Division of Water Supply Protection

DCR Division of Water Supply Protection: FY2022 Forest Harvest Proposals

USING THIS INTERACTIVE STORY MAP

Each tab across the top of this page will open up an interactive map journal focused on one of the FY 2022 proposals. This year there are ten at Quabbin, five at Ware River, and six at Wachusett (the last tab on the right will open up the list of lots that cannot be fit across the top). As you scroll down in the frame on the left side, maps will update to highlight appropriate information relevant to the accompanying text section. The maps themselves can also be panned and zoomed using your mouse. (*If you are having issues with loading times or seemingly missing information, we have found that* ***clearing your browser cache*** *can help*.) A tab discussion archaeological review and protection of cultural resources during forestry activities has been included at the end.

Public comment on these proposals is welcome and can be submitted online at this link: https://www.mass.gov/forms/dcr-public-comments. Comments may also be submitted by U.S. mail to

Department of Conservation and Recreation
Office of Public Outreach
251 Causeway Street
Boston, MA 02114

These proposals were presented at the Quabbin Watershed Advisory Committee meeting on June 28, 2021, and the Ware River Watershed Advisory on July 8, 2021. A link to this interactive web map application was also distributed to all advisory boards and committees, and letters were sent to individual Select Boards of affected towns.

Public Comments will be accepted until the close of business on Friday, August 6, 2021.

If you have any questions, please contact Natural Resources Specialist Brian Keevan at brian.keevan@mass.gov (preferred) or at (413) 213-7948.


DCR Division of Water Supply Protection Forest Management
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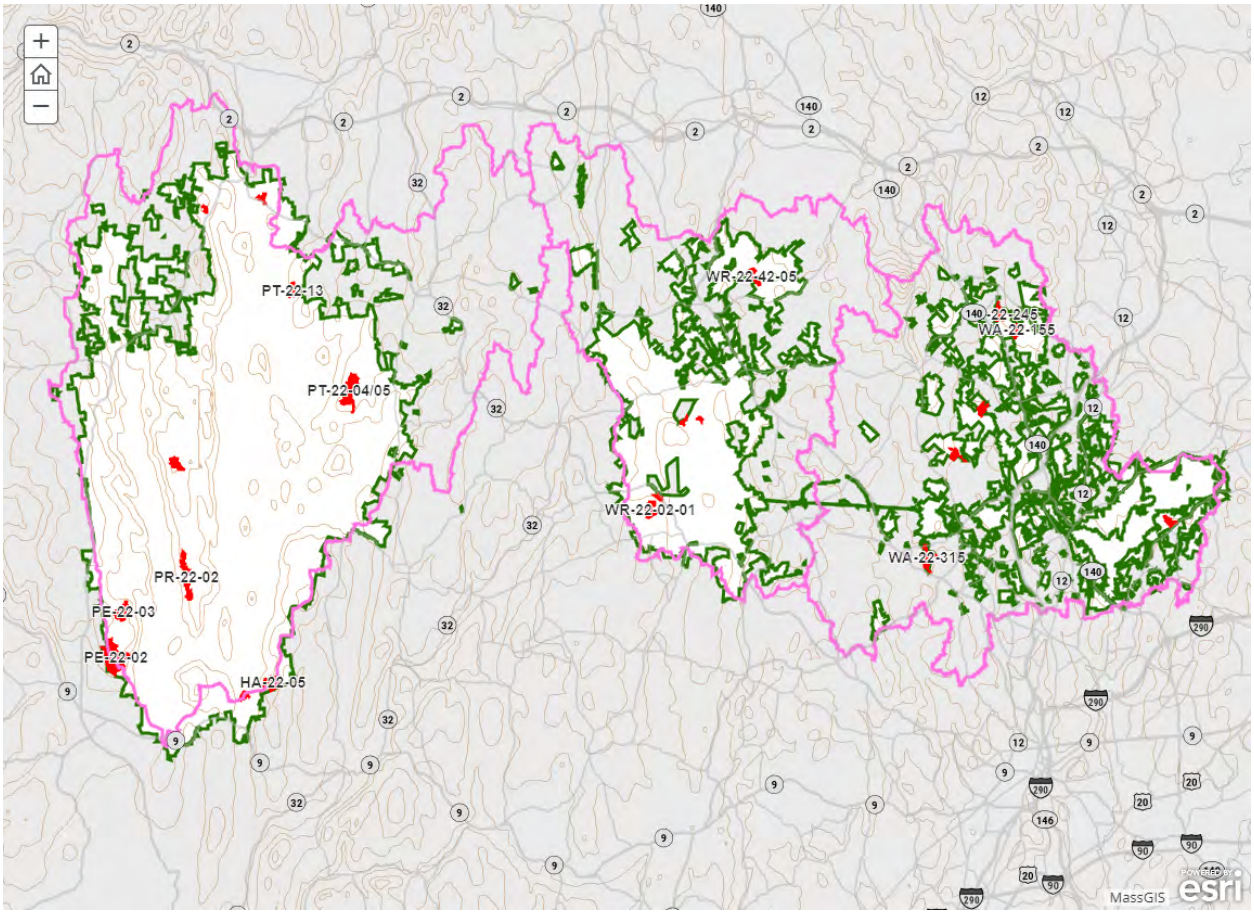
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PT-22-04/05
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WA-22-245
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WR-22-02-01
WA-22-315
PR-22-02
PE-22-03
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DWSP Forestry and Cultural Resources

WATERSHED PROTECTION FORESTRY

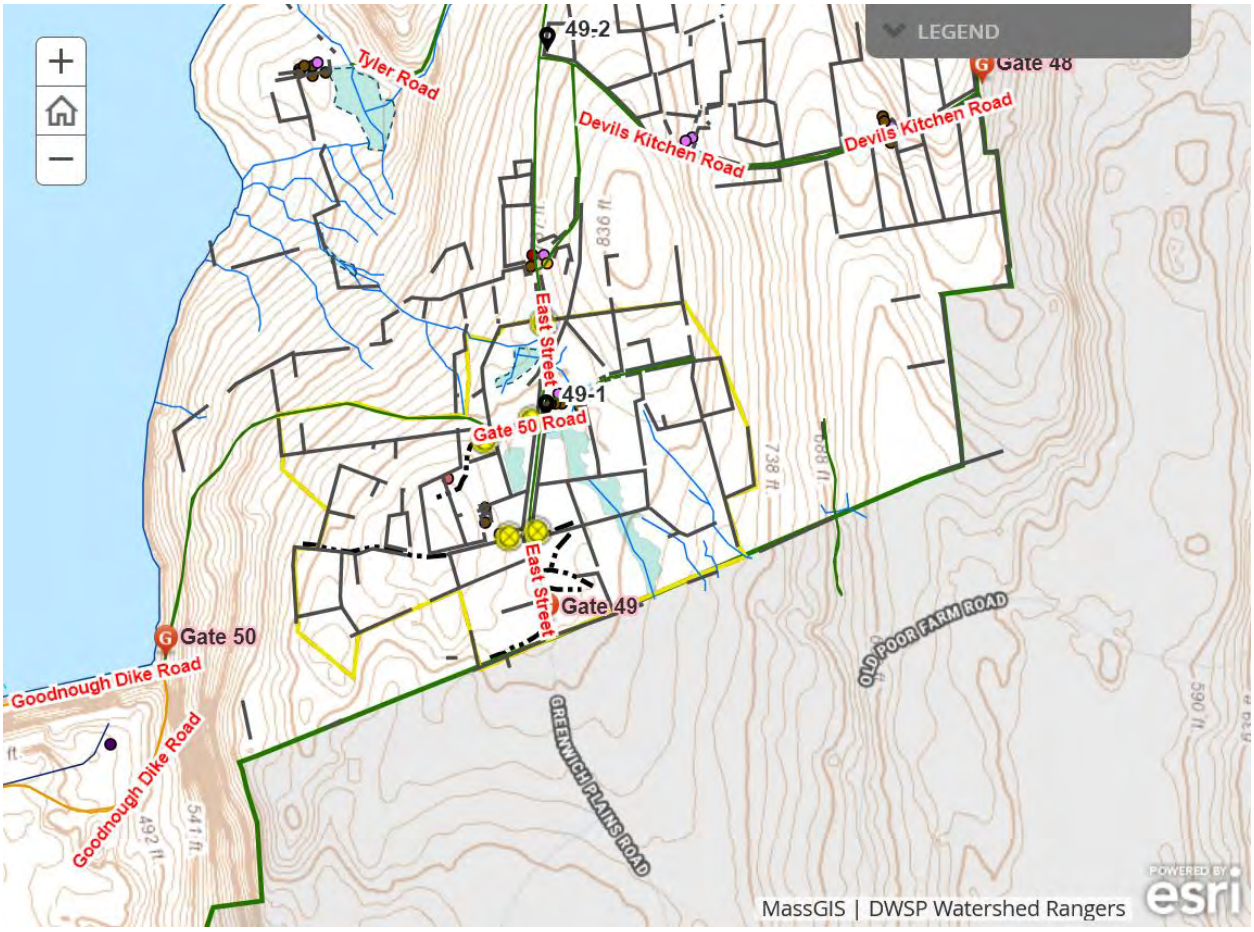
The Division of Water Supply Protection (DWSP) is mandated to protect drinking water resources for over three million Massachusetts residents. DWSP owns and manages over 100,000 acres of land within the Quabbin Reservoir, Ware River, Wachusett Reservoir, and Sudbury Reservoir watersheds. Forests on these lands serve as a living, protective filter, producing high quality water in our streams and reservoirs. DWSP is committed to maintaining a watershed protection forest cover on the vast majority of its lands, and has determined that the most resilient and protective forest is one that is vigorously growing and comprised of a broad diversity of tree species and ages. The Division's long-term objective is to steadily transition today's mostly even-aged forest into a forest with more balanced proportions of young, middle-aged, and older trees of a variety of native species. These conditions have been shown to promote and enhance native plant and wildlife biodiversity. DWSP's working hypothesis is that a diverse forest structure will also promote resiliency in the event of large and small scale natural disturbances such as increasingly severe weather events, disease outbreaks, and insect pest infestations.

For full details on DWSP watershed land management please see the:

2017 Land Management Plan (opens a pdf)

DWSP FORESTRY PLANNING AND REVIEW PROCESS

DWSP Foresters are responsible for the design, preparation, implementation, and oversight of forest management operations. Each year they prepare a number of timber harvest proposals which are reviewed for compliance with Land Management Plan goals and for protection of environmental resources by DWSP professionals in Natural Resources, Environmental Quality, and Watershed Management. Cultural resource review is completed by DCR's Archaeologist. Following this process, these proposals are made available for public comment as presented here.

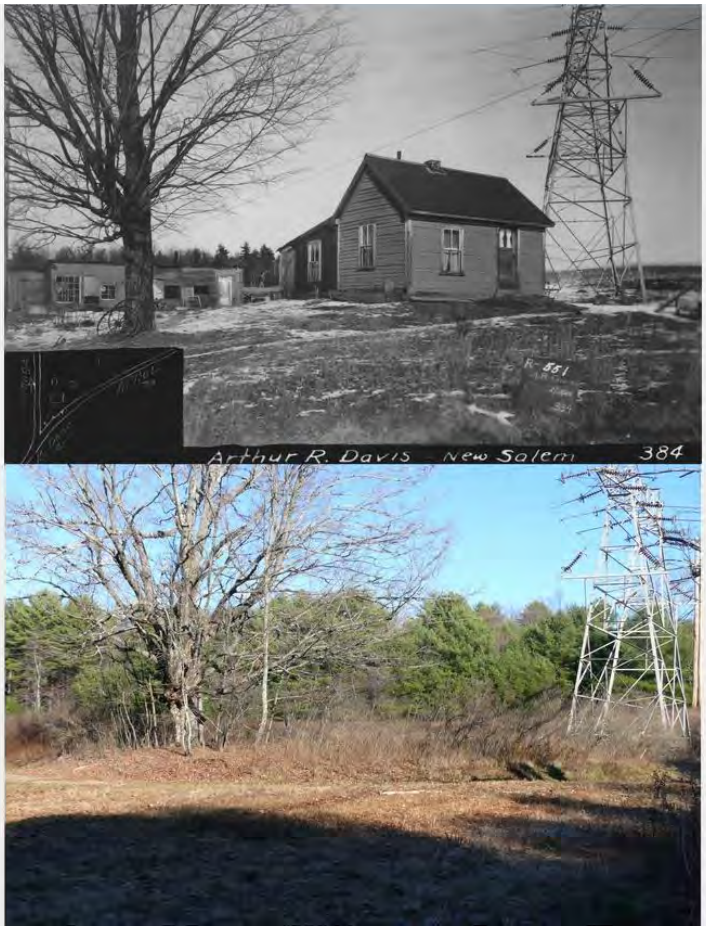


Cultural Resource Protection and DWSP Forestry Activities

Cultural resource review has been a standard part of the internal review of DCR forestry activities for over two decades. In addition to overseeing historical preservation activities throughout the DCR Parks system, the DCR archaeologist reviews the areas we propose to harvest for proximity to known or potentially sensitive sites, both historic and pre-Contact.

Feedback is often fairly standard. If there are known to be significant historic or archaeological resources documented within the proposed project parcel, then the lot will have restrictions to be operated when the ground is dry, frozen, or can support harvesting equipment. A standing requirement is that any cultural resource features located before or during the forestry project will be protected according to guidelines set forth in the current DWSP's Land Management Program and indicated on harvest maps accordingly. And foresters are asked to flag, protect, photograph, and map any cultural features and contact DCR staff archaeologist if there are any questions or concerns.

In most cases on DWSP properties, the cultural resource sites are easily identified as recent historical activities associated with agricultural land clearing and farming by European colonists. Stone walls, cellar holes, foundations, and wells are routinely encountered by foresters as they walk DWSP's watershed forests. Some of these structures are well-documented, especially at Quabbin, while others would require research to determine original owner/builder, last known owner, etc. Systematic surveys were conducted of all the known historical sites at Quabbin by researchers in the 1990s, using property maps created when the lands were surveyed and taken for construction of the reservoir. Much of this information is available upon request at the Quabbin Visitor Center in Belchertown.


Arthur R. Davis New Salem 384

Protection of Sensitive Sites

These lands had been occupied for thousands of years before the influx of Europeans in the 17th century and the reworking of the landscape to suit their agricultural way of life. Plowed soils often revealed artifacts from pre-Contact land use, such as the tools and weapons collected by this enthusiast from pre-Quabbin Enfield.

DCR's archaeologist routinely consults Massachusetts Historical Commission records to determine proximity of proposed activities to known protected sites such as villages and burial sites. Models are also consulted that use ground conditions such as topography and distance to water sources to estimate the potential locations of other pre-Contact sites such as seasonally occupied camps.

In an effort to protect this information it will not be included in the public documentation for the forestry proposals. DWSP foresters abide by all recommendations pertaining to protection of historic and pre-Contact cultural resources.

Ongoing Field Mapping of Cultural Resources

Known and visible features and sites are mapped using GIS and are incorporated into editable digital field maps. Mapping apps for smartphones and tablets have revolutionized the ability for foresters to verify locations and add previously unmapped features right in the field. This technology aids immensely in planning harvesting operations.

At Ware River, Wachusett, and Sudbury no modern systematic surveys have been conducted, although the foresters routinely map stone walls and other features and do consult property sheets that show locations of extant homes and outbuildings at the time of land takings.

Most of what you will read in these individual lot proposals will be the foresters' assessments of visible cultural features in the area, and these are nearly always stone features related to colonial and post-colonial land use.

Wachusett Harvest Proposal WA-22-59

Proposal Goals

The primary goal will be initiating a preparatory cut to manage the mountain laurel currently preventing regeneration from establishing. The secondary goal will be releasing advanced regeneration that resulted from a previous preparatory cut.

Proposal Location

Beginning at Esty Road, heading southwest and then northwest along the property line to the DWSP Israel lot. Thence, southwesterly along the Israel lot for about 2,500 feet at which point the working unit heads due south for about 900 feet to the Poutwater pond area. The unit follows the Poutwater pond area easterly for about 1000 feet. At which point the working unit heads northerly against private properties for about 2000 feet where it rejoins Esty Road.

Total Acres: 50

General Description

	Overstory Type(s)	Acres
Dominant	Oak - hardwoods	34
Secondary	White pine - oak	17
Other	Red maple -wet	1

	Understory Type(s)
Dominant	Mountain laurel prevalent
Secondary	Tree seedlings/saplings dominate site

Description of forest composition/condition:

This working unit is characterized by its overwhelming amount of mountain laurel in the understory. The forest is comprised of the following tree species; red oak, white oak, black oak, white pine, black birch, black cherry, red maple, paper birch and yellow birch. Both the mature oak and white pine are of good vigor. The understory is predominantly mountain laurel with far lesser amounts of tree saplings, witch-hazel, highbush and lowbush blueberry.

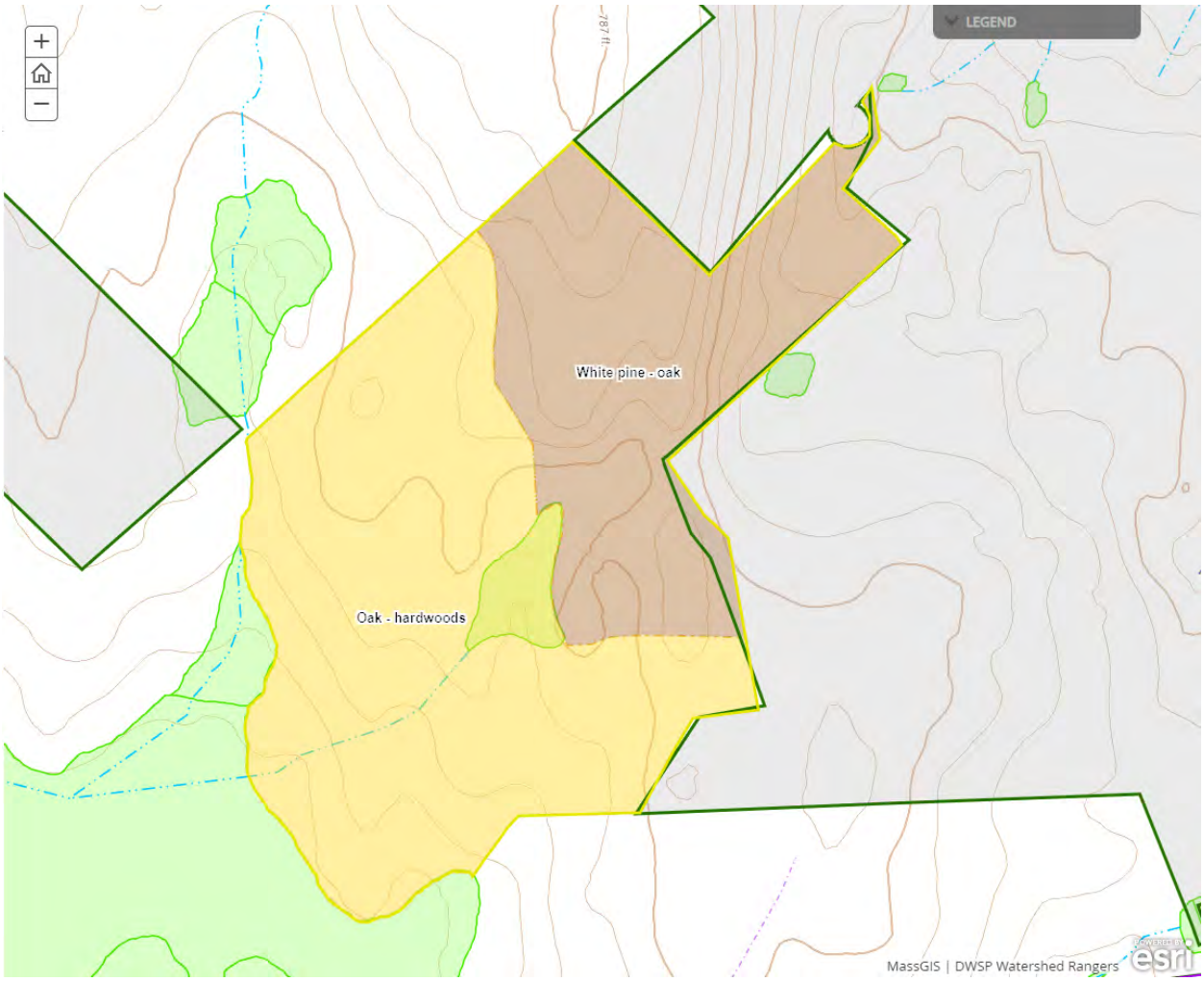
The western half of this working unit was worked in 2007, where some openings and thinning occurred. Also, 3 blocks of about 2 acres each were heavily cut. The goal was to damage the mountain laurel sufficiently while opening the overstory to encourage the establishment of regeneration. This was successful and there is now good advance regeneration in these areas that were previously dominated by mountain laurel. The areas that were not worked in the western half and the eastern half are almost entirely oak or white pine and oak with large swaths of mountain laurel underneath.

The southeast section of the working unit has a large concentration of exposed rock and boulders. There are also some small groups of dead white pines that appear to be from lightning strikes.

The age structure of the working unit is as follows: 7% (0-20 years old) 0% (21-40 years old) 0% (41-60 years old) 28% (61-80 years old) 0% (81-100 years old) 65% (>100 years old).

Assessment of Terrestrial Invasive Species:

Sampling found no invasives present in 46 plots taken. The reconnaissance hike also found no invasives. It is a somewhat dry site.



Soils

Drainage Class	%
Excessively Drained	8
Well Drained Thin	1
Well Drained Thick	69
Moderately Well Drained	20
Poorly to Very Poorly Drained	2

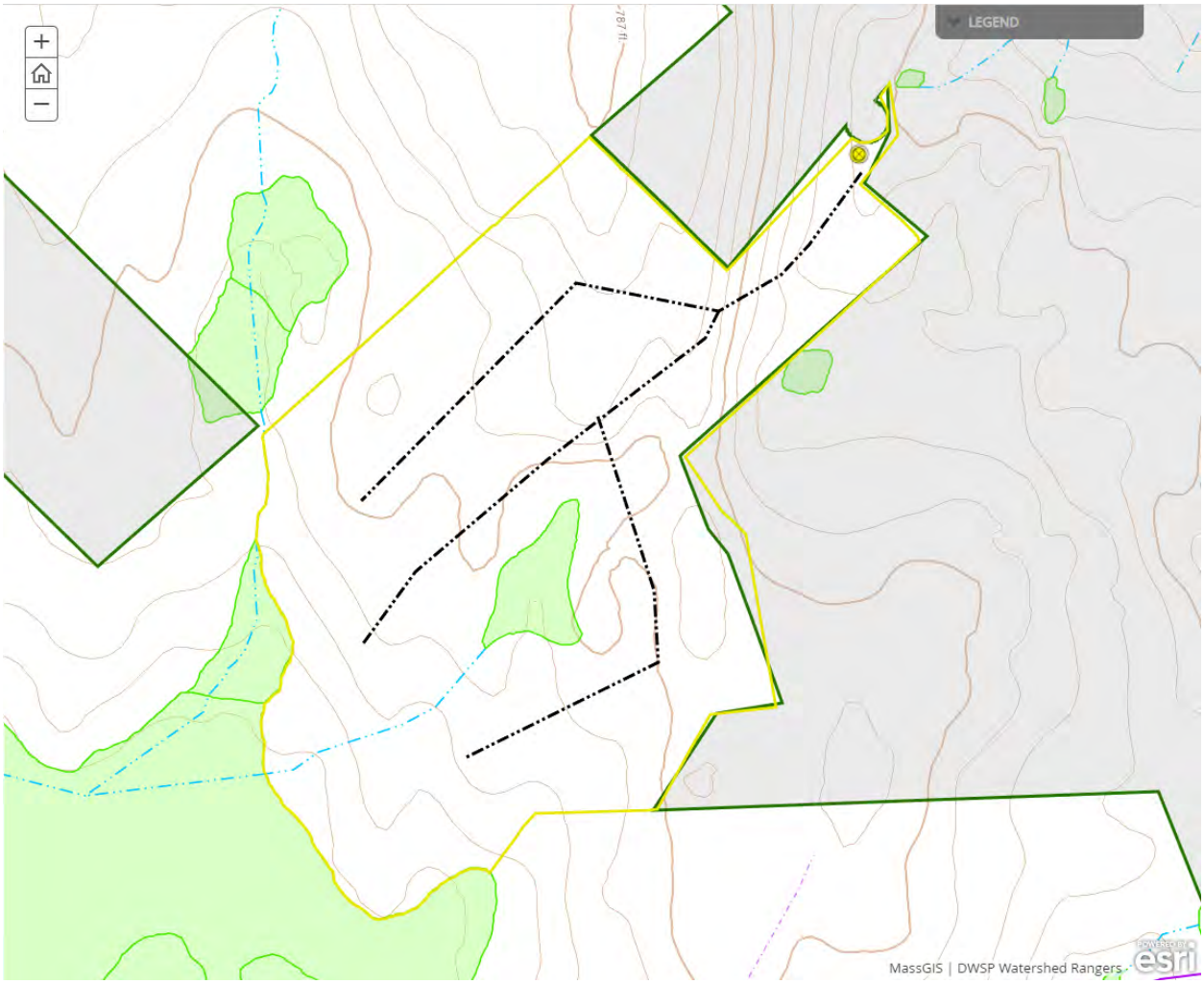
The site is made up of predominately Well drained thick Canton and Montauk-Scituate-Canton Soils, followed by moderately well drained Woodbridge-Paxton soils.

(The gap in the map results from incomplete GIS soils mapping coverage in this area.)

Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**
- Is logging in wetlands planned? - **No**

There are two GIS mapped streams that are small intermittent channels and hard to locate in the field.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **17**

Acres in Regeneration cuts: **13**

Average regen opening size: **1**

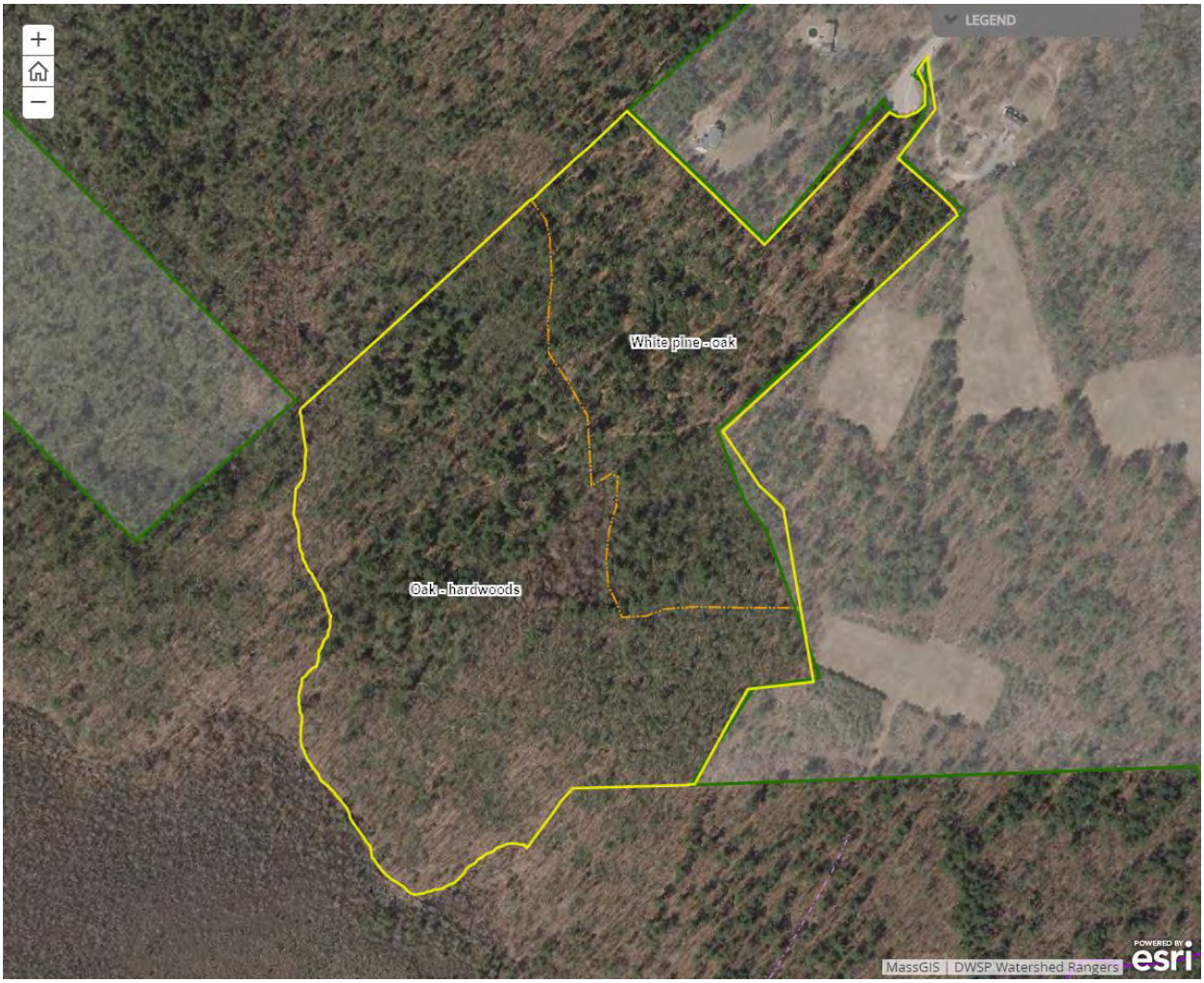
Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

In the western half of the working unit 46 plots were taken and 59% of them were interfered with mountain laurel. Only 26% of the plots were considered regenerated with only 22% having oak present. 2/3rds of the regenerated plots are within the 3 blocks that were heavily cut in 2007. The eastern half of the working unit has such tremendous amounts of mountain laurel that taking plots would be a formidable task and it was determined plots were not needed to accurately determine the makeup of the area.

General comments on silviculture proposed:

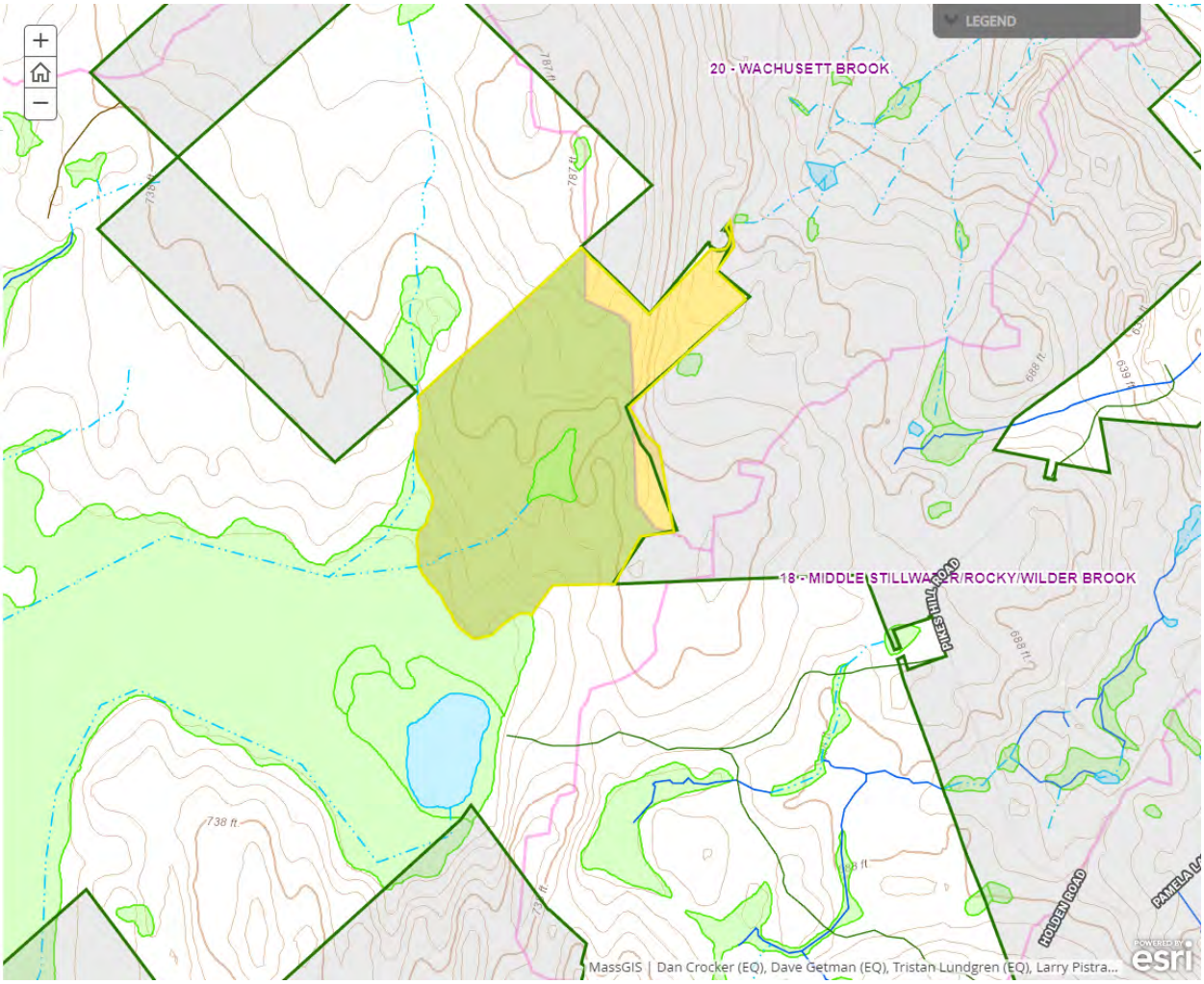
Given the tremendous amounts of mountain laurel in the working unit, a preperatory cut, designed to damage the mountian laurel and encourage the establishment of regeneration will be implemented on up to 17 acres in the area mountain laurel is found to be interfering. More basal area will be left than traditional openings in this area but less basal area than a typical thinning which would only encourage the regrowth of mountain laurel. A great focus will need to be paid on the harvester cutting and crushing the mountain laurel and disturbing the soil throughout the site for seed to germinate and be able to outcompete the regrowth of the mountain laurel. Up to another 13 acres of openings may be made only where advance regeneration is suitable (focusing first on the prep work that occurred in 2007) to help achieve the goal of 3 age classes.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
15 (Trout Brook)	1058	55	1003	35
20 (Wachusett Brook)	1046	44	1002	7

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

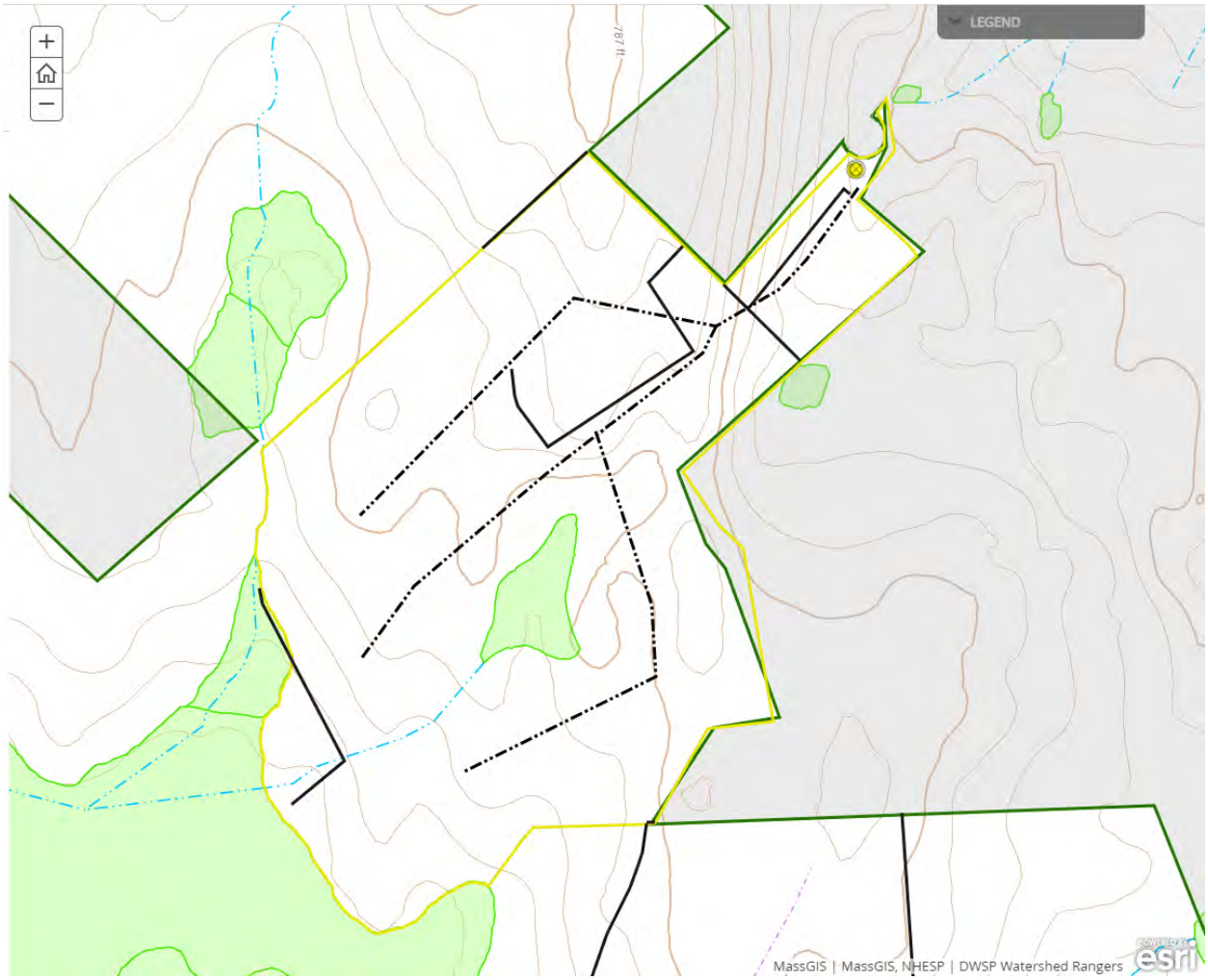
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

Due to some areas having advanced regeneration that we want to release, a forwarder & processor will be required. There also might potentially be some harvesting limitations in small areas due to the exposed rock and boulders.

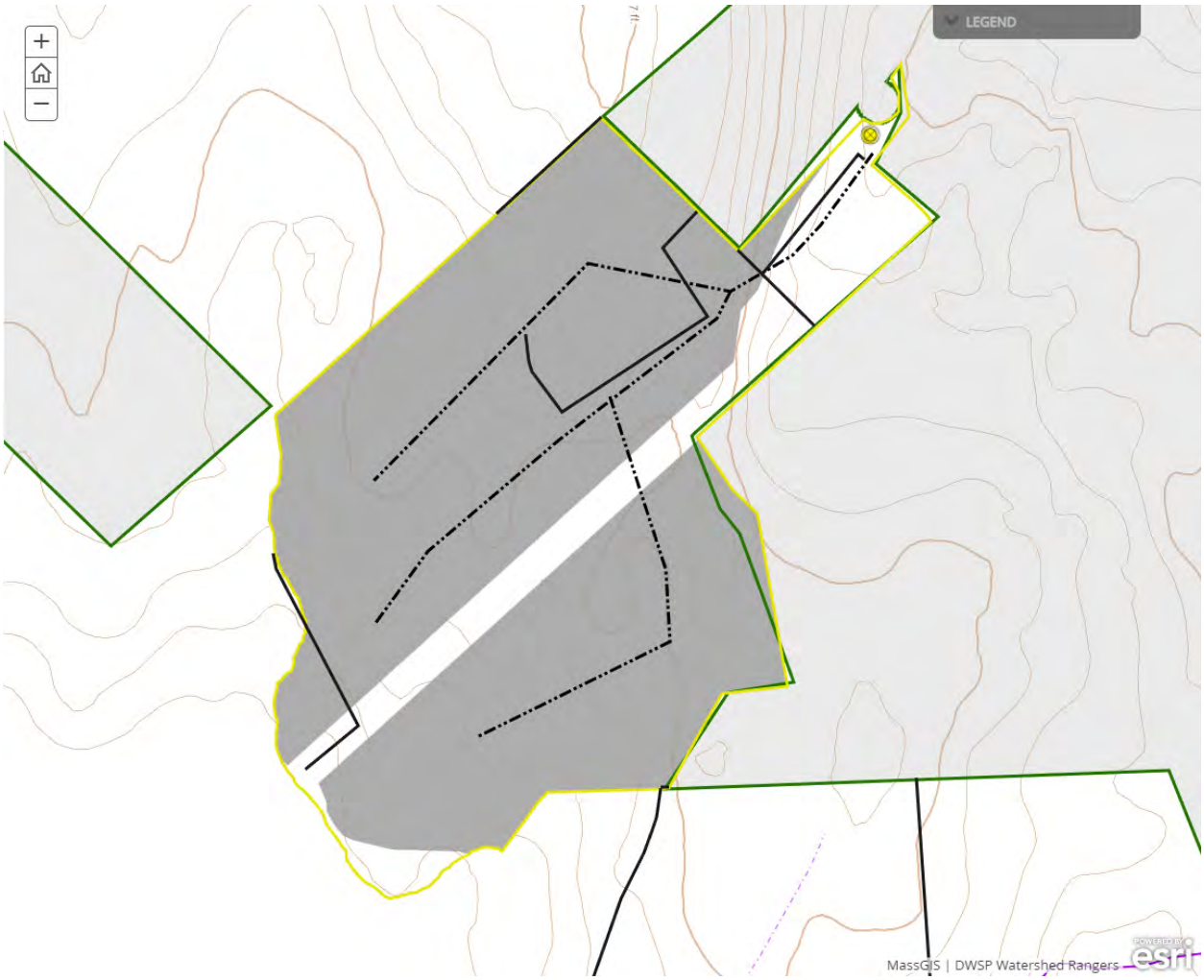


Cultural Resources

Comments on Cultural Resources:

No historic cultural resources present other than stone walls. Surface stone is prevalent.

(The gap in the map results from incomplete GIS soils mapping coverage in this area.)



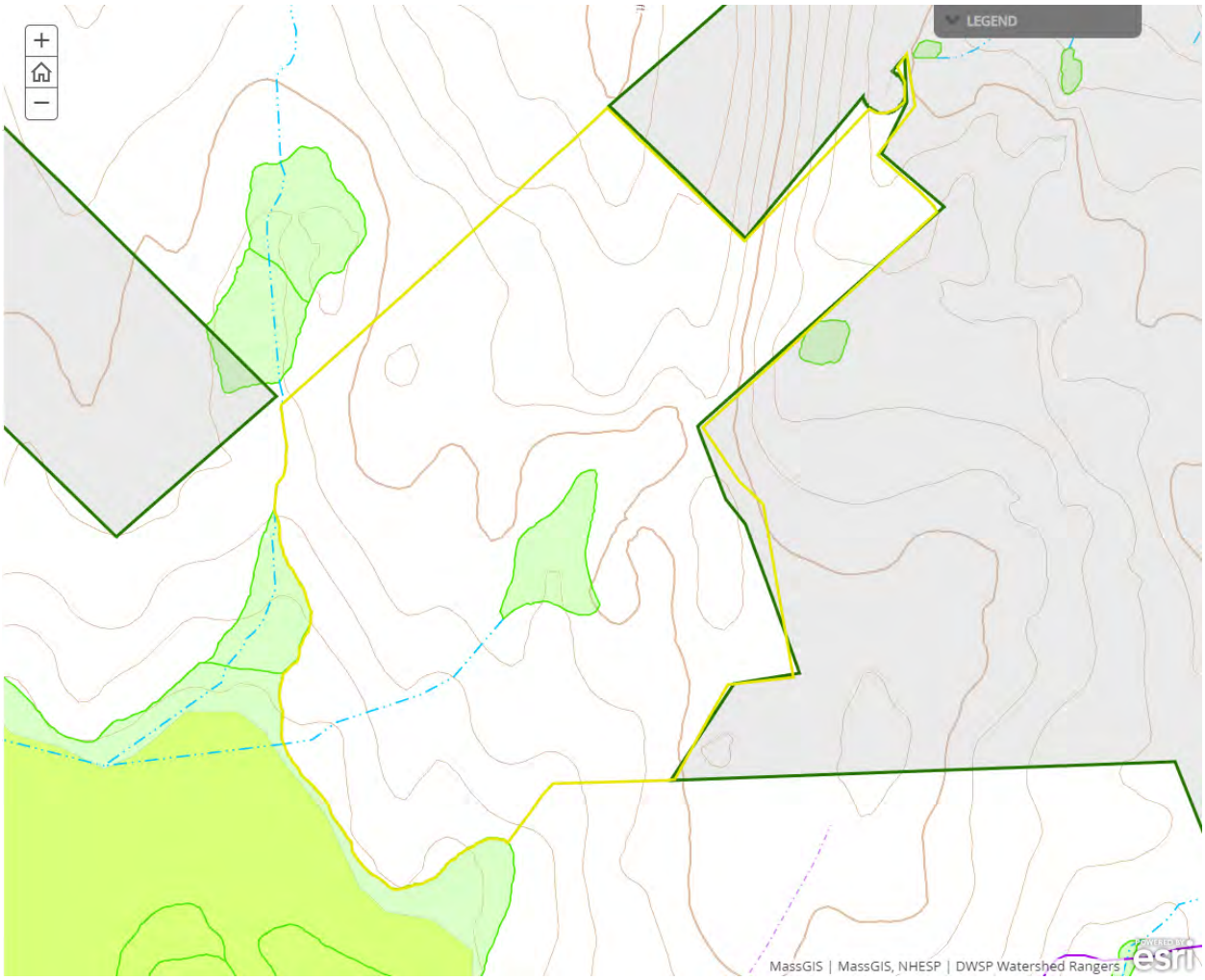
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

No unusual wildlife observed; old stick nests noted were inactive, but active ones noted during lot layout will be protected. All DWSP Best Management Practices for wildlife management such as the protection and enhancement of wildlife habitat features will be an integral part of the silviculture and job layout. Diverse hard and soft mast species will be retained and the healthiest trees will be released to improve seed production, which will promote tree seedlings and food for wildlife. Large snags, den trees, logs and nest trees will be retained whenever possible as valuable habitat. Where they occur, streams, wetlands, seeps and vernal pools will be protected for water quality and wildlife habitat.

Comments on Rare Species/Habitats:

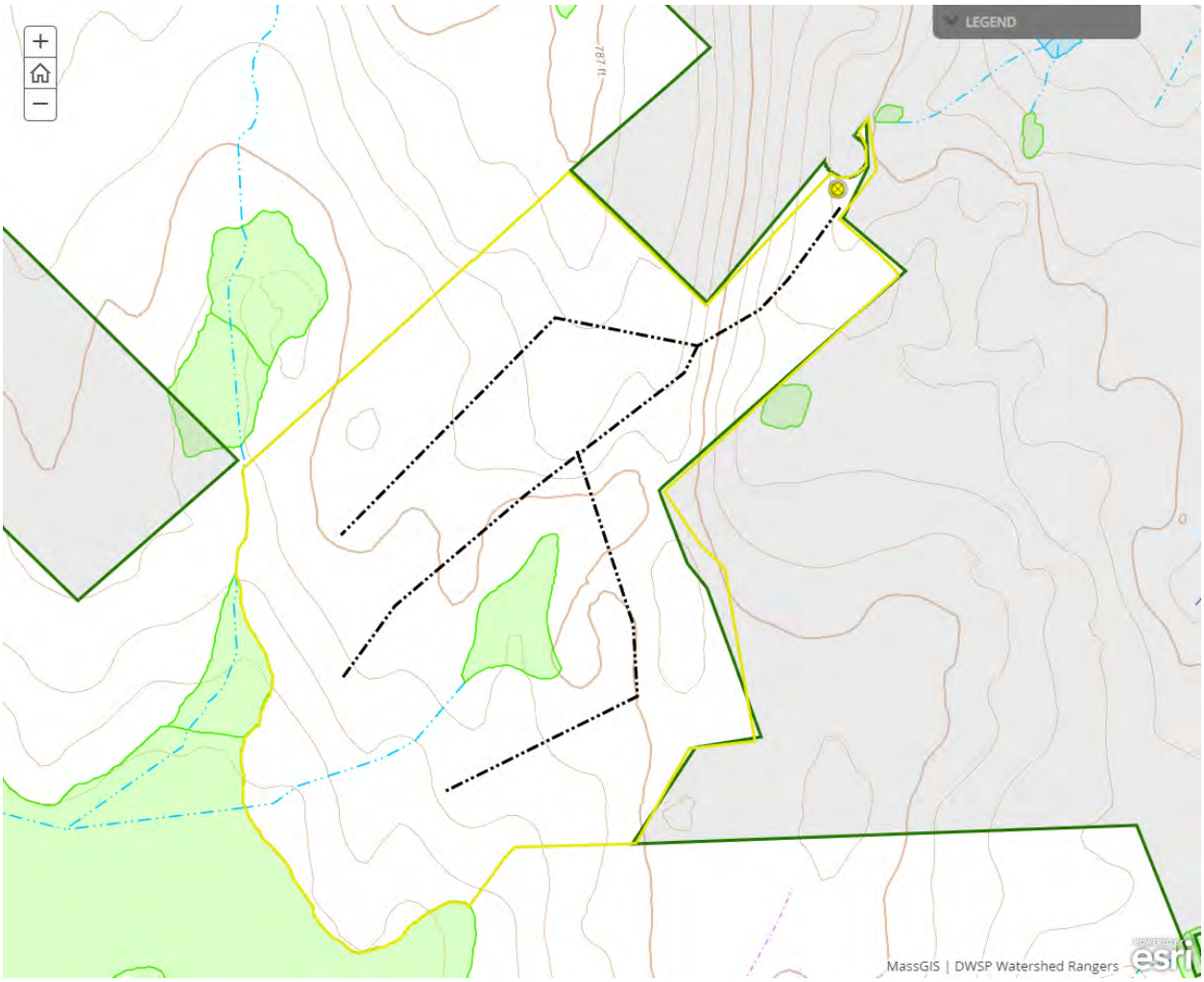
None known; no NHESP Priority Habitats.



Environmental Quality Engineering

Comments on EQ Issues:

There are no stream crossings.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

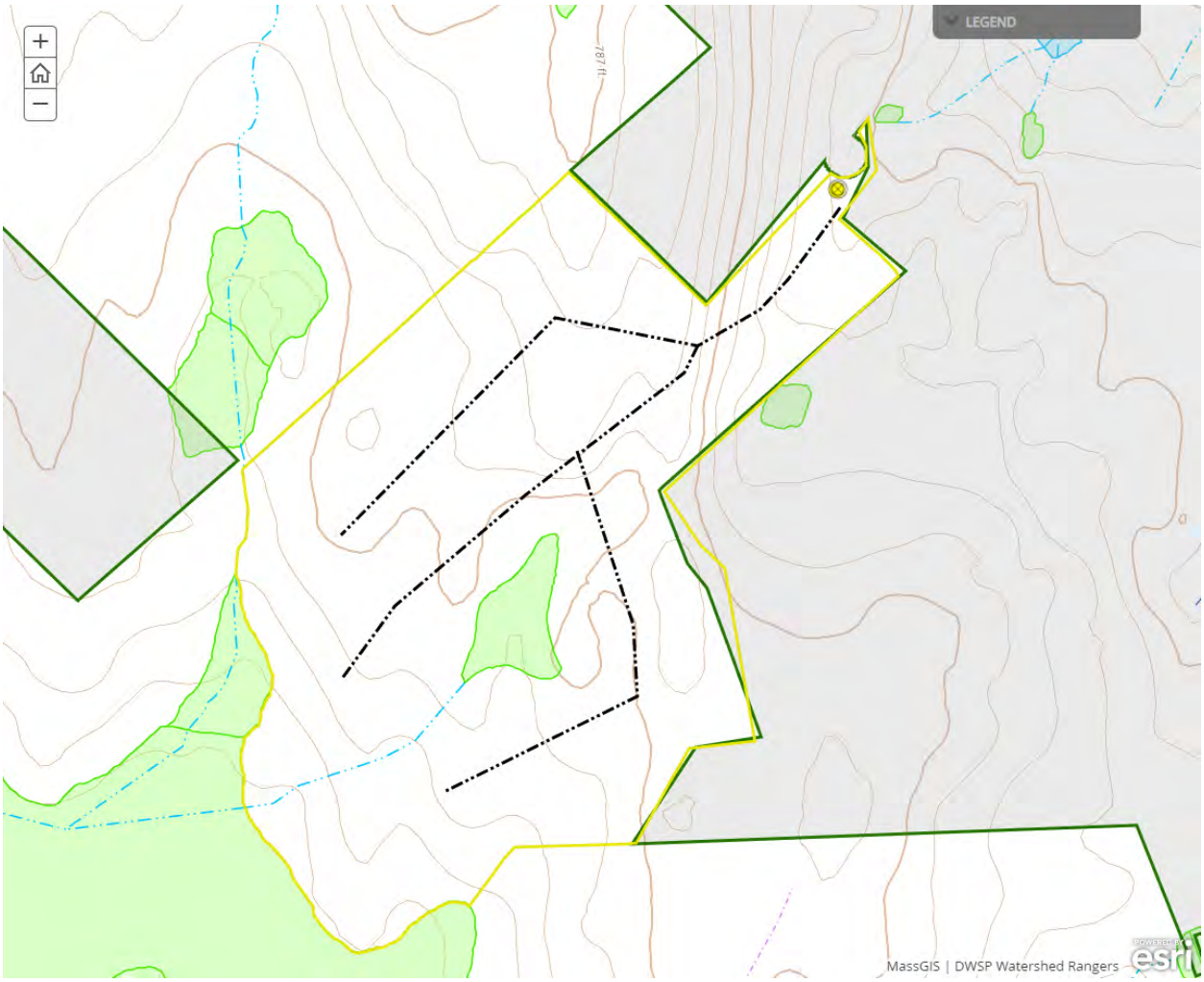
Culverts needed: No

Work needed on permanent bridges: No

Beaver issue: No

Further comment on access needs:

No engineering work is anticipated to be needed prior to harvest.


LEGEND
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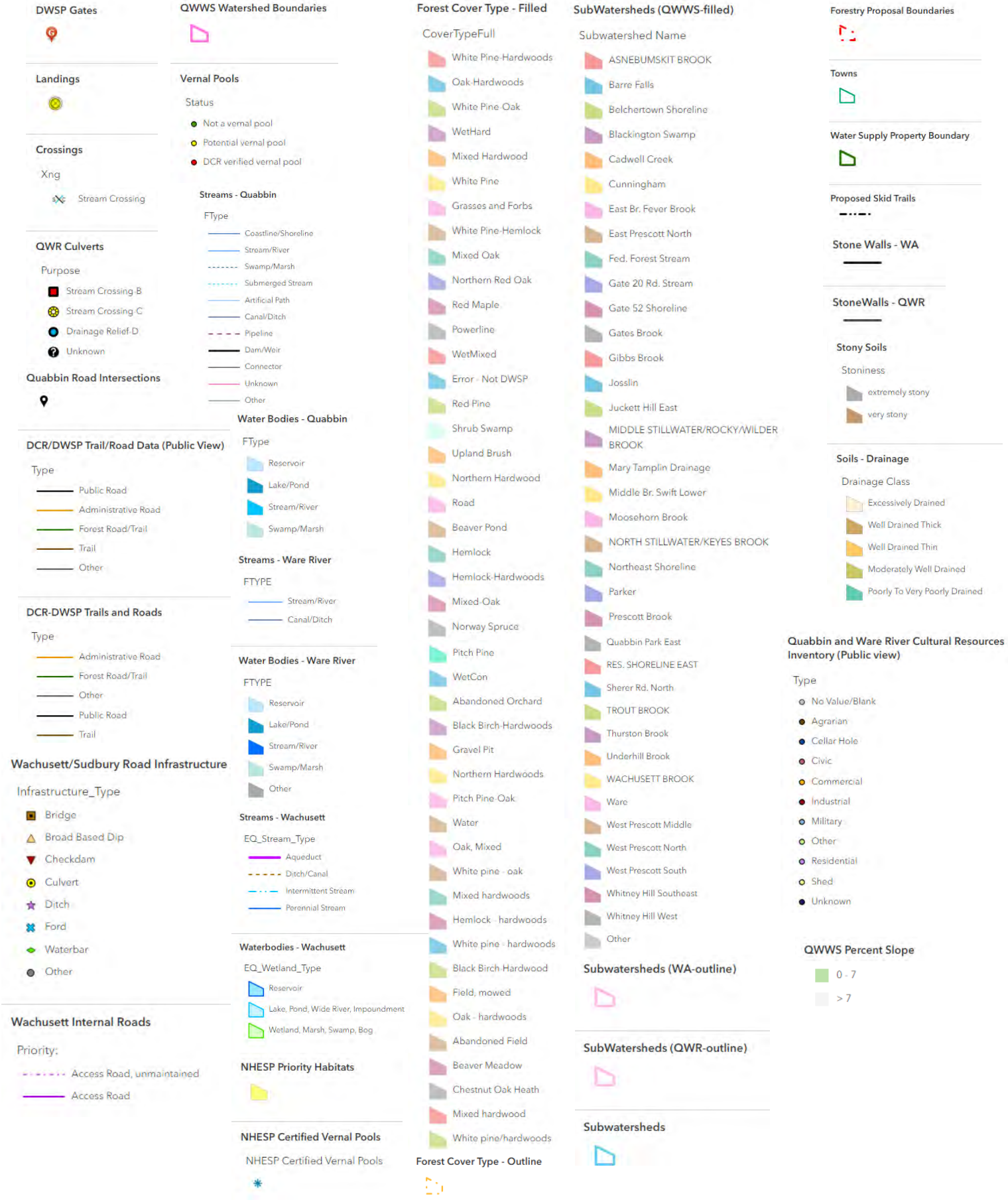
MassGIS | DWSP Watershed Rangers

DWSP FY 2022 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-22-115

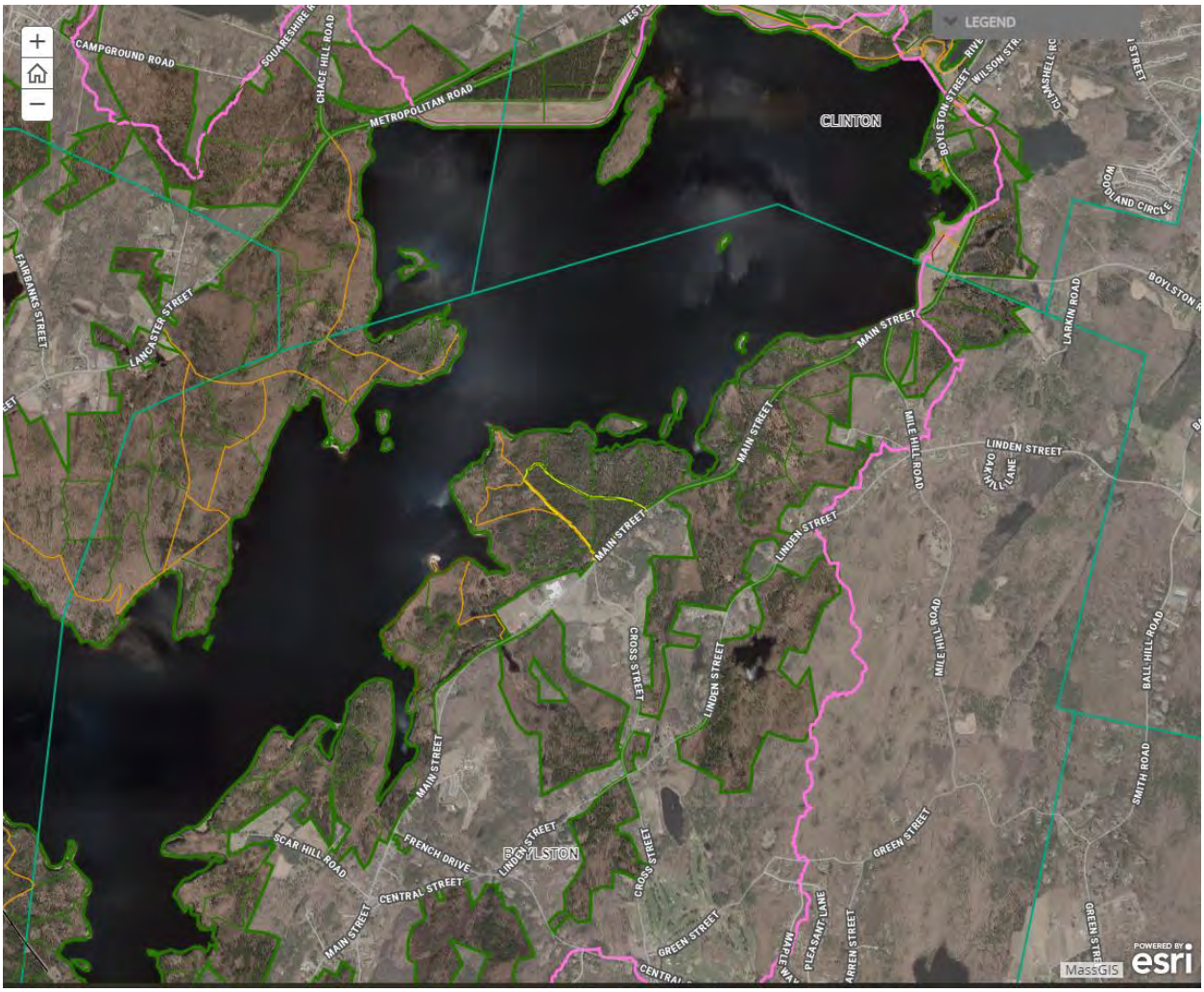
Proposal Goals

The primary goal is to promote a resilient, diverse and vigorously growing forest by creating openings throughout the lot to release areas of abundant advance regeneration from canopy competition.

Proposal Location

Beginning at gate 8 heading north easterly to gate 7 thence northwesterly along a forest road about 2,800 feet to a forest road intersection. Thence, south easterly along a forest road 2,300 feet to gate 8.

Total Acres: 43



General Description

	Overstory Type(s)	Acres
Dominant	White pine - oak	24
Secondary	Oak, mixed - dry site	11
Other	White pine	7

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mountain laurel prevalent

Description of forest composition/condition:

All of this working unit is original watershed property that was taken from Levi Flagg and several smaller landowners on July 23, 1900 when the Wachusett Dam was being built. The land within this working unit at the time of taking was designated as woodland. Prior to the taking, an old highway ran through the southern portion of this working unit and was decommissioned in 1860. Today, the highway is still noted by the stonewall that ran along it. In 1905 the roadside of Route 70 was planted/improved and Flagg nursery was in the middle of this working unit. The map of the 1938 hurricane shows a scattering of damage in the area. In 1939 the MDC cleared 100% of the route 70 road frontage in this working unit. The 1951 cover type map shows white pine in the southern portion, scotch pine/hardwoods in the north, white pine/hardwood to the northwest and Austrian pine/hardwood in the area where Flagg's nursery was. The first timber harvest was in 1982 when a thinning occurred in the southern portion of the working unit. Then, the next year (1983) 24 acres were thinned in the northern section. In 1984 the Route 70 roadside was thinned. In 1995, a small thinning occurred in the working unit. The last time this lot was worked was a salvage that occurred along Route 70 in 2005 which resulted in a new young stand.

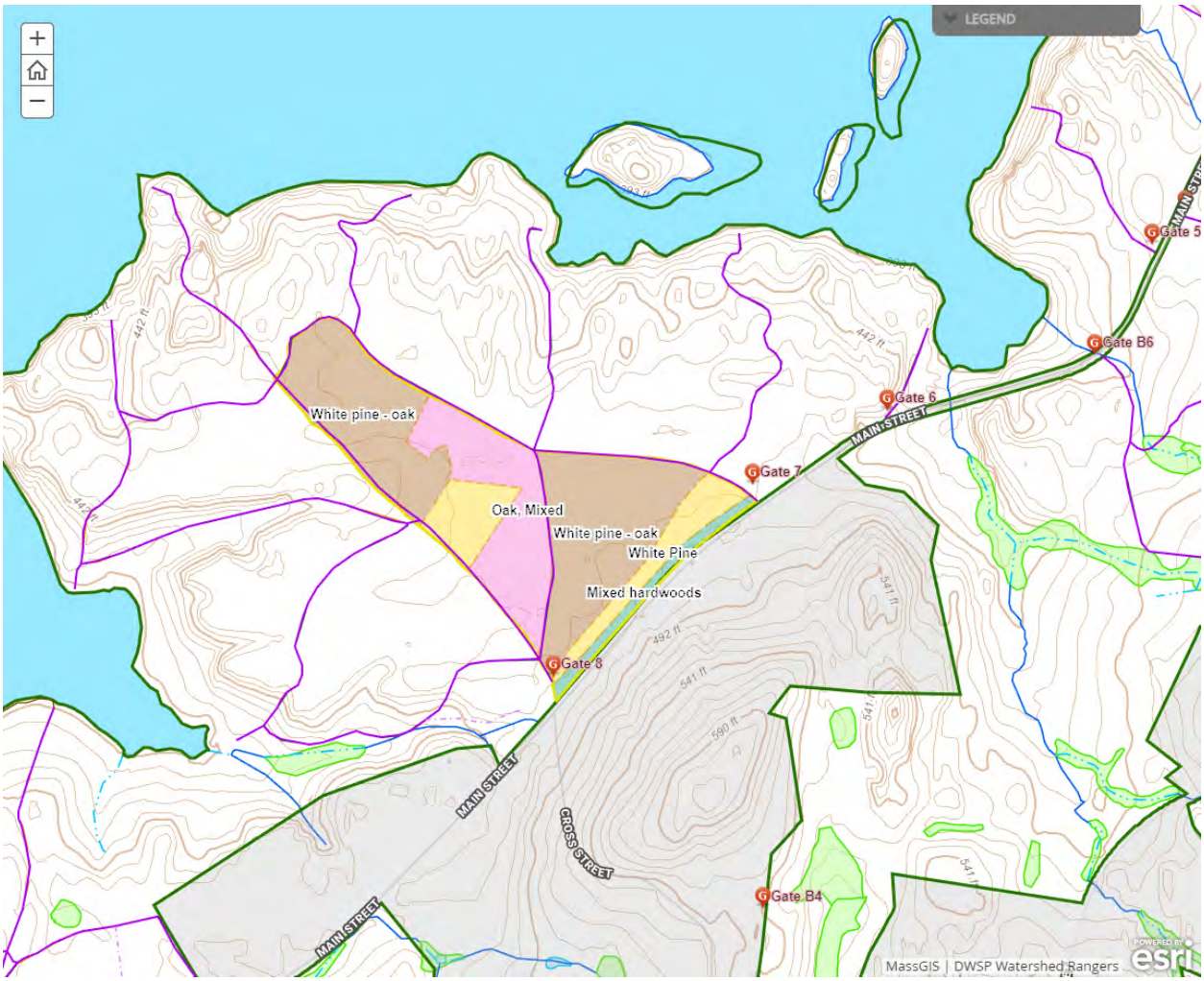
All of those harvests have resulted in thick regeneration throughout the working unit. The current forest structure is dominated by white pine, red oak, black oak, white oak, red maple, American beech and paper birch. The pine is of better health and vigor than the hardwoods currently. There is evidence of past pine cutting throughout the unit and some hardwoods. There is no current gypsy moth evidence, but infestations have occurred in similar areas nearby in recent years. Regeneration is uniformly good with some small pockets of heavy mountain laurel in the northern area. There is also some low bush blueberry and sheep laurel mixed in the understory. The area is fairly flat with some scattered small kettle bowls.

A section of this unit was also part of a Clark University professor's research project with the numbered aluminum tree tags still remaining in the field. The working unit falls within the Asian Longhorned Beetle Quarantine zone. There is a very small amount of host material within the working unit. With the recent deer hunts, there is now little current deer browse evident.

The age structure of the working unit is as follows: 4% (0-20 years old) 0% (21-40 years old) 0% (41-60 years old) 0% (61-80 years old) 66% (81-100 years old) 30% (>100 years old).

Assessment of Terrestrial Invasive Species:

Sampling found no invasives present in 108 plots taken. It is a dry site. There was some significant gypsy moth defoliation nearby, but none noted here. The area is also in the ALB zone but no infestations have been found within the quarantine zone for a while and there is little host species within the unit.

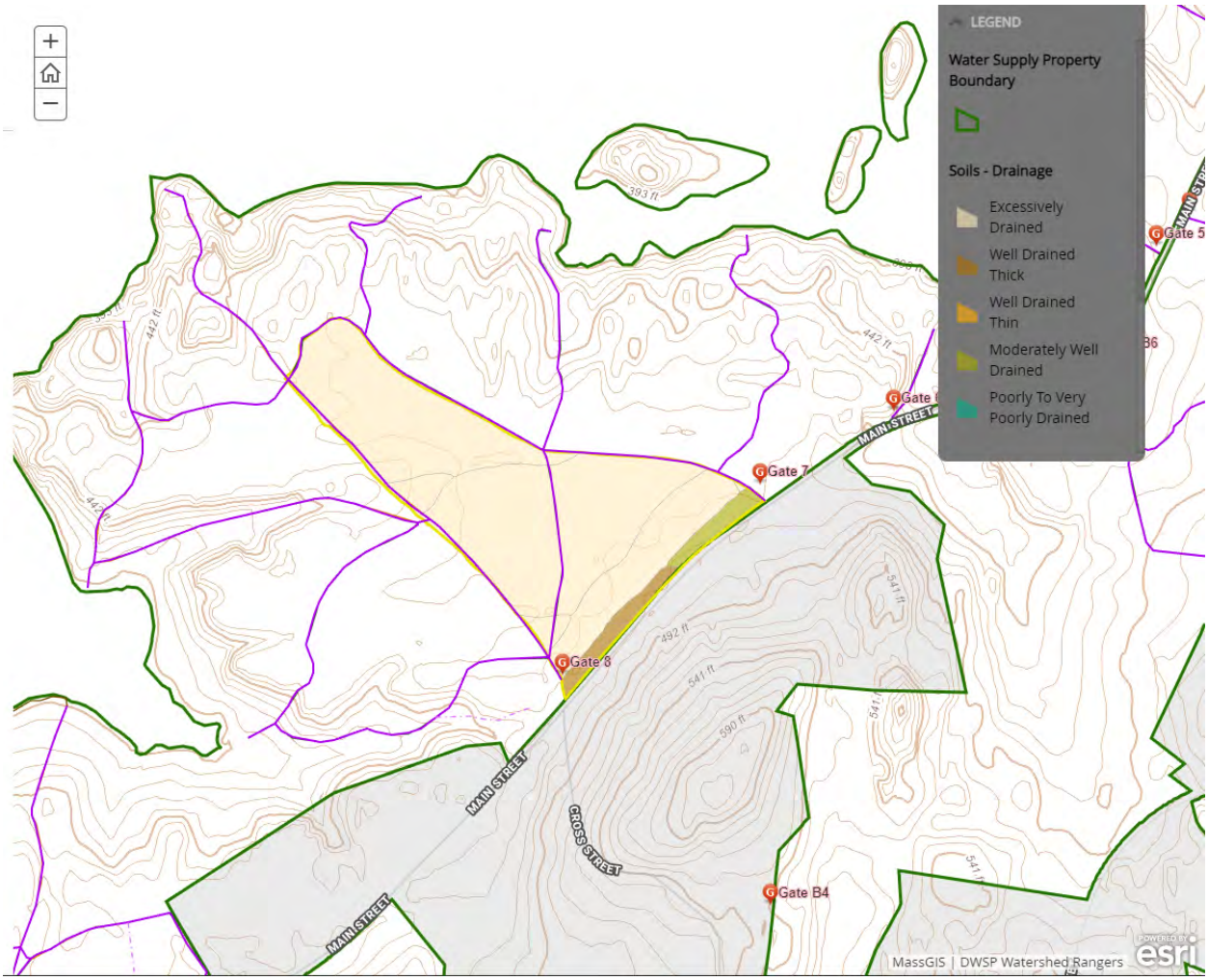


Soils

Drainage Class	%
Excessively Drained	93
Well Drained Thin	0
Well Drained Thick	4

Moderately Well Drained	3
Poorly to Very Poorly Drained	0

Almost the entire site is composed of excessively drained Merrimac or Hinckley soils.

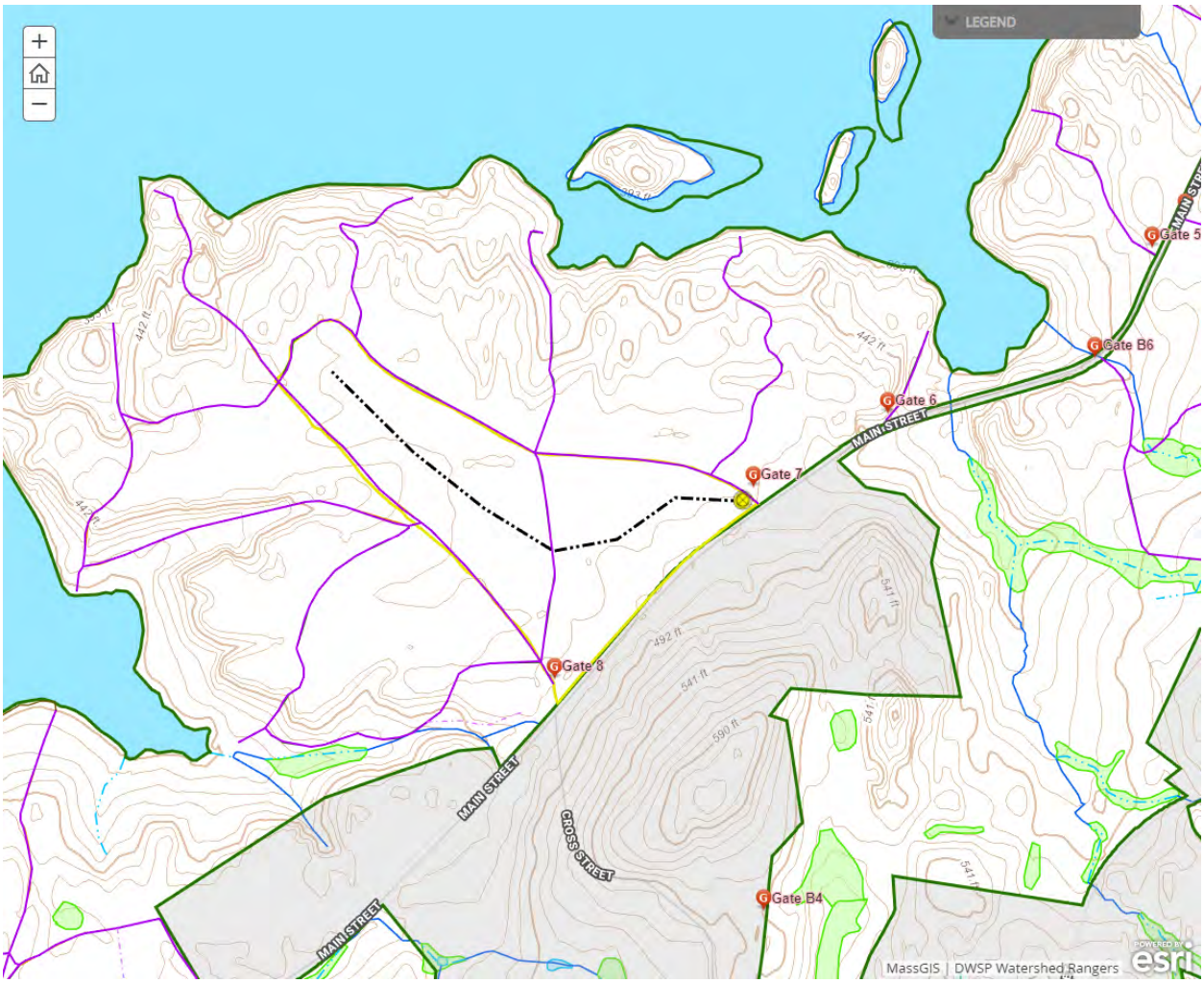


Wetlands

- Wetlands present? - **No**
- Streams present? - **No**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**

- Is logging in wetlands planned? - **No**

No wetland resources within this proposal area.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **0**

Acres in Regeneration cuts: **15**

Average regen opening size: **1**

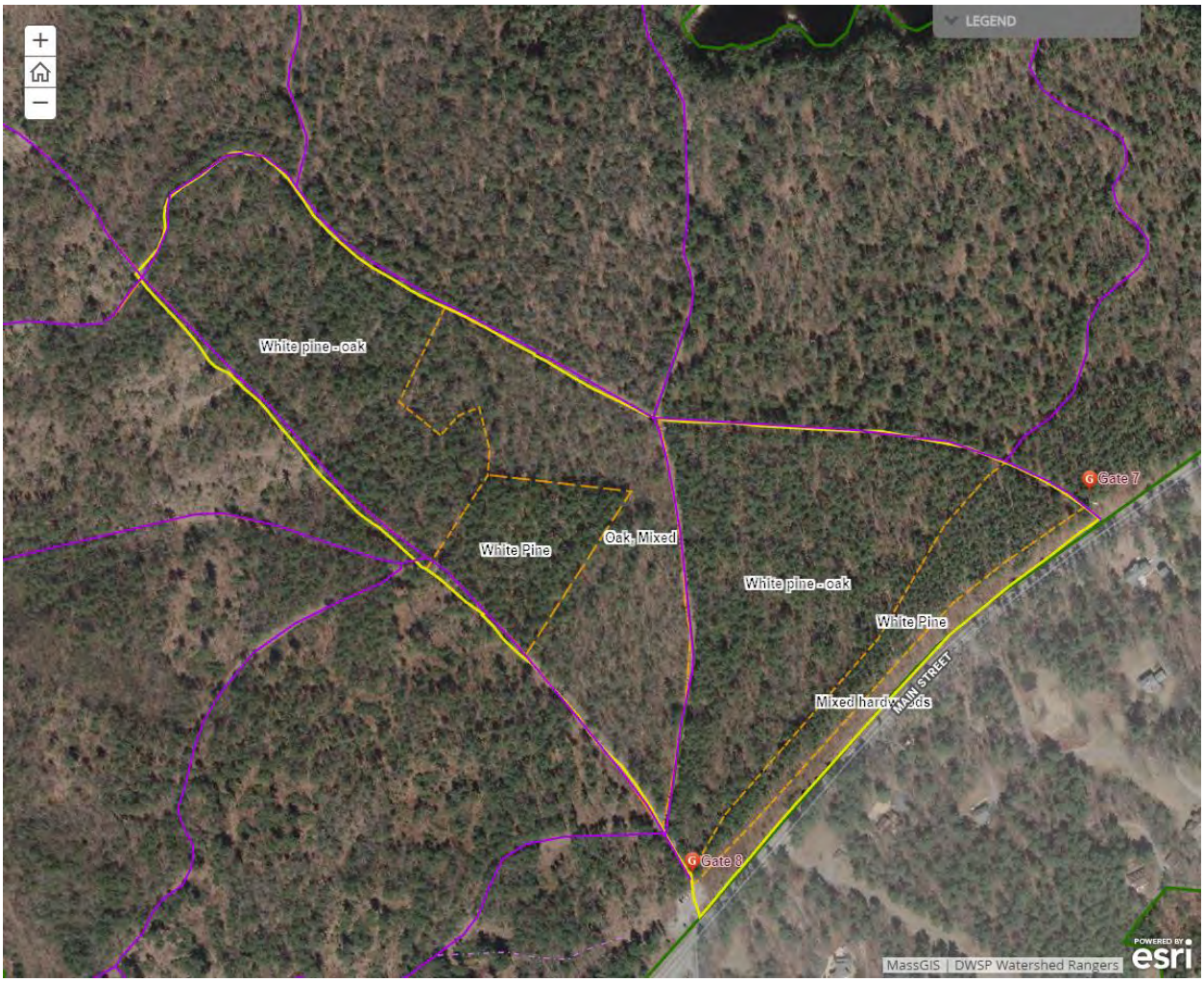
Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Regeneration sampling found adequate regeneration present in 85% of the plots, with marginal regeneration in another 10% of the plots. Oak was present in 83% of the plots. The advance regeneration is comprised of red oak, black oak, white oak, white pine, red maple, black birch, hickory and beech.

General comments on silviculture proposed:

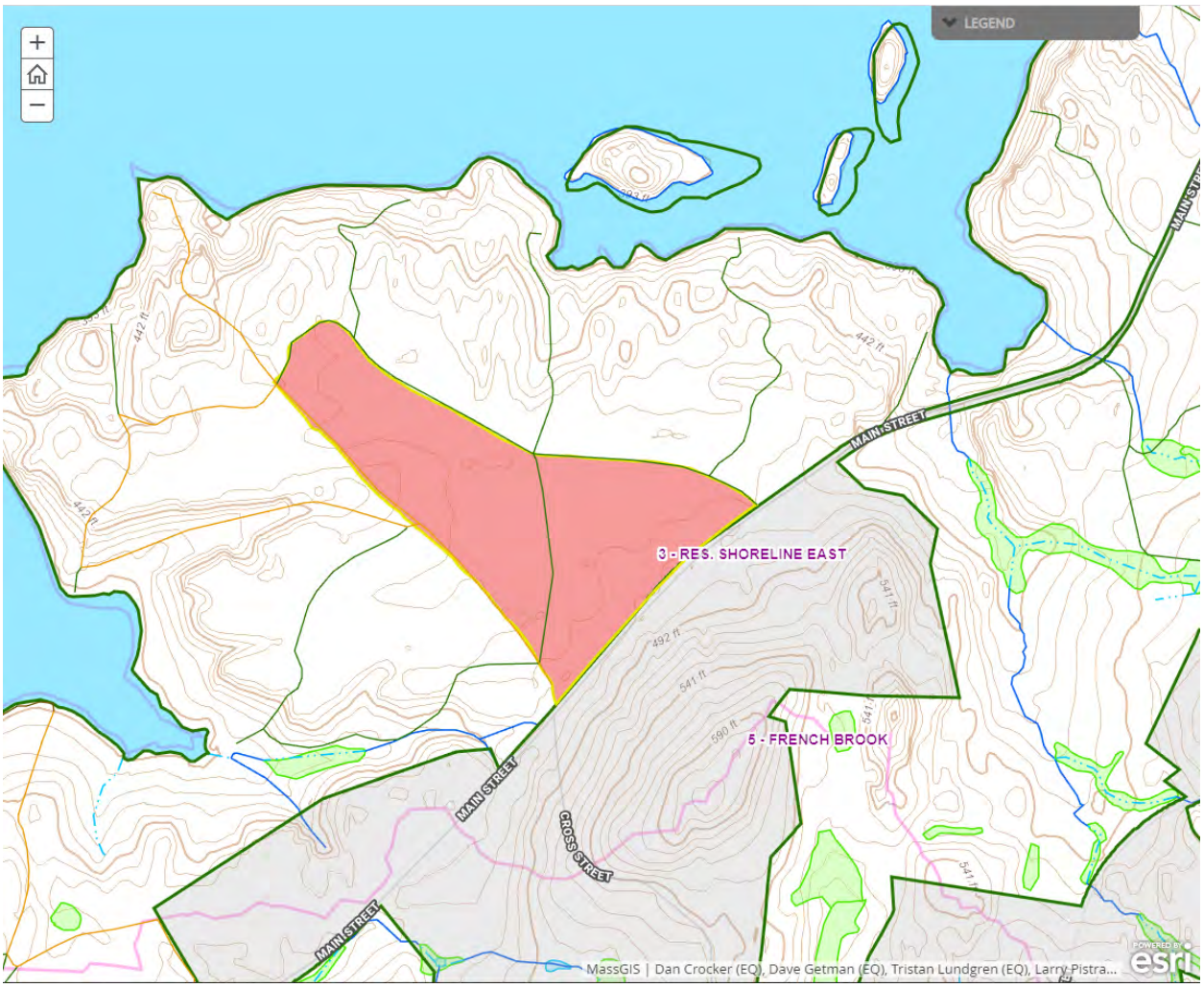
With good amounts of advance regeneration present throughout the working unit, openings will be made on about 15 acres which achieves the goal of creating a new age class on 1/3 of the working unit. This will be done by the removal of the overstory in patches averaging an acre in size with a maximum size of about 2 acres. The openings will be distributed throughout the working unit taking advantage of the best advance regeneration within the unit.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
3 (Reservoir Shoreline East)	1105	112	993	43

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

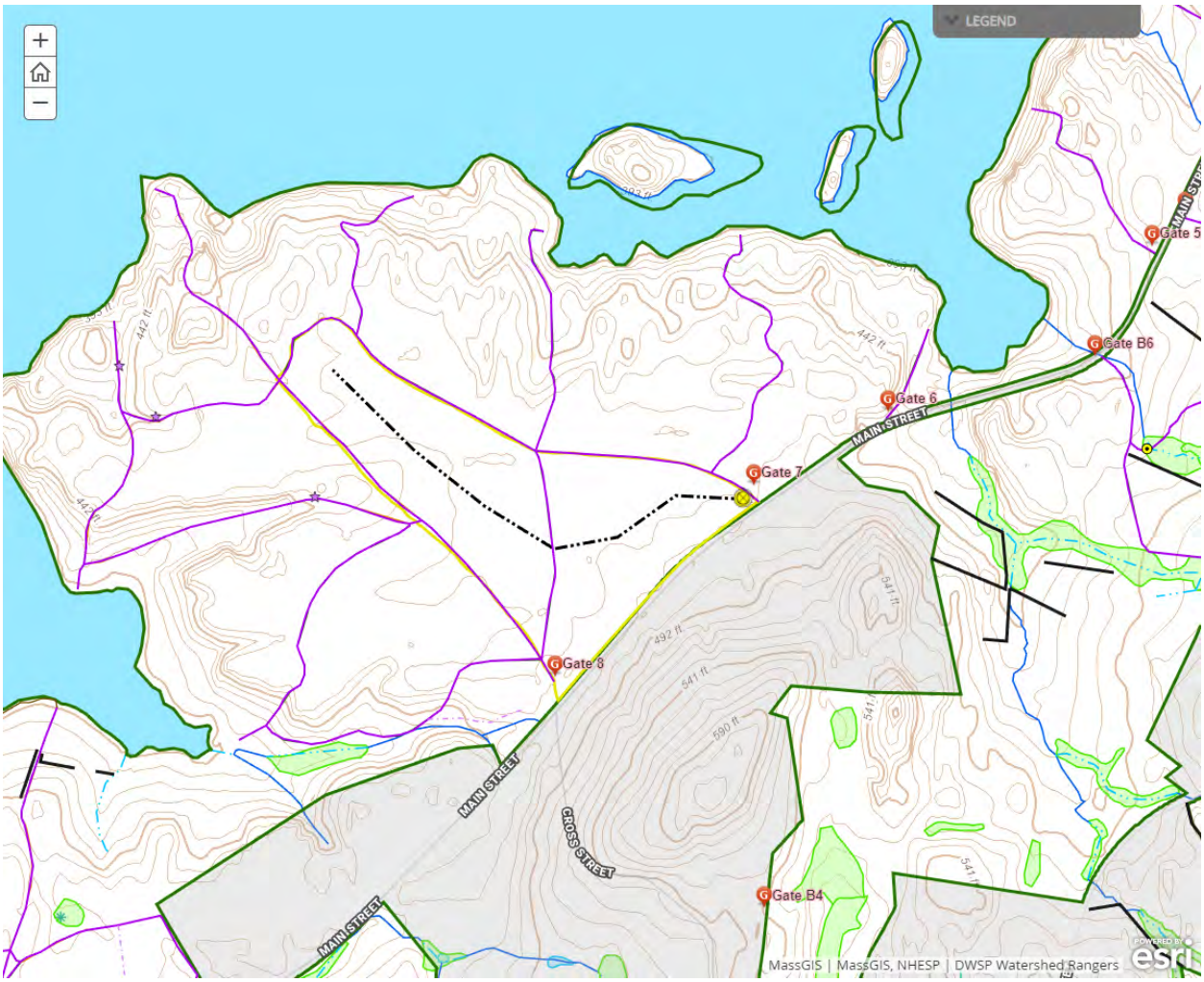
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

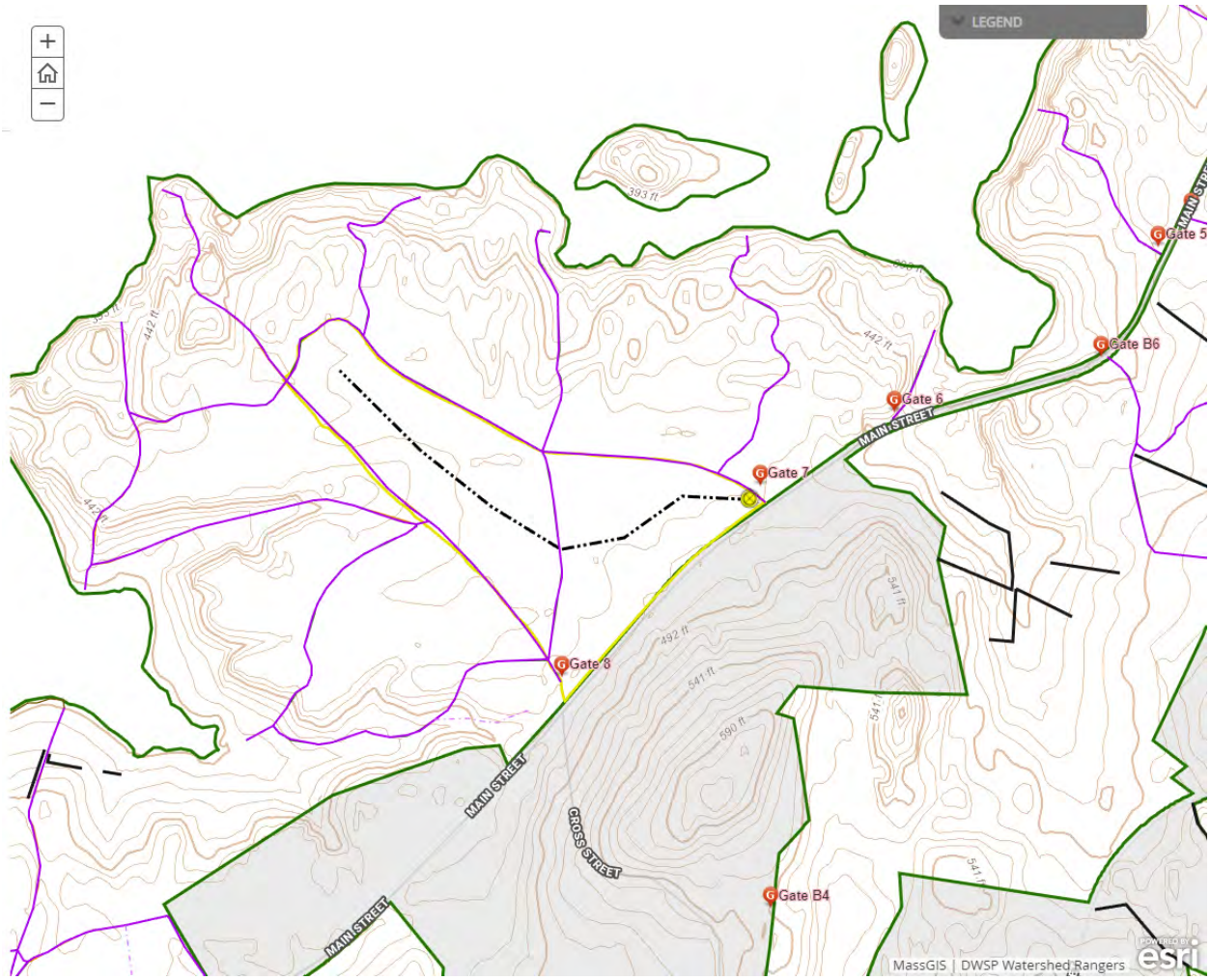
With advance regeneration present throughout the working unit, a cut-to-length harvesting system will be used to protect the regeneration as much as possible.



Cultural Resources

Comments on Cultural Resources:

An old (discontinued in 1860) highway ran through the working unit is evidenced by a stonewall.



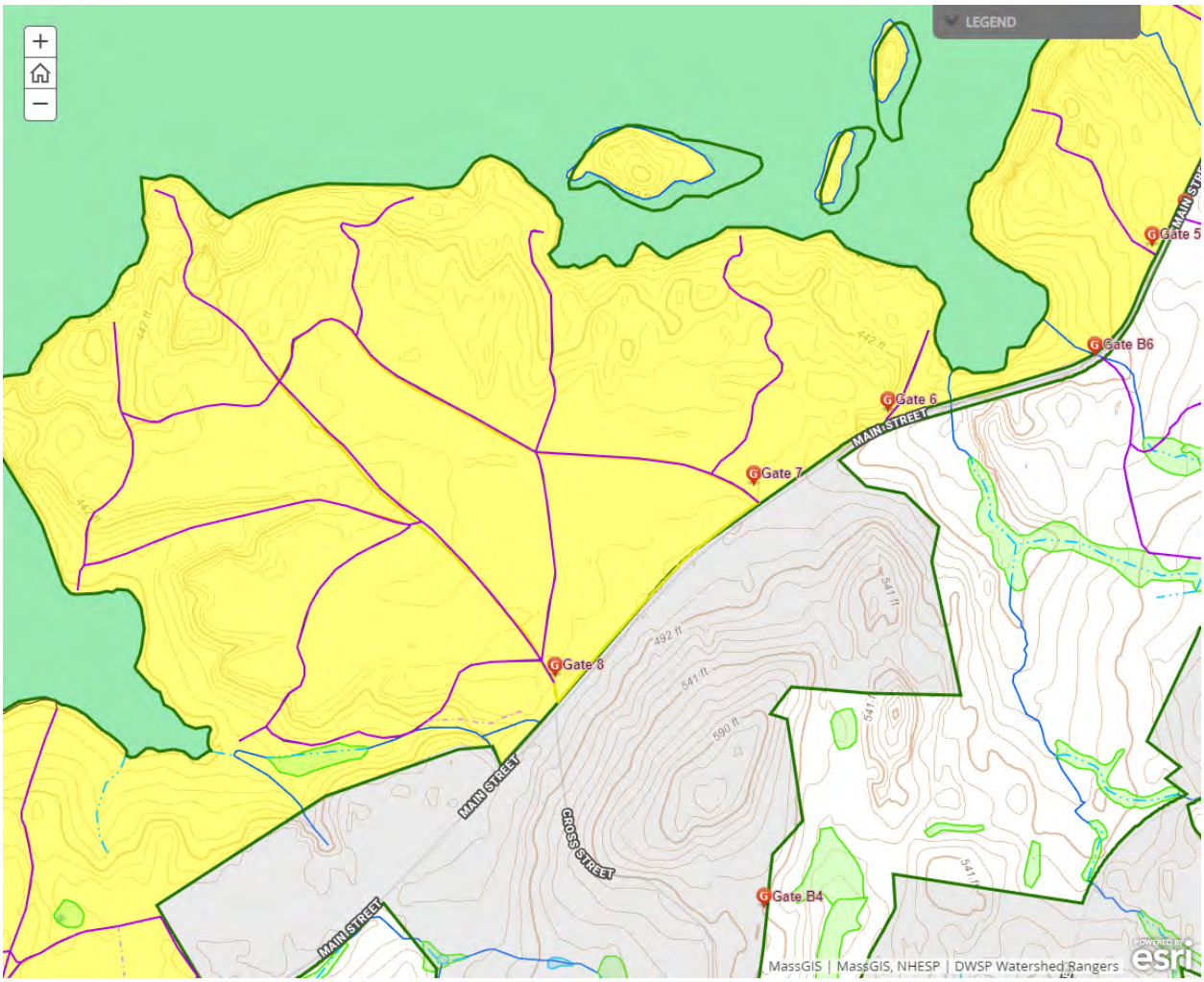
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

The recent deer hunts appear to be helping preserve the advance regeneration within this working unit, as browse is less of an issue currently. A goshawk was known to be nesting in this general area in 2019.

Comments on Rare Species/Habitats:

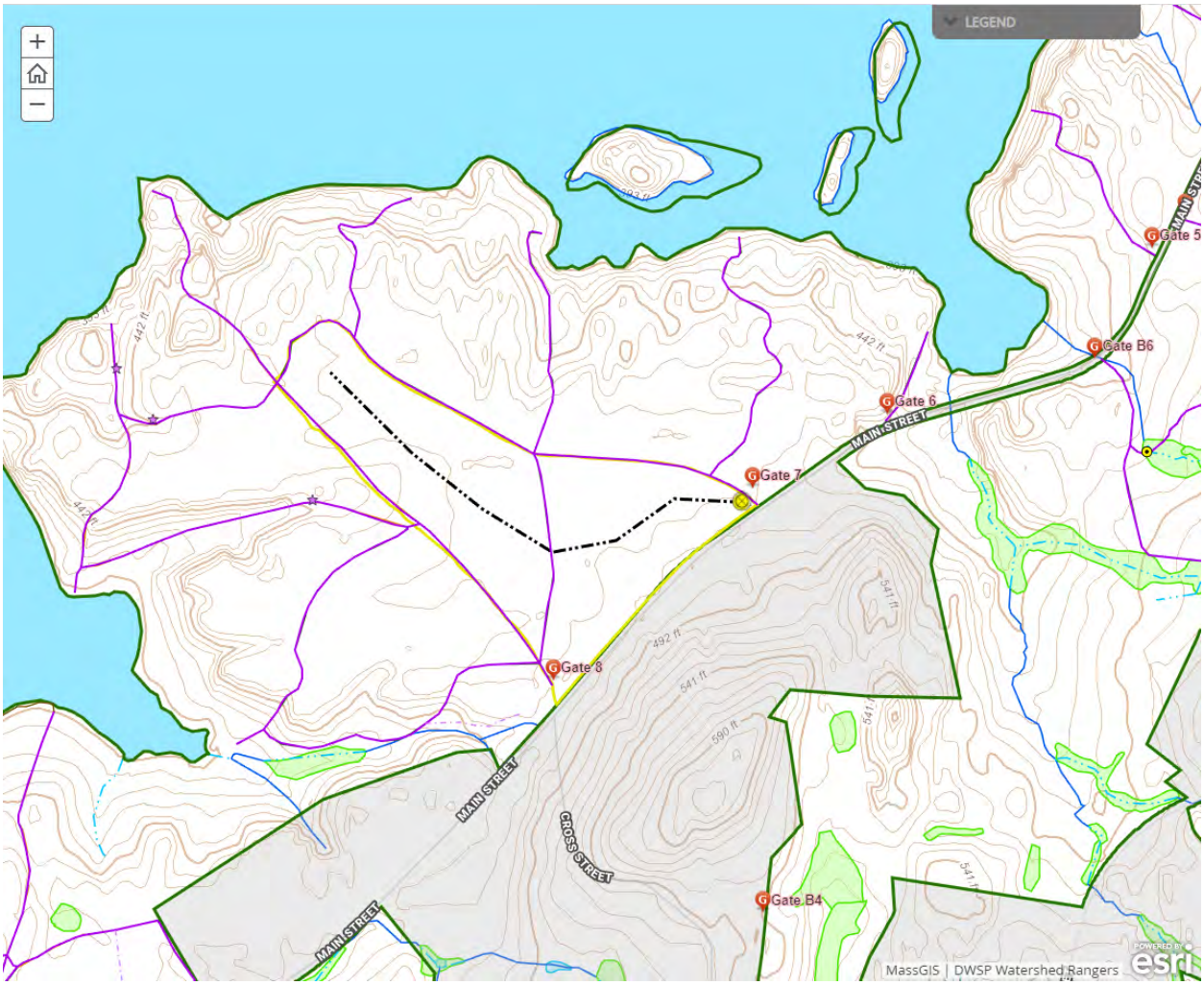
None known; no NHESP Priority Habitats fall within the proposal area.



Environmental Quality Engineering

Comments on EQ Issues:

There are no stream crossings.



Forest Access Engineering

Gravel needed: Yes

Landing work needed: No

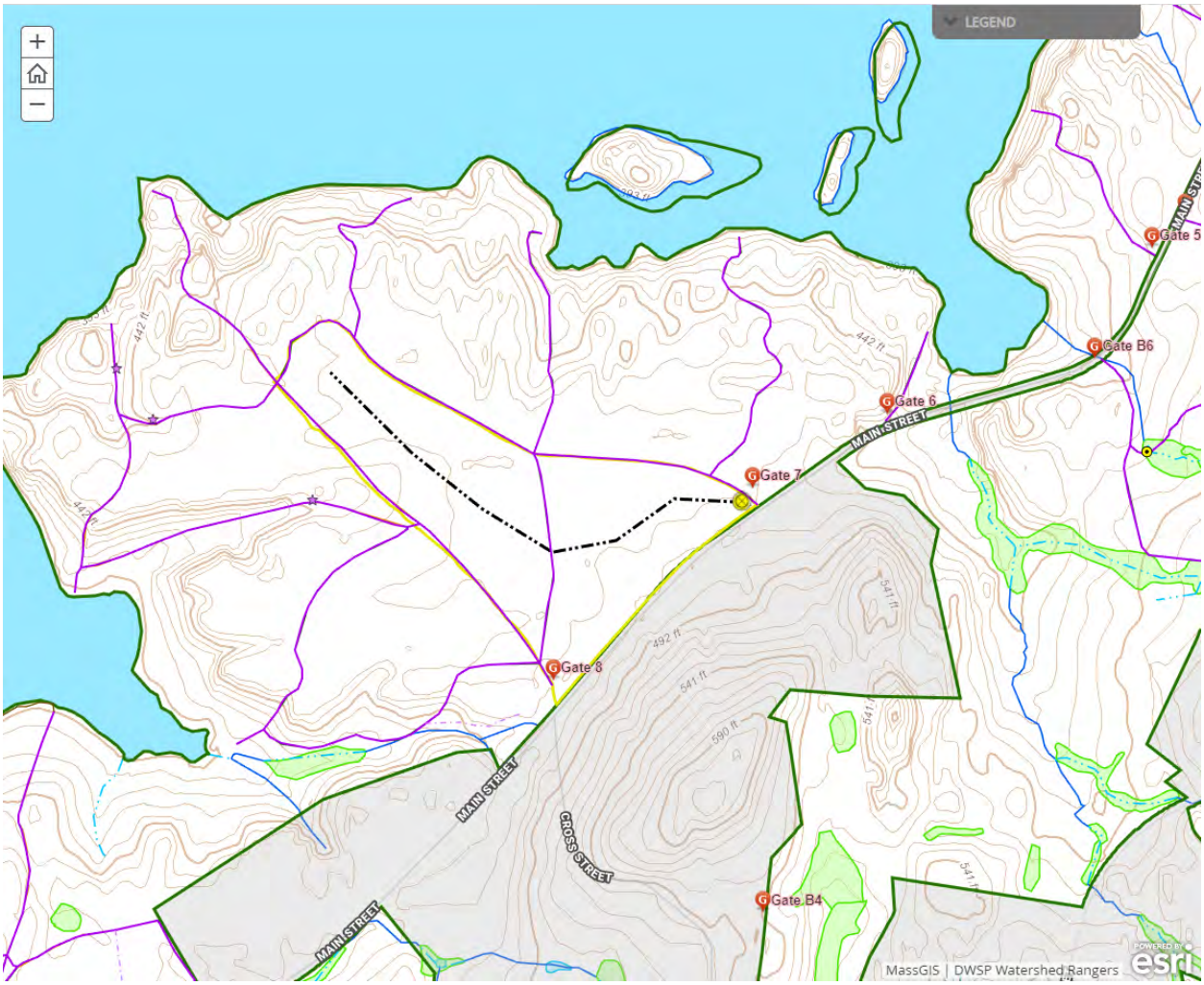
Culverts needed: No

Work needed on permanent bridges: No

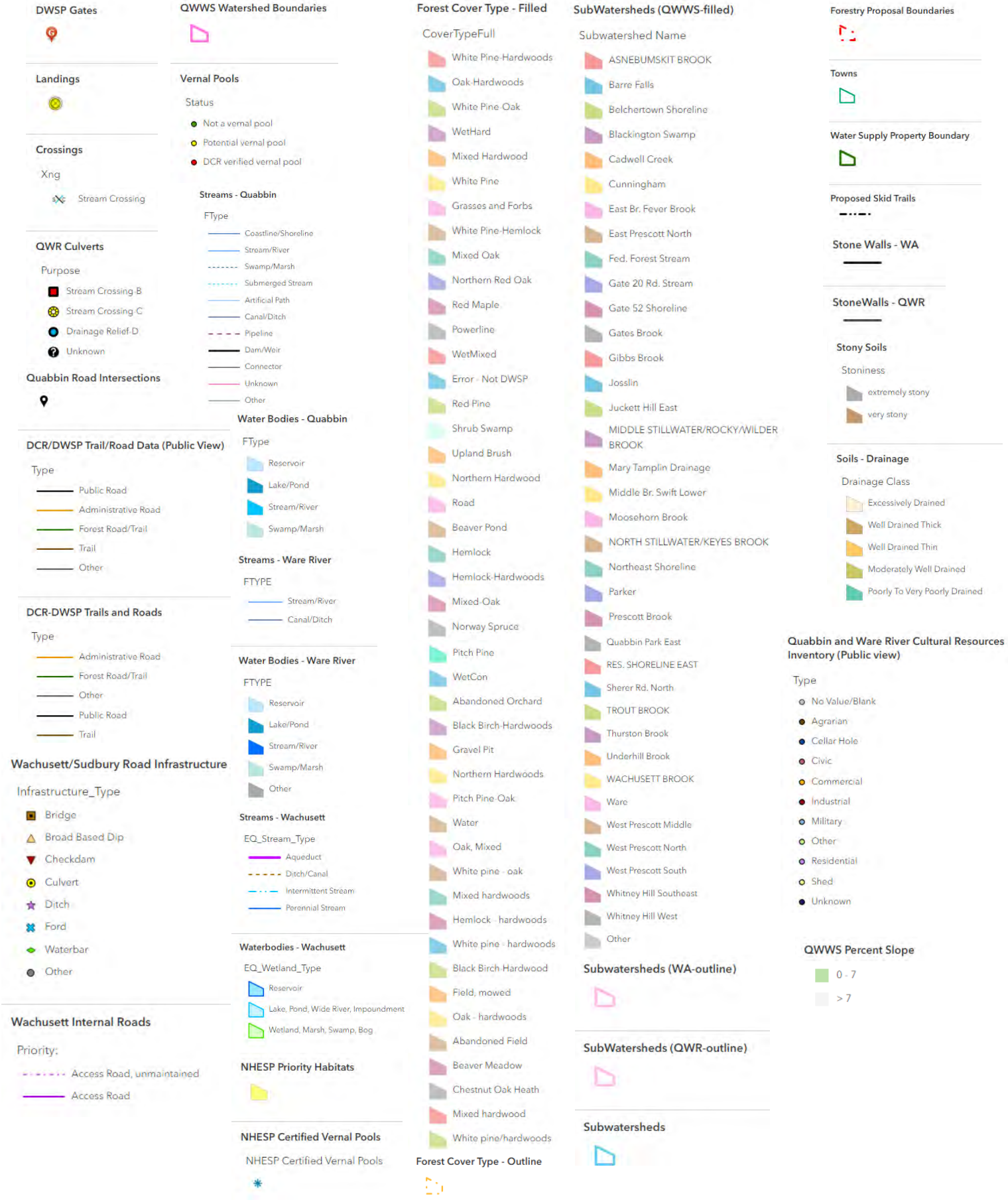
Beaver issue: No

Further comment on access needs:

Trailer access to the landing through Gate 7 likely to be improved by leveling the section of forest road from route 70 to gate 7 with some gravel. Currently there is a severe dip before gaining elevation to the gate. At most, about 20’ of the road needs gravel.



DWSP FY 2022 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-22-155

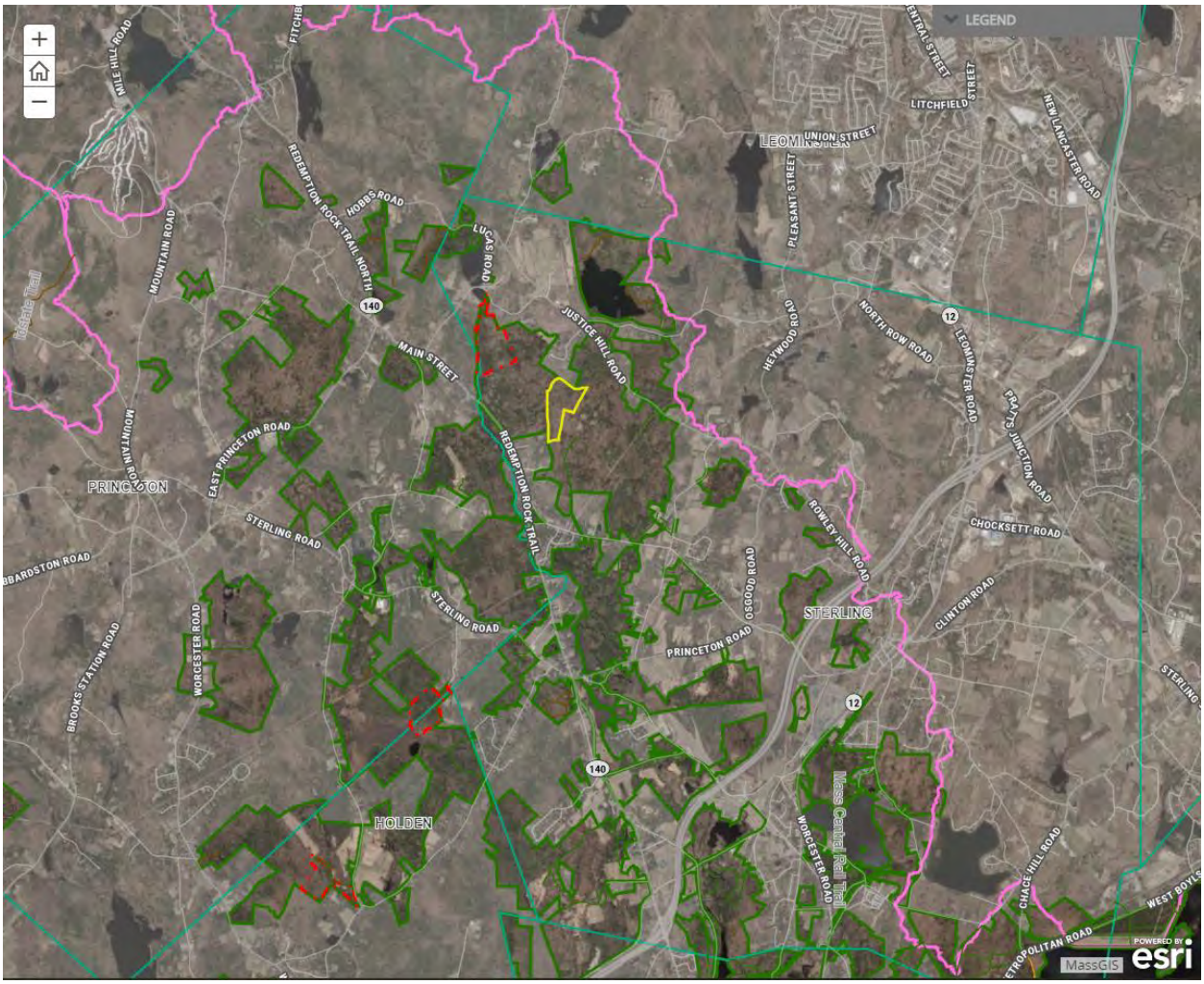
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. These former pastures have a diverse hardwood understory, a portion of which will be released thereby creating a second age class of forest in this area.

Proposal Location

Located in the town of Sterling between Redemption Rock Trail and Justice Hill Road. The entirety of this proposed sale area is bounded by stone walls except for the northwestern corner which is bound by an intermittent stream which is a tributary to the Stillwater River. The stone wall along the northern end is also a property boundary line.

Total Acres: 57



General Description

	Overstory Type(s)	Acres
Dominant	Oak - hardwoods	19
Secondary	Northern red oak	17
Other	White pine - hardwoods	13

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mesic site - witch hazel, highbush blueberry

Description of forest composition/condition:

This area was purchased by the MDC in 1998. It's made up of two former pastures that are surrounded by stone wall; a 26 acre pasture in the south and a 39 acres pasture formerly known as the "Jones Pasture" to the north. Only the northern 18 acres of the southern pasture are included in this proposed sale area. The old AT&T long-distance phone cable right-of-way was used to divide this area.

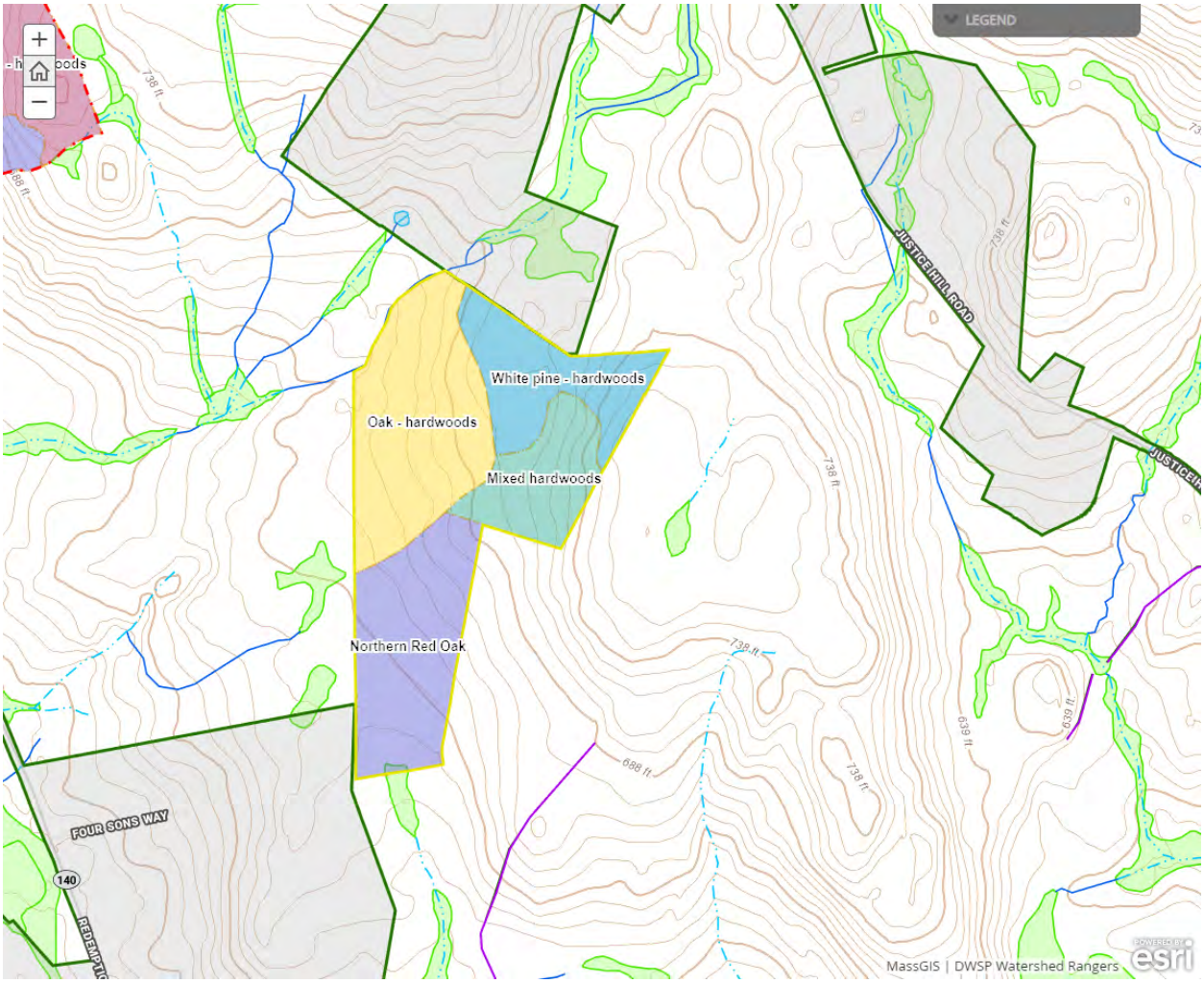
The southern pasture is dominated by red oak in the overstory along with red maple, white pine, white oak, black birch, white ash and paper birch. The understory is dominated by witchhazel along with hazelnut and scattered mountain laurel. The advance regeneration is comprised of black birch, red maple, white oak, red oak, white pine, white ash, paper birch and hickory.

The northern pasture is dominated by red oak and white pine along with hickory, black birch, red maple, white oak and white ash. Eastern hophornbeam is found in the far north end of this area. The dominant shrub in the understory is mountain laurel. Witchhazel is more common on the lower slopes to the west. Advance regeneration is comprised of black birch, red oak, white pine, red maple, white ash, hickory and black cherry.

The age structure of this area is as follows: 0%, 0-20 years old; 0%, 21-40 years old; 0%, 41-60 years; 15%, 61-80 years; 80%, 81-100 years and 5%, >100 years old. The oldest trees are in the far southwest end of the southern pasture. The red oaks here originated in about 1913 making them about 108 years old. There's an individual very large white oak in the approximate middle of the northern pasture that was present when this was still an actual pasture making it much older than the 85 year old forest that now surrounds it.

Assessment of Terrestrial Invasive Species:

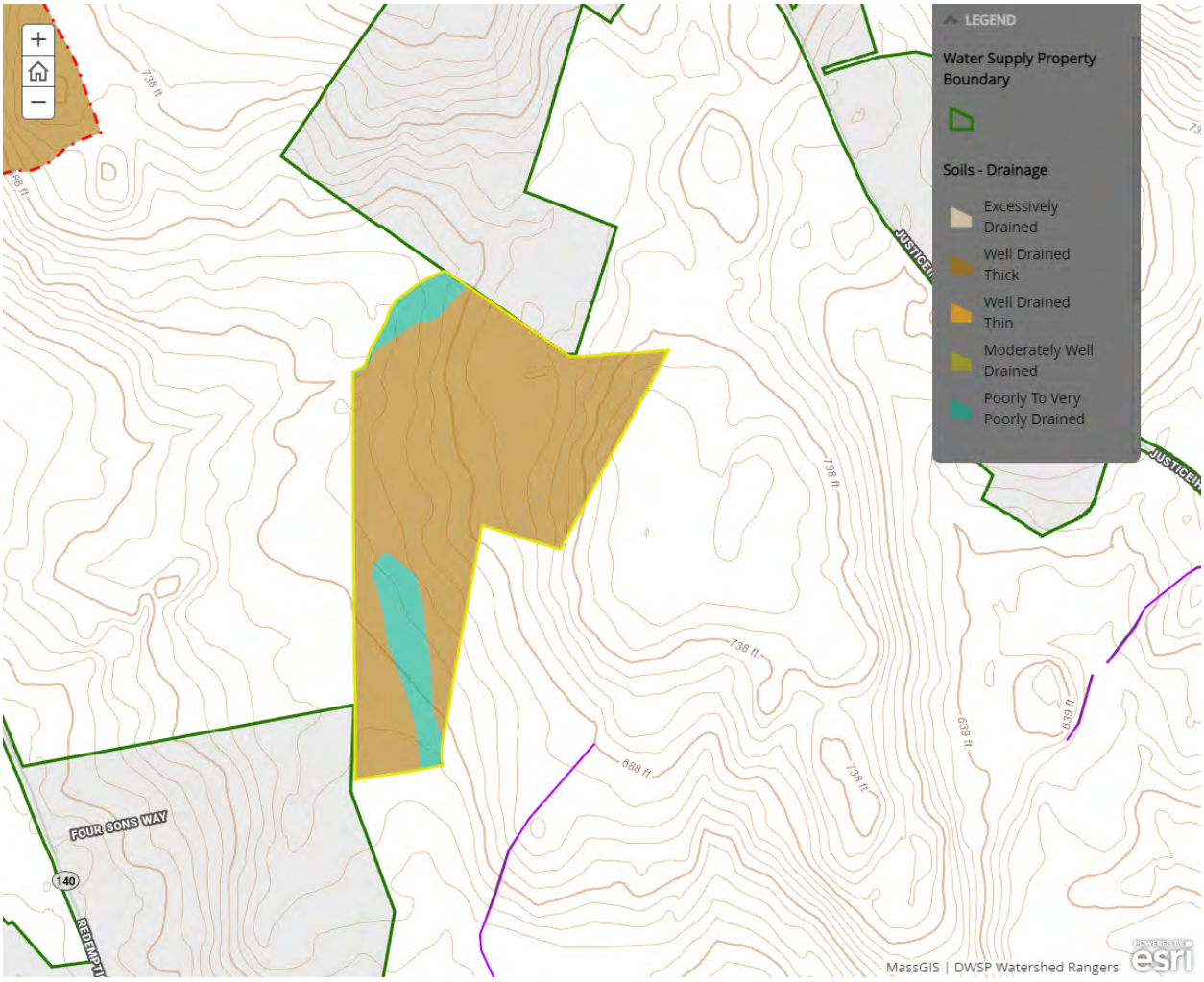
Sampling did not find any terrestrial invasives.



Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	0
Well Drained Thick	88
Moderately Well Drained	0
Poorly to Very Poorly Drained	12

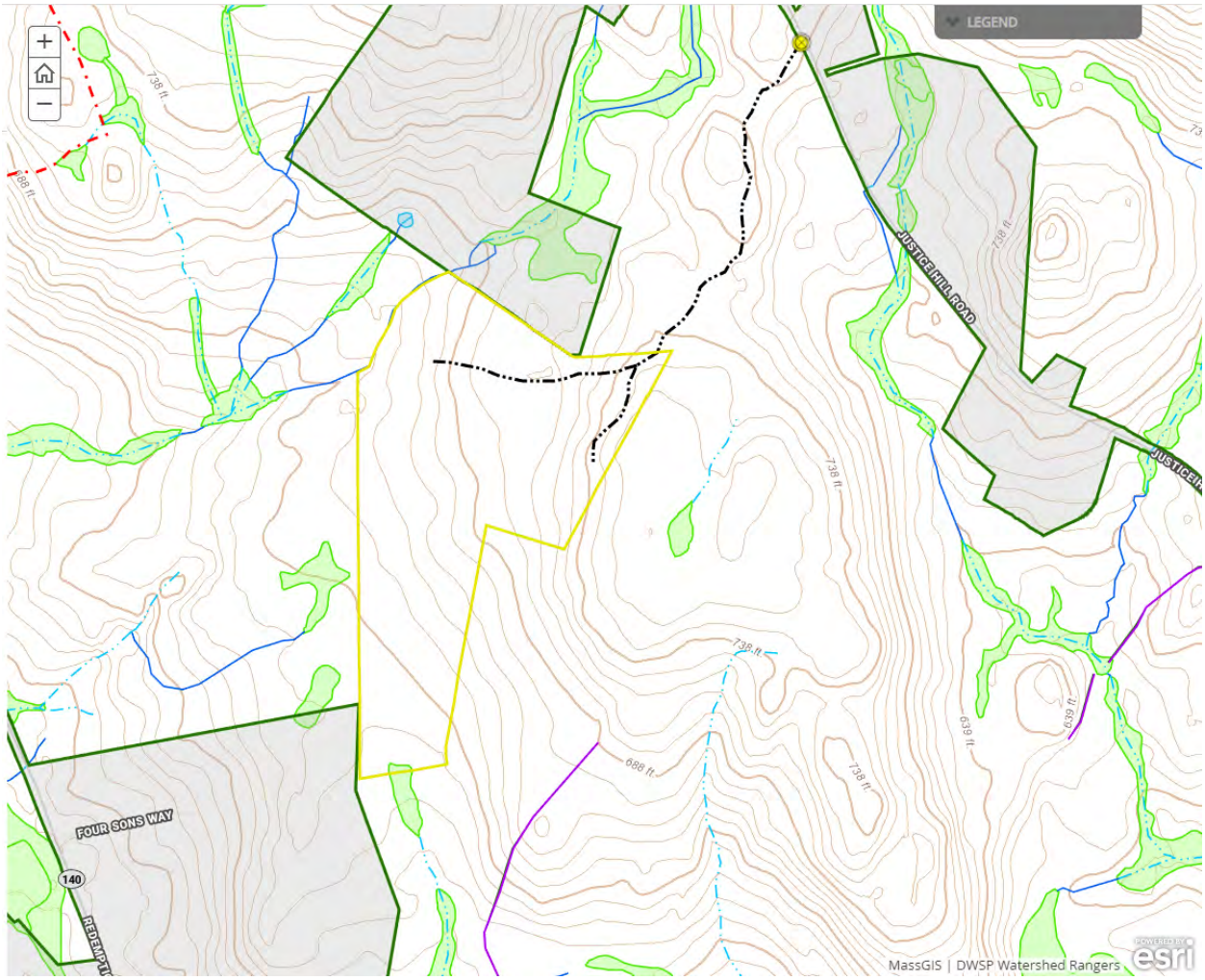
The well-drained thick soil is the Paxton fine sandy loam, extremely stony. The poorly-drained soil is the Ridgebury fine sand loam, extremely stony which is found along the stream at the north end and across a portion of the southern pasture.



Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**
- Is logging in wetlands planned? - **No**

An intermittent stream which is tributary to the Stillwater River forms the northwestern boundary of this area. There is also a very small, unmapped intermittent stream roughly in the middle of the northern pasture which originates and ends within this area and is not tributary to a wetland or other stream.
There is a piece of a small mapped wetland in the far southern end of this area. However, upon inspection, it appears that this wetland should perhaps be mapped much farther north into the southwestern corner of this area.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **0**

Acres in Regeneration cuts: **18**

Average regen opening size: **1**

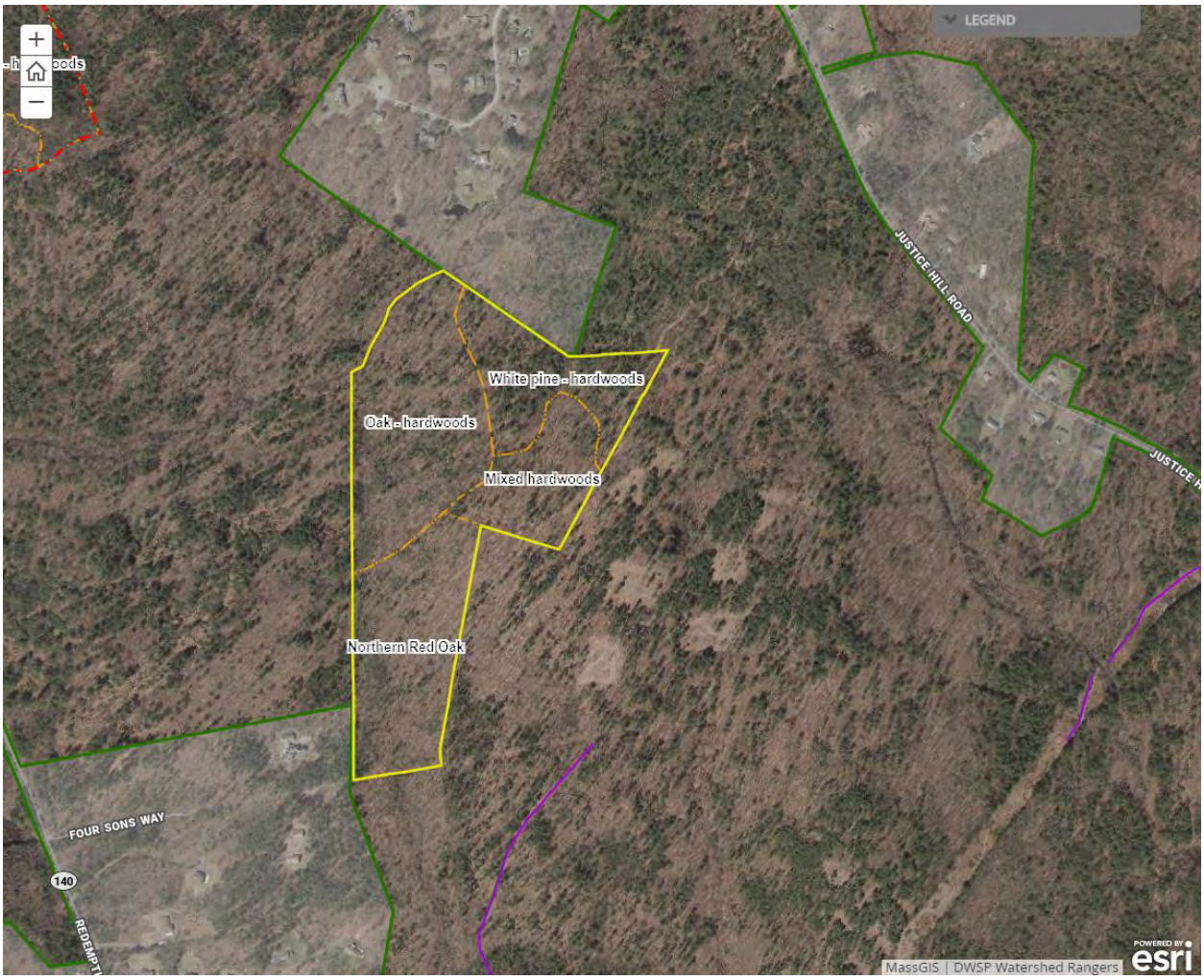
Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate regeneration in 38% of the plots with marginal regeneration in an additional 32% of the plots. Most of the plots with adequate regeneration are in the northern pasture although there some in the southern pasture. Black birch is the most commonly found species in the understory although there is also a good component of red oak, white oak, black oak, red maple, white pine and hickory along with lesser numbers of eastern hornbeam, sassafras, yellow birch and black cherry.

General comments on silviculture proposed:

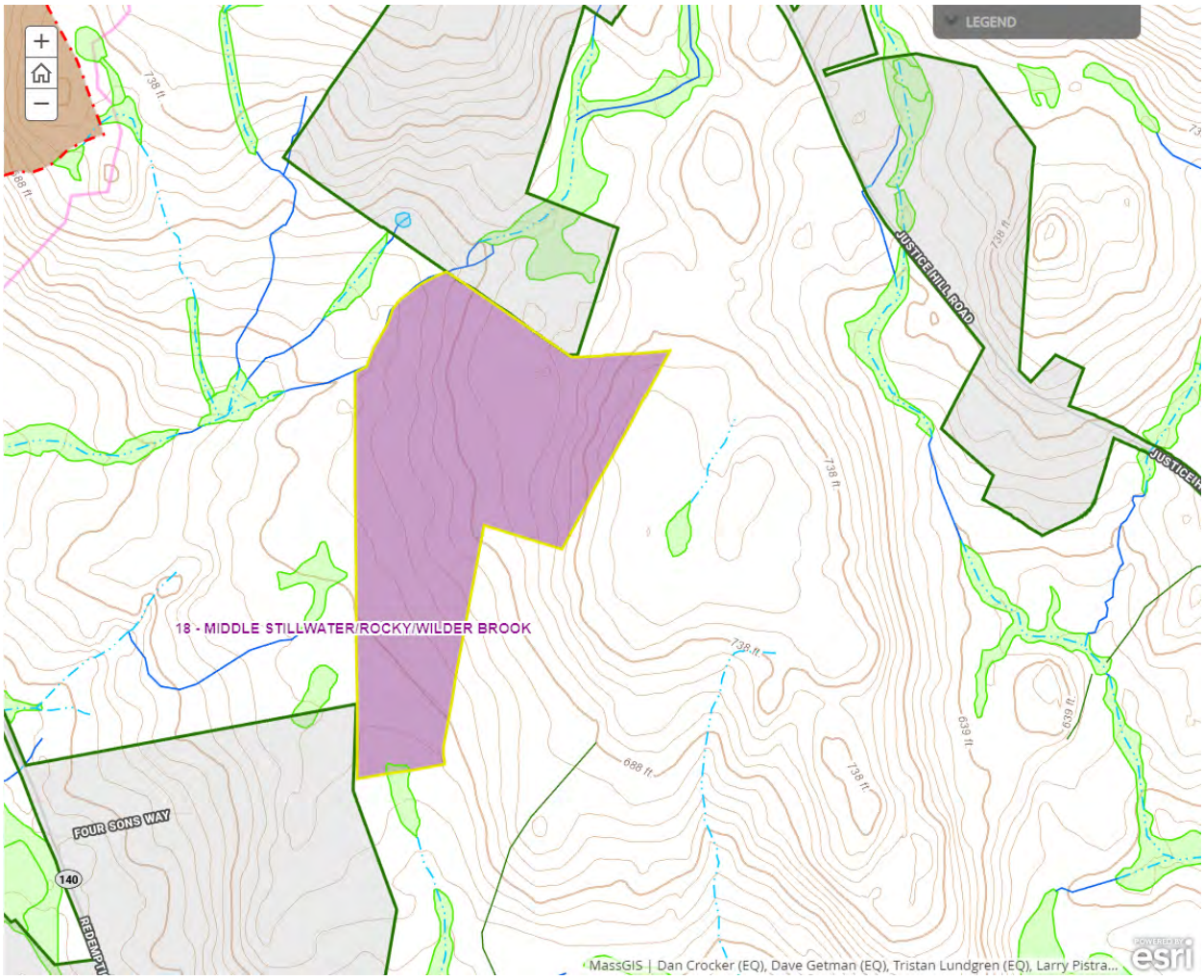
With good advance regeneration present comprised of a diversity of species well suited to this site, the goal will be to make openings that total about 18 acres. This will result in a new age cohort within the forest that makes up about 1/3rd of the area of this working unit. These openings will be well distributed throughout the area taking advantage of where the advance regeneration is best. Given that the majority of the good advance regeneration is found in the north pasture, it's likely that a disproportionate amount of the acreage of the new age cohort will here. Following the harvest, the age structure of the forest is anticipated to be approximately as follows; 33%, 0-20 years old, 0%, 21-40 years; 0%, 41-60 years; 10%, 61-80 years; 52%, 81-100 years and 5%, >100 years old.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
18 (Middle Stillwater/ Rocky/ Wilder)	2028	118	1910	57

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

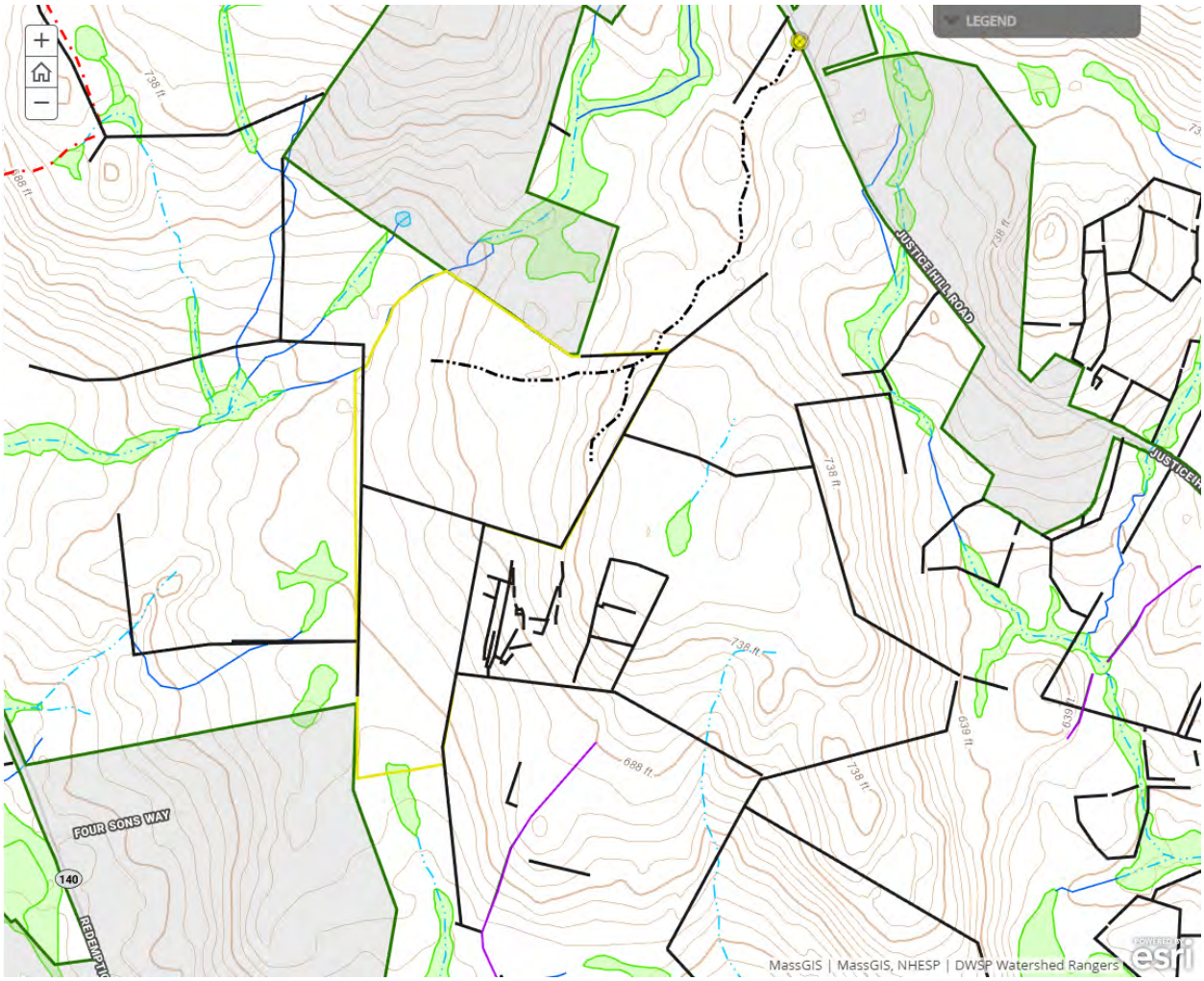
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

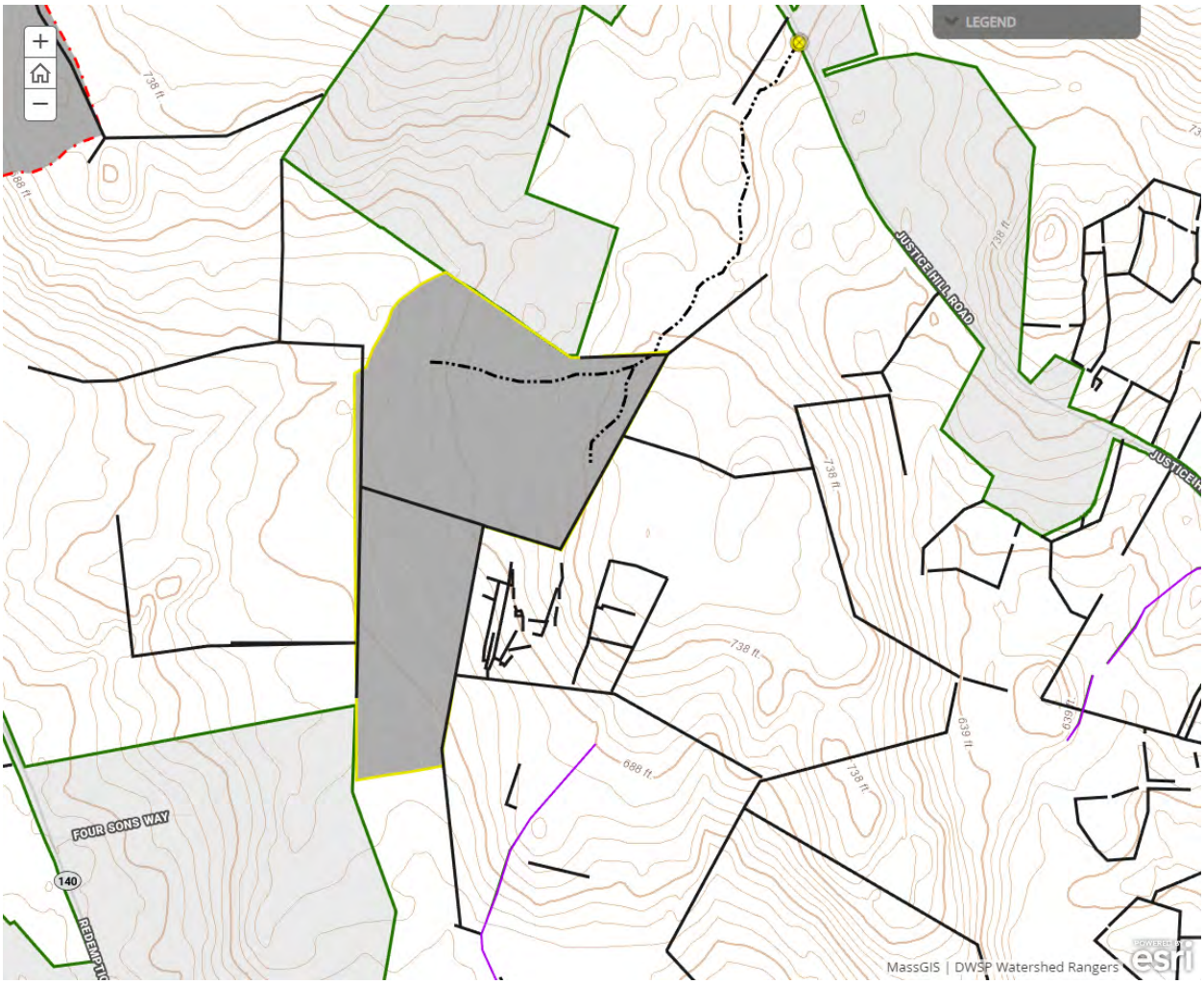
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

Surface stone prevalent throughout.



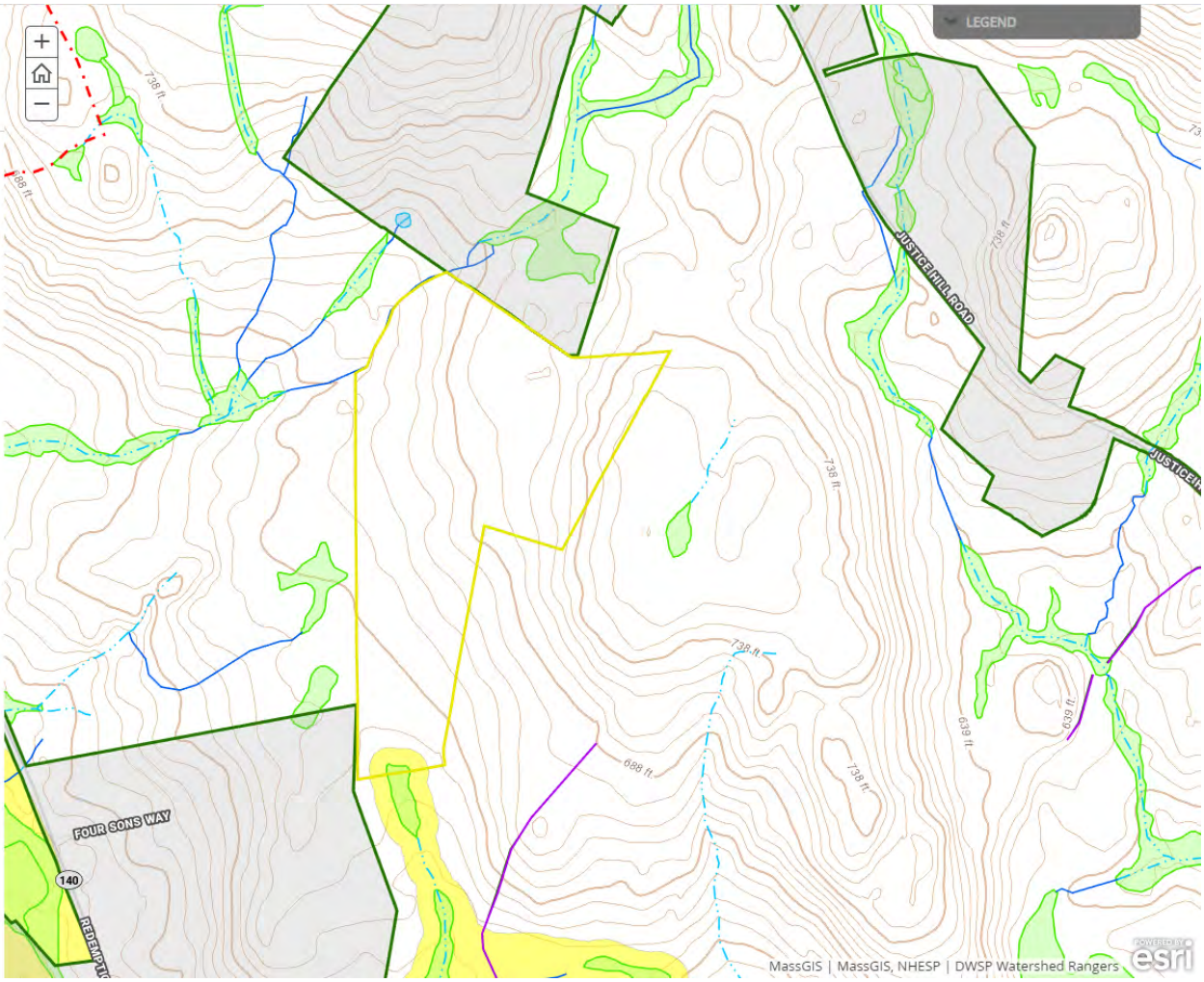
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

Deer present but browse pressure is light.

Comments on Rare Species/Habitats:

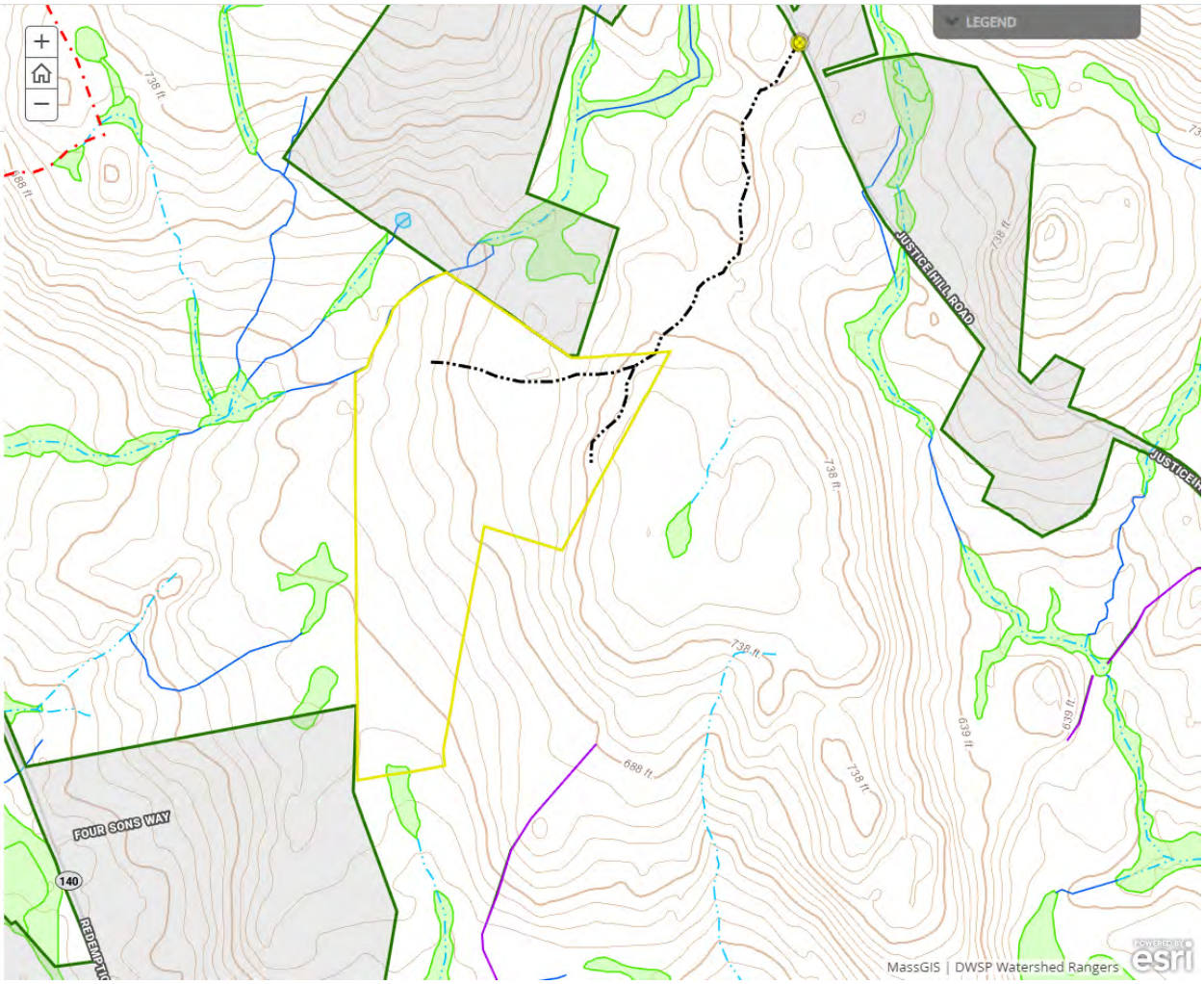
NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not include in this report. DWSP will coordinate with NHESP and follow recommendations to protect these species during the proposed activity.



Environmental Quality Engineering

Comments on EQ Issues:

There are no stream crossings.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

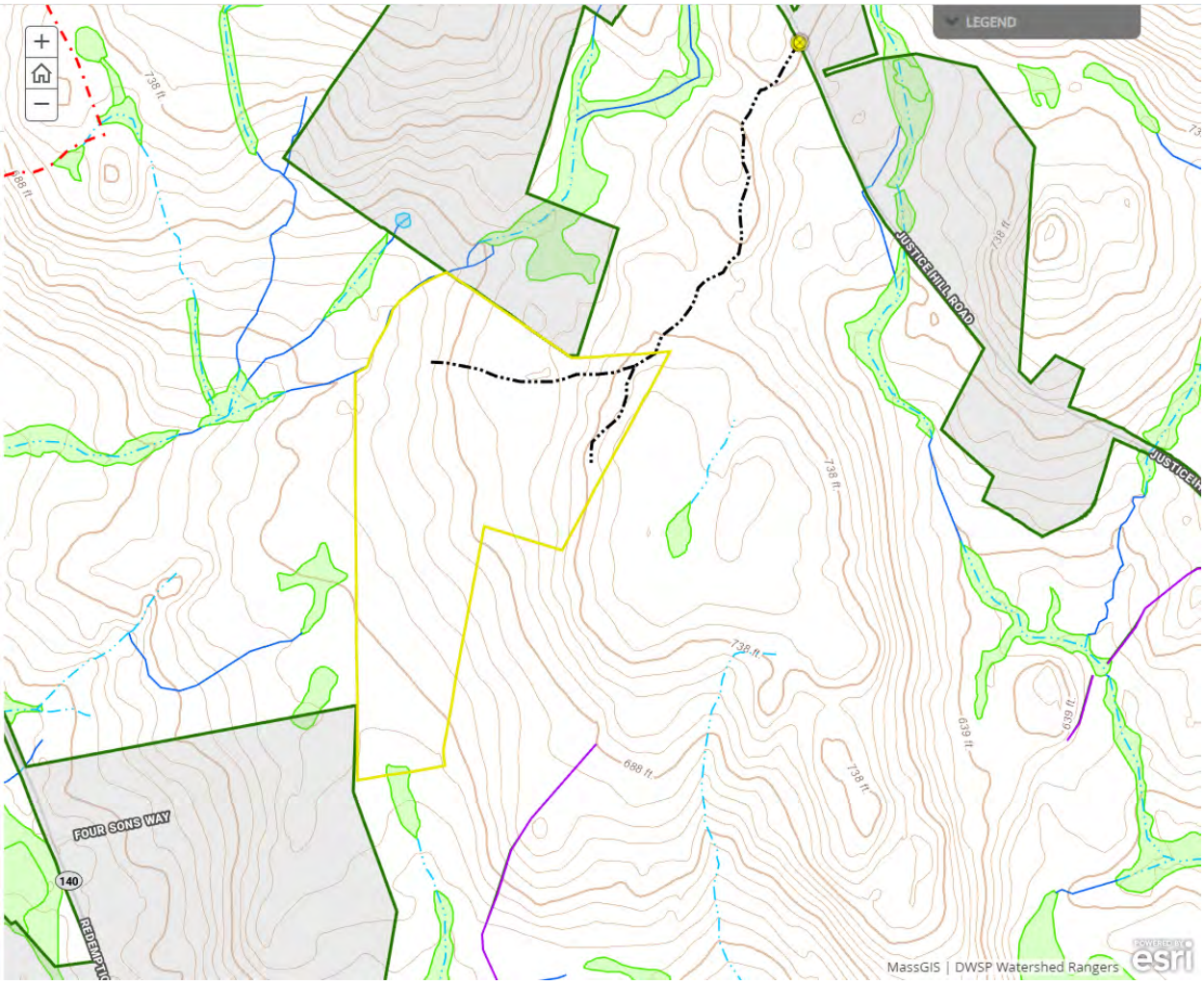
Culverts needed: No

Work needed on permanent bridges: No

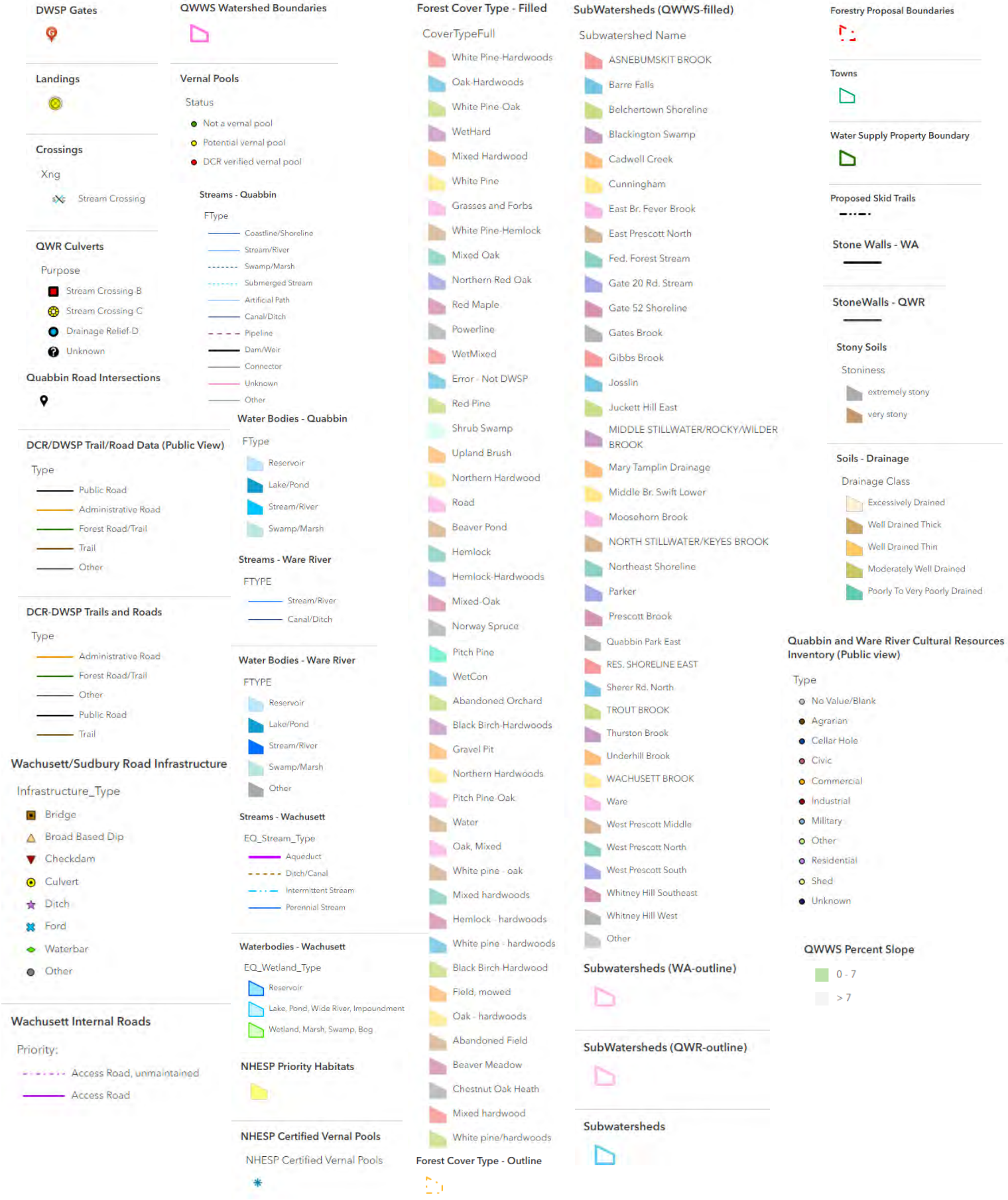
Beaver issue: No

Further comment on access needs:

No issues with access.


LEGEND
738 ft
688 ft
JUSTICE MILL ROAD
FOUR SONS WAY
140
639 ft
MassGIS | DWSP Watershed Rangers
esri

DWSP FY 2022 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-22-245

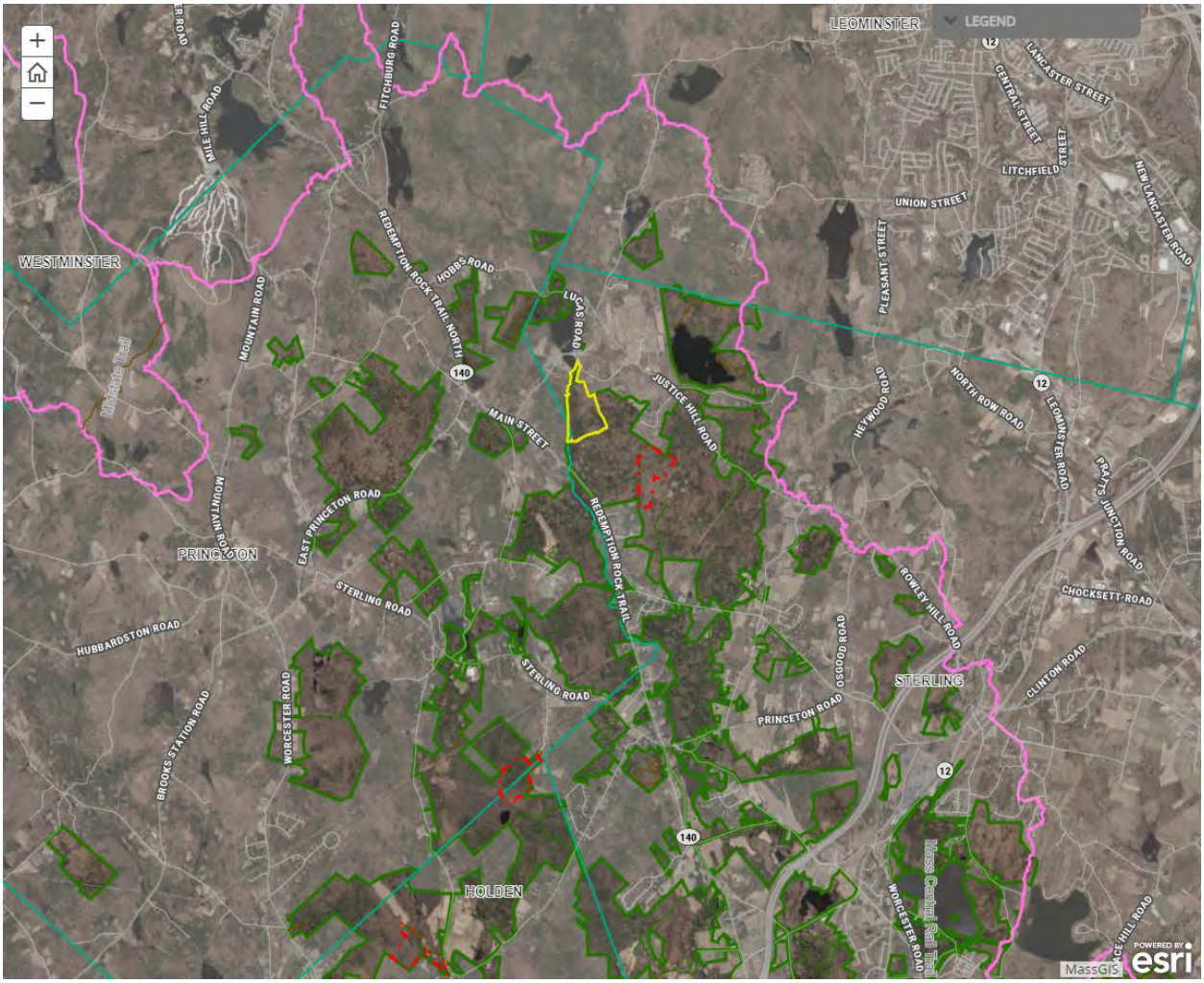
Proposal Goals

With limited advance regeneration present, the goal will be to encourage the establishment of a diverse mix of young trees through the partial removal of the nearly 100 year old overstory.

Proposal Location

The north side is bound by Justice Hill Cutoff; east side partially by property boundary lines and by an internal stone wall; the south side by an old fence that demarcates the former boundary line between the Baker and Davis Farm properties; and the west side by property boundary line which closely parallels Justice Brook.

Total Acres: 74



General Description

	Overstory Type(s)	Acres
Dominant	White pine - hemlock	27
Secondary	Oak - hardwoods	21
Other	Northern red oak	13

	Understory Type(s)
Dominant	Mesic site - witch hazel, highbush blueberry
Secondary	Mountain laurel prevalent

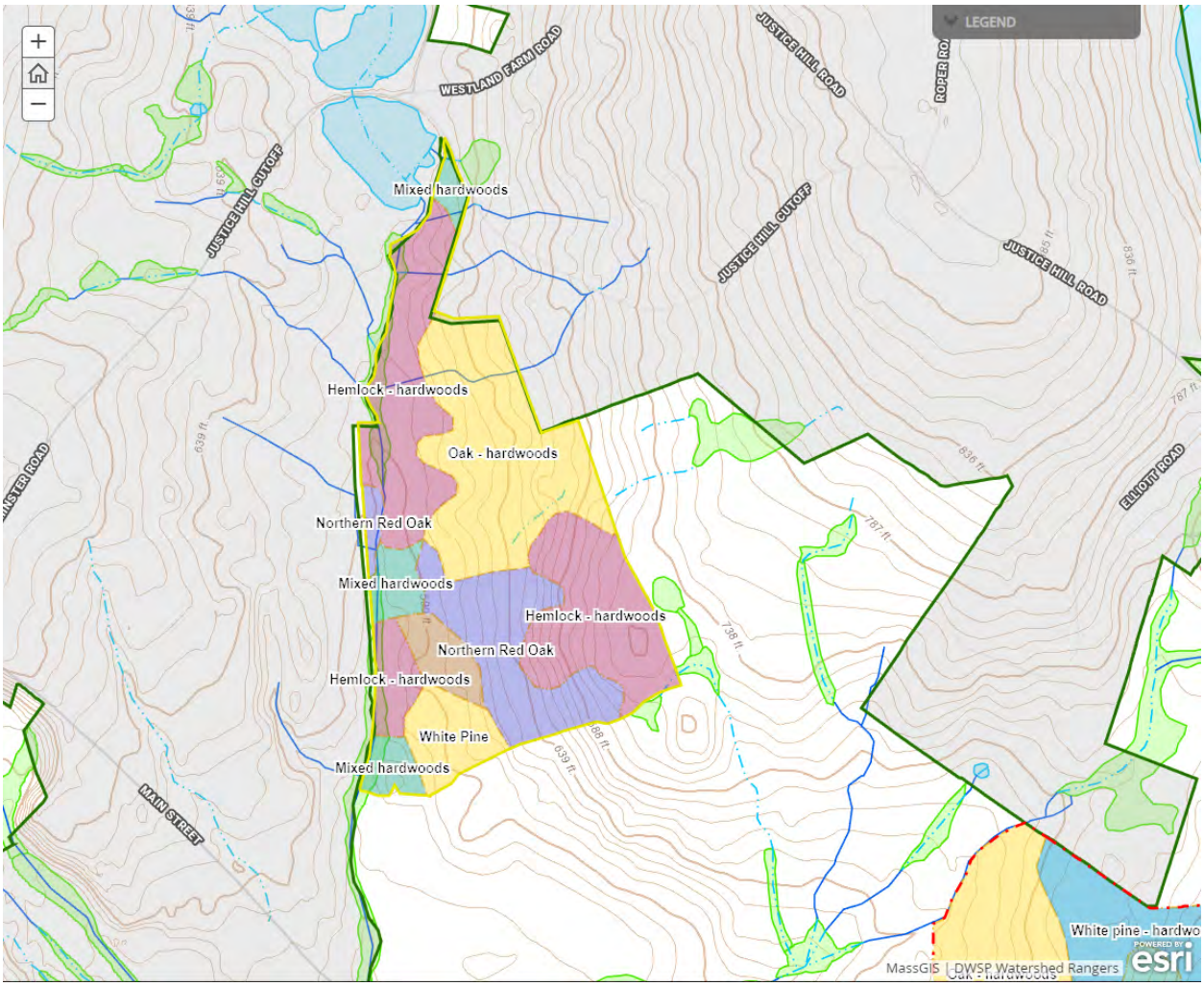
Description of forest composition/condition:

The forest on this west facing hillside above Justice Brook originated in the 1920's and 30's, presumably following pasture abandonment. The dominant species are white pine, red oak, black oak, white oak, hemlock and red maple. Most of the hemlock is in a mid-story position and it is infested with hemlock wooly adelgid. There are also scattered paper birch and bigtooth aspen. Along the intermittent streams and in the wet benches common in this area, white ash, sugar maple and yellow birch are found. A few blackgum are present in a seepy area in the southern end and basswood is present near Justice Brook. Beech is found in scattered pockets particularly in the southern half of the area. The understory is dominated by mountain laurel in the southern end of the area while witchhazel is more common in the north. There's essentially no understory in the white pine-hemlock stand on the top of the hill in the southeast portion of this area. With white pine in the overstory and a mid-story dominated by hemlock, this area was a heavily used winter deer yard for many years. This no longer seems to be the case…perhaps the thinning of the hemlock foliage by hemlock wooly adelgid is the cause.

There is evidence of logging (e.g. old stumps and basal wounds) that took place roughly 30 years ago prior to MDC acquisition which occurred in 1997. The age structure is as follows; 0%, 0-20 years old; 0%, 21-40 years; 0%, 41-60 years; 0%, 61-80 years; 99%, 81-100 years and 1%, >100 years old.

Assessment of Terrestrial Invasive Species:

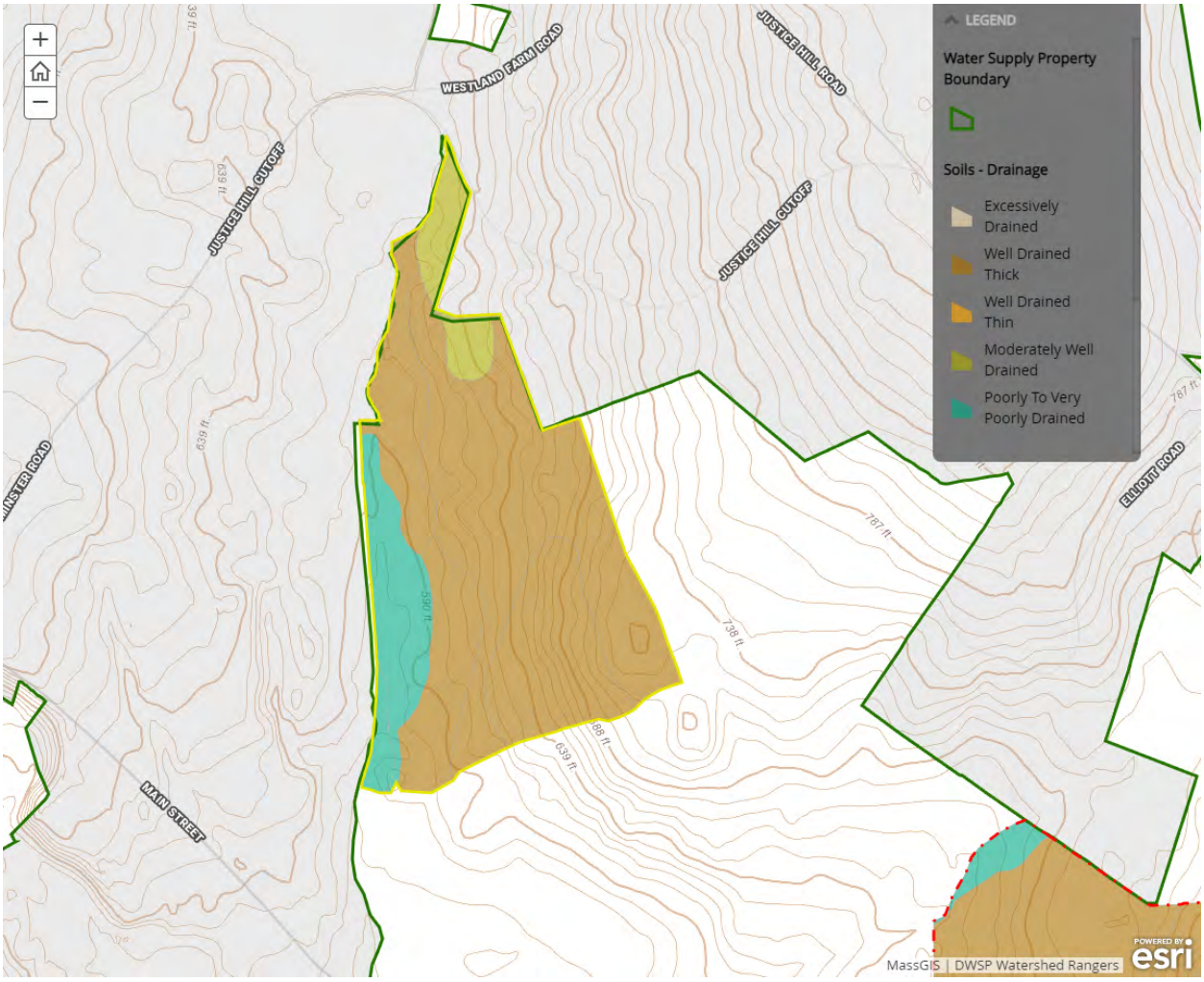
Sampling did not find any terrestrial invasives.



Soils

Drainage Class	%
Excessively Drained	0
Well Drained Thin	0
Well Drained Thick	82
Moderately Well Drained	7
Poorly to Very Poorly Drained	11

The well-drained thick soils are the Paxton and Canton fine sandy loams. The moderately well-drained soil is the Woodbridge fine sandy loam and the poorly drained soil is the Whitman loam.



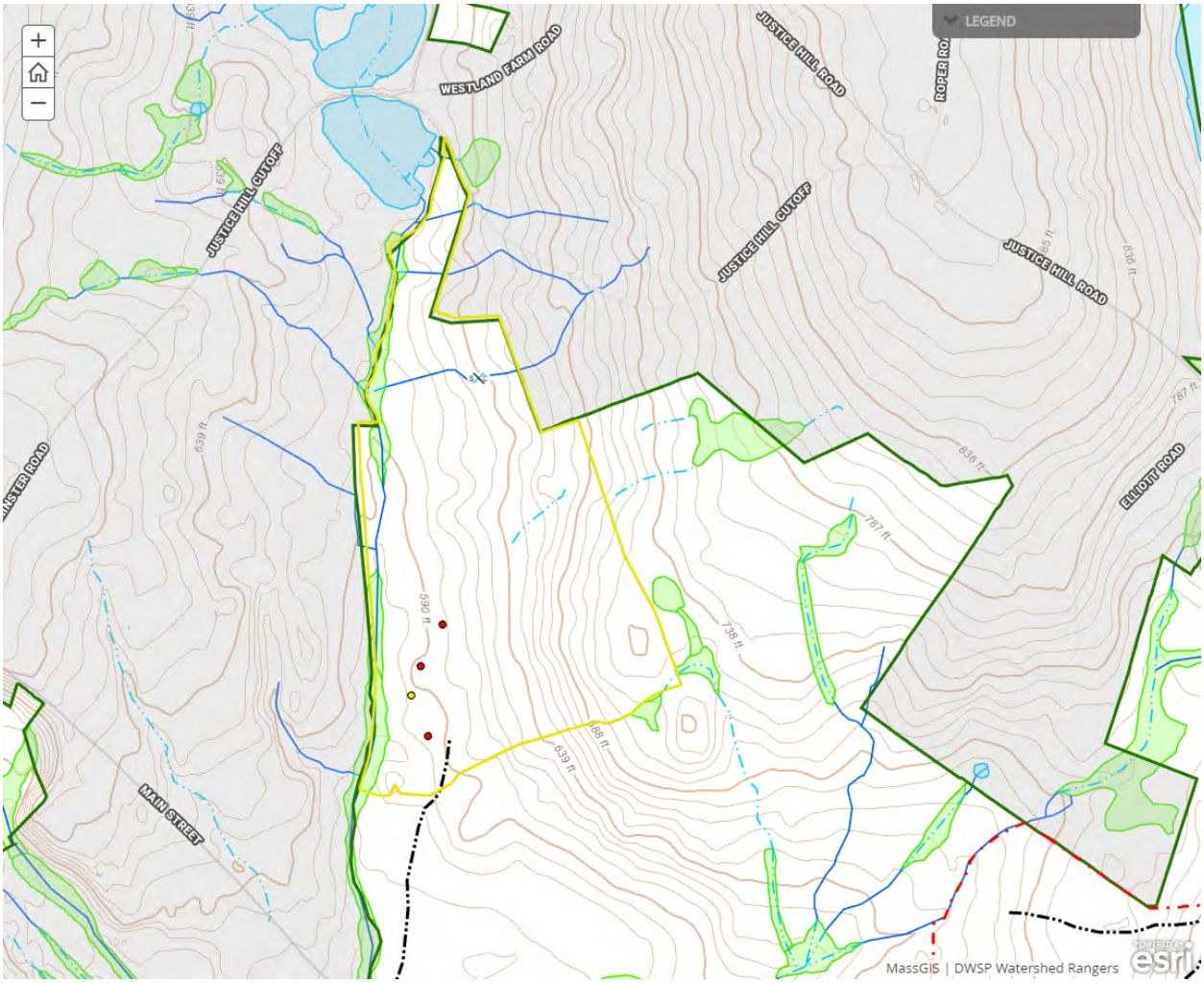
Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **Yes**
- Are stream crossings required? - **Yes**
- Are wetland crossings required? - **No**
- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**
- Is logging in wetlands planned? - **No**

Justice Brook with it's narrow bordering vegetated wetland flows southerly along the western edge of this sale area. There are several very small intermittent streams in the northern end of this area that flow westerly, joining Justice Brook. There's a very small intermittent stream in

roughly the center of the area that disappears about half way down the slope when it flows into a bench on the hillside and reappears near the bottom of the slope as a seep.

Several vernal pools were verified in the southwestern corner.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **50**

Acres in Regeneration cuts: **10**

Average regen opening size: **1**

Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Adequate advance regeneration was found in only 6% of the plots that were evenly distributed across this area. There was marginally adequate regeneration in 20% of the plots. When present, the advance regeneration is comprised primarily of red maple, black birch, hemlock and red oak. Less common are sugar maple, yellow birch, black cherry, white pine, white ash, beech and eastern hophornbeam.

General comments on silviculture proposed:

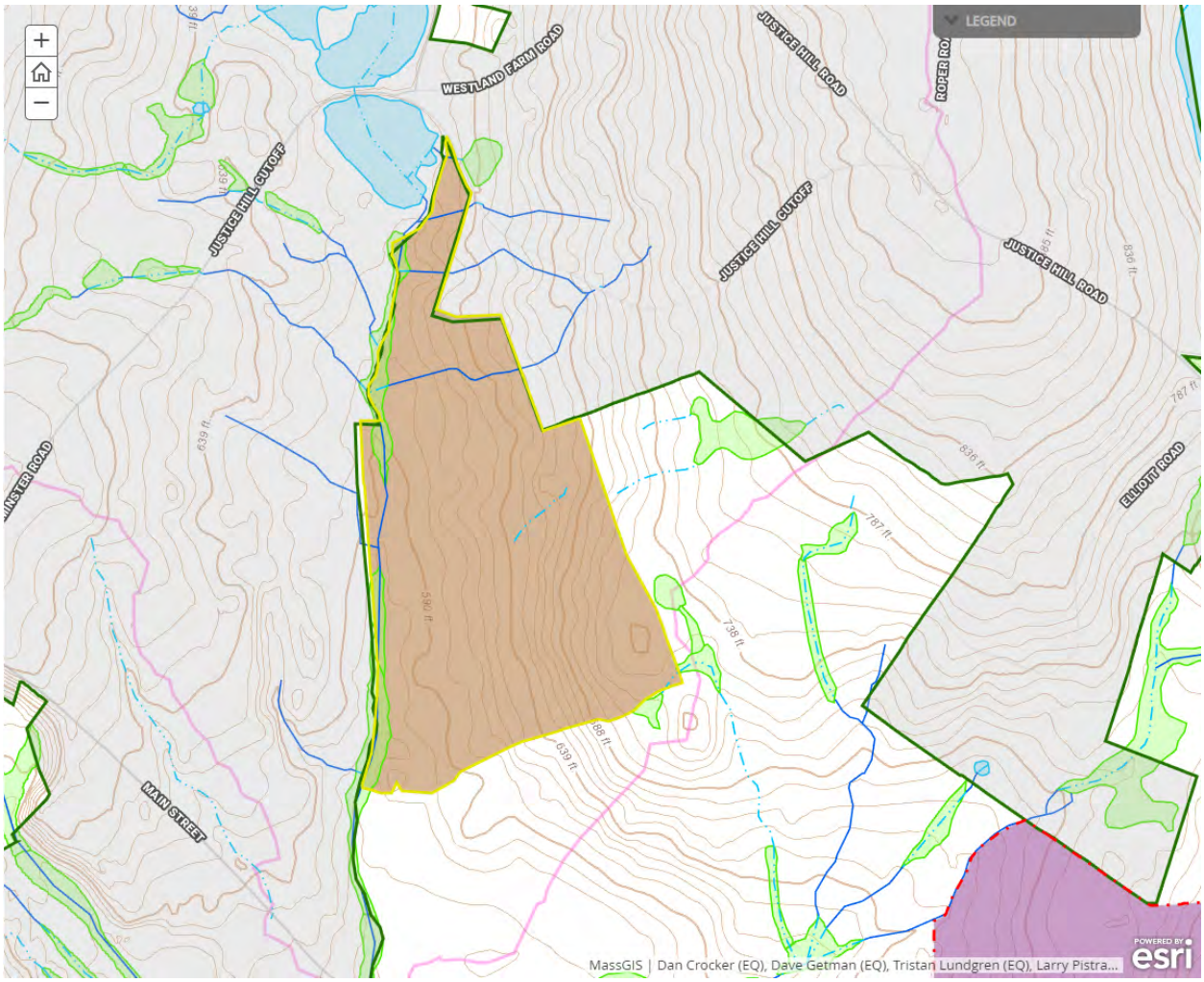
Where adequate advance regeneration exists, openings will be made in the overstory to give it the light and space it needs to continue to grow and thereby create a new age cohort in this even-aged forest. Given that only 6% of the plots had adequate regeneration present, it is not anticipated that these overstory removal areas will comprise more than about 10 acres.

Throughout much of the rest of the area, the goal will be to encourage the establishment of regeneration through the partial removal of the overstory. Given the soils, this site is well suited to growing hardwoods and so it is anticipated that hardwoods will comprise the majority of the new regeneration just as they comprises the majority of the advance regeneration.

Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
19 (North Stillwater/ Keyes Brook)	709	10	699	74

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

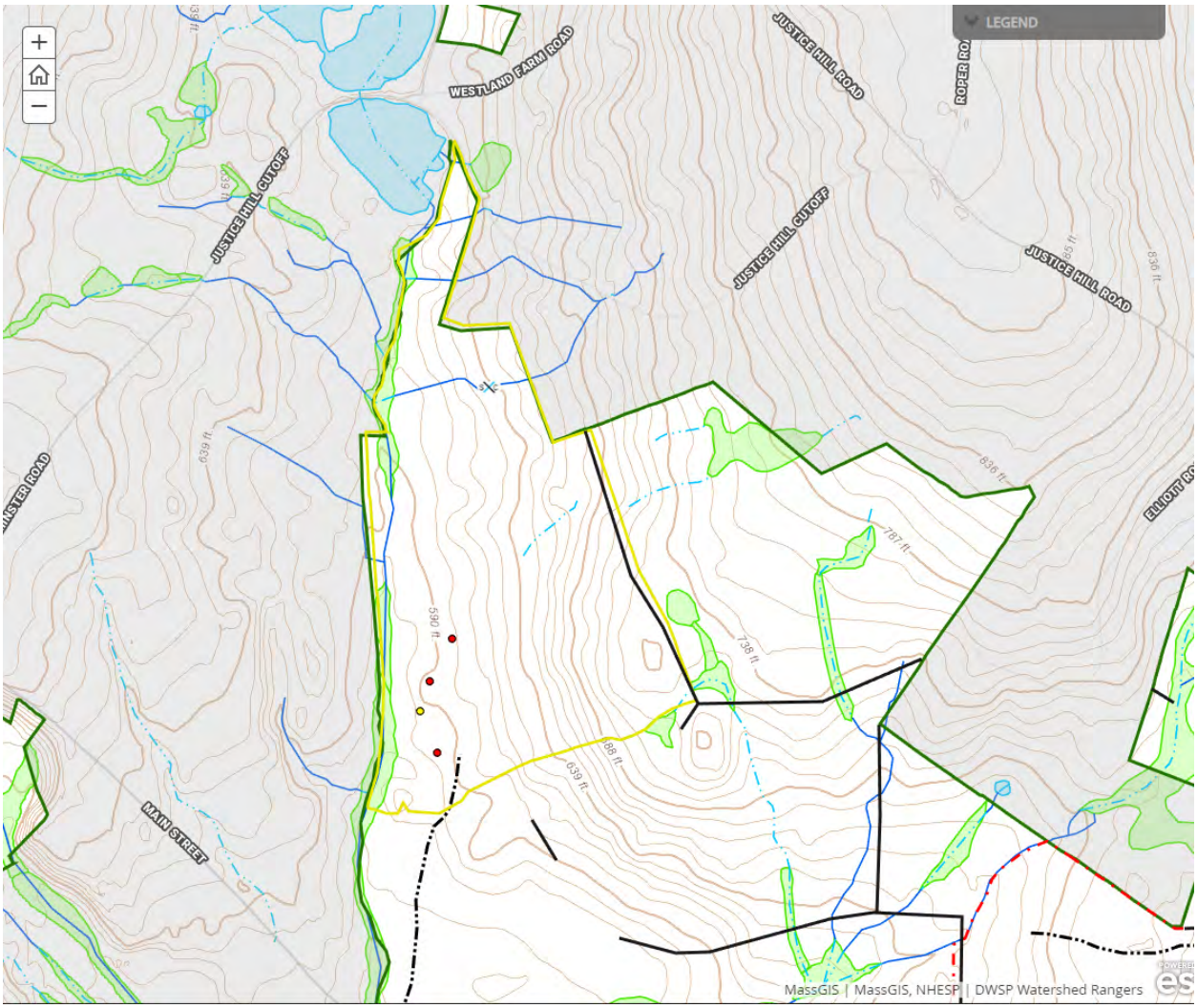
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

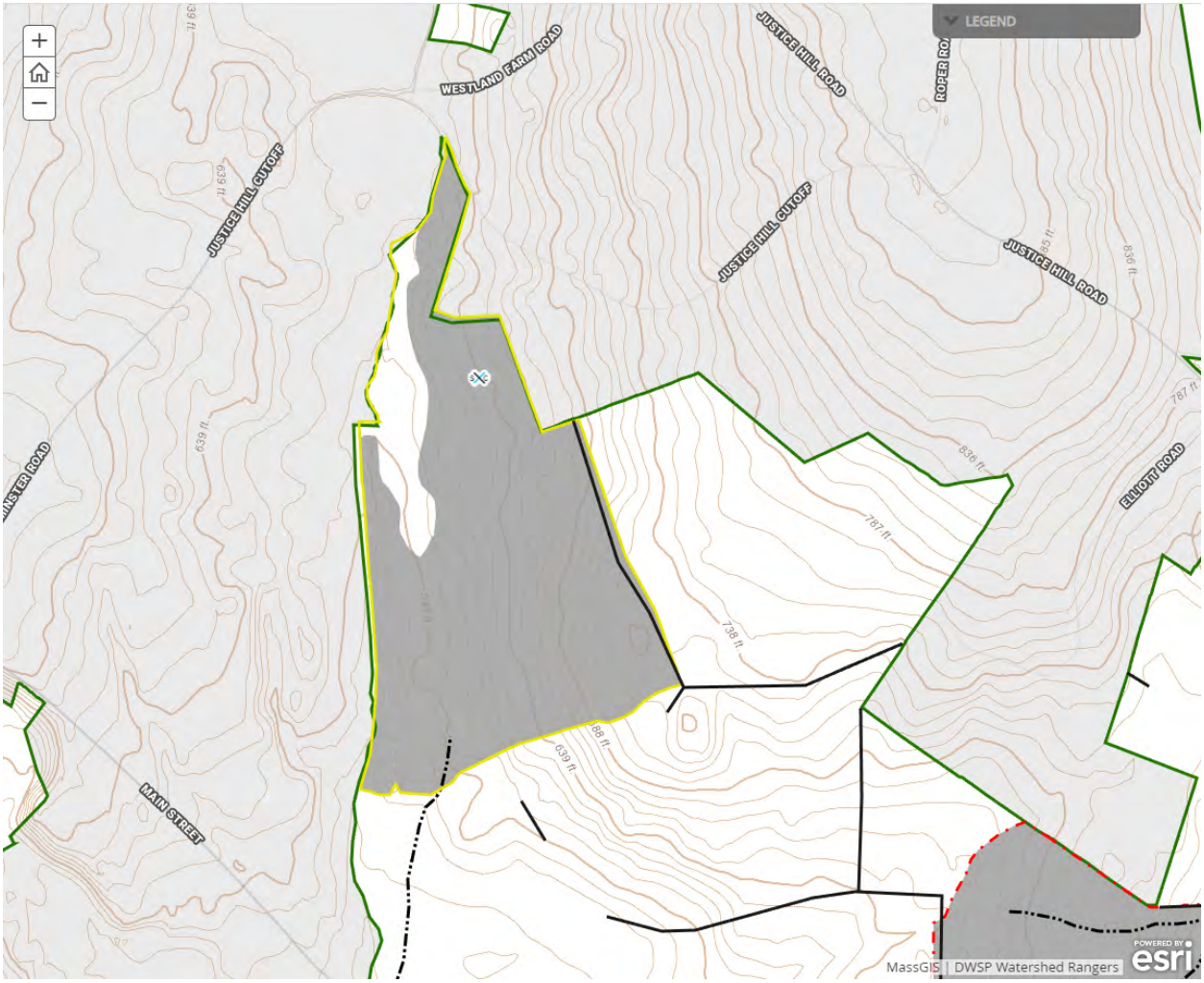
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

No known cultural resources. Surface stone prevalent throughout.



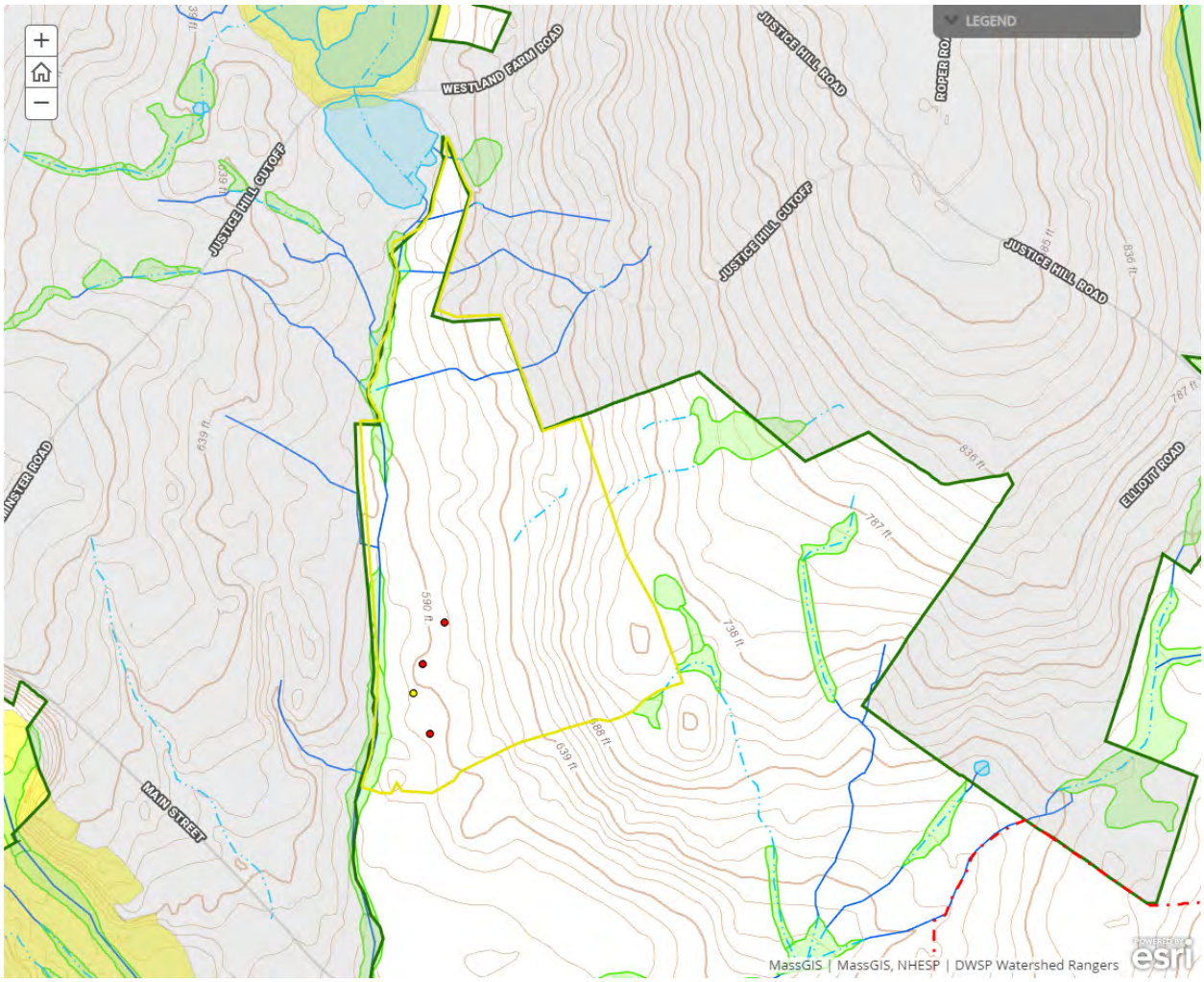
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

The white pine-hemlock stand on the top of the hill in the southeast part of this area was for many years a heavily used winter deer yard. This no longer seems to be the case. Many hemlock in the white pine-hemlock stand on the top of the hill show evidence of moose browse.

Comments on Rare Species/Habitats:

No known rare species or habitats in the proposal area.

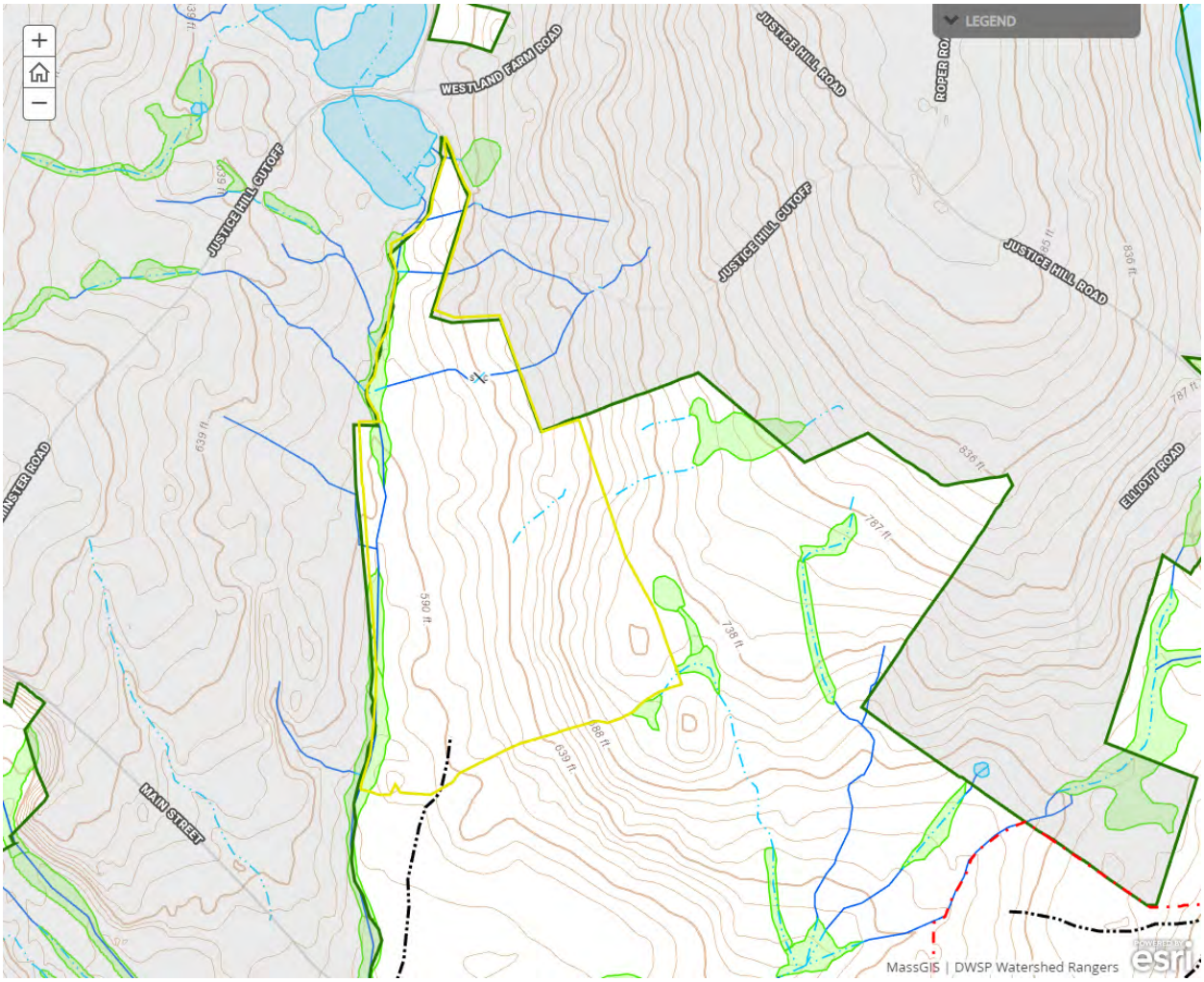


Environmental Quality Engineering

Comments on EQ Issues:

The only stream crossing is over an intermittent stream (the third mapped stream south from the northern end of this area). If used this will be monitored by EQ.

Further south, the main forwarder road through the lot will cross the centrally-located east-west intermittent drainage where it flows through boulder voids under the surface for about 200', avoiding the need for crossing structures.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

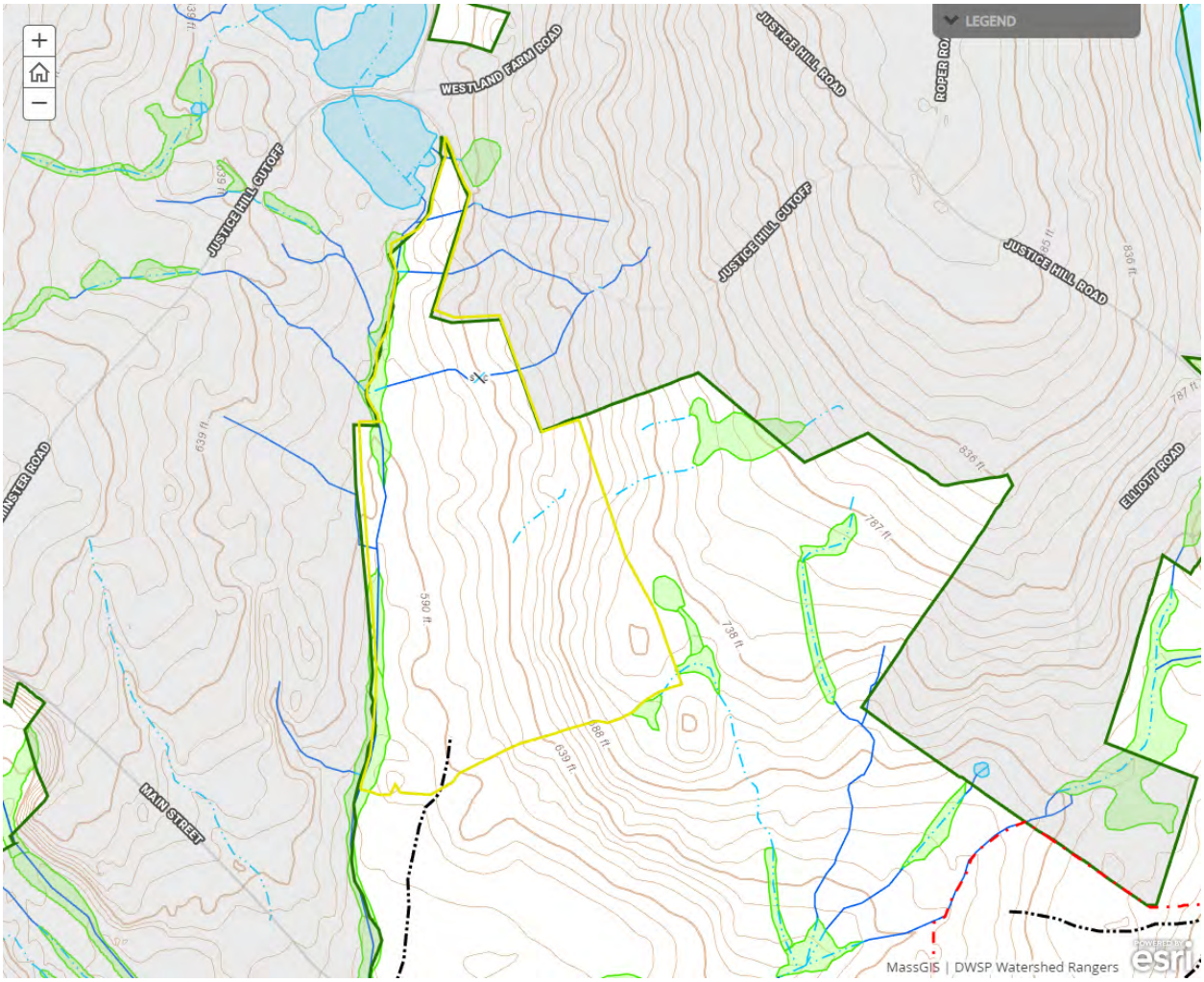
Culverts needed: No

Work needed on permanent bridges: No

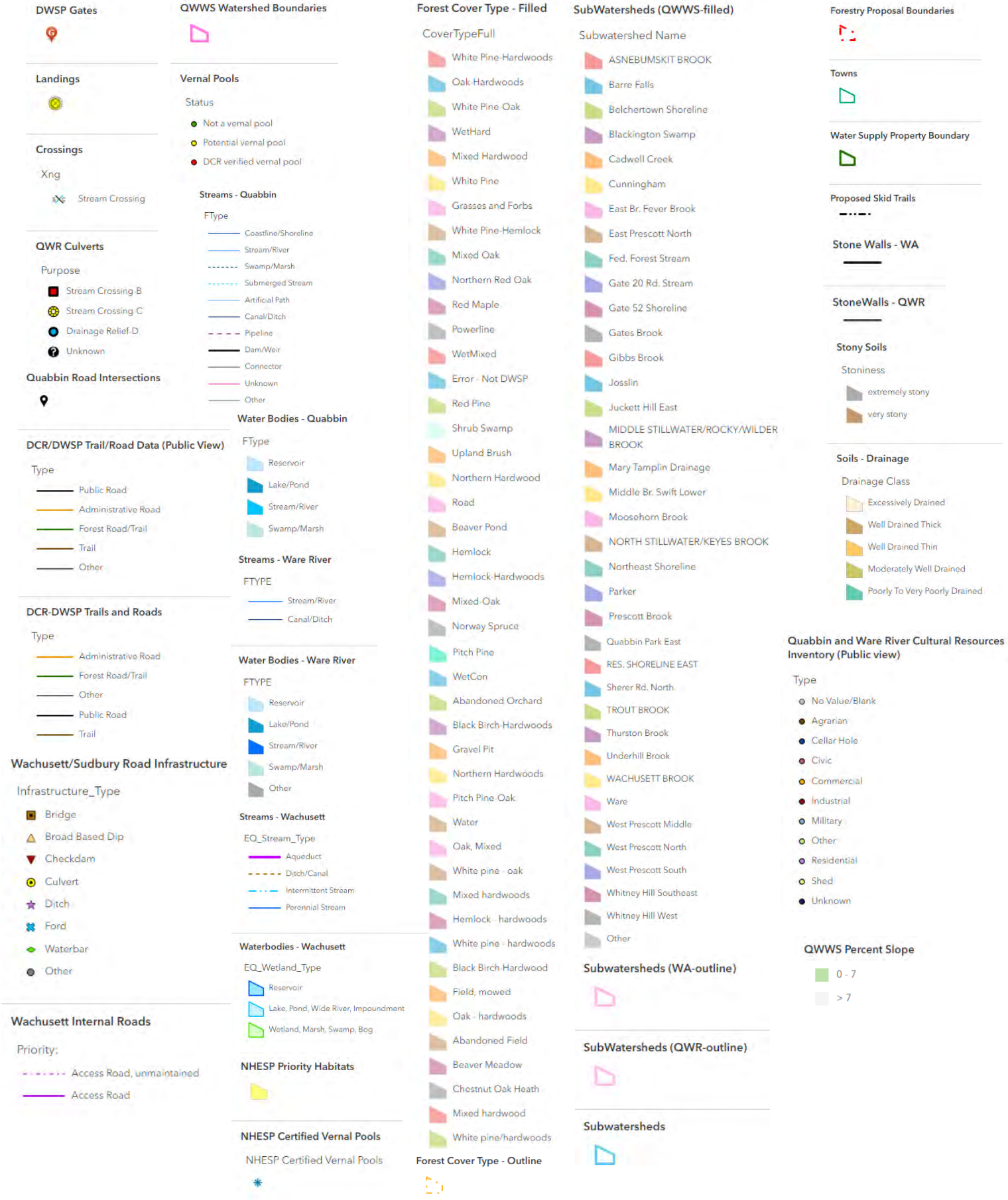
Beaver issue: No

Further comment on access needs:

No issues with access.


LEGEND
WESTLAND FARM ROAD
JUSTICE HILL ROAD
JUSTICE HILL CUTOFF
ROPER RO
JUSTICE HILL ROAD
836 ft
787 ft
ELLIOTT ROAD
639 ft
590 ft
738 ft
MAIN STREET
MassGIS | DWSP Watershed Rangers
esri

DWSP FY 2022 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-22-312

Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. In this area, canopy openings in this hardwood forest will be made to advantage of the good hardwood understory.

Proposal Location

Located in Holden. The northern side of this proposed sale area is bound by an interior woods road; the east side by Mason Road; the south side by property boundary line, much of which is stone wall; and the west side is bound primarily by internal stone walls.

Total Acres: 37

General Description

	Overstory Type(s)	Acres
Dominant	Mixed hardwoods	26
Secondary	White pine - oak	5
Other	White pine - hardwood	2

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mesic site - witch hazel, highbush blueberry

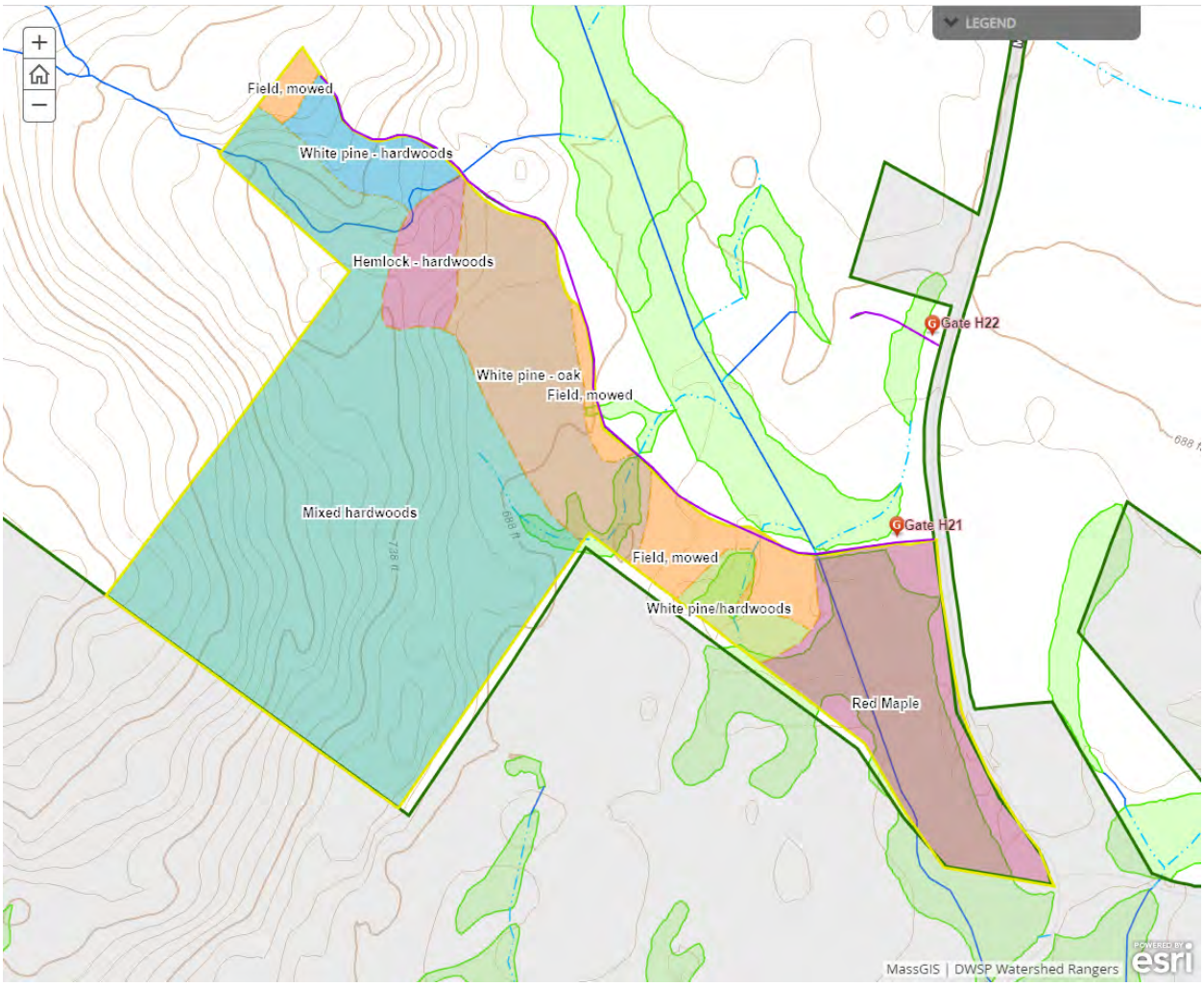
Description of forest composition/condition:

The mixed hardwood stand that covers the majority of this area is comprised of hickory, red maple, red oak, black birch, white ash, some scattered white pine and even a few basswood. The understory is dominated by tree seedlings and saplings along with hazelnut, maple-leaved viburnum (much of it very tall) and grape. There is notably less striped maple than in the understory of the other stands at the bottom of the hill. The significantly younger white pine-oak stand at the bottom of the hill to the east is comprised of white pine, red oak, white oak, red maple and black birch. A small area of hemlock-hardwood adjacent to the stream is notable for the significant decline of the hemlock due to the hemlock wooly adelgid. Essentially all of the hemlock is either dead or dying.

The age structure of this working unit is as follows; 0%, 0-20 years old; 0%, 21-40 years; 0%, 41-60 years; 19%, 61-80 years; 25%, 81-100 years and 56%, >100 years old.

Assessment of Terrestrial Invasive Species:

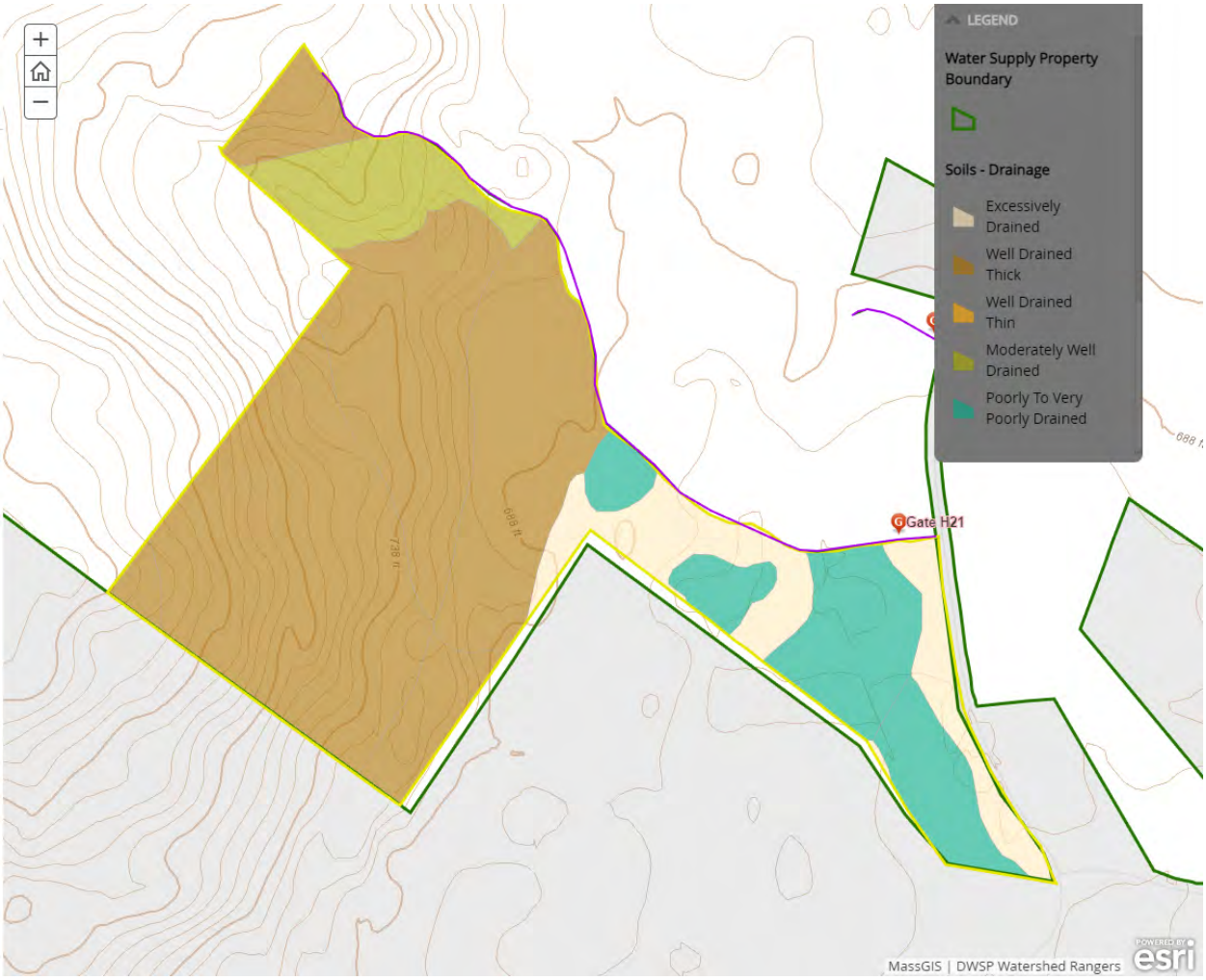
While none of the 73 sample plots had any terrestrial invasive species present, multiflora rose and autumn olive were observed adjacent to the small wetland near the road through the fields.



Soils

Drainage Class	%
Excessively Drained	7
Well Drained Thin	0
Well Drained Thick	82
Moderately Well Drained	9
Poorly to Very Poorly Drained	2

The excessively-drained soils are Merrimac fine sandy loam and the Hinckley sandy loam.
The well-drained thick soils are the Canton fine sandy loam, extremely stony and the Paxton fine sandy loam, extremely stony. These are the soils on the hillside where most of the management activities will occur.
The moderately well-drained soil is the Woodbridge fine sandy loam, extremely stony.
The poorly and very poorly-drained soils are the Walpole fine sandy loam and Freetown muck, both of which are associated with the wetland in the southeast corner of this area where management activities are not anticipated to occur.



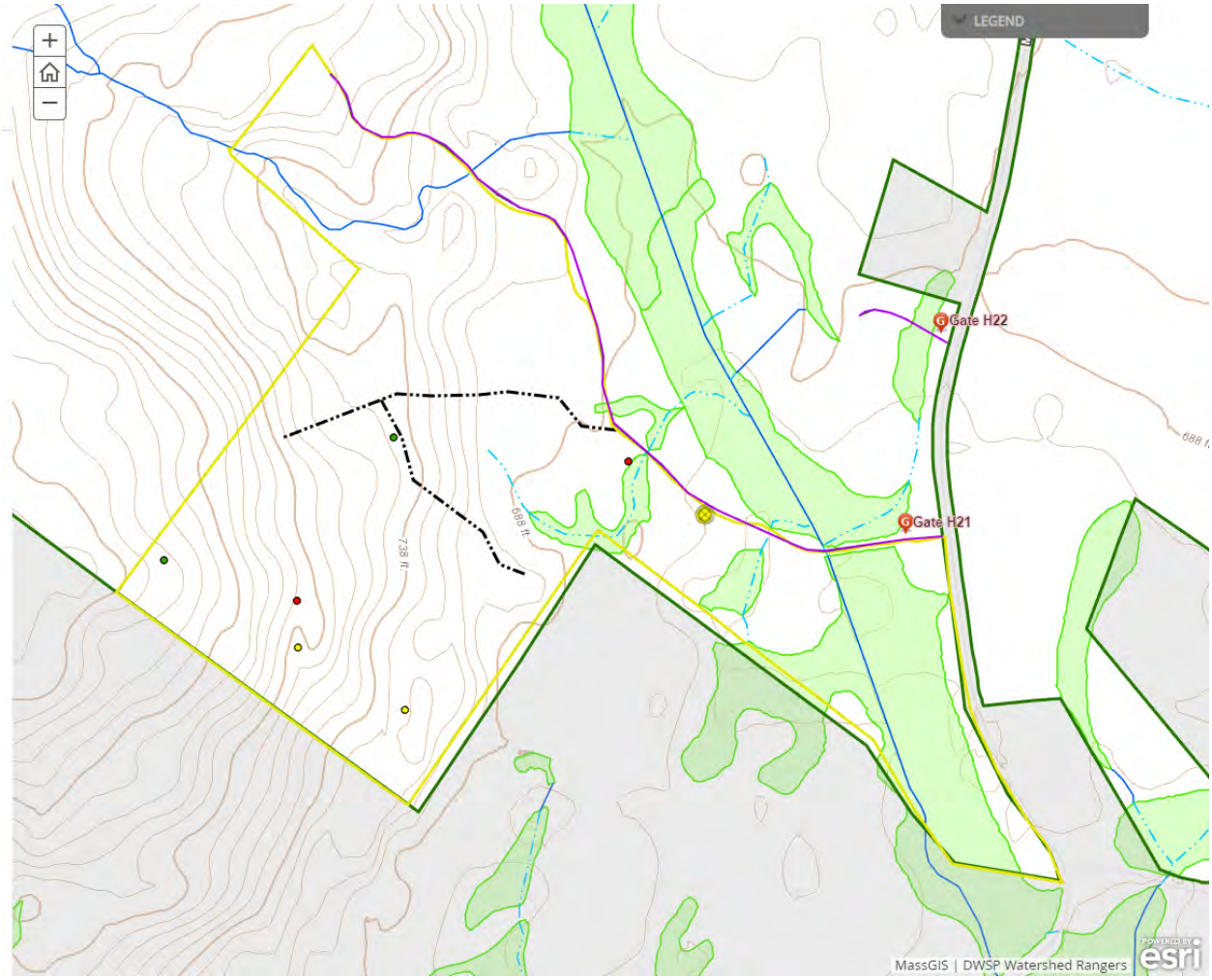
Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **Yes**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **No**

- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**
- Is logging in wetlands planned? - **No**

There's an intermittent stream in the north end of this area. This is the same stream where a weir has been installed as part of the long-term forestry sub-watershed study. If any management activities occur in the few acres north of this stream, access will occur via the existing road.

One verified vernal pool and two potential vernal pools have been identified within the forested area of this working unit.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **0**

Acres in Regeneration cuts: **12**

Average regen opening size: **1**

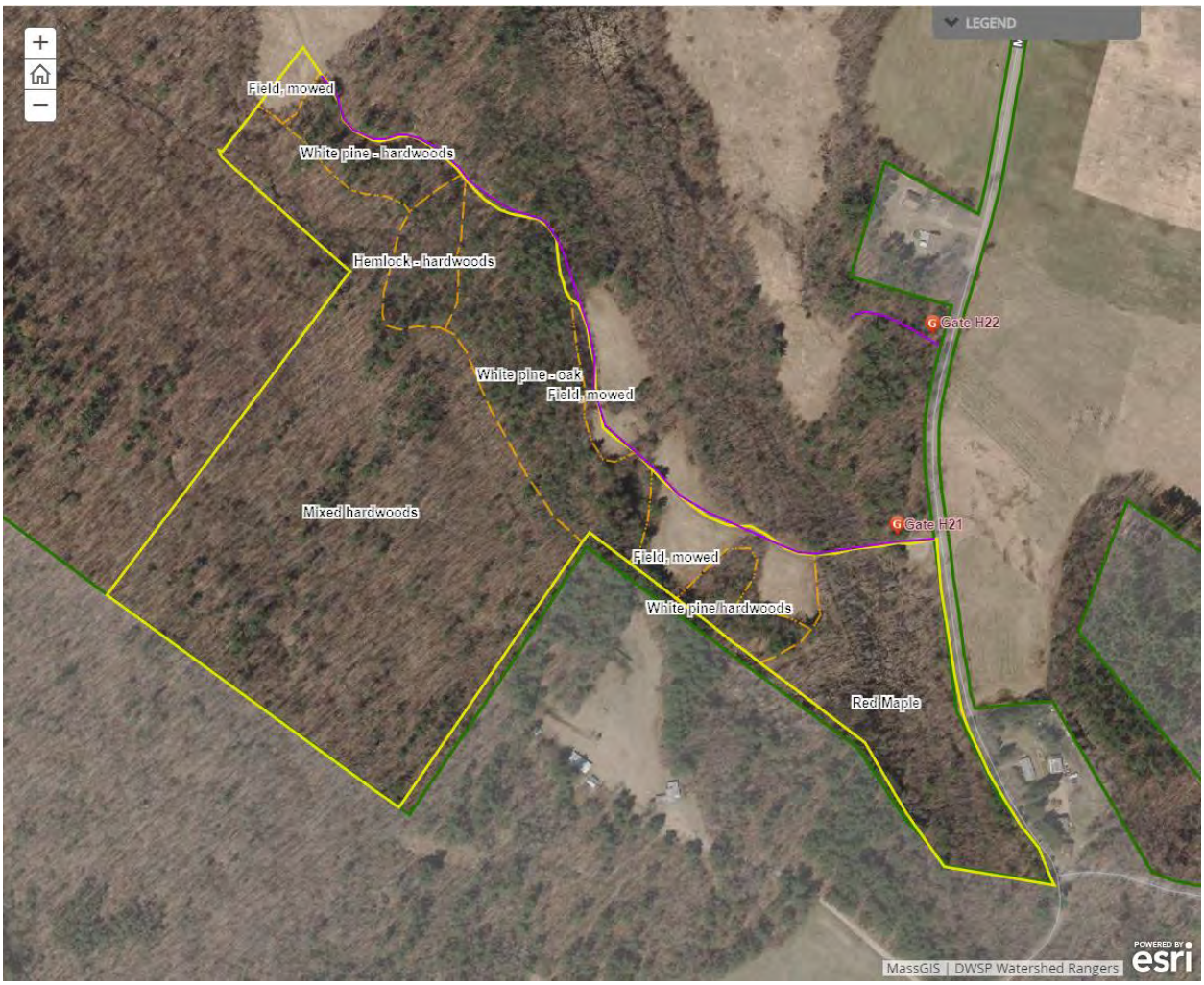
Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate regeneration present in 48% of the plots with marginal regeneration in an additional 20% of the plots. 34% of the plots had oak present. The regeneration is dominated by white ash, red maple and red oak along with black birch, hickory, hophornbeam, white pine, hemlock and sugar maple.

General comments on silviculture proposed:

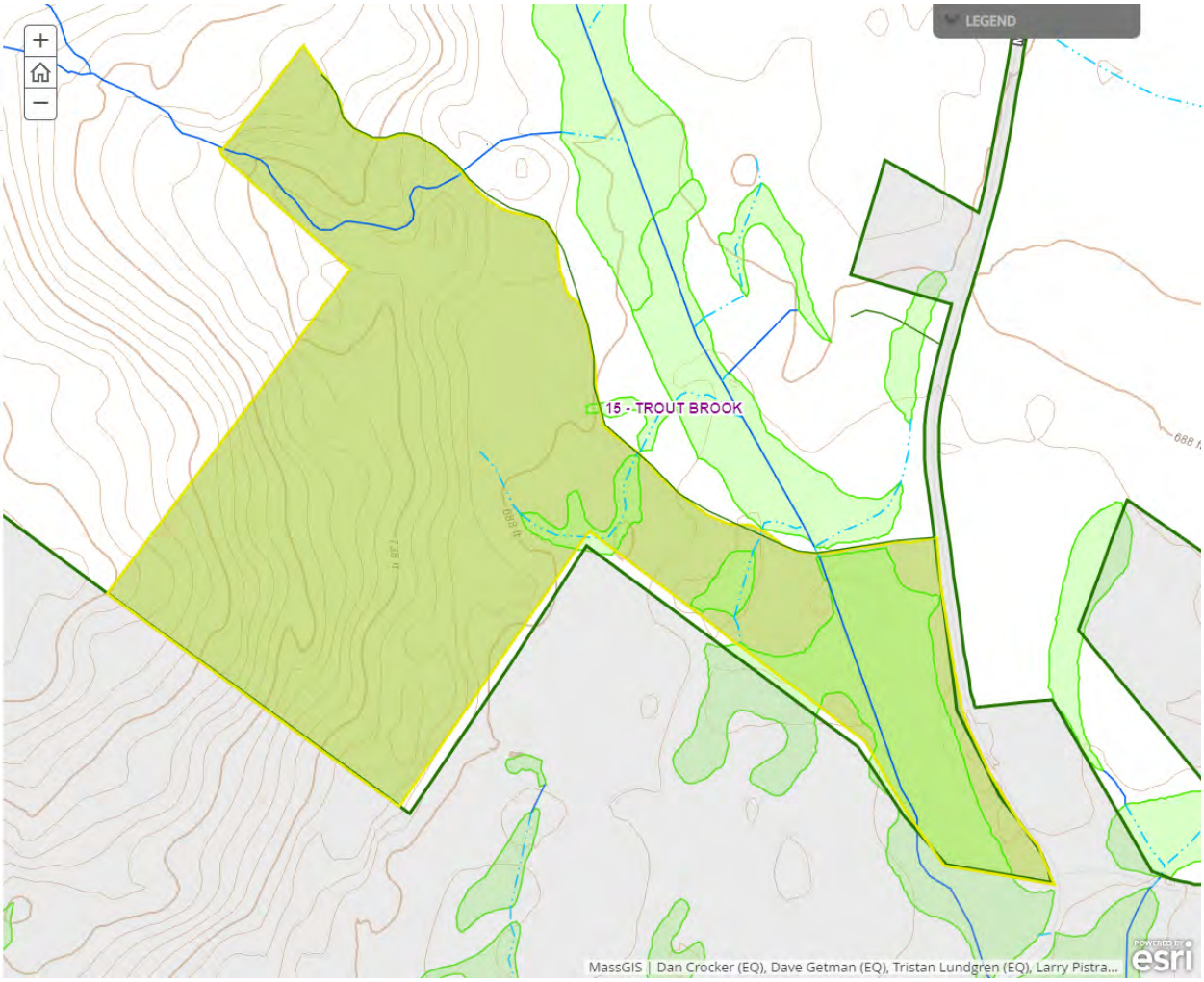
With good advance regeneration present comprised of a diversity of species well suited to this site, the goal will be to make openings that total about 12 acres. This will result in a new age cohort within the forest that makes up about 1/3rd of the area of this working unit. These openings will be well distributed throughout the area taking advantage of where the advance regeneration is best. Following the harvest, the age structure of the forest is anticipated to be approximately as follows; 33%, 0-20 years old, 0%, 21-40 years; 0%, 41-60 years; 13%, 61-80 years; 1%, 81-100 years and 53%, >100 years old.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
15 (Trout Brook)	1058	55	1003	37

The proposed level of cutting falls below the 25% threshold.



Harvesting Limitations

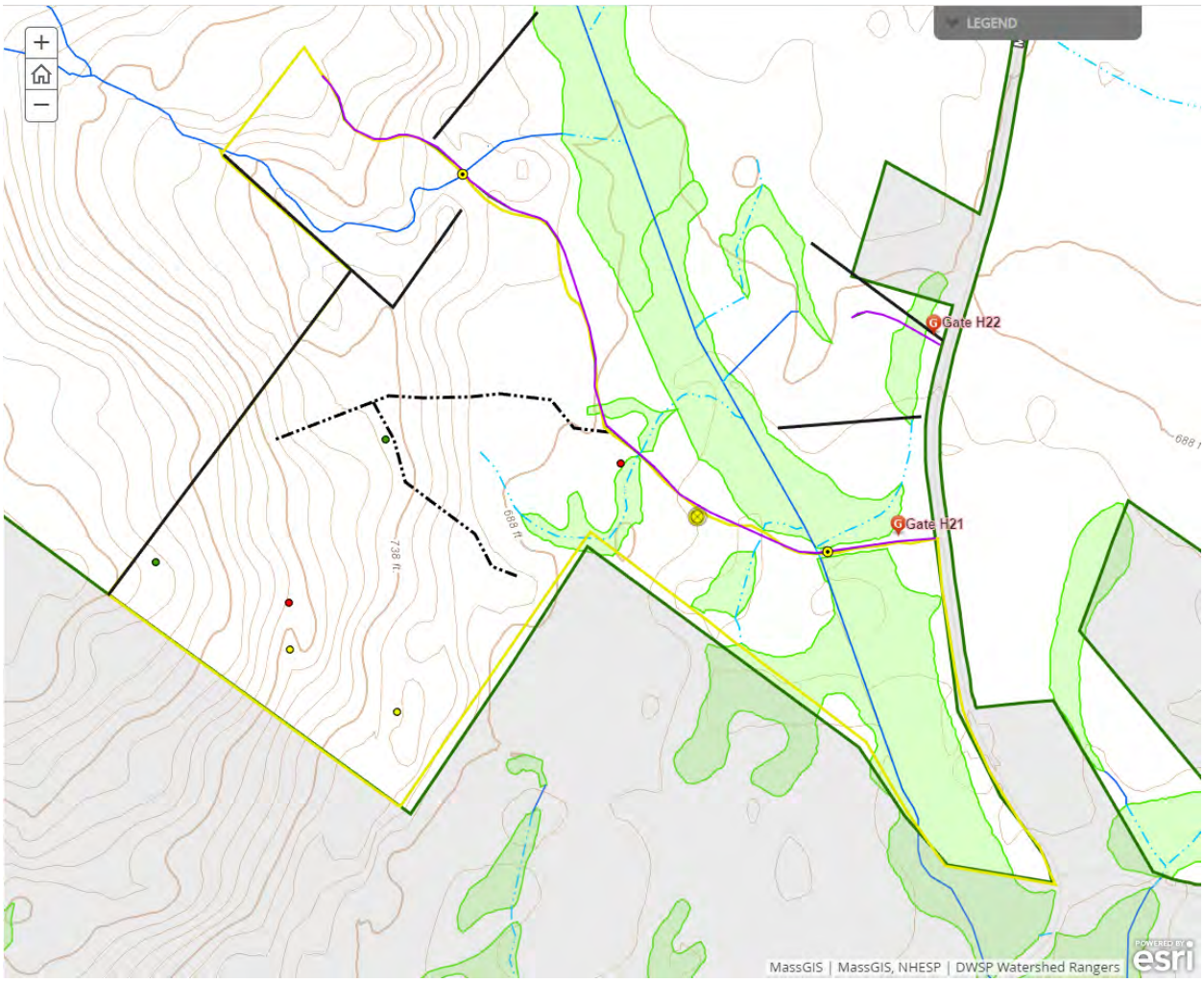
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

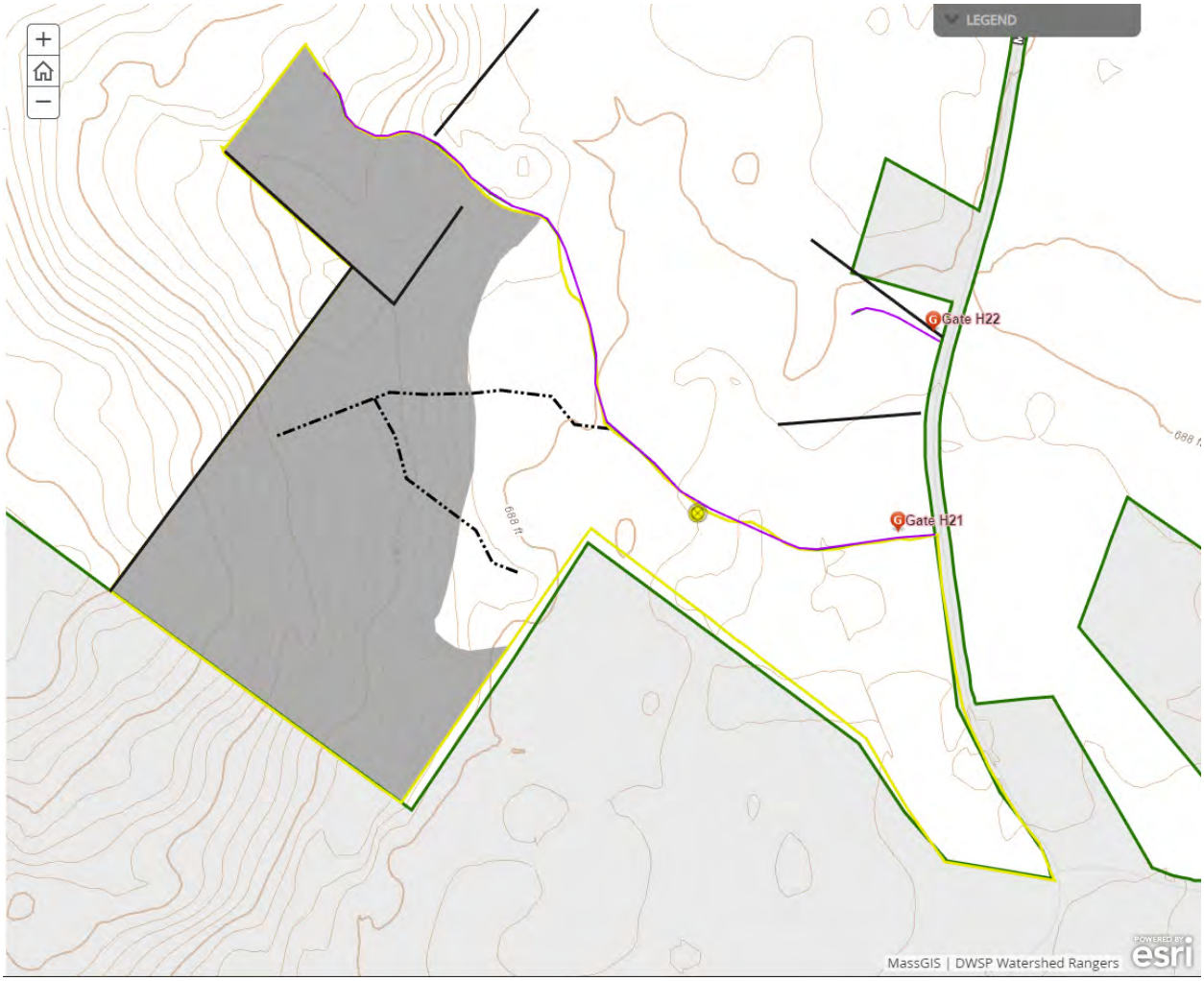
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

No known cultural resources. Surface stone prevalent throughout.



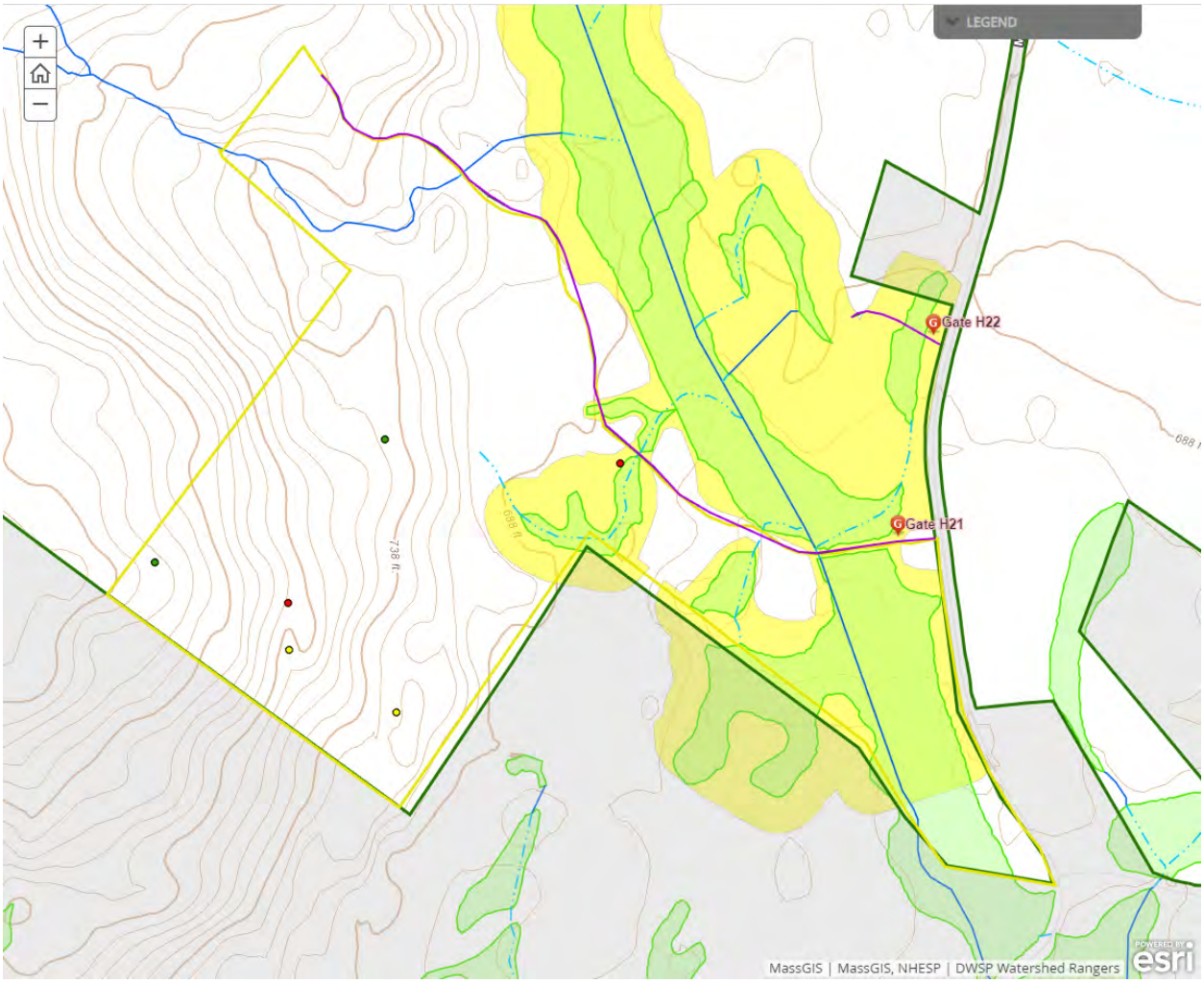
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

This area is part of a much larger block of DWSP-owned land where two young forest habitat cuts have been performed in the past 15 years and where moose routinely frequent.

Comments on Rare Species/Habitats:

NHESP has determined that certain state-listed sensitive species or habitats may exist within the lot proposal area. To protect them from unnecessary disturbance, detailed information regarding affected species and their locations is not include in this report. DWSP will coordinate with NHESP and follow recommendations to protect these species during the proposed activity.

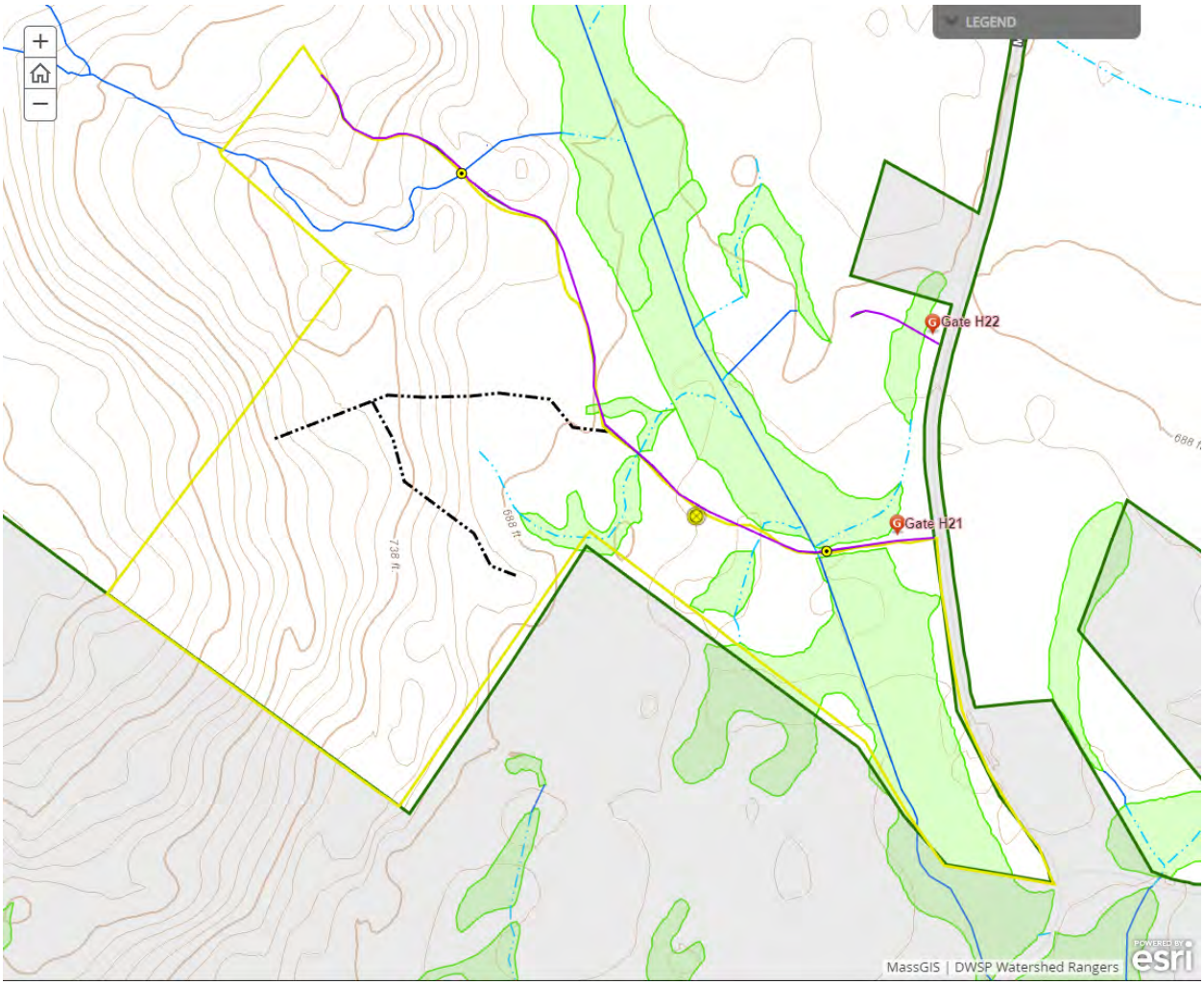


Environmental Quality Engineering

Comments on EQ Issues:

Roughly 6 acres at the north end of this area is within the subwatershed of the small stream that being used as the control subwatershed in the long-term forestry subwatershed study. Foresters will coordinate with Wachusett Environmental Quality staff regarding the timing of this operation to ensure that there's no conflict with the study. An available option is to carve out any portion of this subwatershed from the sale area.

There may be an upgrade to the culvert in the road just inside the gate on Mason Road that would occur prior to this harvest.



Forest Access Engineering

Gravel needed: Yes

Landing work needed: No

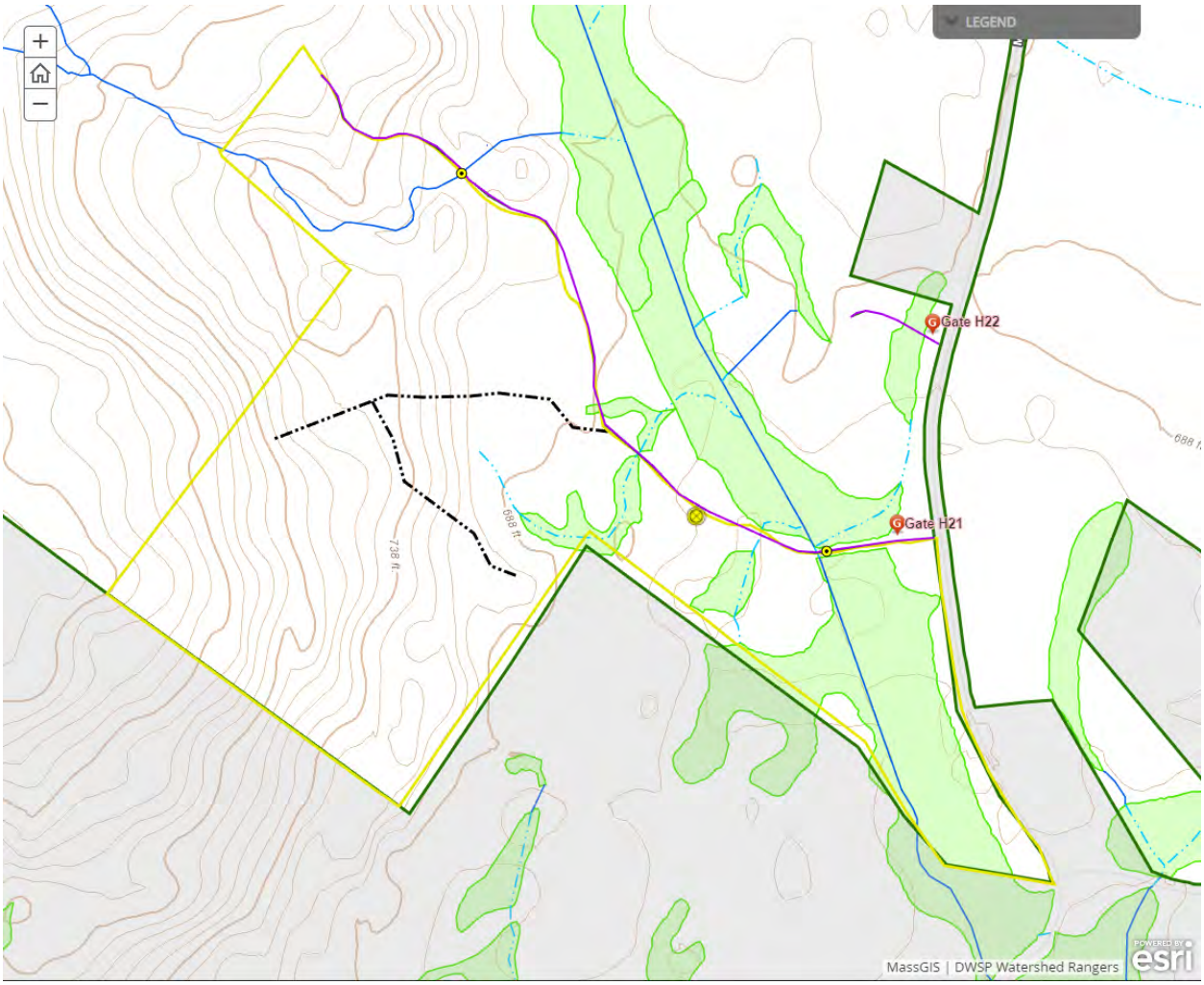
Culverts needed: Yes

Work needed on permanent bridges: No

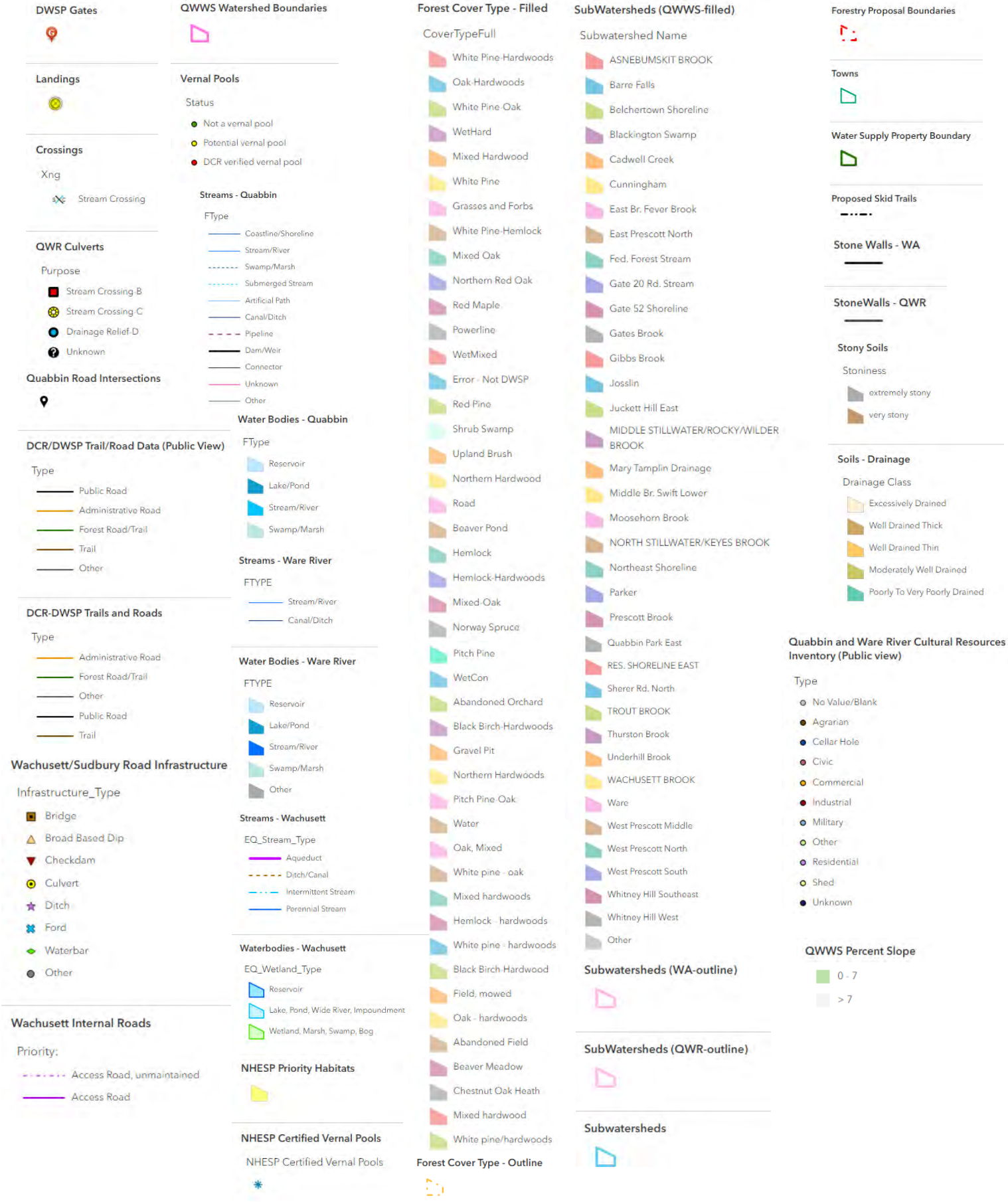
Beaver issue: No

Further comment on access needs:

The stream crossing of the access road just inside Gate H21 is in long-need of repair.


LEGEND
Gate H22
Gate H21
738 ft
688 ft
MassGIS | DWSP Watershed Rangers
esri

DWSP FY 2022 Forestry Proposals – Master Legend for story maps



Wachusett Harvest Proposal WA-22-315

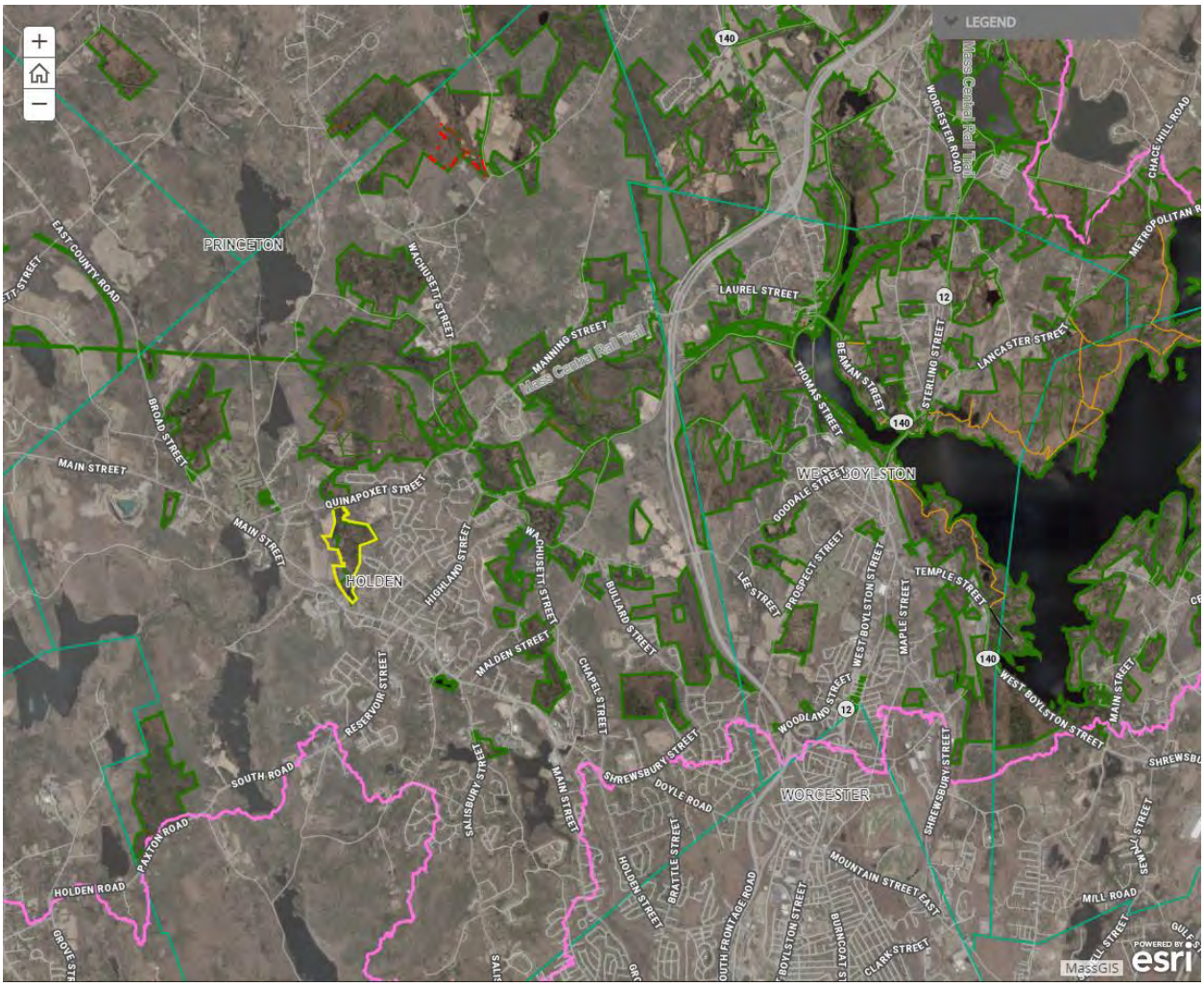
Proposal Goals

The primary goal is to promote a resilient, diverse forest through the creation of canopy openings that allow young forest to develop, release established healthy young trees, and remove groups of poor quality trees. Logging prior to DCR acquisition of this property resulted in the establishment of diverse advance regeneration throughout the area.

Proposal Location

Located in Holden. (The following is a description of the boundary for the area where management will occur and not for the working unit as a whole).
The north and east sides are bound by private property none of which is stone wall. The south and west sides are bound by the wetland associated with Warren Tannery Brook.

Total Acres: 40



General Description

	Overstory Type(s)	Acres
Dominant	White pine - oakMixed hardwoods	40
Secondary	Oak, mixed - dry site	7
Other	White pine	3

	Understory Type(s)
Dominant	Tree seedlings/saplings dominate site
Secondary	Mountain laurel prevalent

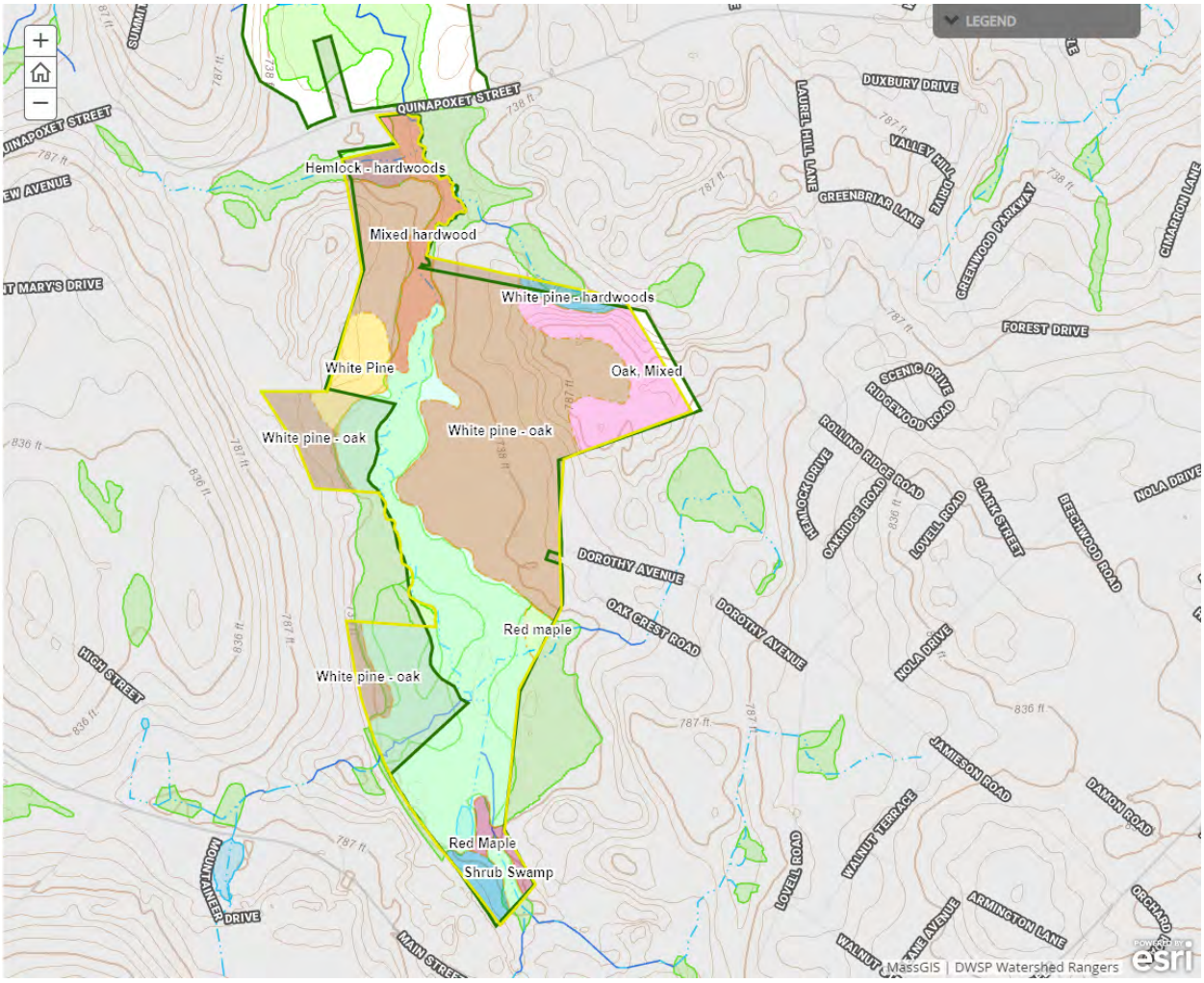
Description of forest composition/condition:

The forest overstory in this area is dominated by red oak, white pine, black oak, white oak and red maple. In the southern part of the area there is some black cherry and hemlock as well. In the northern end there are paper birch mixed into the overstory. Most of this property was logged about 30 years ago prior to DCR acquisition. The result has been the establishment of an excellent understory of regeneration. This regeneration is primarily hardwoods in the southern end made up of red maple, red oak, black cherry, bigtooth aspen and some white pine. There is also quite a lot of shadbush. In the northwestern corner of the area where many of the overstory trees have fire scars from a wildfire several decades in the past, there's significantly more oak in the understory. The central and northeastern parts of this area on the hill, along with having much shorter overstory trees also have a far larger component of white pine in the understory. The shrub layer in this area is made up of mountain laurel and huckleberry. In the lower areas in the south end of this working unit there is highbush blueberry along the ubiquitous mountain laurel while sheep laurel is paired with the mountain laurel in the previously burned northwest corner.

The age structure of this area is as follows; 0%, 0-20 years old; 0%, 21-40 years; 0%, 41-60 years; 13%, 61-80 years; 41%, 81-100 years and 46%, >100 years old. The oldest stands date to about 1900 making them just over 120 years old.

Assessment of Terrestrial Invasive Species:

Terrestrial invasive species were only found in 1 out of 84 plots taken. There is Asiatic bittersweet present in a small, damp opening in the overstory near the terminus of Dorothy Avenue.



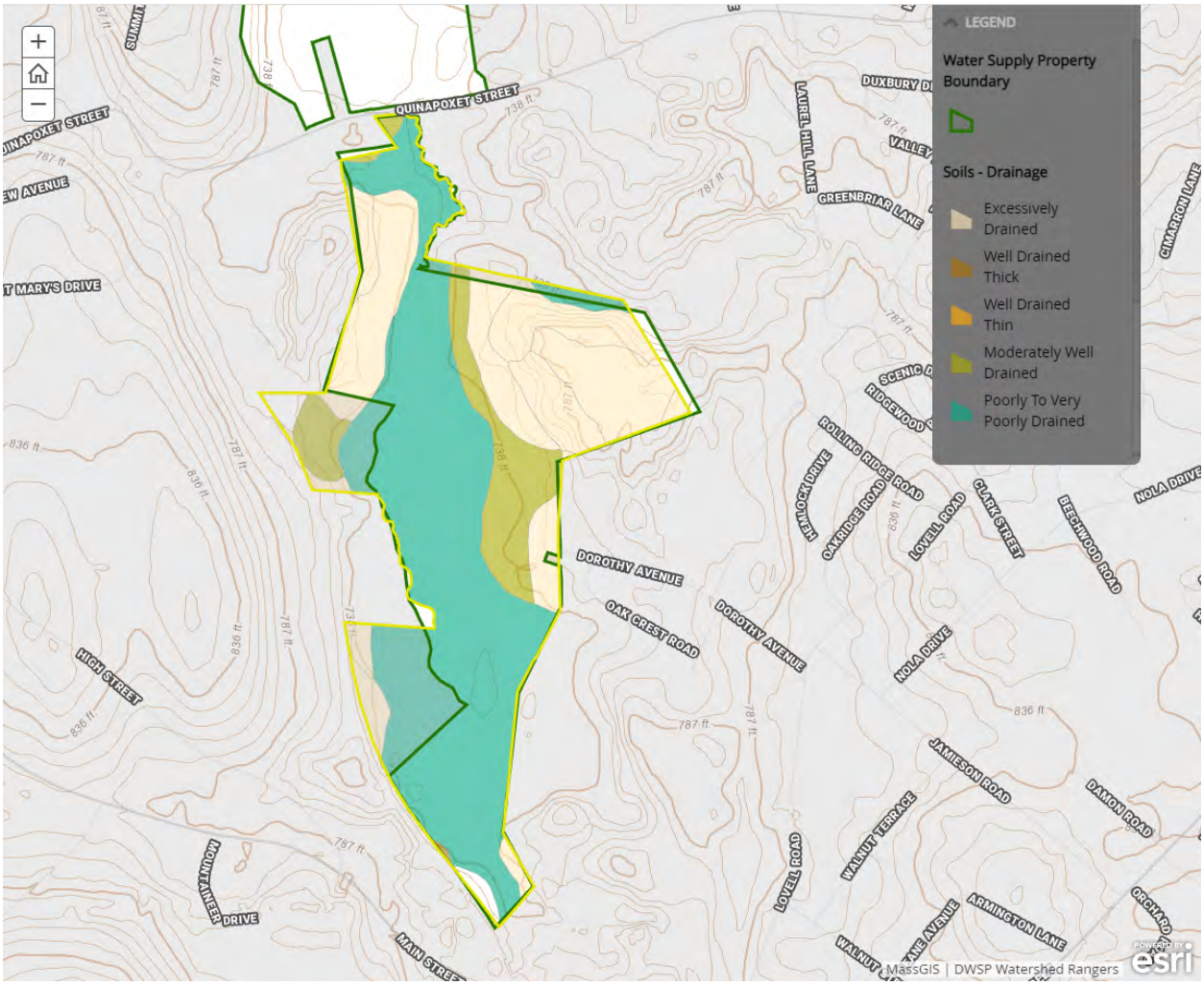
Soils

Drainage Class	%
Excessively Drained	55
Well Drained Thin	0
Well Drained Thick	0
Moderately Well Drained	45
Poorly to Very Poorly Drained	0

(This description omits the large wetlands that show as 'poorly drained' on the map.)

The excessively drained soils are associated with the hill in the northern half of the area and are primarily the Windsor, Hinckley and Merrimac loamy sands.

The moderately well drained soil is the Sudbury fine sandy loam.

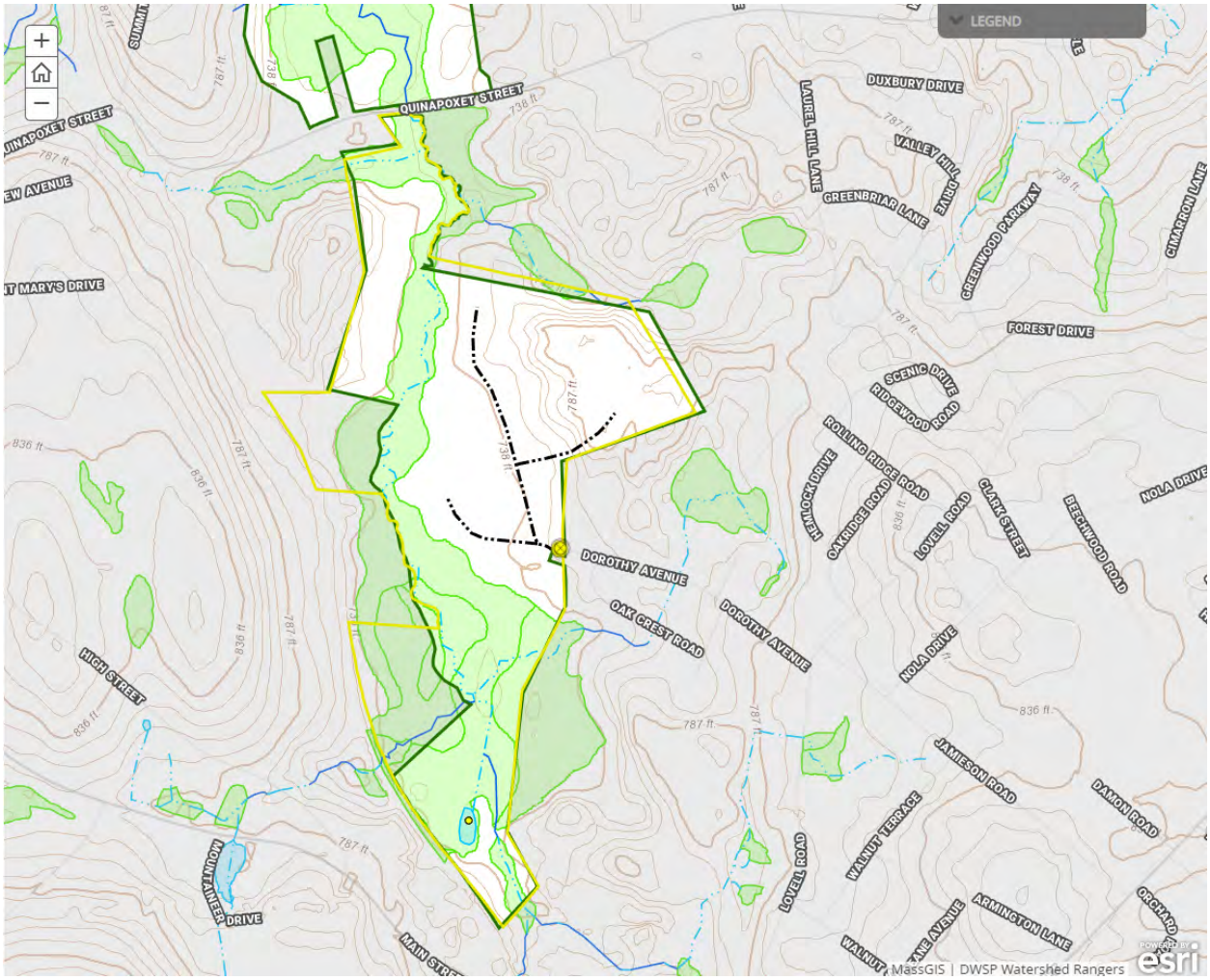


Wetlands

- Wetlands present? - **Yes**
- Streams present? - **Yes**
- Vernal pools present? - **None known**
- Seeps present? - **None known**
- Are stream crossings required? - **No**
- Are wetland crossings required? - **Yes**

- Is logging in filter strips planned? - **No** **(Riparian Zone Mgt)**
- Is logging in wetlands planned? - **No**

In addition to the large wetland associated with Warren Tannery Brook that forms the western and southern boundary of this area, there is a narrow, forked, unmapped wetland in the western area of this proposed timber sale. It connects the larger wetland on the west side to the same wetland on the south side, and appears to be an old cutoff meander channel that is now dammed up and flooded by beaver. There's about 5 acres of upland forest between this unmapped wetland and the larger mapped wetland.



Silviculture

Acres in Intermediate cuts: **0**

Acres in prep/establishment cuts: **0**

Acres in Regeneration cuts: **13**

Average regen opening size: **1**

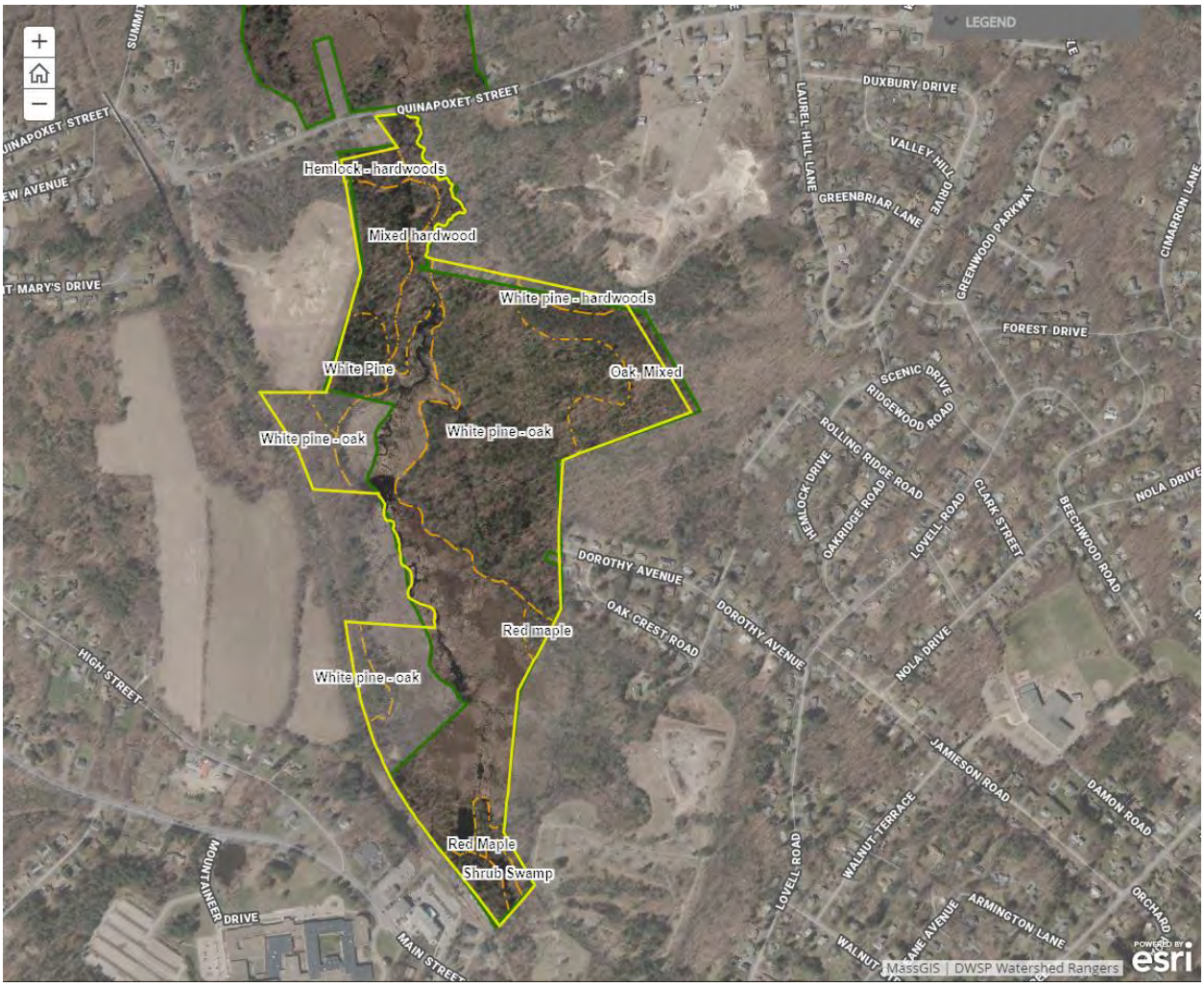
Maximum regen opening size: **2**

Description of advance regeneration in proposal area:

Sampling found adequate advance regeneration present in 46% of the plots with marginal regeneration present in an additional 20%. Oak was found in 46% of plots. This regeneration is comprised of red maple, white oak, red oak and white pine with lesser numbers of black birch, black cherry, aspen and chestnut.

General comments on silviculture proposed:

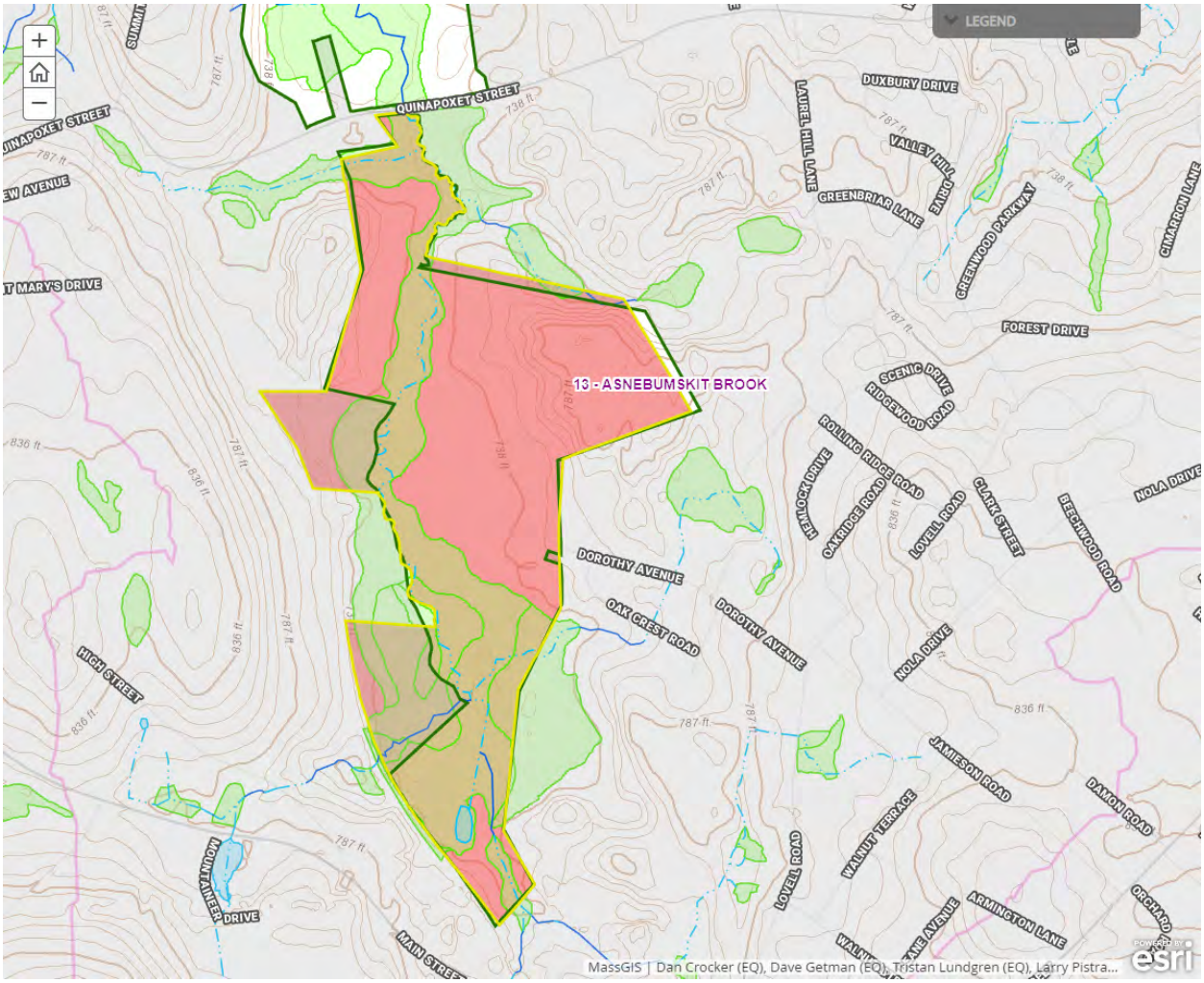
Forest management will only be occurring in the 40 acres on the east side of the Warren Tannery Brook wetland. With good advance regeneration present comprised of a diversity of species well suited to this site, the goal will be to make openings that total about 13 acres. This will result in a new age cohort within the forest that makes up about 1/3rd of the area of this 40-acre portion of this working unit. These openings will be well distributed throughout the area taking advantage of where the advance regeneration is best. Following the harvest, the age structure of the forest is anticipated to be approximately as follows; 33%, 0-20 years old, 0%, 21-40 years; 0%, 41-60 years; 9%, 61-80 years; 27%, 81-100 years and 31%, >100 years old.



Subwatershed Analysis

Sub-watershed number	Total DCR-owned Acres	Acres Regenerated on DCR Land in the last 10 years	Acres Remaining for Regenerating Up to the 25% / 10 Year	Acres part of this proposal
13 (Asnebumskit Brook)	169	0	42	40

With 13 acres of harvesting proposed the level of cutting falls below the 25% threshold.



Harvesting Limitations

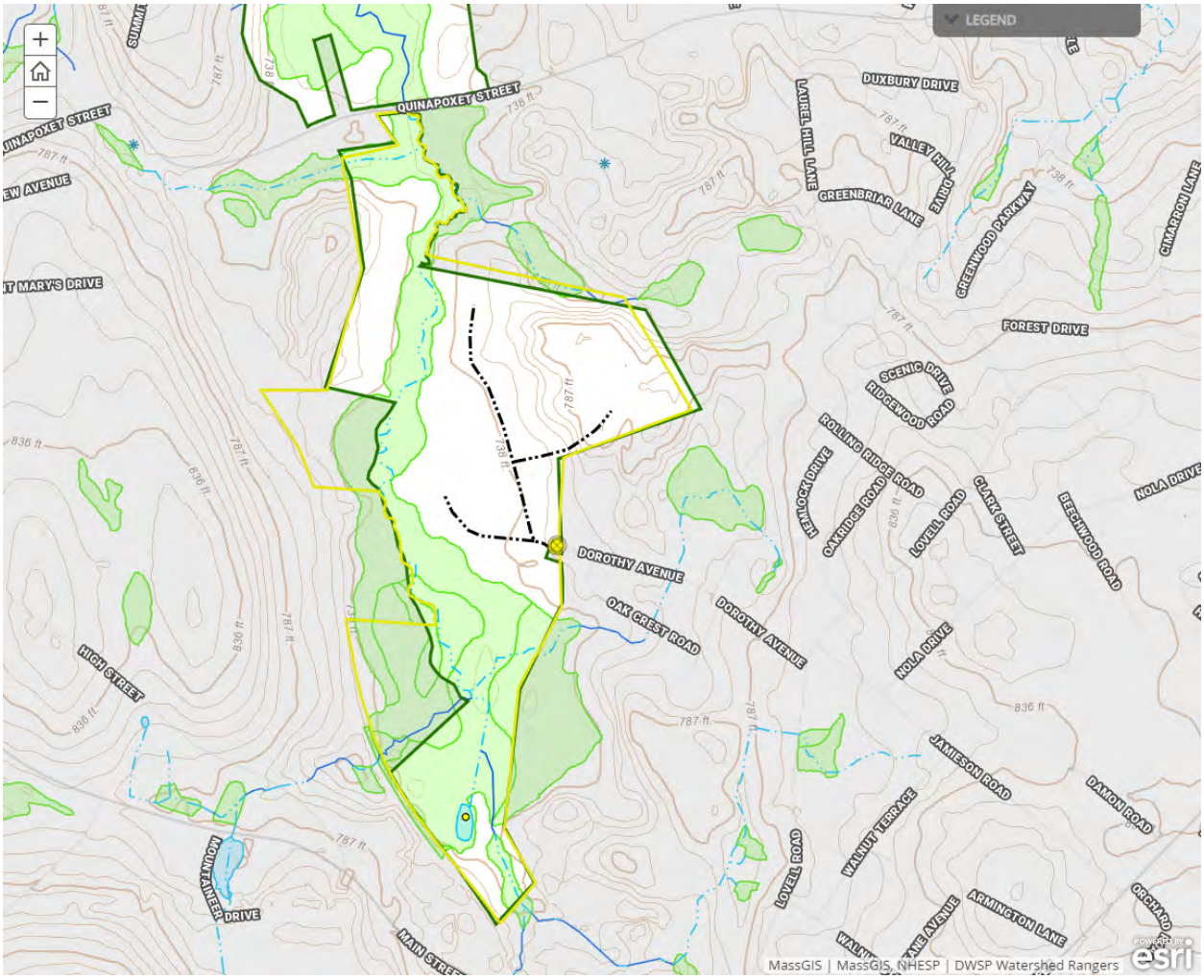
Forwarder required: **Yes**

Feller/processor required: **Yes**

Steep slopes present: **No**

Comments on harvesting limitations:

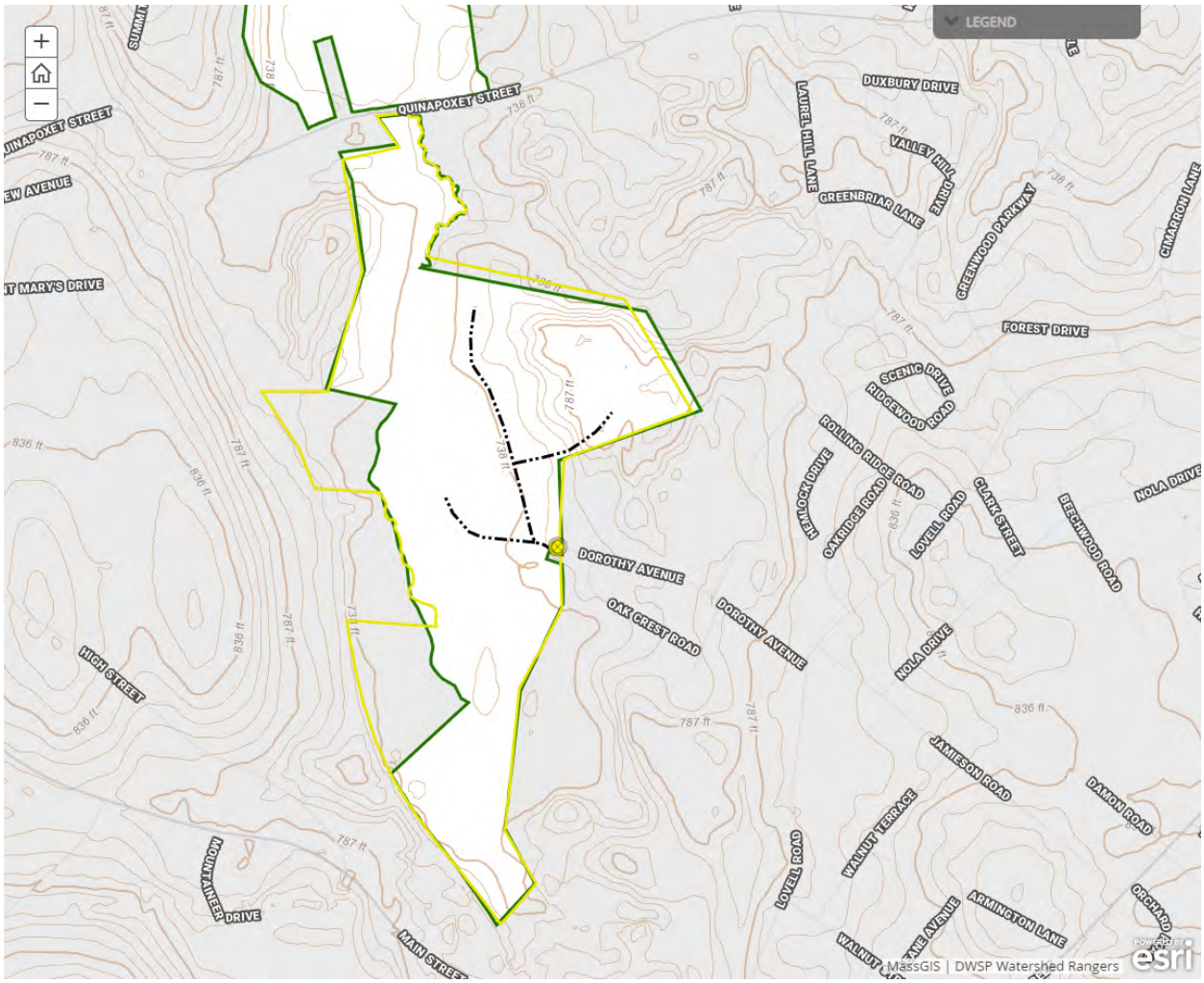
With advance regeneration present and a desire to protect as much of it as possible during the harvest, a cut-to-length harvesting system will be employed.



Cultural Resources

Comments on Cultural Resources:

No known historic cultural resources.



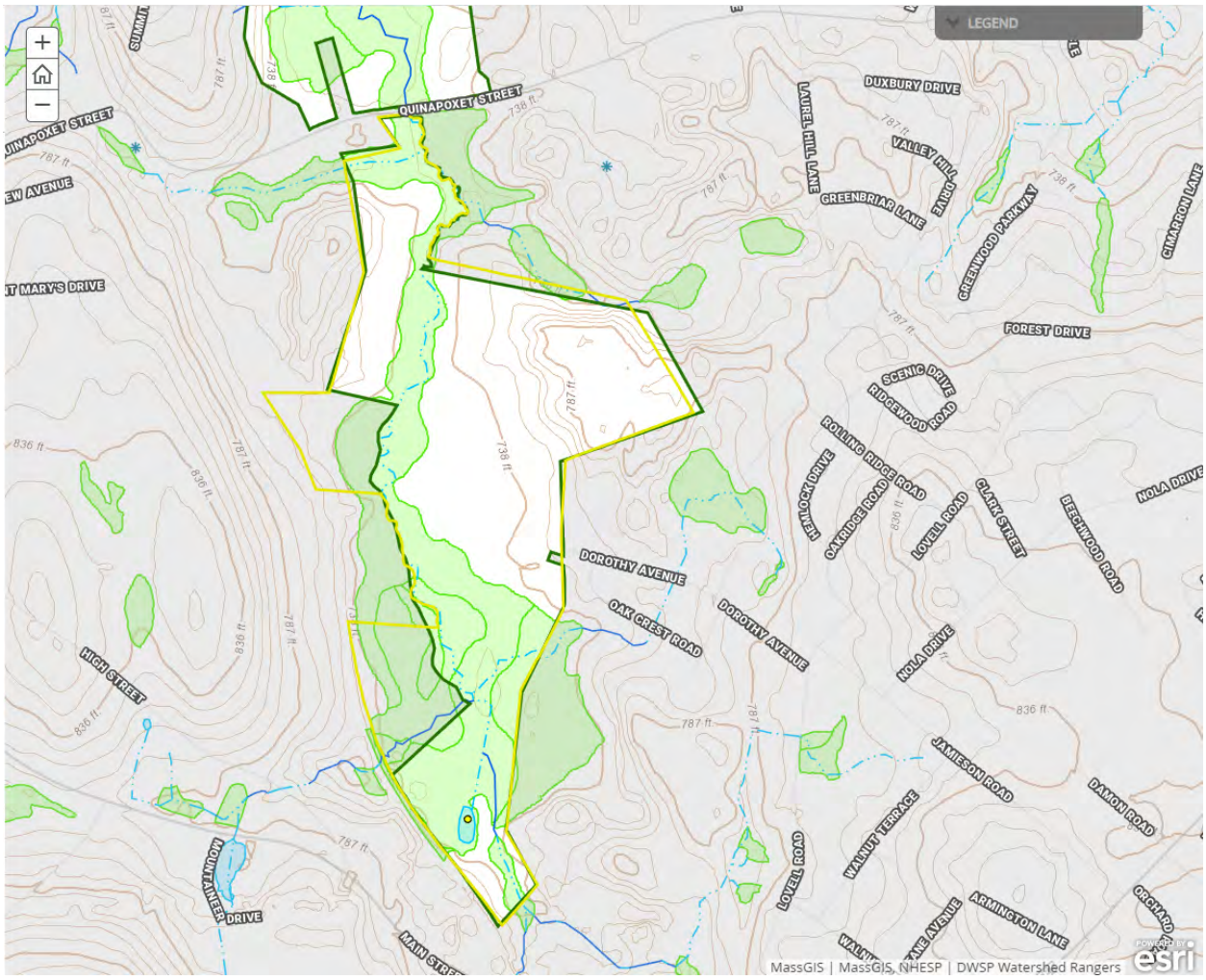
Wildlife Resources & Rare and Endangered Species

General Wildlife Comments:

No unusual wildlife observed; some stick nests present. Tannery Brook is considered a Coldwater Fisheries Resource by MA DFW; the proposed harvesting will not cause siltation or alter the shading conditions that are important for the fish species that use these habitats.

Comments on Rare Species/Habitats:

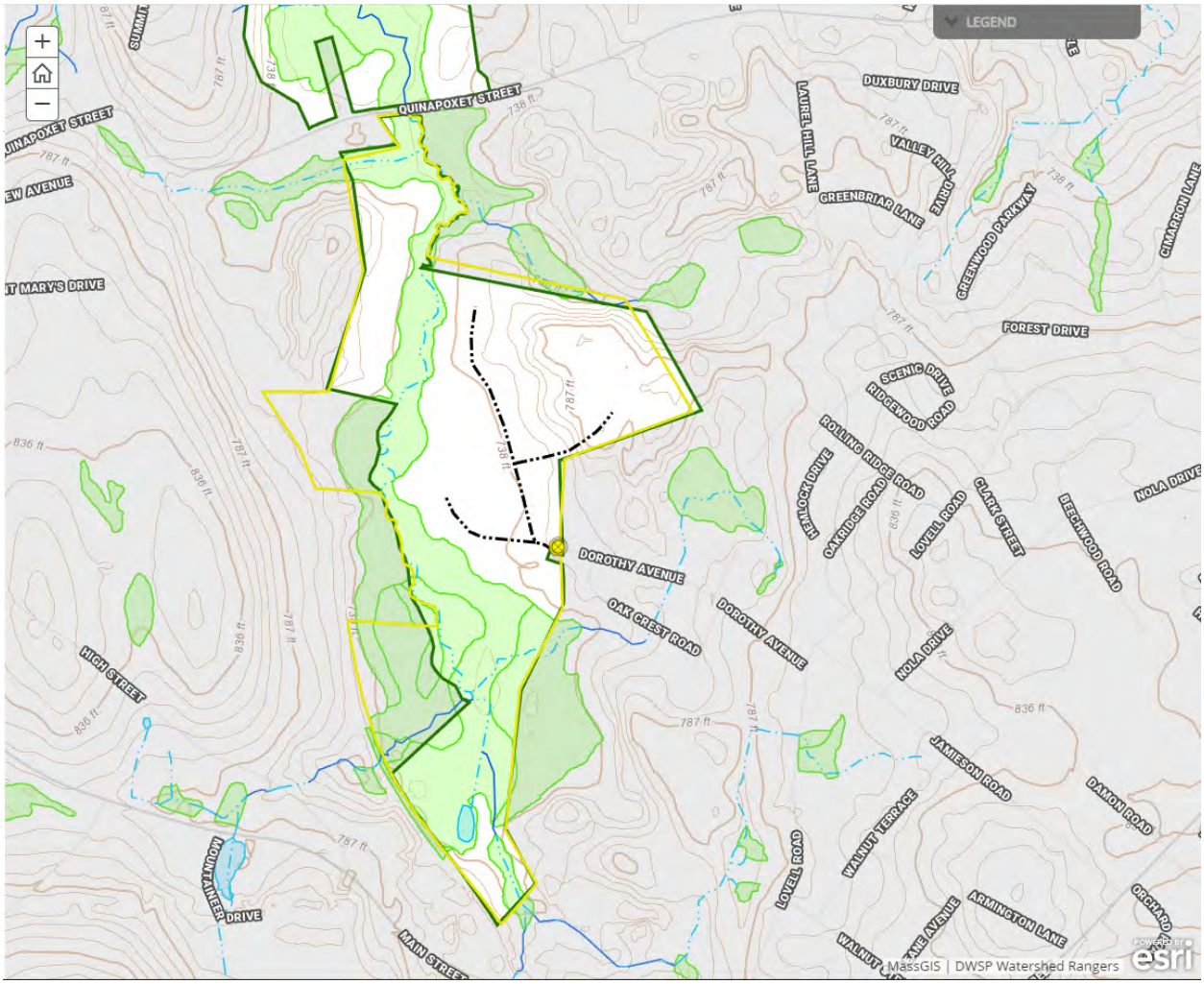
No rare species or habitats in this proposal area.



Environmental Quality Engineering

Comments on EQ Issues:

A wetland crossing may be considered to access about 5 acres between the old meander channel and the main wetland along Tannery Brook. Evidence suggests this was done long ago when the channel was dry, but significant bridging would be required to do the same now unless the beaver dam breaches and the area drains out. This being unlikely in the short term, the crossing is probably impractical but worth mentioning as a possibility.



Forest Access Engineering

Gravel needed: No

Landing work needed: No

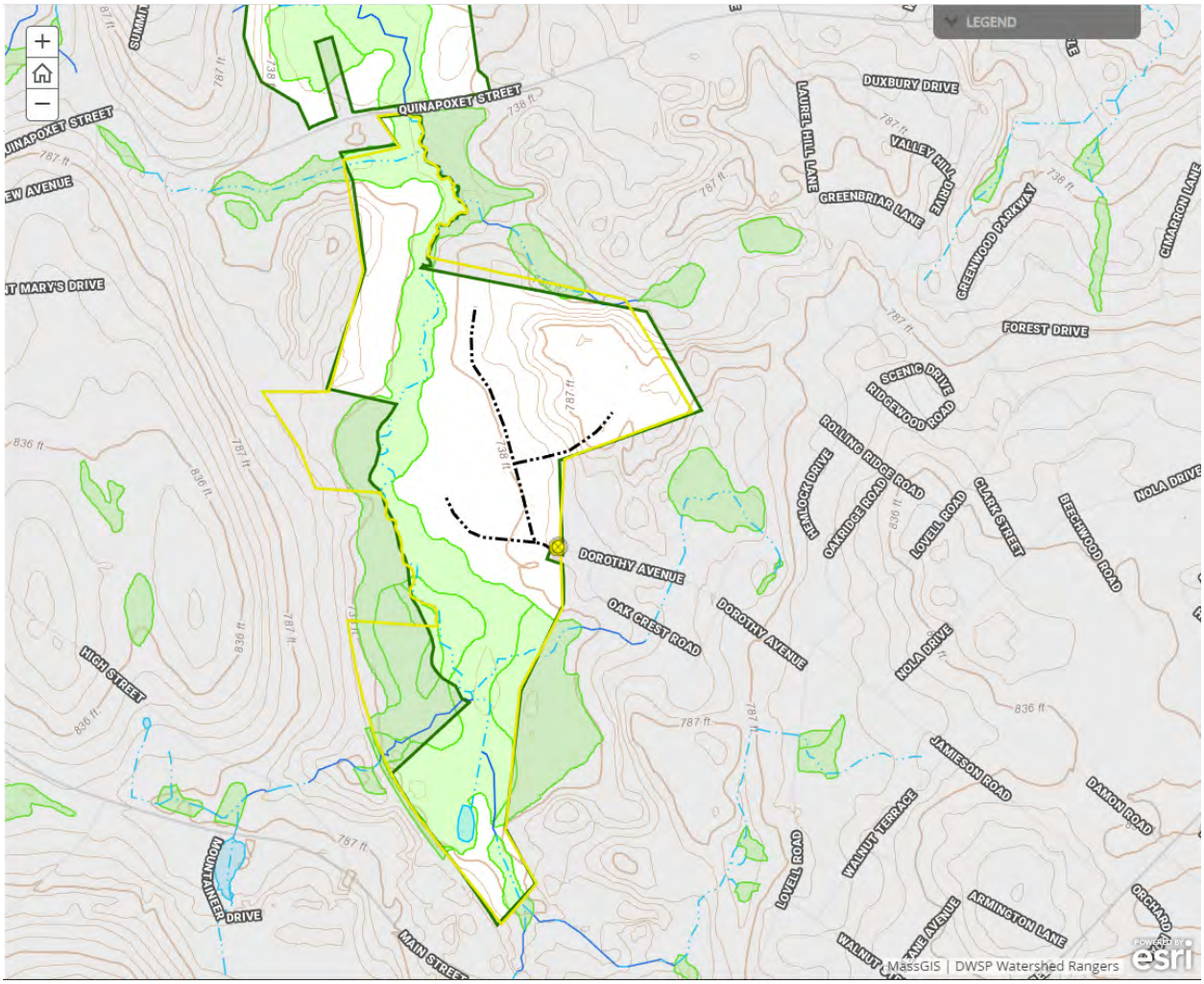
Culverts needed: No

Work needed on permanent bridges: No

Beaver issue: No

Further comment on access needs:

No access issues. The landing will be off the end of Dorothy Avenue.


LEGEND
QUINAPOXET STREET
DUXBURY DRIVE
LAUREL HILL LANE
VALLEY HILL
GREENBRIAR LANE
GREENWOOD PARKWAY
CIMARRON LANE
FOREST DRIVE
SCENIC DRIVE
RIDGEWOOD ROAD
ROLLING RIDGE ROAD
OAKRIDGE ROAD
LOVELL ROAD
CLARK STREET
BEECHWOOD ROAD
NOLA DRIVE
DOROTHY AVENUE
OAK CREST ROAD
HIGH STREET
JAMIESON ROAD
DAMON ROAD
WALNUT TERRACE
ARMINGTON LANE
MOUNTAINEER DRIVE
MAIN STREET
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