

Reed & Reed, Inc.

PO Box 370
Woolwich, ME 04579
Ph : (207)443-9747

Letter of Transmittal

To: Ridge Mauck
NHDES - Water Division
PO Box 95
29 Hazen Drive
Concord, NH 03302
Ph: 603-271-3501 Fax: 603-271-6683

Transmittal #: 2.2
Date: 11/9/2018
Job: 532 Antrim Wind Project

Subject: Antrim - SEC Conditions - Blasting & Well Monitoring Plan - Rev. 2

- WE ARE SENDING YOU**
- Attached
 - Under separate cover via None the following items:
 - Shop drawings
 - Prints
 - Plans
 - Samples
 - Copy of letter
 - Change order
 - Specifications
 - Other

Document Type	Copies	Date	No.	Description
Submittal	1	11/9/18		Blasting & Well Monitoring Plan - Rev. 2

THESE ARE TRANSMITTED as checked below:

- For approval
- For your use
- As requested
- For review and comment
- FOR BIDS DUE
- Approved as submitted
- Approved as noted
- Returned for corrections
- Other
- PRINTS RETURNED AFTER LOAN TO US
- Resubmit ___ copies for approval
- Submit ___ copies for distribution
- Return ___ corrected prints

Remarks: Revised Blast Plan for On Site Blast Material Storage Additional info pages 2-7, plan changes page 14 and 18

Copy To: Jack Kenworthy (Walden Green Energy), Jeff Nelson (TransAlta), Dana Valteau (TRC Solutions)

From: Dustin Littlefield (Reed & Reed, Inc.)

Signature: _____

F01040

STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
DIVISION OF STATE POLICE

TYPE

License Number 7639 Resident Non-Resident
Date December 7, 2018 Description: Magazine Number
Date of Birth XXX H.E.

- #1 Permanent
- #2 Portable
- #3 Indoor
- #4
- #4 Indoor
- #5
- #5 Indoor

LICENSE TO STORE EXPLOSIVES
IN ACCORDANCE WITH RSA 158:9:a-1 LAWS OF NEW HAMPSHIRE

Signature of Licensee
By _____

Name Capital Rock Drilling & Blasting
Address 306 River Rd., Rev. Boston, NH 02070
For Colonel Christopher J. Warner
License Expires December 7th Year 2019
DOSP 273 (Rev. 11/95) Distributor - White - Licensee Clergy - Magazine Fee - \$15.00

29
24
53

C02282

STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
DIVISION OF STATE POLICE

TYPE

License Number 7640

Resident Non-Resident

#1 Permanent

Date December 7, 2018

Description / Magazine Number _____

#2 Portable

#2 Indoor

#4 _____

Date of Birth XXX

CAPS

#4 Indoor

#5 _____

#5 Indoor

LICENSE TO STORE EXPLOSIVES
IN ACCORDANCE WITH RSA 158:9:a-f LAWS OF NEW HAMPSHIRE

Name Capital Rock Drilling & Blasting

Address 306 River Rd, New Boston, NH 03070

For Colonel Christopher J. Wagner:

Matthew C. Partridge
JFC MATTHEW C. PARTRIDGE

(SIGNATURE & TITLE OF ISSUING AUTHORITY)

License Expires December 7th

Year 2019

ID 840

DSSP 273 (Rev. 11/99)

Distribution: White - Licensee;

Canary - Magazine;

Pink - S.P. File

Signature of Licensee

By

(NOT VALID UNTIL ENCLOSED)

Dustin Littlefield

From: Kevin Burns <kburns@sargent-corp.com>
Sent: Thursday, October 18, 2018 1:53 PM
To: Dustin Littlefield
Cc: Mark Wright; Louis Rumore; Heather Niemiec
Subject: Antrim - Capital Rock - storage on site FW: Info on the Antrim project
Attachments: Magazine inspection pic 1.jpg; magazine inspection pic 2.jpg

Dustin,
See below and attached. Capital Rock will be storing on-site starting tonight. They have ATF and state approval, and have given Antrim fire chief a heads up.
Regards,
Kevin

Kevin Burns
Project Manager
Sargent Corporation
Cell Phone: 207-570-2537

From: Heather Niemiec <heather@capitalrockdandb.com>
Sent: Thursday, October 18, 2018 1:38 PM
To: Kevin Burns <kburns@sargent-corp.com>
Subject: Re: Info on the Antrim project

Good Afternoon Kevin,

Blasting agent will be stored there as of tonight , and blasting agent and High Ex will be there tomorrow.

Have a good day!

~Heather Niemiec
Capital Rock Drilling & Blasting
Office Administrator
[603-487-2840-t](tel:603-487-2840)
[603-487-2841-f](tel:603-487-2841)

On Thu, Oct 18, 2018 at 12:12 PM Kevin Burns <kburns@sargent-corp.com> wrote:

Thanks. When do you plan on storing overnight for the first time?

Kevin Burns

Project Manager

Sargent Corporation

Cell Phone: 207-570-2537

From: Heather Niemiec <heather@capitalrockdandb.com>
Sent: Thursday, October 18, 2018 12:10 PM
To: Kevin Burns <kburns@sargent-corp.com>
Subject: Re: Info on the Antrim project

Good afternoon Kevin,

The white numerical sticker in the upper corner of the picture is the ATF inspection.

The state police have all our magazines inspection written up in December.

Hopefully that helps clarify.

Have a good day!

~Heather Niemiec

Capital Rock Drilling & Blasting

Office Administrator

[603-487-2840](tel:603-487-2840)-t

[603-487-2841](tel:603-487-2841)-f

On Thu, Oct 18, 2018 at 11:56 AM Kevin Burns <kburns@sargent-corp.com> wrote:

Good morning,

The dates are in the future? 12/7/2018?

Also, nothing from ATF just state?

Kevin Burns

Project Manager

Sargent Corporation

Cell Phone: 207-570-2537

From: Heather Niemiec <heather@capitalrockdandb.com>

Sent: Thursday, October 18, 2018 11:51 AM

To: Kevin Burns <kburns@sargent-corp.com>

Cc: Louis Rumore <louis@capitalrockdandb.com>

Subject: Info on the Antrim project

Good morning Kevin ,

Below you will find the information you have requested from Capital Rock:

I have attached 2 pictures of our magazine inspection both from the ATF and the NH State Police.

We also contacted the fire chief of Antrim NH, Marshall Gale on October 17,2018.

Water sampling was performed by Continental Placer Inc. on October 16,2018.

Capital Rock will make you aware along with the ATF, and NH State Police , every time we move the magazines around on site.

Should you need any more information from us at this time please don't hesitate to contact us

Have a good day!

~Heather Niemiec

Capital Rock Drilling & Blasting

Office Administrator

[603-487-2840](tel:603-487-2840)-t

[603-487-2841](tel:603-487-2841)-f



CONTINENTAL PLACER INC.

PO Box 825 • Laconia, New Hampshire 03247
(603) 524-0811

www.continentalplacer.com

May 14, 2018

Mr. Louis Rumore
Capital Rock Drilling & Blasting
306 River Rd
New Boston, NH 03070

RE: Groundwater Monitoring Plan – Antrim Wind Farm (*Amended*)

Mr. Rumore:

The Groundwater Monitoring Zone (GMZ) for Antrim Wind Farm project shall be the area within 2,000+/- feet from the edge of the blasting areas. There are 13 homes within the GMZ; all homes are along NH Route 9 in Antrim, NH and are shown in Figure 1. The names and addresses of the 13 land owners are shown in Table 1 below. Figure 2 shows the proposed work areas as a whole. Each land owner will be contacted via certified mail return receipt requested and be offered to have their well water sampled and tested prior to the start of blasting activities. Groundwater monitoring results are to be provided to DES as soon as they are available. Private drinking water supply wells are to be sampled within 21-30 days after the initiation of blasting and continue to be sampled every 30 days until blasting is complete. The last sampling round shall occur within 21-30 days after the final cessation of blasting. All samples will be tested for nitrate and nitrite at a NH state certified laboratory.

Prior to taking the water samples, Continental Placer Inc (CPI) will obtain the appropriate samples bottles from the lab. When collecting samples, the water will be run for several minutes so that the water getting sampled is water directly from the well and not from a source that has been sitting in a storage tank or pipes. Samples will, if possible, be taken prior to a treatment system, if any. After the samples are taken, we will place the samples on ice in a cooler and deliver them to the lab under a chain-of-custody form.

Sampling reports for each source authorized for monitoring shall include the sampling dates and analyte levels. CPI will provide sampling reports to each source owner and all reports to Capital Rock within week of receiving the test result from the lab.

Table 1: Land Owner’s Addresses

Street Address	Owner	Mailing Address (if different)	Town	State	Zip Code
339 Keene Rd	Phillip Buxton		Antrim	NH	03440
340 Keene Rd	Robert Holmes		Antrim	NH	03440
344 Keene Rd	Marcel Couterier		Antrim	NH	03440
345 Keene Rd	Steven Voydatch	55 Jewett Rd	Dunbarton	NH	03045
349 Keene Rd	Frosch Real Estate Investment	176 Old Hancock Rd	Antrim	NH	03440
351 Keene Rd	Robert Barry		Antrim	NH	03440
354 Keene Rd	Michael Ott	PO Box 160	Antrim	NH	03440
355 Keene Rd	Ronald Doughty	372 Keene Rd	Antrim	NH	03440
359 Keene Rd	Kenneth Keating	225 Branch Rd	Roxbury	NH	03431
362 Keene Rd	Adam Perry	PO Box 163	Antrim	NH	03440
363 Keene Rd	Ted Hutchinson		Antrim	NH	03440
372 Keene Rd	Susan Vayens		Antrim	NH	03440
375 Keene Rd	Chris Salmon		Antrim	NH	03440

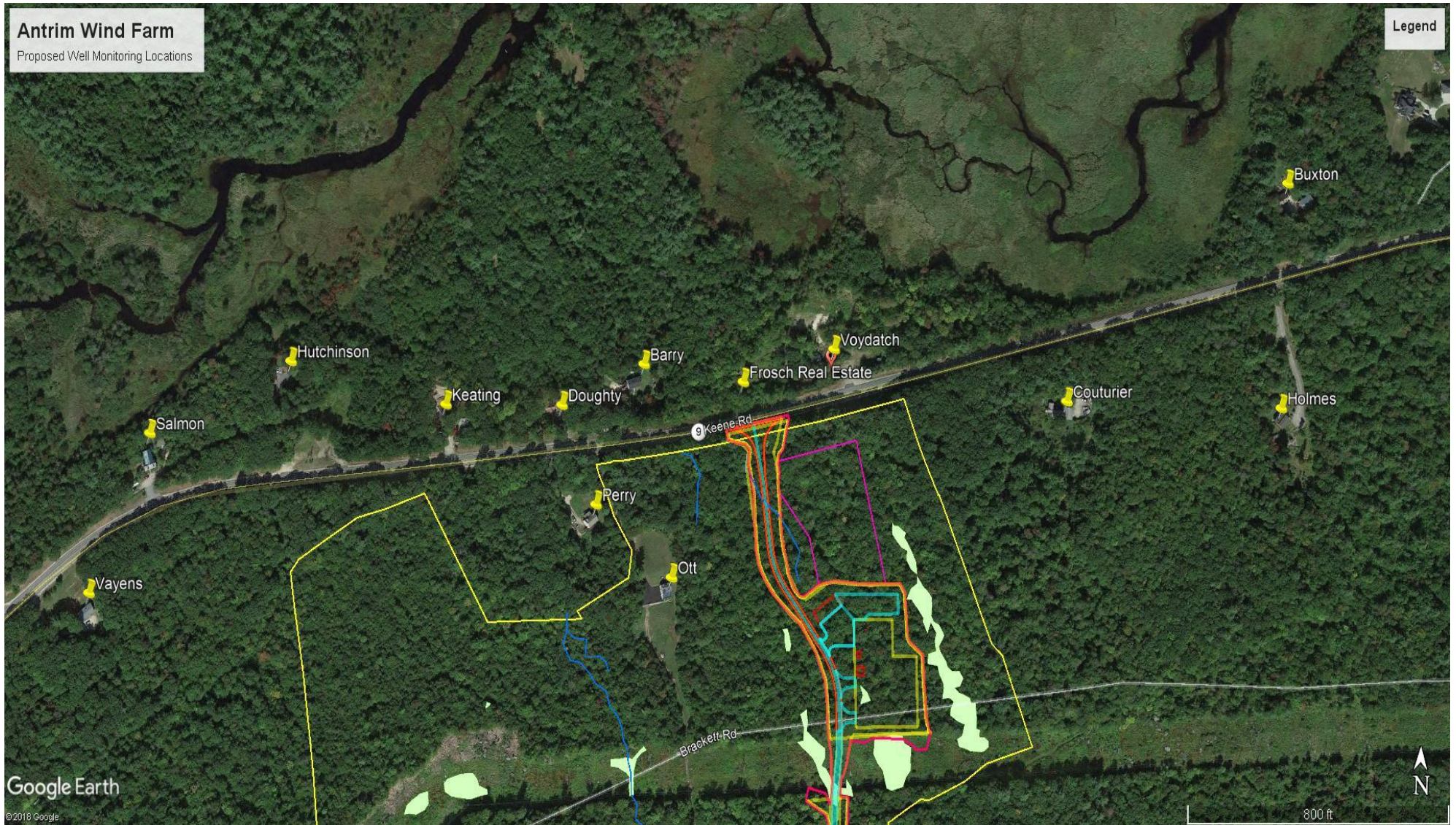


Figure 1: Homes within 2,000+/- feet of Possible Blast Areas (outlined in orange)

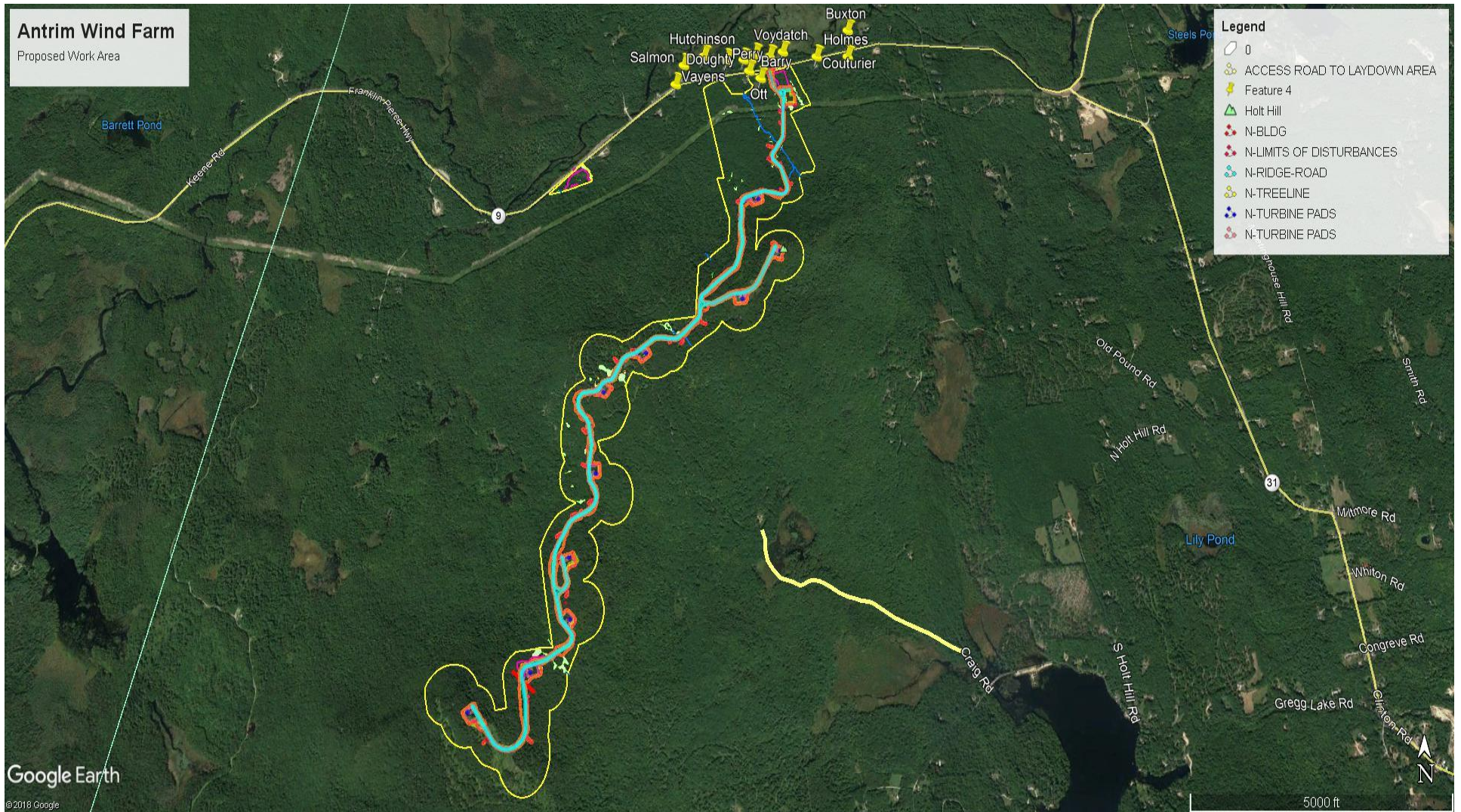


Figure 2: Proposed Work Areas

At the conclusion of blasting, CPI will complete a post-blast sampling once for each source authorized for monitoring. The same notification and sampling procedures will be employed. CPI will provide sampling reports to each source owner and all reports to Capital Rock within week of receiving the test result from the lab.

Thank you for this opportunity to work with you. If we can be further assistance in this or any other matter, please do not hesitate to call.

Sincerely,
CONTINENTAL PLACER INC.

A handwritten signature in black ink, appearing to read "Brent J. Tardif".

Brent J. Tardif, PG
Senior Geologist

Calibration Certificate

Part Number: 721A2501
Description: Micromate with ISEE Geophone
Serial Number: UM11233
Calibration Date: December 12, 2017
Calibration Equipment: 714J7401

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____

Andrew Stockwell

 Instantel



**Blasting Plan
Antrim Wind Park
Antrim NH**

Scope of Work : To drill and blast ledge on the project known as the Antrim Wind Park . Located in Antrim NH. All blasting will be to NH State and local regulations and Capital Rocks Best management practices .Each blast should be coordinated with local authorities and Sargent Corp.

Blasts shall be developed not to exceed the project/NH State limits and vibration limits. Blasting shall commence on or around the first of May 2018.

3.2.11 Best Management Procedures for blasting. Capital Rock Drilling and Blasting shall follow Best Management Procedures (BMP's) to include preparing, reviewing and following an approved General Blasting Plan; proper drilling, explosive handing and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and proper excavation, stockpiling, processing and use of blasted rock. Best Management Procedures will be considered subsidiary to all rock excavation items.

3.2.11.1 Loading practices. The contractor shall utilize the following loading practices to minimize environmental effects:

- a) **Blastholes shall be drilled within one foot of the intended blast pattern.**
- b) **Blastholes shall be within five (5) degrees of the intended orientation.**
- c) **Blasthole boring logs shall be maintained by the driller and communicated directly to the blaster. The logs shall indicate depths and lengths of voids, cavities, and fault zones or other weak zones encountered as well as groundwater conditions.**
- d) **Unpackaged/unsleeved ANFO and emulsions shall not be used if artesian or water flowing conditions are encountered.**
- e) **Loaded explosives shall be detonated as soon as possible and shall not be**



left in the blastholes overnight.

3.2.11.2 Ammonium Nitrate and Fuel Oil (ANFO). The following BMP's shall be followed to reduce nitrate impacts when ANFO is used:

- a) Identify blastholes containing water and remove water prior to loading with ANFO.
- b) Water resistant ANFO (ANFO-WR) shall be used in blastholes that recharge with groundwater and remain wet even after pumping.
- c) Spills of ANFO or other blasting agents, at the ground surface around the blasthole collars shall be cleaned up promptly and either reused or taken off site.
- d) Adequate unloaded collar lengths shall be established to reduce both "blowback" when loading pneumatically and blasthole proximity effects.
- e) Proper "standoff" distance and loading vessel pressure shall be maintained to reduce "blowback" during pneumatically loading ANFO.
- f) Partially used bags of ANFO shall be resealed and returned to the explosive magazine.
- g) Loading equipment shall be cleaned in an area where the water can be properly contained and handled in a manner that prevents releases.
- h) Explosives shall only be delivered to the site in approved magazine trucks. **Storage on site will be in approved magazines and necessary signage will be posted.**

3.2.11.3 Bulk emulsions and slurry/water gel explosives. The following BMP's shall be followed to reduce nitrate impacts when bulk emulsions or slurry/water gel explosives are used:

- a) Spills of the product shall be removed from the spillage area, and either reused or taken off site for disposal.
- b) Proper loading techniques shall be followed when loading a bulk product into a wet blasthole. The bulk liquid product should be extruded into itself from the bottom of the blasthole and not into the standing water above the product.
- c) If groundwater conditions are severe, e.g., artesian/flowing conditions, packaged explosives (emulsions, water gels, slurries, blends, cartridge, etc.) shall be used instead of bulk products or as required by the Engineer.



left in the blastholes overnight.

3.2.11.2 Ammonium Nitrate and Fuel Oil (ANFO). The following BMP's shall be followed to reduce nitrate impacts when ANFO is used:

- a) Identify blastholes containing water and remove water prior to loading with ANFO.
- b) Water resistant ANFO (ANFO-WR) shall be used in blastholes that recharge with groundwater and remain wet even after pumping.
- c) Spills of ANFO or other blasting agents, at the ground surface around the blasthole collars shall be cleaned up promptly and either reused or taken off site.
- d) Adequate unloaded collar lengths shall be established to reduce both "blowback" when loading pneumatically and blasthole proximity effects.
- e) Proper "standoff" distance and loading vessel pressure shall be maintained to reduce "blowback" during pneumatically loading ANFO.
- f) Partially used bags of ANFO shall be resealed and returned to the explosive magazine.
- g) Loading equipment shall be cleaned in an area where the water can be properly contained and handled in a manner that prevents releases.
- h) Explosives shall only be delivered to the site in approved magazine trucks and should not be stored overnight on-site.

3.2.11.3 Bulk emulsions and slurry/water gel explosives. The following BMP's shall be followed to reduce nitrate impacts when bulk emulsions or slurry/water gel explosives are used:

- a) Spills of the product shall be removed from the spillage area, and either reused or taken off site for disposal.
- b) Proper loading techniques shall be followed when loading a bulk product into a wet blasthole. The bulk liquid product should be extruded into itself from the bottom of the blasthole and not into the standing water above the product.
- c) If groundwater conditions are severe, e.g., artesian/flowing conditions, packaged explosives (emulsions, water gels, slurries, blends, cartridge, etc.) shall be used instead of bulk products or as required by the Engineer.



3.2.11.4 Blasthole stemming. The following BMP's shall be followed when placing stemming in blastholes:

- a) Blastholes shall be cleaned out thoroughly using the compressed air stream from the drill to remove the drill cuttings.
- b) Drill cuttings shall not be used as stemming.
- c) Stemming shall be placed to prevent bridging, and shall be appropriately sized for the blasthole diameter.
- d) Blastholes shall be completely stemmed to prevent incomplete detonation.
- e) Weak zones, voids, and cavities shall be stemmed as decks to prevent the loss of explosive products into the bedrock.

3.2.11.5 Misfires. One or more of the following BMP's shall be followed to help prevent misfires:

- a) Use of redundant surface delays to connect blastholes if shifting mats, uneven terrain or other conditions could cause cut-offs.
- b) Double or triple priming of the blastholes.
- c) Use of an electric detonating system.
- d) Use of a programmable electronic detonating system.
- e) Or a method proposed by the Contractor.

3.2.11.6 Fragmented blast rock excavation, handling, stockpiling, processing and use. The following BMP's shall be followed when excavating, handling, stockpiling, processing or using blasted rock fragments on site.

- a) Remove the blasted rock (muckpile) from the blast area immediately after blasting.
- b) Distribute rock fragments and processed blasted rock widely throughout the project in fill areas as soon as possible.
- c) If the blasted rock will not be reused on site, remove the muckpile/processed rock from the project site as soon as possible.



Blasting Procedures:

- Pre Blast surveys will be performed at all structures within 1500ft of each blast.
- Blasting Operations shall commence after 8:00 am and cease before 7:00 pm
- Mon - Sat days of blasting
- All warnings shall be given by audible and by signage. The audible decibel can be heard a half mile away.
- Access to the blasting area shall be controlled to prevent unauthorized entry before each blast
- Clean 3/8 crushed stone shall be used for all stemming
- All blast holes shall be drilled with one foot of intended blast design
- Boring logs shall be filled out by each driller and identify overburden voids seams and ground water condition and be given to blaster that will load those holes.
- Blasting Logs will be filled out for every blast
- All loaded holes shall be detonated before end of work day.

Warning Signals :

Three Whistles - 5 minutes to blast

Two Whistles - 1 minute to blast

One Whistle - All Clear

All communication will be through radio or cell phone with Sargent Corp. All personnel closest to blast will be warned with a representative from Capital Rock of where to go and when blast is projected to go off. All personnel and equipment shall be at a designated safe location per blast. Blast Zone and Warning Whistles signs will be displayed at appropriate project locations highly visible for anyone in blasting zone to see.

Any misfires Capital Rock will immediately notify Sargent Corp and correct the problem weather bad product, not tied in properly, or cut off. The site personnel will stay at designated safe locations until problem is corrected.



Blasters/ Insurances: All Capital Rocks Blasters are licensed in the state of NH. Capital Rock is fully insured for all blasting operations and all trucks are fully licensed and insured to haul explosives.

Explosives: All explosives will delivered to job by two different vendors, Maxam North America and Austin Powder. Explosives will be stored on site for duration of project. Permits and approvals both state and federal will be posted on explosive magazines and copies will be made available if requested. Necessary signage will be posted around explosive magazines.

SDS sheets are available upon request and each driver shall have one for each product on board with them.

Safety Plan: All personnel from Capital Rock follows the best management practices for the company. Supervisors have copies in their trucks.

Traffic Control: During blasts close to Rt 9 all traffic on Rt 9 will be controlled using local authorities. The communication will be through Capital Rock and Sargent Corp

Typical Blast:

Blasting on this project could occur one to two several times per working day. Capital Rock will start by pre drilling blast holes. Blasting will take place once intended shot is drilled.

The number of holes to be initiated will be site specific. A typical blast would consist of 60 holes

Blast Vibration:

Blast vibration will be monitored at the blast site, typically at the structures closest to blast site. Vibration limits will closely follow limits described in the project specs and the state regulations. Blast designs will be required to stay with guidelines and meet project schedules as well. Blasting operations will be modified accordingly when approaching



Blasters/ Insurances: All Capital Rocks Blasters are licensed in the state of NH. Capital Rock is fully insured for all blasting operations and all trucks are fully licensed and insured to haul explosives.

Explosives: All explosives will delivered to job by two different vendors, Maxam North America and Austin Powder. No trucks or powder will be left on jobsite overnight. SDS sheets are available upon request and each driver shall have one for each product on board with them.

Safety Plan: All personnel from Capital Rock follows the best management practices for the company. Supervisors have copies in their trucks.

Traffic Control: During blasts close to Rt 9 all traffic on Rt 9 will be controlled using local authorities. The communication will be through Capital Rock and Sargent Corp

Typical Blast:

Blasting on this project could occur one to two several times per working day. Capital Rock will start by pre drilling blast holes. Blasting will take place once intended shot is drilled.

The number of holes to be initiated will be site specific. A typical blast would consist of 60 holes

Blast Vibration:

Blast vibration will be monitored at the blast site, typically at the structures closest to blast site. Vibration limits will closely follow limits described in the project specs and the state regulations. Blast designs will be required to stay with guidelines and meet project schedules as well. Blasting operations will be modified accordingly when approaching building and utilities. Enclosed are preliminary calculations based on known distance to the structures of concern and anticipated initial blast designs



Ground vibration peak particle velocity limits shall not exceed:

- 2.0 inches per second

Air blast pressure level not to exceed 134 peak dB (linear) two Hz high-pass system

Blast Reports: Enclosed is a copy of Capital Rocks blast report. This report will be filled out for each blast and copies supplied if required

Typical Blast design: Enclosed is what would be considered typical blast designs for this project. Hole size, depths, spacing and loading information is provided. These designs are to be considered a good starting point. Modifications are usually made if necessary following the first blasts to meet control and seismic considerations

Blast Design Information: Vibration Considerations

Scaled Distance: A number representing the distance to quality of explosives detonated per delay

Scaled distance Equation: Can be used to determine the maximum allowable charge weight for any given distance and is designed to keep peak particle velocity vibration below suggested limitations

Regulatory Limits For Vibrations:

USBM RI 8507 - Frequency v .PPV

0.03 ips - Detectable by people

2.0 ips - Universal Limit for residential structures

5.4 ips - Minor damage potential

* ips = Inches per second



Pre Blast Surveys & Notifications:

Pre blast surveys will be conducted and offered to all property owners within 1500ft radius of each blast site. Appropriate notices will be given and appointments arranged for those owners who are in this radius. Pre Blast surveys will be conducted by Capital Rock or Continental Placer Inc. Results of these surveys will be documented through video or still photographs and appropriate narration or written reports. Pre blast surveys will be performed in accordance with the state of New Hampshire standard specifications and will be submitted to the contract administrator before commencement of blasting.

Blast Monitoring:

All blasts will be monitored by a representative of Capital Rock, who has been properly trained in the setup and use of seismic equipment. Seismographs will be in use during all blasts. Placement of seismographs will be at the nearest structure to the blast site. Results from each blast. Results will be reviewed and modifications will be made to the blasting as necessary. Please see attached blast report for a pre-determined location for seismograph.

Water Monitoring: Well monitoring will be conducted and offered to all owners who have drinking water supply wells with a 2000ft radius. This will be to NH DES regulations and only be for monitoring Nitrates and Nitrites. The surveys will be conducted by a representative of Continental Placer who has been properly trained in this type of well monitoring

Blasting Mats:

Blasting mats and backfill will be used at the discretion of the blaster in charge to control excessive amounts of rock movement when blasting. Placement and number of mats are typically determined by blaster. Mats will be placed so as to protect people natural resources and structures on or surrounding blast site. Rubber size blasting mats will be used on this project and will consist of 12x24 mats or equivalent.



BLAST REPORT

306 RIVER ROAD
 NEW BOSTON, NH 03070
 (603) 487-2840
 Fax (603) 487-2841

Blast #: 1
 Permit No.: 1
 Blast Location: Antarm NH
 Type of Material: granite
 No. of Holes: 30
 Diameter: Min. 3 (in.) Max. 4.5 (in.)
 Depth: Min. 10 (ft.) Max. 50 (ft.)
 Subdrilling: 3 (ft.)
 No. Decks/Hole: 0
 Deck Separation: Min. (ft.) Max. (ft.)
 Wt./Deck: Min. (lbs.) Max. (lbs.)

Customer: Sargent Corp
 Date: 5/10/18
 Time: 10:00 A.M. P.M.
 Predicted Peak Particle: .44 in/sec
 Stemming: Min. 5 (ft.) Max. 7 (ft.)
 Type Stem: 3/8 crushed stone
 No. of Rows: 6
 Burden: Min. 7 (ft.) Max. (ft.)
 Spacing: Min. 7 (ft.) Max. (ft.)
 Maximum No. of Holes Per Delay: 2
 Max. Lbs./Delay of 8 ms. or greater: 158 (lbs.)
 Powder Factor: 2,370 (lbs/vol) 1088 2.17
 Scaled Distance: _____

Explosives	Amount (lbs)	Detonators/Delay MS	Amount (qty)
<u>1¹⁵ boosters</u>	<u>30</u>	<u>30' Dual Delay</u>	<u>30</u>
<u>Bulk</u>	<u>2,340</u>	<u>#17 surface Delay</u>	<u>4</u>
	<u>2,370</u>		<u>34</u>
	Total		TOTAL

Seismograph							
Type	Serial #	Date Calibrated	Location	dBL	I	V	L
#1							
#2							

Method Used to Measure Critical Distances: Laser Wheel Tape Other _____
 Seismographs Set at Closet Structure: Yes No Cover Used? Yes No/Type of Cover _____ Mats _____ Sand _____
 Distance to Closest Structure: 500' FT Blast Direction N S E W (Method)
 Distance from Blast to Seismograph: 500' FT Weather: cloudy Temp: 00°

Remarks: predicted peak particle 160 k factor was used

Number of Individuals in blasting Crew: _____ Blaster-in-Charge Louis Pomose (Print)
 Name: _____ (Sign)
 Name: _____ Lic. # 2812
 Name: _____
 Name: _____

X	X	X	X	X
209	167	125	87	204
X	X	X	X	X
184	142	100	142	184
X	X	X	X	X
159	117	75	117	159
X	X	X	X	X
134	92	50	92	134
X	X	X	X	X
109	67	25	67	109
X	X	X	X	X
84	42	0	42	84

IP

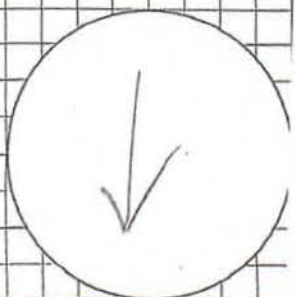
500'

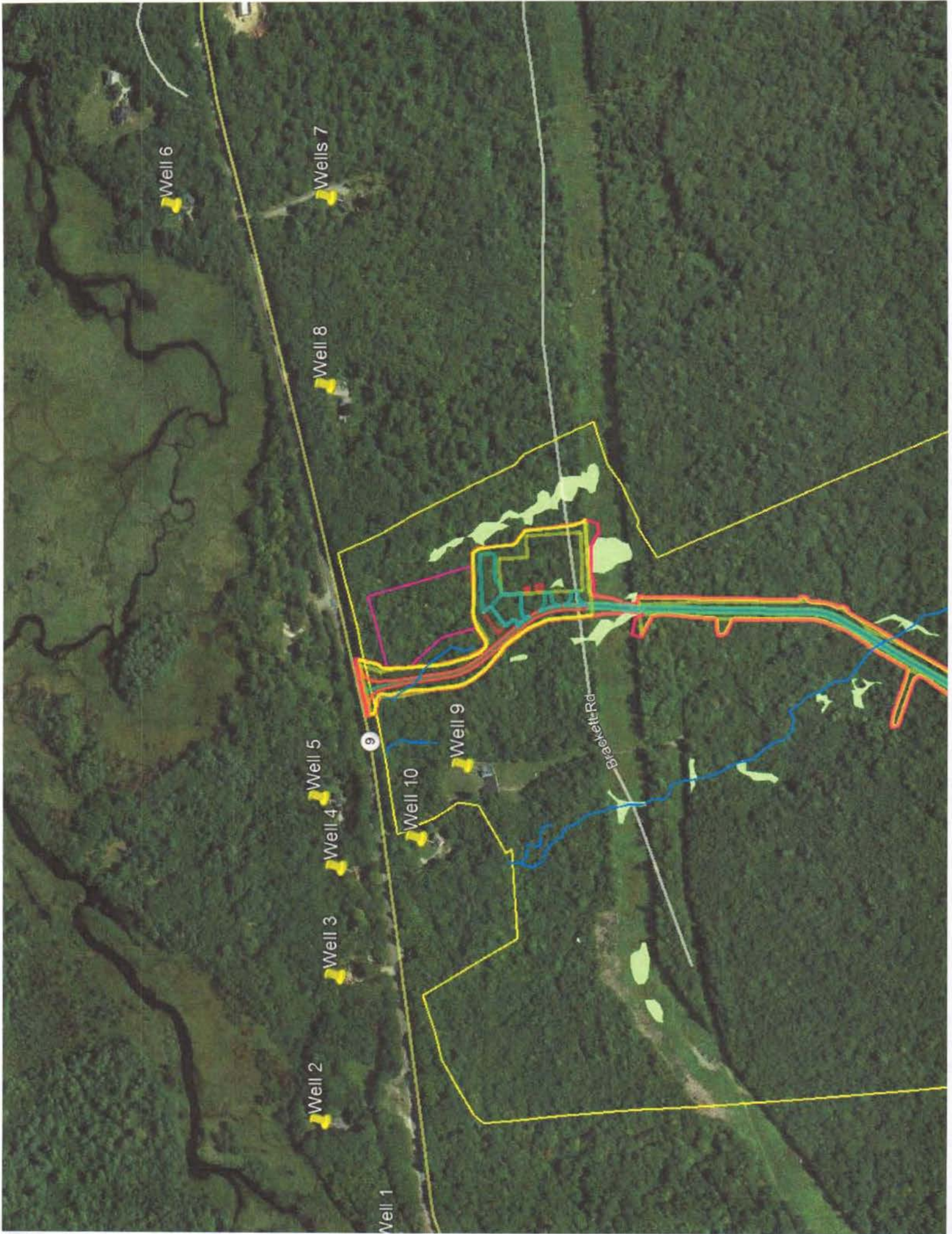


3.5" 20' Hole
79 lbs total

15' Emulsion
78 lbs

115 boosters

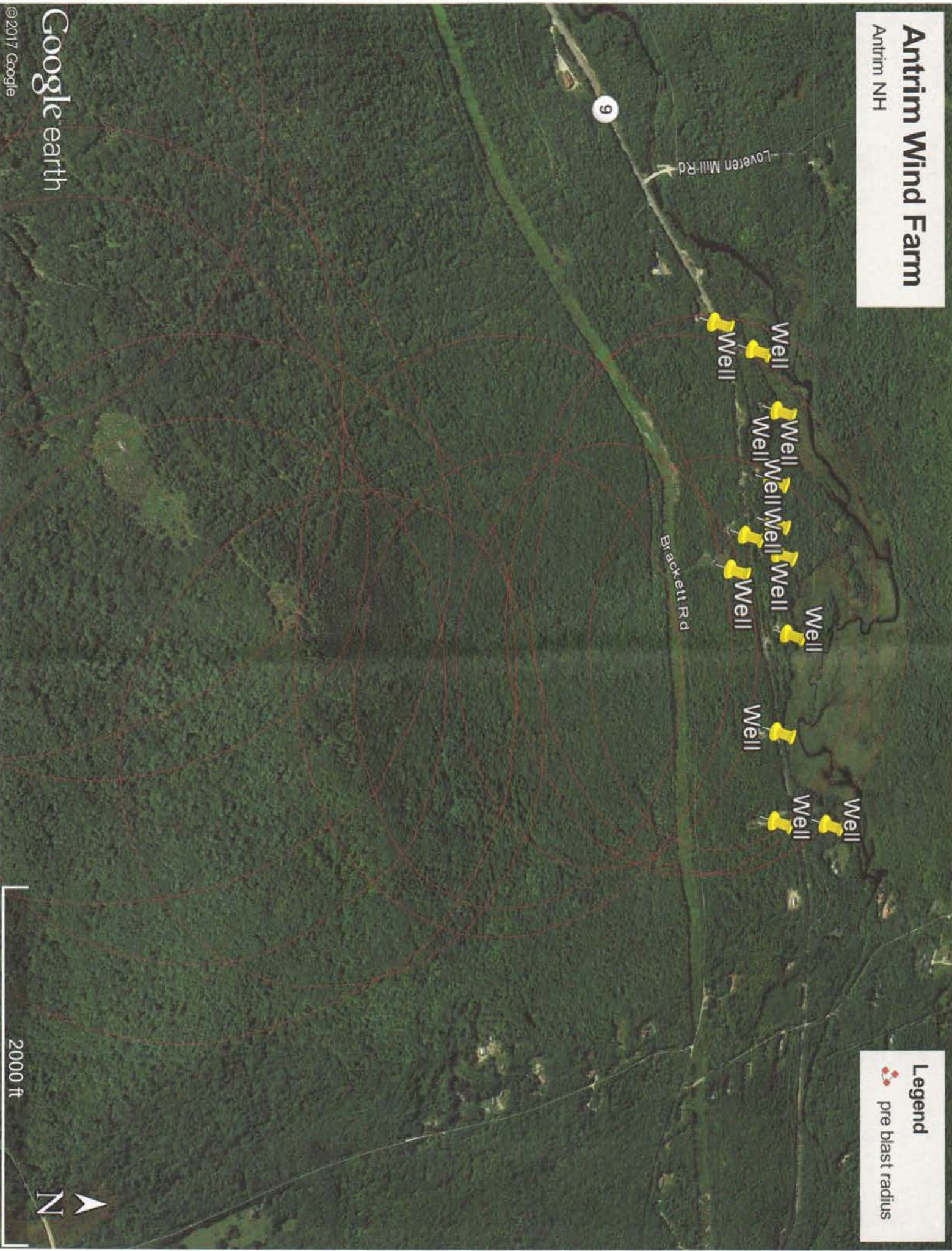




Antrim Wind Farm

Antrim NH

Legend
pre blast radius



Google earth

© 2017 Google

2000 ft



In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Direct ATF License/Permit
Correspondence To ATF - Chief, FELC
244 Needy Road
Martinsburg, WV 25405-9431
Number **6-NH-011-33-0A-00280**

Chief, Federal Explosives Licensing Center (FELC)
Christopher R. Reers
Expiration Date **January 1, 2020**

Name
CAPITAL ROCK DRILLING AND BLASTING LLC

Premises Address (Changes? Notify the FELC at least 10 days before the move.)

**306 RIVER RD
NEW BOSTON, NH 03070-**

Type of License or Permit

33-USER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Mailing Address (Changes? Notify the FELC of any changes.)

CAPITAL ROCK DRILLING AND BLASTING LLC
306 RIVER RD
NEW BOSTON, NH 03070-

Lonnie Kachuck
Licensee/Permittee Responsible Person Signature

Supervisor
Position/Title

Lonnie Kachuck
Printed Name

4/26/2017
Date

ATF Form 5400.14/5400.15 Part 1
Revised October 2011

Previous Edition is Obsolete CAPITAL ROCK DRILLING AND BLASTING LLC 306 RIVER RD 03070-6-NH-011-33-0A-00280 January 1, 2020 33-USER OF EXPLOSIVES

Federal Explosives License (FEL) Customer Service Information

Federal Explosives Licensing Center (FELC)
244 Needy Road
Martinsburg, WV 25405-9431

Toll-free Telephone Number: (877) 283-3352
Fax Number: (304) 616-4401
E-mail: FELC@atf.gov

ATF Homepage: www.atf.gov

Change of Address (27 CFR 555.54(a)(1)). Licensees or permittees may during the term of their current license or permit remove their business or operations to a new location at which they intend regularly to carry on such business or operations. The licensee or permittee is required to give notification of the new location of the business or operations not less than 10 days prior to such removal with the Chief, Federal Explosives Licensing Center. The license or permit will be valid for the remainder of the term of the original license or permit. **(The Chief, FELC, shall, if the licensee or permittee is not qualified, refer the request for amended license or permit to the Director of Industry Operations for denial in accordance with § 555.54.)**

Right of Succession (27 CFR 555.59). (a) Certain persons other than the licensee or permittee may secure the right to carry on the same explosive materials business or operations at the same address shown on, and for the remainder of the term of, a current license or permit. Such persons are: (1) The surviving spouse or child, or executor, administrator, or other legal representative of a deceased licensee or permittee; and (2) A receiver or trustee in bankruptcy, or an assignee for benefit of creditors. (b) In order to secure the right provided by this section, the person or persons continuing the business or operations shall furnish the license or permit for for that business or operations for endorsement of such succession to the Chief, FELC, within 30 days from the date on which the successor begins to carry on the business or operations.

(Continued on reverse side)

Cut Here ✂

Federal Explosives License/Permit (FEL) Information Card

License/Permit Name: CAPITAL ROCK DRILLING AND BLASTING LLC

Business Name:

License/Permit Number: 6-NH-011-33-0A-00280

License/Permit Type: 33-USER OF EXPLOSIVES

Expiration: January 1, 2020

Please Note: Not Valid for the Sale or Other Disposition of Explosives.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
1/8/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).


PRODUCER FIAI/Cross Insurance 1100 Elm Street Manchester NH 03101		CONTACT NAME: Tara Dean, CIC PHONE (A/C, No, Ext): (603) 669-3218 FAX (A/C, No): (603) 645-4331 E-MAIL ADDRESS: TDean@crossagency.com	
INSURED Capital Rock Drilling & Blasting, LLC 306 River Road New Boston NH 03070		INSURER(S) AFFORDING COVERAGE INSURER A: United States Fire Insurance Co INSURER B: American Mining Ins Co INSURER C: INSURER D: INSURER E: INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 17-18 All lines **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GENL AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			5068918935	11/22/2017	11/22/2018	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 Blanket Addl Instds required by \$ Included
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			5068918935	11/22/2017	11/22/2018	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Underinsured motorist BI \$ 1,000,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 0			5238076923	11/22/2017	11/22/2018	EACH OCCURRENCE \$ 4,000,000 AGGREGATE \$ 4,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) if yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	AMWC193804 (3a.) MA, ME, NH, VT Louis F. Rumore excluded	11/19/2017	11/19/2018	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER Sargent Corporation 378 Bennoch Road Old Town, ME 04468	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Brian Parsons/JSC 
--	---

© 1988-2014 ACORD CORPORATION. All rights reserved.

State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

LOUIS F. RUMORE

Certificate #: 2812

Restrictions: NONE

DOB: 6/3/1983 Sex: M

Height: 5'05" Weight: 160

Hair: Blue Eyes: Brown

Director of State Police

Expires: 6/5/2021



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

MICHAEL C. DASTOLI

Certificate #: 2813

Restrictions: NONE

DOB: 1/13/1990 Sex: M

Height: 5'08" Weight: 150

Hair: Brown Eyes: Brown

Director of State Police

Expires: 6/5/2021



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

ROLAND GENEST

Certificate #: 2800

Restrictions: NONE

DOB: 3/29/1974 Sex: M

Height: 5'07" Weight: 190

Hair: Brown Eyes: Brown

Director of State Police

Expires: 9/16/2019



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

MARK F. SIDERS

Certificate #: 1275

Restrictions: NONE

DOB: 5/5/1959 Sex: M

Height: 6'00" Weight: 235

Hair: Blonde Eyes: Blue

Director of State Police

Expires: 11/14/2020



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

GEORGE P. SUMMIT

Certificate #: 928

Restrictions: NONE

DOB: 9/10/1966 Sex: M

Height: 6'02" Weight: 260

Hair: Brown Eyes: Blue

Director of State Police

Expires: 2/11/2019



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

LONNIE KACHUCK

Certificate #: 2779

Restrictions: NONE

DOB: 11/22/1965 Sex: M

Height: 5'11" Weight: 200

Hair: Brown Eyes: Blue

Director of State Police

Expires: 12/10/2020



State of New Hampshire
Department of Safety
State Police

Certificate of Competency For
Blasting Operations

CORY A. RAND

Certificate #: 2736

Restrictions: NONE

DOB: 1/31/1969 Sex: M

Height: 6'03" Weight: 220

Hair: Brown Eyes: Blue

Director of State Police

Expires: 8/28/2019



No. 2845
License number

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF SAFETY
DIVISION OF STATE POLICE

LICENSE TO USE, PURCHASE AND TRANSPORT EXPLOSIVES

This license is issued in accordance with the provisions of RSA 158:9-b part 1, Laws of the State of New Hampshire.

Name.	CAPITAL ROCK DRILLING & BLASTING, LLC		Date of birth.	XXX	
Residence or place of business.	306 RIVER RD	City.	NEW BOSTON	State.	NH
Date of issue.	APRIL 2, 2017	Date of expiration.	APRIL 2, 2019		
Signature of Licensing Authority.	<i>Colonel Chris Wagoner</i>				

THIS LICENSE NOT VALID FOR THE STORAGE OF EXPLOSIVE MATERIALS

ATTACH PHOTOGRAPH HERE.

Height.	Weight.
5'7"	200
Eyes.	Hair.
BRO	BRO
Signature of Licensee.	<i>X Roland Donest</i>
Title of person authorized to sign.	<i>X Supervisor</i>
Address of person signing.	181 WESTERN AVE, HILLSBORO NH
Date of birth of person signing.	03-29-74

Calibration Certificate

Part Number: 714A0801
Description: BLASTMATE III
Serial Number: BA19479
Calibration Date: February 13, 2017
Calibration Equipment: 718A1501

InstanTel certifies that the above product was calibrated in accordance with the applicable InstanTel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds InstanTel specifications

InstanTel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at InstanTel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. InstanTel recommends that products be returned to InstanTel or an authorized service and calibration facility for annual calibration

Calibrated By:


Tuyen Bui

 InstanTel

Calibration Certificate

Part Number: 714A0801
Description: BLASTMATE III
Serial Number: BA19480
Calibration Date: February 23, 2017
Calibration Equipment: 718A1501

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology, or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By:


Tuyen Bui

 Instantel

Calibration Certificate

Part Number: 714A0801
Description: BLASTMATE III
Serial Number: BA19481
Calibration Date: March 17, 2017
Calibration Equipment: 718A1501

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____



Li Pan

 **Instantel**

Calibration Certificate

Part Number: 716A3001
Description: MINIMATE BLASTER
Serial Number: BE19593
Calibration Date: February 2, 2017
Calibration Equipment: 718A1501


InstanTEL certifies that the above product was calibrated in accordance with the applicable InstanTEL procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds InstanTEL specifications.

InstanTEL further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology, or National Research Council of Canada. Evidence of traceability is on file at InstanTEL and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. InstanTEL recommends that products be returned to InstanTEL or an authorized service and calibration facility for annual calibration.

Calibrated By:


Tuyen Bui

 InstanTEL

Calibration Certificate

Part Number: 716A3001
Description: MINIMATE BLASTER
Serial Number: BE19592
Calibration Date: February 23, 2017
Calibration Equipment: 718A1501

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____

Vipulan Mathi

 **Instantel**

Calibration Certificate

Part Number: 716A3001
Description: MINIMATE BLASTER
Serial Number: BE19594
Calibration Date: March 9, 2017
Calibration Equipment: 718A1501

InstanTel certifies that the above product was calibrated in accordance with the applicable InstanTel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds InstanTel specifications

InstanTel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at InstanTel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. InstanTel recommends that products be returned to InstanTel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____

Li Pan

 **InstanTel**

Calibration Certificate

Part Number: 721A2501
Description: Micromate ISEE Base Unit
Serial Number: UM11231
Calibration Date: November 28, 2017
Calibration Equipment: 714J7401

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology, or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____

Li Pan

 Instantel

Calibration Certificate

Part Number: 721A2501
Description: Micromate ISEE Base Unit
Serial Number: UM11235
Calibration Date: November 29, 2017
Calibration Equipment: 714J7401

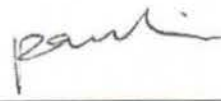
Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____



Li Pan

 **Instantel**

Calibration Certificate

Instantel

Part Number: 721A2501

Description: Micromate ISEE Base Unit

Serial Number: UM11234

Calibration Date: December 11, 2017

Calibration Equipment: 714J7401

Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications

Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.

The environment in which this product was calibrated is maintained within the operating specifications of the instrument.

Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.

Calibrated By: _____

Xiaochuan He

 **Instantel**