

Appendix A:

Rural Road Resilient Right-of-Ways Project
Town of Calais Letter of Collaboration
July 25, 2017

Letter of Collaboration

Resilient Right-of-Ways: Rural Road Vegetation Assessments

Vermont Department of Forests, Parks and Recreation
Contact: Joanne Garton (802) 249 - 4217; joanne.garton@vermont.gov

This letter summarizes the collaborative work to be completed by the Urban & Community Forestry Program of the Vermont Department of Forests, Parks and Recreation (VT FPR) located at 1 National Life Drive, Davis 2 Montpelier, VT 05620-3801 and the Town of Calais with offices at 3120 Pekin Brook Road, East Calais, VT 05650. VT FPR will work with the Town of Calais to assess rural roadside vegetation and develop recommendations for long-term resilience of its roadside vegetation to manage stormwater runoff, maintain or improve wildlife habitat, and plan for the future of scenic and culturally important roadside hedgerows and forests, all while considering the necessary physical requirements of safe and well-maintained roads. This work will be part of the Resilient Right-of-Ways Project funded by the US Forest Service.

1. Issue Presented

There are multiple challenges that prevent local adoption of Green Stormwater Infrastructure (GSI), which includes trees, shrubs, and other herbaceous vegetation, in roadside environments. On rural back roads, existing trees can be improperly managed, interfering with road maintenance equipment and other infrastructure. Additionally, municipalities often lack the capacity to plan and care for roadside vegetation while still addressing public concerns regarding road safety, beauty, and future condition. To address these issues, we seek to build greater understanding and capacity within our communities to plan and maintain rural roadside vegetation to maximize their benefits. Municipalities engaged in proactive planning of roadside vegetation need technical resources to guide their planning and management efforts, as well as support to attain accurate data, develop and implement strategic plans, enhance management skills, and secure funds.

While communities statewide will benefit, this project will focus on only 10 communities within the Lake Champlain Basin. Priority communities have a high percentage of town-maintained unpaved roads, have relatively large acreages of stream headwaters (land over 1,500 feet elevation or acreage identified as source water protection area), and/or have identified impaired or stressed surface waters. These communities also have staff capacity and community willingness to consider cost-efficient and effective solutions that maximize road safety, comply with stormwater guidelines, maintain scenic sections of canopy roads, and are sensitive to the environmental concerns of landowners in each town. This work prioritizes assessments and strategies that focus on enhancing tree cover and promoting GSI practices in roadside environments to grow resilient right-of-ways.

2. Purpose

VT FPR will support 10 communities in Vermont to assess their roadside vegetation, including trees, and develop strategies to guide vegetation management in their towns that supports environmental, economic, and cultural values. The project will focus on two processes:

- 1) conducting a roadside vegetation assessment (both desk- and field-based) and writing of a report summarizing assessment results, and
- 2) support for towns developing action-based management plans for vegetation in their public right-of-ways, including outreach material focused on future scenarios of roadside

environments typical for each assessed town.

This is a multi-year grant project that will allow VT FPR to assist towns in implementing best management practices to maintain and enhance roadside vegetation. Areas of collaboration may be proposed by either institution and agreed to in writing. These may include, but are not limited to:

- Providing a record of roadside vegetation based on available GIS data to inform plans and budgets;
- Assessing roadside condition including identification of priority tree canopies in Calais that support environmental or cultural goals (i.e. reduce soil erosion, protect water quality, preserve scenic character, and cultural heritage);
- Identifying best practices, management priorities, and plan of work to maximize public benefits from safe and healthy roadside vegetation;
- Providing educational outreach materials targeted at selectboard members, the town highway crew, the conservation commission, and the public regarding best practices for both clearing and maintaining roadside vegetation;
- Scheduling a public meeting with all parties involved to share results of the assessment;
- Collaborating to develop a management plan for the town's roadside vegetation; and
- Identifying priority training needs and communicating them with VT FPR to inform the development of technical training workshops in the region.

3. *Representatives*

Joanne Garton will be the primary point of contact for VT FPR. Stephanie Kaplan of the Calais Conservation Commission will be the primary point of contact for Calais.

4. *Partner Agreement*

The Town of Calais will:

- Provide a point contact responsible for:
 - past and current community engagement with vegetation in the right-of-way in the town;
 - identifying key stakeholders in this effort;
 - aiding to determine the scope and scale of the roadside vegetation assessment;
 - being the recipient of project deliverables.
- Provide VT FPR with information specific to Calais, including:
 - a current, large parcel map of the town;
 - relevant aerial maps of the town to demonstrate scope of the assessment;
 - accurate information on the extent of the public right-of-way;
 - information on past tree or vegetation inventories;
 - information on local engagement with public vegetation (including tree) management and stewardship.
- Utilize the communication channels of the Calais conservation commission to notify the public of key steps in the project development and invite and manage public comment.
- Determine membership of a Project Advisory Committee; convene meetings of the Project Advisory Committee with VT FPR staff and any interested members of the public to:
 - outline the project scope;
 - review results of the right-of-way vegetation assessment;
 - review the draft vegetation management plan; and

- o receive a final presentation on the results of the collaborative effort before the end of the collaborative period and facilitate discussion how to advance resilient roadside vegetation management in Calais.

VT FPR will:

- Meet with the Calais conservation commission to develop a tentative schedule for the roadside vegetation assessment, management plan development, and any public meeting(s).
- Provide staff support to conduct the roadside vegetation assessment;
- Provide necessary tools for assessment, including:
 - o Diameter (DBH) tapes
 - o Clipboards, field sheets, iPads
 - o Orange safety vests
 - o Tree, shrub, and invasive plant ID guides;
- Provide an assessment summary report that includes a community profile, methodology, field observations, assessment data, charts and graphs, GIS maps, and general recommendations;
- Work with the Calais conservation commission and/or select board and other key stakeholders to develop a management plan for Calais's rural roadside vegetation not inconsistent with the Town of Calais Road and Bridge Standards;
- Provide opportunities for public employees and local citizens to become trained in tree care along rural roads based on needs identified by the Calais select board and other key stakeholders.

5. Monetary Outline

No money will be exchanged during this project.

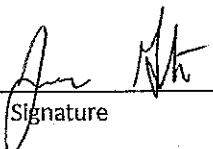
6. Termination Clause

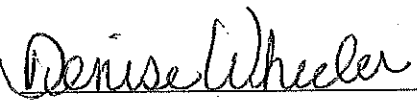
Either party may terminate this working relationship at any time, seven days after notifying the other party in writing.

7. Effective Date and Signatures

This scope of work will be effective from July 24, 2017 to the end of the grant period in September 2018.

Both parties agree to the conditions as described above.


 Signature _____ 7/25/17
 Date _____
 Joanne Garton
 Name _____


 Signature _____ 7/24/17
 Date _____
 Denise Wheeler
 Name _____

Vermont Department of Forests, Parks and Recreation

Town of Calais

Appendix B:

Rural Road Resilient Right-of-Ways Project
Town of Calais Work Plan
August 25, 2017

Rural Road Resilient Right-of-Ways Vegetation Assessment

Town of Calais Work Plan

August 25, 2017 – Revised - DRAFT

Town priorities

Maintain the rural character of many of Calais's rural roads by planning for and utilizing vegetation management practices appropriate to the types of roadside communities found in town. Through this rural roadside vegetation assessment and resulting action plan, the town will address:

- preservation of historically, culturally, or aesthetically important tree canopies;
- management of roadside forests to promote healthy and long-lasting tree canopies;
- management of invasive species and planning for future mitigation;
- preservation of important viewsheds;
- road degradation in common mud season problem spots;
- locations where the road is too narrow or too wide;
- key roadside areas in need of planting (trees or other vegetation);
- key roadside areas in need of thinning or cutting for increased road safety or improved canopy health;
- key intersections where an increase or decrease of vegetation may improve safety and/or aesthetics;
- the safety and experience of those using roads for purposes other than driving (pedestrians, bicyclists, equestrians); and
- assess areas at higher risk from storm damage that causes trees to fall on or across the road.

Assess town processes used to:

- improve continuity of road crew operations with input from the Calais Tree Warden and the Calais Roads Advisory Committee;
- continue and open dialogue with Washington Electric, the main utilities company responsible for vegetation clearing underneath power lines; and
- develop a standard practice and timely plan to reduce potential danger to road users along prioritized roads. Dangers may include risk posed by dead trees in and near the ROW, steep ditches, roadside hazards, etc.

In addition, Vermont Forests, Parks and Recreation staff will facilitate exploration of a **pilot project** that outlines on-the-ground management techniques recommended for a specific road segment within the town. This may include marking of trees to be preserved or cut within the right-of-way, and/or location of potential planting locations. The pilot project will serve to highlight site-appropriate species composition for improved forest health in roadside environments. The location will be chosen at the completion of the road assessment.

Priority Roads

The road assessment will likely occur during the week of September 11th, continued during the week of Sept. 18th if necessary. At least three of the following seven routes will be assessed during the fall of 2017.

Route 1: Number 10 Pond, Approx. 5.25 miles

North Calais Road from town offices – Number 10 Pond Road to town border – Return to Foster Hill Road in North Calais – Foster Hill Road north to town border.

Route 2: The Hills, Approx. 8.75 miles

Sand Hill Road from town border – Ballentine Road – Foster Hill Road to North Calais – Upper Road – Jack Hill Road – Pekin Brook

Route 3: Lightening Ridge Neighborhood, Approx. 6 miles

Lightening Ridge Road (West to East) – Rte 14 (S to N) to Pekin Brook) – Pekin Brook Road (E to W) – George Road (N to S)

Route 4: East Calais, Approx. 5 miles

Max Gray Road to East Hill Road intersection (S to N) - Luce Road (S to N) – Marshfield Road to East Hill Road (W to E)

Route 5: County Road and Worcester Road, Approx. 5 miles

County Road from town border to Maple Corner Store – Worcester Road to town border

Route 6: West County Road neighborhood, Approx. 6 miles

West County Road to Woodbury Mountain Road – Woodbury Mountain Road – return to West County Road to town border. Return via Robinson Cemetery Road and Kent Hill between Robinson Cemetery and West County Road.

Route 7: Bliss Pond neighborhood, Approx. 4.5 miles

Adamant Road from Adamant center – Fowler Road – Bliss Pond Road – return to Old West Church Road

Appendix C:

Rural Road Resilient Right-of-Ways Project
Town of Calais Field Data Results, draft presentation
February 2, 2018

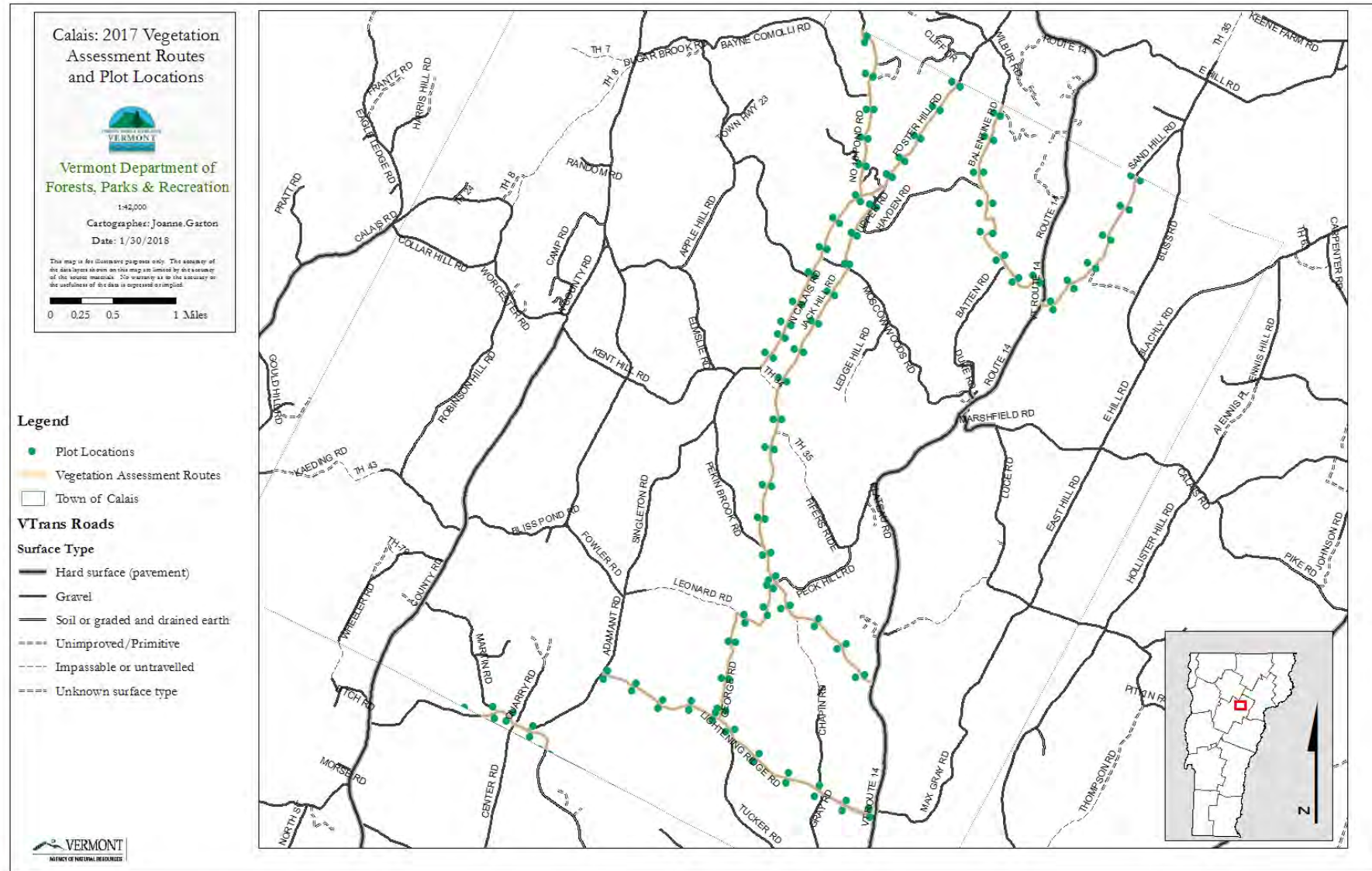


Resilient Right-of-Ways

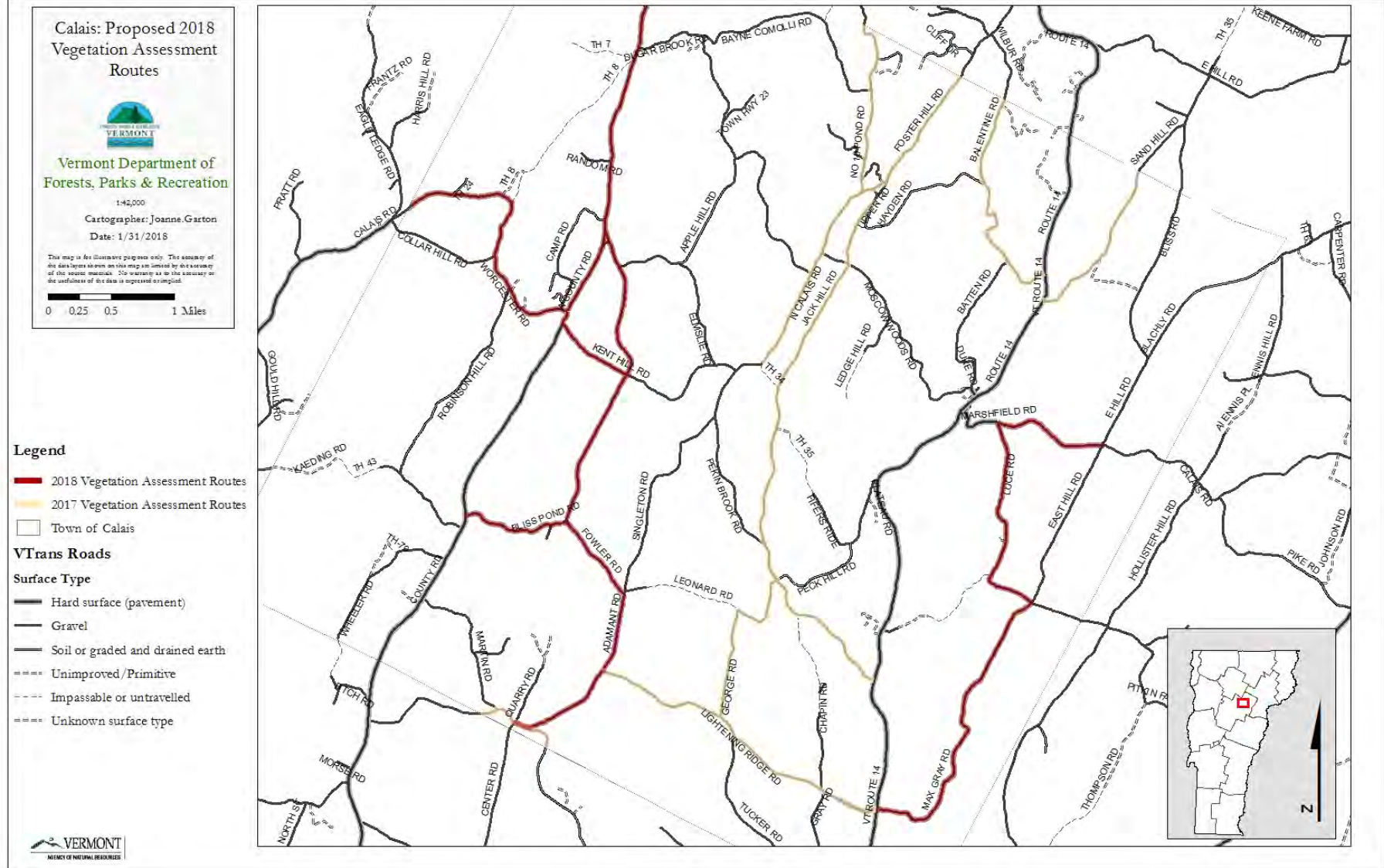
Calais Rural Road Vegetation Assessment Results
- DRAFT

February 2, 2018

Vegetation Assessment Routes – 2017



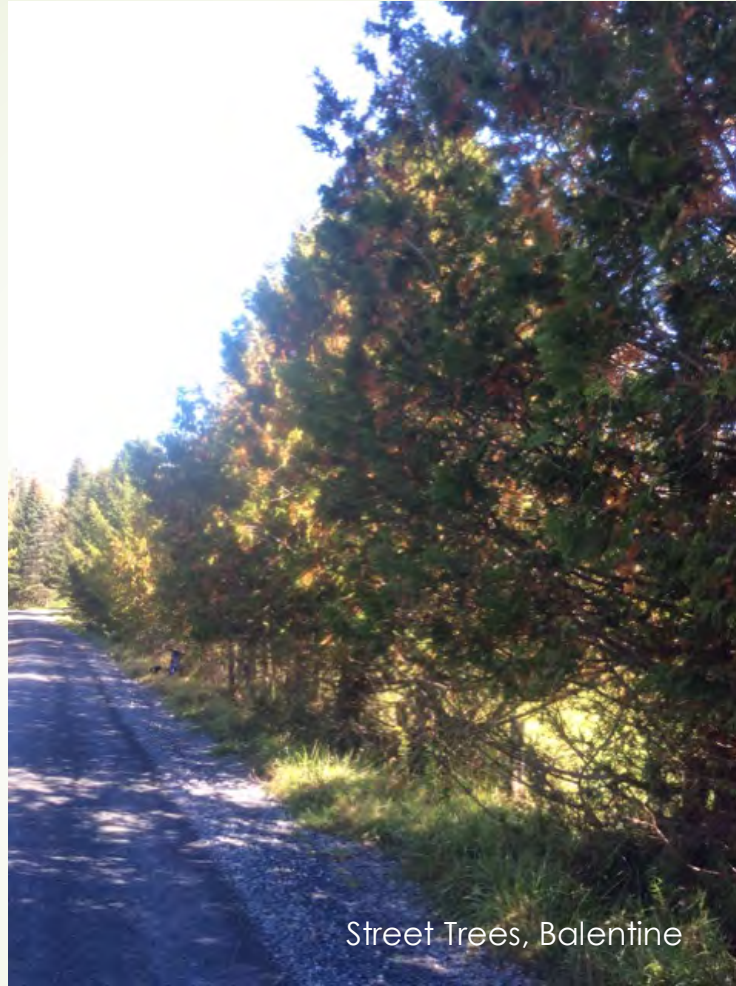
Proposed 2018 Vegetation Assessment Routes



Right-of-Way Community Types



Wet Area, Balentine Road



Street Trees, Balentine



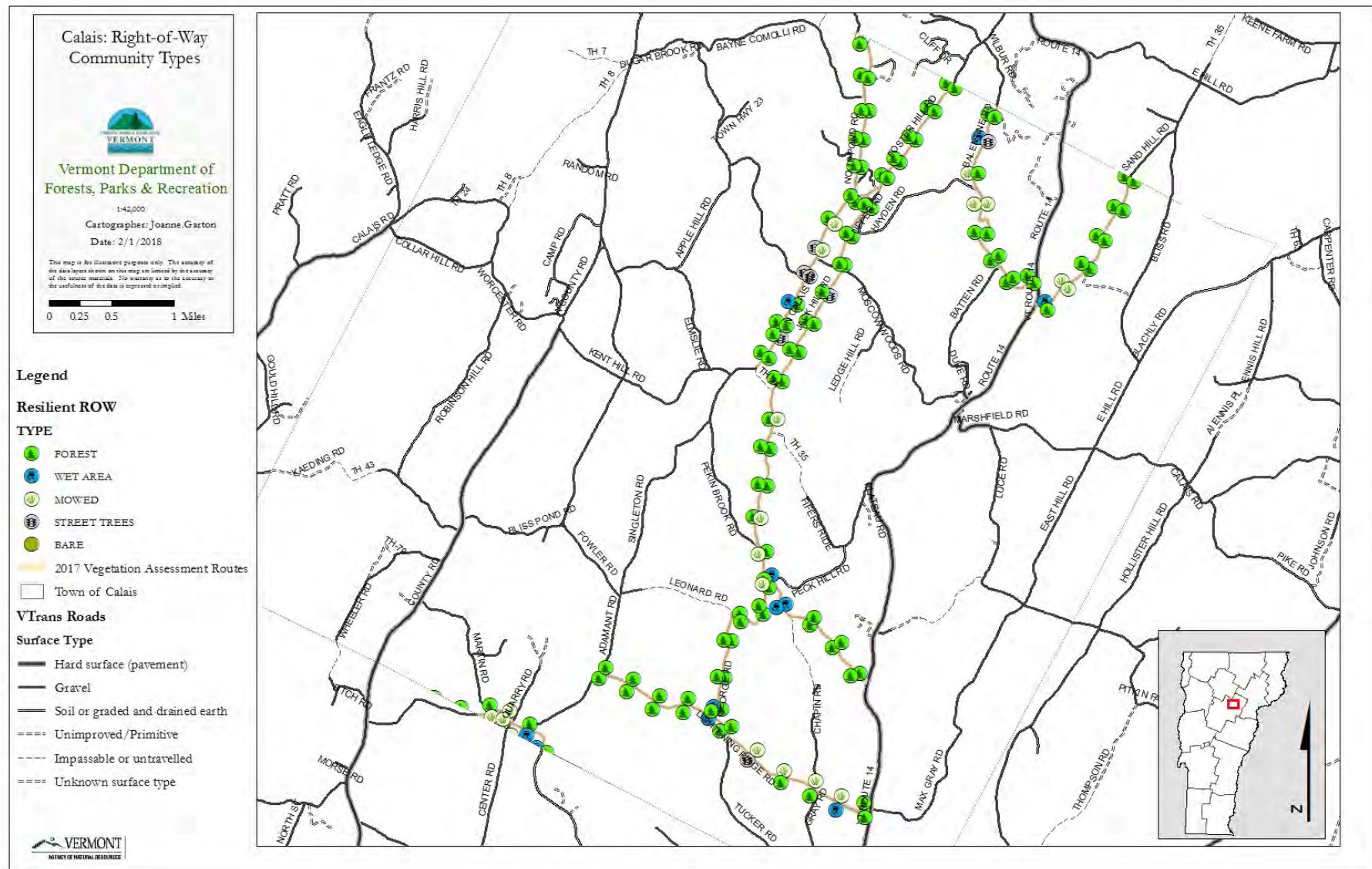
Trees and Forest,
Foster Hill Road



Seasonally mowed,
Pekin Brook Road

Historic Tree, Gould Hill

Right-of-Way Ecology Community Type



Overhead Utilities affecting ROW



Utility, North Haggett Road



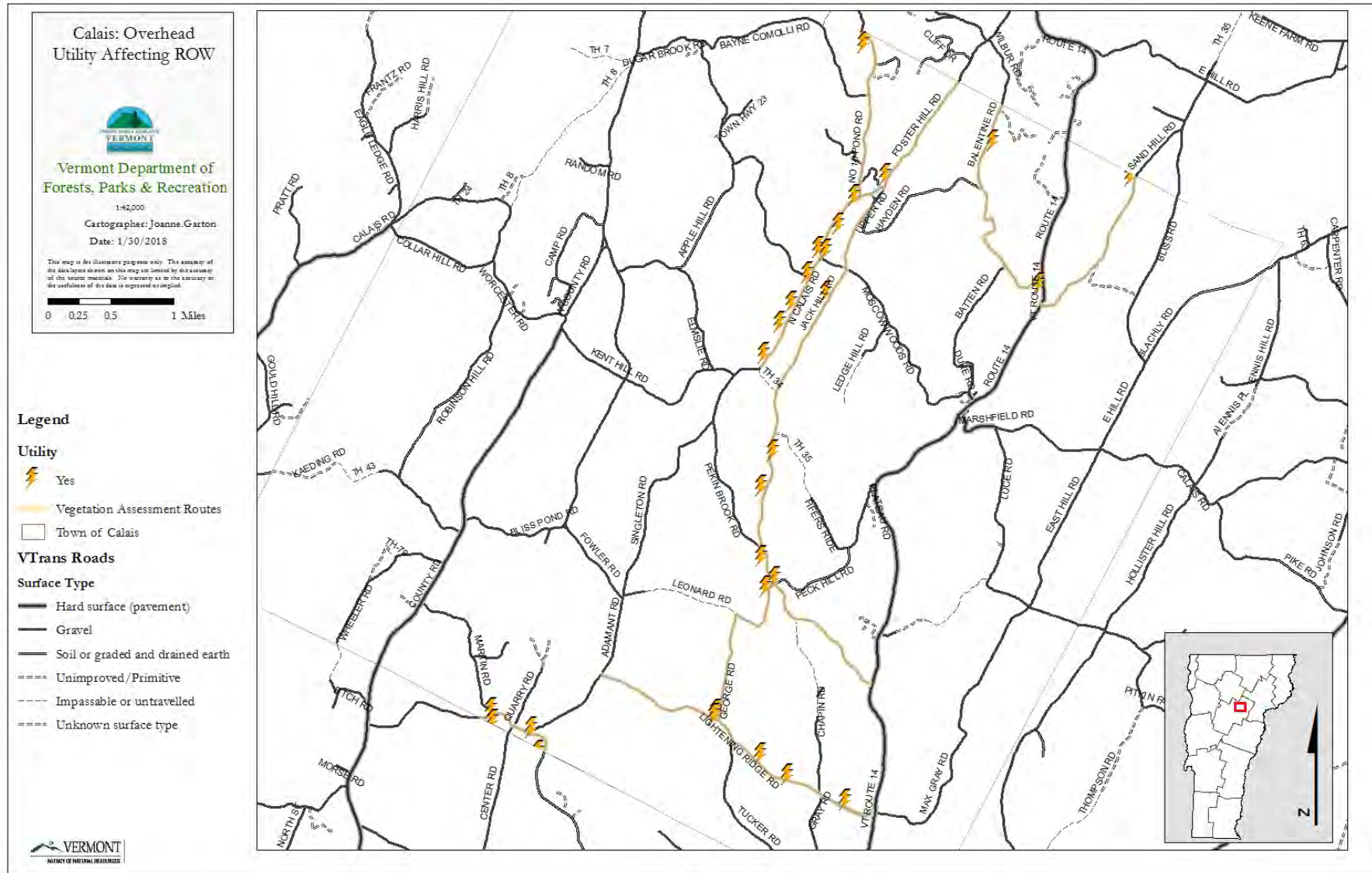
Utility, Balentine Road



Utility, George Road

Historic Tree, Gould Hill

Overhead Utility affecting ROW



Mechanical Damage



Root damage,
George Road



Tree Damage,
Balentine Road



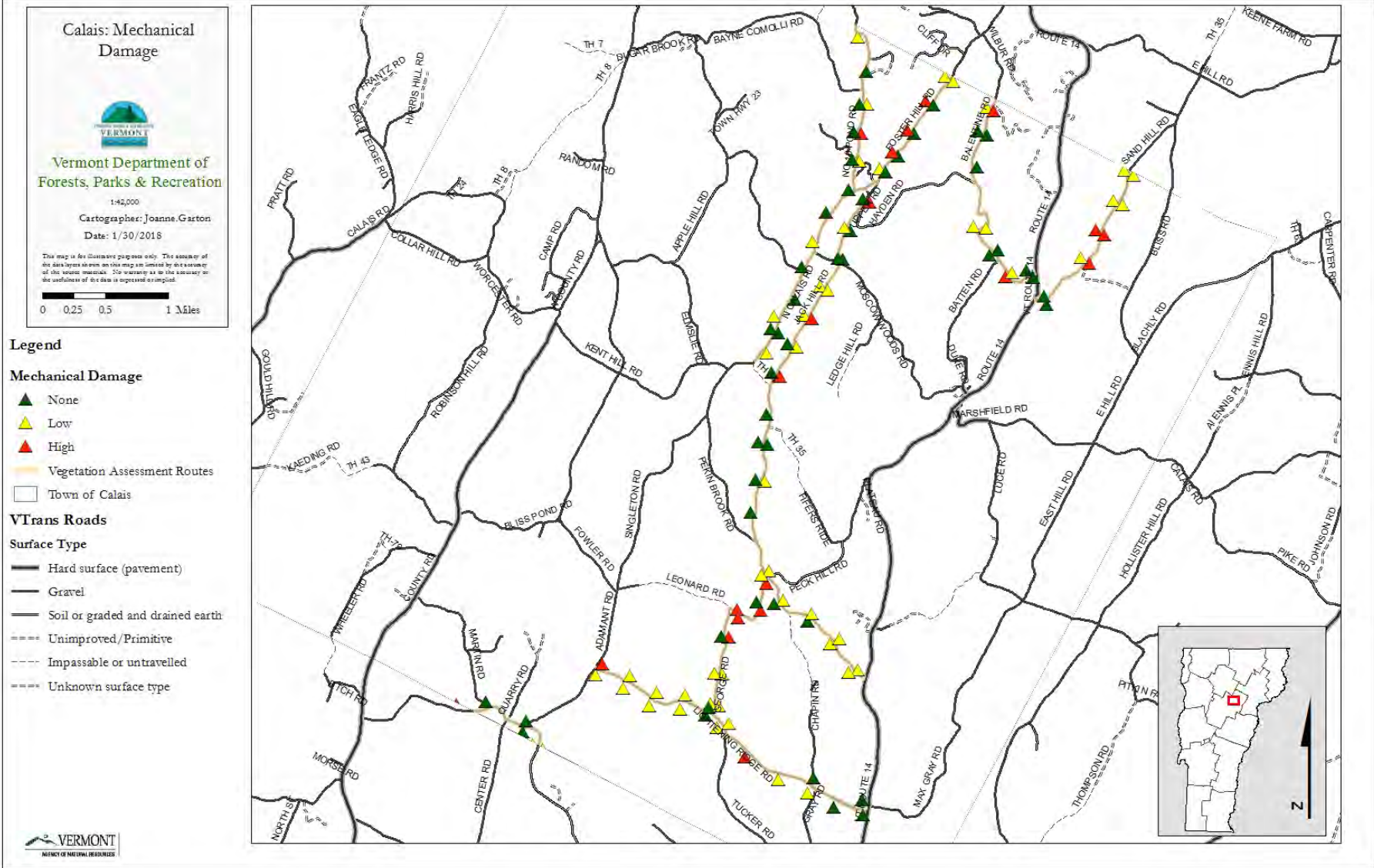
Tree Damage,
Lightening Ridge Road



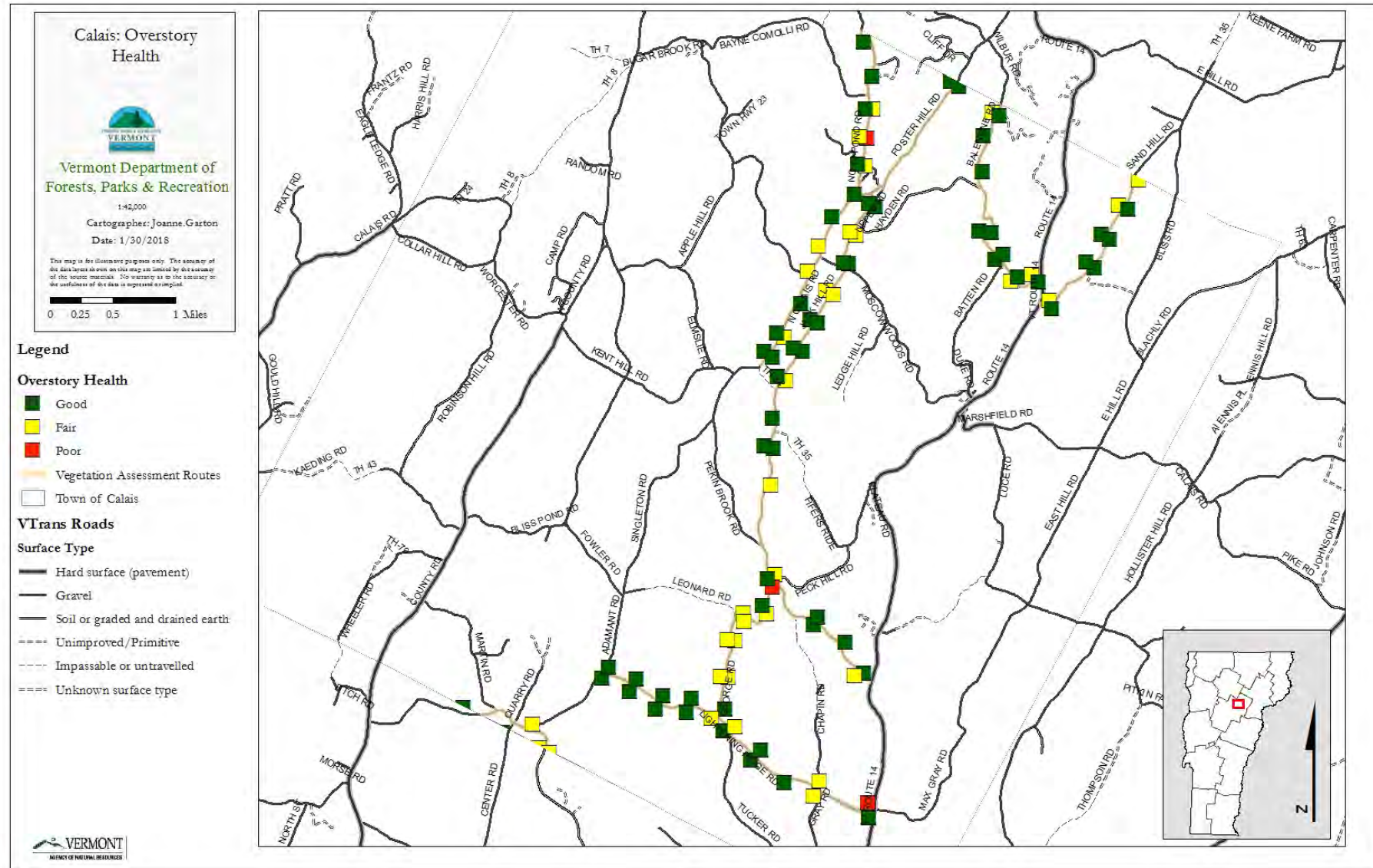
Root damage,
Jack Hill Road

Historic Tree, Gould Hill

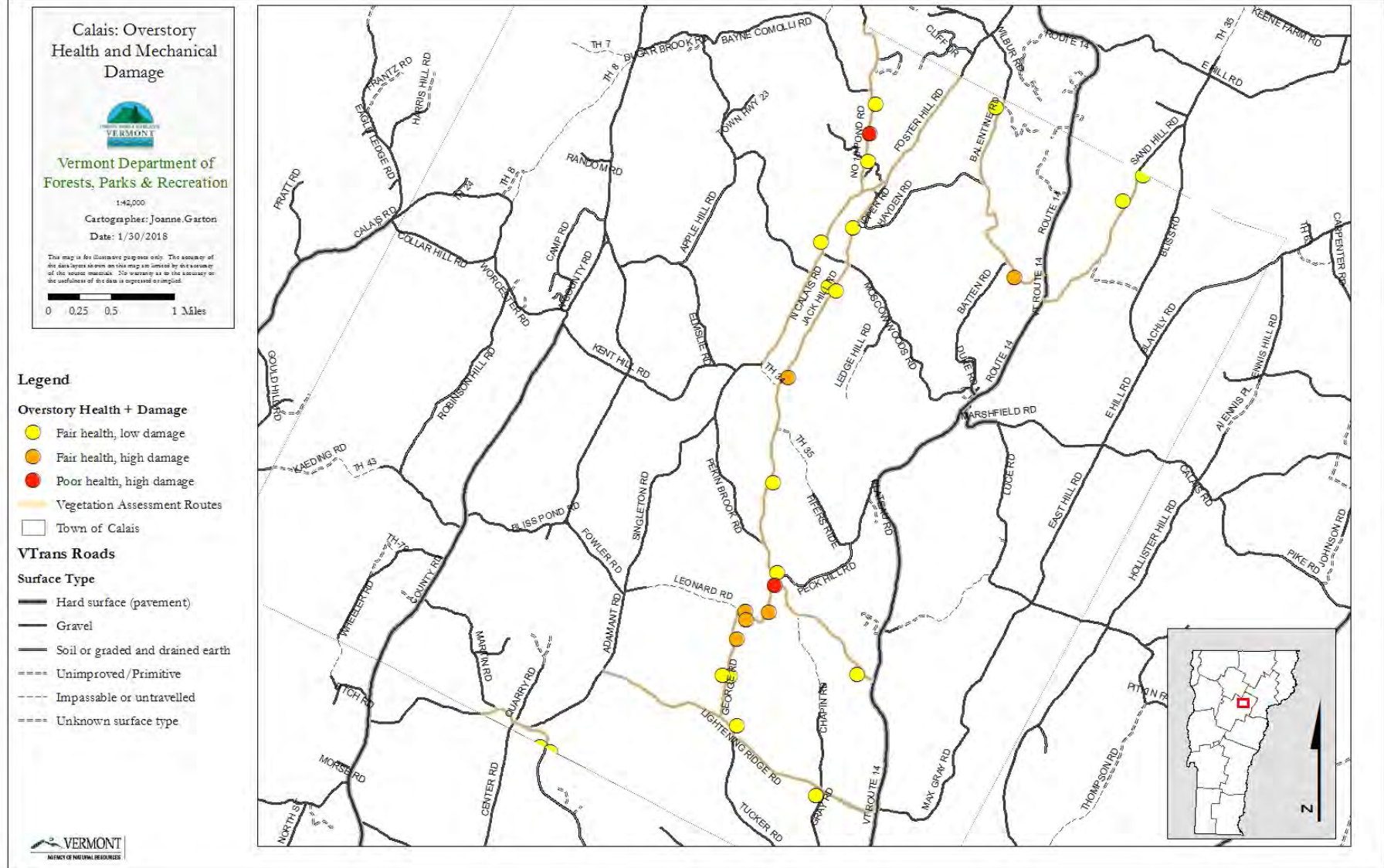
Mechanical Damage



Overstory Health



Overstory Health and Mechanical Damage



Hedgerows



Hedgerow, Lightning Ridge Road



Hedgerow, Ballantine Road



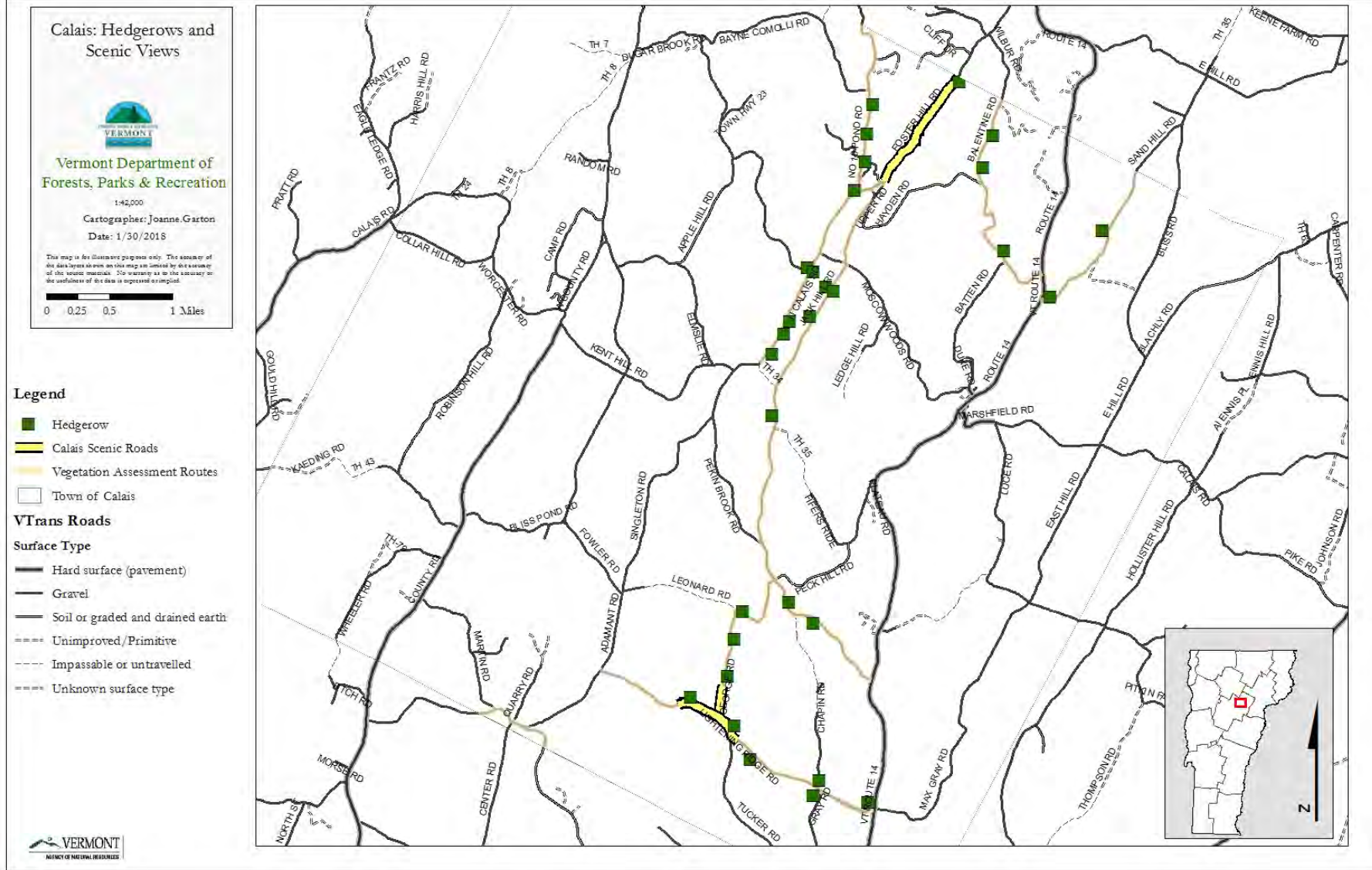
Hedgerow of edge species, North Calais Road



Hedgerow, Foster Hill Road

Historic Tree, Gould Hill

Hedgerows and Scenic Views



Historic Trees



Historic Trees, Poor Health,
Foster Hill



Historic Trees, Poor Health,
Foster Hill



Historic Tree and Road
Markers, Sand Hill Road



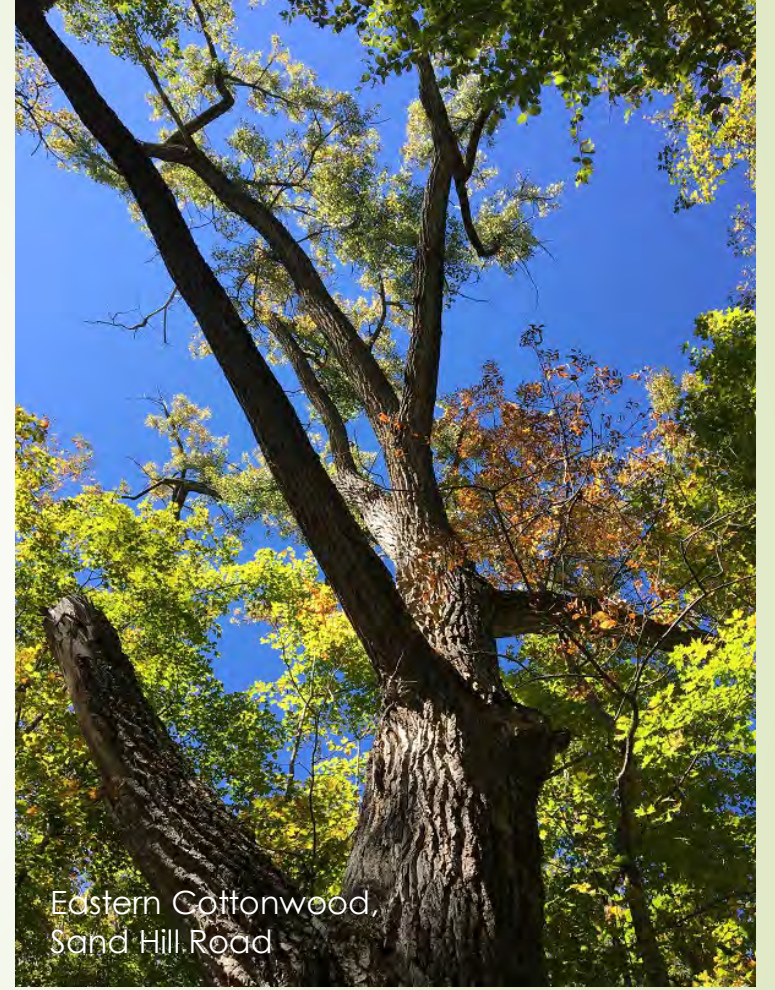
Historic Trees, Fair Health,
Jack Hill Road

Historic Tree, Gould Hill

Big Trees



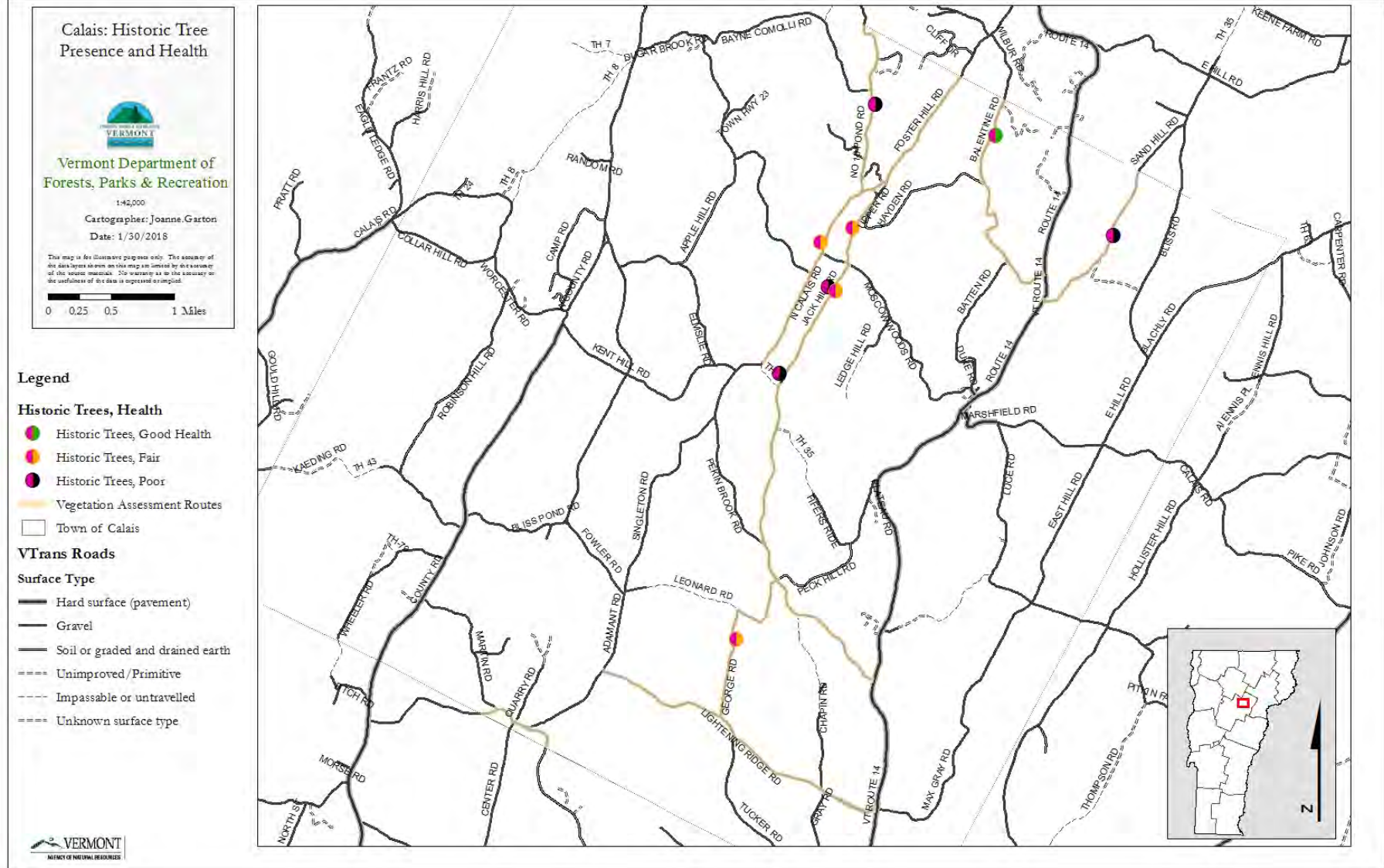
Eastern Cottonwood,
Sand Hill Road



Eastern Cottonwood,
Sand Hill Road

Historic Tree, Gould Hill

Historic Tree Presence and Health



Invasive Plant Species



Japanese Knotweed, Pekin Brook Road near George Road



Buckthorn, Jack Hill Road



Wild Chervil (Cow Parsley), Lightening Ridge Road



Honeysuckle, Pekin Brook Road

Opportunities for Thinning to Improve Canopy Health



Dense roadside trees, Jack Hill



Treescaping opportunity, Balentine Road



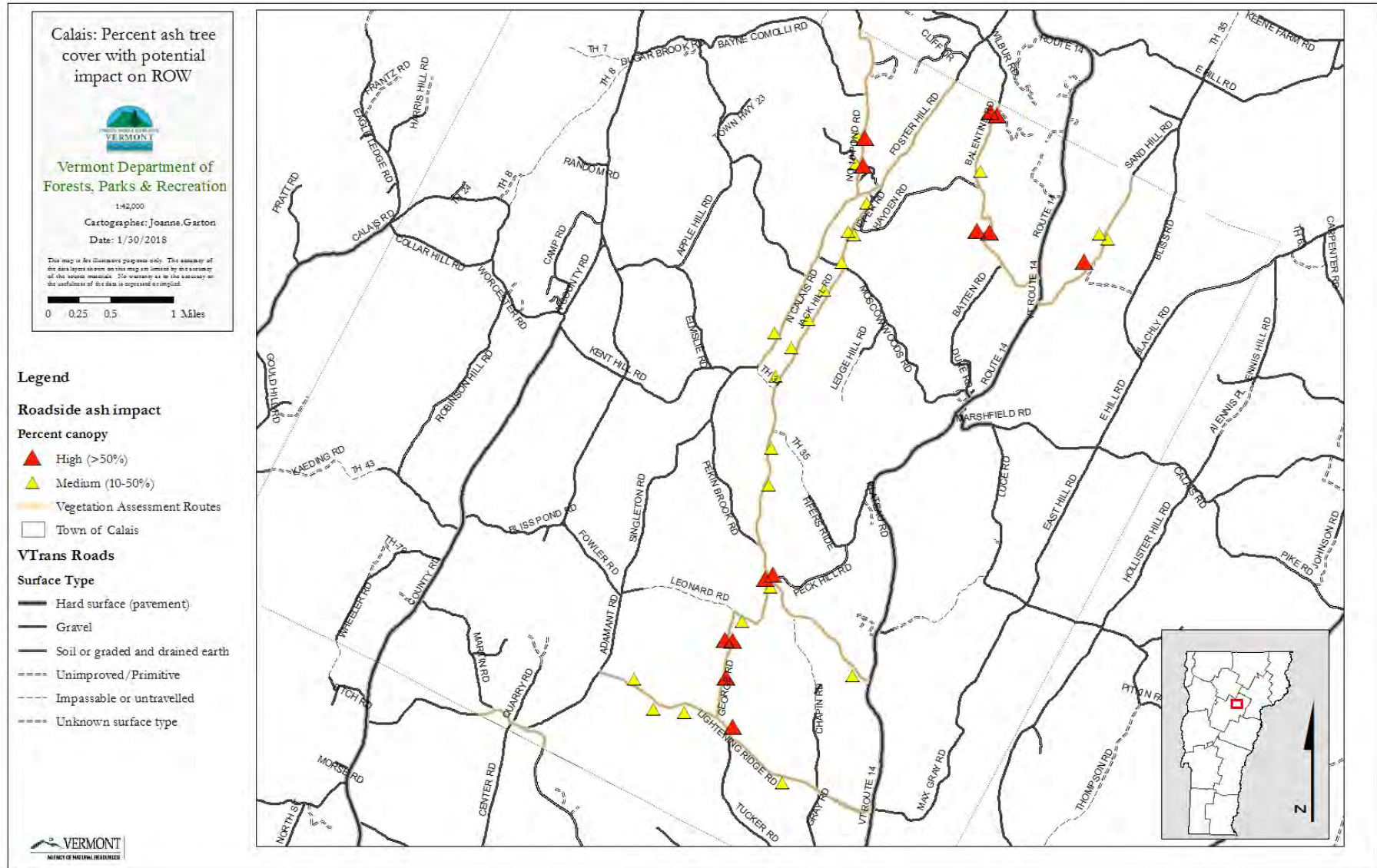
Treescaping opportunity, George Road



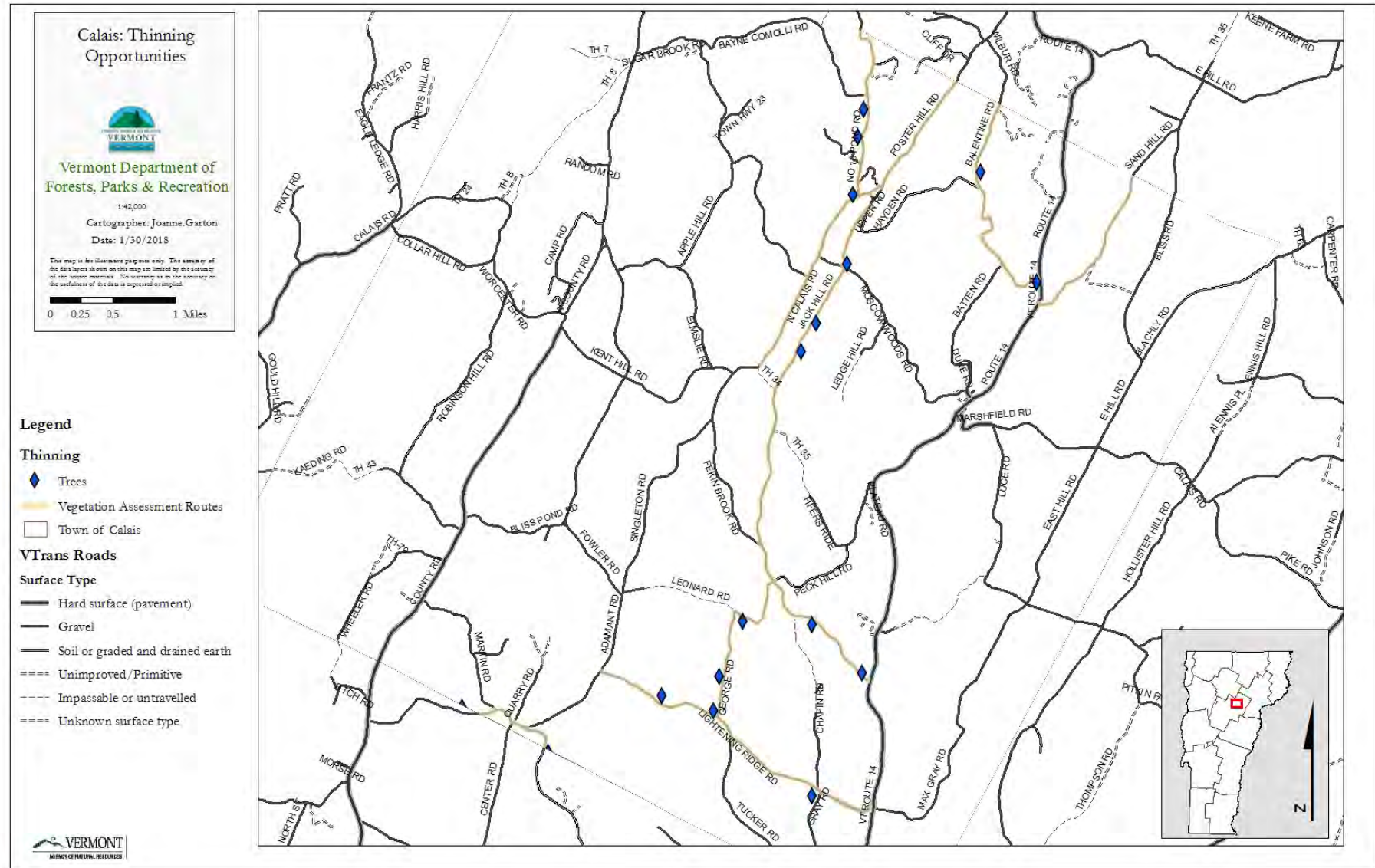
Dense roadside trees, Lightning Ridge

Historic Tree, Gould Hill

Ash Tree Canopy Cover affecting ROW



Opportunities for Thinning to Improve Canopy Health



Opportunities to Plant or Promote Regeneration



Planting Opportunity, No. 10 Pond Road



Regeneration opportunity,
North Calais Road



Regeneration opportunity, Pekin Brook



Planting or Regeneration Opportunity,
Balentine Road

Historic Tree, Gould Hill

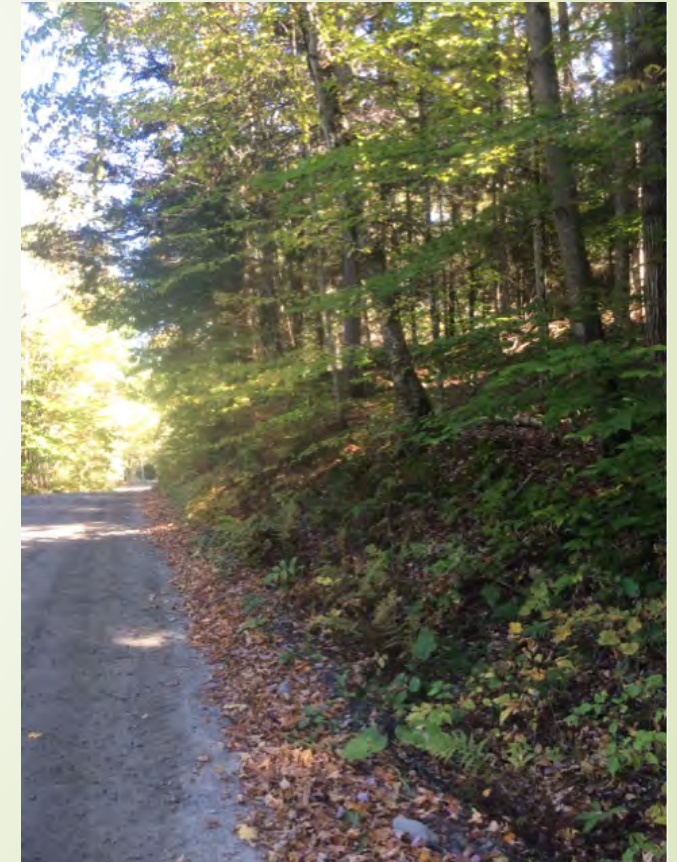
Preserve vegetation to preserve roadside slope



Historic Tree, Gould Hill

Proposed Pilot Project – West end of Lightning Ridge Road

- ~1/2 mile portion along highly trafficked and wide
- Mature short-lived species in the ROW and on private land
- Opportunity for planting or regeneration to demarcate the road
- No cut zones to preserve roadside slope
- Mechanical damage to trees
- Wild chervil (and other invasives?)



Appendix D:

Rural Road Resilient Right-of-Ways Project
Selected Resources for Tree Wardens



Guidelines for Public Hearings for Tree Removals

In each Vermont town, a tree warden shall be appointed by the selectboard to be responsible for the protection, care, planting, and removal of public shade and ornamental trees on town property and along the public right-of-ways. Tree wardens evaluate whether and when aging or damaged trees need to be removed, and also approve requests for removal of trees on town property by town officials. The public has the right to appeal tree warden decisions for public tree removal. According to the Vermont Tree Warden Statutes:

A public shade tree within the residential part of a municipality shall not be felled without a public hearing by the tree warden, except that when it is infested with or infected by a recognized tree pest, or when it constitutes a hazard to public safety, no hearing shall be required. In all cases the decision of the tree warden shall be final except that when the tree warden is an interested party or when a party in nterest so requests in writing, such final decision shall be made by the legislative body of the municipality.
 (Amended 1969, No. 238 (Adj. Sess.), § 6.)

It is therefore the responsibility of the tree warden to hold a public hearing prior to the removal of a public ornamental or shade tree, unless the tree is diseased or dying or constitutes a hazard to public safety. Failure to hold a public hearing means that the tree warden acted outside the scope of their authority and, as seen in the example of the Holland Case below, could lead to legal action if pursued by landowners.

WHEN IS A PUBLIC HEARING NECESSARY?

Tree Warden's Decision to Remove a Public Tree.

Is the tree diseased, infected with a pest, or a hazard to public safety?

YES

A public hearing is **NOT** necessary.

No

Is the tree located in the **residential* part of town?

YES

A public hearing is necessary.

No

A public hearing is **not** necessary.

THE LAW IN ACTION: The Holland Case



In 2001, the Town of Holland sought to widen a Class 3 Town Highway in a residential area to accommodate large vehicles. The plan for the road expansion called for removal of approximately 30 trees and additional tree cutting, among other things.

Before the work began, an adjoining landowner brought suit in Orleans Superior Court to prevent the Town from cutting down the trees. The Town filed for summary judgment, arguing that the tree warden was not required to hold a public hearing prior to felling the trees because they contributed to the narrowness of the road, and thus created a public safety hazard.

In the end, the Court agreed with the landowner. The tree warden had no authority to remove the trees without first holding a public hearing. The public hearing must be warned by the tree warden for the discrete purposes of considering the removal of the tree.

EIGHT STEPS TO HOLDING PUBLIC HEARING FOR TREE REMOVAL*

Step 1: Determine where and when the public hearing will take place. The tree warden should provide direct notification by mail to the affected property owner(s), as well as posting a public notice in a minimum of three public places in town, at least 15 days before the hearing. The public notice should include the time, date, location, and purpose of the hearing.

Step 2: Before the hearing begins, make sure that someone is designated to take good notes and, if possible, record the proceedings of the hearing.

Step 3: At the beginning of the hearing, identify the parties that will be involved in the proceedings. Only those affected are parties: i.e., the landowner, the neighbors, town officials. Inform others in attendance that they have no official role in the hearing.

Step 4: At the public hearing, a notary, clerk, assistant clerk, of Justice of the Peace affirms everyone who will speak before the evidence is taken. An example of an affirmation used is: "Do you solemnly affirm, in the cause now under consideration before the tree warden, to tell the whole truth and nothing but the truth under the pains and penalties of perjury?"

WHAT DOES A WRITTEN DECISION LOOK LIKE?

After the public hearing, the tree warden needs to write up a brief decision along these lines and send a copy to each of the parties who attended the hearing:

On _____, 2014, at ___ p.m., I, _____, Tree Warden for the Town of _____, held a hearing at the _____ Town Office to consider removal of trees from a portion of the right-of-way for Town Highway No. __, also known as _____ Road. Present at the hearing were _____, Road Foreman for the Town of _____. Also present were _____, and _____ (list all attendees).

The parties offered the following testimony: _____

Based on the testimony provided at the hearing, authority is (or is not) granted to _____, Road Foreman for the Town of _____ to remove trees from the following portion of the right-of-way for Town Highway No. __: _____ for the following reasons: _____

In accordance with 24 V.S.A. 2509, Persons interested in this decision may appeal the decision in writing within ___ days from the date of the decision to the _____ select board.

Signed,
_____, Tree Warden for the Town of _____

Step 5: Ask the party requesting that the tree be removed to speak first and to describe the details and their views on the removal, in as logical an order as possible. Make sure everyone who speaks gives his or her name first, every time, to make a clean transcript later on if one is needed.

Step 6: Allow the other parties to ask questions of the first speaker and those called to assist the first speaker.

Step 7: Repeat steps 5 and 6 for the other parties, one at a time, allowing them to give their reasons, and allowing them to be questioned by the other parties.

Step 8. Adjourn, and then issue a written decision (see example at left) within a reasonable period of time, starting with findings of fact, then applying the facts to the law, then a decision, and finally a notice of a right to appeal. Send copies by certified mail to each party, and have one copy for the town clerk for public record.

ADDITIONAL RESOURCES

Vermont Urban & Community Forestry Program's Tree Warden Resources: www.vtfrp.org/urban/tree_wardens.cfm
Vermont League of Cities & Towns, Municipal Assistance Center: www.vlct.org/municipal-assistance-center/overview/
The Law of Trees, compiled by Paul Gillies, Vermont Attorney: www.uvm.edu/crs/resources/citizens/trees.pdf

* Based on recommendations provided by Vermont Attorney Paul Gilles.

Vermont Tree Warden Statutes

TITLE 24: Municipal and County Government

CHAPTER 033: MUNICIPAL OFFICERS GENERALLY

§ 871. Organization of selectmen; appointments

Forthwith after their election and qualification, the selectmen shall organize and elect a chairman and, if so voted, a clerk from among their number, and file a certificate of such election for record in the office of the town clerk. Such selectmen shall thereupon appoint from among the legally qualified voters the following officers who shall serve until their successors are appointed and qualified, and shall certify such appointments to the town clerk who shall record the same:

1. Three fence viewers;
 2. A poundkeeper, for each pound; voting residence in the town need not be a qualification for this office provided appointee gives his consent to the appointment;
 3. One or more inspectors of lumber, shingles and wood;
 4. One or more weighers of coal; and
 5. A tree warden. (Amended 1963, No. 74, § 2.)
-

TITLE 24: Municipal and County Government

CHAPTER 067: PARKS AND SHADE TREES

§ 2502. Tree wardens and preservation of shade trees

Shade and ornamental trees within the limits of public ways and places shall be under the control of the tree warden. The tree warden may plan and implement a town or community shade tree preservation program for the purpose of shading and beautifying public ways and places by planting new trees and shrubs; by maintaining the health, appearance and safety of existing trees through feeding, pruning and protecting them from noxious insect and disease pests and by removing diseased, dying or dead trees which create a hazard to public safety or threaten the effectiveness of disease or insect control programs. (Amended 1969, No. 238 (Adj. Sess.), § 1.)

§ 2503. Appropriations

A municipality may appropriate a sum of money to be expended by the tree warden, or if one is not appointed, by the mayor, aldermen, selectmen or trustees for the purpose of carrying out this chapter. (Amended 1969, No. 238 (Adj. Sess.), § 2.)

§ 2504. Removal of trees, exception

The tree warden may remove or cause to be removed from the public ways or places all trees and other plants upon which noxious insects or tree diseases naturally breed. However, where an owner or lessee of abutting real estate shall annually, to the satisfaction of such warden, control all insect pests or tree diseases upon the trees and other plants within the limits of a highway or place abutting such real estate, such trees and plants shall not be removed. (Amended 1969, No. 238 (Adj. Sess.), § 3.)

§ 2505. Deputy tree wardens

A tree warden may appoint deputy tree wardens and dismiss them at pleasure.

§ 2506. Regulations for protection of trees

A tree warden shall enforce all laws relating to public shade trees and may prescribe such rules and regulations for the planting, protection, care or removal of public shade trees as he deems expedient. Such regulations shall become effective pursuant to the provisions of chapter 59 of this title. (Amended 1969, No. 238 (Adj. Sess.), § 4.)

§ 2507. Cooperation

The tree warden may enter into financial or other agreements with the owners of land adjoining or facing public ways and places for the purpose of encouraging and effecting a community wide shade tree planting and preservation program. He may cooperate with federal, state, county or other municipal governments, agencies or other public or private organizations or individuals and may accept such funds, equipment, supplies or services from organizations and individuals, or others, as deemed appropriate for use in carrying out the purposes of this chapter. (Amended 1969, No. 238 Adj. Sess.), § 5.)

§ 2508. Cutting shade trees; regulations

Unless otherwise provided, a public shade tree shall not be cut or removed, in whole or in part, except by a tree warden or his deputy or by a person having the written permission of a tree warden.

§ 2509. - Hearing

A public shade tree within the residential part of a municipality shall not be felled without a public hearing by the tree warden, except that when it is infested with or infected by a recognized tree pest, or when it constitutes a hazard to public safety, no hearing shall be required. In all cases the decision of the tree warden shall be final except that when the tree warden is an interested party or when a party in interest so requests in writing, such final decision shall be made by the legislative body of the municipality. (Amended 1969, No. 238 (Adj. Sess.), § 6.)

§ 2510. - Penalty

Whoever shall, willfully, mar or deface a public shade tree without the written permission of a tree warden or legislative body of the municipality shall be fined not more than \$50.00 for the use of the municipality. Any person who, willfully, critically injures or cuts down a public shade tree without written permission of the tree warden, or the legislative body of the municipality shall be fined not more than \$500.00 for each tree so injured or cut, for the use of the municipality. (Amended 1969, No. 238 (Adj. Sess.), § 7.)

§ 2511. Control of infestations

When an insect or disease pest infestation upon or in public or private shade trees threatens other public or private trees, is considered detrimental to a community shade tree preservation program or threatens the public safety, the tree warden may request surveys and recommendations for control action from the commissioner of agriculture, food and markets. On recommendation of the commissioner of agriculture, food and markets, the tree warden may designate areas threatened or affected in which control measures are to be applied and shall publish notice of the proposal in one or more newspapers having a general circulation in the area in which control measures are to be undertaken. On recommendation of the commissioner, the tree warden may apply measures of infestation control on public and private land to any trees, shrubs or plants thereon harboring or which may harbor the threatening insect or disease pest. He may enter into agreements with owners of such lands covering the control work on their lands, but the failure of the tree warden to negotiate with any owner shall not impair his right to enter on the lands of said owner to conduct recommended control measures, the cost of which shall be paid by the municipality. (Amended 1969, No. 238 (Adj. Sess.), § 8.)

§ 2512. Repealed. 1969, No. 238 (Adj. Sess.), § 9.

TITLE 32: Taxation and Finance

CHAPTER 017: FEES AND COSTS

§ 1680. Tree warden

When a town or incorporated village fails to fix the compensation of a tree warden or his deputies, they shall receive such compensation as the selectmen or trustees determine.



Other Statutes Related to Trees

TITLE 30: Public Service

CHAPTER 071: TELEGRAPH, TELEPHONE AND ELECTRIC WIRES

§ 2506. Trees not to be injured; exception; penalty

A tree within a street or highway shall not be cut or injured in constructing, maintaining or repairing a line of wires, without the written consent of the adjoining owner or occupant, unless the transportation board or the selectmen of the town in which the tree is situated, after due notice to the parties and upon hearing, shall decide that such cutting or injury is necessary. A person or corporation cutting or injuring such trees shall pay the damages, if any, awarded on such hearing, before cutting or injuring the trees. A person or corporation that violates a provision of this section shall be fined not more than \$50.00 nor less than \$5.00 for each tree so cut or injured. (Amended 1989, No. 246 (Adj. Sess.), § 31.)

TITLE 13: Crimes and Criminal Procedure

CHAPTER 077: TREES AND PLANTS

§ 3606. Treble damages for conversion of trees or defacing marks on logs

If a person cuts down, destroys or carries away any tree or trees placed or growing for any use or purpose whatsoever, or timber, wood, or underwood standing, lying or growing belonging to another person, without leave from the owner of such trees, timber, wood, or underwood, or cuts out, alters or defaces the mark of a log or other valuable timber, in a river or other place, the party injured may recover of such person treble damages in an action on this statute. However, if it appears on trial that the defendant acted through mistake, or had good reason to believe that the trees, timber, wood, or underwood belonged to him, or that he had a legal right to perform the acts complained of, the plaintiff shall recover single damages only, with costs. (Amended 1959, No. 61, eff. March 26, 1959.)

TITLE 19: Highways

CHAPTER 009: REPAIRS, MAINTENANCE AND IMPROVEMENTS

§ 901. Removal of roadside growth

A person, other than the abutting landowner, shall not cut, trim, remove or otherwise damage any grasses, shrubs, vines, or trees growing within the limits of a state or town highway, without first having obtained the consent of the agency for state highways or the board of selectmen for town highways. (Added 1985, No. 269 (Adj. Sess.), § 1.)

§ 902. Penalty for removal

A person who willfully or maliciously cuts, trims, removes or otherwise damages grasses, shrubs, vines or trees within highway limits in violation of section 901 of this title shall be fined not more than \$100.00 nor less than \$10.00, for each offense. (Added 1985, No. 269 (Adj. Sess.), § 1.)

§ 903. Agreements for planting

The agency or the board of selectmen may enter into agreements with individuals or organizations who wish to plant grasses, shrubs, vines, trees or flowers within highway limits. (Added 1985, No. 269 (Adj. Sess.), § 1.)

§ 904. Brush removal

The selectmen of a town, if necessary, shall cause to be cut and burned, or removed from within the limits of the highways under their care, trees and bushes which obstruct the view of the highway ahead or that cause damage to the highway or that are objectionable from a material or scenic standpoint. Shade and fruit trees that have been set out or marked by the abutting landowners shall be preserved if the usefulness or safety of the highway is not impaired. Young trees standing at a proper distance from the roadbed and from each other, and banks and hedges of bushes that serve as a protection to the highway or add beauty to the roadside, shall be preserved. On state highways, the secretary shall have the same authority as the selectmen. (Added 1985, No. 269 (Adj. Sess.), § 1.)

Appendix E:

A quick cheat sheet on roadside mowing in Calais
May 20, 2018

A quick cheat sheet on roadside mowing in Calais – DRAFT

May 30, 2018

As of now (and I will keep gathering more information), I suggest the following:

1. Areas infested with wild chervil should be mowed **before the plants bolt and produce flowers (late May, early June)**. The plants are low at this time. Focus mowing on known infested areas to monitor changes over time and clean equipment before leaving infested areas. Wild chervil and poison parsnip will flower again after mowing – repeat cutting before the plant seeds again to eradicate the plant population.
2. Other common invasive species (buckthorn, honeysuckle) should be mowed **before they go to seed in mid-July**.
3. Areas infested with phragmites, Japanese knotweed or purple loosestrife **should not be mowed**. Small root fragments easily resprout in new locations. Chemical treatment is almost always required to eradicate Japanese knotweed. Learn more with this [treatment sheet](#).

Follow roadside mowing best management practices (BMPs) that include:

- Locate staging areas that are free of invasive plants.
- First mow areas not infested with invasive plants. Then move to infested areas. In Calais, we know that main thoroughfares and recent road construction sites often host invasive species. Data collected so far shows that invasive-rich roads include Rte 14, Lightening Ridge, Adamant Village, George Road and Pekin Brook Road, *although we do not yet have a comprehensive survey of invasive species locations*.
- Clean mowing equipment daily and prior to transport **before leaving the project site**. This is particularly important if mowing happens after seeds mature. See attached document “Equipment.pdf”.
- Avoid mowing areas infested with phragmites, Japanese knotweed, and purple loosestrife, as these can sprout from stem and root fragments. Stake roadside populations with “Do Not Mow” signs.
- During construction:
 - Minimize soil disturbances to avoid future weed control
 - Inspect and wash equipment before moving to another site, allow time and funds to do so
 - Do not import soil or mulches that contain invasive species seed and properly dispose of invasive species plant fragments (see attached document, “PlantDisposal.pdf”).

Each invasive species requires different management techniques. Below are some details about common invasive species in Calais, including some areas where they have been identified.

- **Mow areas with wild chervil (a.k.a. cow parsley) before plants bolt and produce flowers.** This happens in late May or early June. We saw a lot of wild chervil on Lightening Ridge Road – this may be a good place to start mowing. According to The Nature Conservancy, infestations need to be mowed repeatedly (3-5 times per year) to control them. Alfred will have to weigh in on how easy it will be to mow chervil of this height with the equipment he has. So far, wild chervil

has also been observed on Lightning Ridge, the northern end of Tucker Road (near Lightning Ridge), northern end of George Road, the north end of Emslie Road, and along Rte. 14.

- **Do not mow phragmites, Japanese knotweed or purple loosestrife if they are not causing a safety concern.**
 1. Fragments of plant stems can easily sprout and create new plant populations.
 2. Many patches of Japanese knotweed were observed along Pekin Brook Road. It is also established along the northern section of George Road, the western end of Dugar Brook Road, several places in East Calais village, along Rte 14, and likely in other places.
 3. If the plants are causing a safety concern, cut with hand tools or line trimmers. Leave pieces at the infestation or bag them in heavy duty plastic – see [BMP #11](#) in this document for disposal techniques.
- **Cut buckthorn by the middle of July, at least one time during the growing season (mid-April to mid-October).** Use loppers, pruning shears, weed whackers, brush saws, or mower to cut the stem as close to the ground as possible. When stressed by cutting or mowing, buckthorn will resprout. Plan to repeat cutting for 3-5 years, noting that infestation can easily happen again from plants located outside of the ROW. Buckthorn has currently been observed at the corner of Batten and Balentine Road, Jack Hill Road, George Road near the cemetery, and in Adamant Village.
- **Cut honeysuckle by the middle of July, at least one time during the growing season (mid-May to October).** Honeysuckle is common in the southern half of Calais. Like buckthorn, cutting or mowing encourages resprouting and may need to be conducted for 3-5 years to eradicate the species.
- **Mowing barberry is not a recommended removal technique; however, mowing before it seeds in July will slow the spread.** Barberry is also very common and prevalent in Calais. It should be pulled or dug up, then treated with a direct flame or herbicide.
- **Mow areas with wild parsnip when first flowers are observed (June).** Wear eye and face protection, work on a cloudy day, and wash all clothes that come into contact with the sap. So far, I only know of wild parsnip observations on Lightning Ridge Road. The road crews may know of more. The plants bloom yellow flowers in June but will flower again after being cut. Like wild chervil, mow multiple times per year to prevent the plant from going to seed.
- **Beware of poison ivy.** It is technically not an invasive species but is certainly problematic for road crews, walkers and bicyclists. And, it spreads. Poison ivy has been found on Lightning Ridge Road near the Chickering Bog trailhead, West County Road near Curtis Pond, Balentine Road, Dugar Brook Road, and Rte 14.

Current Needs

1. Ensure that mowing equipment is cleaned between project sites, especially if moving from a known infested area.
2. Create a list of key invasive species and update regularly with new species as they are discovered.
3. Offer or attend trainings in both in identification and appropriate control methods of invasive species.
4. Increase public awareness of invasive plant species along roadsides. All town citizens can help monitor the distribution of invasive species along roadsides and on their own property.

Additionally, the public should also be aware of actions that the road crew is taking, or will take, to mitigate the spread of invasive plants.

5. Identify ways to revegetate disturbed areas quickly, especially exposed soil.
6. Ensure that seed mixes used on roadsides contain only native species.

Resources

- The VTrans State Highway System Roadside Terrestrial Invasive Plants Best Management Practices outlines practices that the state is now using. http://vtrans.vermont.gov/sites/aot/files/operations/documents/techservices/ms4/OpsMowingBMP_May2015_UPDATE.pdf. See in particular pages 10-11 on the Impacts of Mowing Invasive Plants, specifically the subsection on “Timing”. Mowing timing is a dance between damaging the invasive species and promoting the natives. I think the main goal should be to reduce the spread of invasive species through mowing – eradicating invasive species is a much more difficult task that requires repeated mowing, manual extraction, and often, herbicides. Remember, only certified pesticide applicators can apply pesticides.
- The [Best Management Practices for Roadside Invasive Plants](#) by the New Hampshire Department of Transportation offers clear BMPs divided by task (e.g. mowing, disposal of plants, placement of excavated material, etc.)
- This article outlines some of the parameters the town of Barnard has addressed when it comes to mowing twice a year: <https://www.thevermontstandard.com/2014/06/archive-to-stop-wild-chervil-mowing-time-is-everything/>

Appendix F:

Rural Road Resilient Right-of-Ways Project
Washington Electric Cooperative, Inc.
Vegetation Management Plan
July 2006

**WASHINGTON ELECTRIC
COOPERATIVE, INC.**

VEGETATION MANAGEMENT PLAN

July 2006

I. Purpose

The primary purpose of this document is to provide guidance on methods to be used to manage vegetation within Washington Electric Cooperative's (WEC) rights-of-way (ROW) in a safe, efficient and environmentally sound manner. In providing this guidance, it is understood that all line clearing, maintenance and other vegetation management work shall be performed in strict conformance with all applicable federal, state and local government laws and regulations, including OSHA Rule 29 CFR 1910.269, Electric Power Generation, Transmission and Distribution Regulations.

II. Background

WEC currently serves approximately 10,000 members in 41 rural Vermont towns in the counties of Washington, Orange, Caledonia and Orleans. Today, WEC's electric system consists of 1,237 miles of distribution line and 18 miles of local transmission line, plus an additional 7.4 miles of transmission line in Coventry. Of those line miles, approximately 800 miles of distribution line and 10.47 miles of local transmission line require tree trimming.

The terrain in WEC's service territory is described as hilly, often rugged and for the most part heavily forested with various deciduous and coniferous species. While distribution lines were constructed across fields in the early years of the Co-op in order to minimize time and the cost of construction, WEC has been routinely relocating those lines nearer to roadsides during major rehabilitation projects whenever possible. However, in many cases, it is likely that landowners will be reluctant to allow WEC to relocate their lines due to aesthetic and environmental impacts.

For the last several years, the WEC Board of Directors has authorized increased funding of the annual ROW budget in an effort to improve reliability. The amount of money budgeted and spent on tree trimming in each of the past four years is as follows:

Distribution System and Danger Tree Removal

Year	2003	2004	2005	2006
Budgeted	\$351,000*	\$418,000	\$436,000	\$467,620
Actual	\$347,496	\$410,993	\$435,751	\$467,539

* Original 2003 budget was \$378,000, but funding had to be curtailed due to budget constraints.

Transmission System

Year	2003	2004	2005	2006
Budgeted	\$13,000	\$13,400	\$13,500	\$14,000
Actual	\$11,522	\$8,121	\$10,267	\$13,966

The number of miles of line that WEC has cleared and maintained, and the number of danger trees removed, in each of the last three years is as follows:

2003

Distribution Miles Cleared:	54.26	Distribution Miles Maintained:	83.48
Transmission Miles Cleared:	1.20	Transmission Miles Maintained:	2.03
Danger Trees Removed:	700		

2004

Distribution Miles Cleared:	59.94	Distribution Miles Maintained:	85.62
Transmission Miles Cleared:	.78	Transmission Miles Maintained:	1.30
Danger Trees Removed:	900		

2005

Distribution Miles Cleared:	55.12	Distribution Miles Maintained:	84.80
Transmission Miles Cleared:	.98	Transmission Miles Maintained:	1.51
Danger Trees Removed:	1,000		

III. Policy

WEC shall strive to maintain its transmission and distribution ROW corridors in accordance with Policy 80, attached hereto as Appendix A, as well as in the following manner:

- a. In a safe, professional, efficient and environmentally sound manner, while being sensitive to the concerns of property owners and the general public.
- b. In a manner that will provide reliable electrical service in conformance with the Electrical Safety Code;
- c. In a manner that protects all electrical system infrastructure necessary to transmit power between substations;
- d. In a manner that uses the services and knowledge of employees and contract ROW crews who are professionally trained and inherently concerned with proper ROW techniques in conjunction with safe work practices.

IV. ROW Management Practices

Inspections:

As part of WEC's annual pole inspection and treatment program, and in accordance with RUS operational planning requirements, a visual inspection of ten percent (10%) of WEC's electrical T&D system shall be conducted on an annual basis. In addition to noting the physical condition of the poles and wires, ROW vegetation growth conditions shall be noted.

Species:

It is the practice of WEC to control the following tree species the full width of the ROW:

Ash	Cherry	Locust	Pine
Basswood	Fir	Maple	Poplar
Beech	Hemlock	Oak	Spruce
Birch	Larch		

This practice of vegetation management control allows for safe passage by WEC employees and contractors within the ROW for maintenance purposes, and removes potential fire and safety hazards to humans and animals in the area.

In general, it is desirable to use or enhance existing natural vegetation that does not interfere with the distribution of electricity. Herbs, most shrubs and low maturing trees should be left in the ROW to suppress the invasion of tall-growing trees. Following is a partial list of some of the low shrubs and plants that are native to WEC's service territory:

Alpine Azalea	Juniper	Rhododendron
American Yew	Laurel	Serviceberry
Dogwood	Leatherwood	Steeplebush
Dwarf Willow	Meadowsweet	Virginia Creeper
Eastern Redbud	Partridge Berry	Wintergreen
Fern	Pussy Willow	Witch Hazel
Gooseberry	Raspberry/Blackberry	

Notification:

In general, the Cooperative membership and affected property owners will be notified prior to any ROW clearing or reclearing maintenance work, except during emergency restoration or if hazardous conditions exist. Such notification shall include one or more of the following:

- First: by a general article in *Co-op Currents* listing all ROW maintenance projects scheduled for the year
- Second: by a mailed postcard to the member, or to the property owner if different from the member and readily known, who will be affected by the ROW maintenance work
- Third: by either an automated or personal telephone call to the member, or to the property owner if different from the member and readily known, informing them that ROW maintenance work is about to commence

General Practices

A. The Removal of Trees by Manual Means (Chainsaws)

This method of control is primarily used for softwood and hardwood trees which have the potential for interfering with line reliability. The principal method of dealing with this type of vegetation is to cut it at ground level (flat cutting) using chainsaws and brush saws. Whenever trees are removed, all stumps are to be cut as close to the ground as practical so as to discourage multi-stemmed sprout regrowth. Side trimming and danger tree removal work are to be performed in conjunction with flat cutting.

B. Trimming/Pruning

It may not always be necessary, economically feasible or aesthetically acceptable to flat cut all trees within the ROW. This may be in response to a property owner's request, when the tree is a compatible, non-interfering vegetation variety, or it may be that while the tree itself is in the required clearance zone, only its branches immediately threaten the electric line. In these cases, it may be appropriate to prune or trim the tree.

Limbs to be removed are those that are dead, decayed, insect damaged, or structurally weak, including limbs which could break at weak points and strike conductors when swinging down in an arc. Pruning guidelines are as follows:

1. Tree Under Conductor – Under Trimming

Under-trimming is cutting back large portions of the upper crown of a tree. Under-trimming is required when a tree is located directly beneath a line. The main leader or leaders are cut back to a suitable lateral. (The lateral should be at least one-third the diameter of the limb being removed.) Most cuts should be made with a saw; the pole pruner is used only to trim some of the smaller lateral branches.

For the sake of appearance and the health of the tree, it is best not to remove more than one-third of the crown when under-trimming.

2. Tree at Side of Conductor – Side Trimming

Side trimming consists of cutting back or removing the side branches that are threatening the conductors. Side trimming is required where trees are growing adjacent to utility lines.

Limbs shall be removed to the trunk or to a lateral that is growing parallel to or away from the conductors.

Where possible, or as designated by WEC, the contractor shall eliminate all branches growing within 10 feet beneath and toward the conductors.

3. Tree Over Conductors – Overhead Trimming

Overhead trimming consists of removing limbs beneath the tree crown to allow wires to pass below. Most of the natural shape of the tree is retained in this type of trimming, and the tree can continue much of its normal growth. Overhanging limbs should be removed as dictated by the species of the tree, location, and the general condition of the tree. When trimming, remove all dead branches above the wires, since this dead wood could easily break off and cause an interruption.

The contractor shall remove all weakly attached overhanging limbs that are capable of hitting the conductor if the limb were to split at the point of attachment.

Where possible, all branches within ten (10) feet above conductors shall be removed as dictated by the species of the tree, location, and the general condition of the tree.

Overhead trimming must be performed in accordance with current VOSHA/OSHA trimming regulations.

4. Combination Trimming

It is often necessary to use judgment in combining several types of arboricultural trimming techniques in order to achieve a good looking job and provide adequate clearances.

5. Improper Trimming Techniques

a. Pollarding: This is done by stubbing off major limbs until the tree assumes the desired shape. The result is not only unsightly, but a multitude of fast-growing suckers will sprout from the stubs, resulting in a line clearance problem more serious than before. The stubs are quite likely to fall victim to decay and disease.

b. Rounding Over: Rounding over or shearing is done by making small cuts so that the tree top is sheared in a uniform line. This creates an unhealthy condition and results in rapid regrowth of suckers directly toward the electrical conductors.

c. Side Trim Stubbing: This is done by stubbing off portions of limbs along the side of the tree to obtain clearance. This method of trimming, like pollarding and rounding over, creates many fast growing suckers that become a serious line clearance problem. These trimming methods should be avoided.

d. Topping: Removing top and upright branches should be avoided. Where necessary, use natural or directional pruning methods.

C. Proper Trimming Techniques

Various trimming shapes were previously described. The following provides the details for WEC standard line clearance and can be used for overhead trimming, side trimming, under trimming, and combinations. Pollarding, rounding over and side trim stubbing shall be avoided.

All trimming shall be performed to direct the growth of a tree away from the conductors. Branches shall be cut back toward the center of a tree to a suitable lateral branch, parent limb or the tree trunk. This is commonly called drop crotch, lateral or natural trimming (see Figure 1). When cutting back to a lateral branch, the diameter of the lateral branch must be at least one-third of the diameter of the branch being removed in order to sustain growth. Almost all cuts are made with a saw and very little pruner work is required. If a proper lateral branch is not available, the branch shall be cut back to the parent limb or tree trunk.

Trimming shall be done in such a manner as to protect tree health and condition.

All saw and pruner cuts shall be made back to the branch collar at an angle equal to but opposite of the branch bark ridge on the parent limb or trunk in order to leave no stubs.

No damage by loosening or stripping of the bark or splitting of branches shall be caused during trimming.

All severed limbs and branches (hangers) shall be removed from trees after trimming.

C. Removal of Trees by Mechanical Means (Brontosaurus)

WEC shall utilize the Brontosaurus wherever possible to clear ROW. The Brontosaurus is an excavator on steel tracks that utilizes a hydraulically driven shearing mechanism that pulverizes the tree and root system. Having utilized this machine over the past several years, WEC's field observations indicate that it effectively reduces the rate of resprout in many species. The Brontosaurus effectively removes trees, shrubs and brush within a ROW, however, this method still requires contract ROW crews to revisit the ROW to do side trimming and danger tree removals which adds to the cost of this method of clearing. Use of the Brontosaurus is limited due to its inability to safely work in narrow ROWs, and near roadsides and members' homes.

D. Danger Tree Removal

A danger tree is any tree, due to its location, species and condition, which is tall enough to pose a threat to WEC's electric lines. Many of the trees at the edge of the ROW have crowns that are heavily grown in towards the line, and when they fall, are likely to make contact with the electrical conductors. Danger tree removal is most effective towards reducing outages associated with high wind storms, prolonged rain incidents and routine outages due to "rotten trees". This, in effect, targets short-term and long-term reliability while also reducing the duration of outages due to excessive damage. For every danger tree

that is targeted and removed, a future outage is avoided. (See Figure 2 for minimum clearances for danger tree removal.)

Since 2002, WEC has been aggressively targeting and removing danger trees in an effort to improve reliability. In 2005, approximately 1,000 danger trees were removed at a cost of \$96,333.

E. “Hot Spot” Clearing

Selective clearing of ROW line sections outside the normal reclearing schedule helps to improve reliability to those members located at the end of a single-phase line. Identification of these problem line sections normally comes from the members who are affected by poor reliability. Devoting resources to “hot spot” line sections improves reliability and/or power quality to specific problem areas, improves line crew access and outage restoration time, and improves overall reliability of a particular line. Hot spot trimming is the least efficient method of ROW clearing, but is essential to good member relations.

F. ROW Clearing During Emergency Restoration and When Hazardous Conditions Exist

In the best interests of employee and public safety, any tree making contact with WEC’s electric system conductors shall be immediately removed to mitigate the hazard. It is not reasonable to provide advance notification to property owners under these conditions.

In the event of a power outage caused by trees within or outside of WEC’s ROW, the trees shall be cut to the extent that is necessary to safely restore power. Advance notification to property owners is not possible under these conditions.

Under both of the above circumstances, a WEC employee shall coordinate with WEC’s ROW Management Coordinator to arrange for any necessary cleanup.

G. Clearing Within Municipal Street or Highway ROW

In situations where the Cooperative does not hold a valid ROW easement along a public street or highway, whether for a new service or for relocation of an existing line, no tree within that street or highway shall be cut in the construction, relocation, maintenance or repair of electric power lines without the written consent of the adjoining property owner(s) or occupant, unless the transportation board or selectmen of the town in which the tree is situated, after due notice to the parties and upon provision for a hearing, shall decide that such cutting is necessary (Title 30 VSA, § 2506), or unless such decision is made by the appointed municipal tree warden for the town (Title 24 VSA, § 67).

H. Clearing Within Wetlands

Wetlands are considered to be sensitive areas for vegetation management practices. These may include swamps, marshes and bogs, and other areas identified in the National Wetlands survey, and will be identified by WEC's representative prior to ROW management activities. Handcutting will be used near wetland areas where necessary to control undesirable vegetation. If extensive wetlands are encountered, WEC may elect to carry out the work in winter because of improved access. Vegetation in wetland areas will be managed according to the Vermont Department of Environmental Conservation's policy on wetlands.

I. Clearing Within Stream Corridors

Stream buffers are areas adjacent to streams requiring special vegetation management, and these areas shall generally be maintained to a minimum width of 75 feet on each side of the stream. Where distribution lines cross streams, standing woody vegetation, shrubs and low mature height trees will be allowed to grow within the ROW if consistent with the terrain and existing land use. This cover will protect fish habitat, service wildlife travel lanes, and control soil erosion.

Where the electric line spans a ravine, streamside vegetation may be allowed to grow taller as specified by WEC's representative. Where an undesirable woody species becomes taller than 12 feet, it will be removed to ensure protection of line conductors. In general, provision of the Vermont Agency of Environmental Conservation policy on river and stream bank management shall be followed.

J. Clearing Where Electric Lines Cross Roads

Electric lines that cross roads will be treated similarly to streams. Low woody shrubs, such as Sweet Gale and other compatible plant species identified on page 4, which have a low height at maturity, will be permitted and encouraged at road crossings in order to provide screening of the electric lines.

K. Clearing Within Wildlife Travel Areas

Wildlife travel areas shall be maintained to promote the movement of white-tail deer and other wildlife across the corridor of extended cross-country distribution and transmission lines. In general, WEC's objectives will be to favor vegetation that can support snow and thereby keep the snow depth on the ground shallow enough for deer to move about and to conceal wildlife as it crosses through wildlife travel lanes. Treatment will be similar to high visibility ROW areas, and preference may be given where practical to preserving a conifer canopy. WEC shall use the Vermont Agency of Natural Resources policy on wildlife management as a guide to maintaining wildlife travel lanes.

L. Stump Height

ROW clearing will be limited during winter months. Deep snow during winter months often results in unsightly ROWs because of excessive stump height, which oftentimes need to be recut in the spring, which adds to the cost. Excessive stump height

also encourages the regrowth of saplings. At other times of the year whenever trees are removed, all stumps will be cut as close to the ground as practical so as to discourage multi-stemmed regrowth of the original species.

M. Cherry Tree Disposal Precaution

Wilted leaves from cherry trees are poisonous to livestock. Therefore, in areas frequented by livestock, any cherry cuttings shall be disposed of immediately by removing any cuttings from the enclosed livestock grazing area.

V. Trees and Debris Removal

Disposal techniques for each ROW section will be determined by WEC's representative, taking into account federal, state and local regulations, the practicality of certain disposal methods, the potential for wood utilization, and the wishes of the property owner. Whenever roadside trimming is performed, all log length material shall be picked up by a log truck as soon as possible and disposed of in accordance with the property owner's request. All other brush and wood material shall be removed from the ditch and municipal ROW and appropriately chipped or stacked at the tree line. If the ROW maintenance area is located more than fifty (50) feet from a public road or highway, then the log or tree length wood shall be moved to the tree line. All brush shall be windrowed at the edge of the ROW in order to provide unobstructed access for maintenance purposes. All other wood material shall be cut in four foot lengths and stacked at the tree line (see Figure 3). There will be no brush left in stream beds, across fence lines, stone walls, paths or roadways.

VI. Prioritization of ROW Clearing

WEC's Vegetation Management Plan promotes the prioritization of ROW clearing as it statistically relates to reliability of service. In general, the focus of the ROW management program shall be as follows:

1. Transmission Lines

- Annually patrol 18 miles of local transmission line as well as 7.4 miles of 46 kV transmission line in Coventry for purposes of identifying potential equipment problems and marking danger trees for removal.
- Flatcut WEC's 10.47 miles of local transmission line as needed to ensure maximum reliability to WEC's substations.
- Flatcut WEC's 7.4 miles of Coventry transmission line as needed based on annual patrol to ensure 100% availability.

2. 3 Phase Lines

Three-phase circuits are critical links from substations to all members. Damage to one conductor of a three-phase line require the entire three conductors to be de-energized when repairs are made. WEC's three-phase lines are prone to greater damage for any given tree contact due to construction type and phase-to-phase voltage levels. The reliability of three-phase circuits, like substations, have a direct impact on the reliability of all single-phase lines. Improving the reliability of WEC's three-phase circuits is essential to achieving state mandated SAIFI and CAIDI indices.

3. Two-Phase Lines

Two-phase lines shall be treated similarly to three-phase lines as they serve a greater number of members than do single-phase lines.

4. Single-Phase Lines

Maintain single-phase line ROWs based on member density.

5. Worst-Performing Circuits

At the beginning of each year, WEC shall analyze circuit performance for the previous calendar year and identify the five worst performing circuits based on annual reliability. The reliability of the worst-performing circuits shall be further analyzed to determine if there are conditions that can be changed to improve the reliability of the circuits, including danger tree removals, flat cutting, line relocation and reconstruction if needed. In all cases, the circuit analysis shall take into consideration year-to-year fluctuations and longer-term trends to identify root causes of the reliability problems.

VII. CLEARANCE ZONE REQUIREMENTS

In general, single phase primary and/or secondary conductors shall be cleared of trees within 15 feet of each side of the pole line center. Three phase primary conductors shall be cleared 25 feet each side of the pole line center. (See Figure 4 for clearance zone dimension measurements.)

VIII. ROW Contractor Training and Requirements

ROW contractors hired by WEC are required to become familiar with the procedures and requirements of this plan and to utilize safe and proper ROW clearing techniques that are in compliance with state and federal laws and regulations. Each ROW crew must have two (2) qualified line clearance tree trimmers. Minimum qualifications include the following:

- Annual CPR and first aid training
- Annual electrical hazard awareness training
- Ability to perform an aerial rescue from a minimum height of 35 feet in four minutes or less. Aerial rescue must be practiced at least once a year.

- Knowledge of electric line voltages and minimum approach distances
- Annual inspection and dielectric testing of bucket trucks to be used for tree trimming
- *Need to add all references to OSHA 1910.269 material*

This plan has been prepared and adopted in order to provide a broad assessment of WEC's ROW vegetation management goals and policy objectives, and the operational methods and practices that shall be used in attaining those goals and objectives. The procedures outlined herein are designed to provide general guidelines for the safe operation and maintenance of electrical distribution and transmission lines, while minimizing visual and other environmental impacts within the communities served by WEC.

Appendix G:

Rural Road Resilient Right-of-Ways Project
Best Management Practices for Roadside Invasive Plants
The Nature Conservancy

Best Management Practices for Roadside Invasive Plants

SOIL DISTURBANCE & STABILIZATION	MOVEMENT & MAINTENANCE OF EQUIPMENT
<ol style="list-style-type: none"> 1. Minimize soil disturbance. Monitor recent work sites for the emergence of invasive plants for a minimum of 2 years after project completion. 2. Stabilize disturbed soil as soon as possible. <ul style="list-style-type: none"> • Use clean mulch, hay, rip-rap, or gravel • Seed with native species where possible 3. Avoid using fill from invaded sites. When in doubt about the quality of fill, monitor work sites for the emergence of invasive plants for a minimum of 2 years. 	<ol style="list-style-type: none"> 1. When equipment needs to be moved, plan work flow so that equipment is moved from unaffected sites to affected sites. This is especially important during ditch cleaning and shoulder scraping. 2. Staging areas should be free of invasive plants 3. All equipment and tools should be cleaned of visible dirt and plant material before leaving affected project sites. Cleaning methods can include portable wash stations, high pressure air, brush, broom, or other hand tools. 4. If equipment will be used in infested areas, remove above-ground invasive plant materials such as purple loosestrife, phragmites, and Japanese knotweed prior to the start of work.
MOWING	HANDLING EXCAVATED MATERIAL & INVASIVE PLANT MATERIAL
<ol style="list-style-type: none"> 1. Avoid mowing areas infested with purple loosestrife, phragmites, and Japanese knotweed, as these can sprout from stem and root fragments. Stake roadside populations with “Do Not Mow”. 2. If mowing is necessary, mow these areas BEFORE seed maturation (approximately August 1st). 3. Clean mowing equipment daily, and prior to transport. This is particularly important if mowing is after seed maturation (August 1st) 	<ol style="list-style-type: none"> 1. Destroy removed plant material. Methods include: <ul style="list-style-type: none"> • Drying/Liquefying: <i>place on impervious surface and cover</i> • Brush piles: <i>not for plants with fruit or seed</i> • Burying: <i>minimum of 3 feet below grade</i> • Burning: <i>have a designated burn pile for invasive plants</i> • Herbicide: requires a <i>licensed applicator (VT Department of Agriculture)</i> 2. Cover invasive plant material when transporting. 3. Excavated materials taken from infested areas should only be used onsite, unless all plant material has been destroyed. Only use within exact limits of infestation. 4. Stockpile unused excavated materials on impervious surface, or bury a minimum of 3 feet below grade (5 feet for Japanese knotweed). 5. Excavation should be avoided in areas containing purple loosestrife, phragmites, and Japanese knotweed. 6. Cover soil from infested areas when transporting.

*Adapted from New Hampshire Department of Transportation's Best Management Practices for Roadside Invasive Plants
<http://www.nh.gov/dot/org/projectdevelopment/environment/units/technicalservices/documents/BMPsforRoadsideInvasivePlants.pdf>*

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For more information, go to www.vtinvasives.org.