unless waived by the Fire Chief, in the format outlined, a site specific blasting plan shall be prepared and submitted by the Master blaster or their authorized designee.

#### **§ 102-15. Additional Surveys / Seismic Devices**

- A. The Town reserves the right to require additional condition surveys and/or placement of seismic measuring equipment on properties should the need arise due to complaints or other causes.
- B. The Town reserves the right to require geological surveys of the area around the blasting location should conditions warrant such analysis (mapping the area of disturbance and topography changes.)
- C. The costs associated with these additional requirements shall be borne by the applicant.
- D. Such additional requirements shall be prerequisites to obtaining any permit renewals.

#### **§ 102-16. Blast Vibration Control and Monitoring**

- A. The applicant shall be required to comply with the blasting vibration limits established by the applicable State of New Hampshire rules and regulations or as outlined in or as outlined in § 102-18. Report of Monitoring.
- B. The Town/Fire Chief reserves the right to impose lower maximum vibration and sound limits.
- C. All blasting if required by the Fire Chief within the Town of Merrimack NH requires seismograph monitoring.

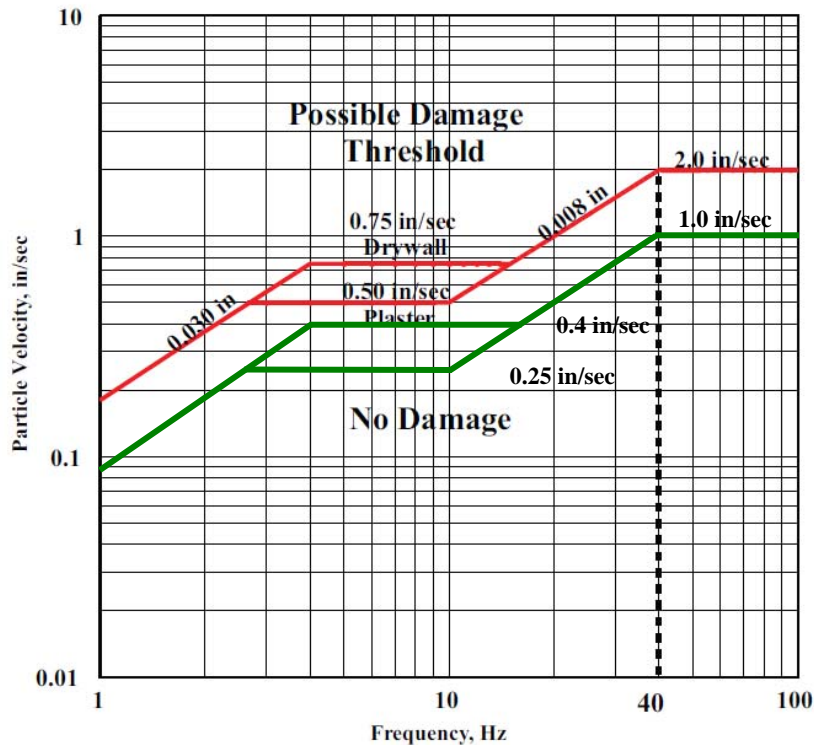
#### § 102-17. Vibration Monitoring Instrumentation

- A. All vibration monitoring instrumentation proposed for use on the project by the applicant shall comply with the International Society for Explosives Engineers (ISEE) Field Practice Guidelines for Blasting Seismographs current edition requirements.
- B. All seismographs used on the project shall display the date of the most recent calibration. Said calibration must have occurred within the last twelve (12) months and been performed to a standard traceable to the National Institute of Standards and Technology.

#### § 102-18. Report of Monitoring Results

- A. If the results exceed the requirements outlined in this document, or if required by the Fire Chief, the applicant shall provide at a minimum and in writing a “Non-Compliant Blast Report” form OFM-FRM-103 to the Fire Chief by the end of the day of a non-compliant blast.
- B. A report covering the results of the blast monitoring at each instrument location, including PPV in inches per second, decibels as well as a copy of the chart recording for each monitoring location, marked with the date, time, location of the equipment, and signature of the seismograph operator shall be required for each blast.
- C. This report (OFM-FRM-103) is to be submitted even if there is no trigger of the device.
- D. Unless otherwise authorized by the Fire Chief, if the seismic ground vibration or air concussions or both ground vibration and air concussions caused by the applicant’s blasting operation attain or surpass, at any structure not owned or controlled by the property owner, the compliance limit for air response of 133dB as recommend by USBM standards, or the “Safe level Blasting Criteria from USBM RI 8507” (see **Blasting Level Criteria** below in RED) or at the property line of the blasting operation, blasting operations shall cease and the permit revoked pending review by the Fire Chief. In the event that the blasting operation exceeds the identified criteria or complaints are received in a manor that exceeds an acceptable level as identified by the Fire Chief, a buffer limit may be imposed (see Alternate Blasting Level Criteria below in GREEN) at any time during the project.

E. **ALTERNATE BLASTING LEVEL CRITERIA Chart Below)**



**§ 102-19. Notice and Warning Signals**

- A. The applicant shall publish a notice in a local paper no later than one week prior to blasting operations noting the place, date of blasting operations, and estimated number of days of blasting. This is required only if blasting more than 1152 cubic feet of material (12' x 12' x 8'.)
- B. The applicant shall contact the Fire Department at 603-424-3690 and the Merrimack Police Dispatch Center at 603-424-3774, not less than one hour before the scheduled time of blast, and again 15 minutes before the scheduled blast and provide the address of the blasting site, the total pounds of explosives and the number of charged holes. The applicant shall notify the Fire Department when the "All Clear" has been given after the scheduled blast.
- C. If requested by any resident and/or property owner the applicant shall notify residents and property owners of a blast time using the e-mail or telephone number provided by resident or property owner not less than one hour before the scheduled time of blast.
- D. Signboards and flags indicating areas where blasting operations are occurring shall be placed along the property line and/or if required by the Fire Chief 500 feet from the blast area, 50 feet apart or as otherwise directed by the Fire Chief.
- E. These signs shall be clearly visible and legible from all points of access to the area.
- F. The signs shall clearly describe the audible signal system for warning of impending blasts.

- G. Blast area signs shall clearly indicate the length and nature of audible blast warning and all clear signals.
- H. All warning systems shall comply with the requirements of local, state, and federal agencies.
- I. Adequate audiometric warnings shall be given to all personnel in proximity to the blast site at least three minutes in advance of each blast.
- J. Blasting shall be performed only after ensuring that all people and equipment have been removed to a safe location.
- K. The applicant shall use sirens or horns or both sirens and horns with sufficient intensity such that they can be heard for a minimum distance of 1,000 feet in all directions.

#### **§ 102-20. Fly Rock Control**

- A. Except as previously approved by the Fire Chief, all blasts within one thousand feet (1,000') of any structure, power transmission line or communications tower shall be covered with an adequate blasting mat or shield and secured together properly.
- B. In the event that flyrock is identified beyond the blast site or lands on or within 15 feet of a traveled roadway the blasting contractor shall cease all blasting operations and the current Blasting Permit shall be revoked without any financial reimbursement.
- C. Immediate notification shall be made to the Fire Chief and Police Chief of the flyrock incident and the locations of where the flyrock had landed.
- D. The blasting contractor shall review the flyrock incident and determine the cause and solution for the incident. This report shall be filed with the Fire Chief prior to issuance of any further blasting permits.

#### **§ 102-21. Blasting Monitoring**

- A. The Fire Chief reserves the right, to have personnel on site at any time at a cost to the applicant to monitor any and all activities of the applicant.
- B. These representatives shall have the right to order all blasting operations to cease at anytime.
- C. The applicant shall provide the Fire Chief with copies of Material Safety Data Sheets (MSDS) information for all products, materials and compounds that will be used on the site in association with the blasting operation.

#### **§ 102-22. Dust Control**

- A. Dust control plans and procedures shall be submitted at the time of all blasting permit applications for review, and approval by the Department of Public Works, and Community Development Department.
- B. Dust migrations from blasting operations, including rock removal and rock processing to adjacent properties, shall be controlled and kept to a minimum.

### **§ 102-23. Storage of Explosive Material**

- A. Part Saf-C 1609 Storage of Explosive Materials is hereby amended in the following particulars:
- 1) The storage of explosive materials or blasting agents, whether supervised or not, is hereby prohibited in the Town (exception reference 102-25 3.)
  - 2) The storage of explosive materials, blasting agents and black powder for the purpose of sale or resale with the exception of retail sporting goods stores (in amounts identified by the Fire Chief for retail only) is prohibited in the Town.
  - 3) The storage amount on-site in the Town of explosive materials for blasting purposes is limited to the amount planned for a single daytime use for times outlined in the Blasting Permit.
  - 4) Loaded explosives intended for detonation are considered storage for blasting purpose, in the event that there are issues that may arise preventing the detonation of explosives; the applicant shall immediately make notification to the Fire Chief for further actions and requirements.

### **§ 102-24. Baseline and Ongoing Blasting Groundwater Monitoring and Mitigation**

- A. The implementation of a baseline and ongoing blasting groundwater monitoring and mitigation program requirements will apply to any blasting operation which is associated with the removal of 36,000 cubic yards (approximately an area of 180 feet wide x 180 feet long x 30 feet deep) or greater of material from a specific site location/property of the blasting project and/or within 2000 feet of a public or private well, well head protection area or public water supply.
- B. The total quantity of material removed or blasted shall be calculated over a period of one year for a specific site or property.
- C. In order to assess and/or address the potential adverse impact that may arise when using substances to blast rock or when altering the surface of the rock, a plan that includes the following elements shall be prepared and implemented to collect water quality data to determine if nearby water supply wells are being impacted from the effects of rock blasting:
- 1) Establish an inventory of water users within 2,000 feet or an alternative distance, as may be required by the Fire Chief based on site-specific conditions and magnitude of blasting in the permit application of the blasting sites, blasted rock stockpile, and water retention pond.
  - 2) Using records of the New Hampshire Water Well Board and municipalities(s) and by surveying homeowners with written questionnaires identify the following to the extent possible for each water supply well:
    - a. Well type (bedrock, dug, driven point etc.)
    - b. Well driller
    - c. Date installed
    - d. Well depth

- e. Depth to groundwater
  - f. Well diameter
  - g. Well casing depth
  - h. Estimated yield or reported yield
  - i. Estimated depth to bedrock
  - j. Age of pump
  - k. A description of any water treatment equipment being used and the frequency in which maintenance on the equipment is currently being performed
  - l. Any historic or existing water quality or supply problems with the well
  - m. A description of the most recent maintenance activity performed on the well
  - n. Copies of all laboratory results associated with water samples collected from the well
- 3) Historic water quality analysis shall only be used if it can be reasonably determined what water treatment systems may have been online that could affect historic water quality sample results.

#### **§ 102-25. Baseline Sampling Program**

- A. The applicant shall complete a baseline water quality sampling program for public and private water supply wells listed on the Inventory which shall include but not limited to the following, prior to initiating blasting at the site:
- 1) Water samples must be obtained at a point in the water system prior to any treatment unless it is demonstrated and approved by the Fire Chief that access cannot be gained to sampling points that meet this requirement.
  - 2) The applicant shall obtain raw (untreated) water samples from each well identified in the inventory and have them analyzed for benzene, pH, total iron, total manganese, total arsenic, dissolved iron, dissolved manganese, dissolved arsenic, nitrate, nitrite, perchlorates and turbidity.
  - 3) The applicant may be required by the Fire Chief to include an analysis of other compounds that may be unique to the blasting materials or products used on a particular project.

#### **§ 102-26. Continuing Sampling Program**

- A. The Continuing Sampling Program shall include routine sampling of either all water supply wells in the inventory or a sufficient number of monitoring wells that are representative of the water supply wells in the inventory.
- B. The frequency of the water quality sampling shall be determined by the frequency of blasting estimated travel time of contaminants and distance of receptors to the blasting location.
- C. The frequency of sample collection must reflect the fact that nitrate in drinking water is an acute health concern.

**§ 102-27. Baseline and Ongoing Bedrock Aquifer Water Level Monitoring Program  
("Water Level Monitoring Program")**

- A. The Water Level Monitoring Program shall consist of:
- 1) The use of pressure transducers and data loggers to measure water levels in a sufficient number of monitoring wells and/or drinking water supply wells in the Inventory that are representative of the existing water supply wells that are most susceptible to being impacted by blasting of bedrock or groundwater dewatering activities.
  - 2) Manual or automated measuring devices may be used at locations that are less susceptible to being impacted by blasting.
- B. The monitoring locations shall be adequate to provide representative data for all water supply wells located within 2,000' feet of the area being blasted.
- C. The monitoring program shall include provisions that ensure sanitary practices are being implemented when measurements are being collected in drinking water supply wells.
- D. Develop and implement an adverse impact response and mitigation plan to mitigate water quality or quantity impacts caused by the blasting and/or dewatering activities ("Mitigation Plan.")
- E. The Mitigation Plan should include:
- 1) Procedures (including time frames) to investigate complaints about impacts to wells associated with the rock blasting and/or dewatering activities.
  - 2) Provisions (including time frames) for immediate responses such as the provision of bottled water.
  - 3) Provisions (including time frames) for longer-term responses, such as the installation of water treatment equipment or the repair, modification, deepening or replacement of wells adversely impacted by the blasting activity.
- F. Blasting related activities that result in the violation of ambient groundwater quality standards, primary drinking water standards or secondary drinking water standards in untreated samples collected from water supply wells shall require mitigation in accordance with the Mitigation Plan.
- G. For impacts to water levels, the adverse impact criteria shall be as follows:
- 1) Reducing the withdrawal capacity of a private water supply well of a single residence as a result of the reduction of available water that is directly associated with the blasting. This is determined by the following:
    - a. Any reduction in capacity for wells with a capacity which is less than water well board recommended optimum minimum of 4 gallons per minute for 4 hours before the blasting occurred;
    - b. Any reduction in capacity below 4 gallons per minute for 4 hours, for wells that had a capacity greater than 4 gallons per minute for 4 hours, before the blasting occurred; or

- c. A reduction in capacity where the well still has a capacity between 4 gallons and 10 gallons per minute for 4 hours and the user provides information indicating that the reduction in flow has resulted in the inability to meet his or her water needs.
- 2) Reducing the capacity of a public drinking water supply below the minimum withdrawal rates required per consumer determined by the following:
  - a. Minimum daily amounts of drinking water shall be determined per use based on the design flow criteria established for public water supply systems established in rules adopted by the State of New Hampshire.
  - b. Where it is verified that such wells were unable to produce the design flow before the withdrawal began, the adverse impact shall be any reduction in the ability to produce water.
- 3) Reducing the capacity of a water supply that is used for a multiple dwelling unit residence, but that is not a public water supply, which results in the inability to continue established activities or maintain existing water capacity requirements.
- 4) Reducing the capacity of a private, non-residential, non-drinking water supply that results in the inability of a commercial, industrial, agricultural, or retail facility to continue established services or production volumes; and reducing the ability of a registered water user to produce volumes equivalent to the average daily withdrawal for a specific calendar month as determined by discharge measurements and reports made to the department in accordance with the water user requirements under RSA 488 or other previous water use reporting requirements of the department (NHDES.)

## **§ 102-28. Abutter Notification**

### **A. The applicant shall:**

- 1) Update the inventory as necessary to reflect the current owners, at least 30 days prior to initiating blasting.
- 2) Provide written notice via certified mail to each owner of a water supply well listed on the Inventory with reference to the initiation of blasting activities, between 15 to 30 days prior to initiating blasting.
- 3) Include the following in the notice:
  - a. Contact information for a representative of the permittee;
  - b. Contact information for the staff member of the governing body assigned to the project;
  - c. A statement concerning the potential for impacts of blasting on water supply wells should be forwarded to the representatives of the permittee and the Department as listed on the notification;
  - d. Date that blasting is expected to commence.



- 4) Send a written notice as specified in § 102-30.3 to each owner listed on the Inventory via certified mail every six (6) months after blasting commences until such time blasting is completed.

#### **§ 102-29. Emergency Notifications**

- A. A licensee shall immediately report, to the Town of Merrimack Fire Department and Merrimack Police Department:
  - 1) The discovery of any loss, theft, or unlawful removal of explosive materials (this will not relieve the licensee of other notifications, which are required by the state or federal government), (PD 603-424-3774, FD 603-424-3690.)
  - 2) If there is any explosion, fire or other accident occurring in connection with the keeping, storage, manufacture, handling, transportation, use or other disposition of explosives causing loss of life or injury to any person or damage to property (911.)
  - 3) Any loading of holes or blasting which occurred without a valid permit issued by the Fire Department (603) 424-3690.)

#### **§ 102-30. Non-Emergency Notification**

- A. Notification shall be made by telephone at (603) 424-3690 for incidents involving, but not be limited to:
  - 1) Improper loading of holes;
  - 2) Minor damage following any blast;
  - 3) Any complaints received.
- B. Provide a written account of the incident.

#### **§ 102-31. Required Reports**

- A. The licensee shall submit a written accident/incident report within 24 hours of any Emergency or Non-Emergency incident on form OFM-FRM-004.

#### **§ 102-32. Prohibitions**

- A. No blasting or explosives discharge shall be conducted without first obtaining a valid permit.
- B. Permit holders shall only detonate explosives between the hours of 9:00 a.m. and 4:00 p.m. unless authorized by the Fire Chief.
- C. No blasting or explosive discharge shall be conducted on Saturday or Sunday or on days observed as state or national holidays unless approval has been obtained from the Fire Chief.
- D. No blasting or loading of explosives shall be conducted after an order to cease blasting operations has been issued by the Fire Chief and communicated to the permit holder or blasting company.

- E. No drilling shall take place within fifty feet (50') of any loaded hole(s.)
- F. No holes shall be loaded except those to be fired in the next round of blasting and no holes can be loaded containing water unless the water has been pumped out first. If water continues to fill the hole the holes must be sleeved (alternative protection measures may be granted by the Fire Chief after review.)
- G. All explosives are to be shot on the day they are loaded between the hours of 9:00 am and 4:00 pm. Extension of these times may be granted by the Fire Chief.
- H. After loading, all remaining explosives shall be immediately returned to the appropriate magazine or storage containers. Any residue spilled shall be completely cleaned up and containerized or reloaded into another hole to be shot.

### **§ 102-33. Revocation of Permit**

- A. The Fire Chief may revoke any permit upon a showing that the permit holder has violated any provision of this ordinance or any requirement or condition of the issued permit.
- B. Any blasting or explosive discharge that occurs without a permit may result in a thirty (30) day revocation pending an investigation by the Fire Chief and/or the New Hampshire State Police.
- C. Any permit may be revoked or suspended upon a showing that a condition or conditions exist which warrant such revocation or suspension.

### **§ 102-34. Penalty**

- A. Failure to follow this ordinance, file any report required by this ordinance or the Fire Chief may result in suspension of blasting privileges within the Town of Merrimack, for up to one year.
- B. Any person found to have infringed any provisions of this ordinance may be guilty of a violation and follow the measures outlined within this document.
- C. Each violation and/or each day of violation may be regarded as a separate violation of this ordinance.
- D. First Violation may result in the immediate cancellation of the permit and a \$100.00 fine.
- E. Second violation may result in immediate cancellation of the permit, \$500.00 fine and suspension of explosive operations within the Town of Merrimack for a period of 60 days.
- F. Third Violation may result in the immediate suspension of the permit, \$1000.00 fine and suspension of explosive operations within the Town of Merrimack for a period of one year.
- G. Any subsequent violations may result in immediate termination of the privilege to conduct explosive operations within the Town of Merrimack for a period of five (5) years.

#### **§ 102-35. Restoration of Permit**

- A. The Fire Chief may restore any permit that has been revoked upon a showing that the conditions(s) leading to the revocation has (have) been corrected.

#### **§ 102-36. Waivers - General**

- A. The Town Council has the authority to waive any penalty if issued outlined in § 102-34. Penalty.

#### **§ 102-37. Waivers-Emergency Conditions**

- A. In situations that pose a possible or perceived danger to safety, the Fire Chief may, for a limited time, waive such provisions of this ordinance as may be necessary to avoid and/or lessen that danger.

#### **§ 102-38. Interpretation**

- A. This ordinance is intended to complement, supplement, and not conflict with, federal and state regulation of blasting operations and explosives and shall be interpreted in accord with that intent or the availability of staffing to enforce.
- B. The provision that imposes the higher standard shall govern should the requirements of this ordinance differ from any requirement or regulation prescribed by any law, statute, ordinance, rule or other regulation governing blasting operations and explosives.

#### **§ 102-39. Severability**

- A. If any provision of this ordinance, or its application to any person or circumstance, is held to be invalid by a court of competent jurisdiction, such invalidity shall not affect any other provision or application of this ordinance that can be given effect without the invalid provision or application and, to this end, the provisions of this ordinance shall be severable.

#### **§ 102-40. Effective Date**

- A. The ordinance shall take effect on the date designated by the Town Council.
- B. Any amendments to this ordinance shall take effect on the date(s) designated by the Town Council.