Application Number: (Office use Only)___

STATE OF VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
103 South Main Street, Building 10 North, Waterbury, VT 056710408
29 V.S.A. Chapter 11: Management of Lakes and Ponds

1. Name of Lake or Pond: **Lake Rescue** Municipality: **Ludlow, Vermont 05149_**
2. Name of Applicant: **Lake Rescue Association, Inc.**

   Mailing Address: **PO Box 372, Ludlow, Vermont 05149**
3. Persons to contact regarding this application:

Name: **Christina Salerno**	Name: **Charles Robinson**
Daytime Telephone: **239 472-3124** **Cell: 203-733-8259**	Daytime Telephone: **802-989-7079**
Mailing Address: **537 Lake Murex Circle** **Sanibel, FL 33957**	Mailing Address:**70 Maple Street, #307** **Middlebury, VT 05753**
Email:**chrssal@aol.com**	Email:**crobinson@askdrcharlie.com**

4. Project description:

The Lake Rescue Association, Inc., with the Town of Ludlow as co-applicant, has carefully considered the major issues involved in Project Restore Rescue (R^2). They are:

A. The specific areas of the lake require dredging to restore minimal navigability by removing only the sediment material necessary to accomplish that objective.
B. Locations where removed material can be stored during dewatering.
C. Locations for final disposal of material removed.
D. Methods of moving the material between land sites.
E. Selection of contractors for dredging and transportation.
F. Issues in Project Management.
G. Cost factors for restoring navigability.

A. Specific areas, composition and volume of material to be removed.

Currently, we know of three areas where there is less than four feet of water depth needed and formerly available to boats passing between Round Pond and the main lake. Absent additional survey data from ANR and an underwater survey planned for spring of 2012, it is impossible to be sure that there are not more areas where navigability must be restored to mitigate the impact of tropical storm Irene. We expect to have that data no later than June 2012.

However, the significant impact of tropical storm Irene on the lake is evident by simply comparing data from ANR soundings taken in November 2010 (See page 6 of this application) with those by LRA members in September 2011. In areas where depths on the ANR map were between 6 and 7 feet (2 meters), we have located two places now at or below 3 feet. Given the inflow of sediment as clearly shown in the aerial photograph on page 7, this is not surprising. In addition, there are other places where navigability is not present as evidenced by having the pontoon boat stuck on a sand bar during a visit by ANR staff. We also understand that something similar occurred during the depth survey follow up conducted in November. These events are good examples of the need for additional surveying of depths.

The composition of material dumped during the flood is not known. We are advised that it is likely composed of fine silt and sand. However, we will take samples from the areas to be dredged for analysis since composition will impact dredging and dewatering times and acceptability at distribution sites.

As noted in section 7 below, we are currently estimating the need to remove 740 cubic yards. This estimate is largely based on information gathered by LRA members. It seems unlikely that this number will hold up once better information is obtained before final contracting for removal. Presently we are using height, width and depth measurements in square blocks, not the irregular shapes that are much more likely. Since we only have to remove material extending into the four foot level, that volume is unlikely. On the other hand, it is also unlikely that we now know all the areas where critical depths were reduced by Irene.

B. Material location during dewatering.

Several criteria influenced our choice of dewatering site:

- The first is distance from the dredger since the material is pumped through hoses. The maximum distance for moving material directly from the dredger to dewatering sites without an extra pump is said to be 1,500 feet.
- Second, the elevation of the site above the lake is important since it also determines whether extra pumps must be installed. A gradual rise of no more than 50 feet is the current estimate of the point at which extra pumping (read "cost") is required.
- Next, the site must be near a road so that trucks can enter to remove the dried material.
- Any site must be prepared to so as to allow drainage of water back into the lake. Depending on location that could include minor site preparation and clean up.
- The site must be available throughout the project, currently estimated at two to four weeks.
- Finally, the site must be large enough to store at least two dewatering bags and accommodate trucks and equipment needed to move the material from the bags to the trucks.

Only two sites have been identified as meeting the above criteria:

- The State Fishing Access, marked as Site A, or

- The entry to Benson Point Road just off Route 100 North marked Site B.

These site locations are shown on page 8 of this application.

The State Fishing Access best meets these selection criteria: It is closer to areas of the lake where dredging is needed, is at lake level so that extra pumps will not be required and drainage is easiest. Benson Point Road abuts a blacktopped road making truck traffic easier. However, it is farther away from dredging, uphill, and would require preparation for drainage across privately owned land. Assuming some dredging in the main lake, both sites will require that hoses cross private property.

We are requesting that ANR staff assist us in securing permission to use it as the dewatering area from the state agency responsible for the Fishing Access. We would plan to do the dredging during the month of September which is after the period of major usage but when the water is still warm enough for dredging and inspection.

C. Location for final disposal of material.

At this time, we have not identified site(s) largely because we don't know when material would be ready, the volume needing disposal or the soil characteristics of the material. If, as is sometimes the case, it can be mixed with lime to become topsoil, there are likely many locations damaged by flood or opened as temporary sand pits where it would be useful. The area across from the Green Mountain Sugar House is one example. The Ludlow landfill is another. The Pingree land in Plymouth would be particularly desirable since that is currently a source of continuing sediment into the lake and is in need to restoration. Until we have a better picture of volume and schedule, however, final disposal sites must remain an open item.

D. Moving material between sites.

Since the amount of dried material is certain to exceed what can be used anywhere near the dewatering site, trucks will be needed to move it. It is possible to use dewatering bags made for construction skips, but they are small so would increase the time period for dredging and the number of truck trips. Larger bags (e.g. 25x40 feet) are more commonly used, but dried material must then be removed from the bags onsite and loaded onto trucks using power equipment. The latter method seems most economical at present, but once we have a better measure of material volume, we will reconsider the options.

E. Selection of contractors.

Dredging and transportation will require separate contracts. We will request bids from area trucking companies once we have determined the details. There are likely sufficient bidders to make that task fairly straightforward.

However, locating a contractor for dredging and dewatering has proven difficult. We contacted a total of eight companies advertising on the Internet and solicited additional companies from engineering companies engaged in water projects. Most of the dredging companies did not respond to our questions after finding out this was to be dredging on a small lake in Vermont. Most are located 500+ miles away, use equipment much larger than we need and/or report a preference for job costs of $700,000 and up.

Only two companies reported dredging experience in the New England-New York area. Substructure, Inc. (http://substructure.com/) has done larger projects in New Hampshire and elsewhere and has shown continuing interest in our project. They favor multibeam bathymetry studies before and after dredging to identify areas actually needing dredging and afterwards to confirm removal per specification. As a result, they are more expensive than we can likely afford. However, they continue to be interested and have the equipment and expertise we require. Since they typically do pre-dredging surveys before contracting for the entire project, we have not asked them for a bid but are maintaining contact until we are sure of the alternative.

The company we currently favor is AE Commercial Diving Services. The owner, Chris Sheldon, has been our milfoil diver for nine years, so is well known to us as both reliable and professional. He has done dredging for milfoil and other invasive plants in both Connecticut and New York. Their website and project reports can be found at http://issuu.com/wswqc/docs/ae_commercial_diving_services, http://www.bantamlakect.com/newsletter%20pdfs/Bantam_Lake_FANWORT_CONTROL_PROJECT_Jan_2011.pdf, and http://www.stoptheasianclam.info/2011/10/survey-work-in-north-end-of-lake-going.html.

The company has nine experienced employees and is expanding into dredging for projects such as ours. A DynoSix dredger will be available for this project.. This equipment is in use by several of the other companies we contacted and can be viewed at http://dinosix.com/index.php. Size, flexibility, portability and power of this equipment most closely match the project we are seeking to undertake. Combined with personnel with whom we have well established relationships, AE Commercial Diving Services is therefore our first choice of contractors.

Mr. Sheldon is intimately acquainted with our lake and the specific sections where dredging is required. He will conduct an underwater survey as soon as possible in the Spring of 2012 to supplement information we have from other sources and will conduct similar surveys during and after the actual dredging to assure that the barriers to navigability are indeed being removed with the minimum of disruption to the lake bottom. His bid will also include the sediment curtain required to minimize the spread of sediment to other parts of the lake.

Given our current estimate of sediment volume and the equipment to be used, Mr. Sheldon believes up to four weeks will be required at a fixed, daily rate. Since we do not know the size of dewatering bags to be used, their cost will be extra.

F. Project management.

As the complexities of the project have become more evident, we have considered the need for project management and have had contact with companies that do this type of work. Since there will be at least two contractors for the two major parts of the project, costs could be substantially increased if one contractor experiences delays that impede the work of the other. As examples, if trucks are not available when material is ready for moving, it would stop dredging since only a limited amount of space will be

available for the dewatering bags. Similarly, if dredging stops for some reason, material will not be ready when trucks are available to remove it. We are mindful of comment from ANR that outside project management may not be needed. However, we are concerned that such onsite coordination may be beyond what is available from ANR and LRA personnel so are eager to discuss this during application review.

G. Cost factors in restoring navigability.

The volume of material to be dredged can only be estimated based on currently available information. The rough estimate of 740 cubic yards is based solely on a "guestimate" that each of the two sandbars must be lowered two feet, and are 100 feet by 50 feet. Divided by 27, the result is 370 cubic yards apiece. Since it is likely that those measurements are elevated, we have not added volume for the points at which the pontoon boat hung up during the ANR visits or any additional areas found in surveys after that date. However, the actual volume of material that must be removed to restore navigability impacts all of the other factors: number of days for dredging, number of bags that must be purchased and filled, number of days required at the dewatering site, number of truckloads of dried material and volume to be left permanently at some location. Therefore we are unable to estimate total cost at this time. Since our resources are finite, LRA will need a better estimate before letting final contracts, but feel we must go further to get that information.

5. Purpose of the project:

The purpose of Project Restore Rescue (R^2) is to restore navigability in Lake Rescue to key locations that were significantly reduced by tropical storm Irene. We define navigability as a minimum water depth of four feet. That is only slightly more than required for a fully loaded motor boat or sail boat with center board down. Navigability also includes allowing two boats to meet and pass safely, allowing for tacks required by sailboats and maintaining safe passing distances. As noted elsewhere, navigability has been reduced from 6 - 7 feet to less than 3 feet in some areas where navigation was already difficult.

6. Public benefits of the project:

As can be seen on the Google Earth map on page 8, large portions of area around the narrows separating Round Pond from the main lake were already much too shallow for boating as the result of sediment build up over the past several years. The addition of at least three more new areas makes travel truly hazardous in this heavily traveled section of the lake. This is particularly true for boaters leaving from and returning to the State Fishing Access. Being unfamiliar with the twists and turns now required, accidents, damage to boats and general dissatisfaction with recreation experience at Lake Rescue is very likely. Therefore a major public benefit of the project is to improve safe passage through the area beginning at the State Fishing Access and extending below Discovery Island on the main lake. A similar benefit will accrue to boaters from lake residences.

Residences and seasonal rentals in the Lake District account for more than $124,000,000 on the Ludlow tax base. In addition, residents and visitors using the State Fishing Access contribute a large, albeit

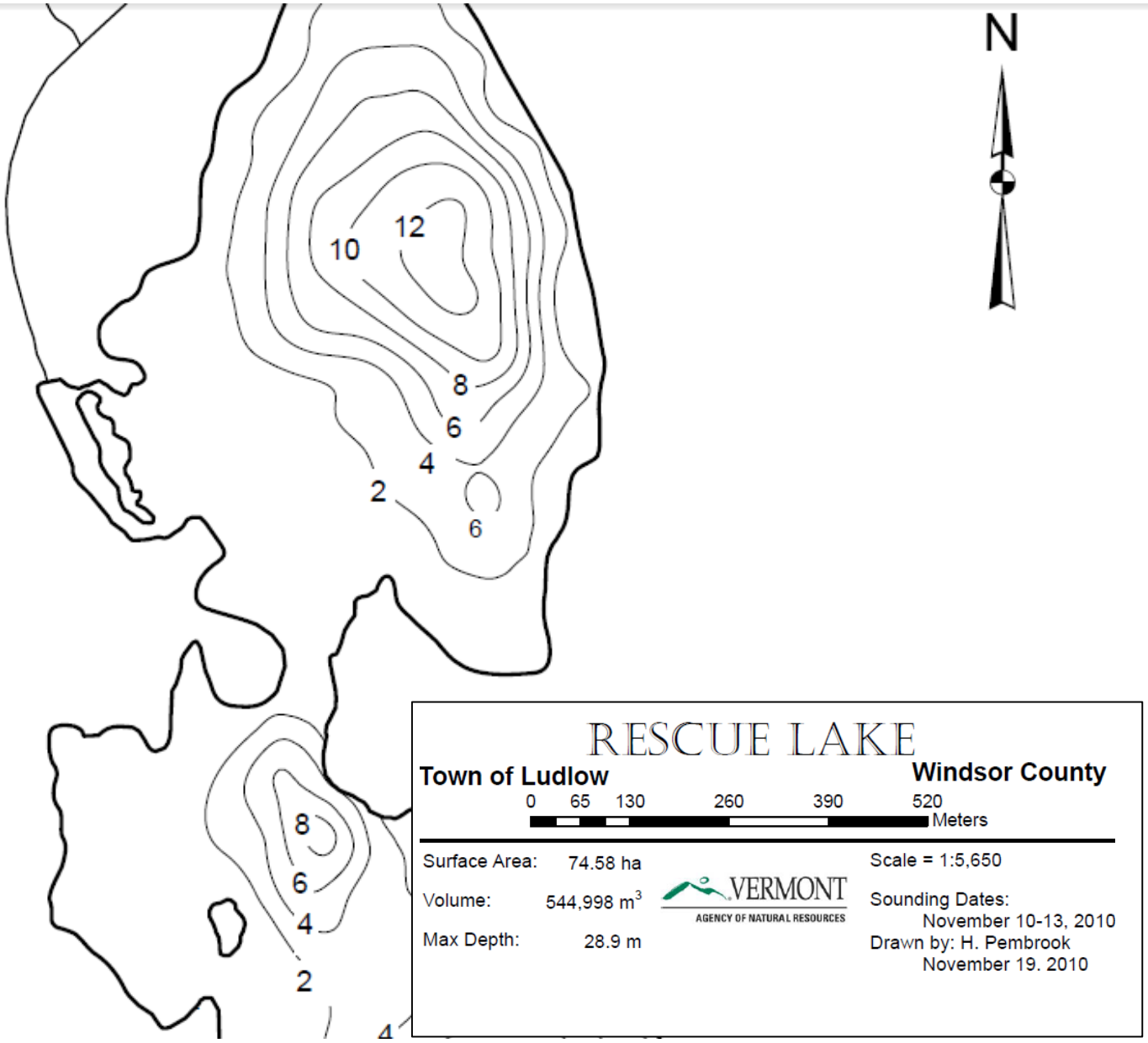
unknown, amount to the state and local economies by purchasing licenses and local services and goods. Restoring navigability will assure that such benefits to everyone will not be reduced as a result of tropical storm Irene.

7. Planned work schedule:

Assuming approval of this application, we expect to fund the underwater survey of the area immediately after high water in the spring of 2012 and sign contracts soon thereafter. The actual date for dredging may be influenced by evidence of continued storm-related silting resulting from road construction in places such as Lake Ninevah road and flooded areas such as Pingree pasture in Plymouth through which the Black River flows. If it looks as if these consequences of Irene will be attended to in another year, we would consult with ANR about a delay in dredging schedule.

8. Maps:

2010 RESCUE LAKE DEPTH CHART, AGENCY OF NATURAL RESOURCES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12
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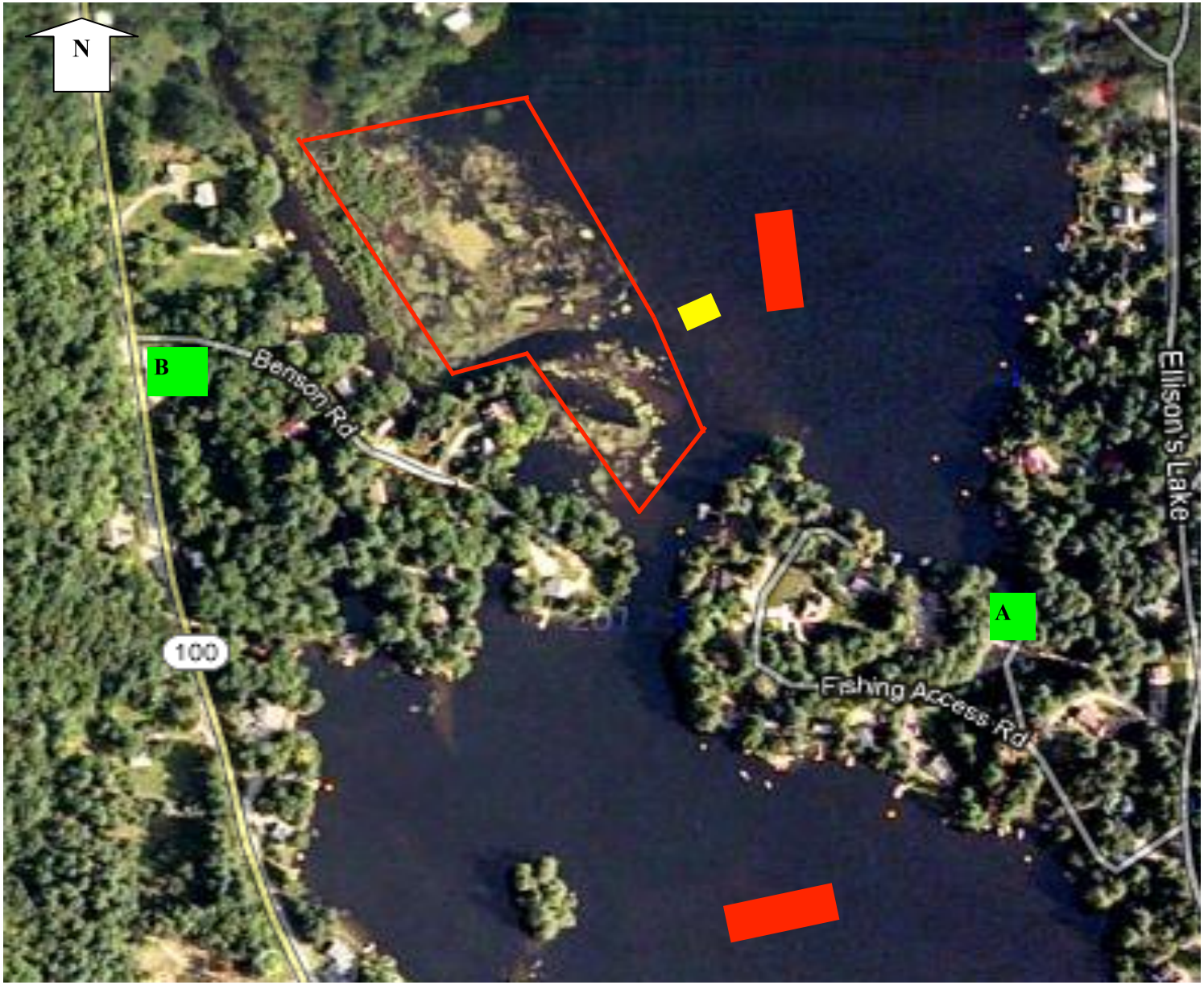
4
RESCUE LAKE
Town of Ludlow
Windsor County
0 65 130 260 390 520
Meters
Surface Area: 74.58 ha
Volume: 544,998 m3
Max Depth: 28.9 m
VERMONT
AGENCY OF NATURAL RESOURCES
Scale = 1:5,650
Sounding Dates:
November 10-13, 2010
Drawn by: H. Pembrook
November 19. 2010

ARIAL PHOTOGRAPH OF ROUND POND TAKEN ABOUT SEPTEMBER 5, 2011

Pre-existing sediment is clearly shown at mouth of river despite the impact of new, in-solution material coloring the water.

Coloring of main lake differs because of light angle when picture was taken. It was the same as Round Pond.

GOOGLE MAP SHOWING PROPOSED AREAS OF DREDGING AND DEWATERING.



As a result of previous build up of sediment, nearly all of the area inside the area outlined in red was already less than 2 feet deep before Irene. In those places, the sediment is so close to the surface, it showed as land, not water in the satellite image. Thus, the impact of Irene was to substantially increase difficulties navigating through a previously constricted area. Dredging in those areas is not contemplated.

The green boxes show the proposed dewatering sites at the state fishing access (favored) and the junction of Route 100 North and Benson Point Road.

The yellow box shows the approximate location where the pontoon boat hung up on new sediment during the October, 2011 tour with ANR staff. Previous to Irene, such boats could enter the river.

The solid red boxes show the approximate locations of two new sandbar areas.

Site location/address:
North portion of Lake Rescue, Route 100 North, Ludlow, Vermont 05149

9. Complete name and **mailing addresses** of each abutting property owner. Available on request.

10. Application fee enclosed $ 0

Fee for non-structural erosion control projects $155; Fee for structural erosion control $250; Fee for other projects $300 plus 0.01 times the project cost.

By a vote of the Select Board, January 2, 2011, the Town of Ludlow is a co-applicant

1-5-2012

Co-Applicant Signature:
Francis J. Heald, Municipal Manager DATE

11. Certification: I hereby certify that the information in this application and its enclosures are true and accurate. I grant the Department permission to enter upon the land to verify information contained in the application [29 V.S.A. 404(b)].

Mary Rita Batesole 1-5-2012

Applicant Signature:
Mary Rita Batesole, President, Lake Rescue Association, Inc. DATE

Rev. 7/2010