STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD

IN RE: **The Narragansett Electric Company d/b/a National Grid and Clear River Energy LLC's Joint Application to Construct the Burrillville Interconnection Project in Burrillville, Rhode Island**

DOCKET No. SB-2017-01

CLEAR RIVER ENERGY LLC'S SUPPLEMENTAL RESPONSE TO THE TOWN OF BURRILLVILLE'S 4TH SET OF DATA REQUESTS, NO. 4-8

Request 4-8

Provide a copy of any wetland mitigation plans submitted to DEM and/or the ACOE, whether in draft or final format.

ORIGINAL RESPONSE 4-8

The in-situ wetland mitigation measures that are to be implemented to stabilize and restore construction-related disturbances to wetlands within the ROWs, including the removal of temporary swamp mats, will comply with RI *Rhode Island Soil Erosion and Sediment Control Handbook,* the *Rhode Island Stormwater Design and Installation Standards Manual,* and the *Wetland BMP Manual: Techniques for Avoidance and Mitigation.* These mitigation measures are discussed in the ACOE and DEM applications:

- *Section 6.0* Avoidance and Minimization Statement
  - *Section 6.2* Burrillville Interconnection Project
- *Section 7.0* Proposed Project Mitigation Plan

The project team continues to advance a Compensatory Wetland Mitigation Plan following the 2016 ACOE New England Division Compensatory Mitigation Guidance ("Guidance") in cooperation with resource agencies. The plan is anticipated to include a description of project impacts, objectives, mitigation site selection procedures, site protection information, and monitoring standards in addition to all required graphics and information. At this time, it is anticipated that the mitigation package will primarily consist of land preservation. The overall goal of the mitigation package is to provide no net loss of existing wetland functional values and statutory interests within the affected watersheds and meet the ACOE guidance regarding compensatory mitigation ratios for permanent and temporary / secondary impacts.

A Final Compensatory Wetland Mitigation Plan will be prepared and submitted to both the ACOE and DEM prior to the application being sent out to Public Notice and will be implemented once the project receives all necessary permits and approvals.

SUPPLEMENTAL RESPONSE

Please see <u>Exhibit 4-8</u> for two (2) draft Sweet Hill Farm Site Assessment Reports, prepared by ESS Group, Inc., which were provided to the ACOE and DEM for review, along with the Compensatory Mitigation Plan for the Clear River Energy Center and Burrillville Interconnection Project, prepared by ESS Group, Inc., which was provided to ACOE and DEM for review on June 15, 2018.

RESPONDENT: Jason Ringler, ESS Group, Inc.

DATE: June 20, 2018

Clear River Energy LLC
By its Attorneys,

/s/ Alan M. Shoer

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Dated: June 20, 2018

CERTIFICATE OF SERVICE

I hereby certify that on June 20, 2018, I delivered a true copy of the foregoing supplemental response to the **Town of Burrillville's 4th Set of Data Requests in Docket No. SB-2017-01** via electronic mail to the parties on the attached service list.

/s/ Alan M. Shoer

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EXHIBIT 4-8

10 Hemingway Drive, 2nd Floor
East Providence, Rhode Island 02915
p 401.434.5560 f 401.434.8158
www.essgroup.com

MEMORANDUM

TO: Alex Kostra
DATE: April 12, 2018
FROM: Craig Wood
ESS Project No.: I108-013
SUBJECT: Draft Sweet Hill Farm Desktop Habitat Assessment
COPY TO: Mike Feinblatt, John Niland, Erin Whoriskey

The following desktop habitat assessment was prepared by ESS Group, Inc. (ESS) for the Sweet Hill Farm site (the site) located on East Avenue in Burrillville, Rhode Island. The goal of the desktop assessment was to evaluate the existing habitat conditions at the site and determine the suitability of the site to satisfy the compensatory wetland mitigation requirements for the Clear River Energy Center (CREC) and Burrillville Interconnection Project (BIP) (collectively, the Project) through land preservation and to serve as mitigation for impacts associated with the Project through land preservation. Table 1 provides a summary of the anticipated project impacts to wetlands, watercourses, and floodplains.

Table 1. Anticipated Project Impacts to Wetlands, Watercourses, and Floodplains

	Biological Wetland (acres)			Perimeter Wetland (acres)			100' Riverbank Wetland (acres)			200' Riverbank Wetland (acres)			100-Year Floodplain (acres)			Intermittent Stream (linear ft)		
	P	T	C	P	T	C	P	T	C	P	T	C	P	T	C	P	T	C
CREC	0.5	0.37	0	1.15	1.08	0	0.5	0	0	0.03	0.03	0	0.13	0	0	136	0	0
BIP	0.24	8.36	6.69	4.08	1.98	3.26	0.47	0.34	0.72	0.71	0.02	0.10	0.49	0.02	0.26	0	0.01	0
Total	**0.74**	**8.73**	**6.69**	**5.23**	**3.06**	**3.26**	**0.97**	**0.34**	**0.72**	**0.74**	**0.05**	**0.1**	**0.62**	**0.02**	**0.26**	**136**	**0**	**0**

P = permanent impacts, T = temporary impacts, C = habitat conversion

GENERAL SITE INFORMATION

The Sweet Hill Farm site (Assessor's plat 144, lot 19) is an approximately 148-acre privately-owned parcel located on East Avenue (RI-107) in the Town of Burrillville, Rhode Island (Figure 1). The parcel is located in the eastern-central portion of the town, just east of the village of Harrisville. The site is primarily forested and is located adjacent to the state-owned Black Hut Management Area. An approximately 725-foot gravel road is located in the southern-central portion of the site off of East Avenue and provides access to four residential properties bounded on all sides by the site. Elevations at the site range from approximately 344 feet to approximately 523 feet ASL.

ADJACENCY TO PROTECTED OPEN SPACE

The site is located adjacent to the Black Hut Management Area, an approximately 1,853-acre tract of state-owned conservation land in the Town of Burrillville. Black Hut Management Area is managed by the Rhode Island Department of Environmental Management (DEM) Division of Fish and Wildlife and is generally bounded to the north by West Ironstone Road, to the northeast by Douglas Turnpike, to the east by Joslin Road, to the southeast by Broncos Highway, to the south by East Avenue, and to the west by Cherry Farm Road (Figure 2). The Sweet Hill Farm site represents the single largest unprotected parcel adjacent to Black Hut Management Area within the bounds of these roadways. The entirety of the site's

eastern and northern boundary as well as a portion of the western boundary abuts Black Hut Management Area for a total linear distance of approximately 9,400 feet (1.78 miles) (Figure 3). The DEM has, in the past, expressed interest in acquiring this parcel to supplement existing public lands in the northwestern corner of the state and to close a noticeable gap in contiguous property associated with the Black Hut Management Area. In 2011, DEM acquired 105 acres of land to add to the Management Area.

The site is also located very close to an approximately 23-acre undeveloped, privately-owned parcel under a conservation easement. This conservation parcel is located to the east of the site and is separated from the site by a narrow strip of state-owned land that is part of Buck Hill Management Area. If a permanent conservation easement were placed on the Sweet Hill Farm site, the area of contiguous protected land in eastern Burrillville would total approximately 2,024 acres.

HABITAT CHARACTERIZATION

Rhode Island Ecological Communities Classification

The Rhode Island Ecological Communities Classification (Enser *et al.* 2011) categorizes the state into a five-tiered hierarchical structure based on vegetation and habitat characteristics. Geospatial mapping of ecological communities has been completed to the "community" level, which represents the third of five tiers in the hierarchical system. The ecological communities mapped at the site are listed in Table 2 and displayed on Figure 4.

Table 2. Sweet Hill Farm Site Rhode Island Ecological Community Mapping

Ecological Community	Area (acres)	Percent of Parcel
Tree Plantation (Coniferous forest)	54.7	37.2%
Oak Forest	43.1	29.2%
Mixed Deciduous/Coniferous Forest	34.4	23.3%
Ruderal Grassland/Shrubland	7.6	5.1%
Hayfields/Pasture	3.8	2.6%
Urban/Suburban Built	2.4	1.6%
Forested Swamp*	1.5	1.0%

The ecological communities mapping indicates that nearly the entire site (90.7%) is comprised of forested habitats (tree plantation [coniferous forest], oak forest, mixed deciduous/coniferous forest, and forested swamp). The remainder of the site is comprised of early successional habitats (ruderal grassland/shrubland – 5.1%), agricultural land (hayfields/pasture – 2.6%), and developed land (urban/suburban built – 1.6%).

**This number reflects the area of forested wetland on the site based on publicly-available geospatial data, not the results of a site-specific wetland delineation. See the next sub-heading for additional information regarding wetlands at the site.*

Wetlands and Waterways

Wetlands at the site were delineated in the field by Natural Resource Service, Inc. at some point prior to 2004 (Figure 5). The wetland delineation indicates the presence of forested wetland in the southern and eastern portions of the site, some of which border a small stream that flows off the site to the east. Approximately 19 acres of forested wetlands were delineated at the site, representing approximately

12.8% of the total site acreage. An additional approximately 13 acres of perimeter wetland are associated with the delineated wetlands greater than three acres in size at the site as shown on Figure 5. Riverbank wetlands may also be present at the site.

The United States Army Corps of Engineers recognizes 13 broad functions and values that can be provided by wetlands. A wetland may be suitable for some or all of the 13 functions and values, and some of these may be principal functions and values if they are an important component and/or are considered of special value. While a functional assessment is typically completed following a review of wetlands in the field, an initial assessment can be made using desktop data sources. Wetlands at the site likely currently provide the following functions and values: groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, and wildlife habitat. If the site were permanently protected with a conservation easement and opened to public recreational use, wetlands at the site may also provide recreation, educational/scientific value, and visual quality/aesthetics. Currently, insufficient information exists to determine whether wetlands at the site may provide uniqueness/heritage or threatened or endangered species habitat. Wetlands at the site likely do not provide fish and shellfish habitat due to the lack of significant surface waters.

***Biological wetland only. This number does not include perimeter or riverbank wetlands, which are also within RIDEM jurisdiction.*

Vegetation

General vegetation information is provided in a site plan prepared by DiPrete Engineering Associates, Inc. dated January 2004. Primary tree species at the site are identified as oak (*Quercus* sp.) and white pine (*Pinus strobus*), with lesser amounts of birch (*Betula* sp.), quaking aspen (*Populus tremuloides*), eastern hemlock (*Tsuga canadensis*), eastern red cedar (*Juniperus virginiana*), and pitch pine (*Pinus rigida*). Primary shrub species include sassafras (*Sassafras albidum*), highbush blueberry (*Vaccinium corymbosum*), mountain laurel (*Kalmia latifolia*), and sheep laurel (*Kalmia latifolia*), while herbaceous species include hay-scented fern (*Dennstaedtia punctilobula*), greenbrier (*Smilax rotundifolia*), and lycopodiums (*Lycopodium obscurum*).

Soils

According to the Rhode Island Soil Survey, soils at the site are primarily stony fine sandy loams with slopes ranging from zero to 35%. Over 85% of the site is comprised of soils in the Canton-Charlton complex, which are well-drained upland soils generally well-suited for development. The relatively small Ridgebury, Whitman, and Leicester map unit at the site is the only soil map unit classified as hydric. Soil map units for the site are given in Table 3 and displayed on Figure 6.

Table 3. Rhode Island Soil Survey Soil Map Units

Soil Map Unit	Area (acres)	Percent of Parcel
Canton and Charlton fine sandy loams, very rocky, 3 to 15 percent slopes (CeC)	67.55	45.8%
Canton and Charlton fine sandy loams, 3 to 8 percent slopes (CdB)	24.19	16.4%
Canton and Charlton extremely stony fine sandy loams, 3 to 15 percent slopes (CkC)	19.19	13.0%

Soil Map Unit	Area (acres)	Percent of Parcel
Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes (ChB)	12.96	8.8%
Sutton very stony fine sandy loams, 0 to 8 percent slopes (SuB)	10.30	7.0%
Ridgebury, Whitman, and Leicester extremely stony fine sandy loams (Rf)	9.81	6.7%
Canton-Charlton-rock outcrop complex, 15 to 35 percent slopes (CaD)	2.87	1.9%
Hinckley gravelly sandy loam, rolling (HkC)	0.60	0.4%

Other Habitat Features

Approximately 129 acres (88%) of the site is mapped as part of an unfragmented forest block greater than 500 acres in size (Figure 7). The unfragmented forest block of which the site is a part is approximately 780 acres in size and includes most of Black Hut Management Area and other surrounding lands. Thus, the portion of the unfragmented forest block located on the site represents approximately 16% of the total size of this forest block.

The site is not mapped as a wildlife corridor, which typically follow major river and stream systems. There are also no mapped Natural Heritage areas present at the site; however as a privately-owned parcel, the presence of a mapped Natural Heritage area would not be expected. There are no inventoried dams located on the site.

DEVELOPMENT POTENTIAL

It is our understanding that one or more solar energy facility developers have expressed recent interest in acquiring the site from the current landowner. Additionally, an Existing Conditions & Site Analysis plan for the so-called “Sweet Farm Estates” was prepared by DiPrete Engineering Associates, Inc. as recently as 2004. Based on the following factors, development of the site appears to be feasible:

- The wetland delineation conducted at the site indicates that 87% of the site is upland.
- Over 91% of the site is comprised of soil map units considered well-suited for development and installation of septic systems.
- The site also has over 3,200 feet of frontage on East Avenue, which provides ample opportunity for configuring access to a potential internal road system.
- The site has very limited areas of bedrock ledge.
- Groundwater is likely suitable for development of domestic wells.
- The site is zoned as farming/residential. Net-metering solar photovoltaic installations are allowed in all zoning districts in Burrillville (per Article VI, Sec. 30-211).

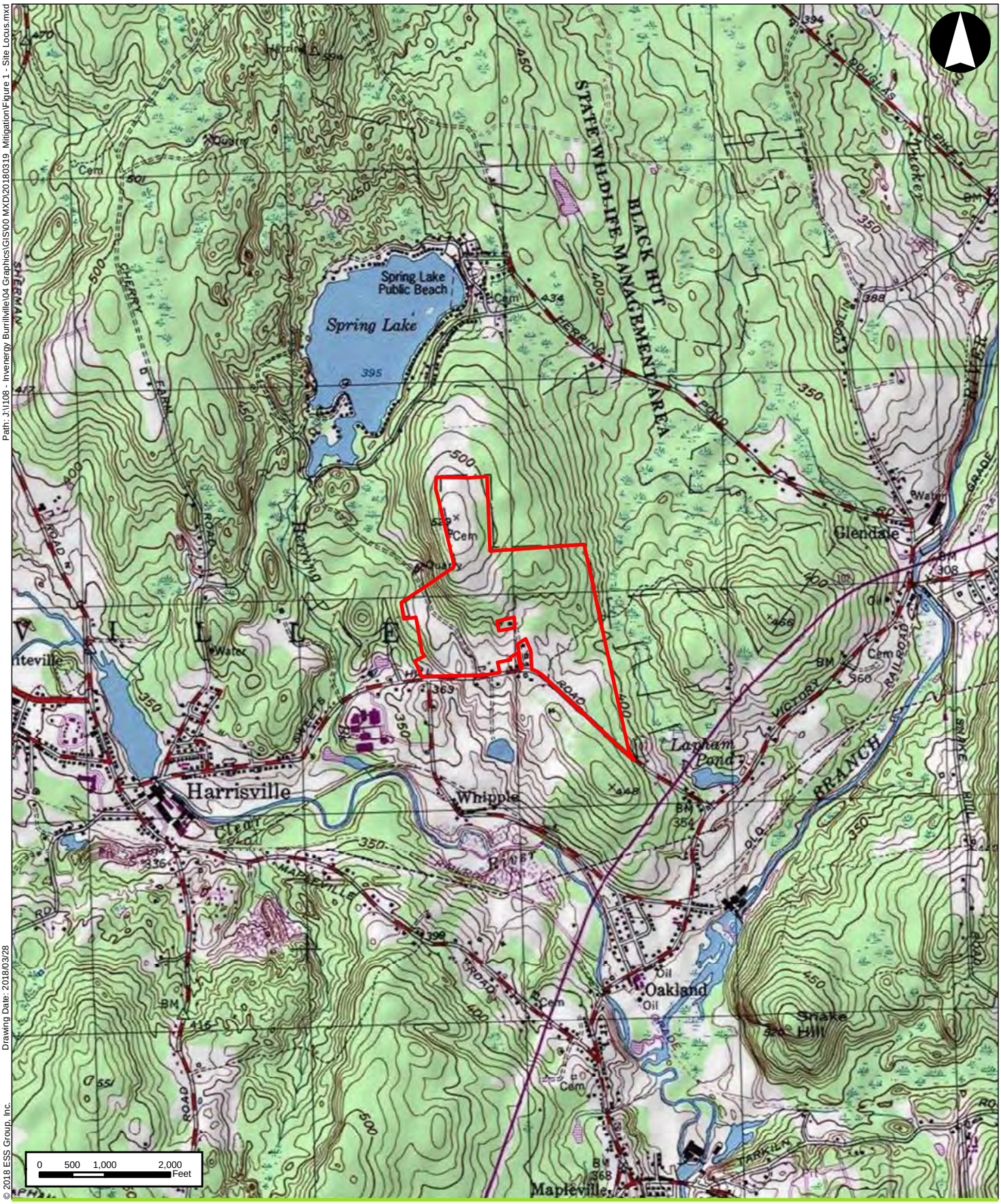
CONCLUSION

Based on the results of this desktop analysis, the Sweet Hill Farm site appears to provide an excellent opportunity for habitat conservation in northwestern Rhode Island, and therefore is likely well-suited as a preservation parcel to offset the unavoidable impacts from the CREC and BIP Project. The parcel is contiguous with important existing state-managed open space, and DEM has identified this parcel in the past (through the National Grid IRP Project) as open space DEM would be interested in acquiring. Without protection, the site does appear to be well-suited (and at-risk) for development. A planned field evaluation by ESS ecologists will allow for the collection of additional site-specific information to supplement the results of this desktop analysis.

LIST OF FIGURES

REFERENCES

Enser, R., D. Gregg, C. Sparks, P. August, P. Jordan, J. Coit, C. Raithel, B. Tefft, B. Payton, C. Brown, C. LaBash, S. Comings, and K. Ruddock. 2011. Rhode Island Ecological Communities Classification. Technical Report. Rhode Island Natural History Survey, Kingston, RI.



Path: J:\1108 - Invenergy Burrillville\04 Graphics\GIS\00 MXD\20180319_Mitigation\Figure 1 - Site Locus.mxd

Drawing Date: 2018/03/28

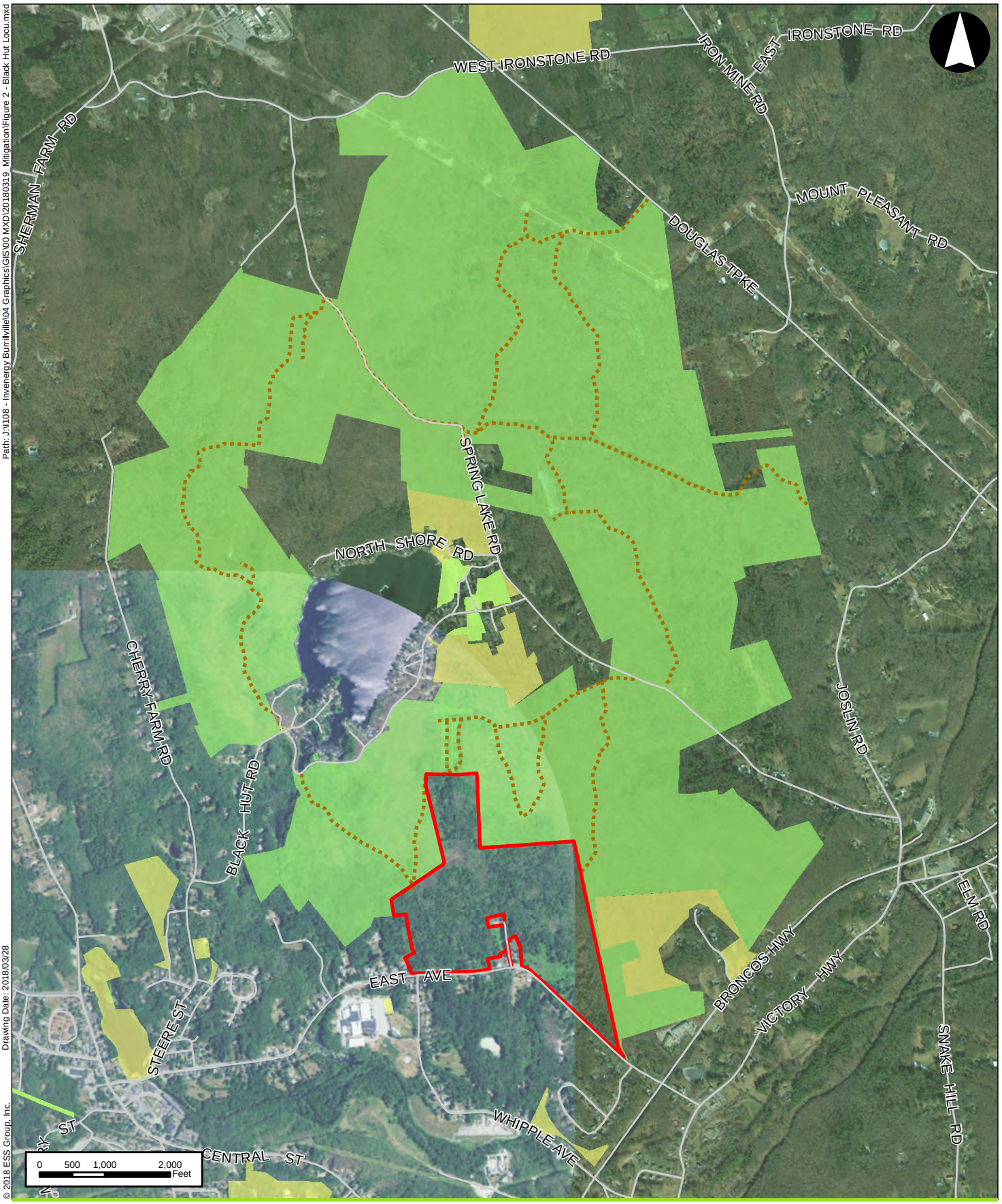
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Source: 1) Town of Burrillville, Parcel Data

Site Locus

Figure 1



Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

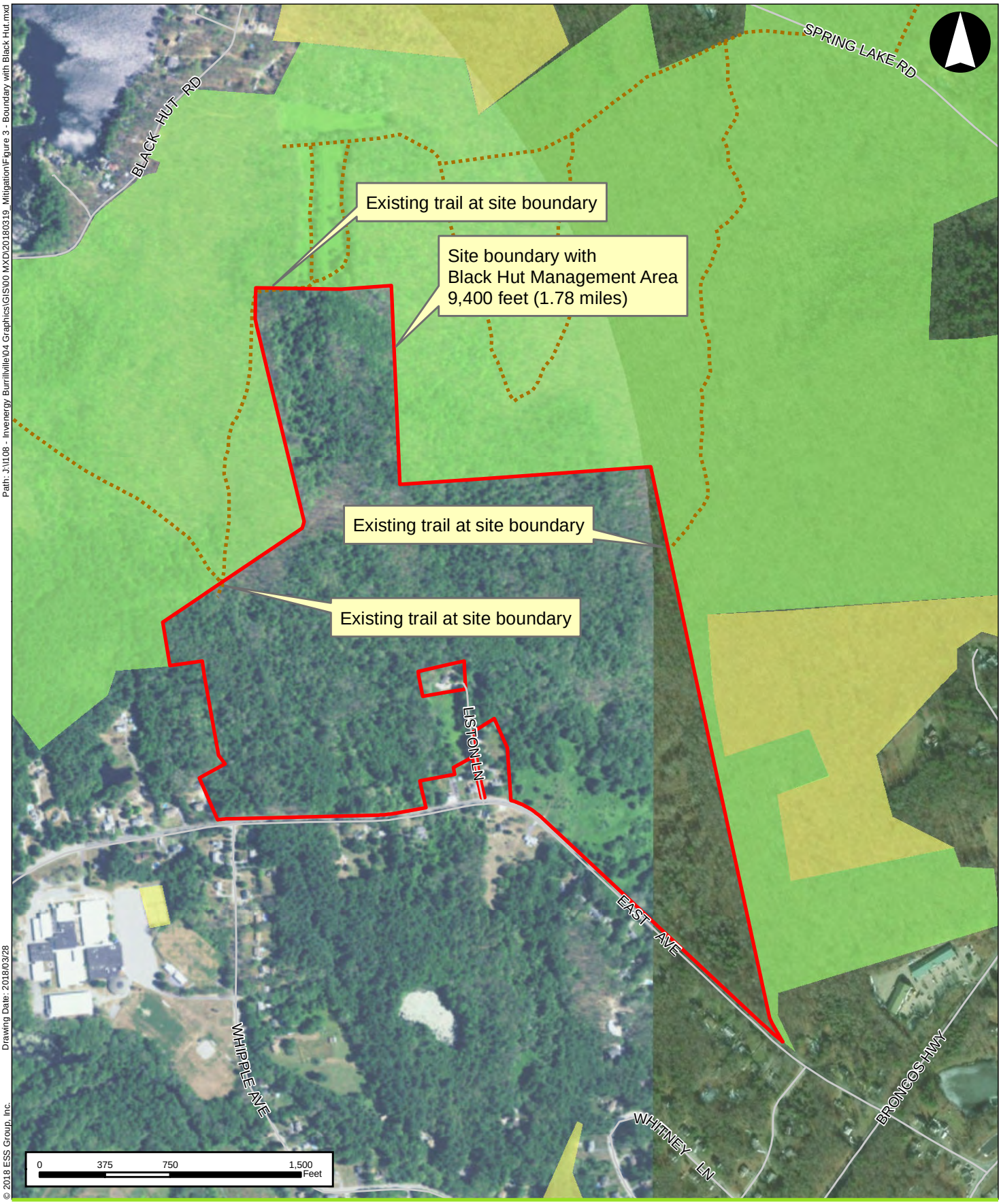
Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Hiking Trails on State Land

Black Hut Management Area Locus

Figure 2



ess group
environmental consulting & engineering services

Sweet Hill Farm Property
Burrillville, RI

1 inch = 750 feet

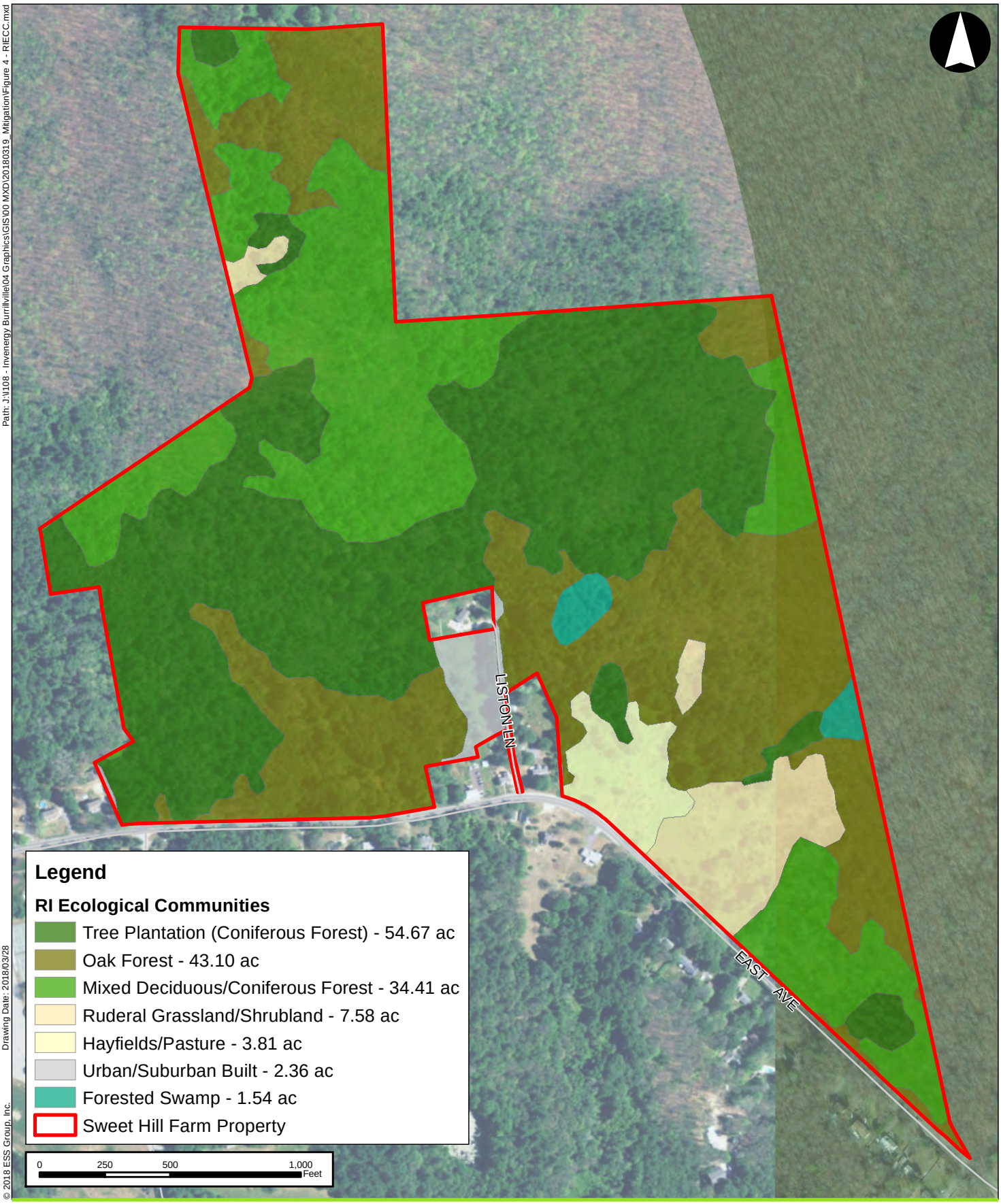
Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Hiking Trails on State Land

Site Boundary with Black Hut Management Area

Figure 3



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Drawing Date: 2018/03/28

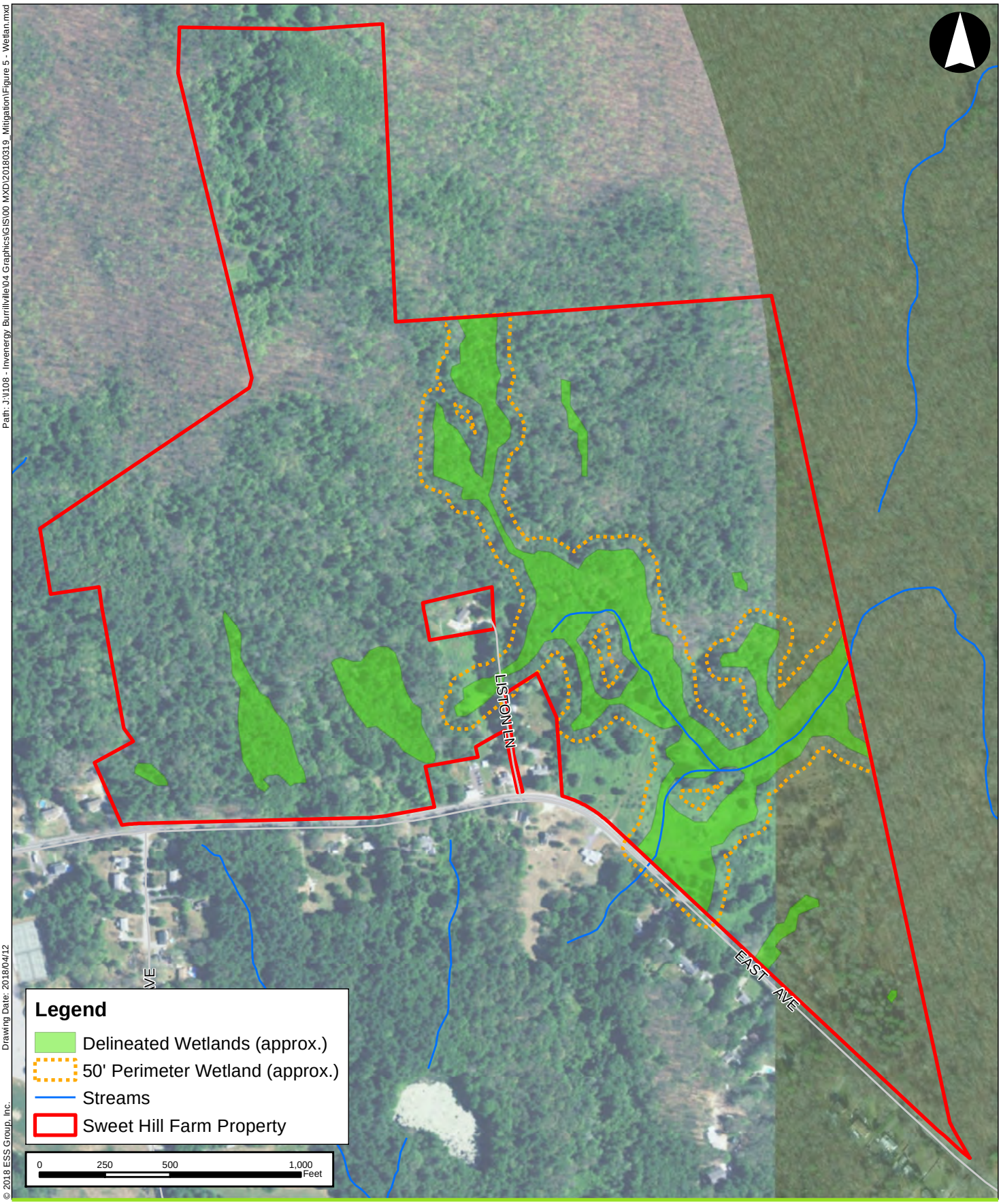
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Rhode Island Ecological Communities Classification

Figure 4

Source: 1) Town of Burrillville, Parcel Data 2) RIECC, RIGIS 2016



Path: J:\1108 - Invenergy Burrillville\04 Graphics\GIS\00 MXD\20180319_Mitigation\Figure 5 - Wetlan.mxd

Drawing Date: 2018/04/12

ess group
environmental consulting & engineering services

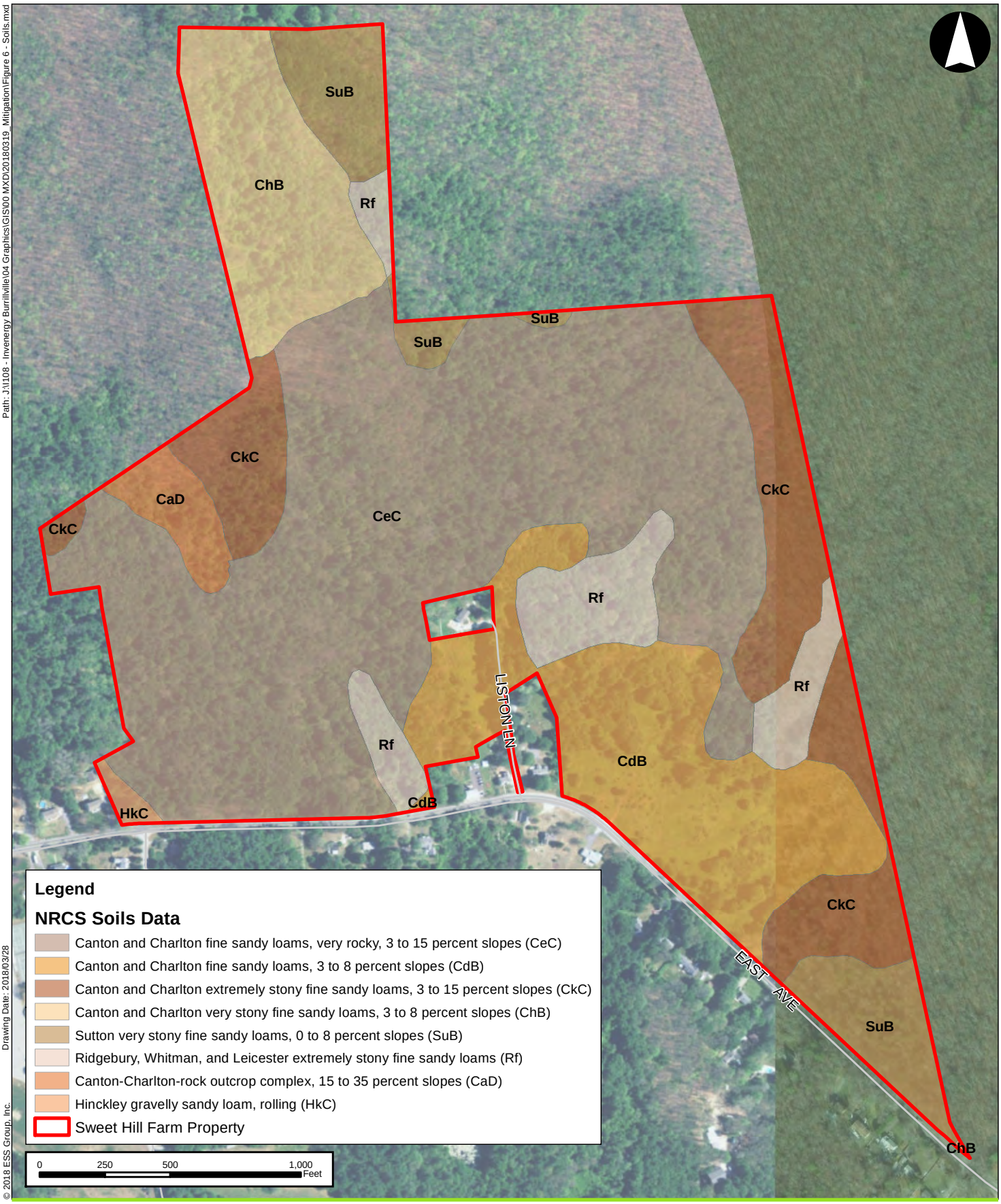
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Source: 1) Town of Burrillville, Parcel Data 2) Wetlands data geo-referenced from 2004 Existing Conditions Site Plan prepared by DiPrete Engineering Associates, Inc.

Approximate Extent of Delineated Wetlands

Figure 5



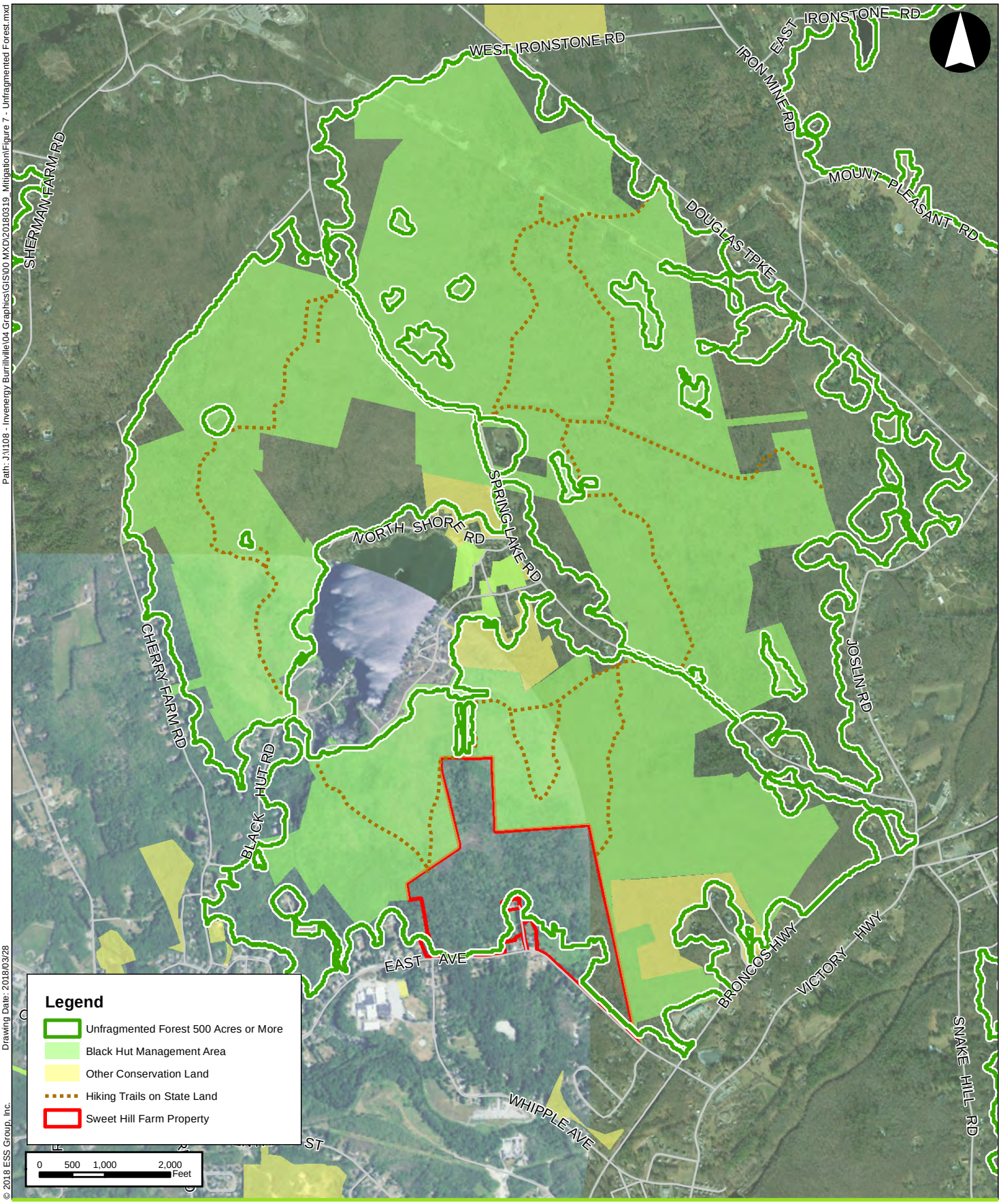
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Rhode Island Soil Survey

Figure 6

Source: 1) Town of Burrillville, Parcel Data 2) Soils, NRCS 2010



Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Unfragmented Forest Blocks Greater than 500 Acres

Figure 7

Source: 1) Town of Burrillville, Parcel Data 2) RIDEM, Forest Data 2016

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East Providence, Rhode Island 02915
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MEMORANDUM

TO:	Alex Kostra	DATE:	May 4, 2018
FROM:	Alex Patterson, Craig Wood	ESS Project No.:	I108-013
SUBJECT:	Sweet Hill Farm Site Assessment Report (NAE-2016-00505)		
COPY TO:	Mike Feinblatt, John Niland, Erin Whoriskey		

The following site assessment report was prepared by ESS Group, Inc. (ESS) for the Sweet Hill Farm site (the site) located on East Avenue in Burrillville, Rhode Island. This assessment is based on a review of publicly-available data related to the site as well as the results of a field assessment by ESS scientists on April 13, 2018 and research conducted by Gray & Pape on the history of the property. The goal of this assessment was to evaluate the existing conditions at the site with regard to adjacency to protected open space, wildlife habitat, historical and cultural resources, recreational value, and risk of development, and determine the suitability of the site to satisfy the compensatory wetland mitigation requirements for the Clear River Energy Center (CREC) and Burrillville Interconnection Project (BIP) (collectively, the Project) through land preservation.

Table1 provides a summary of the anticipated project impacts to areas subject to the jurisdiction of the Rhode Island Department of Environmental Management (RIDEM) under the Rhode Island Freshwater Wetlands Act.

Table 1. Anticipated Project Impacts to RIDEM Jurisdictional Areas

	Biological Wetland (acres)			Perimeter Wetland (acres)			100' Riverbank Wetland (acres)			200' Riverbank Wetland (acres)			100-Year Floodplain (acres)			Intermittent Stream (linear ft)		
	P	**T**	**C**	**P**	**T**	**C**	**P**	**T**	**C**	**P**	**T**	**C**	**P**	**T**	**C**	**P**	**T**	**C**
CREC	0.5	0.37	0	1.15	1.08	0	0.5	0	0	0.03	0.03	0	0.13	0	0	136	0	0
BIP	0.24	8.36	6.69	4.08	1.98	3.26	0.47	0.34	0.72	0.71	0.02	0.10	0.49	0.02	0.26	0	0.01	0
Total	**0.74**	**8.73**	**6.69**	**5.23**	**3.06**	**3.26**	**0.97**	**0.34**	**0.72**	**0.74**	**0.05**	**0.1**	**0.62**	**0.02**	**0.26**	**136**	**0**	**0**

P = permanent impacts, T = temporary impacts, C = habitat conversion

Table 2 provides a summary of the anticipated direct and secondary project impacts to areas subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act, as well as guidance on approximate mitigation requirements based on the USACE *New England District Compensatory Mitigation Guidance*.

Table 2. Anticipated Project Impacts to USACE Jurisdictional Areas and Approximate Mitigation Requirements

	Project Impact (sq ft)	Compensatory Mitigation Multipliers			Mitigation Obligation (sq ft)	
		Restoration	Preservation	% of Standard Amount	Restoration	Preservation
Direct Permanent Impacts						
PEM	383	2	20	-	766	7,660
PSS	266	2	20	-	532	5,320
PFO	31,075	3	20	-	93,225	621,500
Temporary/Secondary Impacts						
Temporary fill in PFO (will revert to PFO)	166,714	0.45	3	15	75,021	500,142
Temporary fill in PEM (will revert to PEM)	10,507	0.1	1	5	20,347	203,467
Temporary fill in PSS (will revert to PSS)	203,467	0.2	2	10	40,693.40	406,934
Permanent conversion of PFO to PEM	-	0.9	6	30	-	-
Permanent conversion of PFO to PSS	294,101	0.45	3	15	132,345	882,303
Permanent conversion of PSS to PEM	4	0.3	3	15	1	12
Removal of PFO for new corridor	-	-	-	-	-	-
Edge effect - high level impact zone - PEM (25')	13,353	0.5	5	25	6,677	66,765
Edge effect - high level impact zone - PSS (50')	77,291	0.5	5	25	38,646	386,455
Edge effect - high level impact zone - PFO (50')	244,282	0.75	5	25	183,212	1,221,410
Edge effect - remainder of impact zone - PEM (50')	48,315	0.2	2	10	9,663	96,630
Edge effect - remainder of impact zone - PSS (50')	135,526	0.2	2	10	27,105	271,052
Edge effect - remainder of impact zone - PFO (100')	1,018,140	0.3	2	10	305,442	2,036,280
				Total PEM	37,452	374,522
				Total PSS	106,977	1,069,773
				Total PFO	789,245	5,261,635
				Grand Total	**933,675**	**6,705,930**
				Grand Total (ac)	**21.4**	**153.9**

GENERAL SITE INFORMATION

The Sweet Hill Farm site (Assessor's plat 144, lot 19) is an approximately 148-acre privately-owned parcel located on East Avenue (RI-107) in the Town of Burrillville, Rhode Island (Figure 1). The parcel is located in the eastern-central portion of the town, just east of the village of Harrisville. The site is primarily forested and is located adjacent to the state-owned Black Hut Management Area. An approximately 725-foot gravel road identified as Liston Lane is located in the south-central portion of the site off of East Avenue and provides access to four residential properties bounded on all sides by the site. Elevations at the site range from approximately 344 feet to approximately 523 feet above sea level (ASL).

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The site is located adjacent to the Black Hut Management Area, an 1,853-acre tract of state-owned conservation land in the Town of Burrillville. Black Hut Management Area is managed by the RIDEM Division of Fish and Wildlife and is generally bounded to the north by West Ironstone Road, to the northeast by Douglas Turnpike, to the east by Joslin Road, to the southeast by Broncos Highway, to the south by East Avenue, and to the west by Cherry Farm Road (Figure 2). The Sweet Hill Farm site represents the single largest unprotected parcel adjacent to Black Hut Management Area within the bounds of these roadways. The entirety of the site's eastern, northern, and portions of the western boundary abut Black Hut Management Area for a total linear distance of approximately 9,400 feet (1.78 miles). The DEM has, in the past, expressed interest in acquiring this parcel to supplement existing public lands in the northwestern corner of the state and to close a noticeable gap in contiguous property associated with the Black Hut Management Area. In 2011, DEM acquired 105 acres of land to add to the Management Area.

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Urban/Suburban Built	2.4	1.6%
Forested Swamp**	1.5	1.0%

**ESS has determined based on the field assessment of the site that the area mapped as "tree plantation" is white pine forest.*

***This number reflects the area of forested wetland on the site based on publicly-available geospatial data, not the results of a site-specific wetland delineation. See the next sub-heading for additional information regarding wetlands at the site.*

Wetlands, Waterways, and Vernal Pools

Wetlands at the site were delineated in the field by Natural Resource Service, Inc. at some point prior to 2004 (Figure 4). The wetland delineation indicates the presence of forested wetland habitats in the southern, eastern, and central portions of the site, some of which border low-gradient intermittent streams which flow off the site to the east. ESS generally confirmed the location of delineated wetland areas at the site during the field assessment in April 2018. Approximately 19 acres of forested wetlands were delineated at the site, representing approximately 12.8% of the total site acreage. An additional approximately 13 acres of perimeter wetland are associated with the delineated wetlands greater than three acres in size at the site as shown on Figure 4. Riverbank wetlands are also present at the site.

The United States Army Corps of Engineers Highway Methodology recognizes five functions and eight values that can be provided by wetlands. A wetland may be suitable for some or all of the functions and values, and some of these may be principal functions and values if they are an important component and/or are considered of special value. Wetlands at the site currently provide the following functions and values: groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, and wildlife habitat. If the site were permanently protected with a conservation easement and opened to public recreational use, wetlands at the site may also provide recreation, educational/scientific value, and visual quality/aesthetics. Currently, insufficient information exists to determine whether wetlands at the site may provide uniqueness/heritage or threatened or endangered species habitat. Wetlands at the site do not provide important fish and shellfish habitat due to the lack of significant surface waters.

ESS used the Massachusetts Natural Heritage and Endangered Species Program's (NHESP) *Guidelines for the Certification of Vernal Pool Habitat* to identify vernal pools at the site (Rhode Island has no established guidelines for identifying vernal pools). Under the NHESP guidelines, vernal pools may be certified in one of two ways: 1) by documenting the presence of obligate species breeding activity and that the pool lacks a permanently flowing outlet, or 2) by documenting the presence of facultative species, an absence of established fish population, and that the pool lacks a permanently flowing outlet. Using these criteria, ESS identified at least three vernal pools (special aquatic sites) on the property during the field assessment in April 2018 (Figure 4). One small vernal pool was located in a pine/hemlock grove

near the southeastern corner of the site near East Avenue; approximately ten wood frog (*Lithobates sylvaticus*) egg masses were identified in this vernal pool. A second, large vernal pool located in mixed forest habitat was identified near the northeastern corner of the site. Approximately 20 wood frog and approximately 12 spotted salamander (*Ambystoma maculatum*) egg masses were identified in this vernal pool, and wood frogs were heard vocalizing in and around the vernal pool. A third vernal pool was identified in the southern portion of the site, northwest of the residential properties on East Avenue. Multiple wood frog and spotted salamander egg masses were identified in this vernal pool, and wood frogs were heard vocalizing in and around the pool. At least one additional vernal pool may be located in this vicinity, as wood frogs were also heard vocalizing to the east from this location.

Vegetation

The primary vegetative communities on the site are forested upland (including deciduous forest, coniferous forest, and mixed deciduous/coniferous forest), deciduous forested wetland, and to a lesser extent, early successional meadow/shrubland. Primary plant species documented in the forested upland habitats at the site include: white pine (*Pinus strobus*), white oak (*Quercus alba*), red maple (*Acer rubrum*), pitch pine (*Pinus rigida*), chestnut oak (*Quercus montana*), eastern hemlock (*Tsuga canadensis*), gray birch (*Betula populifolia*), sassafras (*Sassafras albidum*), witch hazel (*Hamamelis virginiana*), mountain laurel (*Kalmia latifolia*), sweet pepperbush (*Clethra alnifolia*), lowbush blueberry (*Vaccinium angustifolium*), sheep laurel (*Kalmia angustifolia*), shrub honeysuckle (*Lonicera* sp.), multiflora rose (*Rosa multiflora*), greenbrier (*Smilax rotundifolia*), and fox grape (*Vitis labrusca*). Primary plant species observed within forested wetland habitats include: red maple, gray birch, sweet pepperbush, highbush blueberry (*Vaccinium corymbosum*), and sensitive fern (*Onoclea sensibilis*). Species observed in the early successional habitats located in the southeastern portion of the site include: eastern red cedar (*Juniperus virginiana*), white pine, red maple, gray birch, domestic apple (*Malus* sp.), multiflora rose, shrub honeysuckle, dogwood (*Cornus* sp.), dwarf sumac (*Rhus copallina*), blackberry/raspberry (*Rubus* sp.), Oriental bittersweet (*Celastrus orbiculatus*), steeplebush (*Spiraea tomentosa*), goldenrod (*Solidago* sp.), little bluestem (*Schizachyrium scoparium*), sensitive fern, milkweed (*Asclepias* sp.), mullein (*Verbascum thapsus*), cattail (*Typha* sp.), and soft rush (*Juncus effusus*).

It is important to note that formal botanical surveys at the site have not been conducted, and the species list presented above represents only incidental observations made over the course of one field assessment.

Topography and Soils

Elevations at the site range from approximately 344 feet to approximately 523 feet ASL. The lowest elevations at the site are along East Avenue, and the highest point at the site is located in the northern portion of the property in the vicinity of the historical cemetery. The northwestern portion of the site features relatively steep slopes; topography throughout the remainder of the site is relatively gently-sloping.

According to Natural Resource Conservation Service (NRCS) soils data, soils at the site are primarily stony fine sandy loams with slopes ranging from zero to 35%. Over 85% of the site is comprised of soils in non-hydric the Canton-Charlton complex, which are well-drained upland soils generally well-suited for development. The relatively small Ridgebury, Whitman, and Leicester map unit at the site is the only soil map unit classified as hydric. Soil map units for the site are given in Table 4 and displayed on Figure 5.

Table 4. Rhode Island Soil Survey Soil Map Units

Soil Map Unit	Area (acres)	Percent of Parcel
Canton and Charlton fine sandy loams, very rocky, 3 to 15 percent slopes (CeC)	67.6	45.8%
Canton and Charlton fine sandy loams, 3 to 8 percent slopes (CdB)	24.2	16.4%
Canton and Charlton extremely stony fine sandy loams, 3 to 15 percent slopes (CkC)	19.2	13.0%
Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes (ChB)	13.0	8.8%
Sutton very stony fine sandy loams, 0 to 8 percent slopes (SuB)	10.3	7.0%
Ridgebury, Whitman, and Leicester extremely stony fine sandy loams (Rf)	9.8	6.7%
Canton-Charlton-rock outcrop complex, 15 to 35 percent slopes (CaD)	2.9	1.9%
Hinckley gravelly sandy loam, rolling (HkC)	0.6	0.4%

Other Habitat Features

Approximately 129 acres (88%) of the site is mapped as part of an unfragmented forest block greater than 500 acres in size per the 2015 Rhode Island Wildlife Action Plan (Figure 6). The unfragmented forest block of which the site is a part is approximately 780 acres in size and includes most of Black Hut Management Area and other surrounding lands. Thus, the portion of the unfragmented forest block located on the site represents approximately 16% of the total size of this forest block.

The site is not mapped as a wildlife corridor in the 2015 Rhode Island Wildlife Action Plan, which typically follow major river and stream systems. There are also no mapped Natural Heritage areas present at the site; however as a privately-owned parcel, the presence of a mapped Natural Heritage area would not be expected.

The site is partially located within an area identified by The Nature Conservancy as a corridor allowing for the gradual movement of animal and plant populations in response to changes in climate (Figure 7).

Wildlife Community

Based upon the desktop habitat assessment and subsequent initial site visit, habitats at the site appears to support a wildlife community typical of that of mixed forested sites in southern New England. The variety of habitat types on the property - including forested wetlands, mixed upland forest, high-elevation pine forest, and early successional fields/shrublands - provide the opportunity for a robust wildlife community to persist at the site. Key habitat features were also noted at the site, including multiple vernal pools, snags, tree cavities, wildlife food plants, shrub thickets along streams, large woody debris on the ground, and rock piles and walls. These features provide important habitat components for a variety of bird, mammal, reptile, and amphibian species.

During the site visit on April 13, 2018, ESS documented the presence of 12 bird species at the site: song sparrow (*Melospiza melodia*), American robin (*Turdus migratorius*), American goldfinch (*Spinus tristis*), black-capped chickadee (*Poecile atricapillus*), eastern phoebe (*Sayornis phoebe*), red-bellied

woodpecker (*Melanerpes carolinus*), white-breasted nuthatch (*Sitta carolinensis*), tufted titmouse (*Baeolophus bicolor*), blue jay (*Cyanocitta cristata*), northern flicker (*Colaptes auratus*), hermit thrush (*Catharus guttatus*), and pine warbler (*Setophaga pinus*). Each of these species are relatively common and would be expected to occur at the site based on the habitats present. Pileated woodpecker (*Hylatomus pileatus*), a Rhode Island species of concern, is also likely to occur at the site based on the presence of several distinctive rectangular cavities in snags observed during the field assessment.

Other wildlife species detected directly or indirectly at the site include wood frog, spring peeper (*Pseudacris crucifer*), spotted salamander, white-tailed deer (*Odocoileus virginianus*), and coyote (*Canis latrans*).

It is important to note that formal wildlife surveys at the site have not been conducted, and the species list presented above represents only incidental observations made over the course of one field assessment. In addition, given the date of the site visit the presence of most neotropical migratory bird species would not be expected.

HISTORICAL AND CULTURAL RESOURCES

In addition to the natural resources discussed in the sections above, historical and cultural resources are also located on the Sweet Hill Farm site. Among these are a historical cemetery (Town of Burrillville No. 44) located on the northern part of the property which was used by members of the Ross family from the mid-nineteenth to early twentieth centuries. Other remnants of historical use of the site are also present, including stone walls, a stone building foundation, a former granite quarry, and former road beds.

In 1982, the Rhode Island Historical Preservation Commission (now the Rhode Island Historical Preservation and Heritage Commission [RIHPHC]) recommended “Sweet’s Hill Historic District” on East Avenue as an area meriting consideration for entry into the National Register of Historic Places; however, this historic district was never established.

A 2010 report produced by the RIHPHC and the Blackstone River Valley National Heritage Corridor Commission identifies “Sweet’s Hill Farm” as one of five “priority heritage landscapes” selected by residents of the town in 2010 as:

- highly valued by the community,
- contributing to the character of the community, and
- lacking permanent protection or preservation.

With regard to preserving the Sweet Hill Farm site, the report also states that:

- residents value the undeveloped frontage of the property which lies along a primary travel way between the village of Harrisville and other areas in town
- the site is an important open space resource that features connectivity with Black Hut Management Area and Spring Lake, and many residents would like the site to remain as open space
- the property owner is interested in exploring development options for the site
- RIDEM has expressed interest in acquiring the site but could not reach an agreement with the landowner on purchase price

Historically, the Sweet Hill Farm property links to more than 300 years of family, farming, and business enterprises within the town of Burrillville. The farm is associated with one of the earliest families in town, and with important personages in the town's history. Although the farm has ceased operation and the lands are now reverting to wilderness, the property will continue to reflect this history in the remnants visible on the ground surface of varied pursuits of these family members.

For a more detailed description of the history of the property, see Attachment A.

RECREATIONAL VALUE

As stated above, the Sweet Hill Farm site shares an approximately 1,900-foot (1.78-mile) property boundary with the 1,853-acre Black Hut Management Area. If permanently protected through a conservation restriction and opened to public access as proposed, the site would provide a high degree of recreational value both in its own right and as part of a larger contiguous tract of protected open space. As shown on Figure 8, an extensive network of existing trails provides access throughout the Sweet Hill Farm site. Most of these trails are currently in good to excellent condition and would require minimal maintenance or improvement. The trail network through the site is also connected to the existing public trail system in Black Hut Management Area; there are at least six locations along the property line at which trails cross between the Sweet Hill Farm site and public land. Additionally, as the site has over 3,200 feet (0.60 miles) of frontage on East Avenue, additional parking to provide access to the property could be sited relatively easily.

The site could also function as a valuable educational resource and outdoor classroom for students attending Burrillville High School, which is located across East Avenue less than 1,000 feet (0.20 miles) from the Sweet Hill Farm site. While Black Hut Management Area is also located near the school, the state-owned land currently has no frontage on East Avenue, and the nearest parking area for access to Black Hut is located more than two miles from the high school.

DEVELOPMENT POTENTIAL

It is our understanding that one or more solar energy facility developers have expressed recent interest in acquiring the site from the current landowner. Additionally, an Existing Conditions & Site Analysis plan for the so-called "Sweet Farm Estates" was prepared by DiPrete Engineering Associates, Inc. in 2004. Based on the following factors, development of the site appears to be feasible:

- The wetland delineation conducted at the site indicates that 87% of the site is upland.
- Over 91% of the site is comprised of soil map units considered well-suited for development and installation of septic systems.
- The site also has over 3,200 feet of frontage on East Avenue, which provides ample opportunity for configuring access to a potential internal road system.
- The site has very limited areas of bedrock ledge.
- Groundwater is likely suitable for development of domestic wells.
- The site is zoned as farming/residential. Net-metering solar photovoltaic installations are allowed in all zoning districts in Burrillville (per Article VI, Sec. 30-211 of the Burrillville Zoning Ordinance).

CONCLUSION

Based on the results of this desktop analysis, the Sweet Hill Farm site appears to provide an excellent opportunity for habitat conservation in northwestern Rhode Island, and therefore is likely well-suited as a

preservation parcel to offset the unavoidable impacts from the CREC and BIP Project. The parcel is contiguous with important existing state-managed open space. Based on the 2010 Report prepared by RIHPHC and the Blackstone River Valley National Heritage Corridor Commission, the parcel is highly valued by the town as open space contributing to the character of the community and RIDEM has expressed interest in acquiring the site in the past. Historically, the Sweet Hill Farm property links to more than 300 years of family, farming, and business enterprises within the town of Burrillville. The farm is associated with one of the earliest families in town, and with important personages in the town's history. Without protection, the site does appear to be well-suited (and at-risk) for development.

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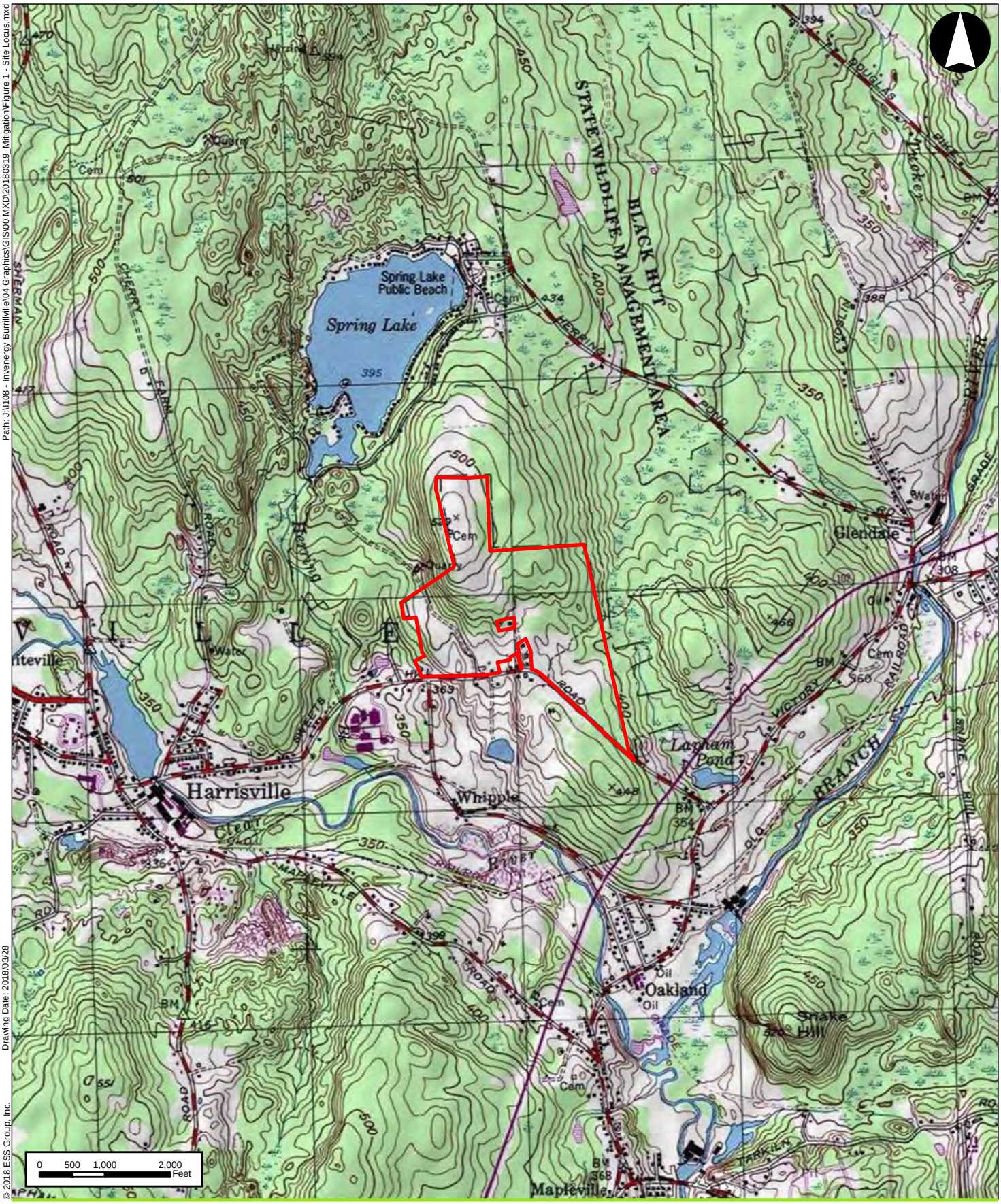
Rhode Island Historical Preservation Commission. 1982. Historic and Architectural Resources of Burrillville, Rhode Island: A Preliminary Report.

Rhode Island Historical Preservation and Heritage Commission and Blackstone River Valley National Heritage Corridor Commission. 2010. Burrillville Reconnaissance Report: Blackstone Valley Heritage Landscape Inventory.

Figures



Path: J:\1108 - Invenergy Burrillville\04 Graphics\GIS\00 MXD\20180319_Mitigation\Figure 1 - Site Locus.mxd

Drawing Date: 2018/03/28

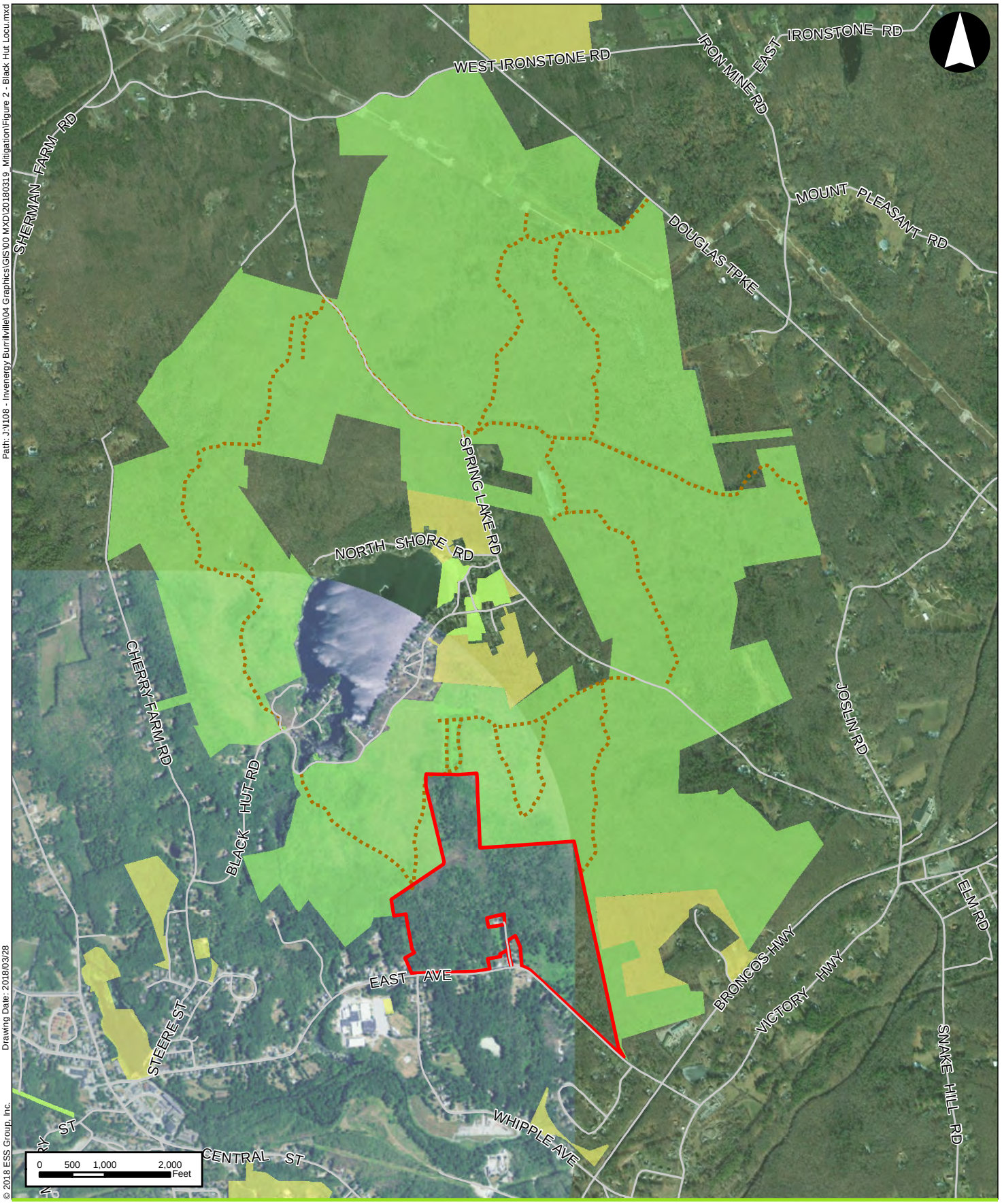
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Source: 1) Town of Burrillville, Parcel Data

Site Locus

Figure 1



Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

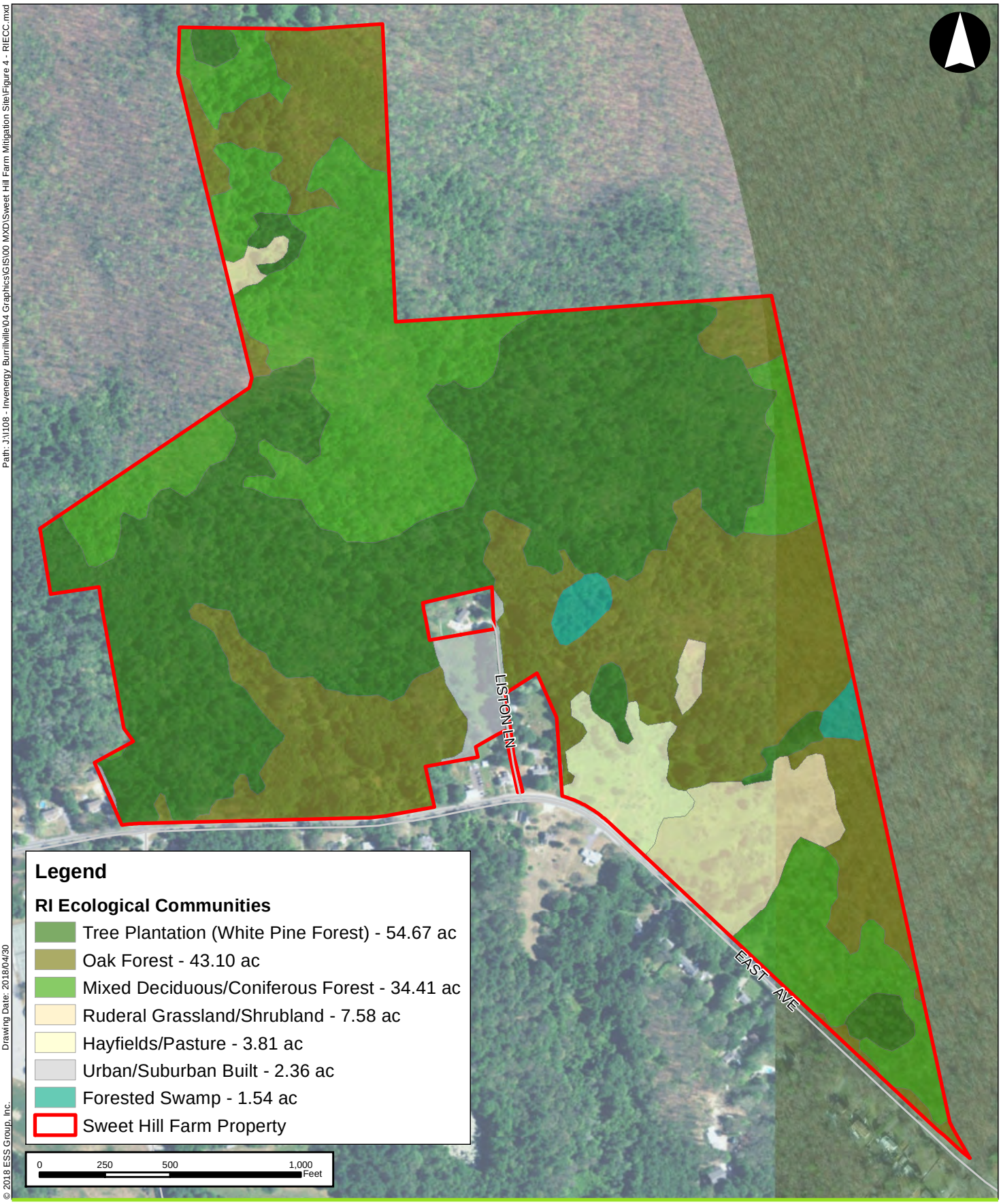
Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Hiking Trails on State Land

Black Hut Management Area Locus

Figure 2



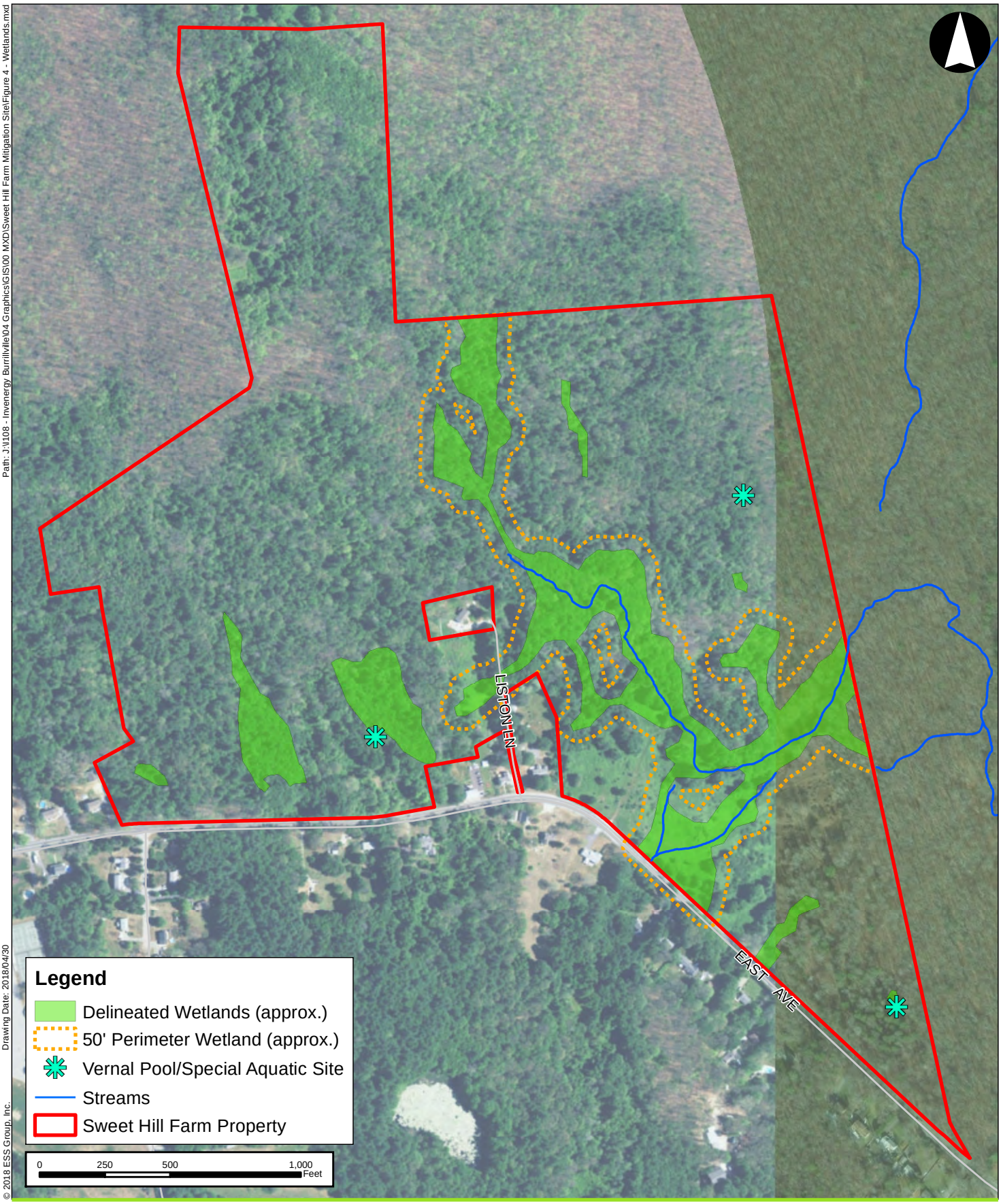
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Rhode Island Ecological Communities Classification

Figure 3

Source: 1) Town of Burrillville, Parcel Data 2) RIECC, RIGIS 2016



ess group
environmental consulting & engineering services

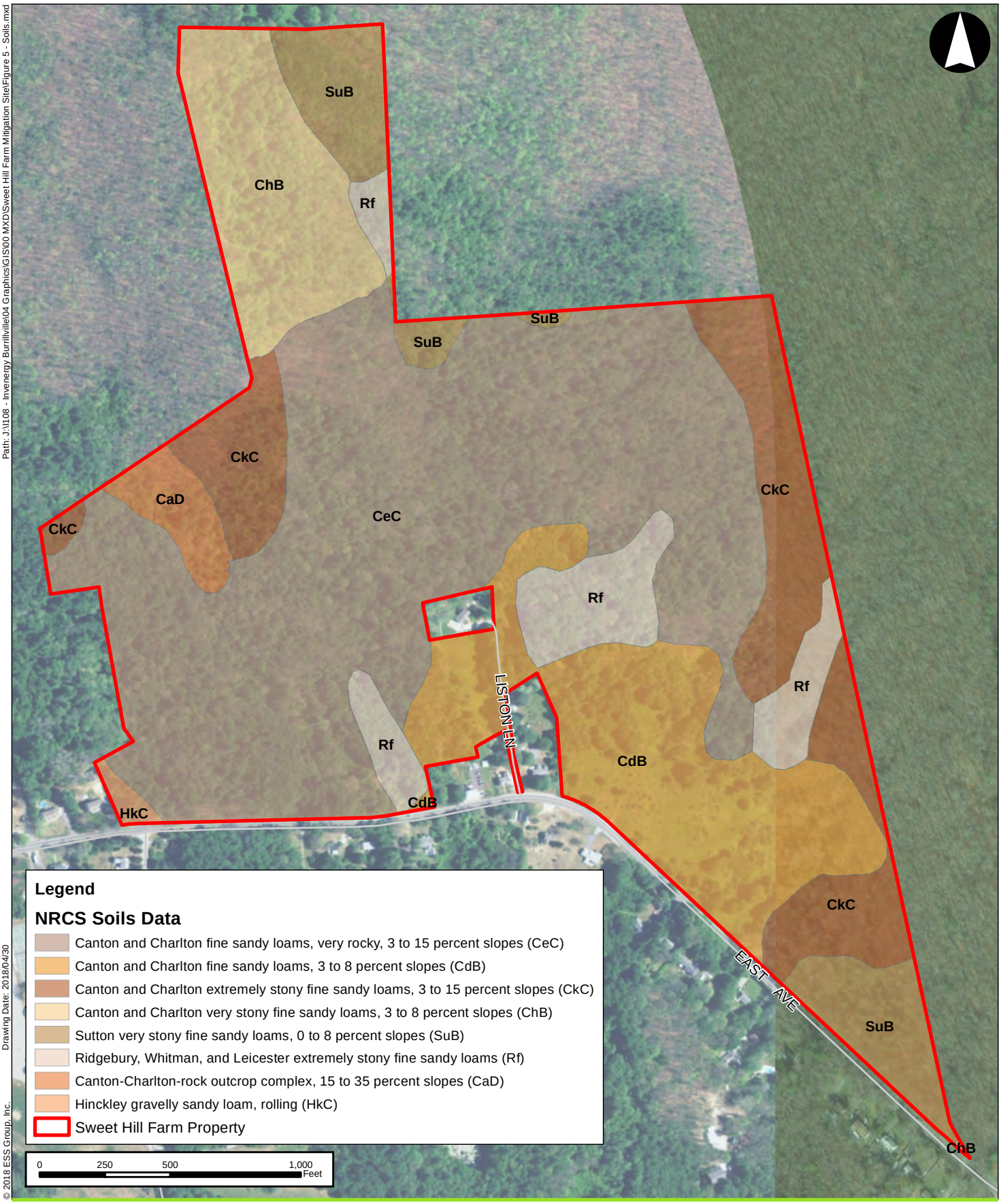
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Wetlands and Streams

Figure 4

Source: 1) Town of Burrillville, Parcel Data 2) Wetlands data geo-referenced from 2004 Existing Conditions Site Plan prepared by DiPrete Engineering Associates, Inc.



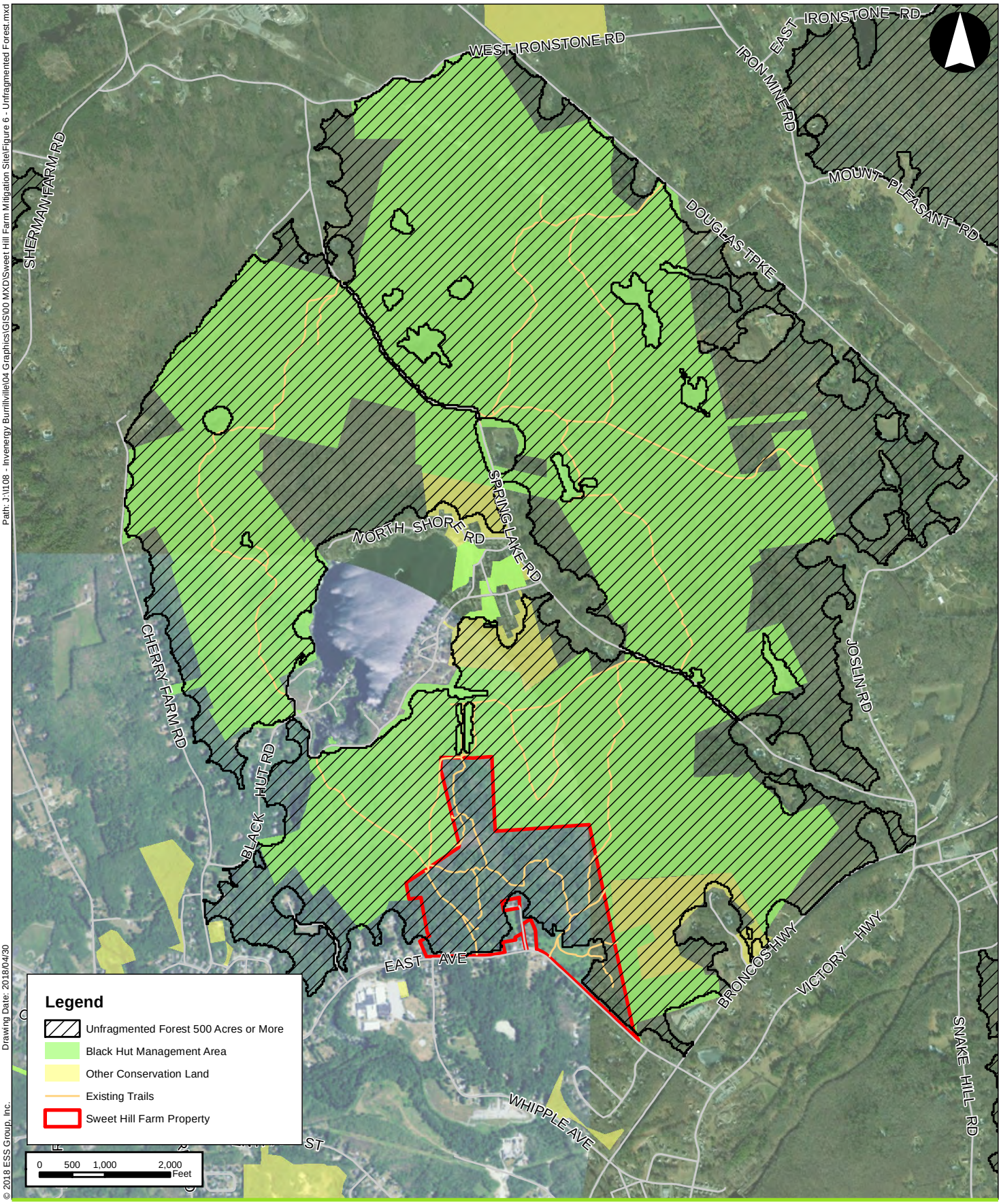
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Soils Map

Figure 5

Source: 1) Town of Burrillville, Parcel Data 2) Soils, NRCS 2010



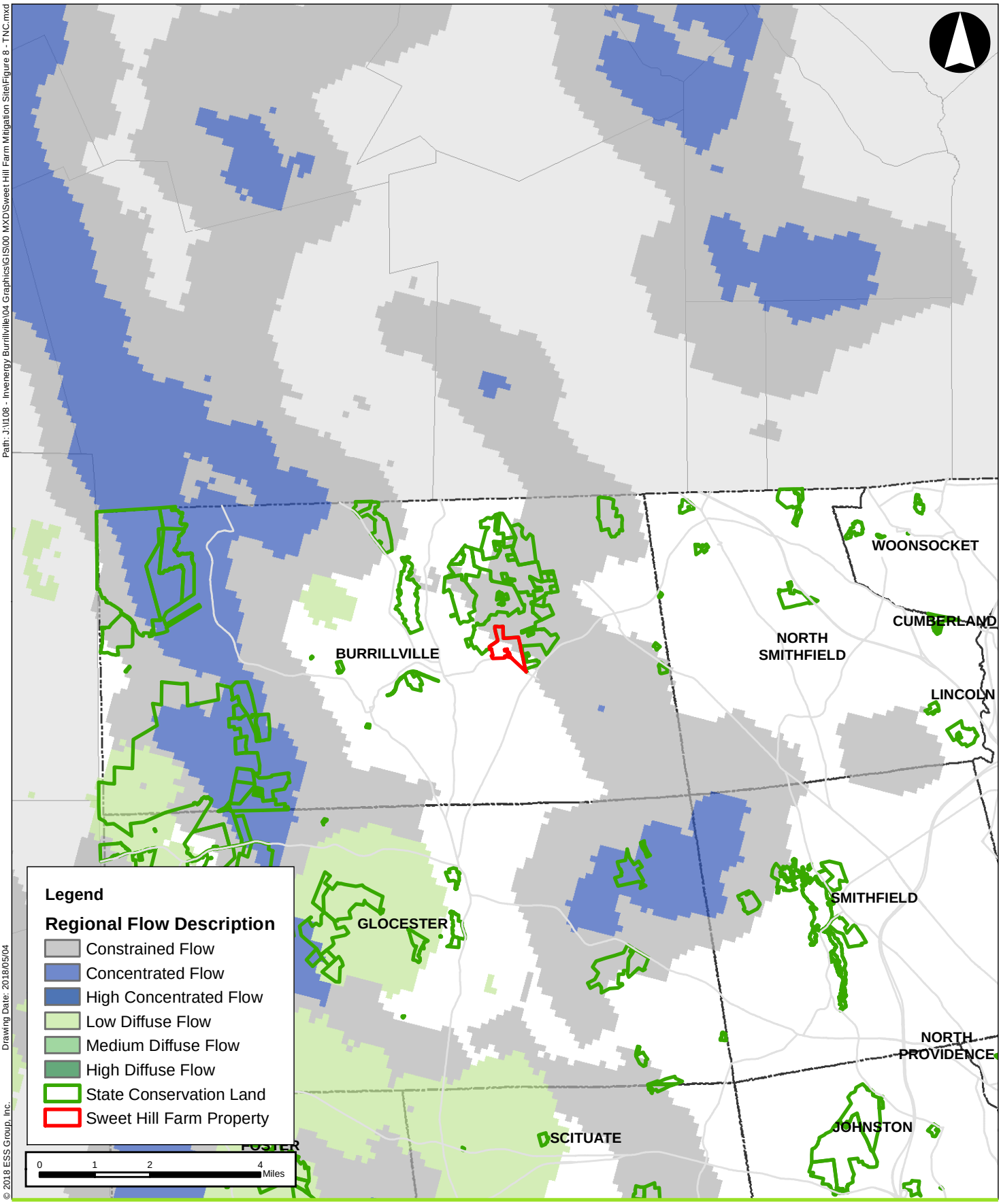
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Unfragmented Forest Blocks Greater than 500 Acres

Figure 6

Source: 1) Town of Burrillville, Parcel Data 2) RIDEM, Forest Data 2016



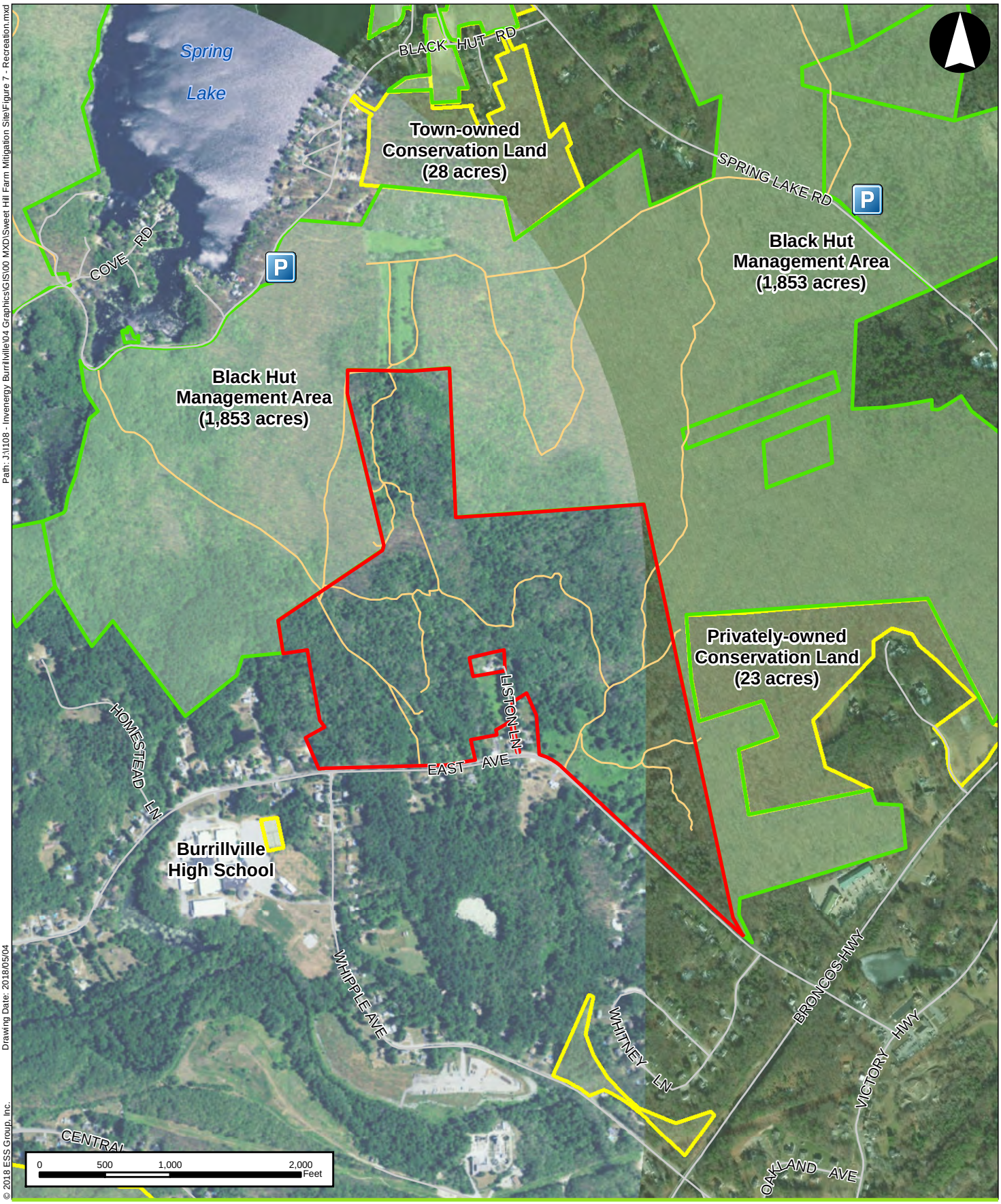
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2 miles

Regional Flow

Figure 7

Source: 1) The Nature Conservancy, Regional Flow Descriptions, 2018



Sweet Hill Farm Property
Burrillville, RI

1 inch = 1,000 feet

Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Existing Trails

Recreational Resources

Figure 8

Photographic Log

Photograph No.: 1
Early successional habitats and emergent mash in the southeastern portion of the property along East Avenue.

Photograph No.: 2
Forested wetland along stream corridor in eastern portion of the property, near the boundary with Black Hut Management Area.

Photograph No.: 3
Vernal pool/special aquatic site located in the northeastern portion of the property.

Photograph No.: 4
Wood frog egg mass in vernal pool located in northeastern portion of the property.

Photograph No.: 5
Trail and stone wall located in the north-central portion of the property.

Photograph No.: 6
Historical cemetery located in the northern portion of the property.

Photograph No.: 7
Forested wetland and vernal pool/special aquatic site located in the southwestern portion of the property.

Photograph No.: 8
Trail through mixed deciduous/coniferous forest in western portion of the property.

Attachment A

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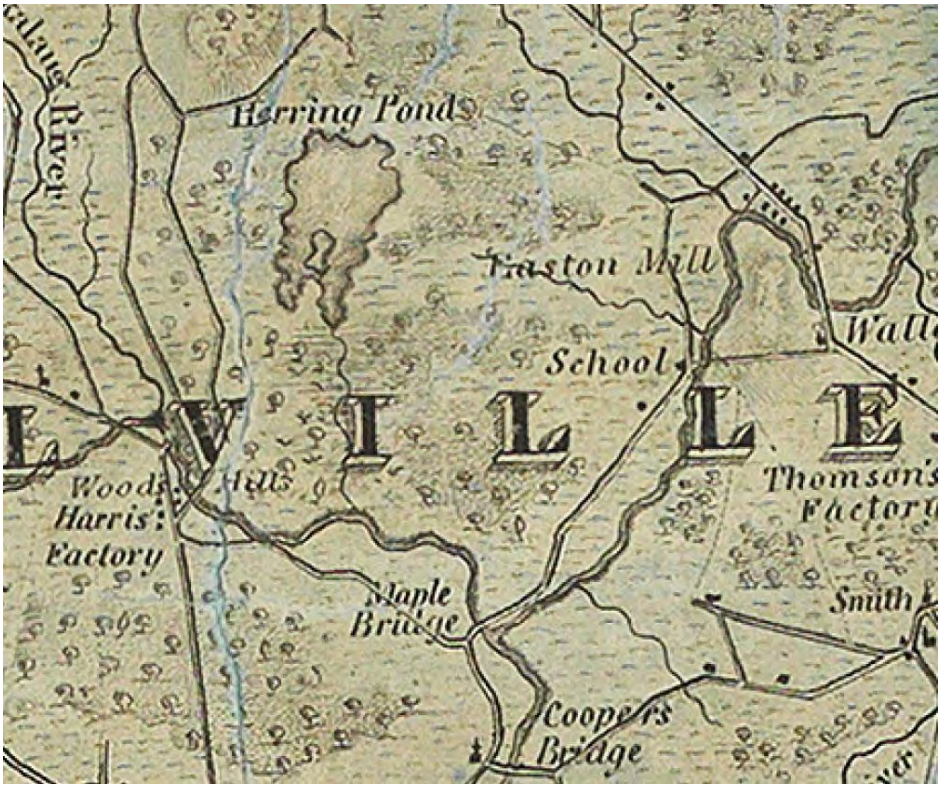
A Brief History of Sweet's Hill Farm
Burrillville, Rhode Island

History of Burrillville

What is now Burrillville lies within traditional Nipmuc Native American tribal homelands. The Nipmuc inhabited much of central Massachusetts, northern Rhode Island, and northeastern Connecticut, neighbors of the Wampanoag to the east and the Narragansett to the south. Divisions among and between these Native groups was fluid, and was not as clearly defined as is often represented in the division of New England Natives into formal "tribes." The Pascoag Indians, probably a subgroup of the Nipmuc, may have been present in the Burrillville area (Bayles 1891: 551), but some dispute exists as to whether or not they were a real entity and to which tribe they belonged (Rider 1904: 231–232). There is little information about the location of Native villages in the Burrillville area, and no specific archaeological sites related to Native Americans have been found in the Sweet's Hill area (RIHPHC site files).

Burrillville was part of the Providence Plantations that were obtained by treaty from the Narragansett in 1638. The northwestern part of Rode Island was referred to as the "Outlands" or the "Providence Woods" while the population of the colony was confined to the headwaters of Narragansett Bay during those first several decades of settlement. The first European settler in the area was probably John Smith, who reportedly moved to the Tarkiln area in 1674, and brought additional friends and family to the southeastern part of what is now Burrillville into the early eighteenth century (Bayles 1891: 551). By 1731, the Outlands had a high enough population to create several towns out of the northwestern portion of Providence County, and Burrillville was first part of the new town of Glocester. Throughout the eighteenth century, family based farming was the dominant way of life. By the mid to late eighteenth century, water powered mills were in operation, including in Pascoag, Wallum Lake, and Glendale. Village centers arose around these mills, and roads were improved between the villages. In 1806, Burrillville was separated from Glocester.



Stevens 1831 Map of Burrillville, Rhode Island

During the nineteenth century, the population of Burrillville increased dramatically, primarily as the result of immigrants arriving to work in the mills. This included first Irish then

French Canadians, with the population reaching over 6,000 in 1900. During the seventeenth and eighteenth century, the first known settlement of Sweet's Hill took place, detailed below.

1878 Engraving of Mathewson and Sweet Residences, Burrillville

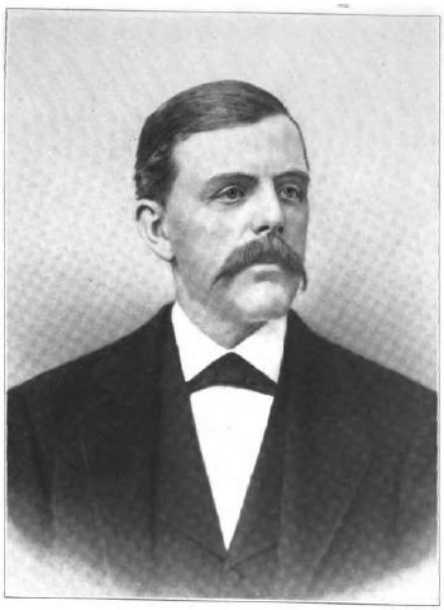
Ownership of Sweet's Hill Farm

The area of Sweet's Hill was originally settled and farmed by the Mathewson family, in the late seventeenth or early eighteenth century. Daniel Mathewson (1683-1751) was apparently the first of the family to move to the area, taking up a large tract of land in what is now North Smithfield and Burrillville acquired by his father James Mathewson (1624-1682), who was in Providence by 1658 (Beers 1908: III: 1110). Daniel's son Peregrine Mathewson (1707-1789) then took up the farm, as did his son John Mathewson (1746-1835), and his grandson Welcome Mathewson (1778-1872). Welcome's daughter Mary Ann Mathewson (1808-1886) married Henry Sweet (1812-1879) in 1833. This couple had five children, including Thomas Henry Sweet (1838-1924) and Albert Erastus Sweet (1841-1929), who ran the farm in the late nineteenth century and into the twentieth century, with the help of a nephew Irving Henry Sweet (1870-1949) and later his son Liston Bartlett Sweet (1895-1958).

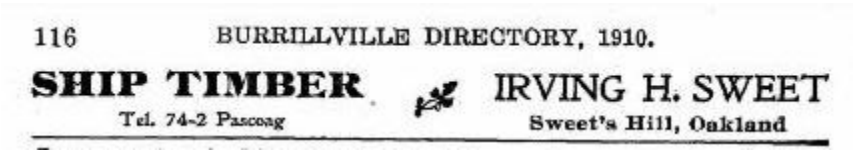
Welcome Mathewson items, featured on Antiques Roadshow, 2012

As was typical of many large farms in the eighteenth and nineteenth centuries, the Mathewson and Sweet farms were largely self sufficient enterprises that involved many different pursuits. Welcome Mathewson was a blacksmith and well known

gunmaker as well as a farmer. Henry Sweet was a blacksmith and machinist who built and installed engines in mills and mines across the Northeast and as far as Cuba. Thomas Henry Sweet was first a meat dealer with his brother Albert, later adding a dairy, the products of which were sold widely across the county in the late nineteenth century. Irving Sweet was a lumber dealer as well as a farmer (Beers 1908: 1532-1534).



Thomas H Sweet



There were many barns and outbuildings on the property, and family members built houses to replace earlier structures, or for their children. There were also roads across the large property, running towards Herring Pond to the northwest, and Herring Pond Road to the north. Historic maps also show a small family cemetery (Burrillville Cemetery #44) on the highest part of the hill, north of East Avenue. A quarry in the west side of Sweet's Hill is also indicated, southeast of Herring Pond.

Some facts related to the people who lived on the property, and the property itself:

- Some early members of the Mathewson family are buried in Burrillville Cemetery #24, on the south side of East Avenue, southeast of Sweet's Hill.
- Additional Mathewsons and some Sweets (including Henry Sweet) are buried in Burrillville Cemetery #23, on the south side of East Avenue, south of Sweet's Hill.
- At its height, the Mathewson/Sweet farm occupied over 1,000 acres.
- The property was known as Sweet's Hill Farm and later as Indian Acres Dairy when it was owned by Liston Bartlett Sweet, and East Avenue was earlier known as Mathewson Avenue and later as Sweets Hill Road.
- No standing agricultural buildings remain on the property; three farmhouses front on East Avenue, but are on separate parcels from the ca. 150 acre remaining farm property
- For a long time, the oldest structure related to the farm was the Welcome Mathewson House (built ca. 1780), but it fell into disrepair and was demolished in the early 1990s

Albert E. Sweet/Indian Acres House, ca. 1880

- The J. & E. Mathewson/Henry Sweet House dates from the mid-nineteenth century
- The Albert E. Sweet /Indian Acres House dates from c. 1880
- The Rhode Island Historical Preservation Commission recommended the establishment of a Sweet's Hill Historic District on East Avenue in a 1982 review of the historical resources of the town of Burrillville (RIHPC 1982), and listed the farm as a Priority Heritage Landscape in its 2010 report (RIHPHC 2010). The historic district was never established.

1796 Map of Burrillville (Carey 1796)

1823 Map of Burrillville (Lucas 1823)

Mapping Discussion

Early maps of Rhode Island date from the late eighteenth century, detailing the town of Glocester, and including what is now Burrillville. These early maps provide little in the way of detail, including only the major topographic features, such as rivers and ponds (as in Carey 1796, Lewis 1804). By the 1820s, the largest roads are indicated, as well as village centers (Lucas 1823; Finley 1827). As of the 1830s, still only select buildings are indicated, such as mills, schools, and churches, but there was no comprehensive inclusion of dwellings (Stevens 1831; Bradford 1838). These early maps show the location of Herring Pond and its relation to the Branch River, but none of the streets in the Sweet's Hill Farm area.

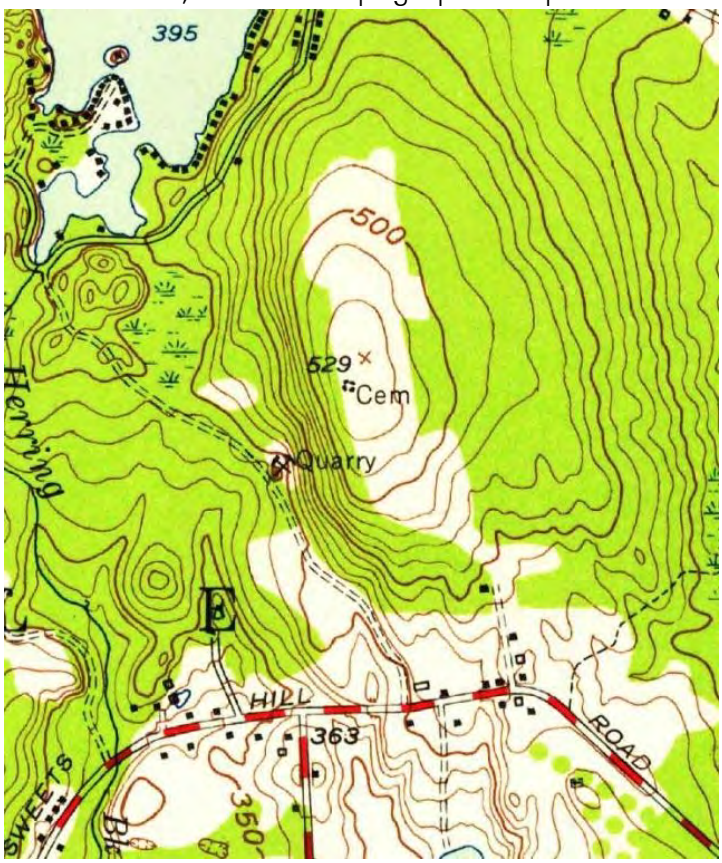
By the 1850s, maps have become detailed enough to include all major streets, houses and some landowner names. The Walling map of 1855 shows what is now East Avenue, W. Matthewson, H. Sweet, and J.&E. Matthewson along the north side of the street. The same level of detail is shown on the Beers 1870 map, with W. Mathewson, T.H. Sweet, and E.

1855 Map of Burrillville (Walling 1855)

Mathewson shown on the north side of East Avenue. No mapping of any structures at the Sweet's Hill Farm or any other roadways off of East Avenue to the north are shown.

The earliest more detailed maps of Burrillville date to the 1890s. These maps include the first USGS topographic maps of the Burrillville quadrangle dating from 1894 (USGS 1894), as well as more precise road maps (Everts & Richards 1895). Unfortunately, these earliest of the topographic maps were drawn at 1:62,500 scale, and did not include all structures. The Everts & Richards map shows houses and outbuildings along East Avenue, including a complex of structures associated with the T.H. & A.E. Sweet farm, and a T.H. Sweet house further north, just east of the south end of Herring Pond, near the cemetery.

The first map found showing most details within the Sweet property is the Chepachet 1:31,680 scale topographic map of 1943



1957 Map of Burrillville (USGS 1957)

1895 Map of Burrillville (Everts & Richards 1895)

(USGS 1943). This map shows houses along Sweets Hill Road, and two roads running north through the property, one towards the southern end of Herring Pond, and one up to the top of Sweets Hill. There are also map symbols for the cemetery and a quarry on the west side of the hill. By 1957, the eastern road no longer goes through to the cemetery. No changes are visible on the 1966 or 1976 editions, but on the 1988 edition, the high school has been constructed on the south side of East Avenue (USGS 1957, 1966, 1976, 1988). The earliest aerial photograph found dates from 1963, at which time a number of fields along East Avenue and to its north are open land, but by 1970 several of these fields are growing over, and by 1995, much of the open land was reclaimed by forest.

Thomas Sweet home, late 1800s, with windmill and barn on top of Sweet's Hill.
Burrillville Historical & Preservation Society collection

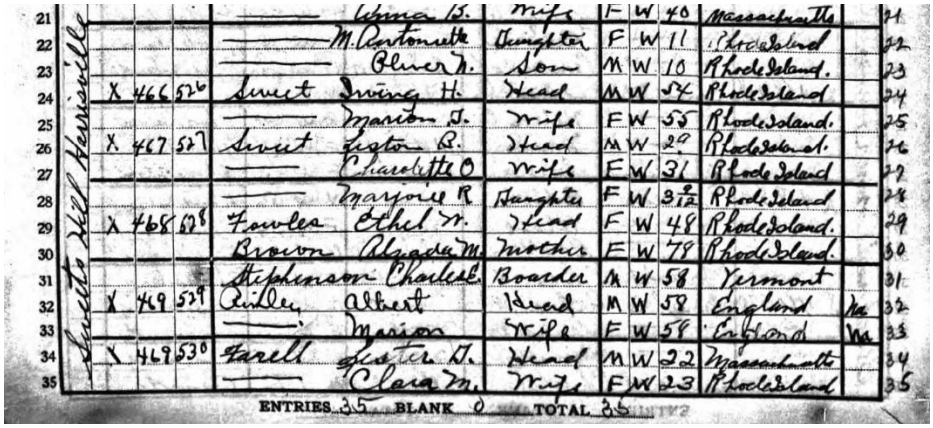
Land Use History

The property was native forest for the thousands of years following the retreat of the last glaciers through its occupation or occasional use by Native Americans. Although there are no recorded Native American sites on the property, this may well because it has not yet been explored for such sites. Sometime probably in the early eighteenth century, the Mathewson family began clearing the woods for use as farmland, and the first houses were built on the property. Over the next hundred years, the open farmland was increased, and the property fully explored for its various resources. Stone fences, barns, privies, paddocks, wells and other structures were built on the property across several generations of the family. In the early 1800s, as transportation improvements were made, several quarries were operated around Herring Pond. These quarries were primarily for granite used in building construction in Providence and for the railroads that were built across the state in the ensuing decades (Bayles 1891), and included one on the west side of Sweet's Hill. The northern part of the property was owned separately by the Ross family, only being incorporated into the Sweet Farm towards the end of the nineteenth century.

Haying on Sweet's Hill, late 1800s
Burrillville Historical & Preservation Society collection

Family farming continued to be the main pursuit on the property into the twentieth century, although we know

various family members had secondary pursuits, such as blacksmithing, meat and lumber sales, and commercial dairying. During the early twentieth century, the farm became known as Indian Acres Dairy, mainly under the auspices of Liston Sweet. By the mid-twentieth century, the farm began to wind down. After ca. 1958, when Liston Sweet died, the farm seems to have ceased operation, and the fields became fallow. Portions of the property were sold in pieces over much of the twentieth century, reducing the remaining property to approximately 150 acres.



1925 Rhode Island State Census, Liston B. Sweet and family on Sweets Hill Road, Burrillville

The property is expected to contain many remnants of agricultural use, as detailed above. The most obvious remnants to be observed are stone walls lining former fields, house and barn foundations, abandoned agricultural equipment, and old roadways. In the area of former houses, evidence of wells, privies garden beds, and trash middens may also be found. Evidence of specialty use is also expected on the property, including the quarry but also blacksmithing and lumber work areas.

Historically, the Sweet's Hill Farm property links to more than 300 years of family, farming, and business enterprises within the town of Burrillville. The farm is associated with one of the earliest families in town, and with important personages in the town's history. Although the farm has ceased operation and the lands are now reverting to wilderness, the property will continue to reflect this history in the remnants visible on the ground surface of varied pursuits of these family members.

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Compensatory Mitigation Plan

Clear River Energy Center & Burrillville Interconnection Project

Burrillville, Rhode Island

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The Narragansett Electric Company d/b/a/ National Grid
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ESS Project No. I108-013
Corps File No. NAE-2016-00505
RIDEM Application No. 17-0079

June 11, 2018

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EXECUTIVE SUMMARY

The project proponent intends to satisfy the project's mitigation requirement primarily through the preservation of the Sweet Hill Farm mitigation site. Restoration of the CREC construction staging area and implementation of construction-phase BMPs are also expected to help offset unavoidable project-related wetland impacts. In providing compensatory mitigation, the overall goal is to provide no net loss of existing wetland functional values and statutory interests within the affected watersheds through the preservation, restoration, enhancement, and/or creation of wetlands. As stated in Table 1, the project is expected to result in the placement of permanent fill in approximately 1.11 acres of jurisdictional wetlands, the placement of temporary fill in approximately 8.36 acres of jurisdictional wetlands, and the conversion of approximately 6.75 acres of jurisdictional wetland to another cover type. Approximately 19 acres of jurisdictional wetlands are present on the Sweet Hill Farm site. Therefore, preservation of the Sweet Hill Farm site, along with the reforestation of the staging areas and implementation of construction-phase BMPs, is expected to compensate for unavoidable wetland impacts resulting from the proposed project.

1.0 INTRODUCTION

The current proposed footprint of the Clear River Energy Center (CREC) Facility and Burrillville Interconnection Project (BIP) have been designed and sited to avoid and minimize impacts to wetland resources to the extent practicable. It is anticipated that additional opportunities to further reduce project-related wetland impacts will arise as the project design advances. Despite these measures, some project activities will be located within wetlands and result in permanent, temporary and secondary impacts to state and federally-regulated wetlands. Federal jurisdiction is pursuant to Waters of the United States (i.e., those regulated under Sections 401 and 404 of the Federal Clean Water Act (CWA") – 33 U.S.C. § 1341 and 33 U.S.C. § 1344). In addition to the CWA, the project is subject to Rhode Island Fresh Water Wetlands Act Rules and Regulations. In order to offset environmental impacts, appropriate compensatory mitigation (in collaborative consultation with state, and federal agencies) will be provided as a component of the final project.

Table 1 provides a summary of the anticipated direct and secondary project impacts to areas subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under Section 404 of the CWA, as well as guidance on approximate mitigation requirements based on the USACE *New England District Compensatory Mitigation Guidance*.

Table 1. Anticipated Project Impacts to USACE Jurisdictional Areas and Anticipated Mitigation Requirements

	Project Impact (sq ft)	Compensatory Mitigation Multipliers			Mitigation Type (sq ft)	
		Restoration Ratio	Preservation Ratio	% of Standard Amount	Restoration	Preservation
Direct Permanent Impacts						
PEM	383	2	20	-	766	7,660
PSS	266	2	20	-	532	5,320
PFO	47,628	3	20	-	142,884	952,560
Temporary/Secondary Impacts						
Temporary fill in PFO (will revert to PFO)	150,161	0.45	3	15	67,572	450,483
Temporary fill in PEM (will revert to PEM)	10,507	0.1	1	5	20,347	203,467
Temporary fill in PSS (will revert to PSS)	203,467	0.2	2	10	40,693.40	406,934
Permanent conversion of PFO to PEM	-	0.9	6	30	-	-
Permanent conversion of PFO to PSS	294,101	0.45	3	15	132,345	882,303
Permanent conversion of PSS to PEM	4	0.3	3	15	1	12
Removal of PFO for new corridor	-				-	-
Edge effect - high level impact zone - PEM (25')	13,353	0.5	5	25	6,677	66,765
Edge effect - high level impact zone - PSS (50')	77,291	0.5	5	25	38,646	386,455
Edge effect - high level impact zone - PFO (50')	354,084	0.75	5	25	265,563	1,770,420
Edge effect - remainder of impact zone - PEM (50')	48,315	0.2	2	10	9,663	96,630
Edge effect - remainder of impact zone - PSS (50')	135,526	0.2	2	10	27,105	271,052
Edge effect - remainder of impact zone - PFO (100')	1,257,850	0.3	2	10	377,355	2,515,700
				Total PEM	37,452	374,522
				Total PSS	106,977	1,069,773
				Total PFO	985,720	6,571,466
				Grand Total	**1,130,149**	**8,015,761**
				Grand Total (ac)	**25.9**	**184**[1]

PEM = palustrine emergent wetland, PSS = palustrine scrub-shrub wetland, PFO = palustrine forested wetland

[1]Note that impacts to wetlands within the construction staging area are considered permanent by the USACE and temporary by RIDEM. As a temporary impact, the mitigation total for preservation would be substantially lower (154 acres). The New England District has developed standard compensatory mitigation ratios, here expressed as multipliers, to serve as a starting point for developing adequate compensatory mitigation. These multipliers provide guidance for the New England District and are not intended to represent a regulatory threshold, and are not intended to be enforceable against the Army Corps of Engineers by third parties.

Table 2 provides a summary of the anticipated project impacts to areas subject to the jurisdiction of the Rhode Island Department of Environmental Management (RIDEM) under the Rhode Island Fresh Water Wetlands Act.

Table 2. Anticipated Project Impacts to RIDEM Jurisdictional Areas

	Biological Wetland (acres)			Perimeter Wetland (acres)			100' Riverbank Wetland (acres)			200' Riverbank Wetland (acres)			100-Year Floodplain (acres)			Intermittent Stream (linear ft)		
	P	T	C	P	T	C	P	T	C	P	T	C	P	T	C	P	T	C
CREC	0.5	0.37	0	1.15	1.08	0	0.5	0	0	0.03	0.03	0	0.13	0	0	136	0	0
BIP	0.24	8.36	6.69	4.08	1.98	3.26	0.47	0.34	0.72	0.71	0.02	0.10	0.49	0.02	0.26	0	0.01	0
Total	**0.74**	**8.73**	**6.69**	**5.23**	**3.06**	**3.26**	**0.97**	**0.34**	**0.72**	**0.74**	**0.05**	**0.1**	**0.62**	**0.02**	**0.26**	**136**	**0**	**0**

P = permanent impacts, T = temporary impacts, C = habitat conversion

Note that impacts to wetlands within the construction staging area are considered permanent by the USACE and temporary by RIDEM.

Compensatory mitigation of unavoidable direct, indirect and secondary impacts will be required to satisfy regulatory requirements. According to USACE regulations, the fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States (33 CFR 332.3(a)). The criteria for compensatory mitigation are set forth in the USACE's mitigation regulations, the U.S. Environmental Protection Agency's (EPA's) companion CWA regulations (40 CFR 230) and in the USACE's New England District (NED) Compensatory Mitigation Guidance (September 2016). Both the USACE and the EPA have established a national goal of no overall loss of wetland functions, as detailed in the agencies' 1990 Memorandum of Understanding and respective mitigation regulations (33 CFR Parts 325 and 332; 40 CFR 230). The NED Compensatory Mitigation Guidance incorporates these mitigation requirements, as well as those contained in the USACE's Regulatory Guidance Letter No. 08-03: *Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving Restoration, Establishment, and/or Enhancement of Aquatic Resources* (October 10, 2008). While compensatory mitigation guidance is not included in the Rhode Island Fresh Water Wetlands Act Rules and Regulations, it is typically a component of formal applications following similar general goals and objectives

The Final Compensatory Mitigation Rule (33 CFR 332) establishes a preference hierarchy for mitigation options in order to reduce risk and uncertainty and help ensure that the required compensation is provided. The Rule identifies mitigation banks and in-lieu fee program credits as the most preferred options. Permittee-responsible mitigation is the third-most-preferable option and the only option available in Rhode Island due to an absence of approved mitigation banks and in-lieu fee programs. Three scenarios for permittee-responsible mitigation are possible (in order of preference): (1) conducted under a watershed approach, (2) on-site and in-kind, and (3) off-site/out-of-kind.

According to the 2016 NED Compensatory Mitigation Guidance, compensatory mitigation sites should be located to provide the desired water resource functions, taking into consideration factors such as watershed location, aquatic habitat diversity, connectivity, and, for wetlands and streams, a balance of wetlands and uplands. Wetland mitigation can include 1) the restoration or reestablishment of a former wetland, 2) the creation or establishment of a new wetland, 3) the enhancement or rehabilitation of a degraded wetland, or 4) land preservation. Mitigation may be provided in one or more of these forms; however the ratio of impact area to mitigation area required differs between each form. The Final Compensatory Mitigation Rule (33 CFR 332) states, in part: *Preservation may be used to provide compensatory mitigation when the resources to be preserved provide important physical, chemical, or biological functions for the watershed; contribute significantly to the ecological sustainability of the watershed; resources are under threat of destruction or adverse modifications; and when the preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust). Typically, where preservation is used to provide compensatory mitigation, it is done in conjunction with other forms of mitigation.*

In providing compensatory mitigation, the overall goal is to provide no net loss of existing wetland functional values and statutory interests within the affected watersheds through the preservation, restoration, enhancement, and/or creation of wetlands. As detailed in the Compensatory Mitigation Guidance, the NED has developed standard compensatory mitigation ratios to provide a framework for all compensatory mitigation. The compensation ratios focus on direct permanent impacts, with additional mitigation required to address temporary fill impacts and secondary impacts, such as conversion of forested wetlands to scrub-shrub or emergent wetlands. While these ratios are the starting point for

developing appropriate compensatory mitigation, there is flexibility on a project-by-project basis in order to achieve the most appropriate mitigation for a specific project. Prior to recent feedback from the USACE, impacts to wetlands in the staging area were considered temporary. The project's anticipated mitigation recommendation was approximately 154.0 acres for preservation. Classifying impacts to wetlands in the staging area as permanent resulted in an additional 30.0 acres of recommended mitigation as preservation. This is due the recommended mitigation for both direct impacts as well as edge effect (high level and remainder). Based on these revised ratios, the overall anticipated mitigation recommendation for the project has been calculated as 184.0 acres (Table 1). The project proponent intends to satisfy this mitigation requirement primarily through the preservation of the Sweet Hill Farm mitigation site (Section 2.0). Restoration of the CREC construction staging area (Section 3.0) and implementation of construction-phase best management practices (BMPs) (Section 4.0) are also expected to help offset unavoidable project-related wetland impacts.

2.0 SWEET HILL FARM MITIGATION SITE

2.1 Site Selection

The Sweet Hill Farm mitigation site was selected following a comprehensive review of potential preservation parcels within the project watershed and the town of Burrillville (the Sweet Hill Farm site is partially located within the same HUC-12 watershed [Clear River] as the project area). An inventory of potential mitigation sites in Burrillville was generated based primarily on a list of properties of interest to DEM for open space protection at the time of the Interstate Reliability Project. This list was refined to exclude parcels already acquired or otherwise no longer suitable and to add other parcels of potential conservation interest based on a combination of desktop analysis and field reviews. This analysis considered proximity to existing conservation lands, Natural Heritage areas, wildlife corridors, and unfragmented forest among others relevant environmental and habitat variables. The Sweet Hill Farm mitigation site was selected from a list of over 30 parcels based on positive responses to these variables, the size of the parcel relative to the project's anticipated mitigation requirement, the results of a field assessment, and the willingness of the existing landowner to sell the property.

2.2 Existing Conditions

The Sweet Hill Farm site (Assessor's plat 144, lot 19) is an approximately 150-acre privately-owned parcel located on East Avenue (RI-107) in the Town of Burrillville, Rhode Island (Figure 1). The parcel is located in the eastern-central portion of the town, just east of the village of Harrisville. The site is primarily comprised of a mix of upland and wetland forest and is located adjacent to the state-owned Black Hut Management Area. An approximately 725-foot gravel road identified as Liston Lane is located in the south-central portion of the site off of East Avenue and provides access to four residential properties bounded on all sides by the site. Elevations at the site range from approximately 344 feet to approximately 523 feet above sea level (ASL). The following sections will describe the existing conditions at the Sweet Hill Farm site.

2.2.1 Adjacency to Protected Open Space

The site is located adjacent to the Black Hut Management Area, an 1,853-acre tract of state-owned conservation land in the Town of Burrillville. Black Hut Management Area is managed by the RIDEM Division of Fish and Wildlife and is generally bounded to the north by West Ironstone Road, to the northeast by Douglas Turnpike, to the east by Joslin Road, to the southeast by Broncos Highway, to the south by East Avenue, and to the west by Cherry Farm Road (Figure 2). The Sweet Hill Farm site

represents the single largest unprotected parcel adjacent to the Black Hut Management Area within the bounds of these roadways. The entirety of the site's eastern, northern, and portions of the western boundary abutsthe Black Hut Management Area for a total linear distance of approximately 9,400 feet (1.78 miles). The DEM has, in the past, expressed interest in acquiring this parcel to supplement existing public lands in the northwestern corner of the state and to close a noticeable gap in contiguous property associated with the Black Hut Management Area (Attachment A). In 2011, DEM acquired 105 acres of land to add to the Black Hut Management Area.

The site is also located very close to an approximately 23-acre undeveloped, privately-owned parcel under a conservation easement. This conservation parcel is located to the east of the site and is separated from the site by a narrow strip of state-owned land that is part of Black Hut Management Area. If a permanent conservation easement were placed on the Sweet Hill Farm site, the area of contiguous protected land in eastern Burrillville would total approximately 2,024 acres.

2.2.2 Ecological Communities Classification

The Rhode Island Ecological Communities Classification (Enser *et al.* 2011) categorizes the state into a five-tiered hierarchical structure based on vegetation and habitat characteristics. Geospatial mapping of ecological communities has been completed to the "community" level, which represents the third of five tiers in the hierarchical system. The ecological communities mapped at the site are listed in Table 3 and displayed on Figure 3.

The ecological communities mapping indicates that nearly the entire site (90.7%) is comprised of forested habitats (tree plantation [white pine forest], oak forest, mixed deciduous/coniferous forest, and forested swamp). The remainder of the site is comprised of early successional habitats (ruderal grassland/shrubland – 5.1%), agricultural land (hayfields/pasture – 2.6%), and developed land (urban/suburban built – 1.6%).

Table 3. Sweet Hill Farm Site Rhode Island Ecological Community Mapping

Ecological Community	Area (acres)	Percent of Parcel
Tree Plantation (white pine forest)*	54.7	37.2%
Oak Forest	43.1	29.2%
Mixed Deciduous/Coniferous Forest	34.4	23.3%
Ruderal Grassland/Shrubland	7.6	5.1%
Hayfields/Pasture	3.8	2.6%
Urban/Suburban Built	2.4	1.6%
Forested Swamp**	1.5	1.0%

**ESS has determined based on the field assessment of the site that the area mapped as "tree plantation" is white pine forest.*

***This number reflects the area of forested wetland on the site based on publicly-available geospatial data, not the results of a site-specific wetland delineation. See the next sub-heading for additional information regarding wetlands at the site.*

2.2.3 Wetlands, Waterways, and Vernal Pools

Wetlands at the site were delineated in the field by Natural Resource Service, Inc. at some point prior to 2004 (Figure 4). The wetland delineation indicates the presence of forested wetland habitats in the

southern, eastern, and central portions of the site, some of which border low-gradient intermittent streams which flow off the site to the east. ESS generally confirmed the location of delineated wetland areas at the site during the field assessment in April 2018. Approximately 19 acres of forested wetlands were delineated at the site, representing approximately 12.8% of the total site acreage. An additional approximately 13 acres of perimeter wetland are associated with the delineated wetlands greater than three acres in size at the site as shown on Figure 4. Riverbank wetlands are also present at the site.

The United States Army Corps of Engineers Highway Methodology recognizes eight functions and five values that can be provided by wetlands. A wetland may be suitable for some or all of the functions and values, and some of these may be principal functions and values if they are an important component and/or are considered of special value. Wetlands at the site currently provide the following functions and values: groundwater recharge/discharge, floodflow alteration, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, and wildlife habitat. Each of these functions with the exception of sediment/shoreline stabilization are considered to be principal functions of the wetlands at the site. If the site were permanently protected with a conservation easement and opened to public recreational use, wetlands at the site may also provide recreation, educational/scientific value, and visual quality/aesthetics. It is possible that wetlands at the site may provide uniqueness/heritage and/or threatened or endangered species habitat. Wetlands at the site do not provide important fish and shellfish habitat due to the lack of significant surface waters.

ESS used the Massachusetts Natural Heritage and Endangered Species Program's (NHESP) *Guidelines for the Certification of Vernal Pool Habitat* to identify vernal pools at the site (Rhode Island has no established guidelines for identifying vernal pools). Under the NHESP guidelines, vernal pools may be certified in one of two ways: 1) by documenting the presence of obligate species breeding activity and that the pool lacks a permanently flowing outlet, or 2) by documenting the presence of facultative species, an absence of established fish population, and that the pool lacks a permanently flowing outlet. Using these criteria, ESS identified at least three vernal pools (special aquatic sites) on the property during the field assessment in April 2018 (Figure 4). One small vernal pool was located in a pine/hemlock grove near the southeastern corner of the site near East Avenue; approximately ten wood frog (*Lithobates sylvaticus*) egg masses were identified in this vernal pool. A second, large vernal pool located in mixed forest habitat was identified near the northeastern corner of the site. Approximately 20 wood frog and approximately 12 spotted salamander (*Ambystoma maculatum*) egg masses were identified in this vernal pool, and wood frogs were heard vocalizing in and around the vernal pool. A third vernal pool was identified in the southern portion of the site, northwest of the residential properties on East Avenue. Multiple wood frog and spotted salamander egg masses were identified in this vernal pool, and wood frogs were heard vocalizing in and around the pool. At least one additional vernal pool may be located in this vicinity, as wood frogs were also heard vocalizing to the east from this location.

2.2.4 Vegetation

The primary vegetative communities on the site are forested upland (including deciduous forest, coniferous forest, and mixed deciduous/coniferous forest), deciduous forested wetland, and to a lesser extent, early successional meadow/shrubland. Primary plant species documented in the forested upland habitats at the site include: white pine (*Pinus strobus*), white oak (*Quercus alba*), red

maple (*Acer rubrum*), pitch pine (*Pinus rigida*), chestnut oak (*Quercus montana*), eastern hemlock (*Tsuga canadensis*), gray birch (*Betula populifolia*), sassafras (*Sassafras albidum*), witch hazel (*Hamamelis virginiana*), mountain laurel (*Kalmia latifolia*), sweet pepperbush (*Clethra alnifolia*), lowbush blueberry (*Vaccinium angustifolium*), sheep laurel (*Kalmia angustifolia*), shrub honeysuckle (*Lonicera* sp.), multiflora rose (*Rosa multiflora*), greenbrier (*Smilax rotundifolia*), and fox grape (*Vitis labrusca*). Primary plant species observed within forested wetland habitats include: red maple, gray birch, sweet pepperbush, highbush blueberry (*Vaccinium corymbosum*), and sensitive fern (*Onoclea sensibilis*). Species observed in the early successional habitats located in the southeastern portion of the site include: eastern red cedar (*Juniperus virginiana*), white pine, red maple, gray birch, domestic apple (*Malus* sp.), multiflora rose, shrub honeysuckle, dogwood (*Cornus* sp.), dwarf sumac (*Rhus copallina*), blackberry/raspberry (*Rubus* sp.), Oriental bittersweet (*Celastrus orbiculatus*), steeplebush (*Spiraea tomentosa*), goldenrod (*Solidago* sp.), little bluestem (*Schizachyrium scoparium*), sensitive fern, milkweed (*Asclepias* sp.), mullein (*Verbascum thapsus*), cattail (*Typha* sp.), and soft rush (*Juncus effusus*).

It is important to note that the species list presented above represents only incidental observations made over the course of one field assessment.

2.2.5 Topography and Soils

Elevations at the site range from approximately 344 feet to approximately 523 feet ASL. The lowest elevations at the site are along East Avenue, and the highest point at the site is located in the northern portion of the property in the vicinity of the historical cemetery. The northwestern portion of the site features relatively steep slopes; topography throughout the remainder of the site is relatively gently-sloping.

According to Natural Resource Conservation Service (NRCS) soils data, soils at the site are primarily stony fine sandy loams with slopes ranging from zero to 35%. Over 85% of the site is comprised of soils in non-hydric the Canton-Charlton complex, which are well-drained upland soils generally well-suited for development. The relatively small Ridgebury, Whitman, and Leicester map unit at the site is the only soil map unit classified as hydric. Soil map units for the site are given in Table 4 and displayed on Figure 5.

Table 4. Rhode Island Soil Survey Soil Map Units

Soil Map Unit	Area (acres)	Percent of Parcel
Canton and Charlton fine sandy loams, very rocky, 3 to 15 percent slopes (CeC)	67.6	45.8%
Canton and Charlton fine sandy loams, 3 to 8 percent slopes (CdB)	24.2	16.4%
Canton and Charlton extremely stony fine sandy loams, 3 to 15 percent slopes (CkC)	19.2	13.0%
Canton and Charlton very stony fine sandy loams, 3 to 8 percent slopes (ChB)	13.0	8.8%
Sutton very stony fine sandy loams, 0 to 8 percent slopes (SuB)	10.3	7.0%
Ridgebury, Whitman, and Leicester extremely stony fine sandy loams (Rf)	9.8	6.7%

Soil Map Unit	Area (acres)	Percent of Parcel
Canton-Charlton-rock outcrop complex, 15 to 35 percent slopes (CaD)	2.9	1.9%
Hinckley gravelly sandy loam, rolling (HkC)	0.6	0.4%

2.2.6 Other Habitat Features

Approximately 129 acres (88%) of the site is mapped as part of an unfragmented forest block greater than 500 acres in size per the 2015 Rhode Island Wildlife Action Plan (Figure 6). The unfragmented forest block of which the site is a part is approximately 780 acres in size and includes most of the Black Hut Management Area and other surrounding lands. Thus, the portion of the unfragmented forest block located on the site represents approximately 16% of the total size of this forest block.

There are no mapped Natural Heritage areas present at the site; however as a privately-owned parcel, the presence of a mapped Natural Heritage area would not be expected.

The site is partially located within an area identified by The Nature Conservancy as a corridor allowing for the gradual movement of animal and plant populations in response to changes in climate (Figure 7).

2.2.7 Wildlife Community

Based upon the desktop habitat assessment and subsequent initial site visit, habitats at the site appears to support a wildlife community typical of that of mixed forested sites in southern New England. The variety of habitat types on the property – including forested wetlands, mixed upland forest, high-elevation pine forest, and early successional fields/shrublands – provide for a robust wildlife community to persist at the site. Key habitat features were also noted at the site, including multiple vernal pools, snags, tree cavities, wildlife food plants, shrub thickets along streams, large woody debris on the ground, and rock piles and walls. These features provide important habitat components for a variety of bird, mammal, reptile, and amphibian species.

During the site visit on April 13, 2018, ESS documented the presence of 12 bird species at the site: song sparrow (*Melospiza melodia*), American robin (*Turdus migratorius*), American goldfinch (*Spinus tristis*), black-capped chickadee (*Poecile atricapillus*), eastern phoebe (*Sayornis phoebe*), red-bellied woodpecker (*Melanerpes carolinus*), white-breasted nuthatch (*Sitta carolinensis*), tufted titmouse (*Baeolophus bicolor*), blue jay (*Cyanocitta cristata*), northern flicker (*Colaptes auratus*), hermit thrush (*Catharus guttatus*), and pine warbler (*Setophaga pinus*). Each of these species are relatively common and would be expected to occur at the site based on the habitats present. Pileated woodpecker (*Hylatomus pileatus*), a Rhode Island species of concern, is also likely to occur at the site based on the presence of several distinctive rectangular cavities in snags observed during the field assessment.

Other wildlife species detected directly or indirectly at the site include wood frog, spring peeper (*Pseudacris crucifer*), spotted salamander, white-tailed deer (*Odocoileus virginianus*), and coyote (*Canis latrans*).

It is important to note that the species list presented above represents only incidental observations made over the course of one field assessment. In addition, given the date of the site visit the presence of most neotropical migratory bird species would not be expected.

2.2.8 Historical and Cultural Resources

In addition to the natural resources discussed in the sections above, historical and cultural resources are also located on the Sweet Hill Farm site. Among these are a historical cemetery (Town of Burrillville No. 44) located on the northern part of the property which was used by members of the Ross family from the mid-nineteenth to early twentieth centuries. Other remnants of historical use of the site are also present, including stone walls, a stone building foundation, a former granite quarry, and former road beds (see historic USGS map in Attachment A).

In 1982, the Rhode Island Historical Preservation Commission (now the Rhode Island Historical Preservation and Heritage Commission [RIHPHC]) recommended "Sweet's Hill Historic District" on East Avenue as an area meriting consideration for entry into the National Register of Historic Places; however, this historic district was never established.

A 2010 report produced by the RIHPHC and the Blackstone River Valley National Heritage Corridor Commission identifies "Sweet's Hill Farm" as one of five "priority heritage landscapes" selected by residents of the town in 2010 as:

- Highly valued by the community,
- Contributing to the character of the community, and
- Lacking permanent protection or preservation.

With regard to preserving the Sweet Hill Farm site, the report also states that:

- Residents value the undeveloped frontage of the property which lies along a primary travel way between the village of Harrisville and other areas in town
- The site is an important open space resource that features connectivity with Black Hut Management Area and Spring Lake, and many residents would like the site to remain as open space
- The property owner is interested in exploring development options for the site
- RIDEM has expressed interest in acquiring the site but could not reach an agreement with the landowner on purchase price

Historically, the Sweet Hill Farm property links to more than 300 years of family, farming, and business enterprises within the Town of Burrillville. The farm is associated with one of the earliest families in town, and with important personages in the town's history. Although the farm has ceased operation and the lands are now reverting to wilderness, the property will continue to reflect this history in the remnants visible on the ground surface of varied pursuits of these family members.

For a more detailed description of the history of the property, see Attachment A.

2.2.9 Recreational Value

As stated above, the Sweet Hill Farm site shares an approximately 1,900-foot (1.78-mile) property boundary with the 1,853-acre Black Hut Management Area. If permanently protected through a conservation restriction and opened to public access as proposed, the site would provide a high degree of recreational value both in its own right and as part of a larger contiguous tract of protected open space. As shown on Figure 8, an extensive network of existing trails provides access throughout the Sweet Hill Farm site. Most of these trails are currently in good to excellent condition and would require minimal maintenance or improvement. The trail network through the site is also connected to the existing public trail system in Black Hut Management Area; there are at least six locations along the property line at which trails cross between the Sweet Hill Farm site and public land. Additionally, as the site has over 3,200 feet (0.60 miles) of frontage on East Avenue, additional parking to provide access to the property could be sited relatively easily.

The site could also function as a valuable educational resource and outdoor classroom for students attending Burrillville High School, which is located across East Avenue less than 1,000 feet (0.20 miles) from the Sweet Hill Farm site. While Black Hut Management Area is also located near the school, the state-owned land currently has no frontage on East Avenue, and the nearest parking area for access to Black Hut Management Area is located more than two miles from the high school.

2.2.10 Development Potential

It is our understanding that one or more solar energy facility developers have expressed recent interest in acquiring the site from the current landowner. Additionally, an Existing Conditions & Site Analysis plan for the so-called “Sweet Farm Estates” was prepared by DiPrete Engineering Associates, Inc. in 2004. Based on the following factors, development of the site appears to be feasible:

- The wetland delineation conducted at the site indicates that 87% of the site is upland.
- Over 91% of the site is comprised of soil map units considered well-suited for development and installation of septic systems.
- The site also has over 3,200 feet of frontage on East Avenue, which provides ample opportunity for configuring access to a potential internal road system.
- The site has very limited areas of bedrock ledge.
- Groundwater is likely suitable for development of domestic wells.
- The site is zoned as farming/residential. Net-metering solar photovoltaic installations are allowed in all zoning districts in Burrillville (per Article VI, Sec. 30-211 of the Burrillville Zoning Ordinance).

2.3 Proposed Preservation and Management Plan

Preservation of the Sweet Hill Farm site is proposed as the primary form of mitigation for project-related impacts. Clear River Energy LLC (CRE) will preserve the Sweet Hill Farm site through purchase from the current landowner and placement of a permanent conservation restriction on the property. CRE intends to transfer the deed to the Sweet Hill Farm site to a public or not-for-profit land management organization

(such as RIDEM, the Burrillville Land Trust, the Audubon Society of Rhode Island, or The Nature Conservancy) following the issuance of project permits and the completion of the management actions described below. Public access to the property would continue to be restricted during ownership by CRE as the interim land manager. Prior to deed transfer, the applicant will undertake the following management actions at the site:

- Placing conservation easement on the parcel to preserve the property as conservation land in perpetuity.
- Marking and posting property boundaries.
- Installation of gates and signage at existing access points along East Avenue.
- Monitoring the site for trespass, encroachment, dumping, or other unauthorized activities, and identifying and addressing existing issues.
- Clean-up of trash and debris.
- Decommission well in the southwestern portion of the site and fence off existing foundation in central portion of site to address existing safety issues.
- Completion of baseline animal and plant surveys to document the faunal and flora community present at the site and help inform future management decisions. Surveys may include: avian point count survey, anuran call count survey, reptile and amphibian searches, remote field camera deployment, lepidopteran and odonate survey, benthic macroinvertebrate sampling, and plant survey.
- Management of invasive plant species in the early successional habitats located in the southeastern portion of the site along East Avenue. Management may include cutting, spraying, and/or mowing, as appropriate. Invasive species management will be monitored to determine the effectiveness of management and the need for follow-up management actions.
- Management of invasive species and other horticultural actions as appropriate in the vicinity of the historical cemetery to release fruiting trees for the benefit of wildlife food production.
- Annual mowing of early successional habitats to maintain open lands for habitat diversity.

3.0 CREC STAGING AREA RESTORATION PLAN

Restoration of the construction staging areas and the compensatory flood storage area will be undertaken following the completion of construction. These areas will be restored to conditions comparable to those that existed before construction. The total size of the construction staging area is approximately 7.95 acres, of which approximately 0.38 acres is biological wetland/Waters of the United States. The compensatory flood storage area, located just downstream of the access road stream crossing, is approximately 6,000 square feet in size.

Restoration activities will include the removal of all fill, construction debris, and equipment; re-grading as necessary to re-establish previous elevations (in the case of the construction staging areas) or to lower existing elevations (in the case of the compensatory flood storage area); re-construction of any stone walls altered during construction; replacement of topsoil; and planting and seeding. Within both locations, topsoil will be removed from upland areas and stockpiled for re-use. A minimum 8-inch depth of salvaged topsoil will be replaced within all reforestation areas where topsoil has been removed.

3.1 Planting Plan

The staging areas and compensatory flood storage area will be planted with a variety of native sapling and shrub species. Plant species were selected based on the plant community which currently occurs at the site, commercial availability, and to avoid plant species most likely to be browsed by deer. The planting density for saplings and shrubs is designed to equal a spacing of 20 feet-on-center and 10 feet-on-center, respectively, utilizing a triangular grid pattern. Saplings will typically be balled and burlapped or container-grown stock, a minimum of 5-feet high and 0.75-inch caliper branching above 2.5 feet. Shrubs will be container-grown stock and a minimum of 2.5- to 3-feet high, full, and bushy. Efforts will be made to source the plant materials locally (e.g., Rhody Natives). Table 5 provides a summary of the species and quantities to be planted in the restoration areas.

Table 5. Planting Quantities Summary

Sapling Totals			Shrub Totals		
Common Name	**Scientific Name**	**Quantity**	**Common Name**	**Scientific Name**	**Quantity**
Black oak	*Quercus velutina*	96	Sweet pepperbush	*Clethra alnifolia*	412
Sassafras	*Sassafras albidum*	113	Highbush blueberry	*Vaccinium corymbosum*	358
Red oak	*Quercus rubra*	117	Lowbush blueberry	*Vaccinium angustifolium*	341
White oak	*Quercus alba*	110	Sheep laurel	*Kalmia angustifolia*	249
Red maple	*Acer rubrum*	82	Witch hazel	*Hamamelis virginiana*	352
White pine	*Pinus strobus*	112	Huckleberry	*Gaylussacia frondosa*	365
Tuliptree	*L. tulipifera*	47	Mountain laurel	*Kalmia latifolia*	171
Black gum	*Nyssa sylvatica*	13	Spicebush	*Lindera benzoin*	28
Shagbark hickory	*Carya ovata*	61	Winterberry	*Ilex verticillata*	28
Yellow birch	*B. alleghaniensis*	22	Arrowwood	*Viburnum dentatum*	39
Total Saplings		**773**	**Total Shrubs**		**2,343**

Installation of plantings will target September 1 to October 15 to maximize survival. Salvaged topsoil will be added as backfill in all planting pits. Dark brown pinebark mulch will be placed around planting pits to a depth of 2 inches. Tubex© tree guards will be provided for all saplings to prevent rodent browsing and will be removed after 2 years. Plantings within the reforestation areas will be supplemented with Allen's Conservation Mix (Allens Seed 693 South County Trail Exeter, RI 02822) to be spread after planting is complete. The seed mix will be seeded at the rate of 5 lbs/1,000 sf and includes the following species: 25% creeping red fescue (25%), annual rye (25%), tall fescue (17%), Kentucky blue (5%), colonial bentgrass (1%), red top (1%), white clover (1%). Straw mulch will be placed throughout seeded areas to aid in seed germination and initial soil stabilization. The contractor will be responsible for maintenance (including watering using an approved method) of the restoration areas for a period of one year after substantial completion.

3.2 Performance Standards

Restoration success shall be measured based on the following criteria:

- Completion of plantings in accordance with the approved plans and specifications;
- Stabilization of all disturbed soils;

- Maintenance of at least an 85% survival rate of plantings over two consecutive monitoring periods as documented during monitoring events, and
- Maintenance of a low occurrence of non-native, invasive species (as defined in the New England District Compensatory Mitigation Guidance).

3.3 Monitoring

Regular monitoring of the restoration areas will be necessary to ensure that the restoration is meeting the performance standards and to determine whether adaptive management strategies are needed to promote the accomplishment of performance standards. Oversight of planting activities will occur at the time of planting to ensure that the approved number and type of species are planted in the correct areas (Year 1). CRE will then monitor the restoration sites in Years 2, 3, 5, and 10 following construction. Monitoring of the restoration areas will be conducted in a manner so as to evaluate the status of the restoration relative to the performance standards. It is anticipated that permanent monitoring plots will be established at representative areas throughout the restoration area to document the development of the vegetation community throughout the monitoring period. Each monitoring plot will be photo-documented and survival of planted species and overall species cover will be recorded.

If it is determined that adaptive management strategies are required to ensure the long-term success of the restoration, CRE will consult with the USACE and RIDEM to determine the best course of action. Monitoring reports will be prepared and submitted to the USACE and RIDEM at the end of each monitoring period. Monitoring reports will detail the monitoring actions conducted during that period, the current status of the restoration areas, whether or not the restoration areas are meeting each of the performance standards, any recommended adaptive management strategies, and any remedial actions that have been performed during that monitoring period.

3.4 Adaptive Management

Certain adaptive management strategies may need to be implemented at restored areas. A summary of potential issues affecting the long-term success of the restoration areas which may occur, as well as proposed responses is provided in Table 6 below.

Table 6. Planned Responses to Potential Restoration Deficiencies

Deficiency	Remedial Measures
Final elevations not as planned	Regrade as necessary
Inadequate species composition	Supplement seeding/planting
Inadequate plant density	Fertilize, supplement seeding
Significant erosion	Install erosion control blankets or similar materials
Less than 85% survival of plantings over two consecutive monitoring periods	Replant as necessary
Marginal tree/shrub vigor	Fertilize
Substantial human disturbance	Access control, legal remedies
Significant wildlife damage	Additional wildlife deterrents/replanting
Significant presence of invasive plant species	Biocontrol, manual removal, herbicide control
Presence of archaeological resources	Notify State Historic Preservation Officer and contract with an archaeological consultant to conduct investigation
Presence of hazardous waste	Notify RIDEM and contract with a hazardous waste firm to determine extent of contamination

3.5 Schedule

Restoration of the staging areas and compensatory flood storage area will begin immediately upon completion of construction, beginning with the removal of all fill, construction debris, and equipment. Planting will be targeted to occur between September 1 and October 15 to maximize survival. Monitoring of the restoration areas will occur according to the schedule described in Section 3.2, with annual monitoring reports submitted to the USACE by December 1 of each monitoring year.

4.0 CONSTRUCTION BEST MANAGEMENT PRACTICES

Proposed measures to avoid or minimize construction-related impacts are discussed in detail in Section 6.0 of the "Application to Alter Freshwater Wetlands: Clear River Energy Center and Burrillville Interconnection Project." Additional BMPs focused on compensatory mitigation activities to be implemented during the construction phase of the project are summarized below:

- Clearing of trees will not take place between June 1 and July 31 to avoid potential impacts to northern long-eared bat (*Myotis septentrionalis*) maternity roost trees and nesting birds. Acoustic surveys for northern long-eared bat conduced at the site in 2015 resulted in no detections of this species.

- Consult with RIDEM and USACE to determine whether the construction of new vernal pools in biological and/or perimeter wetlands would enhance the overall wildlife habitat function at the site. Given the relative paucity of this habitat type within the CREC along with the unavoidable impacts to existing man-made pools serving this function, additional vernal pools would enhance the overall wildlife habitat function. Design details for agency consideration will be developed as part of the mitigation consultation process.

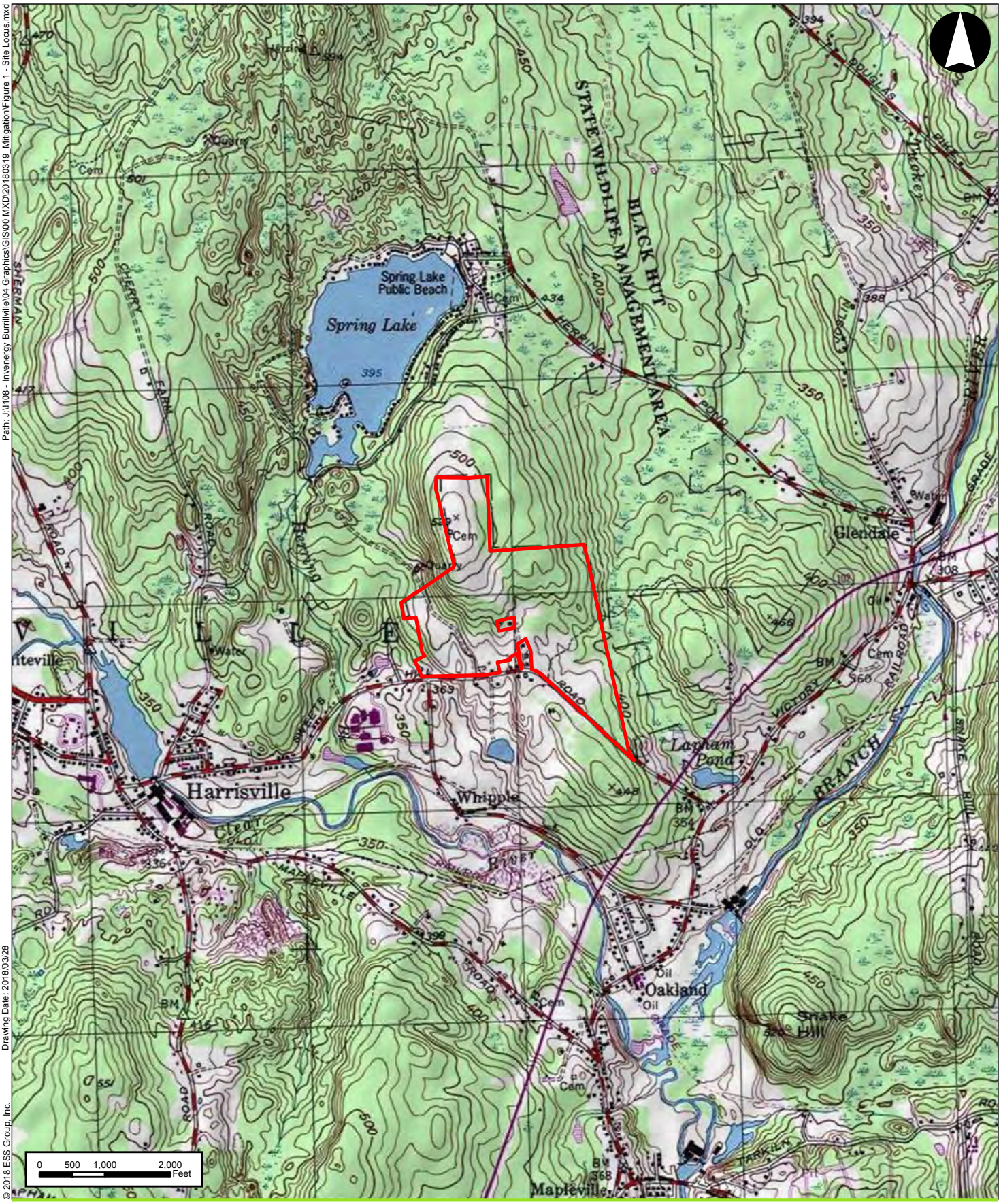
- Intact tree snags will be left in place and new snags will be created in and around wetlands to provide tree cavities and perch sites, where doing so would not interfere with project-related infrastructure.

- Woody debris piles will be created in select locations to provide wildlife cover and habitat complexity.
- A vegetated buffer of shrub/herbaceous growth will be maintained a minimum of 25 feet from the edge of watercourses and open water areas wherever feasible.
- Large logs will be left in place (as directed by the Environmental Compliance Monitors) to decay next to wetlands and streams or within wetlands to provide structure and habitat features for wildlife.
- Wood duck (*Aix sponsa*) nest boxes will be installed in appropriate habitats.
- Native seed mixes will be used during the restoration and re-establishment of vegetation in disturbed areas along the BIP.

5.0 SUMMARY

The project proponent intends to satisfy the project's mitigation requirement primarily through the preservation of the Sweet Hill Farm mitigation site. Restoration of the CREC construction staging area and implementation of construction-phase BMPs are also expected to help offset unavoidable project-related wetland impacts. In providing compensatory mitigation, the overall goal is to provide no net loss of existing wetland functional values and statutory interests within the affected watersheds through the preservation, restoration, enhancement, and/or creation of wetlands. The principal wetland functions and values provided by wetlands within the CREC and BIP project areas are: **groundwater recharge/discharge**, **floodflow alteration**, **sediment/toxicant retention**, **nutrient removal**, **production export**, and **wildlife habitat** (additional discussion of wetland functions and values for the CREC and BIP is provided in Section 4.0 of the Application to Alter). Wetlands at the Sweet Hill Farm site currently provide the following functions and values: **groundwater recharge/discharge**, **floodflow alteration**, **sediment/toxicant retention**, **nutrient removal**, **production export**, **sediment/shoreline stabilization**, and **wildlife habitat**. Each of these functions with the exception of sediment/shoreline stabilization are considered to be principal functions of the wetlands at the site. If the site were permanently protected with a conservation easement and opened to public recreational use, wetlands at the site may also provide **recreation**, **educational/scientific value**, and **visual quality/aesthetics**. As stated in Table 1, the project is expected to result in the placement of permanent fill in approximately 1.11 acres of jurisdictional wetlands, the placement of temporary fill in approximately 8.36 acres of jurisdictional wetlands, and the conversion of approximately 6.75 acres of jurisdictional wetland to another cover type. Approximately 19 acres of jurisdictional wetlands are present on the Sweet Hill Farm site. Therefore, preservation of the Sweet Hill Farm site, along with the reforestation of the staging areas and implementation of construction-phase BMPs, is expected to compensate for unavoidable wetland impacts resulting from the proposed project.

Figures



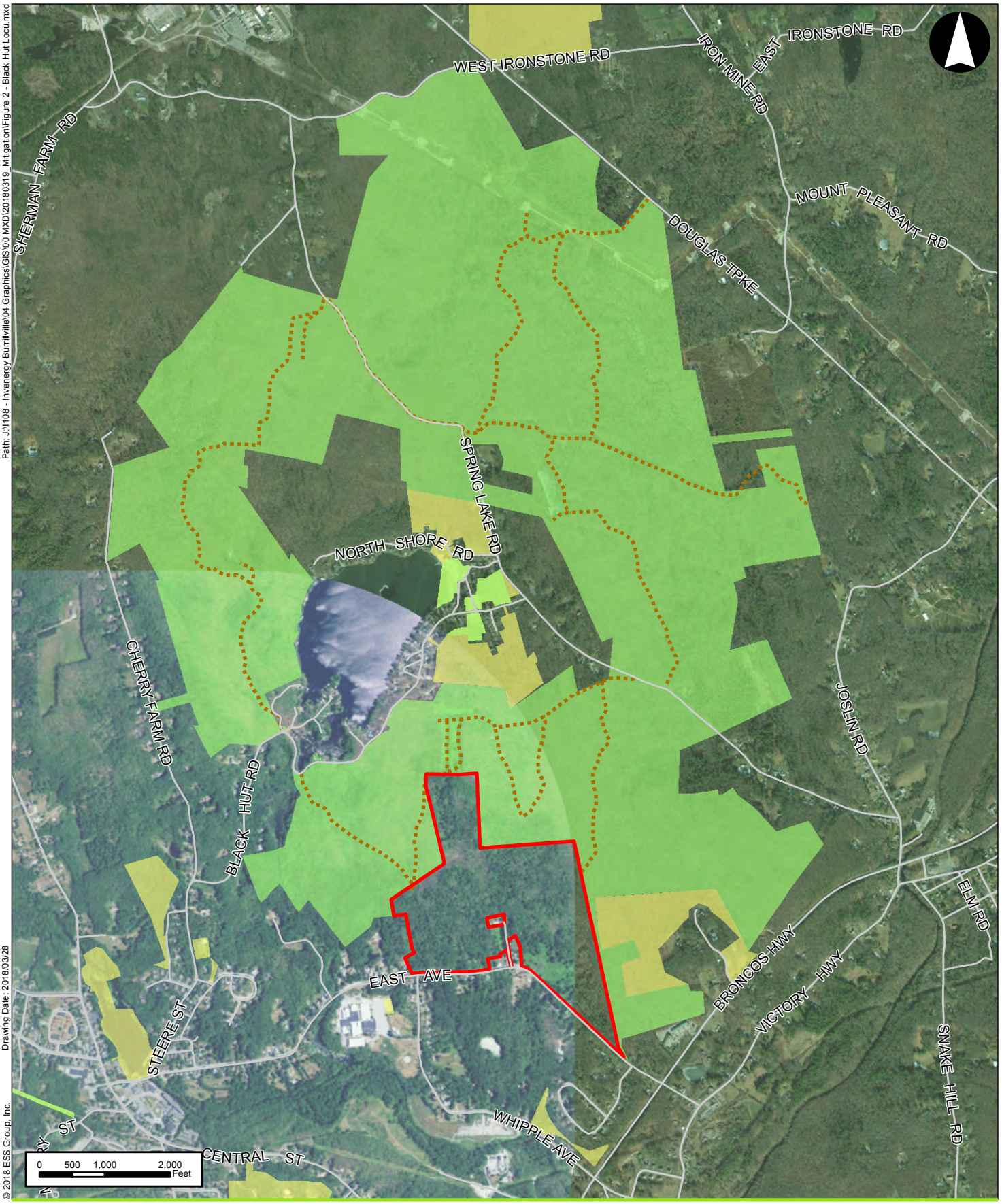
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Source: 1) Town of Burrillville, Parcel Data

Site Locus

Figure 1



Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

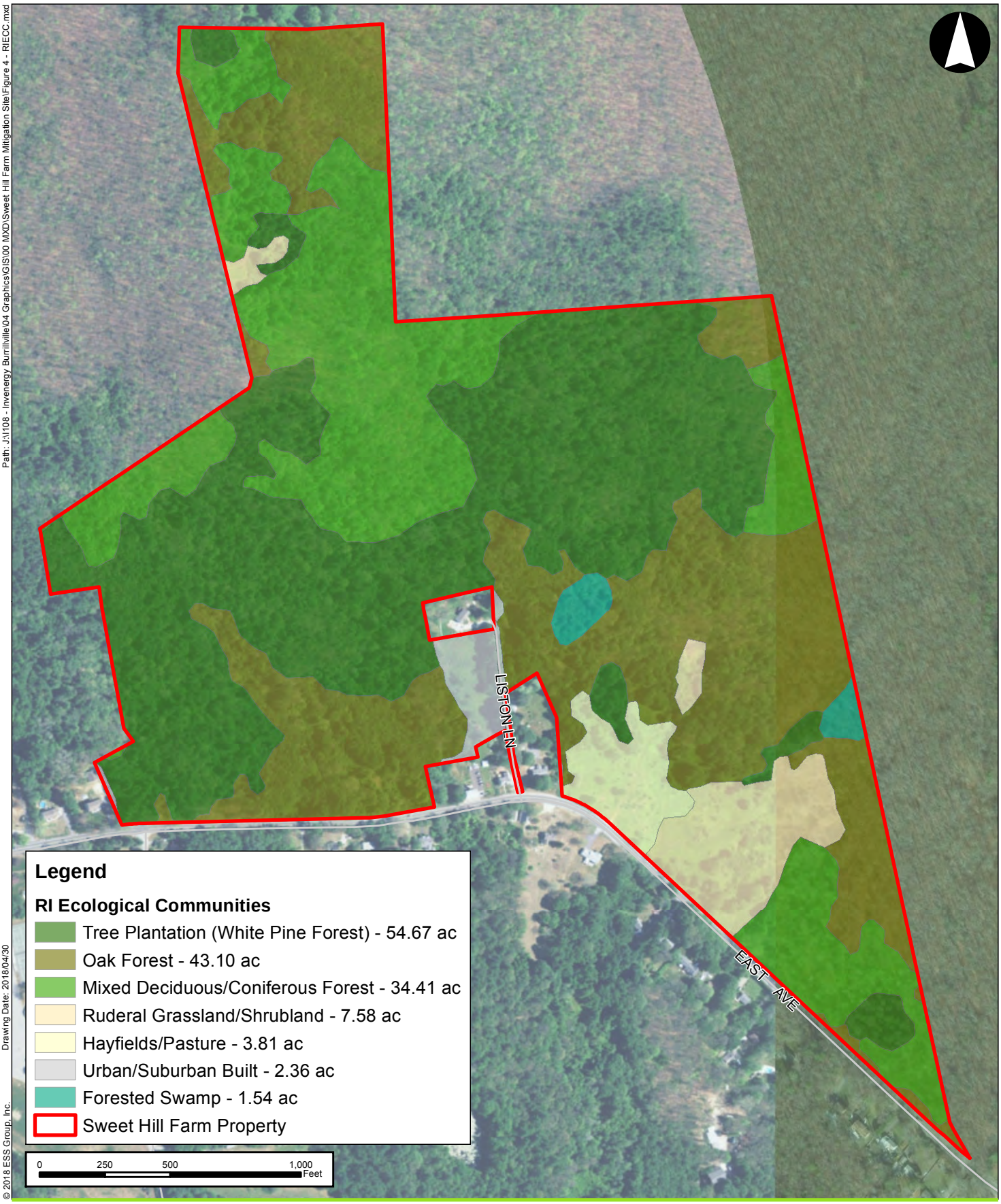
Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Hiking Trails on State Land

Black Hut Management Area Locus

Figure 2



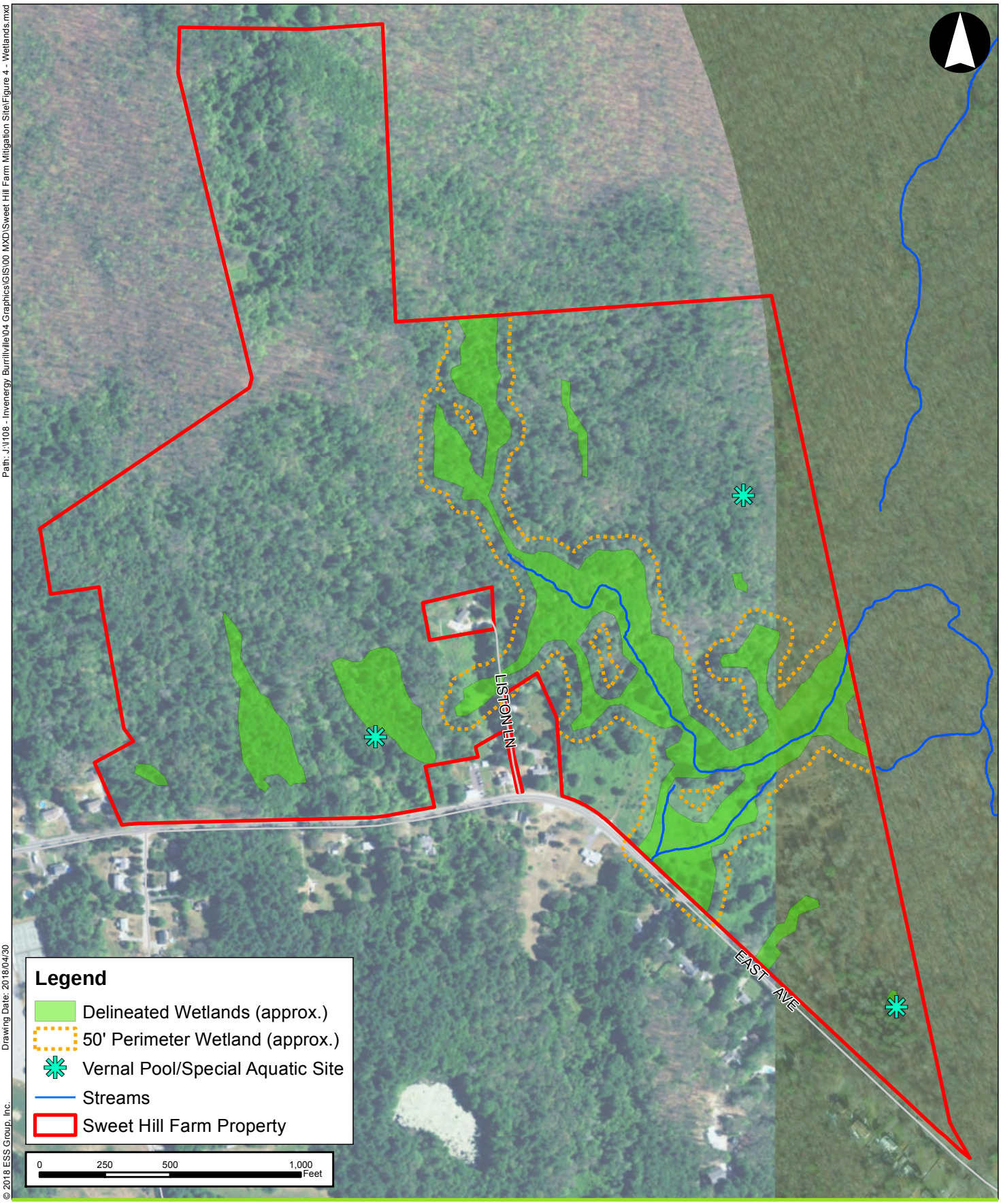
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Source: 1) Town of Burrillville, Parcel Data 2) RIECC, RIGIS 2016

Rhode Island Ecological Communities Classification

Figure 3



ess group
environmental consulting & engineering services

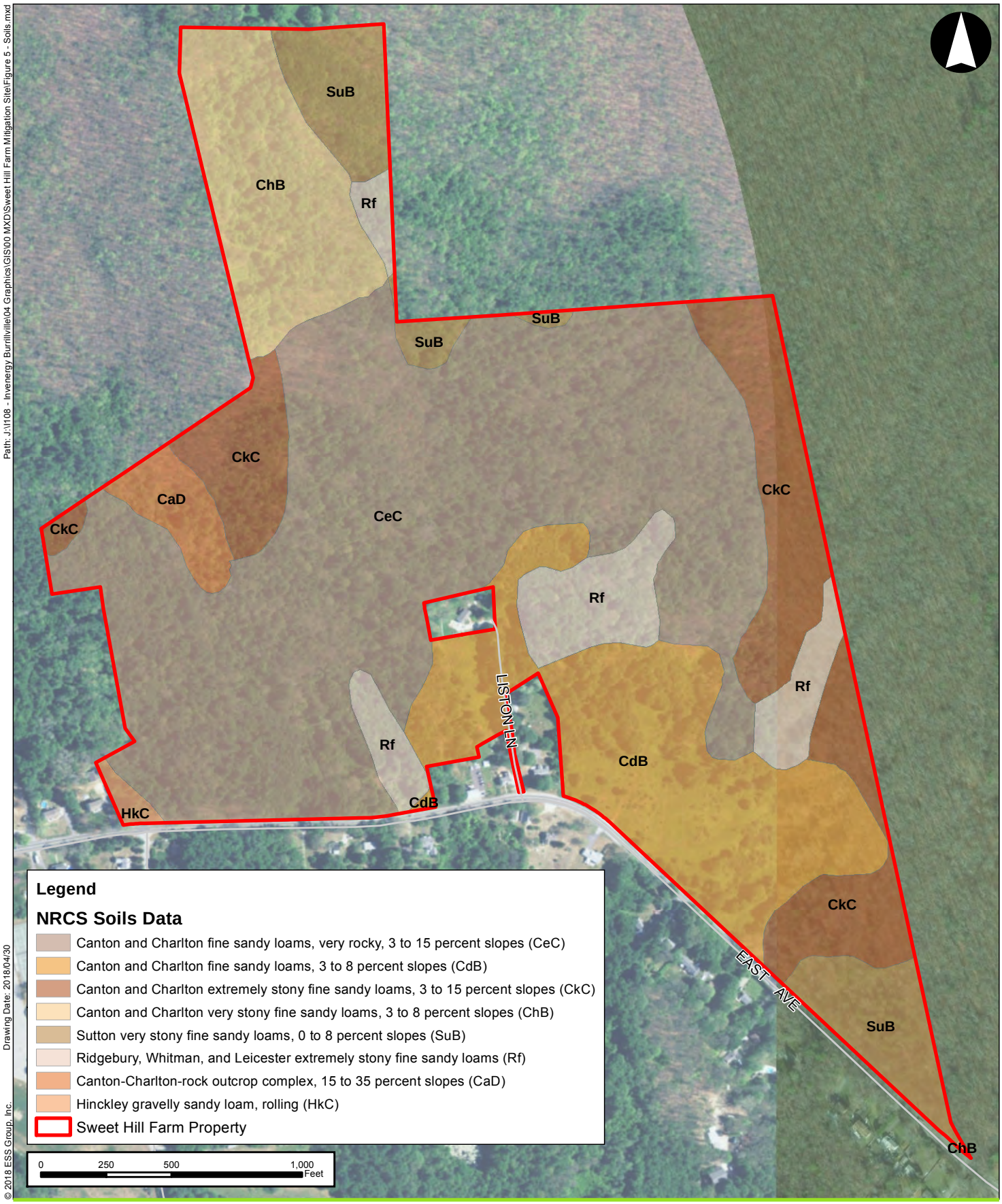
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Wetlands and Streams

Figure 4

Source: 1) Town of Burrillville, Parcel Data 2) Wetlands data geo-referenced from 2004 Existing Conditions Site Plan prepared by DiPrete Engineering Associates, Inc.



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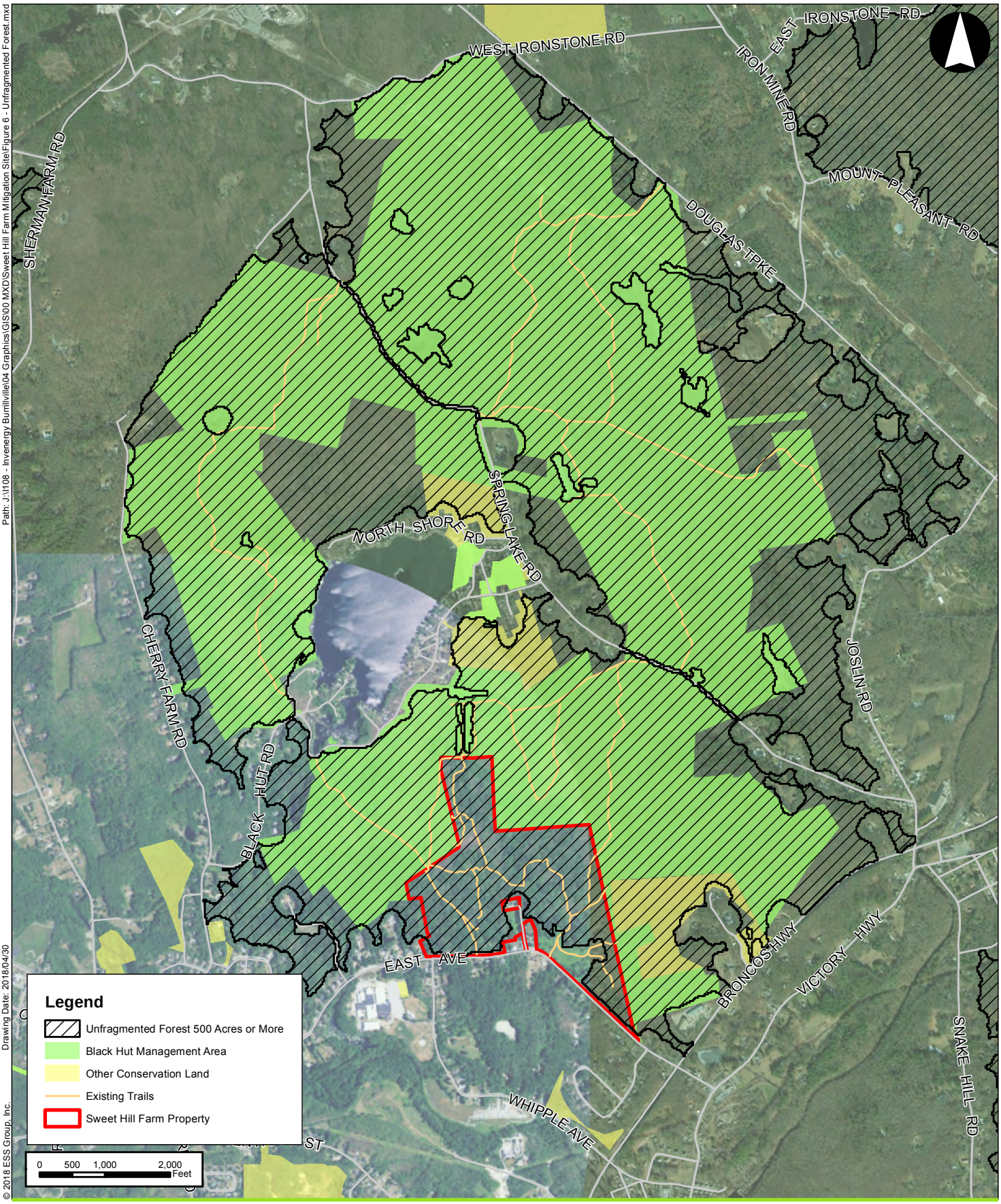
Sweet Hill Farm Property
Burrillville, RI

1 inch = 500 feet

Source: 1) Town of Burrillville, Parcel Data 2) Soils, NRCS 2010

Soils Map

Figure 5



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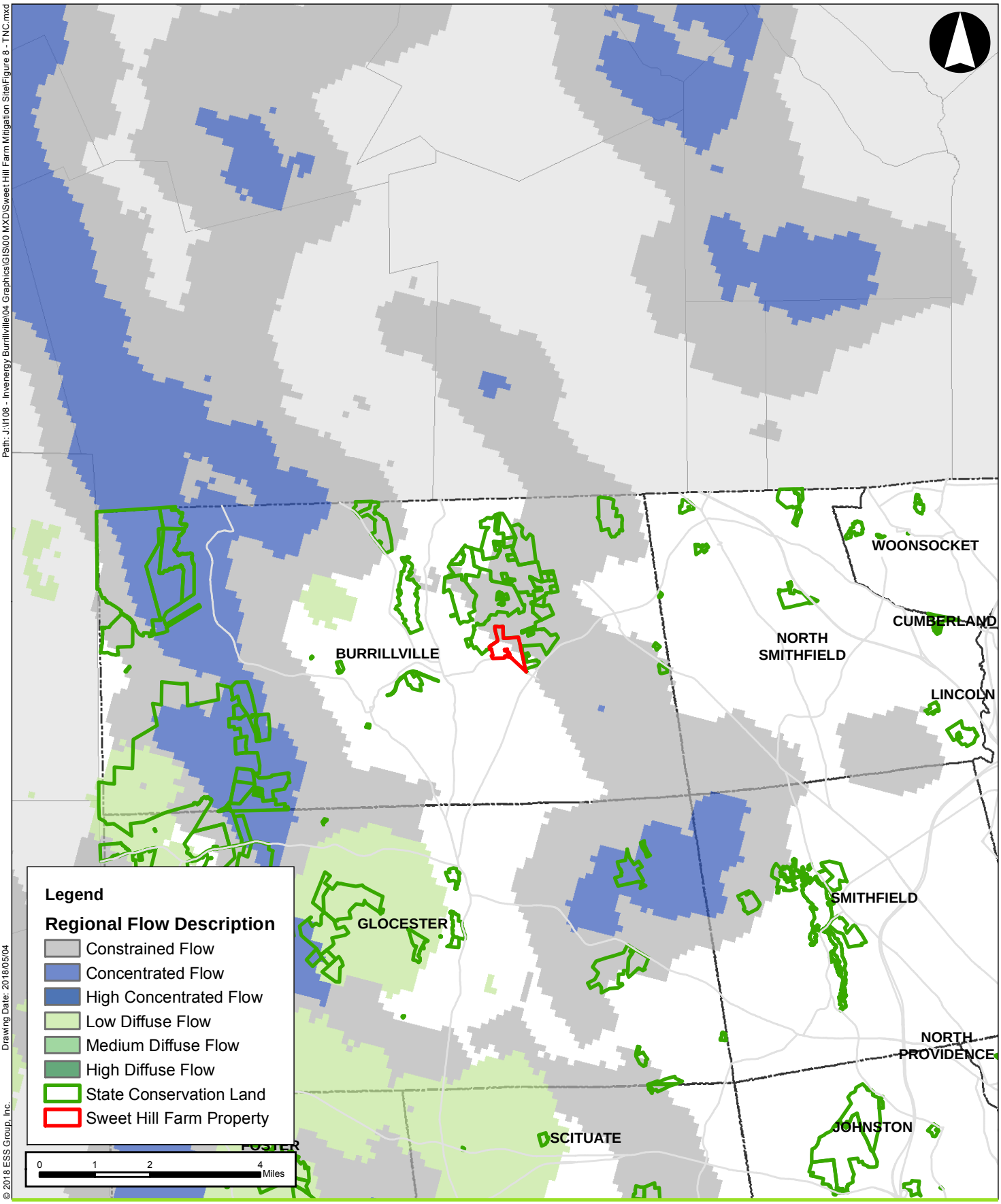
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2,000 feet

Unfragmented Forest Blocks Greater than 500 Acres

Figure 6

Source: 1) Town of Burrillville, Parcel Data 2) RIDEM, Forest Data 2016



Path: J:\l1108 - Invenergy Burrillville\04 Graphics\GIS\00 MXD\Sweet Hill Farm Mitigation Site\Figure 8 - TNC.mxd

Drawing Date: 2018/05/04

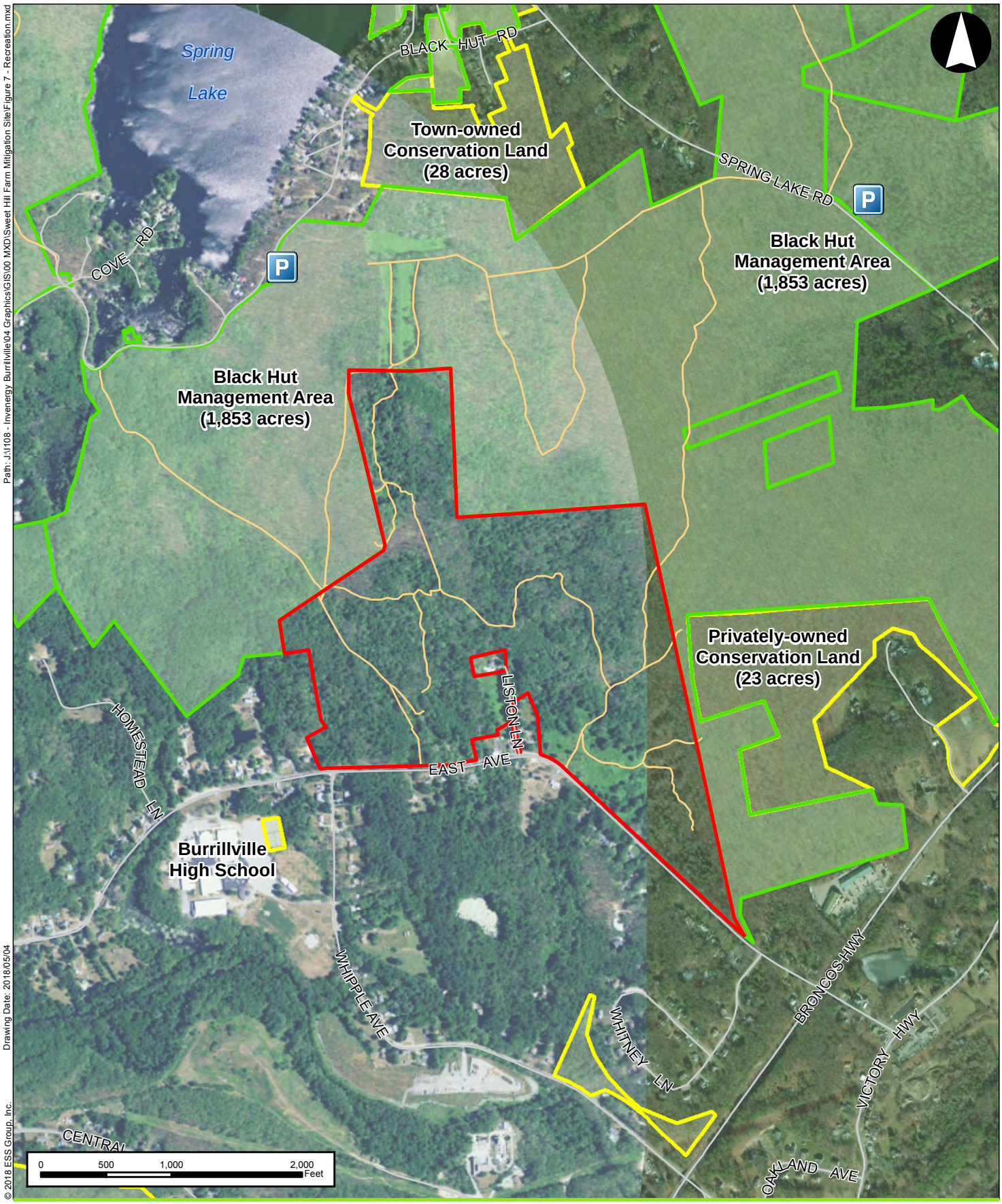
Sweet Hill Farm Property
Burrillville, RI

1 inch = 2 miles

Regional Flow

Figure 7

Source: 1) The Nature Conservancy, Regional Flow Descriptions, 2018



Sweet Hill Farm Property
Burrillville, RI

1 inch = 1,000 feet

Source: 1) Town of Burrillville, Parcel Data

Legend

- Sweet Hill Farm Property
- Black Hut Management Area
- Other Conservation Land
- Existing Trails

Recreational Resources

Figure 8

Attachment A

GRAY & PAPE
HERITAGE MANAGEMENT
Since 1987

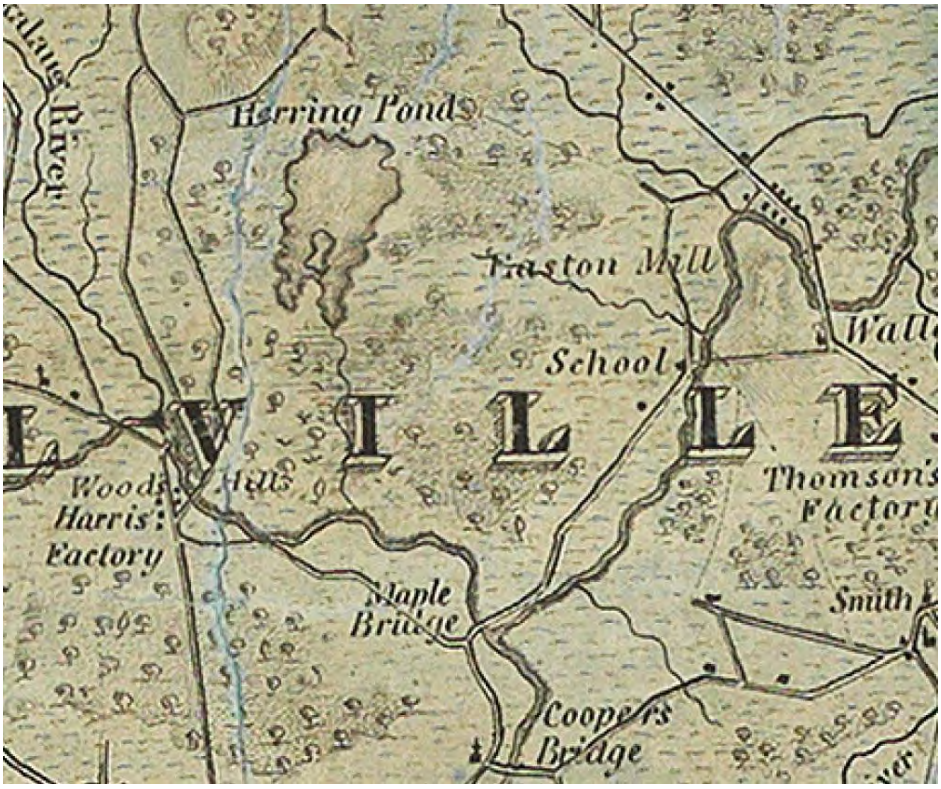
60 Valley Street
Suite 103
Providence, RI 02909
401.273.9900

A Brief History of Sweet's Hill Farm
Burrillville, Rhode Island

History of Burrillville

What is now Burrillville lies within traditional Nipmuc Native American tribal homelands. The Nipmuc inhabited much of central Massachusetts, northern Rhode Island, and northeastern Connecticut, neighbors of the Wampanoag to the east and the Narragansett to the south. Divisions among and between these Native groups was fluid, and was not as clearly defined as is often represented in the division of New England Natives into formal "tribes." The Pascoag Indians, probably a subgroup of the Nipmuc, may have been present in the Burrillville area (Bayles 1891: 551), but some dispute exists as to whether or not they were a real entity and to which tribe they belonged (Rider 1904: 231–232). There is little information about the location of Native villages in the Burrillville area, and no specific archaeological sites related to Native Americans have been found in the Sweet's Hill area (RIHPHC site files).

Burrillville was part of the Providence Plantations that were obtained by treaty from the Narragansett in 1638. The northwestern part of Rode Island was referred to as the "Outlands" or the "Providence Woods" while the population of the colony was confined to the headwaters of Narragansett Bay during those first several decades of settlement. The first European settler in the area was probably John Smith, who reportedly moved to the Tarkiln area in 1674, and brought additional friends and family to the southeastern part of what is now Burrillville into the early eighteenth century (Bayles 1891: 551). By 1731, the Outlands had a high enough population to create several towns out of the northwestern portion of Providence County, and Burrillville was first part of the new town of Glocester. Throughout the eighteenth century, family based farming was the dominant way of life. By the mid to late eighteenth century, water powered mills were in operation, including in Pascoag, Wallum Lake, and Glendale. Village centers arose around these mills, and roads were improved between the villages. In 1806, Burrillville was separated from Glocester.



Stevens 1831 Map of Burrillville, Rhode Island

During the nineteenth century, the population of Burrillville increased dramatically, primarily as the result of immigrants arriving to work in the mills. This included first Irish then

French Canadians, with the population reaching over 6,000 in 1900. During the seventeenth and eighteenth century, the first known settlement of Sweet's Hill took place, detailed below.

1878 Engraving of Mathewson and Sweet Residences, Burrillville

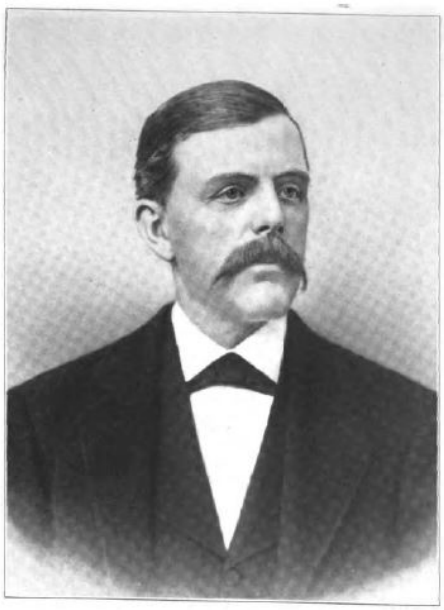
Ownership of Sweet's Hill Farm

The area of Sweet's Hill was originally settled and farmed by the Mathewson family, in the late seventeenth or early eighteenth century. Daniel Mathewson (1683-1751) was apparently the first of the family to move to the area, taking up a large tract of land in what is now North Smithfield and Burrillville acquired by his father James Mathewson (1624-1682), who was in Providence by 1658 (Beers 1908: III: 1110). Daniel's son Peregrine Mathewson (1707-1789) then took up the farm, as did his son John Mathewson (1746-1835), and his grandson Welcome Mathewson (1778-1872). Welcome's daughter Mary Ann Mathewson (1808-1886) married Henry Sweet (1812-1879) in 1833. This couple had five children, including Thomas Henry Sweet (1838-1924) and Albert Erastus Sweet (1841-1929), who ran the farm in the late nineteenth century and into the twentieth century, with the help of a nephew Irving Henry Sweet (1870-1949) and later his son Liston Bartlett Sweet (1895-1958).

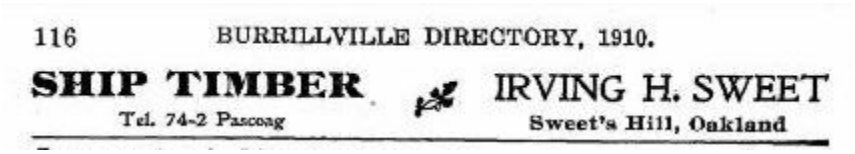
Welcome Mathewson items, featured on Antiques Roadshow, 2012

As was typical of many large farms in the eighteenth and nineteenth centuries, the Mathewson and Sweet farms were largely self sufficient enterprises that involved many different pursuits. Welcome Mathewson was a blacksmith and well known

gunmaker as well as a farmer. Henry Sweet was a blacksmith and machinist who built and installed engines in mills and mines across the Northeast and as far as Cuba. Thomas Henry Sweet was first a meat dealer with his brother Albert, later adding a dairy, the products of which were sold widely across the county in the late nineteenth century. Irving Sweet was a lumber dealer as well as a farmer (Beers 1908: 1532-1534).



Thomas H Sweet



There were many barns and outbuildings on the property, and family members built houses to replace earlier structures, or for their children. There were also roads across the large property, running towards Herring Pond to the northwest, and Herring Pond Road to the north. Historic maps also show a small family cemetery (Burrillville Cemetery #44) on the highest part of the hill, north of East Avenue. A quarry in the west side of Sweet's Hill is also indicated, southeast of Herring Pond.

Some facts related to the people who lived on the property, and the property itself:

- Some early members of the Mathewson family are buried in Burrillville Cemetery #24, on the south side of East Avenue, southeast of Sweet's Hill.
- Additional Mathewsons and some Sweets (including Henry Sweet) are buried in Burrillville Cemetery #23, on the south side of East Avenue, south of Sweet's Hill.
- At its height, the Mathewson/Sweet farm occupied over 1,000 acres.
- The property was known as Sweet's Hill Farm and later as Indian Acres Dairy when it was owned by Liston Bartlett Sweet, and East Avenue was earlier known as Mathewson Avenue and later as Sweets Hill Road.
- No standing agricultural buildings remain on the property; three farmhouses front on East Avenue, but are on separate parcels from the ca. 150 acre remaining farm property
- For a long time, the oldest structure related to the farm was the Welcome Mathewson House (built ca. 1780), but it fell into disrepair and was demolished in the early 1990s

Albert E. Sweet/Indian Acres House, ca. 1880

- The J. & E. Mathewson/Henry Sweet House dates from the mid-nineteenth century
- The Albert E. Sweet /Indian Acres House dates from c. 1880
- The Rhode Island Historical Preservation Commission recommended the establishment of a Sweet's Hill Historic District on East Avenue in a 1982 review of the historical resources of the town of Burrillville (RIHPC 1982), and listed the farm as a Priority Heritage Landscape in its 2010 report (RIHPHC 2010). The historic district was never established.

1796 Map of Burrillville (Carey 1796)

1823 Map of Burrillville (Lucas 1823)

Mapping Discussion

Early maps of Rhode Island date from the late eighteenth century, detailing the town of Glocester, and including what is now Burrillville. These early maps provide little in the way of detail, including only the major topographic features, such as rivers and ponds (as in Carey 1796, Lewis 1804). By the 1820s, the largest roads are indicated, as well as village centers (Lucas 1823; Finley 1827). As of the 1830s, still only select buildings are indicated, such as mills, schools, and churches, but there was no comprehensive inclusion of dwellings (Stevens 1831; Bradford 1838). These early maps show the location of Herring Pond and its relation to the Branch River, but none of the streets in the Sweet's Hill Farm area.

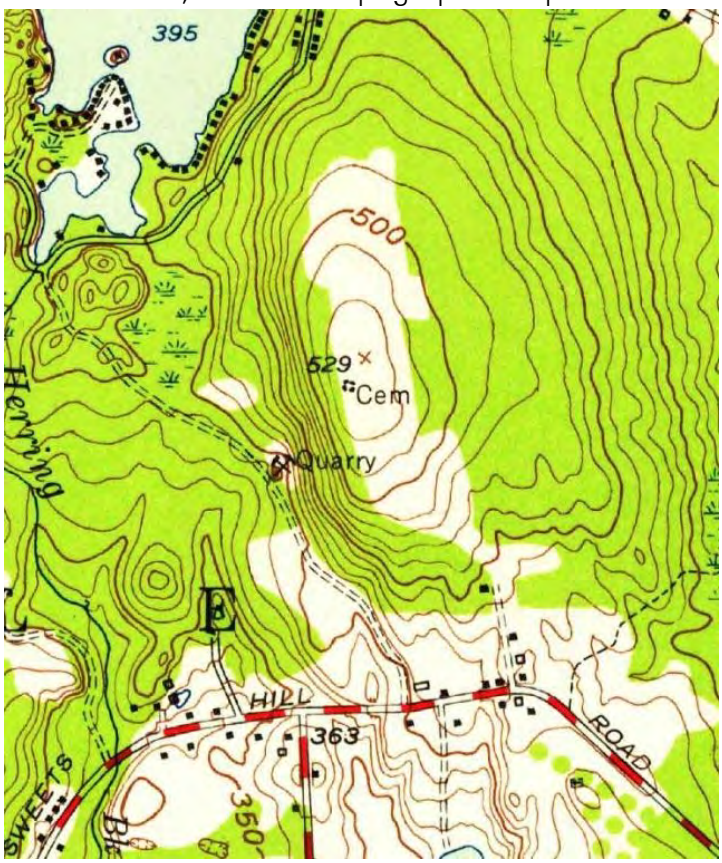
By the 1850s, maps have become detailed enough to include all major streets, houses and some landowner names. The Walling map of 1855 shows what is now East Avenue, W. Matthewson, H. Sweet, and J.&E. Matthewson along the north side of the street. The same level of detail is shown on the Beers 1870 map, with W. Mathewson, T.H. Sweet, and E.

1855 Map of Burrillville (Walling 1855)

Mathewson shown on the north side of East Avenue. No mapping of any structures at the Sweet's Hill Farm or any other roadways off of East Avenue to the north are shown.

The earliest more detailed maps of Burrillville date to the 1890s. These maps include the first USGS topographic maps of the Burrillville quadrangle dating from 1894 (USGS 1894), as well as more precise road maps (Everts & Richards 1895). Unfortunately, these earliest of the topographic maps were drawn at 1:62,500 scale, and did not include all structures. The Everts & Richards map shows houses and outbuildings along East Avenue, including a complex of structures associated with the T.H. & A.E. Sweet farm, and a T.H. Sweet house further north, just east of the south end of Herring Pond, near the cemetery.

The first map found showing most details within the Sweet property is the Chepachet 1:31,680 scale topographic map of 1943



1957 Map of Burrillville (USGS 1957)

1895 Map of Burrillville (Everts & Richards 1895)

(USGS 1943). This map shows houses along Sweets Hill Road, and two roads running north through the property, one towards the southern end of Herring Pond, and one up to the top of Sweets Hill. There are also map symbols for the cemetery and a quarry on the west side of the hill. By 1957, the eastern road no longer goes through to the cemetery. No changes are visible on the 1966 or 1976 editions, but on the 1988 edition, the high school has been constructed on the south side of East Avenue (USGS 1957, 1966, 1976, 1988). The earliest aerial photograph found dates from 1963, at which time a number of fields along East Avenue and to its north are open land, but by 1970 several of these fields are growing over, and by 1995, much of the open land was reclaimed by forest.

Thomas Sweet home, late 1800s, with windmill and barn on top of Sweet's Hill.
Burrillville Historical & Preservation Society collection

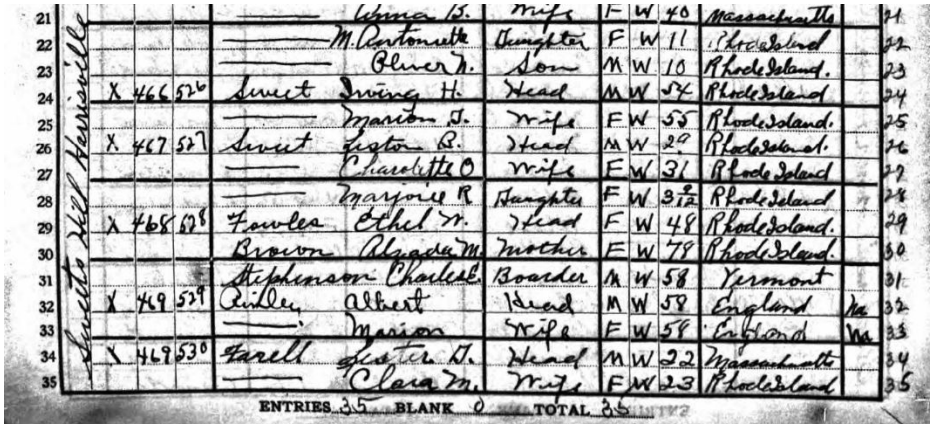
Land Use History

The property was native forest for the thousands of years following the retreat of the last glaciers through its occupation or occasional use by Native Americans. Although there are no recorded Native American sites on the property, this may well because it has not yet been explored for such sites. Sometime probably in the early eighteenth century, the Mathewson family began clearing the woods for use as farmland, and the first houses were built on the property. Over the next hundred years, the open farmland was increased, and the property fully explored for its various resources. Stone fences, barns, privies, paddocks, wells and other structures were built on the property across several generations of the family. In the early 1800s, as transportation improvements were made, several quarries were operated around Herring Pond. These quarries were primarily for granite used in building construction in Providence and for the railroads that were built across the state in the ensuing decades (Bayles 1891), and included one on the west side of Sweet's Hill. The northern part of the property was owned separately by the Ross family, only being incorporated into the Sweet Farm towards the end of the nineteenth century.

Haying on Sweet's Hill, late 1800s
Burrillville Historical & Preservation Society collection

Family farming continued to be the main pursuit on the property into the twentieth century, although we know

various family members had secondary pursuits, such as blacksmithing, meat and lumber sales, and commercial dairying. During the early twentieth century, the farm became known as Indian Acres Dairy, mainly under the auspices of Liston Sweet. By the mid-twentieth century, the farm began to wind down. After ca. 1958, when Liston Sweet died, the farm seems to have ceased operation, and the fields became fallow. Portions of the property were sold in pieces over much of the twentieth century, reducing the remaining property to approximately 150 acres.



1925 Rhode Island State Census, Liston B. Sweet and family on Sweets Hill Road, Burrillville

The property is expected to contain many remnants of agricultural use, as detailed above. The most obvious remnants to be observed are stone walls lining former fields, house and barn foundations, abandoned agricultural equipment, and old roadways. In the area of former houses, evidence of wells, privies garden beds, and trash middens may also be found. Evidence of specialty use is also expected on the property, including the quarry but also blacksmithing and lumber work areas.

Historically, the Sweet's Hill Farm property links to more than 300 years of family, farming, and business enterprises within the town of Burrillville. The farm is associated with one of the earliest families in town, and with important personages in the town's history. Although the farm has ceased operation and the lands are now reverting to wilderness, the property will continue to reflect this history in the remnants visible on the ground surface of varied pursuits of these family members.

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Attachment B

Photograph No.: 1
Early successional habitats and emergent mash in the southeastern portion of the property along East Avenue.

Photograph No.: 2
Forested wetland along stream corridor in eastern portion of the property, near the boundary with Black Hut Management Area.

Photograph No.: 3
Vernal pool/special aquatic site located in the northeastern portion of the property.

Photograph No.: 4
Wood frog egg mass in vernal pool located in northeastern portion of the property.

Photograph No.: 5
Trail and stone wall located in the north-central portion of the property.

Photograph No.: 6
Historical cemetery located in the northern portion of the property.

Photograph No.: 7
Forested wetland and vernal pool/special aquatic site located in the southwestern portion of the property.

Photograph No.: 8
Trail through mixed deciduous/coniferous forest in western portion of the property.