"The process that is used in this evaluation is brilliant. The parcel is first described in a regional and historical context. Next the site is evaluated by using a cascading set of analyses that include water and drainage, geology, soils, topography, vegetation cover, exotic invasive plant issues, and access and circulation on the site. The astute arrangement of topics helps the reader to understand the importance of the physical and biological linkages between each resource. This leads us to having not only a visual picture of the Charity Farm Lot but a deep understanding of what it was, what it is, and ultimately what it could be."

William A. Lattrell
Restoration Ecologist
Professional Wetland Scientist

FUTURE LANDS Designs
resilient landscape planning & design
John Lepore
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Charity Farm Lot

Recreation & Conservation Plan

Bernardston, MA

March 2016

Charity Farm Lot
Recreation & Conservation Plan

March 2016

Wildcat Mountain from the Charity Farm Lots existing lookout.

For the Bernardston Board of Selectmen

By

John Lepore, Ecological Planner & Designer
FUTURE LANDS DESIGNS

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"Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul."

John Muir

Additional copies are available from www.lulu.com/CharityFarmLot

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ACKNOWLEDGMENTS

I would like to thank a number of individuals who contributed myriad hours of advice, guidance and information. Their help kept my vision alive.

Many thanks to the community leaders who attended the stakeholder meetings and provided invaluable ideas and motivation, the Massachusetts Department of Recreations and Conservation, the Massachusetts Department of Fish and Wildlife, Paul Luther, Hugh Campbell and the Bernardston Board of Selectmen.

Bill Montigilio was a great help and my hiking companion on many occasions. His perspective was invaluable in developing this plan. Likewise, Chris Wysk provided insights into the interests and needs of riders who frequent the Charity Farm Lot. Al Sciack also made himself available on many occasions to help and advise.

I am most grateful to Christine Johnston as editor, mentor, fellow teacher and friend and Bill Lattrell, ecologist, friend and mentor whose insights always made me consider a different perspective.

Most of all, I have the deepest gratitude to my wife and lifelong partner, Carolyn Flower-Lepore, who has spent countless hours offering support and guidance in the most unique ways.

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Foreword

"There is a way that nature speaks, that land speaks. Most of the time we are simply not patient enough, quiet enough, to pay attention to the story"

Linda Hogan
Native American
poet, storyteller, academic, playwright, novelist, environmentalist and writer

John Lepore, in his Charity Farm Lot Recreation and Conservation Plan, has used the philosophy stated above by Linda Hogan in a remarkable process that takes the reader into the heart of this 80 acre parcel and helps develop an understanding of one of the crown jewels of the Town of Bernardston, Massachusetts. This thorough and entertaining evaluation of a historical New England landscape uses tools often reserved for large scale evaluations in combination with simple, exquisite graphics, and a strong component of field work in reading the landscape that help to tell the story of this quiet piece of land. John commits his educational, ecological, and planning skills to help anyone who is interested in becoming intimately familiar with the Charity Farm Lot and learn not only what we can offer the parcel in terms of assistance but what we can learn from it by understanding how natural history impacts the human experience in a wild area.

The process that is used in this evaluation is brilliant. The parcel is first described in a regional and historical context. Next the site is evaluated by using a cascading set of analyses that include water and drainage, geology, soils, topography, vegetation cover, exotic invasive plant issues, and access and circulation on the site. The astute arrangement of topics helps the reader to understand the importance of the physical and biological linkages between each resource. This leads us to having not only a visual picture of the Charity Farm Lot but a deep understanding of what it was, what it is, and ultimately what it could be.

John took the time to get the community involved in the creation of the Charity Farm Conservation and Recreation Plan. Hikes on the site took place, meetings were held to develop goals for the plan, and feedback and ideas were shared and put into action in this document. Through this process the Charity Farm Lot Recreation and Conservation Plan takes on the character of a community project rather than just the hard work of one individual. Community involvement is an integral part of this process and it shows in the work that is presented here.

As the result of his analysis of this site John offers three scenarios for management of this site. I'll let the reader discover these after digesting all of the very interesting information presented in this plan. I will say this about the scenarios. They are rendered by careful thought, a true understanding of the natural and human history of the site, and with a vision that will help it to meet its stated goals.

Finally, John writes in one part of the report that at the end of one meeting an astute participant stood up and asked in response to the actual name of the site the Charity Farm Lot, "Where's the charity in all of this?" From my perspective this will be determined by all who have engaged in this process and who continue to participate in making the chosen scenario a reality.... that will be up to and determined by all who have charted a map in this process and who may help to blaze the trail for the chosen scenario in both the near and distant future.

William A. Lattrell
Restoration Ecologist
Professional Wetland Scientist

A wolf or pasture tree, where livestock found shade on hot summer days.

Executive Summary

The charge of Charity Farm Lot Recreation and Conservation Plan (CFL&RC) is to probe avenues to revitalize this site's charitable intention and replenish its recreational value to the community. The assignment began in 2013 with a site visit with one of the Bernardston Selectmen and the team that prepared the 2012 Forest Management Plan, thus opening the door for redirecting the Charity Farm Lot (CFL) to a healthier future. The CFL&RC incorporated a comprehensive process to achieve this multifaceted project.

Two community workshops held in 2013 and 2014 precipitated invaluable results. Attendees shared experiences, insights and opinions. Several hikes at the Charity Farm Lot occurred, the first of which revealed inaccuracies in the Town's tax parcel maps. In the fall of 2013, the Bernardston Board of Selectmen ordered a survey to clarify and mark boundaries, eliminating questionable blazes around the site.

These meetings also revealed a number of concerns. Residents want a public place to roam the woods for hiking and horseback riding, to enjoy vistas, and to relax in a natural setting, but the absence of signs starting at the entrance makes use of the CFL nearly impossible for the newcomer. Many residents have no clear understanding of where the CFL is located. Upon arrival, an eroded road offers some direction, but the lack of signs demands use of a map and compass.

Across the landscape, the CFL reveals a rich agricultural history created by its fascinating geologic fingerprint through time. Fragments of barbed wire dating from the late 1800's embrace the perimeter. Giant wolf or pasture trees, once providing shade for livestock on blistering summer days, tower over much younger, broad leaf offspring below. Hand-dug wells, runs of stone walls and springs with rocks positioned around their trickling intermittent flow are further evidence of a past history.

Other efforts at the site include Christmas tree farming by the Boy Scouts and numerous logging operations. During the past 180 years, the CFL supplied numerous ecosystem services by providing natural resources, such as food, timber, and clean water. Today, we find a landscape that is exhausted and in desperate need of our attention to restore these invaluable functions.

The topography - or lay of the land - is steep for more than one half of the site's 90-acres. The soil acts as a sieve to rainfall and other water sources. As a result, it is highly erodible. Water reserves are limited to scattered pockets in the cols between ridges and several low-lying areas. These multi-functional areas create water reserves for wildlife breeding, nesting and consumption. The site's slope makes it vulnerable to erosion and a long list of outcomes that threaten the site's future. Many trail sections and the fire road are badly eroded; in fact, they are impassible. As a result, hikers create their own trails and increase ecological damage to the site. This issue must be addressed.

Around the edges, encroachment of highly successful exotic invasive plants, especially in wet areas, add to the site's loss of ecosystem services. Exotic invasive plants (EIPs) can readily out-compete native vegetation which serve as food for wildlife. In contrast, EIPs are not delectable to native wildlife, and the EIPs displacement of native species creates a 'food desert.' They threaten water quality, too. Rigorous and aggressive management is required.

Following extensive site analyses of geology/soil, water/drainage, slope, vegetation, wildlife, access/circulation and legal issues, I have developed three scenarios for the site's management. Each has a cost. Doing nothing in light of so many uncertainties is initially 'free,' but the charitable legacy will be lost through tenacious overgrowth from mismanagement. The second plan offers harvestable timbers in 10 to 20 years, yet with native lumber prices matching those of the 1970's, the profits may be offset by the harvest costs. The preferred option outlines a multifaceted approach that includes forestry, conservation, restoration and recreation. The CFL could become a destination not only for Bernardston residents, but could also add to the Town's interest in economic development through eco-tourism. The CFL could be linked to other trails throughout the woodlands, making it inviting to more of the 20,000 travelers presently bypassing Bernardston on Interstate 91.

The Charity Farm Lot Recreation and Conservation Plan details the rationale behind these significant discoveries. Many of the details can be explored in the Appendix. Meeting these goals will require cross-generational involvement and commitment. By being prudent now, we can re-ignite the beauty and ecosystem services of the CFL for generations to come.

John Lepore, Principal
Future Lands Designs
February 15, 2016

Introduction and Goals

Introduction

Stepping onto one of its steep, mountainous trails for the first time lifts one's mood and connects the spirit to Nature.
"I never knew there was a place like this in Bernardston," echoes repeatedly from first timers to the Charity Farm Lot (CFL). Its intriguing forests, shaded, meandering trails, all show signs of an intriguing history deeply routed in Bernardston's past. To the sadness of a handful of old, wise residents, the indifference toward the site since the 1980's causes concern. A few still see bountiful opportunities for family hikes, hunting, and riding.
CFL has been tarnished by time and oversight. This management plan has a clear purpose - to rekindle the enthusiasm that will restore and enrich this jewel once again.

Recognizing the need to restore the CFL took the vision of the Bernardston Board of Selectmen and a handful of committed residents. Two community meetings and a hike sparked conversations that evoked pertinent information and experiences while prioritizing interests. These participants resolved to make the site more inviting and appealing by creating an off-road parking area, moving the historic sign to the refurbished entrance and restoring native attributes.

The process of creating the Charity Farm Lot Management Plan incorporated extensive on-site research to locate historic artifacts, mapping miles of trails, identifying boundaries, and clarifying the 'six forest stands' described, but unmapped, in the 2012 "Forest Stewardship Plan." Many interviews with local residents and support from Town Officials made this plan possible.

Chapter 1, 'Context,' presents a bird's eye view from high, middle and low elevations to identify how the CFL fits in geographically, hydrologically and biologically both regionally and locally.

Attempting to re-create a historic site record (Chapter 2, 'History') incorporates disparate town records and a handful of documents typed by anonymous town historians plus a multitude of site visits to locate hand dug wells, stone walls and 'wolf trees,' singleton oaks or maples chosen by a farmer to shade his livestock when all surrounding trees were cleared for pasture. Unfortunately, except for a map from 1955 and a 1958 arial photograph, there are no graphic site records. This document attempts to clarify and consolidate all of this data.

Engaging a wide range of stakeholders is the focus of Chapter 3. The stakeholders include everyone with a vested interest in the CFL. The silent stakeholders, all of the plants and animals that find a home at CFL, must also be included in the planning process as they are essential to the success of our venture.

Understanding the landscape at an intimate level is analogous to constructing a model of an onion. By 'layering' geologic features, soil qualities, water movement, land-cover, slope, and trails and roads a meaningful summary analysis can be achieved (Chapter 4).
In Chapter 5, we begin to make the CFL a healthy destination where people from Bernardston will want to spend time. Chapter 5, 'Conceptual Designs' connect the

"New England Hillside,' by Edward A Page, 1914 - what Charity Farm Lot might have looked when it was pasture.

stakeholders' wishes and needs to the site analyses to create a pragmatic vision to guide Chapter 6, 'Essential Steps.'

Finally, the 'Appendix' incorporate best management practices (BMPs) described throughout the document and offer more detailed information.

It took almost three years to complete this plan, but in reality, this is only a beginning. The site is at risk from excessive trail erosion, declining forests from lack of management and encroaching exotic invasive plants, which threaten the site's incredible wildlife ecology.

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Goals

Fundamentally, a strong set of goals must be developed that combine the interests of the stakeholders with the landscape's capabilities. While sharing a vision that pushes expectations, goals need to be action-oriented and achievable.

At the end of one of the community meetings, a member stood and asked, "Where's the charity in all this?" Everyone agreed we must keep Job Goodale's charitable vision alive. Since the Charity Farm Lot Trust was established, it has provided heating wood, funding for fuel assistance and other aid.

The discussion of goals continued until we arrive at three clear and achievable goals:

- Restore and regenerate the site's natural features for ongoing community use and charitable needs;
- Embrace community recreational use with well-marked trails, engaging destinations and 'view-scapes;' and
- Illuminate the site for leveraging grants.

This is not the first public document created to bring the Charity Farm Lot into focus This plan embodies the dedicated work of the Town's forefathers and fore-mothers and combines it with today's best management practices. It will take the efforts of many to keep the Charity Farm Lot healthy for future generations.

Before clearing the entrance and parking area (left) and after (right). Volunteer efforts made this possible. The Bernardston Highway Department followed up with a truckload of wood chips shortly thereafter and moved a sign to nearer the entrance.

Context

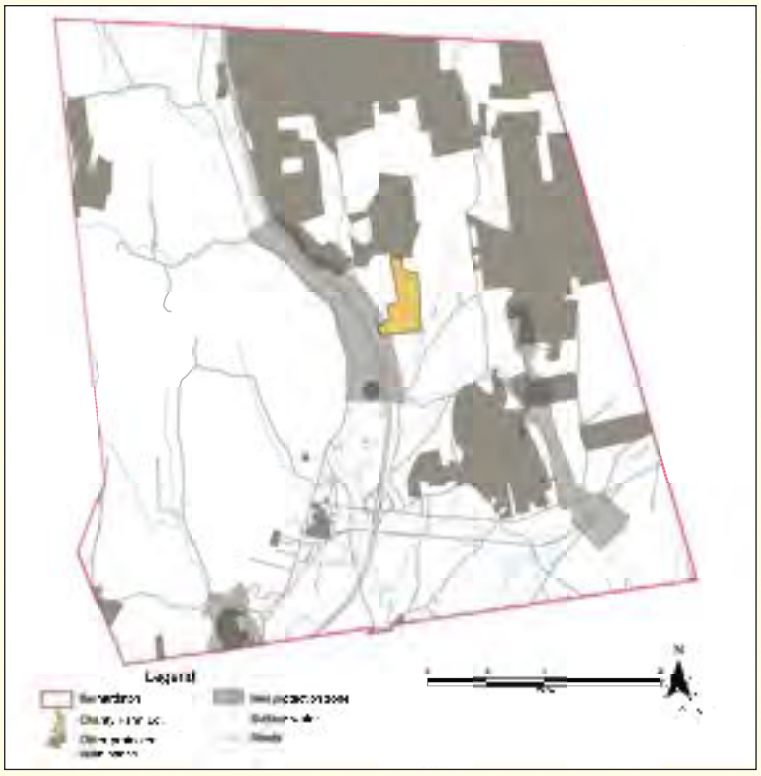
REGIONAL CONTEXT

The Charity Farm Lot (CFL) sits in the middle of Bernardston's 23 square mile border on the hilly terrain of the Green Mountain chain just south of the Vermont state line in northern Franklin County, MA. It faces the Falls River separated by Interstate 91 on the west with the Connecticut River just a few miles east in Northfield. Numerous protected open spaces of vast forestlands adorn the east and north overlooking a river plain to the west.

On a broad scale, CFL's forestland contributes clean water to the Connecticut Watershed. More specifically, water from the 84.64-acre site drains into the Falls River Watershed, a more local watershed subdivision. A well-head protection zone was delineated by Bernardston officials to protect all water resources. A portion of this zone extends into CFL. The Falls River Watershed drains about 30 square miles originating in Vermont and Leyden into Greenfield. Falls River runs parallel to Interstate 91.

The CFL's plays an integral role in the area's protected open space. Protected open space includes a wide range of land uses such as golf courses, farms in APR (Agricultural Protected Restriction), chapter 61/A lands, which are temporary protections, CRs (conservation restrictions), graveyards, town-owned playing fields, such as Pratt Field, and public schools. Except to the south, the protected land in all directions is forestland, either, privately owned or under management by the Massachusetts Department of Conservation and Recreation(MDCR). To the north, vast, protected open space includes the 1200-acre Hull Forest Products parcel with 465-acres in Vernon and the 1300-acre Satin's Kingdom parcel, part of the MDCR management area.

Regional Context Map

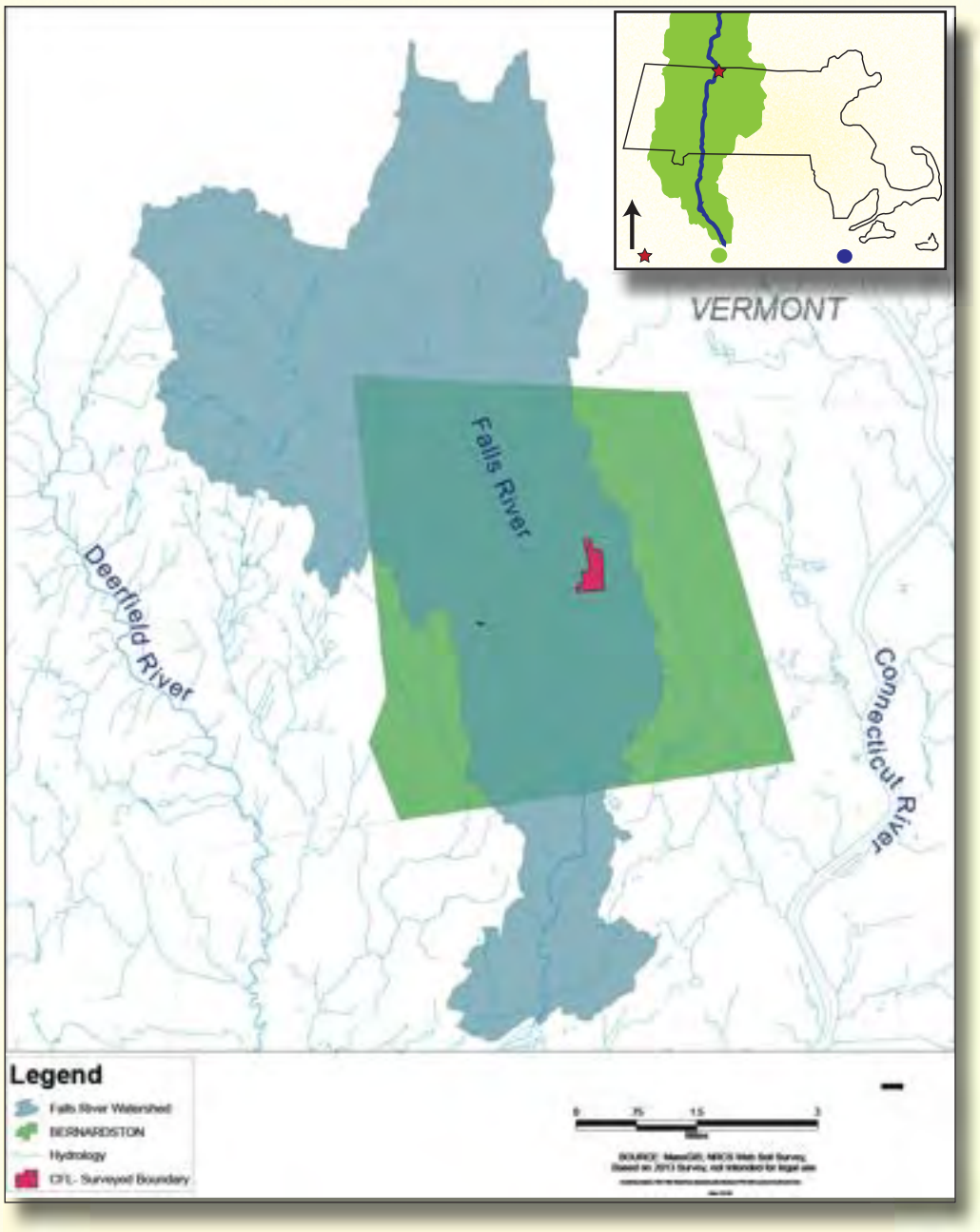


To the north of CFL large expanses of BioMap2 Critical Natural Landscape have been identified. This designation establishes habitats where rare mammals, reptiles, birds, fish, invertebrates and plant species find a home. These species play important roles in supporting ecosystem services. Ecosystem services are “the benefits people obtain from ecosystems” and include “provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling (Millennium Ecosystem Assessment, 2005).

CFL has a buffering capacity to BioMaps2’s Critical Natural Landscape. Although rare and endangered species have not been identified at this site, the numerous pockets of wetlands constitute supporting havens for plants and animals faced with diminishing populations. CFL’s location connects regionally to vital natural habitat, helps protect essential water resources and buffers the impacts of development. Other benefits from CFL include:

- A protective wildlife corridor for breeding, nesting and feeding;
- An aquifer recharge of clean water that feeds the Town’s primary well;
- ‘Sound-scape’ cushioning of the noise generated by a steady flow of over 20,000 cars/day on Interstate 91;
- Frequent destination for area hikers, horseback riders, hunters, ATV riders, and a rescue training site for the fire department; and
- Mountain-view aesthetics which add to the area’s New England hill town charm.

Falls River Watershed Map



Althought only minutes away by car or bicycle travel from Bernardston Center Village to CFL is a little over 2 miles by road, making it impractical to reach by foot.The site remains a well-kept secret by its neighbors and the few old-timers who have supported its regional presence. Our goal is to establish this little bit of paradise as a known destination to all.

Context, continued

Local Context

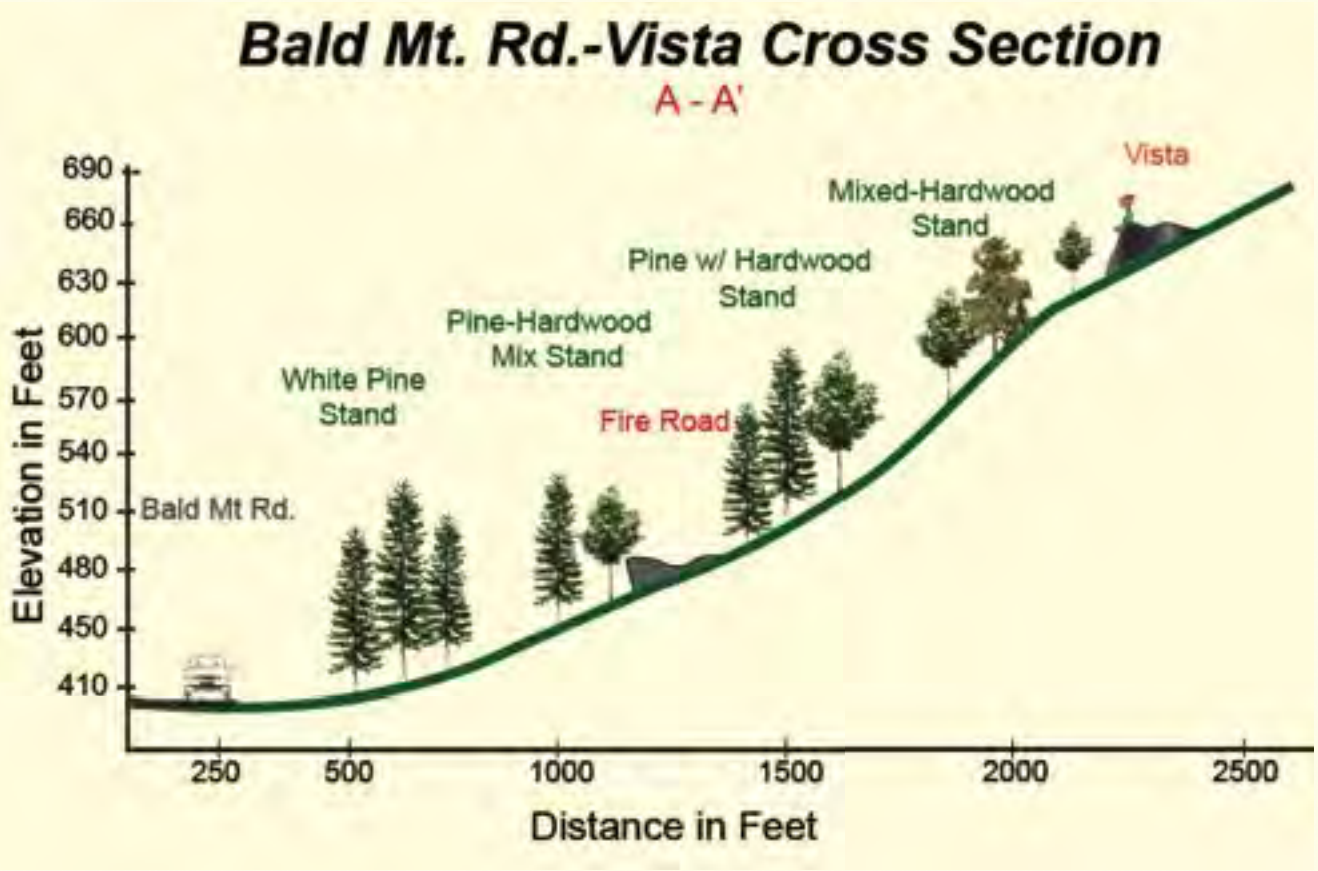
From a distance, the Charity Farm Lot's near 1000 foot elevation resembles a younger sibling to the larger Bald Mountain (1275' elev.) to the north. It is very easy to miss the wooded entrance to CFL on Bald Mountain Road. Neighboring homes (15) pepper the west side.

Prior to 2013, two map versions existed: a 1955 site map created by an ambitious resident and an inaccurate map that added about 20-acres in the shape of an inverted triangle on the east side. The second rendition created tension with a neighbor (Chapter 4 'Site Analysis: Legal'). Fortunately, the land was sold to a new CFL abutter who took the initiative to have their parcel professionally surveyed to identify the correct east boundary. The Bernardston Selectmen followed suit and had CFL surveyed and pinned in 2013, putting the issue to rest. Today, the parcel's boundaries are clearly marked and recorded, but old, misleading maps still circulate.

A sign describing the site's pine research project during the 1920's and created by the Boy Scouts in the 1970's marks the entrance to an obscured, five-car parking area. The site's deeply eroded logging road climbs quickly to the east leveling for a short distance before splitting in two directions. Occasionally, four wheelers attempt to navigate the old logging road, but portions of it are impassible (Chapter 4 'Site Analysis: Access & Circulation'). In less than a half mile, the trail ascends 28 stories over rocky, rough, 100-yard spans. One vista, off an unblazed trail, affords a beautiful view of Fox Hill and Wildcat Mountain with calming farmlands at its feet.

The 84.64-acre site is used by a tight-knit group of equestrians, a few ambitious neighbors, and a diminishing population of deer hunters. A large portion of the user-created trails are badly eroded with slopes over 15%, too dangerous for travel by horseback, especially during wet conditions. In many cases, trails have become intermittent stream beds during rain events (Chapter 4 'Site Analysis: Water & Drainage').

In the past, this property was farmed and logged. It was also the site's Christmas tree farm developed by the Boy Scouts. Evidence of farming can be found in flatter areas bordered by collapsed stone walls, barbed wire locked in tree trunks and several hand-dug wells.



History of Charity Farm Lot

Generous Job Goodale gifted the Charity Farm in 1832 to the Town as a source of income to "assist the industrious and deserving poor." During that time period, clear cutting for sheep and cattle farming dominated landscape practices (Cronan, 2003). Healthy forestlands seemed secondary to industrialized economic growth. Today we know that clear cutting, especially on steep slopes, has devastating consequences on water quality and future agricultural productivity. Although believed to be the best land management strategy at the time, this practice forever transformed a majestic, archaic forest structure into what we have today (Wessels, 1997).

Bernardston's north-south running Falls River flood plain produced largely corn, rye and apples (Kellogg, 1902). To the east are Charity Farm's two pastures, one on the flatter south/ southwest side and the other up steep slopes on the north end (Town Records, 1911 and personally identified artifacts, 2015). These fields were rented with the income funneled to the Charity Farm Trust, thus inaugurating Mr. Goodale's wishes.

Today, the watchful explorer can find scattered evidence of these two overgrown, wooded pastures. Pasture trees or 'wolf trees' that once provided livestock shade still stand, creating invaluable habitat for a full spectrum of wildlife (Wessels, 2010). Patchy remnants of barbed wire encircle the site's boundaries. Remnant stone walls encircle the lower overgrown pasture. A number of stones have been removed by neighbors for personal use. One neighbor admitted removing his 'fair share' many years ago (Anonymous, Personal Interview, 2014).

Two crude, but functional wells persist in the larger, lower pasture. Two springs surround carefully arranged rocks to accommodate easy use. Their purpose was to provide water for thirsty livestock en route up the steep slopes to the northern pasture.

The CFL was an important site for farming during a key time in Bernardston's farming history.
Using the existing historic markers (wells, spring locations, remaining stone walls and pasture trees) and the slope

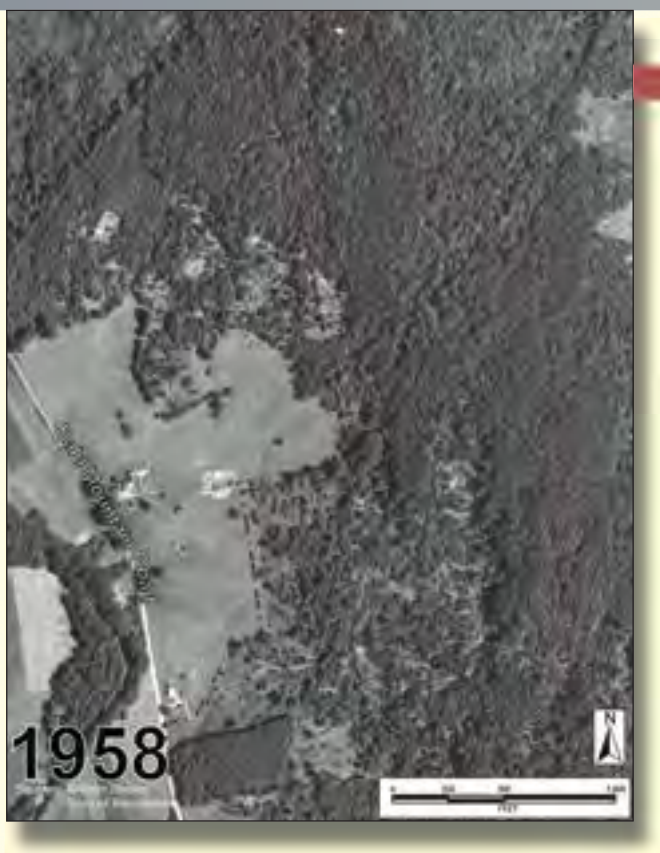
Barbed wire inbedded in border wolf tree.

A stone wall on west side of CFL.

A hand dug well along south border.

A worn cow path along south border.

Air Photographic history



History of Charity Farm Lot, continued

analysis (Chapter 4 Site Analysis: Slope), I have created a historic representation of where CFL pastures were located during the 1800-1900's. The best pastures were established on the lower slopes (0 to 8%), which include most of the southern portion and a small patch to the north. The pasture or wolf trees were left when the fields were cleared. Typically, these trees had much lower branches and large crowns that provided shade and protection for animals while grazing as well as cool areas to stop on the long trek to the north pasture.

There is no confirmed documentation supporting the size of the lower pasture. An anonymous source states that it involved 11 acres of land. Based on Luis Stack's map, it seems that this became the local belief. His work makes the pasture much smaller than the extent of the stone walls, wells and pasture trees seen today. Could he have been delineating the Christmas tree pasture? The actual extent of the historic pasture is closer to a 30 acre plot; farmers most likely used the eastern, plucked rock-falls below the ridges as a barrier (Stark, 1955).

Records showing locations for logging, numbers and types of trees removed, have long since vanished. Beyond the town's annual report and a couple anonymous historic records, the existing forest conditions can be read like an abridged book by a seasoned forester. Old stumps, 'nurse trees - rotting tree trunks feeding new ones, ruts, and blow-downs tell a remarkable story. Chapter 4 'Site Analyses: Land Cover' provides more detail of the landscape's forest health and the urgency for stewardship management. In short, because of the past forest practices during the 1840/50's, early 1900's, 1950's and 1970's, income from logging and timbers is years away.

The site's access was determined largely by farming practices, creating the shortest routes to desirable destinations. Most of these antiquated trails cut across contour lines, encouraging accelerated erosion that become stream beds during rain events. It is well understood today that this practice is very detrimental to sustainable trail design, often polluting waterways with siltation and starving aquatic life of oxygen. Details on these trails is covered in Chapter 4 'Site Analyses: Access and Circulation'. In short, trail use should be carefully reviewed and modified using best management practices (BMP's) (US Forest Service, 2013).

In addition to logging, the most innovative effort to meet the site's charitable mission was Christmas tree farming from the 1960's to the late 70's by the Boy Scouts. They cleared areas, planted, and maintained numerous fir trees. Their generous efforts yielded income for the Charity Farm Lot's coffers. Except for a Forest Stewardship Plan and a boundary survey, this was the last time period that the Charity Farm Lot received any attention (Bordewieck, 2012 & Muszynski, 2013).

Charity Farm Lot's story continues to unfold. Previously undocumented exotic invasive plants have been mapped with some removal efforts underway through biannual community volunteer efforts. Like so many successes in the Town's past, the reliance on volunteerism persists, and given existing economic constraints, this 'free labor' is essential to a successful future.

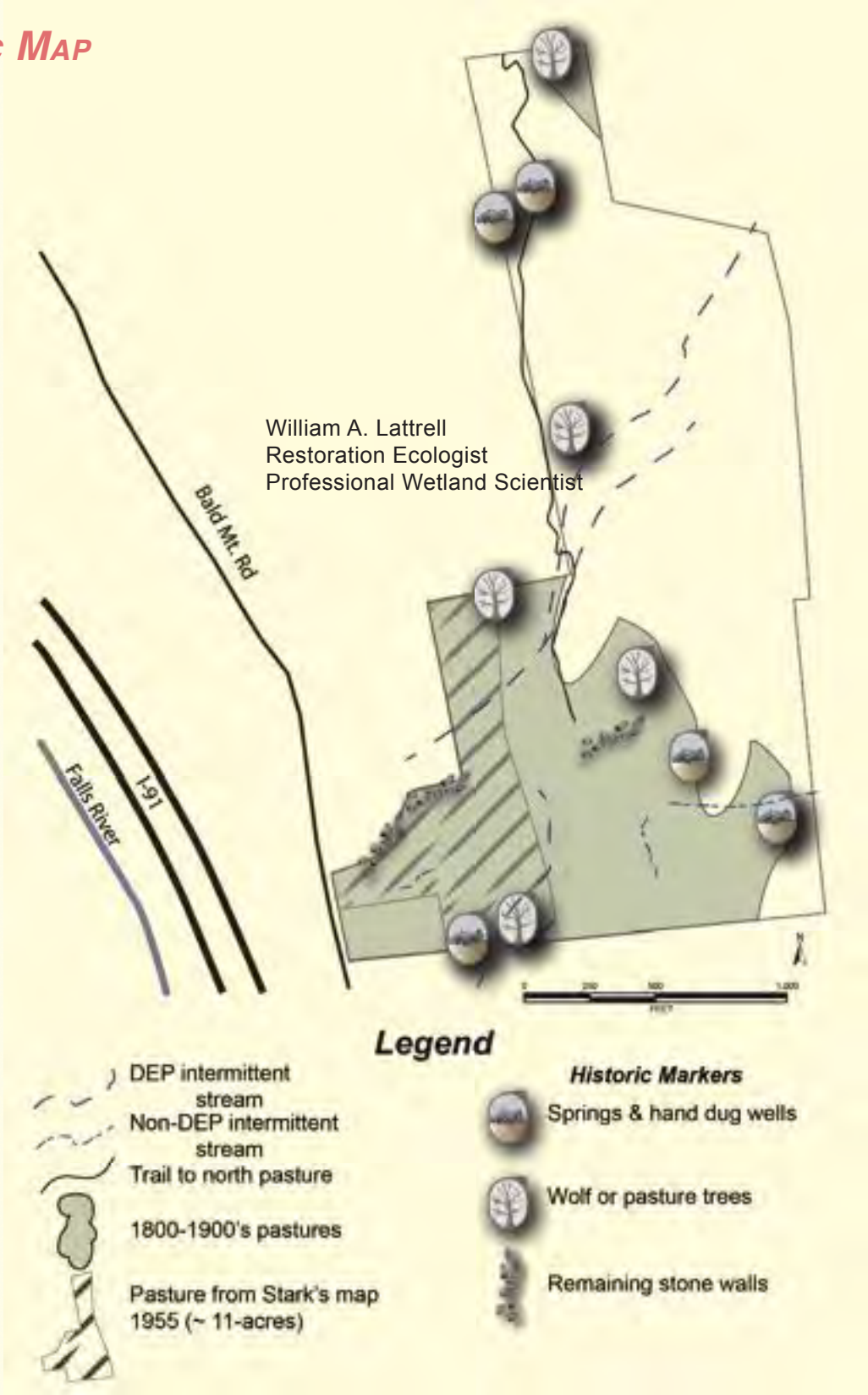
Opportunity

The CFL offers a number of historically attractive sites for eco-tourism and could complement the Town's interest in pursuing this course of economic development.

Robert Herrick locating a hand dug well.

Stone wall marking border

Historic Map



Community & Stakeholder Process

Success of any public effort can be gauged by the input of its stakeholders. Reaching this audience using a variety of strategies while offering a positive mechanism for exchanging ideas, options and understandings has resulted in a workable vision for Charity Farm Lot's (CFL) future.

Two meetings were held at Bernardston Elementary School, the first to collaborate on what is known while the second challenged participants to identify the CFL's future. Later, a site hike further engaged the community. Several people voiced concerns around questionable boundary lines to the east while others marveled at the vista, the majestic 'wolf trees,' and the steep rock faces peppered with backless oaks.

From the concerted efforts of several dozen contributors, six priorities surfaced:

- Improve accessibility by clearing the historic parking area near the west entrance, repairing roads, identifying additional destinations, blazing trails and managing erosion;

- Restore the forest's natural features using best management practices (BMPs), including selective thinning for cord wood, and invasive plant control;

- Identify appropriate routes and destinations for various users while preserving the site's health and beauty;

- Engage users in sorely needed site management tasks. Consider alternative ways to secure help with maintenance such as the Franklin County Jail, community groups like 4-H and Kiwanis;

- Apply for grants to recover the site and establish a paid position to lead its maintenance; and

- Establish a community firewood bank from site thinnings to support those in need.

A summary of all three community input opportunities can be found in 'Appendix Community Process.' Many of these have been incorporated into specific site analyses. For example, " Charity Farm Lot offers a great escape, easily accessible by car or bicycle, but there are no clear signs to direct visitors to specific destinations" is addressed in 'Chapter 4 Site Analyses : Access and Circulation.' Clearly, the community's input demonstrates a deep concern over the future of Charity Farm Lot.

Two community meeting were held to gather input and ideas over the future of the Charity Farm Lot.

Stakeholder hikes on the CFL drew a cross section of abutters and interested community members.

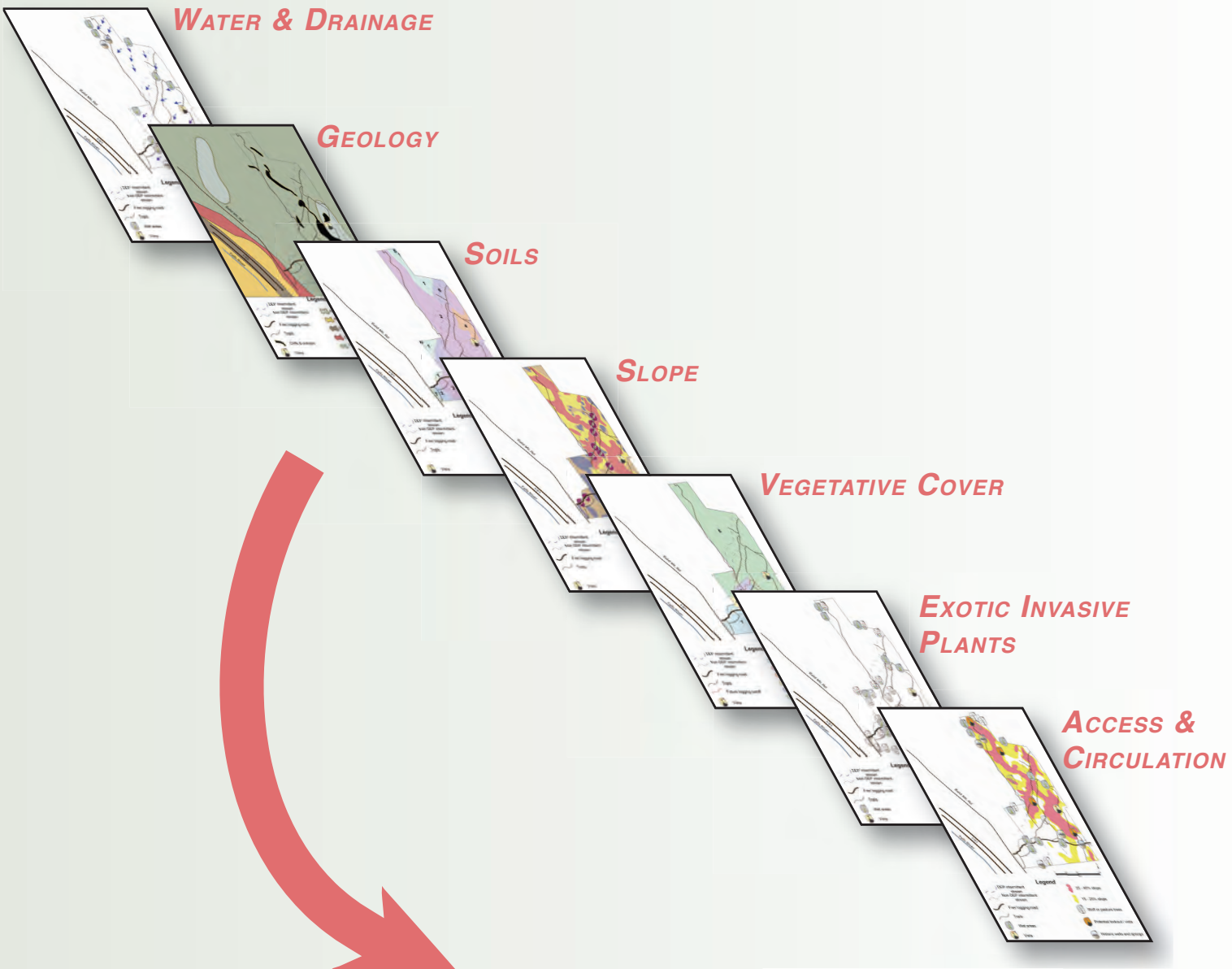
Approaching Charity Farm Lot on Bald Mt. Rd.

Site analysis process overview

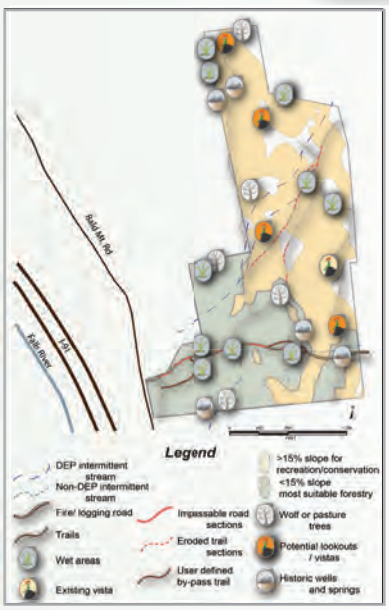
The landscape is the ultimate stakeholder in this plan. Should its voice fall onto deaf ears, any unguided management efforts will bring unpredictable results. The site's climate, geology, soil, hydrology, topography, land cover and wildlife interact dynamically with a complexity that humans frequently miss. For example, unrecognized exotic invasive plants can innocuously thrive for decades in the forest under story waiting for the sun-blocking over story to failresulting in their domination over native growth at an unexpected and unprecedented rate.

An informed management plan is guided by comprehensive site analyses which dissect the significance behind each contributing condition. Further complexity is added by human needs and interests. Charity Farm Lot holds a unique basket of features quietly challenging sustainable human interests that must be carefully considered before action.

Each contributing condition (water & drainage, geology, soil, slope, vegetative cover, exotic invasive plants, and access/circulation) is analyzed separately. (Although not included in the graphic to the right, wildlife and legal issues are included in the Summary Analysis.) At this point, each factor is carefully weighed in a final summary analysis after cross-layering combinations of contributing conditions. These will dictate the priorities in the site's management plan and conceptual designs.



Summary Analysis



"... each analysis is carefully weighed in a final summary analysis after cross-layering combinations of conditions."

WATER & DRAINAGE

Water travels across the Charity Farm Lot's (CFL) forested, thin glacial till, sometimes roaring down its steep hillsides. Shallow pools adorning the site's cols, the low point between ridges, team with vernal life. Perennial streams are absent, partially because the soil drains so rapidly. However, the Massachusetts Department of Environmental Protection (DEP) recognizes two intermittent streams. Scouting further reveals several, non-DEP streams, especially along the site's southern landscape. Topography and the soil's well-drained characteristics interact with an annual rainfall of about 48 inches.

The topography directs runoff towards the southwest. Numerous small, intermittent brooks and pools have been carved by previous logging practices, creating valuable habitat for amphibious creatures and their associated food webs. Such biodiversity adds to the site's ecological resilience, particularly important as climate patterns change. These areas afford wildlife refuge during drought.

The site's west parking area is situated over the Town's Well Protection Zone. Before it was cleared for off-road parking, communication with the Town's Planning Board and the Massachusetts Department of Environmental Protection clarified Best Management Practices (BMPs). Massachusetts Wellhead Protection Regulations 310 CMR 22.21(2) grant use of the area for parking as long as a permeable surface is maintained (Wysk, Personal Interview, 2014).

As a result, the area was covered with 6 inches of composted wood chips by the Bernardston Highway Department (Weatherby, 2014).

Presently, ill-planned pathways and exotic invasive plants threaten water quality on the CFL. Please refer to 'Site Analysis: Exotic Invasive Plants and Access & Circulation.'

All storm water runoff carries polluting sediment. Storm water cuts though numerous user-made trails that run perpendicular to contours, causing severe erosion. Significant oxygen-depriving siltation adds to the runoff, lowering water quality. Ultimately, all surface water enters the Falls River Watershed which feeds the much larger Connecticut Watershed. Storm water from the CFL lowers the quality of the water that eventually supplies theTown's well.

Damage from storm water runoff resulted from a collapsed culvert that carved a 5 foot gully through a steep portion of the fire road, making it impassable. Users have already initiated a by-pass trail, furthering the erosion. (See 'Site Analysis: Access & Circulation').

Having diverse, native vegetation - especially close to water resources - is imperative. Plants buffer runoff velocity which encourages water infiltration and lowers storm water runoff. In the higher use areas on the site's southern end, exotic invasive plants have evolved into significant competitors with the native plants and threaten water quality. ('See Site Analysis: Cover-Exotic Invasive Plants.')

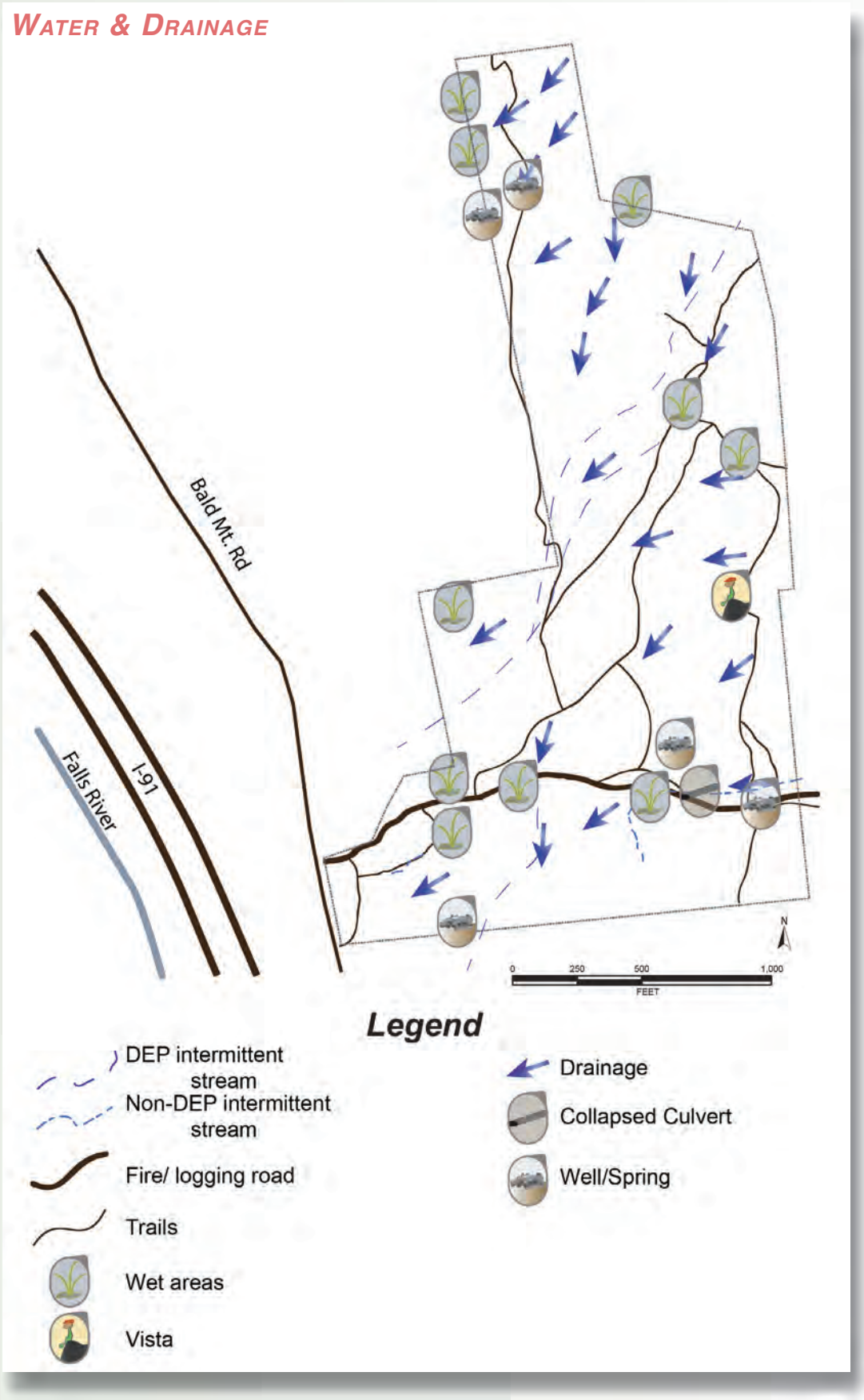
OPPORTUNITIES

- Efforts should be made to reduce storm water runoff over user-made trails by re-routing, installing water bars, and managing visitor use by horseback riders and motorized vehicle; and
- Future roads and trails need to be carefully designed to avoid additional storm water issues.

CONSTRAINTS

- The impact of storm water and the need for employing BMP's will require an informed approach;
- Routine exotic invasive plant management using BMP's is important for managing storm water runoff; and
- Runoff above the eroded logging road needs to be diverted away and the road repaired for vehicle access.

The Falls River, which recharges the Town's well, is fed by the Charity Farm Lot. High storm water quality is essential to the town's drinking water but this issue has not been addressed.

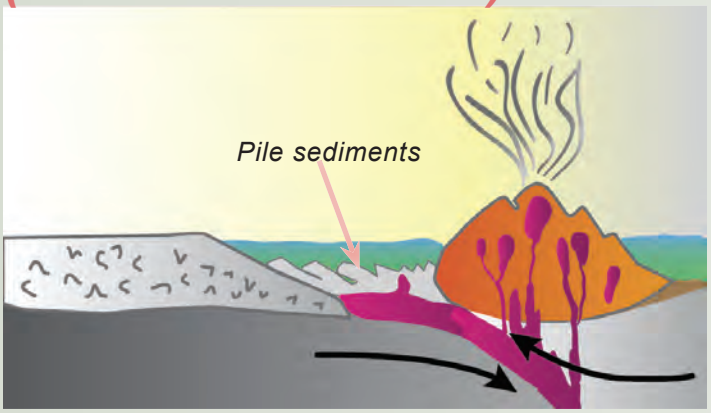

Bald Mt. Rd
I-91
Falls River
N
0
250
500
1,000
FEET
Legend
DEP intermittent stream
Non-DEP intermittent stream
Fire/ logging road
Trails
Wet areas
Vista
Drainage
Collapsed Culvert
Well/Spring

GEOLOGY

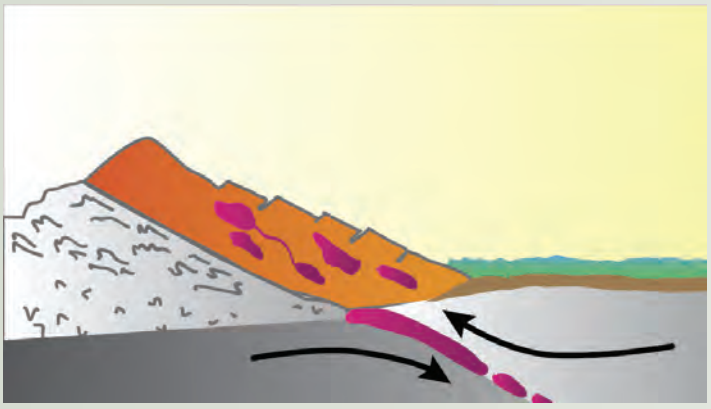
Geologic signatures can be as profound on a mountain range as on landscapes hidden under a thick veneer of soil. Next to water, a site's geologic time line constructs surface features, drainage, topography, and vegetation. The Charity Farm Lot (CFL) boasts an intriguing range of topographical elements that began over one-half billion years ago!

Imagine Bernardston as a shallow sea 500,000,000 years ago. The water teamed with rich aquatic life that flourished, eventually died, and left sediments on the ocean's floor. About 440,000,000 years ago, the collision of the denser continental crust with the lighter oceanic crust caused the continental crust to submerge slowly and reheat in the hot mantel. This ancient concussion accounts for the shale we see scattered across the region's landscape today. Concurrently, the heat from the cracked crustal plates seeped veins of molten quartz into fissures of the fragmented metamorphic sediments. Pieces of this quarts can also be seen today dispersed over the landscape and fixed in the exposed bedrock ridges. This explains how the cliffs of CFL were formed. At one time, these cliffs were buried under thousands of feet of overlying rocky material that eroded away to lower regions of the valley and into the ocean.

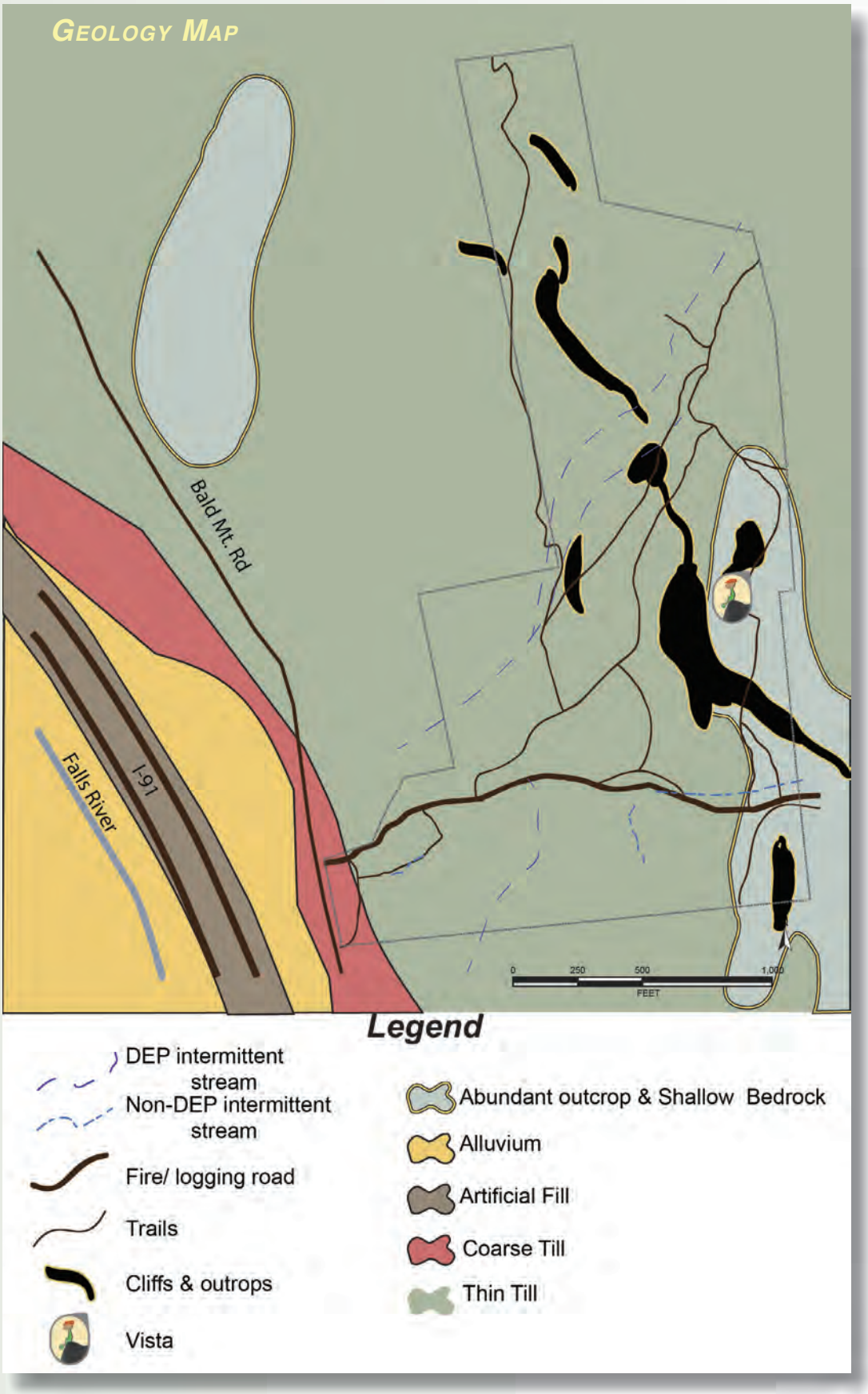
CROSS SECTION OF BERNARDSTON (AS IT MAY HAVE LOOKED)



500,000,000 years ago volcanic activity occurring offshore. Pile sediments scraped off the slab as it slid under a volcanically active landmass that were eventually heated and changed (metamorphosed).



440,000,000 years ago, collision between volcanic islands and the ancient continent form a tall mountain range. Eventually, this mountain range eroded exposing metamorphosed sediment we see throughout Bernardston today. Specifically, the rocky outcrops at Charity Farm Lot that formed during this collision were exposed by glacial activity about 20,000 years ago.


Geology Map
Bald Mt. Rd
I-91
Falls River
0
250
500
1,000
FEET
Legend
DEP intermittent stream
Non-DEP intermittent stream
Fire/ logging road
Trails
Cliffs & outrops
Vista
Abundant outcrop & Shallow Bedrock
Alluvium
Artificial Fill
Coarse Till
Thin Till

GEOLOGY, CONTINUED

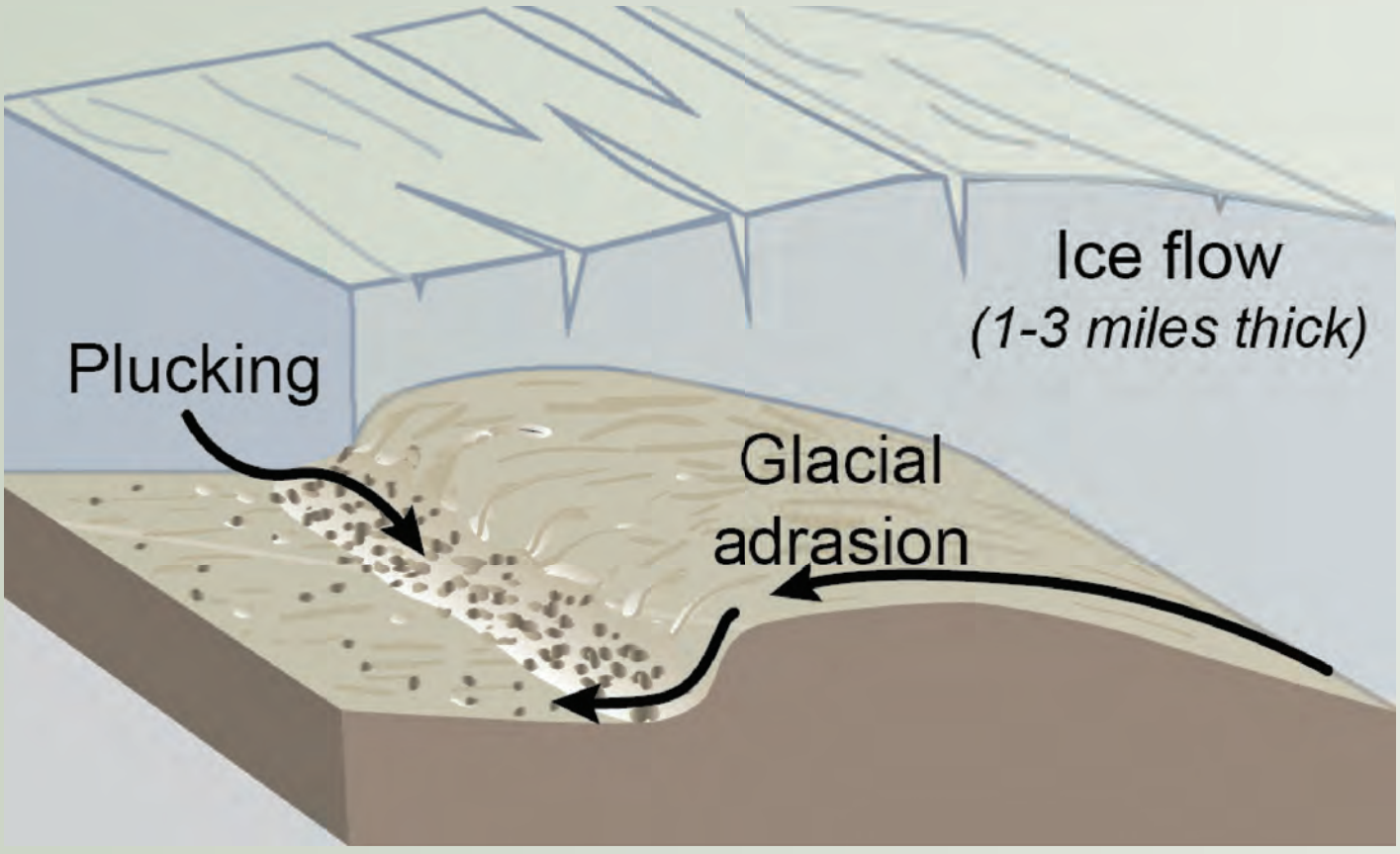
Today, below these cliffs, it is easy to locate 'talus slopes' caused by 'glacial plucking' on the southwest cliff sides about 20,000 years ago. The continental glacier that covered North America grew to over one mile thick! No wonder it had such an impact.

There is more to the story, however. The glacier's massive weight crushed and ground rocks into the thin glacial till that covers the CFL. At its toe, the Fall River Plain filled with finer grained alluvial soil, that was washed into place by icy glacier melt water. Today, the soils of the Plain afford rich agricultural soils while the well-drained, thin till on very steep slopes of the CFL provide meager support to trees.

OPPORTUNITIES

- Many geologic features could become destinations for eco-tourism; and
- More of the rugged cliffs could become attractive lookout points or 'view-sheds.'

GLACIAL PLUCKING



TALUS SLOPES CREATED BY GLACIAL PLUCKING

SOILS

The soils at the Charity Farm Lot (CFL)are the product of metamorphosed ocean bottom sediments, heated far below the earth's surface, uplifted, eroded, and crushed into soil by glaciation. Some soil has been transported great distances by multiple glaciers. The seven soil types blanketing the CFL are as diverse as the geologic history that wove them into place.

Drainage of these types of soils must also be considered. Water infiltrates from a moderate rate in loamy tills (map numbers 1,2 3 & 5), to a rapid rate in sandy-gravely glacial deposits (map numbers 4,6 & 7). The majority of the soil is thin till resulting in slow development of both the soil's profile and the plant life that grows in it.

The low organic matter, especially on steep slopes, suggests that prior site use played a significant role in its deletion. Microbes making up the organic matter collaborate with vegetation in regulating forest health. When absent, valuable soil water reserves diminish quickly, slowing forest growth and recovery. Rebuilding organic matter on the steep slopes of theCFL should be a priority. Dropping trees and allowing them to rot on the ground is a way to facilitate this (Bordewieck, 2012).

About 22% of the CFL's soils are Prime Farmland Soils (PFS) or Soils of Statewide Importance (SSI) (map numbers 1, 6 & 7). Generally these soils are present in flatter areas (see Site Analysis: Slope) and are most suitable as access roads. PFS and SSI will have the greatest economic return to any forestry efforts.

Soils and trail use should be carefully considered. Existing trails cutting across contours and ascending up steep grades result in deep erosion. Further discussion regarding this can be found in 'Site Analysis: Access and Circulation.' More details about CFL soils can be found in the Appendix.

Thin, well-drained soils make up the majority of the CFL soils making forest regeneration slow and prone to blow downs as seen here in the under story.

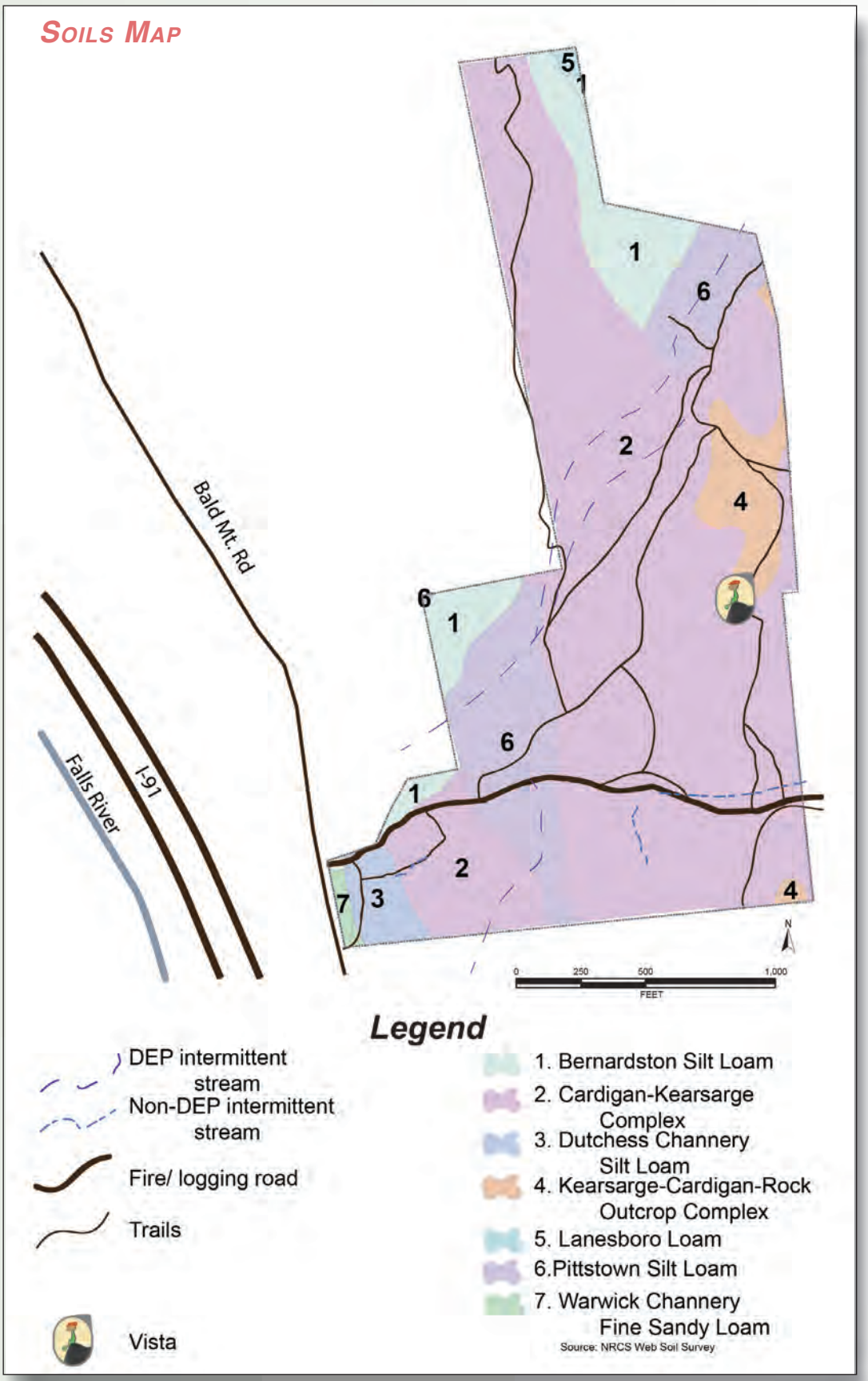
OPPORTUNITIES

- The CFL's well-drained soils direct water to the town's well on Falls River Plain and play a significant role in the Town's drinking water recharge; and
- Areas with PFS and SSI soils should be the focus of future forestry efforts.

CONSTRAINTS

- The fast infiltration rate coupled with a steep topography and very low organic matter make most of the site very vulnerable to drought and increase the risk of forest fires;
- Building trails should carefully follow best management practices (BMP's) to limit erosion;
- Steep slopes lacking PFS and SSI soils should be avoided for any forest management (map numbers 2 & 4); and
- The potential for erosion should be carefully evaluated when establishing access routes.

Soils Map


5
1
1
6
2
4
6
1
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1
2
7
3
4
Bald Mt. Rd
I-91
Falls River
N
0
250
500
1,000
FEET
Legend
DEP intermittent stream
Non-DEP intermittent stream
Fire/ logging road
Trails
Vista
1. Bernardston Silt Loam
2. Cardigan-Kearsarge Complex
3. Dutchess Channery Silt Loam
4. Kearsarge-Cardigan-Rock Outcrop Complex
5. Lanesboro Loam
6.Pittstown Silt Loam
7. Warwick Channery Fine Sandy Loam
Source: NRCS Web Soil Survey

SLOPE

During much earlier times, before the numerous glaciers and the weathering processes shaved off most of its elevation, the CFL was much taller and steeper. Today, most of its slopes are still over 15%, making for challenging hikes.

The percent of rise (elevation) divided by the run (distance) defines slope. Slope, more than any other single factor, dictates design,management and implementation related to drainage, forest regeneration, and erosion.

Humans have a natural attraction to climbing to a lookout point over a surrounding landscape. The CFL has a number of exposed cliffs that make viewing the Falls River Plain a pleasure. The Bernardston Fire Department finds the cliffs on the southeast corner a great place to practice rescue maneuvers. Other users include deer hunters, horseback riders, cyclists, and ATV riders (Montigilio, personal conversation, 2014).

Most folks can easily walk a 0-5% slope but find 5-15% challenging. While horseback riders can travel up a 15% slope, coming down safely is demanding (Wysk, personal conversation, 2014).

Slope is a key consideration in defining safe access routes and sustainable trail management. To avoid injury or accidents equestrian use on slopes close to 15% should be kept to under 200-foot runs. (See 'Chapter 5 Site Analysis: Water & Drainage and Access & Circulation').

Rating symbol	% slope	Audience
●	< 10 %	
■	< 15 %	
◆	< 20 %	
◆	> 20 %	

Slope also influences the site's forest management. A little more than half of the site restricts potential road access because of slopes greater than 15%. These should be avoided for forestry, except when dropping trees to improve the soil's organic matter (Bordewieck, 2012 and DCR Forester Wright, personal conversation, 2016).

OPPORTUNITIES

- Future cutting is most sustainable on the southwest portion where the terrain is below 15% slope;
- Challenging trails in the areas with > 15% slope can be designated for hiking only; and
- Safe areas (< 15%) for horseback riders should be designated as safe alternative routes.

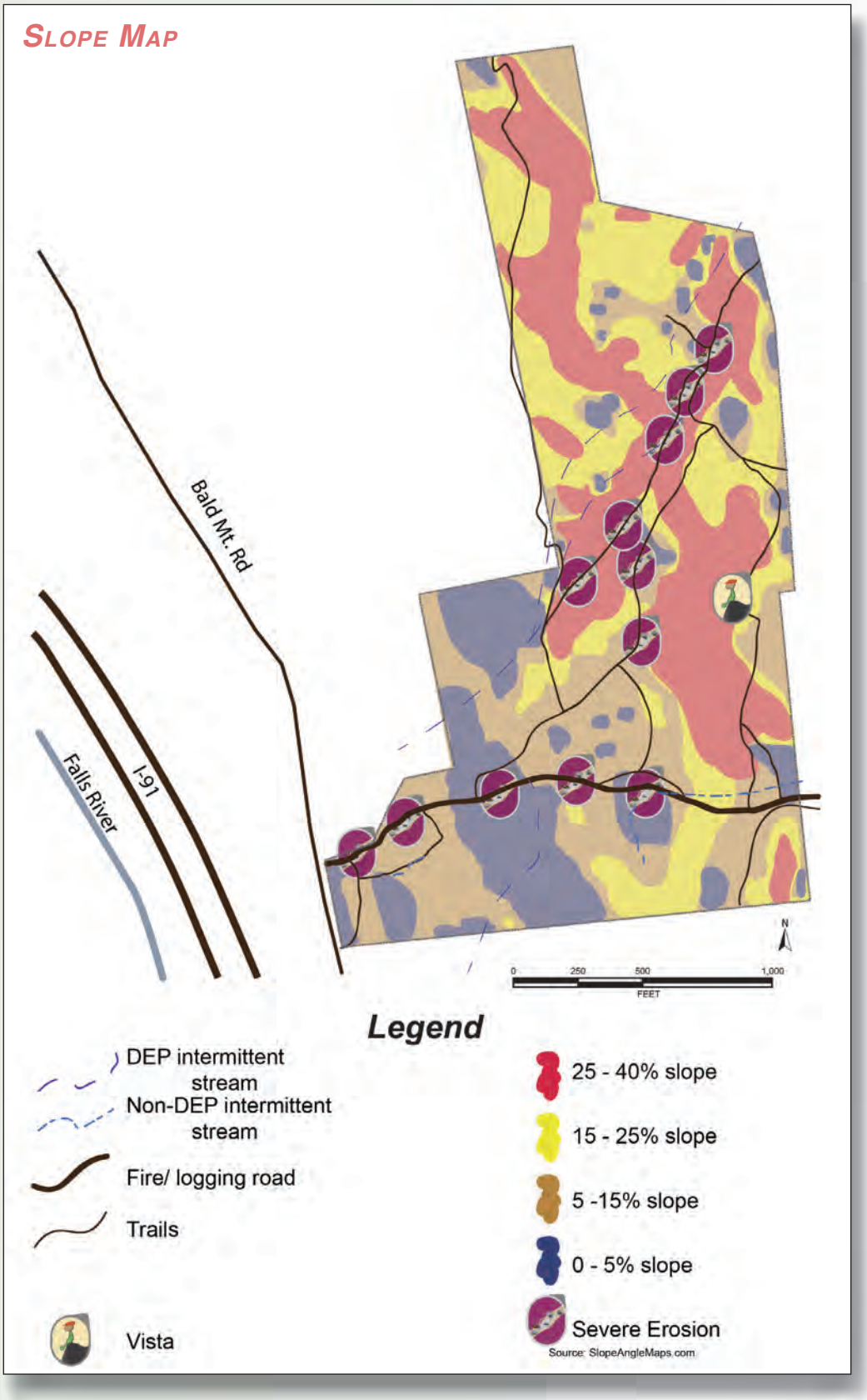
CONSTRAINTS

- Areas with > 15% slopes should be posted as "difficult;" and
- About one-half of the CFL should be conserved for trails and conservation only.

The fire road's straight, steep slope makes it vulnerable to heavy erosion. Today it is impassable.

This culvert collapsed from an extreme rain event, initiating a major erosion problem.

Slope Map


Bald Mt. Rd
I-91
Falls River
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1,000
FEET
Legend
DEP intermittent stream
Non-DEP intermittent stream
Fire/ logging road
Trails
Vista
25 - 40% slope
15 - 25% slope
5 -15% slope
0 - 5% slope
Severe Erosion
Source: SlopeAngleMaps.com

VEGETATION: COVER

The 'wolf' or 'pasture' trees adorning the CFL's 'Land of the Giants' on the northeast corner is a valuable Bernardston historic area. These aged trees mark the long agricultural wealth of the town and constitute a beneficial habitat for a plethora of wildlife. (See 'Chapter 2 History').

The CFL site is characterized by a number of hardwood and softwood species including beech, red and chestnut-leaved oaks, pig nut hickory, white birch, white and red pine, eastern hemlock, witch hazel and mountain laurel. The under story and ground cover include low bush blueberry, tea berry, trailing arbutus, numerous mosses, ferns and seasonal mushrooms. Unique spring ephemerals like trout lily and wood anemone can be found by the prudent observer.

The six forest stands at the CFL share a number of unique features deserving careful management considerations:

- Evidence, although scarce in Town records, suggests logging and/or timber harvesting in various site locations during the 1840's, early 1900's, 1950's and 1970's;

- Aside from the remaining wolf trees and the lack of large decaying stumpage, all old age-class trees have long disappeared. The unsustainable practice of 'high-grading' was common years ago. This involved removing the largest and most genetically successful trees, leaving a genetically poor representation behind to regenerate the forest;
- Large areas share same age-class trees that need thinning to yield future financial benefits;

- Woolly adelgid, lethal to Eastern Hemlock (map site 2), will continue to diminish stands leaving open areas vulnerable to forest fire and exotic invasive plants; and

- Aside from stand thinning that encourages decay on the forest floor (map site 6) where the slopes are over 15% and the soil organic matter is very low, management for future logging and timbering should be confined to map sites 1, 3, 4 and 5.

For additional considerations, please refer to the 2012 Forest Management Plan available at the Town Hall.

OPPORTUNITIES

- Forest stands 1 to 5 can yield limited quantities of cord wood and should be thinned to improve productivity and health;
- Forest stand 6 should only be used for recreation and conservation, because the steep slopes are not conducive to forest harvest and offer high quality ecological integrity for wildlife; (CAPS, 2011); and
- The 'Land of the Giants' offers an attractive historic destination for eco-tourism.

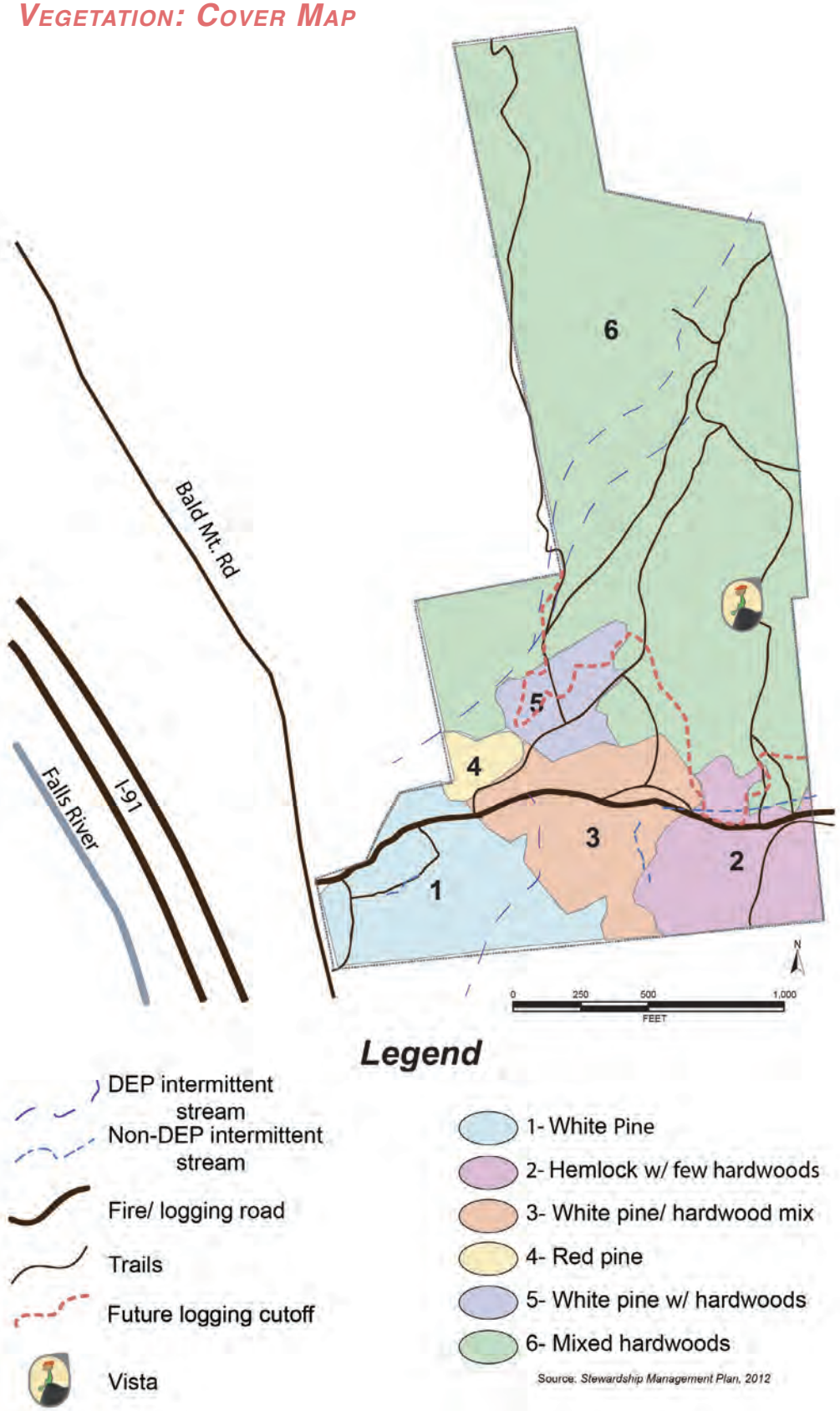
CONSTRAINTS

- Future profitable timber harvest depends on making a commitment to managing the site as outlined in the 2012 Forest Management Plan.

A number of prized wildflowers like this Cat's Eyes can be found on the CFL forest floor.

Wolf or pasture trees are remnants of pasture grazing at the CFL, and provide terrific habitat today.

Vegetation: Cover Map



EXOTIC INVASIVE PLANTS

Exotic invasive plants (EIPs) are low maintenance attractive plants recommended by growers, landscapers and nurseries as 'perfect' for home landscapes. Unfortunately, these non-native plants have become a nightmare in our environment, often overtaking indigenous growth.

Exotic invasives thrive for several reasons:

- Because most animals will not eat them, EIPs thrive and spread freely;
- Early and/or late flowering and bud growth allows them to shade slower growing natives, staving them of sunlight;
- Their allopathic properties can exude substances into their surroundings that kill native growing plants; and
- They possess superior and highly adaptive seed dispersal mechanisms.

As the Charity Farm Lot (CFL) has mesic soils that are prone to drought, EIPs gravitate to wetter areas, reducing the biodiversity and lowering the variety of foods wildlife needs to nest, raise young and migrate. It may be decades before the depth of ecological degradation caused by EIPs is fully understood.

Routine management is critical to limiting the negative effects of EIPs. Manual removal can be highly effective. Legally, no plants can be removed from a wetland resource area without either a permit (Notice of Intent of Applicability) from the local conservation commission or an addendum to the forest management plan. The former requires paperwork, public notification, meetings and approval for each effort while the latter is new and poses an uncomfortable legal situation for many professional foresters.

The forest management plan has been amended to address the need to have ongoing control of EIPs.

See 'Addendum: Exotic Invasive Plants of Charity Farm Lot' for additional management details.

OPPORTUNITIES

- Much of the CFL is free of EIPs while most impacted areas are in the early stages of infiltration.

OBSTACLES

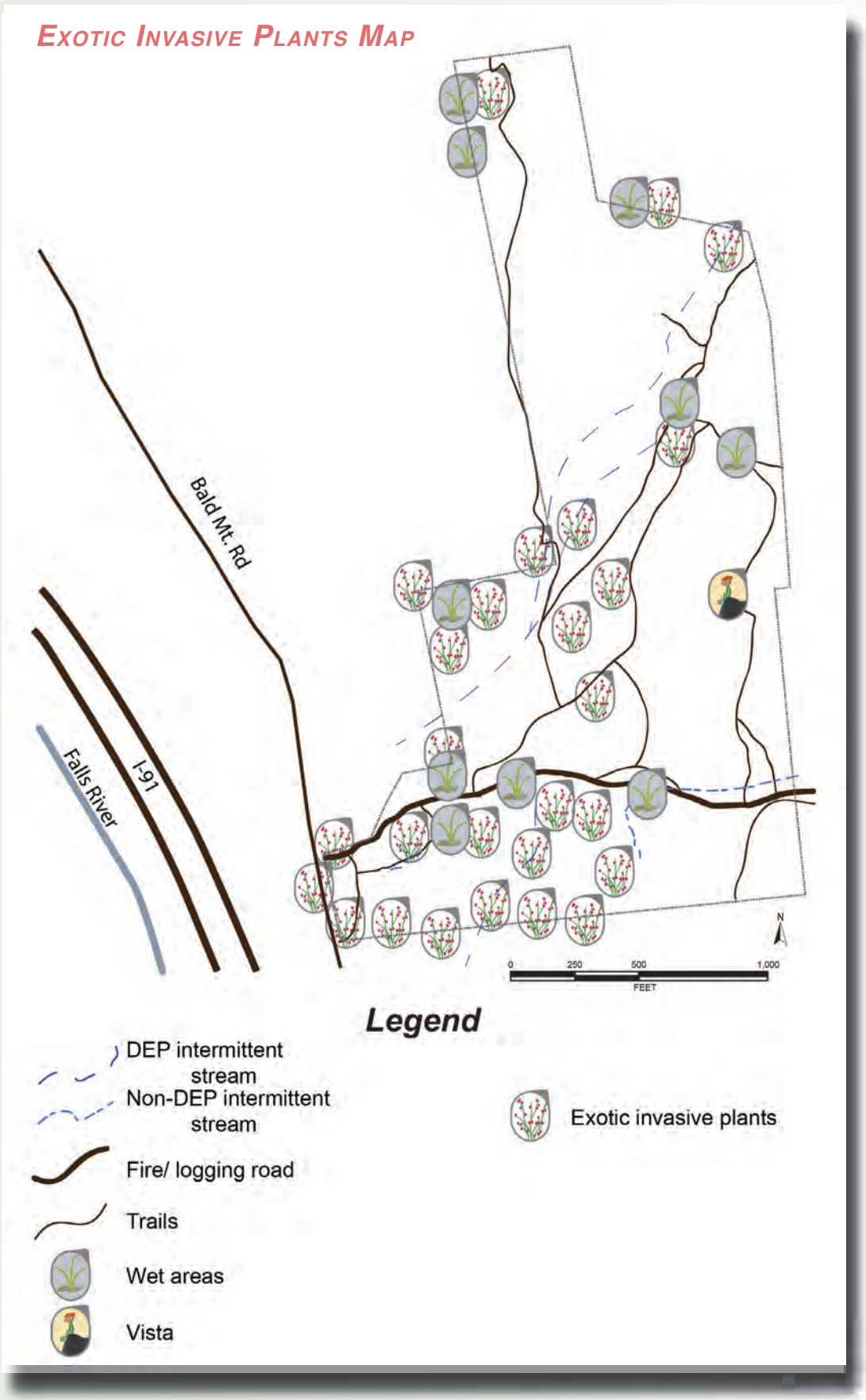
- The Massachusetts Department of Environmental Protection requires permits to control EIPs in wetland resource areas unless the forest management plan includes a management protocol.

Multiflora rose and Russian olive at the CFL entrance.

Japanese bittersweet will become a problem if not addressed.

Multiflora rose and barberry in wetland at the CFL.

Exotic Invasive Plants Map



WILDLIFE & NATURAL HERITAGE

Every generation has altered the Charity Farm Lot (CFL) in a variety of ways to meet its immediate needs. The cumulative effect of this compromises the ecosystem services of the site and, in fact, diminishes our standard of living.

Wildlife faces many new challenges from development, fragmented migration routes and the unforeseen ramifications of climate change. All of these factors threaten the future of our natural heritage (NOAA, 2013).

The CFL serves critical economic and societal functions, also known as ecosystem services. Purifying water, cleansing the air, providing food for hunters and producing forests enhance the quality of human life.

Until two approaches recently developed, strategies to measure the value of this site have been a challenge. The first measures 'Ecological Integrity' (EI) by using an 'index of ecological integrity' developed at the University of Massachusetts, Amherst in 2011, and called CAPS (Conservation Assessment and Prioritization System).

EI identifies strong areas that support a wide range of ecosystem services. (See Appendix: Ecosystem Services) The CFL has a very high EI, especially in the northeastern portion.

The second means of identifying and understanding the value of landscapes is called BioMap2. This describes species habitats of critical biodiversity needed to enhance resilience to the threats of climate change and other evolving wildlife stressors. The northern portion of CFL serves as a BioMap Critical Habitat buffering BioMap Core Habitat to the north.

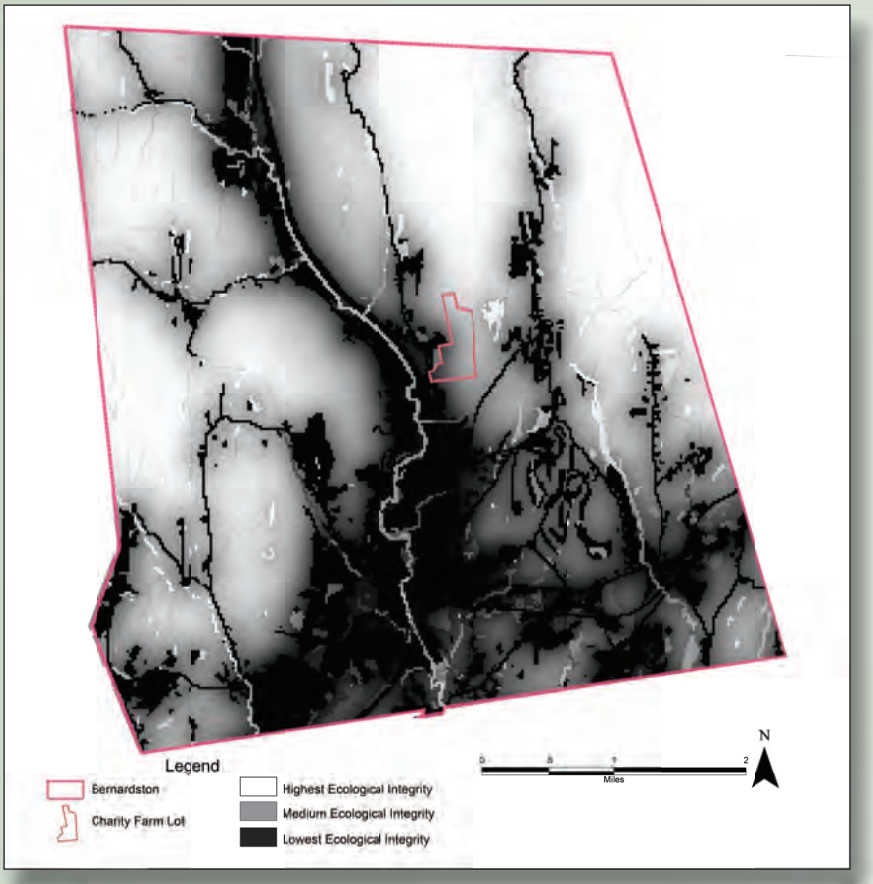
OPPORTUNITIES

- A major portion of the CFL supports wildlife and provides the habitat necessary for its resilience.

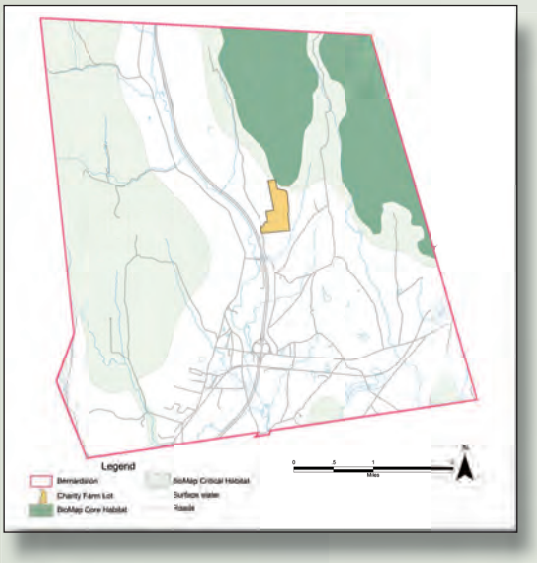
CONSTRAINTS

- Since funding for a site manager is beyond the local municipal budget, site management must rely on volunteers.

BERNARDSTON'S INDEX OF ECOLOGICAL INTEGRITY (IEI)



BERNARDSTON'S BIOMAP2



MASSACHUSETTS BIOMAP2

Wildlife Response & Vulnerability

EFFECTS ON WILDLIFE	Spring/ Autumn Arrival Growing Season Length	Temperature: Mean, Extreme, Variability & Seasonality	Rainfall: Mean, Extreme, Variability
Uncoupling of pollinators with flowering times	√	√	√
Uncoupling of predator-prey relationships	√	√	√
Uncoupling of parasite-host relationships	√	√	√
Interactions with new diseases and exotic invasives		√	√
Changed in distribution ranges		√	√
Loss of habitat		√	√
Increased stress causing death & disease susceptability		√	√
Changes in sex ratios		√	√
Changes in competative ability		√	
Fragmented migration and seed dispersal	√	√	

Pockets of wetlands provide critical habitat.

Bears find the CFL a great place!

Deer & turkey signs are commonplace here.

A porcupine den at 'Land of the Giants.'

LEGAL

Maps can ignite a lot of 'discussion,' especially boundary maps that conflict. Prior to the September, 2013, survey, two maps of the Charity Farm Lot (CFL) existed. The first, although not-to-scale, was crafted by Lucius R. Stark in 1955, when activity at the CFL involved a lot of community volunteerism and logging. This map spells out some important features and has been helpful in the development of the Forest Management Plan (Bordewieck, 2013). Since this map was not accurately scaled, however, forest stand acreage is vague.

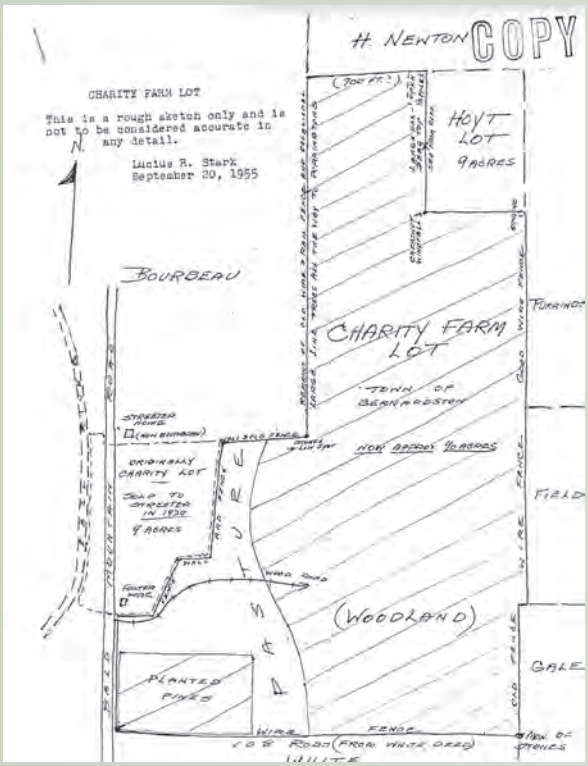
The second map appeared on the MassGIS/Parcel / Bernardston website. It was most likely drafted by a contracted firm when updating the town's tax parcel maps. When compared to a certified site survey, the inaccuracies are obvious.

Legal records for the site are limited. Records of finances are sketchy or absent from the Town's annual reports. At one point, the Charity Lot Trust was formed and managed by town vote. The first record for using trust money for maintenance appeared in the 1960's. (See Appendix: History).

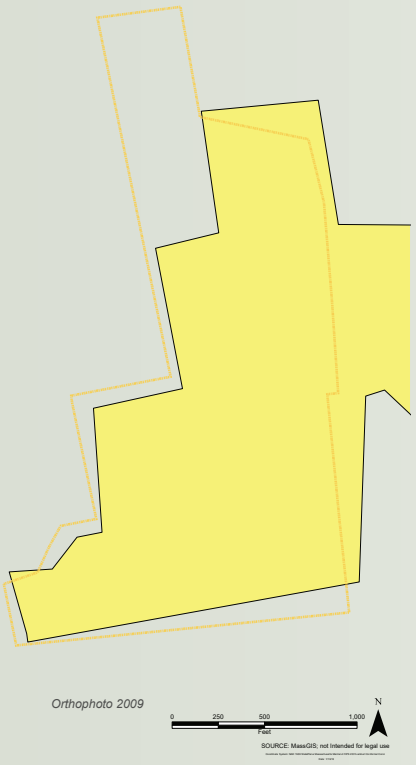
At the second community meeting in 2013, a concerned citizen asked if it is legal for the town to use trust funds for a survey and development of this plan. The town sought legal council and was granted permission to use a portion of the trust for management. The majority of the money must cover its intended charitable purpose, however.

The forest management plan requires action. This document outlines a rough timeline for management through thinning and selective harvesting for cord wood. At this time, the town has not acted on the plan. Unfortunately, the original plan was written when the site was in snow pack, so the exotic invasive plant issue was missed entirely. The Bernardston Conservation Commission and the Board of Selectmen asked that a registered forester write an addendum that would include exotic invasive plant management near and in wetland resources areas. At the time of publication the forester, the Massachusetts Department of Conservation and Recreation, and the Massachusetts Department of Environmental Protection have collaborated in developing a plan addendum. It will allow the Town to control exotic invasive plants in wetland resource areas without the need to file a Notice of Intent of Applicability for each removal.

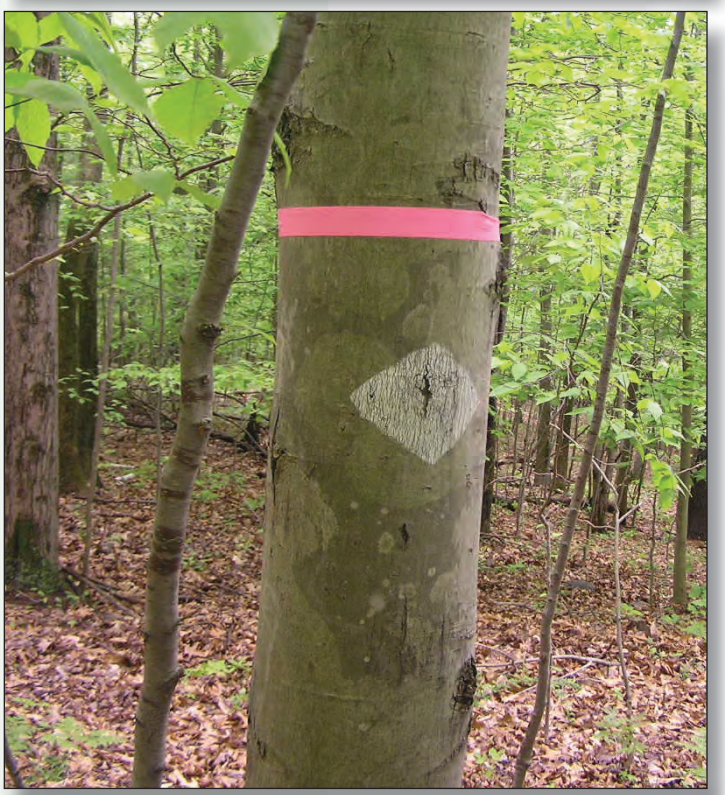
The Charity Farm Lot has received a lot of positive, legal attention that carves the way for a much healthier and promising future.



The 1955 Louis R. Stark map of the CFL.



The inaccurate MassGIS Tax Parcel Map for the CFL (filled yellow) has unknown origins.



Signs, flagging tape, and blazes came from confusing maps and personal interests. Today, survey pins and well-blazed boundaries clarify the line.

VIEW-SHEDS, ACCESS & CIRCULATION

The entrance to the parking area at the Charity Farm Lot (CFL), located about 2 miles from Center Village, is identified by a sign made in the 1970's commemorating the white pine research started in 1924. As the casual visitor treks up the washed out fire road, a maze of trails emerges, all without clear directions. Other access points include a horse trail from the north and a foot trail from West Road on the east side of the CFL.

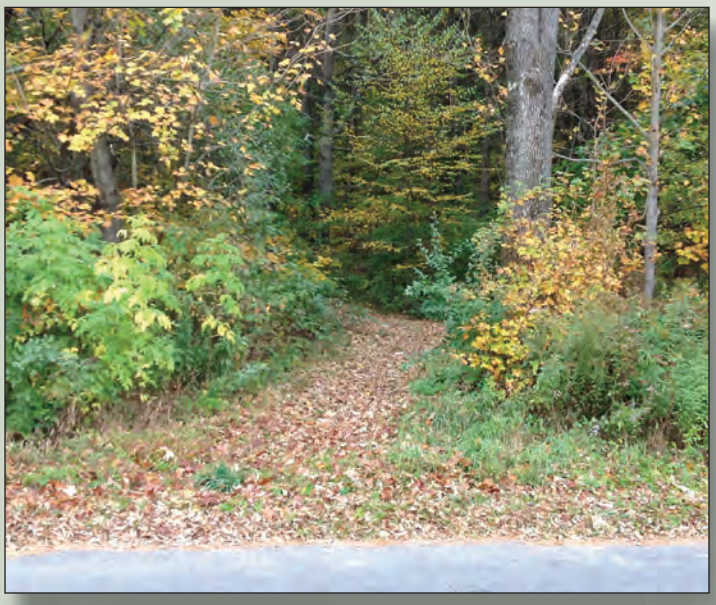
The primary entrance to the CFL is at 327 Bald Mountain Road Extension. The parking lot at the fire road's toe accommodates about five cars. Composed of gravel, the fire road is difficult to travel by foot. Four wheel vehicles and ATVs have trouble ascending. The road eventually levels out at the three-way cross road. Heading straight (east) is doable by foot, but not by other means since a 5 foot deep erosion gully narrows the path to about 2 feet. Above the washout, the path levels and climbs to a collapsed culvert that caused the erosion issues below. These conditions make access by emergency vehicles very difficult.

Back at the three-way cross road, heading north offers an opportunity to take a spur road east past a legendary wolf tree and up to the Wildcat Mountain/Falls River Plain view. This trail is not marked and disappears under fall foliage drop.
There are several other potential attractive 'view-sheds' or potential lookouts to entice visitors. These should be wrapped into some loop trails that offer circuitous routes for visitors to enjoy.

Walking becomes difficult in a number of areas due to heavy erosion on trails cutting up steep slopes. In places, the deterioration is so acute that passage is dangerous. Use by horses is common. Local riders feel confident that they know their animals well enough not to attempt unsafe access trails (Wysk, Personal Interview, 2014).

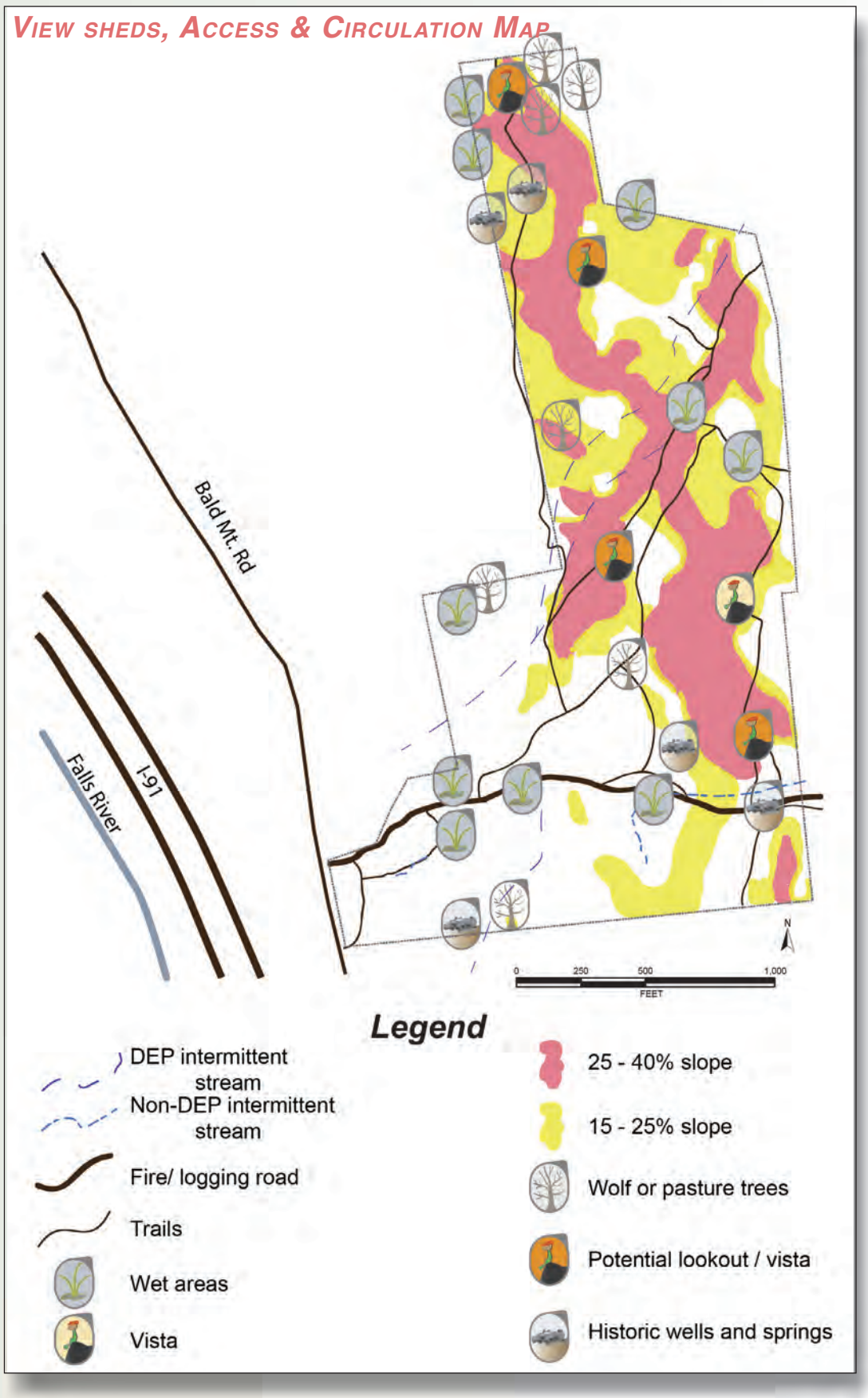
Best management practices (BMPs) maintain a standard of no more than a10% slope, with an occasional run of fewer than 200 feet under 15% slope for safe equestrian use. Some trails should be re-routed to accommodate public interest and signs should be posted to support safe riding for everyone.

The trail system at the CFL creates the single most damaging feature to water quality and wildlife. (Please refer to 'Site Analysis: Water & Drainage and Slope.')
A well-designed trail management plan with annual maintenance efforts is essential to the site.



The entrance and parking area for the CFL before (left) and after clearing. It took two people fours hours and was followed by a generous truckload of wood chips from the Bernardston Highway Department.

View sheds, Access & Circulation Map



ACCESS & CIRCULATION, CONTINUED

OPPORTUNITIES

- Off road parking is safe, because it minimizes roadside traffic congestion, thus keeping the neighbors happy;
- With some planning and clearing, the CFL has several additional potential 'view-scapes';
- About 2/3 of the CFL is over 15% slope making it an attractive challenge for serious hikers;
- Many interesting historic and scenic destinations could be mapped to entice eco-tourism;
- A site map and signs featuring historic places and scenic locations would improve visitation; and
- By carefully planning all logging activities in the lower slope areas and designing roads with switchbacks, erosional problems would be substantially reduced.

CONSTRAINTS

- Presently, many of the site's trails on steep slopes have reached the end of their 'lifespan' and should be re-routed;
- In the event of an emergency, reaching a destination by vehicle could be problematic;
- Due to the lack of signs, visitors cannot enjoy the wealth of natural and historic features;
- User-made trails made for the convenience of hikers, hunters, riders, etc., have created severe areas of erosion;
- Many of the trails become stream beds during extreme storm events, furthering the erosional problem;
- Some of the common equestrian trails are too steep and are accelerating trail erosion;
- Access to 2/3 of the site has deterred a number of people; and
- Some trails pass through wetlands and need appropriate crossings to diminish disturbances to wildlife, especially during vernal months.

This sign was created by the Boy Scouts and their leaders in the 1970 commemorating on-site pine research. It was moved to the site's entrance in the Fall of 2015 by the Bernardston Highway Department..

The first, unmarked intersection on the fire road provides no direction to the many special destinations within the CFL.

This is a view of Wildcat Mountain from the existing view point at the CFL. Several others exist that could create more visitor interest.

Deer hunting is declining across the state. There are many stands at the CFL that show little use in recent years.

A neighbor to the CFL made a circular course near the CFL's entrance. Should such use over the Town's well-head protection zone be regulated?

Summary Analysis

Positive Aspects

- Improving eroded trail sections and the impassible road sections using Best Management Practices (BMP's) would reduce storm water runoff downward, improve safety, and enhance the visitor experience at Charity Farm Lot (CFL);

- The CFL's well-drained soils direct water to the town's well in Falls River Plain and play an important role in the Town's drinking water recharge;

- Areas with less that 15% slope and the Prime Farmland Soils (PFS) as well as Soils of Statewide Importance (SSI) are most suitable for forestry and generating income from the CFL;

- Areas with lower than 15% slope should be designated riding trails. Occasional 200 foot-long trail runs of over 15% slope are acceptable for equestrian use;

- Forest stands in the suitable forestry areas can yield limited quantities of cord wood and should be thinned to improve productivity and health;

- Areas with greater than 15% slope should only be used for recreation and conservation, since the steep slopes are not conducive to forest harvests yet offer high quality ecological integrity (EI) for wildlife;

- Off-road parking is safe and minimizes roadside traffic congestion, thus keeping abutters happy;

- Many interesting geologic, historic, and scenic lookouts could be mapped to entice eco-tourism and support the Town's economy;

- The Charity Farm Lot has received a lot of positive, legal attention that carves the way for a much healthier and promising future.

Constraints

- Bernardston's water quality in the Falls River is directly impacted by eroded trails, the impassible fire road, and the persistence of habitat-changing exotic invasive plants;

- The soil's fast infiltration rate, coupled with steep topography and very low organic matter, makes most of the site vulnerable to drought and increases the risk of forest fires;

- Future profitable timber harvest depends on making a commitment to managing the site as outlined in the 2012 Forest Management Plan;

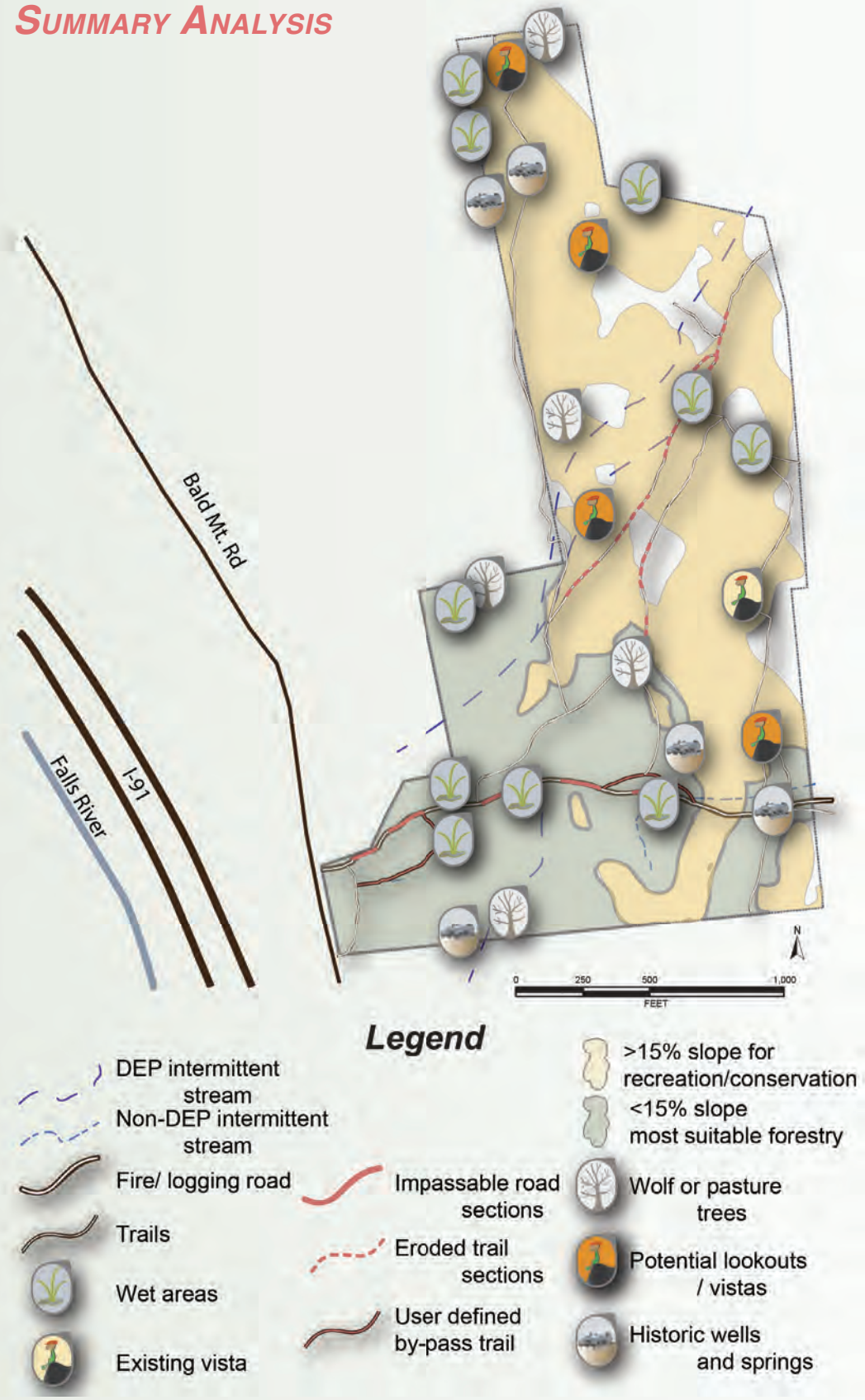
- In the event of an emergency, reaching a destination at the CFL by vehicle could be problematic;

- All wet areas and streams demand priority for exotic invasive plant (EIP) management;

- Due to the lack of signs, visitors cannot enjoy the wealth of natural and historic features; and

- To reduce impacts on wildlife, especially during vernal months, trails that pass through wetlands need appropriate crossings.

Summary Analysis



Management Scenarios Overview

Three management scenarios outline actions and their potential outcomes on the Charity Farm Lot (CFL). These are designed to give stakeholders a sense of the potential outcomes various actions will have.

Landscapes, like many other systems, have a tipping point, a position when undesirable changes can become difficult to reverse or redirect. The Charity Farm Lot (CFL) has two specific ambiguous conditions: erosion from unmanaged access routes and early stage exotic invasive plants (EIPs). These can tip the ecological balance by diminishing biodiversity and increasing disturbances. Add climate change to the mix and redirecting the negative effect becomes more challenging.

In recent years, biologists have wrestled with how natural systems like forests, altered by a range of human activities, can reach a dynamic stability that preserves ecological integrity. Ecological integrity is the ability of the landscape to continue its function for providing essential ecosystem services such as clean water, carbon sequestration, and natural resources.

Most of the Charity Farm Lot occupies a high ecological integrity. However, due to farming, logging and other practices the landscape has been altered. It wears a face today never experienced in its long natural history. The present day combination of plants, soils, water conditions, and accelerated climate changes never existed 'naturally' before. This positions it for a shift in its ecological integrity. Its dynamic nature will become forever changed unless we intervene.

The three Human Initiated Endeavors necessary to maintain a healthy ecological integrity and to keep the CFL useful to the Town include:

1. **Building Ecological Resilience**: This is accomplished by promoting healthy, diverse habitats with native species through forest stewardship efforts and hefty management practices;

2. **Reducing Erosion**: This employs Best Management Practices (BMPs) for access route design, use and management; and

3. **Engaging the Community**: This recognizes the value of this site to future generations as immeasurable, and it needs a face that is recognized and respected across all generations.

The most robust of the three management scenarios takes the Forest Management Plan (FMP) a step further by optimizing the site's numerous assets. '***Charity, Recreation and Conservation***' embrace the three measures for this management plan. The aspiration is that future generations will share the same benefits experienced by those who created the site almost 200 years ago.

The next scenario, '***Firewood and Timber***', focuses on the 2012 Forest Management Plan (FMP) with a few adjustments. Its emphasis is primarily on the first measure listed above. It is a good plan and will yield a promising future for the CFL, but it bypasses all user-centered needs.

The last approach, '***Natural Course***', offers insight into what is about to happen if the present lack of BMPs continues. It rejects the three human-initiated measures described above.

Scenario 1

Charity, Recreation & Conservation

- Public grants are used in conjunction with local funding to focus the CFL on conservation, education, and recreation;
- The FMP is implemented, so all the benefits of the second scenario 'Firewood and Timber' are realized;
- Using a cross-generational focus, the CFL Management Committee oversees the site's future;
- EIP's and trails are routinely managed by volunteers using mechanical approaches, limiting expenses and environmental impacts;
- Not-for-Profit groups, like 4-H or the Boy Scouts, rekindle the Christmas tree farm enterprise;
- The fire road is repaired using Best Management Practices (BMPs);
- A fire wood bank is developed to provide for the 'industrious needy';
- Loop trails highlight scenic, geologic and historic destinations; and
- The CFL fits into the larger Town image as an eco-tourist destination adding another reason for visitors to come to Bernardston.

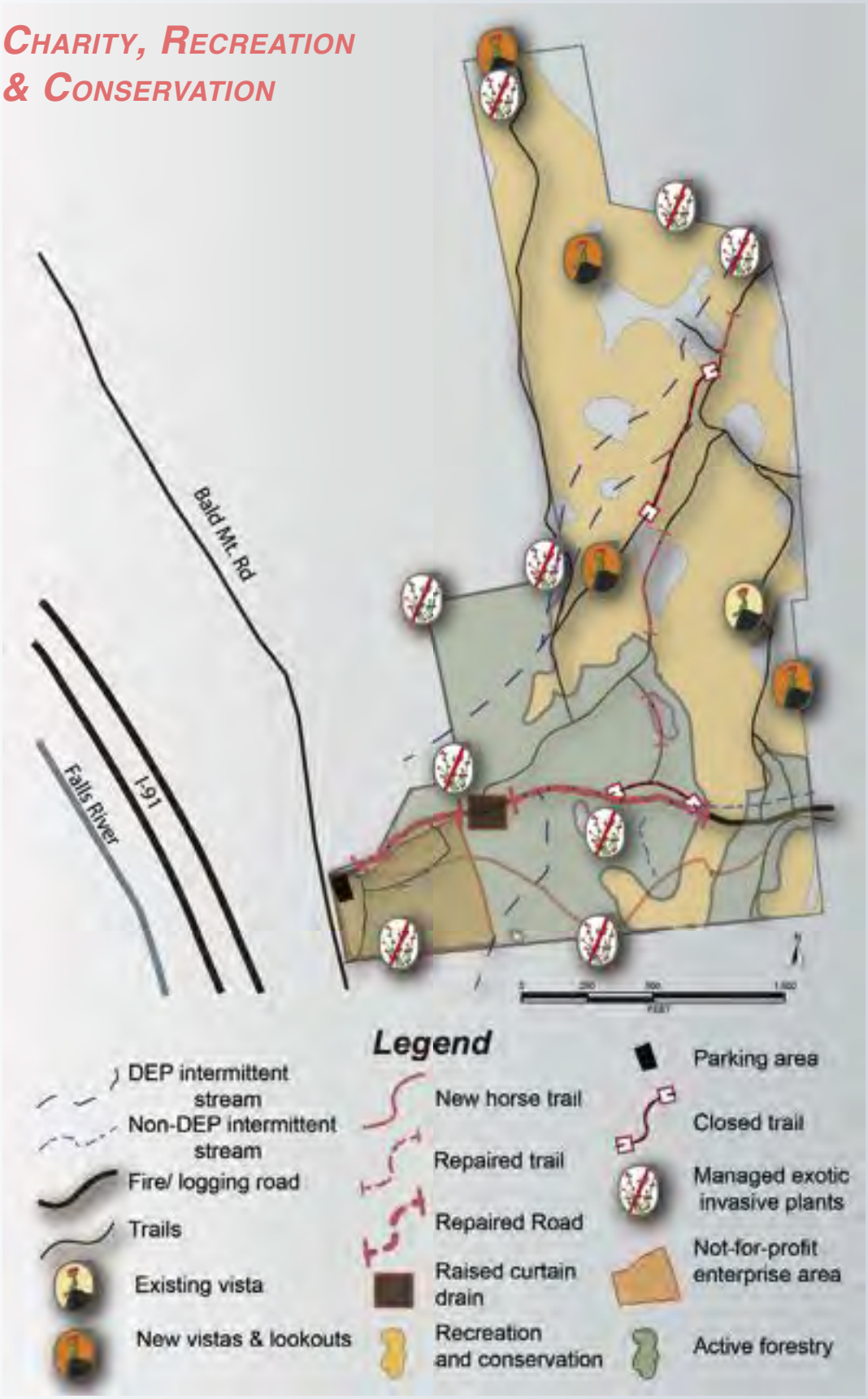
Opportunities

- Public events will spotlight the CFL with activities like GPS geo-caching, hill runs, and naturalist walks creating a sense of promise for the CFL;
- Trails will be maintained, improved and re-routed to create more engaging destinations;
- Erosion will be minimized and attract like-minded, out-door loving participants and their families;and
- Forest health and productivity resulting from implementing the FMP will improve ecological integrity and resilience `to climate change.

Constraints

- Long term investment of time and effort are required;
- Acquiring grant funding can be competitive and uncertain; and
- Local funding is limited.

Charity, Recreation & Conservation



Scenario 2

Firewood & Timber

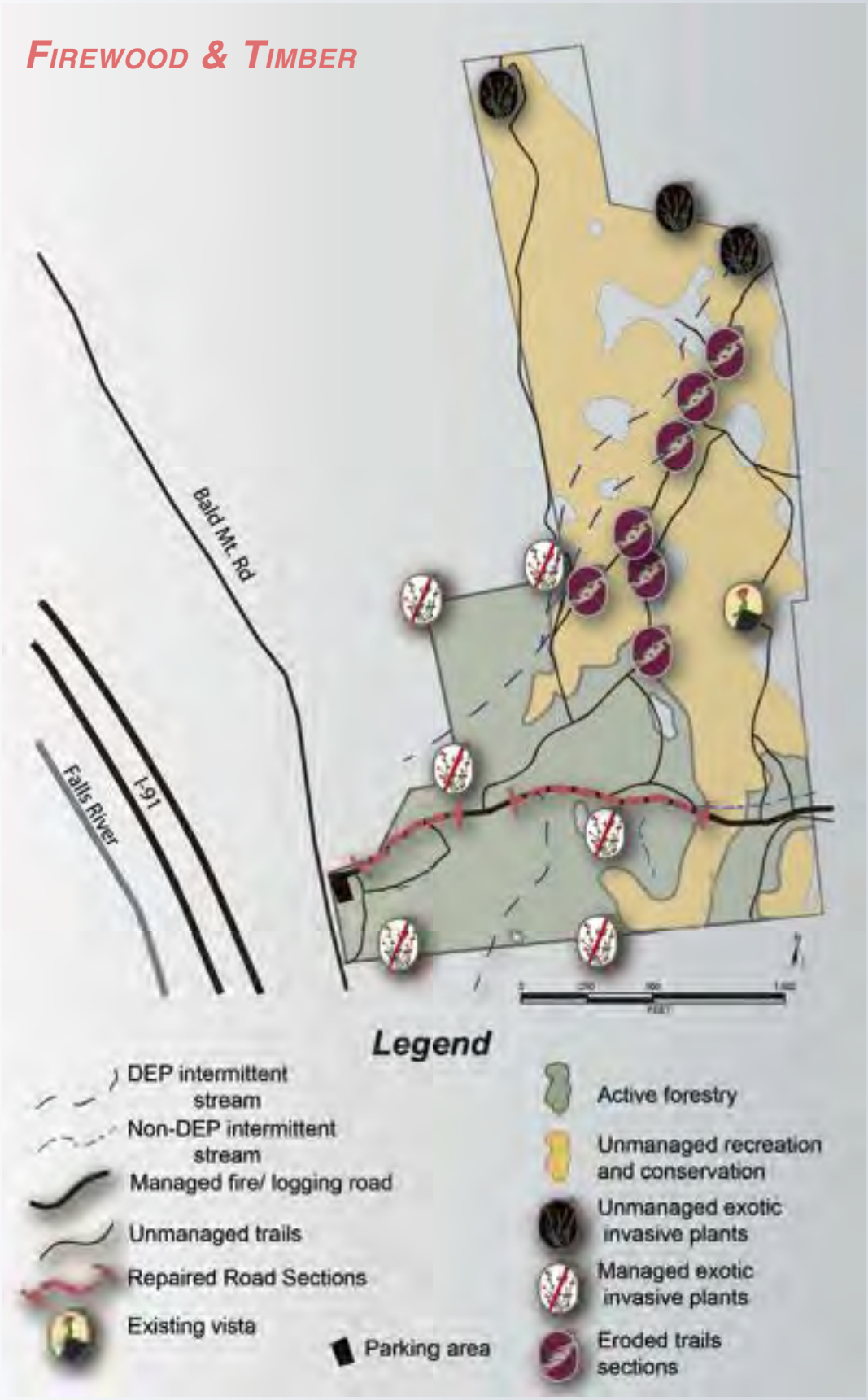
- A forest improvement budget is established by the Town to pay for implementing the 2012 Forest Management Plan (FMP) and improve the fire road;
- Tree thinning within the CFL creates development of a cord wood bank to support the 'industrious needy;'
- Little effort is placed on improving trail conditions;
- Forested areas with slopes greater than 15% are left to regenerate while EIPs are monitored and managed as needed; and
- From ongoing management of exotic invasives, vegetative buffers around wetlands are improved.

Opportunities

- Attention to forest management improves future timber values yielding marketable timbers by 2035;
- The advantages of uneven age classes of tree stands improve;
- Improved road access invites more visitors;
- The community becomes more directly invested in helping those in need through the wood bank;
- Exotic invasive plants are routinely managed, maintaining the site's ecological integrity and continuing to make the CFL a desirable site for wildlife.

Constraints

- Ongoing management could become expensive, potentially depleting the CFL Trust;
- Trails will continue to erode and become impassible as storm water runoff increases into the Falls River, affecting the water quality of the Town; and
- Only the first of three human-initiated endeavors is addressed.


Bald Mt. Rd
I-91
Falls River
Legend
DEP intermittent stream
Non-DEP intermittent stream
Managed fire/ logging road
Unmanaged trails
Repaired Road Sections
Existing vista
Parking area
Active forestry
Unmanaged recreation and conservation
Unmanaged exotic invasive plants
Managed exotic invasive plants
Eroded trails sections

Scenario 3

Natural Course

- Trail and road erosion continues to accelerate;
- The unmanaged white pine stand reaches maximum density;
- Woolly adelgid kills most of the Eastern Hemlocks in the eastern stand;
- Parking area and certain trails become overgrown;
- Opportunistic exotic invasive plants (EIPs) spread into other, more remote wet areas; and
- Storm water increasingly carries sediments, decreasing the Falls River water quality.

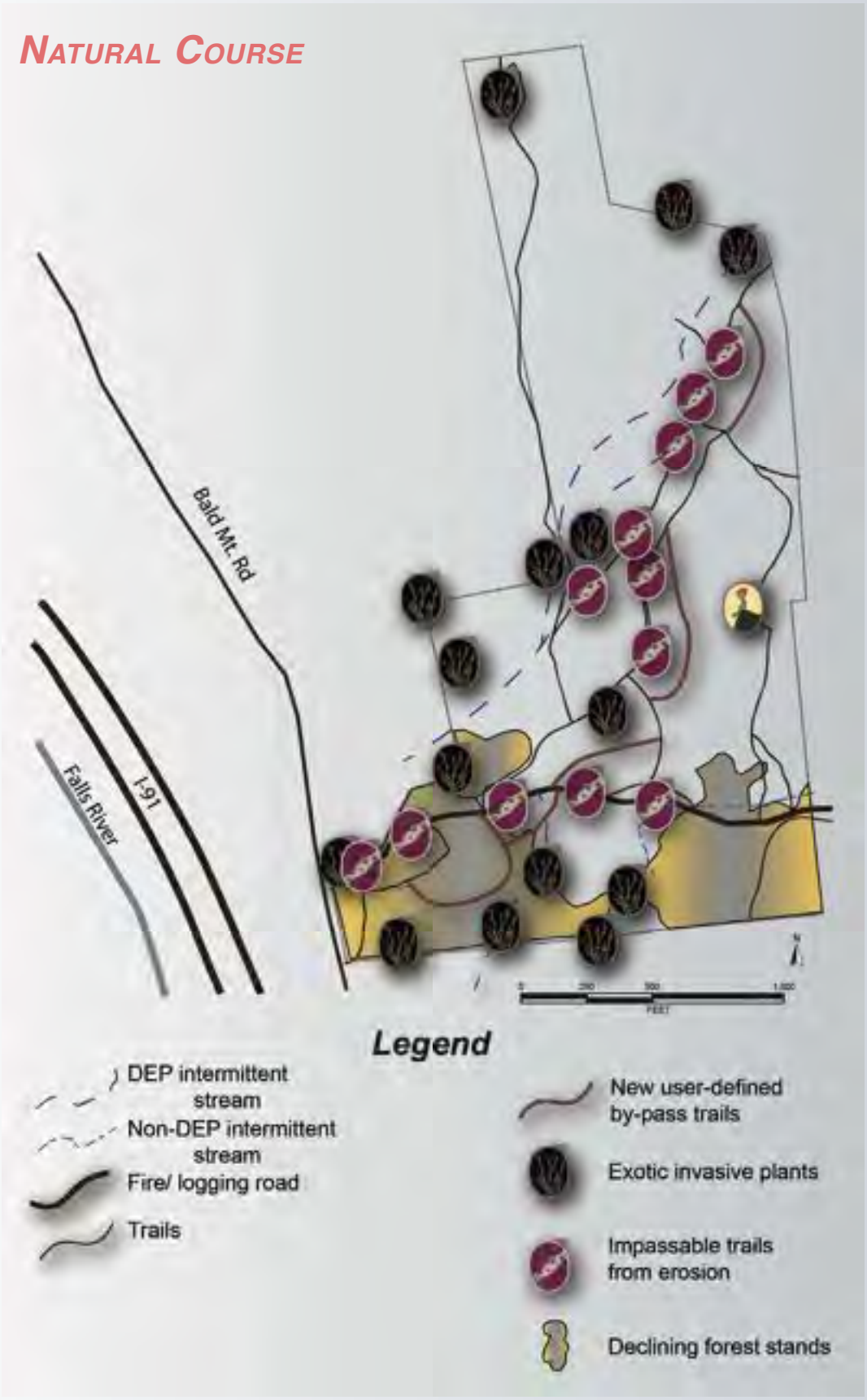
Opportunities

- No short term costs to the Town.

Constraints

- The charitable mission for the site is forfeited;
- Long term - gradual loss of ecosystem services including:
  - Recharge of Town's well with clean water;
  - Decline in biodiversity resulting in decline in hunting opportunities;
  - Diminished carbon sequestration by forest;
  - Loss of natural biological control to the area's agricultural and recreational needs; and
  - Decrease in recreational opportunities on public land;
- Trails and roads become more inaccessible and unsafe, causing users to create 'convenience trails,' which furthers the problem;
- Timber productivity is lost as disease overtakes the white pine stand allowing opportunistic exotic invasives to become established;
- EIPs further overtake native species around wetlands and decrease biodiversity;
- Fewer visitors frequent the CFL because of the unsafe on-road parking and unmarked trails;
- Ecological integrity declines making the CFL a less desirable destination for wildlife.

Natural Course



Getting Started

The Charity Farm Lot Recreation & Conservation Plan (CFLR&CP) should be initiated with a well-developed five-year plan. Once Town leaders have appointed a cross-generational CFL Planning Committee, have had an opportunity to review the CFLR&CP and tour the site, the Committee's efforts should be organized to:

- Keep Bernardston residents informed about efforts at the CFL through the Town newsletter, BNCTV, the Town's Annual Report, etc.;
- Establish a written documentation process for developing a permanent Town record of the site's activities and efforts; and
- Report progress to the Board of Selectmen.

The Planning Committee's roles are based on Scenario 1, "Charity, Recreation & Conservation," pages 50-51.

Step 1: Develop a five-year plan for the CFL

Using the CFLR&CP as a guide, the Planning Committee will:

- Define potential, on-site enterprise efforts such as a Christmas tree farm;
- Determine specific 'view-sheds' to direct new and engaging loop trails;
- Conduct a sign-making campaign to direct and inform visitors (the art department at PVRS?);
- Run a logo contest, then sell items with the logo on it;
- Establish on-site recreational activities; and
- Prioritize on-going invasive plant management and create a documentation system to track management effectiveness.

The CFL Planning Committee would then use the leverage of the CFLR&CP to obtain grant money to:

- Establish a lead time for specific grants to be fully developed and prepared;
- Determine who will write the documents and if compensation will be necessary; and
- Develop collaboration with a land trust, non-profit, and/or business sponsors to help fund the writing of grants.

Priorities for grant writing should include:

- Fire road repair employing best management practices (BMPs) for regrading and drainage;
- Trail repair and routing new loop trails using BMPs;
- Design and development of new trails using BMPs; and
- Invasive plant management for areas too difficult to control by mechanical methods.

Step 2: Implement the Forest Management Plan

Once the road is repaired and invasive plants are under control, implement the 2012 Forest management plan in the designated area delineated in either Scenario 1, " Charity, Recreation & Conservation," or Scenario 2 "Firewood & Timber," pages 50-53.

- Mark specific trees' removal for the firewood bank or drop trees leaving them to improve the soil's organic matter; and
- Establish a protocol for managing the firewood bank, so that it reaches those in need.

Appendix

Historic Time-line

Date	Description	Source
1832	Job Goodale designated Charity Farm Lot as a gi˜ to the town as a source of income to "assist the industrious and deserving poor."	Probate doc #1962, Dec 21, 1832, Kellogg, Lucy Cutter, History of Bernardston
1834	Selectmen voted to be the overseeing committee for CFL.	Anonymous History of Charity Farm Lot
1835	Town voted that the overseer of the poor appropriate annual income to assist the poor.	Anonymous History of Charity Farm Lot
1840	Large tracks of land cleared for sheep and cattle; wool industry booming in the northeast.	Wessel, Tom, Antioch University, Keene, NH
1850	Town voted to instruct overseer of poor to rent CFL at annual auction; request to begin logging granted by Town.	Anonymous History of Charity Farm Lot
1854	Town voted to sell of wood and timber; voted not to rent for less than 5 years.	Anonymous History of Charity Farm Lot
1874	Barded wire found inbedded in boundary trees is from this vintage.	https://en.wikipedia.org/wiki/Joseph_Glidden#/media/File:Patent_Drawing_for_Joseph_F._Glidden%27s_Improvement_to_Barbed_Wire_-_NARA_-_302051.tif
1902	John W. Chapin bid $990 for clearing wood and timber from CFL.	Anonymous History of Charity Farm Lot
1911	Voted that the two CFL pastures, 1 large and 1 small be rented on annual basis	Town records
1924	Pine stand near west entrance established for research	Sign at CFL Entrance
1929	Nine-acres of CFL sold to Streeter	CFL map by Lucius R. Clark, September 20, 1955
1938	Town voted to sell easement for spring water on south boundary for $25 to Herman Streeter.	1938 Annual Report and
1956	Town voted to begin logging mature pine with $200 for improvement, and the remainder for CFL Trust.	1956 Annual Report and
1957	More than 2000 evergreen seedlings planted by the Bernardston Forest Commission and the Boy Scouts; over 30 acres was planted and fenced.	1958 & 1959 Annual Reports, letter fro BOS, January 20, 1956 from Herman B. Dine, Massachusetts Department of Corporations and Taxation, Director of Accounts, Boston; Annual Town Report, 1962
1959	"Article 3-Voted to raise and appropriate the following Charity Farm Improve. Fund $40"	1959 Annual Report
1960	"Article 3-Voted to raise and appropriate the following Charity Farm Improve. Fund $20"	1960 Annual Report

Date	Description	Source
1961	° e Charity Farm Restoration project continues clearing underbrush by 'several interested citizens.'	1961 Annual Report
1962	500 Christmas trees ordered from the State for planting this year	1962 Annual Report
1963	Planting of seedlings continues; $50 appropriated	1963 Annual Report
1964	Discussions for clearing a ÿre road while clearing continues	1964 Annual Report
1965	$150 Christmas trees sold by Boy Scouts; recognized Charles Herrick and Robert Messer for e″ orts	1965 Annual Report
1966	Article 18 Voted to raise & appropriate $150 for general improvement	1966 Annual Report
1973	First request to Town for recreational use by William Underwood, who requested logging CFL to create a recreation area	° e Greenÿeld Recorder, 11/1973
1994	Balance of CFL Trust $45,748.72	1994 Treasurer's Report
2012	Forest Stewardship Plan completed by Brad Bordewieck and Bob Herrick and Lincoln Fish. Approved by DCR	Bordewieck, Bradley, Herrick, Robert, Fish, Lincoln, Forest Management Plan, 2012
2013	Charity Farm Lot Surveyed and Registered	Town of Bernardston, 84.641 acres, Registered Plan Book 150, Page 50

ANNUAL REPORT BALANCES

Year	Trust Value
1956	$2,895
1971	$4,426
1972	$4,628
1973	$4,800
1974	Not reported
1975	$5,520
1976	$5,696
1977	$5,912
1978	$6,191
1980	$6,974
1981	$7,100
1982	Not reported
1983	Not reported
1983	$20,246
1984	$24,094
1985	$22,691
1986	Not reported
1987	Not reported
1988	$30,725
1989	$30,499
1990	$36,180

Year	Trust Value
1991	$38,644
1992	$40,672
1993	$43,144
1994	$45,749
1995	$47,899
1996	$49,813
1997	$52,476
1998	$55,329
1999	$66,015
2000	$69,746
2001	$72,987
2002	$76,429
2003	$79,230
2004	$52,262
2005	$57,855
2006	$87,921
2007	$91,310
2008	$96,012
2009	$98,633
2010	$97,883
2011	$94,946

COMMUNITY INPUT

Results of CFL Workshop, April, 2013

ATTRIBUTES OF THE CFL

- Great escape, easily accessible by car or cycle
- Many potential destinations
- Woodlands invite abundant wildlife
- Intriguing rocky outcrops and ridges
- Some easy, well-planned trails
- Hunting and off-road vehicle use available
- Few exotic invasive plants threaten habitat
- Beautiful vista view
- Forest Management Plan addresses forest health

CONSTRAINS / CONFLICTS

- No clear signs to direct visitors
- Limited destinations
- Trails random, few loops
- Several trails cross onto private property
- Unclear property boundaries create confusion
- Designated-use areas non-existent
- Road access crosses restricted well-protection zone
- Poorly directed drainage causes excessive erosion

POTENTIAL IMPROVEMENTS

- Post clear signs
- Design loop trails, especially along vista-view ridges
- Re-direct drainage to curb erosion
- Develop places to sit, relax, enjoy a meal....
- Designate use areas
- Provide safe, off-road parking
- Remove invasive plants to preserve habitat
- Offer no / low-cost seasonal activities
- Identify key areas to reserve for specific purposes
- Develop youth-centered projects that engage and teach outdoor skills

Input from July 2014 Community Workshop

General	• The newly completed certified survey clearly identifies the site's boundaries	• Clear boundaries are necessary for all endeavors
Forest & vegetation	• The forest management plan provides valuable details necessary for healthy restoration; • Trees in 3 of 6 forest stands require immediate cord wood thinning & removal; • The largest 54-acres stand needs thinning & leaving dropped trees to rot and improve soil; and • Four species of invasive plants are in their early stages of takeover.	• The forest could yield about 25 cords of wood during the next few years; • Thinned trees could become a cord wood bank to support those in need; • Invasive plants will become a serious threat if unmanaged before forest thinning begins; and • Routine forest management is essential to site's future health & productivity.
Soils/Water	• Severe erosion exists on trails and the fire road; and • Less than 4 acres of accessible land has soil suitable for agriculture.	• Erosion impacts water quality, wildlife and routine management; • Routine erosion management is essential to site's future health and productivity; • Town money should be budgeted to improve the fire road's existing condition; • Drainage on trails and the fire road could be greatly improved with low-tech water bars and French drains; • Without safe access, the forest cannot be successfully managed; and • Prime Farming Soils, located near the lot's entrance, provide the greatest opportunities for food production.
Access & Circulation	• Entrance and trail signs/ blazes are absent; and • The 2.2 mile distance from the town's center makes it accessible only by car or cycle.	• The distance from the town; and • Absence of clear trail blazes and welcoming signs makes the visitor experience difficult and detracts from improving community engagement.
Community support	• Income from forestry products is unrealistic in the foreseeable future; and • Most visitors are the abutting neighbors, familiar with the site.	• Generating opportunities for the industrious needy poses many challenges; and • Alternative approaches to "getting the work done" by volunteers will be vital.

Priorities

● ***Accessibility*** - clear the historic park are near entrance, repair roads and trails with adequate blazing and erosion management. All forest management should be led by a trained professional, e.g. marking trees for thinning, re-routing, renewing trails in steep areas, siting water management controls, etc.;
● ***Restore forest's natural features*** with BMPs, including stand health by thinning, invasive plants control and monitoring, etc.;
● I***dentify locations and extent for various users*** with restrictions that preserve the site's health and beauty;
● ***Engage users*** by asking for routine help in trail management, e.g. erosion control with water bars, re-routing trails to minimize erosion;
● ***Apply for grants*** to recover the site and establish a paid person to lead its maintenance;
● ***Consider alternative ways to secure help*** with maintenance such as the Franklin County Jail, community groups like 4 H and Kiwanis; and
● ***Establish a firewood bank*** from site thinnings to support those in need.

Resources

Federal Government

° e Natural Resources Conservation Service (NRCS) works with landowners through conservation planning and assistance to beneÿt the soil, water, air, plants, and animals for productive lands and healthy ecosystems. www.nrcs.usda.gov/

° e United States Department of Agriculture (USDA), Natural Resources Conservation Service, Plants Database. plants.usda.gov/java/

° e United States Environmental Protection Agency (EPA) provides grants that fund state environmental programs, non-proÿts, educational institutions, and others. ° e grant money is used for a wide variety of projects to achieve the EPA's overall mission to protect human health and the environment. www.epa.gov

State Government

° e Massachusetts Association of Conservation Commission's mission is education of and support for Conservation Commissions. In addition, MACC works for strong, workable, science-based laws and regulations regarding wetlands, other water resources, open space, and biological resources. maccweb.org

° e Massachusetts Division of Fisheries and Wildlife/ Natural Heritage and Endangered Species is responsible for the conservation and protection of hundreds of species that are not hunted, ÿshed, trapped, or commercially harvested in the state. www.mass.gov/dfwele/dfw/nhesp/nhesp

° e Massachusetts Executive O˙ ce of Energy and Environmental A˝airs' overall mission is to safeguard public health from environmental threats and to preserve, protect, and enhance the natural resources of the Commonwealth. www.mass.gov/?pageID=eoeeahomepage&L=1&L0=Home&sid=Eoeea

° e MassGIS is the Commonwealth of Massachusetts' O˙ ce of Geographic Information, a statewide resource for geospatial technology and data. www.mass.gov/mgis/

Non-Governmental Organizations (NGOs)

° e Massachusetts Audubon Society works to protect the nature of Massachusetts for people and wildlife. ° e organization cares for 34,000 acres of conservation land, provides educational programs for children and adults, and advocates for sound environmental policies at local, state, and federal levels. www.massaudubon.org

° e National Recreation and Park Association (NRPA) is the leading advocacy organization dedicated to the advancement of public parks and recreation opportunities. www.nrpa.org/

° e mission of the Nature Conservancy is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive.

Local Fire Management Specialist-Plymouth, MA – Alex Belote, Abelote@tnc.org.

° e New England Forestry Foundation (NEFF) is today recognized as a leader in conserving working forests, educating the public about forestry, and assisting landowners in the long-term protection and sustainable management of their properties. www.newenglandforestry.org/

° e Trustees of Reservations has properties of exceptional scenic, historic, and ecological value for public use and enjoyment in Massachusetts. www.thetrustees.org/

° e Lady Byrd Johnson Wild^ ower Center at the University of Texas at Austin, Native Plant Database is yet another resource. www.wild^ ower.org/plants.

Grants

Source	Major Focus	Contact/Website	Due	$$$
William P. Wharton Trust	Supports the study and conservation of nature in its broadest form on the local, national, and international scenes.	http://www.williampwhartontrust.org/	Open	Not Speciÿed
USDA - People's Garden Grant Program	Facilitates the creation of produce, recreation, and/or wildlife gardens in urban and rural areas, which will provide opportunities for science-based informal education. Successful applicants will provide micro-subgrant support to smaller local projects.	http://www.nifa.usda.gov/fo/peoplesgardengrantprogram.cfm	August	Not Speciÿed
TogetherGreen Innovation Program	Enables Audubon groups and their partners to engage new and diverse audiences in conservation action and create healthier communities	www.togethergreen.org/grants	May	$5,000 to $80,000
Roy A. Hunt Foundation Grants	Facilitates the protection and conservation of natural resources and healthy ecosystems by supporting sustainable solutions to root causes of environmental damage.	http://www.rahuntfdn.org/apply.shtml	August	Not Speciÿed
Project Learning Tree's GreenWorks! Grant Program	Blends service activities with an academic curriculum and addresses real community needs as action projects make a di″erence in young people's sense of responsibility toward their communities and in their understanding of their relationship to the environment.	http://www.plt.org/applyforagrant	Sept 30	$1,000

Source	Major Focus	Contact/Website	Due	$$$
Orton Family Foundation Heart & Soul Community Planning Funds	Provides technical/ÿnancial assistance that helps to unlock potential by identifying local values, building a vision from them, and prioritizing actions.	http://www.orton.org/who/heart_soul	July	Cash/ In kind resources up to $25,000
NRCS Conservation Innovation Grant proposals	Stimulates the development and adoption of innovative conservation approaches and technologies, while leveraging the federal investment in environmental enhancement and protection in conjunction with agricultural production.	USDA Natural Resources Conservation Service, 451 West Street, Amherst, MA 01002, 413-253-4368; deb.johnson@ma.usda.gov.	March	Up to $75,000 for 3 years
North Quabbin Regional Landscape Partnership Small Grants Program	Provides funding for land protection transaction fees, including title reviews, appraisals, legal fees and other closing costs, registry fees, surveys, baseline reports, land protection estate planning, municipal circuit grant writers, and other related fees.	http://www.nqpartnership.org/sgp.htm	May	Up to $4000/ cycle
National Grid	Supports educational opportunities that assist people of all ages and advances their opportunities for self-su˙ ciency. ° e Foundation seeks to develop partnerships with outstanding organizations that beneÿt the communities.	http://www.nationalgridus.com/commitment/d3-6_giving.asp	Rolling thru Oct 31	$5000 to $25,000

GRANTS, CONTINUED

Source	Major Focus	Contact/Website	Due	$$$
National Fish & Wildlife Foundation Invasive Species Grant	Seeks proposals that will help control invasive plant species, mostly through the work of public/private partnerships such as cooperative weed management areas.	http://www.nfwf.org	June	Not Speciÿed
MA DCR Recreational Trails Grant Programs Environmental Trust	Supports a range of projects that beneÿt the waters of Massachusetts.	http://www.mass.gov/dcr/stewardship/greenway/regionalGrants.htm	October	
Lowes Toolbox for Education Grants	Meets the goals and dreams of a school.	http://www.toolboxforeducation.com/index.html	Mid - October	up to $5000
Norman Foundation	Strengthens the ability of communities to determine their own economic, environmental and social well-being and helps people control those forces that a″ ect their lives.	http://normanfdn.org	Open	Not Speciÿed
Copeland Family Foundation (no web site)	Provides grants to a large number of educational, health and environmental programs and organizations in Massachusetts.	Letters should be addressed to: Copeland Family Foundation, c/o Martha Verdone, 1183 Randolph Avenue, Milton, MA 02186.	Open	Not Speciÿed
EASTER Foundation	Focuses on education, arts, sustainability, technology, environment and rights.	http://easterfoundation.org	Open	Not Speciÿed

Source	Major Focus	Contact/Website	Due	$$$
Five Star Restoration Grant	Support community-based wetland, riparian, and coastal habitat restoration projects that build diverse partnerships and foster local natural resource stewardship through education, outreach and training activities. Integrates meaningful environmental education into the restoration project either through community outreach, participation, and/or integration with K-12 environmental curriculum.	http://www.nfwf.org/AM/Template.cfm?Section=Charter_Programs_List&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=18198	Mid - February	Not Speciÿed
Fields Pond Foundation	Provides ÿnancial assistance to nature and land conservation organizations that are community-based and that serve to increase environmental awareness by involving local residents in conservation issues. O″ers grants for trail making and other enhancement of public access to conservation lands, rivers, coastlines and other natural resources.	http://www.ÿeldspond.org/index.htm	None	Not Speciÿed
Minnesota-based Cherbec Advancement Foundation (no web site)	O″ers a wide variety of environmental, educational and other charitable causes in New England.	Requests for funding should be directed to: Charles A. Weyerhaeuser, President, 30 East Seventh St., Suite 2000, St. Paul, MN 55101-4930, (651) 228-0935.	Open	Not Speciÿed
Sharpe Family Foundation (no web page)	Provides grants to a number of environmental and educational organizations. Requests for funding should be in the form of a letter describing needs and interests.	Henry D. Sharpe Jr. c/o Amy E. Szostak, Northern Trust, 50 S. Lasalle St., Chicago, IL 60675, (312) 630-6000.	Open	Not Speciÿed

GRANTS, CONTINUED

Source	Major Focus	Contact/Website	Due	$$$
Community Foundation of Western MA Grant	Encourages creative and collaborative responses to existing or emerging problems or opportunities and projects that leverage additional support for programs from other private and public funding sources.	http://www.communityfoundation.org/nonproÿts/criteria.html	August	Not Speciÿed
Community Forest and Open Space Conservation Program	Helps communities and Indian tribes to manage forests, including recreation, income, and environmental education.	http://www.fs.fed.us/spf/coop/programs/loa/cfp.shtml	Mid - October	Not Speciÿed
Executive O˜ ce of Energy & Environmental A°airs	Land and Water Conservation Fund for the development outdoor recreation.	www.nps.gov/lwcf.	November	$250,000

WELLHEAD PROTECTION

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION - DRINKING WATER PROGRAM

MA Wellhead Protection Regulations 310 CMR 22.21(2)[1]

[with selected excerpts from the Source Approval Regulations]

310 CMR 22.21(1) Source Approval

(c) . No public water supply well or wellfield designed to pump 100,000 gallons per day or more shall be constructed, expanded or replaced unless the Department finds in writing that the proponent has drafted wellhead protection zoning or non-zoning controls that prohibit siting within the Zone II the land uses set forth in 310 CMR 22.21(2)(a) and 310 CMR 22.21(2)(b) unless designed in accordance with the performance standards specified therein.

Requirement for drafting municipal wellhead protection controls

(d) . No public water supply well or wellfield designed to pump 100,000 gallons per day or more shall be placed on-line unless the cities and towns in which any part of the *Zone II of the proposed well or wellfield is located have wellhead protection zoning or non-zoning controls in effect that prohibit siting within the Zone II the land uses set forth in 310 CMR 22.21(2)(a) and 310 CMR 22.21(2)(b)* unless designed in accordance with the performance standards specified therein. If the public water system is owned or controlled by an entity other than a municipality, the proponent must demonstrate to the Department's satisfaction that it has used its *best efforts* to have those cities and towns in which the Zone II is located establish such zoning or non-zoning controls.

Best Effort Requirement for non-municipal public water systems

(e) Notwithstanding 310 CMR 22.21(d)(2), no public water supply well or wellfield designed to pump 100,000 gallons per day or more that will be used in a public water system owned or operated by a municipality, and is located within that municipality, shall be placed on-line *unless the municipality has wellhead protection zoning or non-zoning controls in effect that prohibit siting within the Zone II the land uses set forth in 310 CMR 22.21(2)(a) and 310 CMR 22.21(2)(b)* unless designed in accordance with the performance standards specified therein. If the Zone II of a municipal public water system extends into another municipality, the water supplier must also demonstrate to the Department's satisfaction that it has used its *best efforts* to have all cities and towns into which the Zone II extends establish such zoning or non-zoning controls.

Best Effort Requirement for Zone II located in another municipality

310 CMR 22.21(2) Wellhead Protection

(a) Wellhead protection zoning and non-zoning controls submitted to the Department in accordance with 310 CMR 22.21(1), shall collectively prohibit the siting of the following land uses within the Zone II, or Zone III if the criteria of 310 CMR 22.21(1)(f) have been met, of the proposed well or wellfield, whichever is applicable:

Prohibitions 310 CMR 22.21(2)(a)(1) through (b)(7), must be adopted prior to the operation of a new municipal well. For existing permitted wells, refer to the due date in your water withdrawal permit

1. landfills and open dumps, as defined in 310 CMR 19.006;
2. landfills receiving only wastewater residuals and/or septage (wastewater residuals "monofills")
3. automobile graveyards and junkyards, as defined in MGL. c. 140B, §1;

[1] *as amended through 2001*

4. stockpiling and disposal of snow or ice removed from highways and streets located outside of Zone II that contains sodium chloride, chemically treated abrasives or other chemicals used for snow and ice removal;

5. petroleum, fuel oil and heating oil bulk stations and terminals, including, but not limited to, those listed under Standard Industrial Classification (SIC) Codes 5171 and 5983, not including liquefied petroleum gas. SIC Codes are established by the U.S Office of Management and Budget and may be determined by referring to the publication, Standard Industrial Classification Manual and any subsequent amendments thereto;

6. treatment or disposal works subject to 314 CMR 5.00, for wastewater other than sanitary sewage. This prohibition includes, but is not limited to, treatment or disposal works related to activities under the Standard Industrial Classification (SIC) Codes set forth in 310 CMR 15.004(6) (Title 5), except the following:

   a. the replacement or repair of an existing system(s) that will not result in a design capacity greater than the design capacity of the existing system(s);

   b. treatment works approved by the Department designed for the treatment of contaminated ground or surface waters and operated in compliance with 314 CMR 5.05(3) or 5.05(13); and

   c. publicly owned treatment works, or POTW;

7. facilities that generate, treat, store or dispose of hazardous waste that are subject to MGL. c. 21C and 310 CMR 30.000, except for the following:

   a. very small quantity generators, as defined by 310 CMR 30.000;

   b. household hazardous waste collection centers or events operated pursuant to 310 CMR 30.390;

   c. waste oil retention facilities required by MGL. c. 21, § 52A; and

   d. treatment works approved by the Department designed in accordance with 314 CMR 5.00 for the treatment of contaminated ground or surface waters

VSQGs produce less than 220 pounds and less than 27 gallons of hazardous waste per month

8. any floor drainage systems in existing facilities, in industrial or commercial hazardous material and/or hazardous waste process areas or storage areas, which discharge to the ground without a DEP permit or authorization. Any existing facility with such a drainage system shall be required to either seal the floor drain (in accordance with the state plumbing code, 248 CMR 10.00[2]), connect the drain to a municipal sewer system (with all appropriate permits and pre-treatment), or connect the drain to a holding tank meeting the requirements of all appropriate DEP regulations and policies.

The floor drain prohibition must be a non-zoning control.

(b) Wellhead protection zoning and non-zoning controls submitted to the Department in accordance with 310 CMR 22.21(1), shall collectively prohibit the siting of the following land uses within the Zone II, or Zone III if the criteria of 310 CMR 22.21(1)(f) have been met, of the proposed well or wellfield, whichever is applicable, unless designed in accordance with the specified performance standards:

1. storage of sludge and septage, unless such storage is in compliance with 310 CMR 32.30 and 310 CMR 32.31;

[2] Formerly 248 CMR 2.00. Amended 2005.

WELLHEAD PROTECTION, CONTINUED

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION - DRINKING WATER PROGRAM

2. storage of sodium chloride, chemically treated abrasives or other chemicals used for the removal of ice and snow on roads, unless such storage is within a structure designed to prevent the generation and escape of contaminated runoff or leachate;

3. storage of commercial fertilizers; unless such storage is within a structure designed to prevent the generation and escape of contaminated runoff or leachate;

4. storage of animal manures, unless such storage is within a structure designed to prevent the generation and escape of contaminated runoff or leachate.

5. storage of liquid hazardous materials and/or liquid petroleum products unless such storage is above ground level AND on an impervious surface in container(s) AND either;
   (a). in above ground tank(s) within a building on an impervious surface OR;
   (b). outdoors in covered container(s) or above ground tank(s) in an area that has a containment system designed and operated to hold either 10% of the total possible storage capacity of all containers, or 110% of the largest container's storage capacity, whichever is greater;

6. the removal of soil, loam, sand, gravel or any other mineral substances within four feet of the historical high groundwater table elevation (as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey), unless the substances removed are re-deposited within 45 days of removal on site to achieve a final grading greater than four feet above the historical high water mark, and except for excavations for the construction of building foundations or the installation of utility works;

7. land uses that result in the rendering impervious any lot or parcel more than **15% or 2500** square feet, whichever is greater, unless a system for artificial recharge of precipitation is provided that will not result in the degradation of groundwater quality.

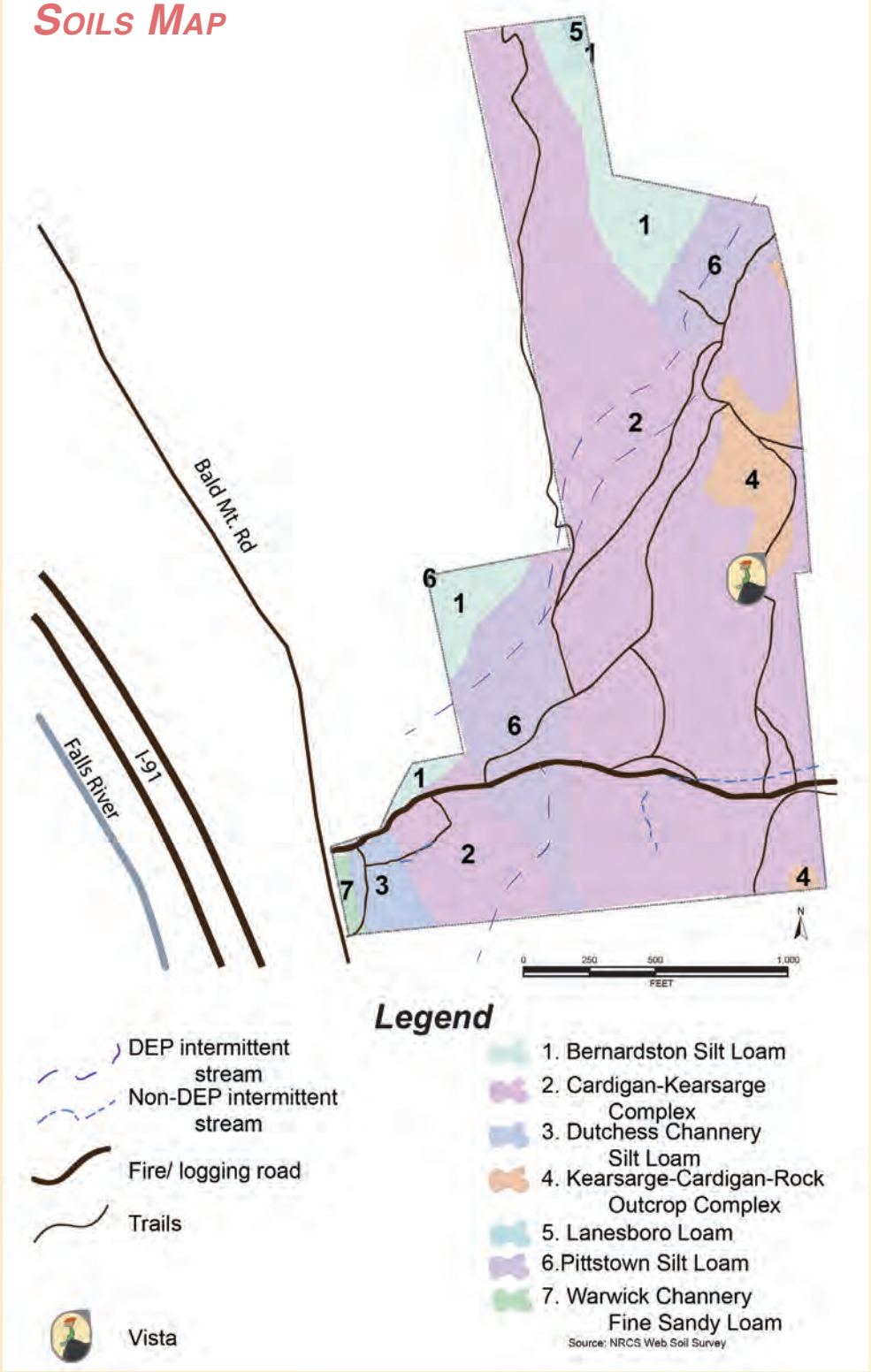
For the complete MA Drinking Water Regulations 310 CMR 22.00, see
www.mass.gov/dep/brp/dws/regs.htm

Copies of these regulations are also available at the State House Bookstore; 617-727-2834 and 413-784-1376

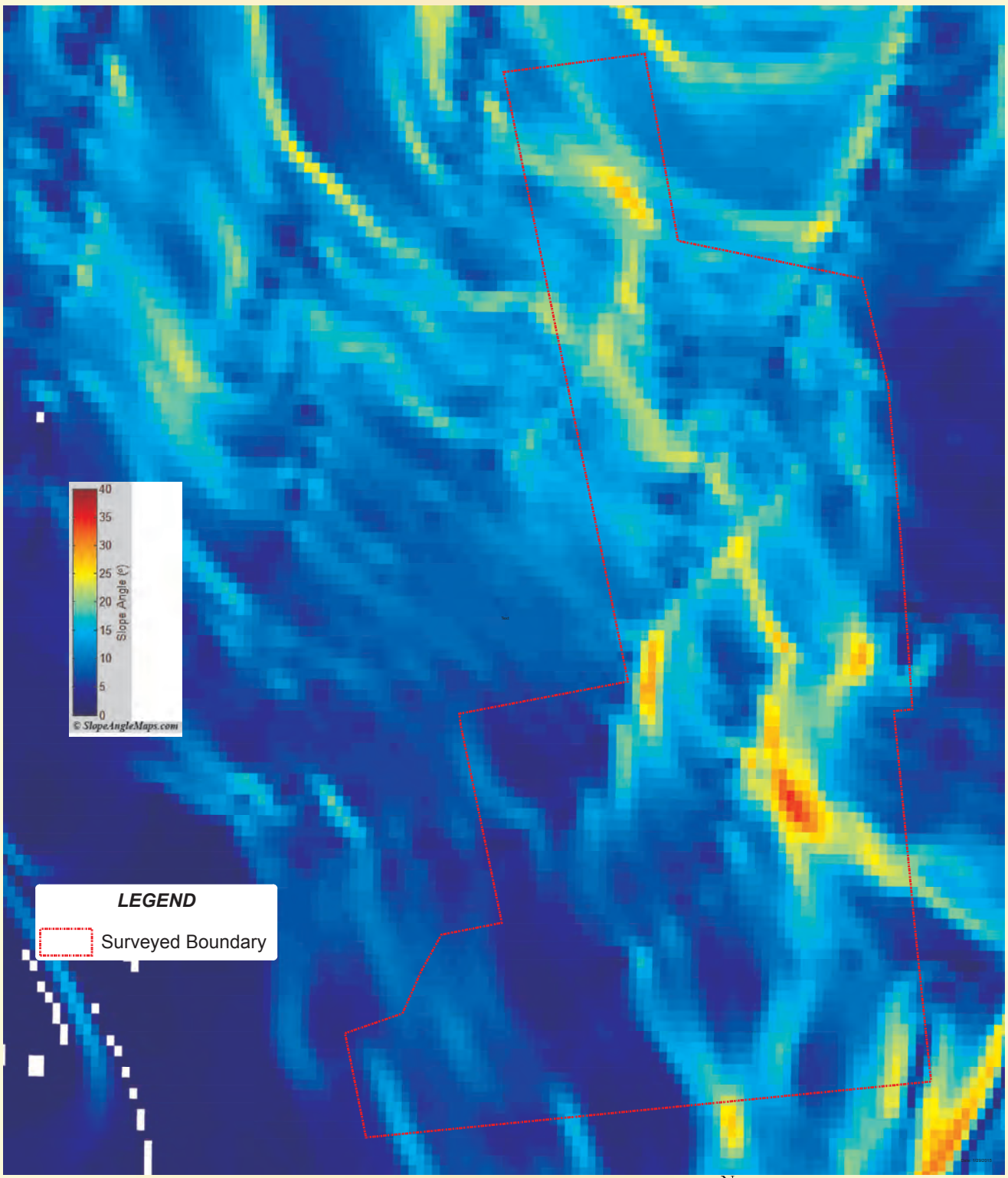
SOIL

Soil	Slope Sub groups	Rocky	Texture	Drain-age	Runo˜ class	Water table	Farmland classiÿ ca-tion	Site per-cent	Site acres
Cardigan-Kearsarge Com-plex (142B,C,D, & F)	3 to 8, 8 to 15, 15 to 25, 25 to 60 % slope	Very	Loamy supra glacial till	Well drained	Medi-um to high	> 80”	Not prime farmland	70%	59
Kearsarge-Cardigan-Rock outcrop com-plex (142F)	8 to 15% slope	Very	Loamy supragla-cial till	Some-what ex-cessively drained	Very high	> 80”	Not prime farmland	5%	4
Warwick channery ÿne sandy loam (266B & C)	3 to 8, 8 to 15 % slope	Low	Sandy & gravelly glacial-ˆ uvial deposit	Some-what ex-cessively drained	Low	> 80”	Prime farmland to farmland of statewide importance	1%	0
Bernardston silt loam (330C) & very stony (331C & D)	8 to 15, 15 to 25, 25 to 60 % slope	Low to medium	Loamy lodg-ment till	Well drained	Very high	15 to 60”	Farmland of statewide impor-tance to not prime farmland	9%	7
Pittstown Silt Loam (345B) & very stony (346B)	3 to 8 % slope	Low	Loamy lodg-ment till	Mod-erately well drained	Medi-um	18 to 24”	Farmland of statewide importance	13%	11
Dutchess channery silt loam (470D)	15 to 25 % slope	Low	Loamy supragla-cial till	Well drained	Medi-um	> 80”	Not prime farmland	2%	2
Lanesboro loam (521F)	25 to 45 % slope	Very	Loamy lodg-ment till	Well drained	Very high	15 to 30”	Not prime farmland	0%	0

Soils Map


Bald Mt. Rd
I-91
Falls River
1
2
3
4
5
6
7
N
0
250
500
1,000
FEET
Legend
DEP intermittent stream
Non-DEP intermittent stream
Fire/ logging road
Trails
Vista
1. Bernardston Silt Loam
2. Cardigan-Kearsarge Complex
3. Dutchess Channery Silt Loam
4. Kearsarge-Cardigan-Rock Outcrop Complex
5. Lanesboro Loam
6.Pittstown Silt Loam
7. Warwick Channery Fine Sandy Loam
Source: NRCS Web Soil Survey

REGIONAL SLOPE ANGLE



SOURCE: MassGIS; NRCS Web Soil Survey,
Based on 2013 Survey, not Intended for legal use

Coordinate System: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001Lambert Conformal Conic

John C. Lepore, Restoration Ecologist & Designer
FUTURE LANDS DESIGNS, LLC

Amended Forest Management Plan

dcr

FOREST MANAGEMENT PLAN

Submitted to: Massachusetts Department of Conservation and Recreation
For enrollment in CH61/61A/61B and/or Forest Stewardship Program

CHECK-OFFS

CH61	CH61A	CH61B	STWSHP	C-S
cert. ☐	cert. ☐	cert. ☐	new ☐	EEA ☒
recert. ☐	recert. ☐	recert. ☐	renew ☒	Other ☐
amend ☐	amend ☐	amend ☐	Green Cert ☐	
			Conservation Rest. ☐	
Plan Change: ____ to ____			CR Holder ____	

Administrative Box

Case No.		Orig. Case No.	-
Owner ID		Add. Case No.	
Date Rec'd		Ecoregion	
Plan Period		Topo Name	Bndstn
Rare Spp. Hab.		River Basin	CT

OWNER, PROPERTY, and PREPARER INFORMATION

AMENDED 2/16

Property Owner(s) Town of Bernardston, MA
Mailing Address P.O. Box 504, Bernardston, MA 01337 Phone (413) 498-5401

Property Location: Town(s) Bernardston Road(s) Bald Mountain Rd

Plan Preparer Michael Mauri, Forester Mass. Forester License # 161
Mailing Address 20 West Street, South Deerfield, MA 01373 Phone (413) 665-6829

RECORDS

Assessor's Map No.	Lot/Parcel No.	Deed Book	Deed Page	Total Acres	Ch61/61A 61B *Excluded* Acres	Ch61/61A 61B **Certified** Acres	Stewshp *Excluded* Acres	Stewshp Acres
25	D6	*	-	84.64	84.641	0	0	84.641
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
			TOTALS	84.64	84.641	0	0	84.641

Excluded Area Description(s) (if additional space needed, continue on separate paper)
None

HISTORY

Year acquired 1832 Year management began 2012

Are boundaries blazed/painted? Yes ☐ No ☒ Partially ☐

What treatments have been prescribed, but not carried out (last 10 years if plan is a recert.)?
stand no. ____ treatment ____ reason ____
(if additional space needed, continue on separate page)

Previous Management Practices (last 10 years)

Stand #	Cutting Plan #	Treatment	Yield	Value	Acres	Date

Remarks: (if additional space needed, continue on separate page)
*see will of Job Goodale probate doc. #1962 (12/21/1832). See next page for explanation of amendment.

(Form revised February 2008) Page ____ of ____

Overview of Forest Stewardship Plan Amendment
Town of Bernardston Charity Lot, February 3, 2016

Background: in September, 2015, John Lepore, owner of Future Lands Designs, working on behalf of the Town of Bernardston, contacted Michael Mauri, Licensed Forester, with a request to help amend a Forest Stewardship Plan that had been prepared for the Town of Bernardston Charity Lot and submitted to DCR in June, 2012 (Case # 029-9465). The intent of the amendment was not to create a new Forest Stewardship Plan from scratch, but rather to make adjustments to the existing plan in light of new information and emphasis.

The following background information was provided:

- John Lepore indicated he is leading a voluntary restoration of Charity Farm Lot and this includes removing/controlling exotic invasive plants. Foreseeably, the removal/control will be manual.
- John Lepore was going to appear before the ConCom in October with an RDA in order to be able to proceed with exotic invasive plant removal in potential wetlands.
- John Lepore wished to revise the Forest Stewardship Plan to include invasive plant species he had identified and mapped during the development of a site management plan which will include recreational use and logging in the far future. He indicated that the original FSP did not include invasive plant removal, and he requested that this be included in the amended FSP.

In a fact-gathering phase, the following information was produced:

1) Forest Stand and Boundary Maps (pages 26 & 27 of the original FSP) were located: these had been missing from the FSP on file with the Town of Bernardston,
2) A map showing the extent of invasive plant populations was provided by John Lepore.
3) A land survey was completed in 2013 and recorded at Plan Book 135, Page 50 (Franklin County Registry of Deeds). According to John Lepore, the boundaries are well marked now as well (blazed).
4) In the course of researching this amendment, John Lepore contacted Mark Stinson (DEP) for guidance in the treatment of invasive plants in wetland areas. Mark Stinson (DEP) provided him with a complicated communication that had been developed for a possibly related situation in Ware.

All of the above materials are included in the ADDENDUM.

In a fact-gathering phase, the following goal was added: control invasive plants. John Lepore proposed the following approach to remove/ control invasive plants:

1) Identify by on-site mapping wetlands afflicted with exotic invasive plants (using GPS/GLONOSS)

2) Determine if mechanical means could be the first and best course of action, followed by herbicide application through a licensed/certified professional, if deemed necessary

3) Record the species, degree of infestation and treatment for each site and provide this for town records; and

4) Monitor/evaluate the effectiveness of treatments and adjust management accordingly.

Also, it should be noted that John Lepore is currently preparing a comprehensive document titled Charity Farm Lot Recreation and Conservation Management Plan, anticipated in February 2016. This plan will provide significant additional information about the property that goes beyond the scope of this FSP, including the extent and distribution of invasive plants.

AMENDED FORESTRY PLAN, CONTINUED

CONCLUSIONS, ADJUSTMENTS AND RECOMMENDATIONS FROM THE INFORMATION GATHERING PROCESS

1) According to the 2013 survey, the acreage of the property (84.641 acres) is different than the 90 acres assumed in the 2012 original FSP. Accordingly, all 2012 stands were adjusted to reflect the new acreage, as follows:

Stand	Type	2012 Acreage	2016 Calculated Acreage	2016 Effective Acreage
1	WP	19	17.831	17.8
2	HH	9	8.446	8.5
3	WH	7.5	7.038	7.0
4	RP	1.5	1.408	1.4
5	WP	4	3.754	3.8
6	WH	49	45.984	46.0
	Totals	90	84.461	84.5

Please note that it was not the purpose of this amendment to confirm or change 2012 stand delineations on the ground.

2) A comparison of the 2012 "Map of Forest Lot" (page 26) with the 2013 survey showed, not surprisingly, a number of differences in the portrayal of the boundary of the property. These differences are important, but, overall, the 2012 map is adequate at this time. In the future, the 2013 survey should be used as the base map when a new forestry map is prepared. In implementing this FSP, both the 2012 map and the 2013 survey should be used as a reference.

3) Boundaries: Now that a recorded survey exists, and the boundaries are blazed, it is recommended that the boundaries be walked every few years or so. This will have many benefits including but not limited to discouraging timber trespass and other types of encroachments.

4) The following language should be added to the statement of landowner goals on page 2: "In support of this, an important objective is controlling non-native invasive plants so that forest productivity and native biodiversity is promoted." The Landowner Goal will now read:

"Overall improvement of the forest with long-term silviculture to sustainably improve the forest for future generations to benefit through forest education, watershed protection, recreation and income from timber products. In support of this, an important objective is controlling non-native invasive plants so that forest productivity and native biodiversity is promoted."

5) The following pages have been altered to reflect current information and goals: Page 1, Landowner Goals, Signature Page. The Landowner Goals and Signature Page are provided here with new signatures.

6) In trying to understand the complex communication from Mark Stinson (DEP), John Lepore asked Mark Stinson for help to clarify the above communication. Mark agreed to talk with DCR Service Forester Alison Wright Hunter. That dialogue is still in process at this writing. At its conclusion, it should be apparent what, if any, special steps need to be taken by or on behalf of the Town of Bernardston innorder to control invasive plants in wetland resource areas. When that becomes apparent, a brief summary should be attached to this plan.

7) Changes to management recommendations: All harvesting recommended in the 2012 FSP should be delayed to allow invasive plant control efforts to take effect. At such time, silvicultural recommendations should be reviewed and possibly adjusted to reflect conditions prevailing at that time.

2016 FSP Amendment Notes 3

INVASIVE PLANT MANAGEMENT

FROM: INVASIVE PLANT MANAGEMENT: GUIDELINES FOR MANAGERS

Julie Richburg, PhD.
° e Trustees of Reservations
September 29, 2008

OVERVIEW FROM THE EXECUTIVE SUMMARY

In the Northeast, invasive species have invaded a variety of habitats from grasslands to intact forests. Invasive species threaten our native biodiversity by directly competing with native species, altering ecosystem processes, changing hydrological characteristics, and degrading gene pools through hybridization with native species. Furthermore, invasive species can degrade the productivity of agricultural lands and compromise signiÿcant cultural landscapes (e.g., historic gardens). Due to the characteristics of invasives (e.g., high seed production, rapid growth), they may be better adapted to colonizing disturbed landscapes and respond more quickly than native species to changes that result from global warming.

GENERAL PRINCIPLES IN INVASIVE PLANT MANAGEMENT

- Prevention
- Early Detection and Rapid Response
- Control and Management
- Education and Public Awareness

PRIORITIZATION OF INVASIVE PLANT MANAGEMENT

Prioritization of our control e″orts is essential to maximizing our ability to protect biodiversity with the limited ÿnancial, sta″ and volunteer resources available. Control e″orts will focus on those species that are threatening rare species or priority community types, or are known to compromise the ecological integrity of habitats beyond competition with native species (e.g., a species that changes soil chemistry or alters community structure). Control e″orts on agricultural lands and designed landscapes will take into account any potential economic and cultural impacts resulting from invasives.

GUIDELINE FOR PRIORITIZATION:

- Identify signiÿcant and important resources to protect.
- Inventory properties to identify invasive species population sizes and locations.
- Prioritize populations for management based on the signiÿcance of the resource, the existence of e″ective control methods, the invasiveness of the species, and the potential for long-term control.
- Implement control and document our successes/failures.
- Reevaluate priorities based on our experiences with control and as we learn about new information and control methods.

e full document is available at: http://www.sib.gov.ar/archivos/Richburg2008_InvasivesPlantGuidelines.pdf

EXOTIC INVASIVES MANAGEMENT

Six exotic invasive plants can be found at CFL. ° is table assists with recognition, management and the ecological threats posed from their spread.

PHOTOGRAPH	COMMON NAME SCIENTIFIC NAME	DESCRIPTION
	Russian Olive *Elaeagnus angustifolia*	Small thorny shrub or tree grows up to 30 feet in height; leaves, buds and stems have a dense silvery covering; leaves are egg-shaped; flowers are yellow, highly aromatic in June/July; they produce clusters of silvery fruits.
	Winged Euonymus *Euonymus alatus*	Shrub grows up to 20' in height; four corky ridges appear along the length of young stems; opposite leaves < 2 in. long are smooth and rounded; plant turns a bright crimson in fall.
	Oriental Bittersweet *Celastrus orbiculatus*	Woody perennial has climbing vine and a trailing shrub; glossy, roundish and finely- toothed leaves alternate; red-orange fruit is fleshy.
	Japanese Barberry and Common Barberry *Berberis*	Spiny shrub grows 2 to 8' in height; brown branches bear a single, very sharp spine at each node;leaves are small, oval to spatula-shaped; flowers in mid-April to May; fruits are bright red berries about 1/3 in. long, mature during late season, and persist through winter.
	Multiflora Rose *Rosa multiflora*	Thorny shrub have arching stems; leaves consist of five to eleven sharply-toothed leaflets; leaflet base bears fringed leaf stems; showy, white-pink flowers appear in May or June; they develop during summer, persisting through winter.
	Exotic Bush Honeysuckles *Lancer* spp.	Shrubs grow 6 -15' in height; leaves are opposite and egg-shaped; older stems are often hollow while most native shrubs have solid stems; flowers are small, paired, fragrant, tubular and creamy white to pink or crimson; fruits are red to orange. .

Management	Threat
Cut and mow annually; avoid native vegetation.	Out-competes native vegetation; interferes with natural plant succession and nutrient cycling; taxes water reserves; accumulates nitrogen in its roots to facilitate rapid growth; lowers species richness along streams.
Hand pull when less than 2' tall and when soil is moist; dig out larger plants with a spading fork; trim off all flowers to prevent spread; paint freshly cut stumps with glyphosate.	Out-competes native species; adapts to various environmental conditions; tolerates full shade; invades moist, forested sites creating dense thickets that can shade out native herbs and shrubs.
Cut or pull every fall/winter; apply herbicide triclopyr to rooted, live-cut surfaces immediately.	Smothers vegetation by shading or breakage; displaces native American bittersweet (*Celastrus scandens*) through competition and hybridization.
Pull shallow root system when soil is damp/moist; remove entire root system; mow or cut in late summer prior to seed production.	Alters soil pH, soil nitrogen levels, and biological activity in soil; displaces native plants and reduces wildlife habitat and forage; Deer avoid browsing barberry, preferring to feed on native plants, giving barberry a competitive advantage; presents as a major habitat for Lyme disease carrying black-legged ticks.
Cut individual plants 3-6 times/growing season; apply glyphosate to freshly cut stumps; repeat process often because of persisting seed bank.	Multiflora rose is extremely prolific and can form impenetrable thickets that exclude native plant species; readily invades open woodlands, forest edges, and successional fields that have experienced land disturbance.
Pull small plants without disrupting soil; clip repeatedly to ground level in shaded forest habitats; apply triclopyr herbicide to cut stems with a sponge.	Rapidly invades and overtakes a site, forming a dense shrub layer that crowds and shades out native plant species; may release toxic chemicals that prevent other plant species from growing in the vicinity; fruits do not offer migrating birds the high-fat, nutrient-rich food sources needed for long flights.

EXOTIC INVASIVES MANAGEMENT EFFORTS

Volunteer removal began in May 2015

Natural Heritage Restoration Project

Charity Farm Lot

Contribution • Recreation • Conservation

Bernardston, MA

Saturday, May 2, 8 to Noon

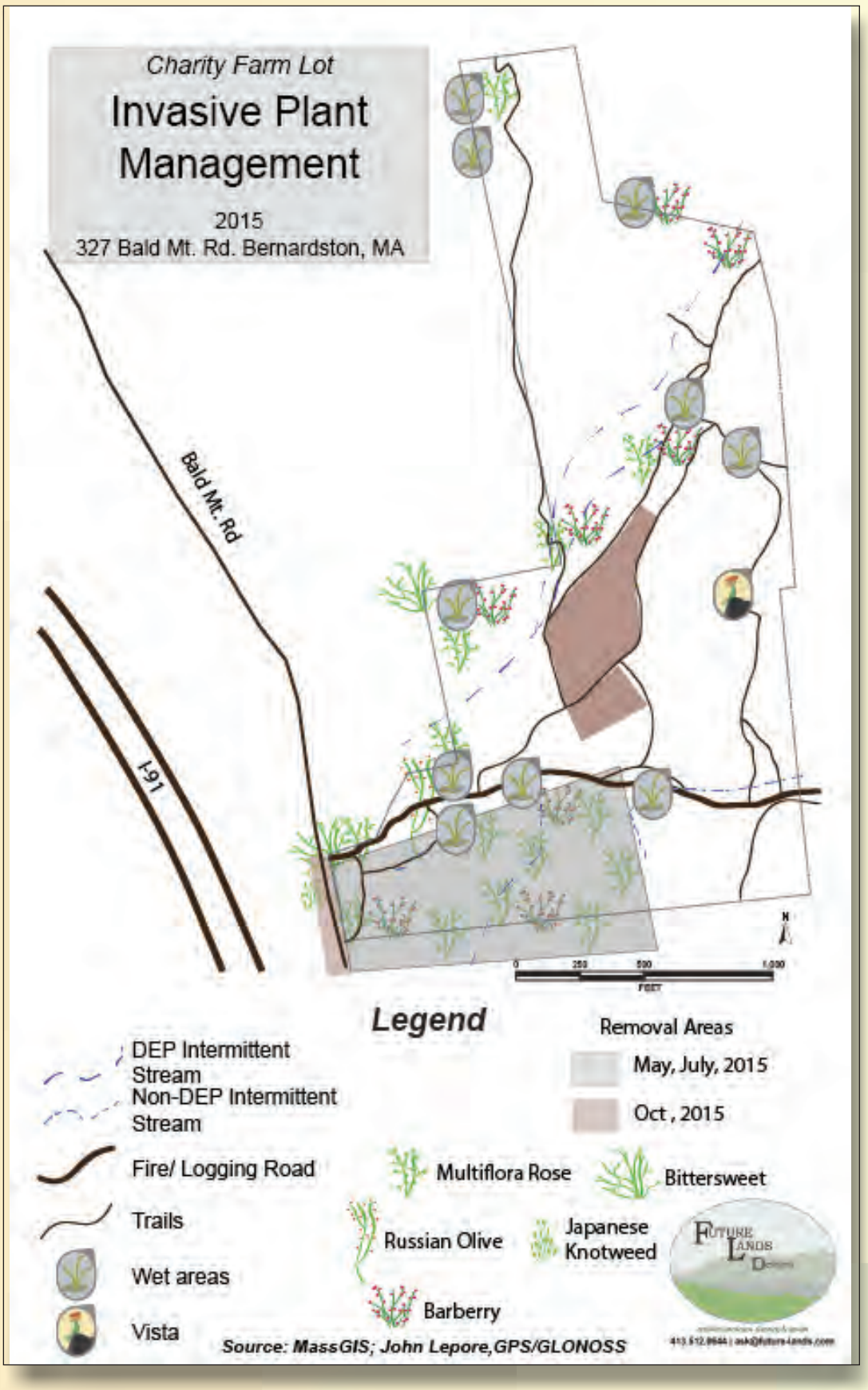
(Rain date May 9)

*We will be removing **early stage exotic invasive plants***
to encourage restoration of native and naturalized species

The parking lot is about 1/4 mile on the right
after Burke Flat Rd. on Bald Mt. Rd. Extension

Please bring work gloves, pruning tools/s and/or a spade

For further information call or email
John Lepore, Landscape Planner & Designer
413.512.0644
ask@future-lands.com


Charity Farm Lot
Invasive Plant Management
2015
327 Bald Mt. Rd. Bernardston, MA
Bald Mt. Rd
I-91
Legend
DEP Intermittent Stream
Non-DEP Intermittent Stream
Fire/ Logging Road
Trails
Wet areas
Vista
Removal Areas
May, July, 2015
Oct , 2015
Multiflora Rose
Bittersweet
Russian Olive
Japanese Knotweed
Barberry
Source: MassGIS; John Lepore,GPS/GLONOSS

FOREST MANAGEMENT BMPS

Management Type	Plan View	Section View

Silviculture clear-cutting: To many people's amazement this forest management strategy, when properly planned and executed, is a legitimate and indispensable regeneration method. Certain species, such an white birch and aspen develop under full light conditions. The methods works more effectively when the forest stand has been badly damaged by insects, diseases or invasive exotics where complete removal and restart would be most effective. Produces an important stage called early succession.

Advantages: easiest method to mark and harvest, high diversity of grasses and forbs necessary until crown closure. Provides early successional habitat needs for many local species, such as woodcock.

Disadvantages: Aesthetically less desirable for the general public. Susceptible to soil erosion and invasive exotics if not property managed.

Shelterwood: this method regenerates new forest under the shelter of older trees by mimicking disturbances in which only the healthiest tree survive. The best growing, most desirable trees in the stand remain during the initial harvest. These overstory trees provide a seed source and cover for the regenerating forest. Simultaneously, extra growth will be gained on the best stems, increasing stand value. The new forest will be essentially even-aged. The regeneration method can be applied in one, two or three harvesting stages, depending on the biological, physical and economic conditions. This method dovetails well with recreational and habitat objectives.

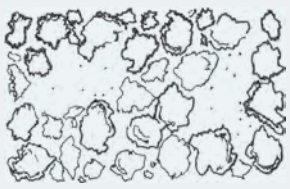
Advantages: Aesthetically, it produces park-like tableau of large canopied trees with and under story over a carpet of new regeneration and wildflower. Tree like oak that can grow in moderate light, benefit from the strategy where more light reaches the forest floor supporting their growth. Additionally, since larger trees remain, the genetics from selective cutting and harvesting for size becomes amplified, thereby increasing long term timber productivity.

Disadvantages: this strategy require a high skill level for several reasons. A market for smaller trees must be found. From the exposure to different wind patterns, remaining trees can become damaged and water sprout form, reducing the tree's market value. And if debris from cutting it not removed or chipped, emerging tree could be damaged.

Reserve tree/seed tree: Similar to clearcut, although more aesthetically pleasing since not all of the large over story tree are removed. Similar to the shelterwood method, a few seed tree get left scattered throughout the stand. The best and healthiest tree remain, while everything else is cleared one time. Since it leaves a fewer number of tree species, habitat enrichment by additional planting of other species may be necessary.

Advantages: more appealing to look at than clearcut while providing conditions similar to clearcut, making it easier to manage invasive plant routines. Provides hunting roost for raptors and other birds. Reserve trees can serve as food seed source for wildlife.

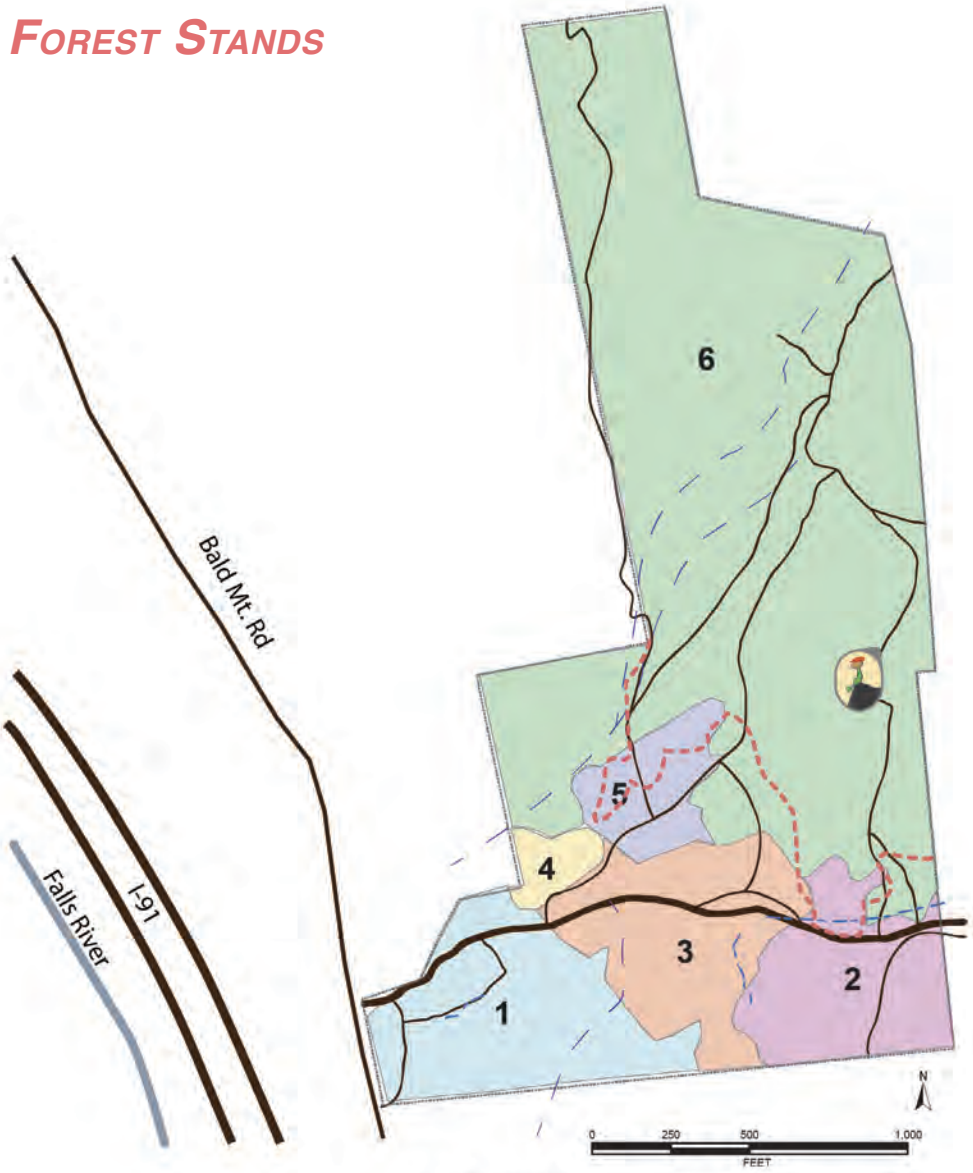
Disadvantages: Forest become susceptible to 'wind-throw', where trees are uprooted or broken by wind and lightning damage. Tree tops or crowns from reserve trees can break and damage the next harvesting operation.

Management Type	Plan View	Section View
Coppice with standards: Originally developed in Europe to provide fuel and timber, it could prove useful for small accessible tracts. Also know as 'crop trees,' standards are favored for producing high quality timber and veneers. Reserve trees are kept to obtain maximum size, provide mast (e.g. acorns, beechnuts) for wildlife, and aesthetic reasons. A great method for a forest managed for firewood. This method requires about 55 standards (potential crops trees) per acre.	(Does Not Apply)	
Advantages: maintains continuous forest cover with minimal impact visually. Provides regeneration conditions favoring 'mid-tolerant' species, like oak, that favor middle light conditions for regeneration.		
Disadvantages: Requires a high skill level for success. Higher costs for inventory, marketing and harvesting. Lower yield at each harvest and large crowns may damage other tree when harvested.		
High grading / diameter limit: ***Often disguised as 'selective' harvesting where the most profitable trees are removed with little or no consideration given to future conditions.*** This has a negative long-term impact on the economic value and the forest's health. In even aged stands, it's the poorly growing trees that should be harvested releasing the larger more productive trees to fill out. Poor trees can be girdled to support habitats for a wide range of wildlife.		
Advantages: harvesting can produce short term income requiring minimal skill and cost. Increases heterogeneity in forest as trees grow.		
Disadvantages: Long term loss of productivity and harvest intervals. Remaining culls and slow growing trees require extra management. Area trees can be damaged during harvesting with loss of mid tolerant species like oak. Detrimental to wildlife species requiring early stage (successional) habitat.		
Group Selection/ Patch Cutting: A hybrid incorporating features from selection and silviculture clear-cutting methods. This process removes groups of trees within a predefined area scattered throughout the stand, leaving undisturbed forest in between similar conditions created by a severe microburst wind event. It enhances certain types of habitat and can create multiple aged conditions within a parcel. Multiple aged stands provide a greater diversity of regeneration species giving a healthy success of growth.		
Advantages: allows regeneration of shade intolerant species without clear-cutting while providing the owner periodic income. Also makes a range of habitats from early to late successional (stage) forests.		
Disadvantages: Patchwork forestry increases management costs. Patches must be large enough to accommodate for mid-light and low-light species need more light. Deer can concentrate feeding in the recent patches while residual trees near the edges may be susceptible to damage.		

FOREST MANAGEMENT BMPS, CONT.

Management Type	Plan View	Section View
Unmanaged Forest/ Forest Preserve: Where the vegetation goes unmanaged by any human intervention, slow changes accumulate gradually through natural mortality of individual trees. The opposite scenario is as likely to occurs as well: suddenly and catastrophically through the action of fire, weather or rampart disease a disruption occurs entirely changing the forest's functions. Responsible stewardship requires that all forests have a management plan with a detailed map. Where hiking trails are present, safety considerations for hazard trees should be included. The plan should also include strategies for monitoring and controlling exotic invasive species such as burning bush and honeysuckle, that threaten the integrity of native populations.		
Advantages: Easy to implement, maintains a shady forest cover, higher number of habitat trees left standing, favors shed tolerant species like hemlock, beech and maple. **Disadvantages:** No income, unplanned and uncontrolled changes happen. Prone to disease and infestations, lower diversity over time.		
Selection Method: Used to create uneven or multiage forest stands. Individual trees of mature or declining health get harvested in a way that minimizes disturbance to the residual stand. The openings created for regeneration, however, tend to provide favorable conditions for slower goring shade-tolerant species. *The method is not the same as selective cutting also known high grading, which has no scientific forestry practice.*		
Advantages: Maintains continuous forest cover with low visual impact while providing some income. Able to remove declining trees. Harvest schedule can be adjusted to market conditions. **Disadvantages:** High skill requirement for successful implementation More expensive to manage, mark for inventory and harvest. May result in lower output of marketable wood. Leads to long term loss of diversity. Higher potential for damage to residual trees.		

Forest Stands



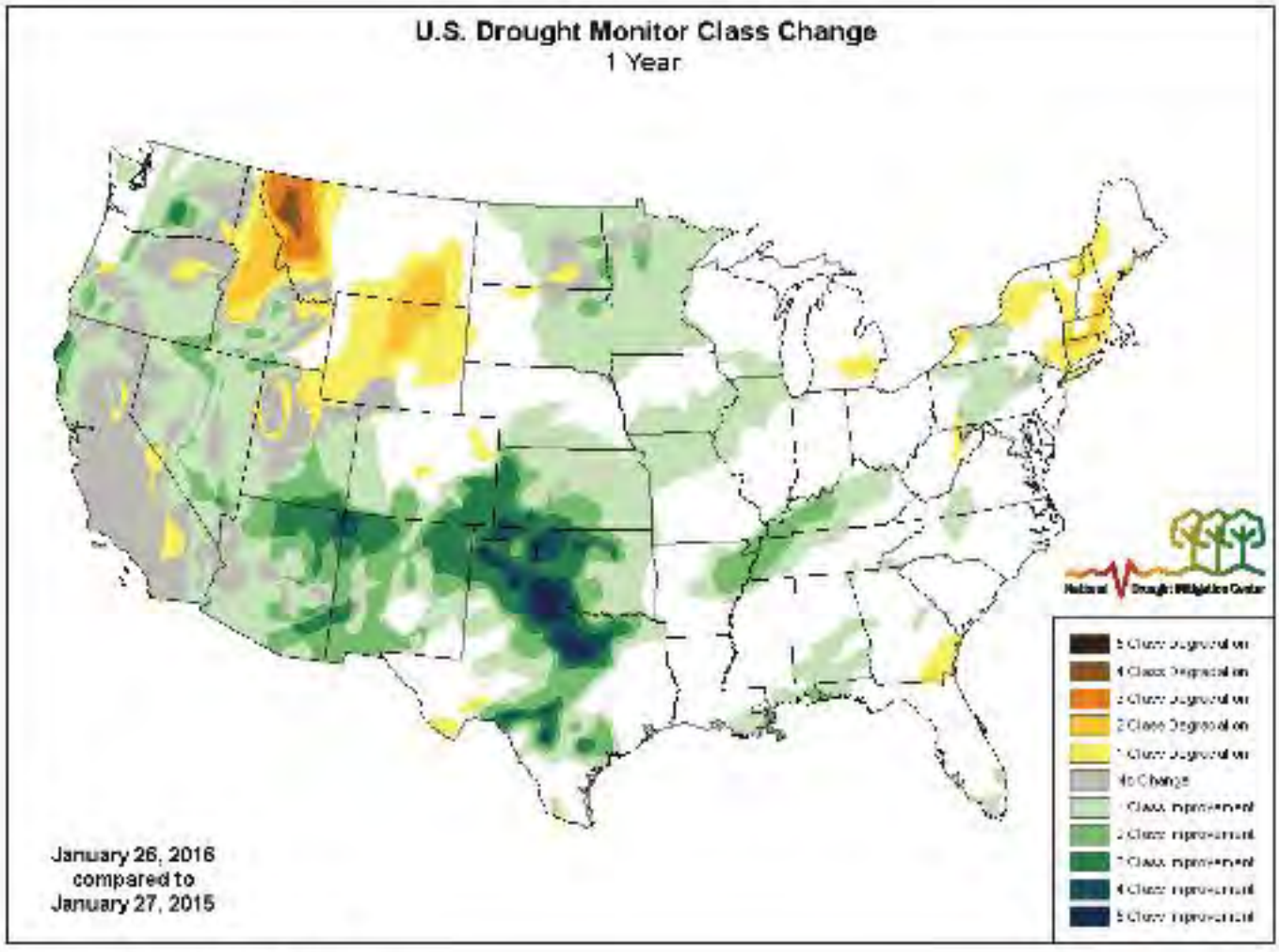
Legend

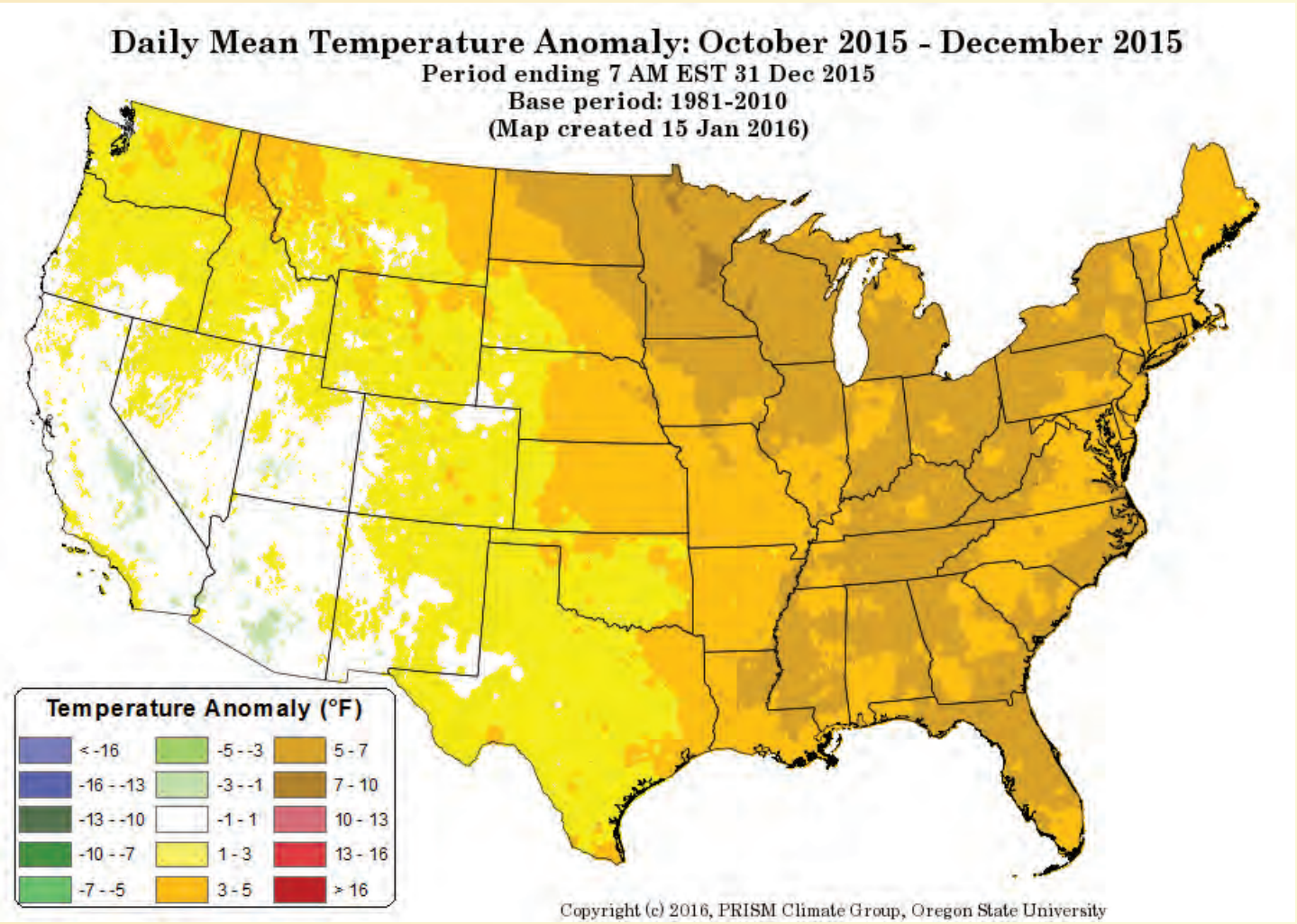
- DEP intermittent stream
- Non-DEP intermittent stream
- Fire/ logging road
- Trails
- Future logging cutoff
- Vista

- 1- White Pine
- 2- Hemlock w/ few hardwoods
- 3- White pine/ hardwood mix
- 4- Red pine
- 5- White pine w/ hardwoods
- 6- Mixed hardwoods

Source: *Stewardship Management Plan, 2012*

Climate Change Trends




Daily Mean Temperature Anomaly: October 2015 - December 2015
Period ending 7 AM EST 31 Dec 2015
Base period: 1981-2010
(Map created 15 Jan 2016)
Temperature Anomaly (°F)
< -16
-16 - -13
-13 - -10
-10 - -7
-7 - -5
-5 - -3
-3 - -1
-1 - 1
1 - 3
3 - 5
5 - 7
7 - 10
10 - 13
13 - 16
> 16
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LEGAL: SURVEY

TOWN OF BERNARDSTON

Virginia M. Budness, Chairman
Robert R. Raymond
Louis J. Bordeaux

BOARD OF SELECTMEN
www.townofbernardston.org

April 17, 2013

Edward Muszynski
Professional Land Surveyor
PO Box 733
Greenfield, MA. 01301

Subject: Charity Farm Lot

Dear Mr. Muszynski:

The Board of Selectmen voted unanimously at their regular meeting April 17, 2013 to accept your proposal to survey the Charity Farm lot in Bernardston for a cost of $6,000.00. Please proceed as soon as possible.

I can be reached at 413-648-5401 if you have any questions.

Sincerely,

Hugh Campbell
Administrative Assistant

cc Board of Selectmen
John Lepore

PO Box 504, Bernardston, Massachusetts, 01337 (413) 648-5401 Telephone;
(413) 648-9318 Fax; Email: bos@townofbernardston.org

TRAILS: PROBLEM CONDITIONS

Presented here are several problematic trail conditions. The next few sheets present potential solutions.

Deep Trenching

A trenched trail makes a hiker feel as though they are traveling in the bottom of a half-pipe. Without maintenance, this situation worsens with every storm, as runoff cuts the trench deeper and increases the flow rate. A major threat to water quality from sedimentation, trenched trails require immediate attention.

Excessive Widening

Trails can become widened from single or double tracks to a wide "freeway" from poor trail design and lack of guidance along the trail, such as stones lining path edges. This common occurrence usually indicates a section that is plagued by poor drainage or some other condition users need to avoid, such as muddy areas.

Shortcuts

Frequently users will take the shortest distance between two points to avoid a wet spot, disregarding the designated trail, and a web of trails is created. This can create excessive and unnecessary erosion problems. To prevent this, trails should be clearly marked and properly maintained. Often this means adding barriers, such as rocks or brush to avoid cutting. When a steep grade demands a switchback, the trail should be wide or curved enough that the trail return remains invisible. Shortcuts should be closed and vegetated to prevent future user.

Saturated Soils

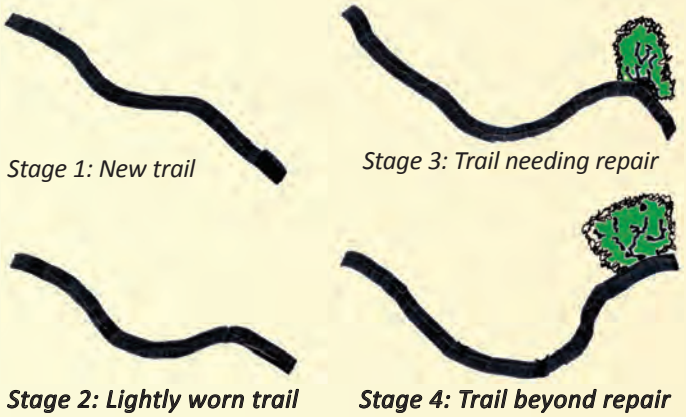
Even small areas with wet soils can deteriorate quickly into muddy areas where users begin to widen the trail. This degrades natural resources such as water quality. Raising the tread crown can remedy the problem and provide a more positive user experience.

Excessive widening increases rapid runoff and sedimentation of waterways.

Duplicate trails should be blocked and re-vegetated.

To prevent habitat degradation and for the convenience of users, trails cutting though wet areas either need crowning if seasonal, or a bridge or boardwalk.

Trail Life Cycle

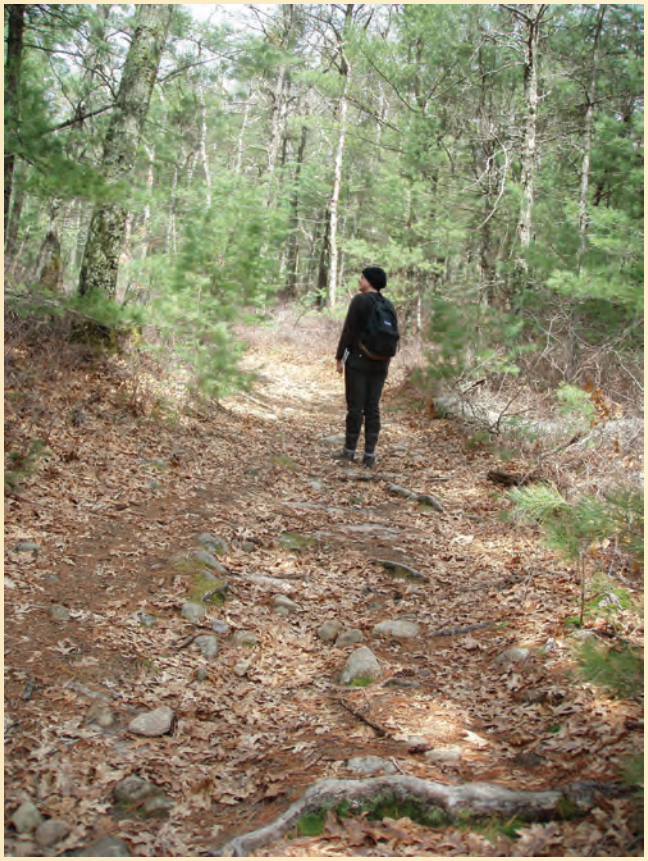


Stage 1: New trail

Stage 2: Lightly worn trail

Stage 3: Trail needing repair

Stage 4: Trail beyond repair



These excessively worn trails have degraded beyond realistic repair and should be closed by blocking with brush and rerouting.

Permitting

Any disturbance to the natural environment has impacts, and trails are no exception. Trail construction or maintenance should make every effort to do no harm. Ideally trails should be routed to avoid sensitive resources such as streams and wetlands, rare species habitats, and sensitive cultural sites. However, trail development within or alongside of sensitive areas is often necessary and justifiable. Streams need to be crossed, steep slopes traversed, and unique features interpreted. Allowing controlled access to sensitive ecological or cultural areas may also be an integral part of educating the public about the value of protecting these resources. When sensitive areas cannot be avoided, trail builders have legal and ethical obligations to minimize impacts by going through the proper regulatory procedures. In Massachusetts, activities occurring within 100 feet of a coastal or inland wetland or within 200 feet of a perennial stream or river are governed by the Wetlands Protection Act. Among the many activities regulated by this act are changing run-off characteristics, diverting surface water, and the destruction of plant life – activities commonly associated with trail building and maintenance. If trail-building activities will occur within 100 feet of a wetland or 200 feet of stream or river you must file a "Request for Determination of Applicability" (RDA) form (http://www.mass.gov/dep/water/approvals/wpaform1.pdf) with the Marshfield conservation commission.

TRAILS: SIGNS

Why Strive for Consistent Signs?

Appropriate trail signs and markings provide information, enhance safety, and contribute to a positive user experience. Trail signs are perhaps the most important form of communication with users, as signs are the message they see every time they visit. Consistent signs should enhance safety, create a positive trail identity, help meet user expectations, and contribute to the public's support for trails.

There are four basic types:

- Trailhead signs and kiosks
- Intersection directional signs
- Reassurance markers and blazes
- Interpretive displays

It is important to consider the different purposes of each type of sign and use appropriately. For example, using reassurance blazes to indicate allowed trail uses is probably inappropriate because it may require more blazing, and is very difficult to change if the allowed uses change. On the other hand, using trailhead signs to designate allowed uses is simpler to implement, requires much less maintenance, and can be easily changed.

General Trail Sign Standards

The following are general trail sign standards.

- Signs within a site should be consistent with respect to colors, materials, and look. Ideally, adjacent facilities, such as picnic tables, will also be consistent.
- According to DCR, the ideal trail sign standard should be routed brown signs (wood or plastic composite material) with white lettering.
- Routed signs are aesthetically appealing and resistant to damage and vandalism. Aluminum trail signs are not recommended since they are easily vandalized.

Naming Trails

DCR recommends: "Trail names can be an important element of the outdoor experience and can help draw visitors onto the trail. The "Blue Heron Trail," "Summit Trail," or the "Round the Mountain Trail" convey to the user information about the wildlife, destination, or experience that lies ahead. Trails named for blaze colors, memorializing a trail advocate or designating a DCR management component may not be as appealing, functional or memorable for users. Whenever possible, utilize trail names that suggest an attractive destination, introduce the natural, cultural or historical context for the trail, or otherwise capture the imagination and experience of the intended user. Please keep in mind that not all trails need to be or should be named." (DCR Trails Guidelines and Best Practices Manual)

Consistent signs provide useful information, enhance safety, and contribute to the user's positive experience.

Trailhead Signs

Trailhead kiosks or signs may come in different forms depending on the setting, complexity, and information needs.

Kiosks at Bear Swamp entrances are attractive.

Simple signs at the trailhead greet and give valuable information to the user.

Intersection Directional Signs

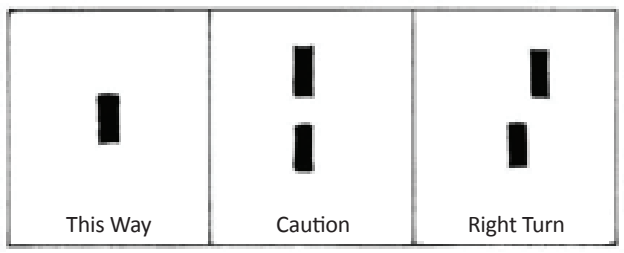
Intersection directional signs are the most important source of information for users, and can serve to enhance safety, avoid bad user experiences, and increase use of under-used sections of the trail. If someone knows that there is a waterfall, lake, or other attraction down the trail, they may be tempted to hike to it and thus increase visitation to that destination.

Trail intersection signs help the user avoid confusion and enjoy the experience.

Directional Change Indicators

Double blazes should be used in places that require extra user alertness (e.g. important turns, junctions with other trails, and other confusing locations). These should be used sparingly to avoid becoming meaningless or visually obtrusive. Blazes are unnecessary at gradual turns and well-defined trail locations such as switchbacks.

A reassurance marker should be placed so that it can be seen from the direction indicator. Be sure to mark confusing areas to guide users coming from both (or all) directions. Avoid arrows since they can be confusing.



The three types of 'reassurance markers' used on state and national trails to clearly direct users.

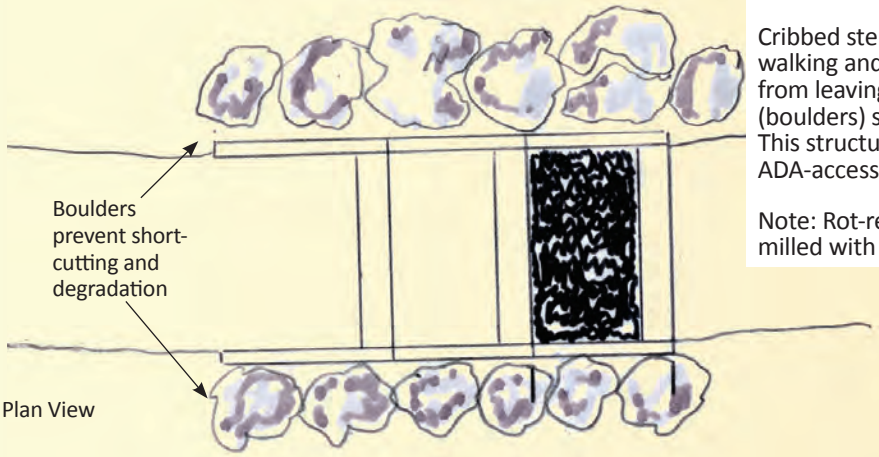
Selected sections edited and taken from DCR Trails Guidelines and Best Practices Manual, 2010 available at http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

TRAILS: SOLUTIONS

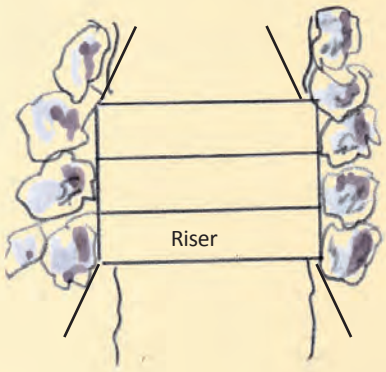
Cribbed Stairs

Cribbed steps are ideal for steep slope remediation where walking and running are the primary uses. To prevent users from leaving the steps and causing erosion, "gargoyles" (boulders) should be positioned on either side of the structure. This structure must be posted as closed to bicycles and is not ADA-accessible.

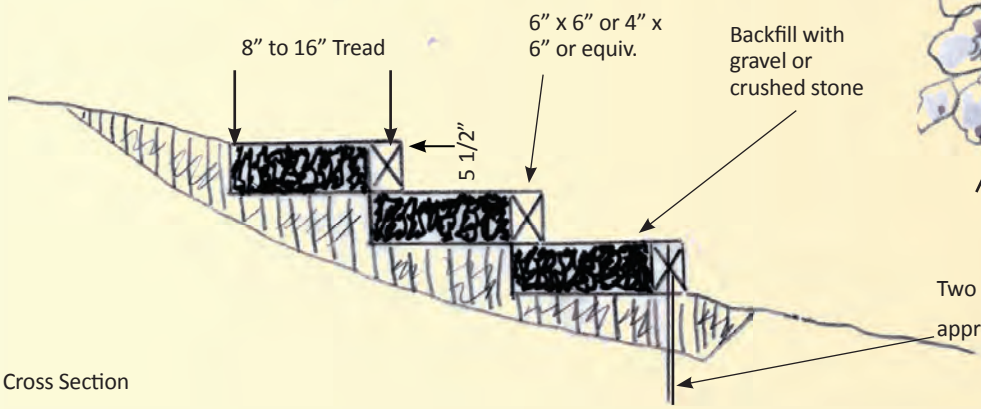
Note: Rot-resistant on-site white oak could be logged and milled with a portable mill to make any of these structures.



Plan View



Elevation

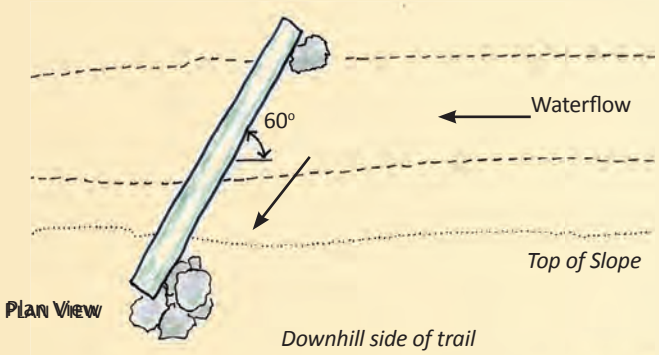


Cross Section

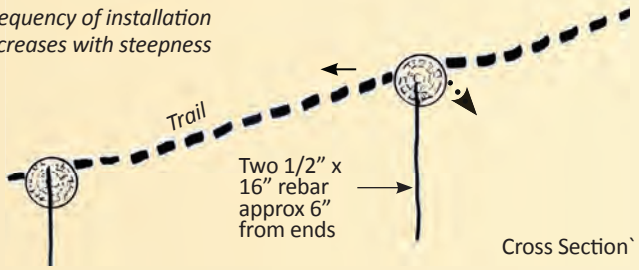
Cribbed stairs on a steep grade improve safety and reduce erosion.

Waterbars

Waterbars divert water runoff away from a trail or road. They can be ridden over if buried correctly at 75% of diameter. These would be especially useful under the power line to help control erosion.



Frequency of installation increases with steepness

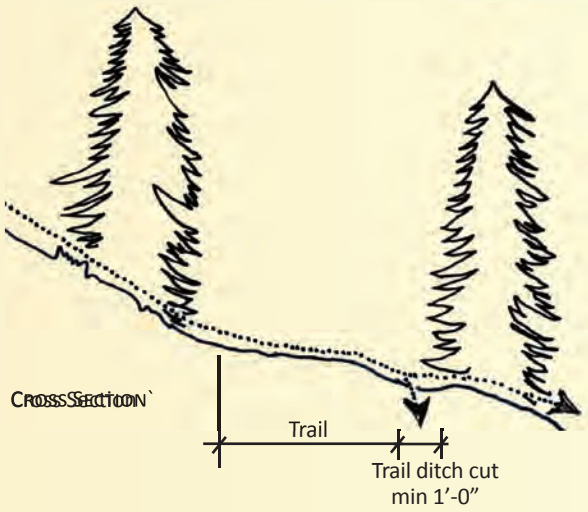


The east side of CHR under the utility lines would benefit greatly from a series of waterbars.

Downslope Ditch

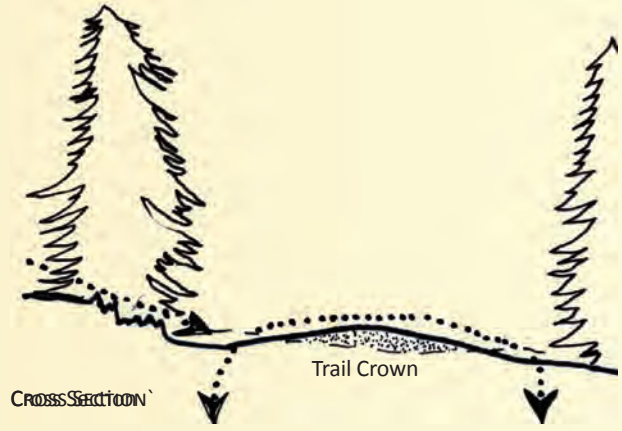
Trails across steep terrain of greater than 20% can improve drainage and reduce erosion while still allowing travel. Trails should have a cross slope draining to a down slope ditch.

- Carefully remove all vegetation from the trail, using it in other locations where possible.
- Cut a ditch along the lower edge of the trail and remove soil for use in another location as needed. The ditch should be at least 1 foot depending on the topography. Steeper slopes will need to be deeper, since runoff will be traveling faster.
- The image below shows a retrofitted trail.

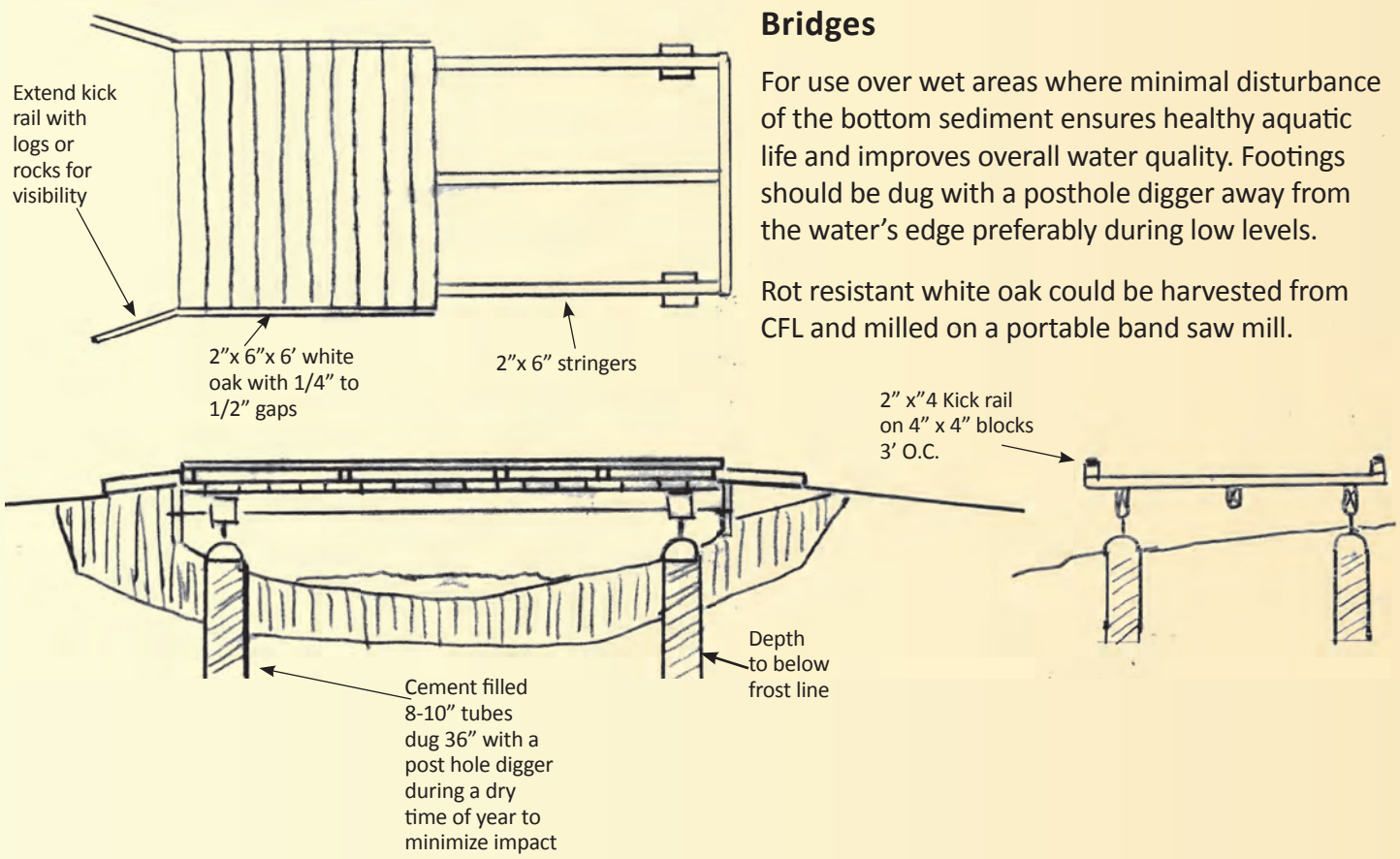


Crowned Trail

Trails on hilly terrain less than 20% grade can be crowned to improve drainage.



Trail Solutions: Wet Areas



Bridges

For use over wet areas where minimal disturbance of the bottom sediment ensures healthy aquatic life and improves overall water quality. Footings should be dug with a posthole digger away from the water's edge preferably during low levels.

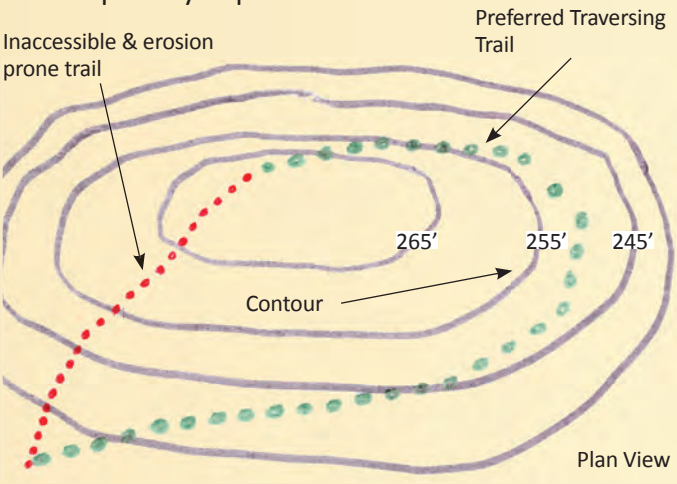
Rot resistant white oak could be harvested from CFL and milled on a portable band saw mill.

Wet areas in lowlands where streams cross the trail need a bridge or boardwalk

Bridges and walkways allow human activities with minimal habitat interferences.

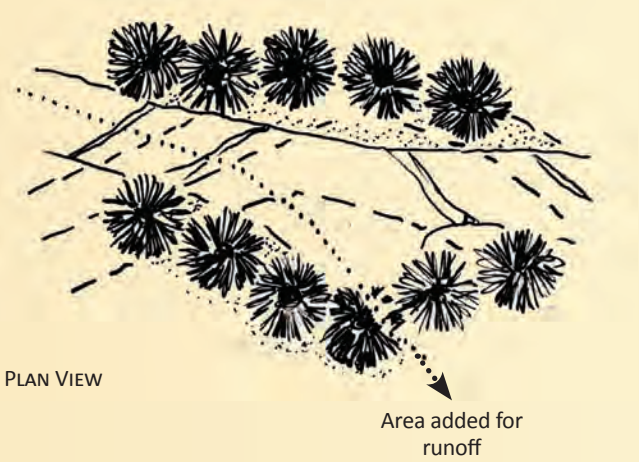
Traversing Trail

Generally trails should travel with the land's contours instead of cutting perpendicular up the steepest slope. This is especially important for universal access.



Trail Drains

Trail drains should be installed at locations along the trails where normal cross slope will not allow adequate drainage. To protect trail, these should be placed every 25 to 50 feet.



ADA Accessibility – New Rulings

This year, the Department of Justice (DOJ) revised rules went into effect allowing "other power-driven mobility devices" to be used by "individuals with mobility disabilities. This DOJ ruling applies to any place, indoors or outdoors, that is open to the public. Under the American with Disabilities Act (ADA) Title II this DOJ rule applies to trails on state or local government lands. The ADA Title III also applies to other "public accommodations" that would include trails open to the public on privately or commercially managed lands.

(American Trails, 2011)

Trails should be routed to avoid greater than a 5% slope as illustrated.

For further information: http://www.americantrails.org/resources/accessible/OPDMD-DOJ-requirement-basic.html

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