VERMONT MOUNTAIN BIKE ASSOC.
SINCE 1997

July 2021

To be revised - July 2023

Major Storm Recovery Plan

The purpose of the Major Storm Recovery Plan (MSRP) is to provide Chapters with an overview of the steps to be taken when a major weather event damages a trail network. This guide is not meant to capture every nuance in every situation.

The method and timing of storm response will vary depending on a variety of factors including, but not limited to: land manager policy, cooperative agreements, district forester input, private landowner preference/access agreements and municipality guidelines.

What is Major Storm Damage?

The nature of damage in forests resulting from major storms can vary – it can be a windstorm that knocks down the overstory, an ice storm that tears down branches, a flood that wipes out culverts or stream crossings, or heavy rain that results in significant erosion. What constitutes “major damage” will be defined in a variety of ways. For some, it will be the cost associated with acute damage and for others it will be the percent of trails damaged in a network. For example, if a major culvert or bridge was washed out and destroyed, it may be comparable in impact to a half mile of trail needing to be rebuilt.

Association Funding

Chapters may apply for support from the VMBA Major Storm Recovery Fund (MSRF), intended to rapidly bring trails back online following a major storm. Funding requests must be submitted to the VMBA Board Chapter Representatives (chapterreps@vmba.org), who will convene the Advisory Council to consider and vote on the request. The complete process for applying for MSRF funds is described in the Major Storm Recovery Fund - Application Guidelines document in the Chapter Resource Library.

Federal Emergency Management Association (FEMA) Funding

If damage from a storm is particularly significant - amounting to at least $1M in damage to public infrastructure in the state, the Governor may issue a Disaster Declaration and request federal (FEMA) funding. These funds are typically available only to State and municipal agencies, underscoring the need to work closely with local land managers and, if applicable, towns hosting affected trails. In cases where FEMA funding is a possibility, Chapters should work with the appropriate state or local agency to contact the local FEMA office as soon as possible and begin thorough documentation of damage (as described below). Any work performed prior to funding approval will not be reimbursed by FEMA. Some additional guidance from Tom Jackman, Stowe Town Planner who led the 2017 Cady Hill Forest wind storm recovery in coordination with Stowe Trails Partnership:

- Begin thorough documentation of the damage as soon as possible; in 2017, we were required to both prove the existence of the affected trails prior to the storm and a cost estimate for restoring each affected section of trail
- The amount of funding will vary based on what hazard mitigation measures were in place; in 2017, FEMA covered 75% of recovery costs, with the State covering an additional 7.5% and the town the remaining 17.5%
- If damage is extensive enough that a salvage logging operation is warranted, keep volunteers from going out and cutting blowdowns to clear the trails, which could result in significant lost value in the recovered timber (more below)

Chapter Preparation

Chapters are strongly encouraged to have a storm response system in place. Developing this together after a storm has hit will slow a Chapter's response and lead to unnecessary difficulty. The Association recommends the following steps be taken by Chapters' boards and kept in an accessible digital file for easy access/revision.

1. Identify who is responsible for contacting a forester or recreation program manager on state land or National Forest System land, respectively. This contact is an essential part of determining the level of risk to people and trails after a major storm.
    a. If the Chapter has paid trail staff, it should be clearly defined as to when, how and who is responsible for each element of the MSRP.
    b. Private landowners are also encouraged to utilize the expertise of the state.
2. If multiple large trees are down upon initial inspection, DO NOT start cutting or clearing for Chapter personnel safety. Get in touch with an FPR district Forester, USFS, or Town Manager to review the damage and coordinate next steps.
3. Identify who is responsible for updating trail conditions on those platforms being utilized by the Chapter (e.g. website, Trail Finder, Trail Forks, etc…)
4. Identify who is responsible for updating all social media channels to share closures, storm assessments/safety information, etc.
5. Create clear messaging around how and when volunteers can/should help in clean up and trail repairs, actions being taken by Chapter/VMBA and any estimates that can be shared relative to re-opening, etc.
6. As needed, contact the VMBA office for trail closure and/or caution signage.

Contact List

This Storm Damage Recovery Plan relied heavily on the work of:

1. *The Iowa State University Extension publication "Managing Storm Damaged Trees" by Paul H. Wray, 1/6/99 Extension Forester and John Walkowiak & Jerry Kemperman, Iowa DNR Foresters*
2. *Wisconsin Department of Natural Resources Storm Recovery Guidelines, Resources, and Best Management Practices (retrieved on May 15, 2020 from, www.wdnr.gov).*

Every Chapter is strongly advised to have easily accessible contact information for municipal, state, and federal partners.

If the affected trails are on State land and damaged enough to require sustained closure, you should contact your County Forester through the Department of Forests parks and Recreation.

Your county forester has connections to loggers, ecologists, arborists, and other specialists. County foresters have absolutely no role in act 250 enforcement. When you contact your County Forester, they will likely:

- Walk the damaged property with you
- Review extent of damage
- Offer limited guidance on salvage potential
- Help you connect with a consulting forester, town land manager, or state land forester (as appropriate)
- Help you come up with a plan to remediate the damage

Key Contact: Danielle Fitzko, FPR Division of Forest Director at: 802-598-9992, Danielle.Fitzko@vermont.gov

County Foresters
See https://fpr.vermont.gov/forest/list-vermont-county-foresters for latest staff information.

- **Addison County: Chris Olson,** Middlebury UVM Extension Office; 802-388-496, Chris.Olson@vermont.gov
- **Bennington: Cory Creagan**, Rutland Office; 802-505-0068, Cory.Creagan@vermont.gov
- **Caledonia and Essex: Matt Langlais**, St. Johnsbury Office; 802-535-8486, Matt.Langlais@vermont.gov
- **Chittenden: Ethan Tapper**, Essex Office; 802-585-9099, Ethan.Tapper@vermont.gov

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- **Franklin and Grand Isle: Nancy Patch**, St. Albans Office UVM Extension Office, 802-524-6501 x441, Nancy.Patch@vermont.gov
- **Lamoille: Emily Potter,** Morrisville UVM Extension Office; 802-888-5733, Emily.Potter@vermont.gov
- **Orleans / Northern Regional Lead: Jared Nunery,** Craftsbury, Sterling College; 802-595-5754, Jared.Nunery@vermont.gov
- **Orange / Central Regional Lead: David Paganelli,** White River Junction Office*;* Contact: 802-461-5304, David.Paganelli@vermont.gov
- **Orange: AJ Follensbee**, White River Junction Office; 802-595-2429, Allen.Follensbee@vermont.gov
- **Rutland: Kyle Mason,** Rutland Office; 802-595-9736, kyle.mason@vermont.gov
- **Southern Windsor: Hannah Dallas,** White River Junction Office; 802-622-4169, Hannah.Dallas@vermont.gov
- **Washington: Dan Singleton**; 802-476-0172,dan.singleton@vermont.gov
- **Windham / Southern Regional Lead: Sam Schneski,** Brattleboro UVM Extension Office; 802-380-8916, Sam.Schneski@vermont.gov

National Forest

Aside from catastrophic damage, recovery from minor storms on USFS land is managed like regular maintenance, with those volunteer organizations that actively maintain the land responsible for communicating with district recreation staff, managing the response, and operating within the parameters of their volunteer agreements (e.g. only sawyer-certified individuals may operate chainsaws).

With major events, Chapters should be in contact with District Recreation Program Managers to agree on appropriate actions. Large events, on par with Tropical Storm Irene, may be guided by an Incident Management Team that will make decisions about staff and volunteer safety and the timeline for appropriate actions.

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The primary contacts to engage for questions regarding storm recovery efforts on USFS-managed land are:

- **Manchester Ranger District**: Casey Merritt; 802-362-2307 x7227, catherine.merritt@usda.gov
- **Rochester Ranger District:** Philip MacAskill; 802-767-4261, philip.macaskill@usda.gov

Private land
Keith Thompson, the Private Land Program Coordinator for FPR, advises that the best starting point is reaching out to the County Forester, who will be able to consider the specific circumstances and provide guidance on options to address the damage related to forest health, operations, general cost or regulatory considerations. IF needed, Keith can be reached directly at 802-498-5169, Keith.Thompson@vermont.gov.

Once damage has been assessed and any immediate threat to trail users contained through closures and/or signage, the Chapter should complete an application for Major Storm Recovery funding and request a hearing with the Advisory Council as soon as possible.

Advantages of working with FPR and the USFS:

1. Definitive source of content for needed permits
2. Guidance in preparing grant proposals
3. Access to known, reliable logging companies. This step is critical when determining how to proceed safely and to learn about potential timber sales
4. Access to a range of arborists, wildlife biologists and archeologists. This is an important step in understanding invasive/endangered species and how to thoughtfully dispose of downfall. The Vermont Nongame and Natural Heritage Program of the Vermont Fish & Wildlife Department can direct you to a consulting biologist or ecologist.

IMMEDIATE RESPONSE STEPS:

The following guidance is general; Chapters should defer to recommendations from the appropriate FPR/USFS contact and, as always, defer to the land owner/manager.

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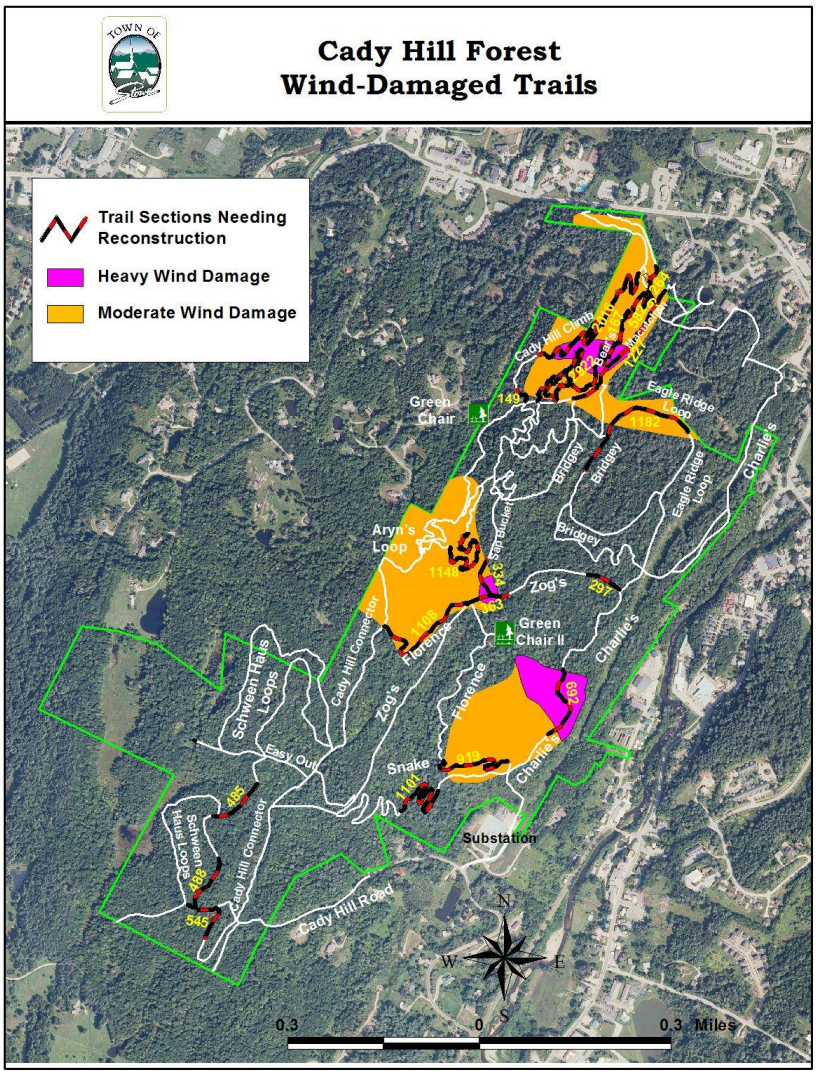
1. **Conduct a thorough damage assessment.** If physically possible, and when safe to do so, walk the entire trail. Be sure to wear your hard hat and other safety gear.
2. **Make a simple map** showing the extent and type of damage. Note trees with broken tops, broken limbs, fallen trees, severely bent trees, blocked roads and trails. Take photographs!



Example storm damage map, from 2017 Cady Hill Forest windstorm

3. **Limit additional damage**. If storm effects will result in ongoing trail damage (E.g. erosion), attempt to remediate the immediate cause to reduce eventual repair requirements.

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4. **Protect trail users**. Install trail signage, fencing, and any other materials as needed to keep users off damaged trail or areas of trail. Seek land manager approval prior to installation.
5. **Work with the land owners/managers on salvage**. Ensure that any economic value from blowdown and damaged trees is realized.
6. **Estimate repair costs**. Assess the resources required to return the trails to working order, engaging a professional trail builder as necessary
7. **Apply for Major Storm Recovery Funds**. Prepare an application and request a hearing with the VMBA Advisory Council, who will determine the amount of funds available for the restoration. Funds can then be disbursed immediately.

ADDITIONAL RECOMMENDATIONS

Monitoring the damaged site on a regular basis for new or developing pest problems is recommended.

Limit disturbance, such as harvest or construction, in adjacent undamaged areas of the stand for one to two years to reduce additional stress to the system and allow the area to recover. Economics of setting up a salvage harvest may prohibit or limit this precaution.

Storm-damaged trees may have value for wildlife. Consider retaining a few storm-damaged trees (large diameter reserve trees, mast and cavity trees, snags and coarse woody debris) for wildlife habitat. Species that may benefit are red-headed woodpeckers, Northern flickers and several species of bats. Reasons to not leave dead trees may include areas where tree retention is deemed a threat to human health and safety and/or where leaving them would interfere with methods to control insect and disease outbreaks.

Determine tree ownership. In almost all cases--except for boundary trees or cases where the timber rights are severed--the landowner on which the tree was growing (i.e., the root ball/stem) owns the tree. With boundary trees, usually both landowners are responsible and/or own the tree in question.

Agree upon boundary and blowdown cutting lines. Individual landowners should work with their neighbors to agree on boundary lines if there is a concern or question regarding who owns certain timber. Given the extreme conditions that result during blowdowns, it is often impractical or impossible to obtain formal surveys in a timely fashion. So, the best advice is to work together to address the problem. Consultant foresters can help.

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Wetland concerns

Contact the Vermont Department of Environmental Conservation.
https://dec.vermont.gov/

Fish/aquatic considerations

Get in touch with the Vermont Department of Fish and Wildlife.
https://vtfishandwildlife.com/

ONGOING MONITORING

Keep an eye out for pests, fungus, and invasive species. These can spread following a storm event. A selection of specific threats are described below. Review the information and contact your county forester if you see signs or symptoms of invasive species. Specifically, Leaning pines can have root damage as well as stem damage which can make them susceptible to bark beetle attack.

- **Pines, stain and bark beetles.** Following a severe storm event, pine trees degrade faster than hardwoods and are also likely to attract secondary pests such as bark beetles. Storm-damaged pines should be salvaged as soon as possible after the initial damage. Pine bark beetles attack and kill damaged pine and then spread to neighboring healthy trees. They can also introduce blue stain fungi, which rapidly discolors the wood and reduces timber value. To minimize future issues with bark beetles and blue stain, salvage pines as soon as possible. For more on bark beetles that attack conifers, including pines, read the conifer bark beetle factsheet. Review this factsheet for more information about salvage harvests, pests and replanting in storm-damaged pine stands.

- **Heterobasidion root disease.** Heterobasidion root disease (HRD, previously known as annosum) is a serious fungal disease of conifers, particularly pine and spruce, that causes decline and eventual mortality. Infection occurs when a spore lands on a freshly cut stump and germinates on the surface. Once in a stand, HRD can spread from an infected stump to nearby living trees through root contact, eventually killing them. It also attacks and kills understory saplings and seedlings within a disease pocket. If your pine or spruce stand is within 25 miles of a known HRD pocket and a harvest or salvage will be done, it is recommended to treat pine and spruce stumps with a preventative fungicide within 24 hours of being cut. Find

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out if you're within 25 miles of known pockets by exploring the DNR's interactive HRD web map.

- **Hardwoods, stain and decay.** Open wounds on storm-damaged hardwoods allow for the entry of bacteria and fungi that stain and decay the wood. The rate of decay varies by both tree and fungal species. In general, aspen, birch, basswood and red maple decay more quickly than oak, hickory and sugar maple. Larger wounds covering more than 1⁄3 of the circumference of the tree can increase the likelihood of tree failure during future wind events. Prioritize removal of species that decay more rapidly and those trees that have large wounds.

- **Oak wilt.** Vermont does not currently have any cases of Oak Wilt, and we sure don't want any. Be on the lookout for discolored leaves while the base of the leaf is still green. (see picture).

When salvaging hardwoods, keep in mind that oaks are more susceptible to infection by the oak wilt fungus during spring and early summer. If salvage of oaks will occur during the high-risk period, please see the oak wilt guidelines for more information on harvesting to minimize introduction of oak wilt. Oaks that require pruning of broken branches should have the wounds painted immediately if pruning occurs from April – July. Wound dressing or latex paint is an acceptable sealant for pruning wounds.

- **Two-lined chestnut borer.** Oaks with broken roots or major branch/stem breakage may be attacked by the native two-lined chestnut borer. Larvae of this beetle bore under the bark of oaks and can girdle and kill branches or entire trees. Branch mortality or whole tree mortality due to this insect will not show up for 1-3 years following a major stress event like these storms.

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WILDFIRE MITIGATION

The threat of wildfire is very real in Vermont. Many acres of dead and dying trees, brush and other vegetation make this threat even greater. While you work to remove storm debris, take time to guard against the possibility of starting a wildfire and minimizing the damage that a wildfire could do should one move through the area.

Brush disposal sites. Many townships and villages have established sites for collection of storm debris (check with your local township or county emergency government office for more information). Check with your town clerk for updated information. Contact information for most townships is available on county websites.

Don't move firewood. Firewood easily transports harmful pests and other problems for yard trees and forests. Firewood that looks clean may actually be hiding insects like emerald ash borer or gypsy moth, or the tiny spores of a tree-killing fungus like oak wilt. To learn more, **https://fpr.vermont.gov/frequently-asked-firewood-questions**

PERSONAL SAFETY

To obtain more information related to protecting yourself and others during the storm recovery process, visit:

- Managing storm damaged woods [PDF] (adapted by William Klase, UWEX Educator).
- Timber harvest tax information [exit DNR]

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