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LAND MANAGEMENT PLAN FOR

LEARY PARCEL

IN

LEXINGTON, MASSACHUSETTS



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Introduction

The Leary Parcel is a 13.5 acre property that was acquired by the Lexington Conservation Commission in 2010 with Community Preservation Act funds. It is adjacent to the 110-acre Lower Vine Brook conservation area, which is a well used and popular conservation area close to the center of town (Figure 1). The Leary Parcel is an integral connection between the two Lower Vine Brook sections which lie adjacent to the east and west. The parcel has approximately 100 feet of frontage along Vine Street. The property consists of a mix of marsh meadow, shrub swamp and upland habitats and includes approximately 833 feet of existing trail.

Land Management Plan

Site Goals and Challenges:

Goals for the site are to:

- enhance public access by providing parking at the site
- enhance public enjoyment of the site by creating a loop walk utilizing existing trails on the Leary Parcel and on adjacent conservation land, new trails, and nearby roads
- maintain early successional habitat area
- protect ground nesting bird habitat from public users with dogs
- preserve forest edge habitat as important habitat for spring and fall migrant passerine bird species
- control Japanese knotweed

Challenges include

- a short strip of road frontage which constrains options for onsite parking
- future development of the adjacent lot which will alter the visitor experience
- wetlands which will necessitate use of boardwalks for some trail sections
- a large stand of Japanese knotweed on an adjacent parcel

Recommendations for addressing these goals and challenges are detailed below.

Property Description

Site Setting and Context

The Leary Parcel is located in East Lexington, in an area of moderate density dominated by residential development. Leary is sandwiched between two parcels of the Lower Vine Brook conservation area to its east and west with residential development on its northern and southern borders (Figure 2). A 100 foot strip of the parcel has frontage on Vine Street. The three parcels together comprise over 100 acres

of contiguous conservation land minutes away from the center of town and are highly valuable for the recreational opportunities they provide to the surrounding community. Any development for recreational opportunities should be balanced with preserving the diversity of habitats favored by ground nesting and migratory bird species. Examples include creating new trails that hug the forest edge to minimize disturbance to early successional bird nesting habitat.

Ecological Features

Topography

As seen in Figure 3, the Leary parcel has very little topographical variation. The land at the southwest and northeast corners dips slightly toward the wetland that runs through the middle of the property. There are no steep slopes on the property, making it suitable for trails in upland areas. A small tributary of Vine Brook flows from south to north within the parcel bounds dissecting the property from northeast to southwest. Water drains from the south of the property and flows north towards the main stem of Vine Brook on the northern edge of the parcel and eventually drains to Butterfield Pond northeast of Brookwood Road.

Soils

Soil texture is classified by the relative composition of clay, silt and sand particles. Sandy soils tend to be well-drained and nutrient poor. Silt laden soils are described as “dusty” and commonly found in floodplains. Clay soils are typically poorly-drained and are often heavy, dense and sticky, conditions which limit root growth in some plants. Ideal agricultural soil, a “loam”, is a combination of sand, silt and clay with moderate drainage and nutrient availability, and density conducive to root growth and microbial community colonization. Loamy soils can retain moisture but drain moderately well so the soils do not remain saturated for longer periods of time.

Soils on the Leary Farm parcel include both poorly drained mucks, rich in organic material from decaying wetland plants, and rapidly drained sandy loams. Neither type is highly suitable for agriculture. Swansea and Freetown mucks are found in the interior wetland while the more well drained soils border the north and south boundaries. A small pocket of fine sandy loam is located in the north east corner (Figure 4). The upland soil comprised of Hollis-Rock Outcrop-Charlton Complex located at the entrance on Vine Street is extremely rocky which should be taken into consideration when visitor parking is designed and implemented for the property.

Natural Communities

Natural communities are divisions in plant communities based on conditions determined by the landscape as a whole. Soil composition, slope, aspect, elevation and land use history are all factors that determine the distribution of natural communities on a site.

The Leary parcel is comprised of shallow marsh meadow, shrub swamp, deciduous wooded swamp, and upland habitats heavily influenced by past land use (Figure 5). The upland areas are dominated by black oak and black cherry with glossy and common buckthorns, bush honeysuckles and grape in the understory. The shrub swamp areas are predominantly red-osier dogwood, multiflora rose, *Rubus* spp.

and grape with staghorn sumac along the upland edge. Red maples create a thick canopy in the deciduous wooded swamps while the interior marsh meadow provides a scenic view of the landscape dotted with joe-pye weed and a variety of goldenrod and aster species.

Wildlife

The Leary parcel currently does not include any Priority Habitat for Rare Species or Estimated Habitat for Rare Wildlife as defined by the 13th edition of the Massachusetts Natural Heritage Atlas, nor is it identified as Core Habitat or Critical Natural Landscape in the Heritage Program's BioMap2. While the site doesn't host rare or exemplary habitats, it still provides for generalist species. Common habitat generalist mammals that are likely to occur on the Leary Parcel or Lower Vine Brook Conservation Area include: Virginia opossum, Eastern Gray Squirrel, Red Squirrel, Eastern chipmunk, Meadow vole, White-footed deer mouse, Eastern cottontail, Coyote, Red fox, Long-tailed weasel, Striped skunk, and White-tailed deer.

In May 2014, local land stewards conducted bird surveys and recorded the following spring migrants:

Ruby-throated Hummingbird
Great-crested Flycatcher
Northern Parula
Orange-crowned Warbler
Nashville Warbler
Yellow Warbler
Chestnut-sided Warbler
Magnolia Warbler
Black-throated Blue Warbler
Palm Warbler
Blackpoll Warbler
Black and White Warbler
American Redstart
Ovenbird
Common Yellowthroat
Wilson's Warbler
Canada Warbler
Scarlet Tanager
Rose-breasted Grosbeak
Indigo Bunting
Baltimore Oriole
Wood Thrush
Veery
Hermit Thrush

These migrants use a mix of forest, edge, and field habitats that are available within the parcel boundary. The diversity of warblers in particular indicates the attractiveness of the shrubby and semi-open areas of the property. The forest specialists such as the thrushes certainly benefit from Leary's location in a larger landscape of connected conservation lands. Woodcock with young have been observed on the property. Development of additional trails should take into account the need to minimize the impact of dogs on ground nesting bird habitat. Skirting new trails to follow the forest edge or the use of raised boardwalks is recommended as possible solutions to minimize disturbance and dissection of available early successional habitat.

Historical and Cultural Information

A town sewer line transects the property with manhole covers for access at several points and a concrete tank not far from the trail near the middle of the property (Photo 1). A mown trail has been maintained from Vine Street along this sewer line. Maintenance of mowing creates an open path for access to this municipal line as well as providing a connection to the *ACROSS* Lexington Trail A on the north western side of the property which connects to an extensive existing trail network to the east. The *ACROSS* Lexington trail system is a network of trails within the town dedicated to connecting various conservation lands and recreational areas with other town resources. *ACROSS* stands for Accessing Conservation land, Recreation areas, Open space, Schools & Streets.

There is a decrepit shed on the south east side of the property (Photo 2). This shed is a remnant from when the parcel was privately owned. Since it has not been maintained it poses potential health and safety risks to the public.

Permitted Uses

The parcel is open for the public to enjoy multiple passive use opportunities including walking, hiking, Nordic skiing, snowshoeing, bicycling, and wildlife watching among others. Existing trails are limited, however. Passive recreation is focused on the southwestern side of the property where a roughly 800-foot mown trail connects the Vine Street entrance on the south to the *ACROSS* Lexington Trail A at the northwest. This trail does not penetrate very far into the Leary property, skirting the wetland on the west side. The Northern portion of the property is inaccessible to the public as there are no other trails currently within the bounds of the parcel.

Safety Concerns

There are few concerns about public safety relating to the condition of the property. The small meadow patch behind the proposed affordable housing site could host stinging insects. Given the extent of wet soils, special efforts should be made after high wind events to survey the trails for fallen trees and hanging branches overhead and remove any hazards identified.

Threats and Opportunities

Invasive species pose one of the main threats to ecological integrity of the Leary parcel. Glossy buckthorn, common buckthorn, oriental bittersweet, and bush honeysuckle edge the forest along the Vine Street entrance, while multiflora rose grows in the wet meadow amongst grape and *Rubus* spp.

There is a large, dense stand of Japanese knotweed growing on both sides of the ACROSS Lexington Trail A just beyond the northwest corner of the parcel (Figure 6, Photos 3 and 4). This stand is not currently within the bounds of the Leary parcel, but it should be monitored and ideally treated to minimize the potential for spread into the interior wet areas within the Leary parcel and surrounding lands.

An affordable housing development has been proposed for the parcel adjacent to Leary on the south side just east of the entrance on Vine Street. If housing is built at this site, we recommend that the Conservation Commission work with the developer to design a parking lot that will accommodate residents as well as public users of the Leary parcel. This would minimize any disturbance to the landscape at a later date and also create a sense of connectedness and ownership of the affordable housing residents to the conservation area that is in their backyard. This would also minimize costs for contractors as the extremely rocky soils will add time and complexities to grading or soil movement needed to prepare the site.

If the parcel near the entrance is developed, care should be taken to carefully mark the boundary of the conservation land so that construction activities do not impact the small meadow along the boundary. The development site plan should include monuments to mark boundaries and some clear delineation of the line between the housing site and the conservation land so that residents are not confused about where the property line lies. Monitoring will be necessary in the years following development to ensure that residents are not encroaching on conservation land by mowing, placing structures on, or dumping leaves on conservation land.

Management Recommendations

Description of Past Management Action

The current management actions are limited to trail maintenance, both for access to the sewer line on the west side of the parcel and to connect the Vine Street entrance to ACROSS Lexington Trail A. In the past, this mowing was conducted by seasonal volunteers and interns with the conservation division.

Recommendation for Future Activity

We recommend two management actions to control invasive plant species to enhance the habitat quality of the Leary parcel and four management actions to enhance the experience of passive recreation.

Invasive Plant Remediation

The largest threat to the ecological integrity of the Leary parcel is the presence of invasive plant species. There is a large, dense Japanese knotweed stand near the northwest corner of the parcel. This infestation runs along the bank of Vine Brook on both sides of the ACROSS Lexington Trail A and is identified in Figure 5. This infestation is not within the bounds of the Leary Parcel, however it could spread onto the parcel in the future. Since the infestation runs along the stream bank and is on both sides of the well used ACROSS Lexington Trail A, it is advised that the Town work with the landowners and conduct management of this infestation. This species is highly prolific and small fragments of roots,

shoots and leaves could start new infestations wherever they are spread by flooding waters, bicycle tires or foot traffic. Successful control would involve a multiyear project, the use of herbicide to remove the knotweed, and restoration with native plants.

Due to the density of the infestation it is advised that the town hire a professional herbicide applicator to manage the site using a foliar spray application rather than injecting the stems with herbicide. Stem injection can be highly effective form of treatment, but since the infestation is large in size and dense there is a high likelihood that the applicator would quickly meet the annual allowance of herbicide per acre before the entire infestation is treated. A foliar spray does not typically have as high a success rate the first year since some surface area of the infestation will be missed due to access, but there will be minimal risk of over applying herbicide at the site. To increase the efficacy of foliar spraying, the site should be mowed in the early summer and spraying would be conducted when the re-growth is approximately 3 feet. If mowing is conducted, the machinery would need to be cleaned before mowing is conducted at any other location as small fragments of the plant would allow new infestations to develop at any subsequent mowing sites.

Due to the size of the infestation and the prolific tendencies of the species it is estimated this project would require 3-5 years of treatment. Once the infestation is less dense we recommend replanting the site with native plants. This would not only allow the rhizome mat to break apart sooner but would also help to outcompete the knotweed growth in the spring as well as stabilize the soil on the bank of Vine Brook. After the second year of treatment with herbicide a native meadow seed mix should be applied. After the third or fourth year of treatment, when only spot treatment is necessary with herbicide, shrubs can be planted to further stabilize soil and help rebuild the understory with native species.

Another area to target for invasive plant management is the field entrance to the parcel from Vine Street (Photo 5). The presence of glossy and common buckthorn, Oriental bittersweet and multiflora rose are choking out the native, berry producing shrubs and trees such as the *Rubus* spp. and cherries. Depending on the scale of available resources this area could be managed using several levels of treatment.

Volunteers can hand pull small plants with small root systems. Since these plants will not be berry producing, the material could be left to decompose onsite, or hauled off site if piling the vegetation onsite is undesirable. Larger stems with established root systems should be treated with a foliar application of herbicide by a licensed herbicide applicator. If possible, shrubs greater than 5 feet in height should be mowed in the spring and herbicide application conducted on the re-growth in the fall when the plants are around 3 feet in height. This would maximize the surface area of the plants being treated with the herbicide and minimize risk associated with applying herbicide to a plant that is taller than the applicator. This project would need approximately 2- 3 years of treatment. Since the site is surrounded by fast growing native species (e.g. *Rubus* spp.) we do not anticipate active restoration with native species to be necessary.

Maintenance

Mowing of the entry trail that connects the Vine Street entrance to the ACROSS Lexington Trail A should be continued since it is well used. Mowing will also continue to provide necessary access to the sewer line. The trail should be mown every two weeks and woody vegetation should be clipped back annually.

Improvement Projects

We recommend creation of a new loop trail on the northeastern side of the property to open up more of the parcel for public enjoyment and add connectivity to the existing trail system. As the soils and natural community maps indicate in Figures 4 and 5, the interior of the parcel is rather wet, so creation of a new trail that leads the passive recreational user into the interior of the property would require a long stretch of boardwalk, approximately 1,000ft in length. As seen in Figure 7, the proposed Y shaped trail would follow an old cart path through the interior of the property and connect to Brookwood Road to the north. The creation of the proposed new loop trail would provide a critical missing trail link between existing trail systems on both halves of Lower Vine Brook properties. This would eliminate the need for users to exit onto Brookwood Road and Fairfield Streets to access both halves of the property.

We recommend removal of the old abandoned shed located on the southeastern part of the parcel. It is currently a standing decrepit building that poses safety concerns and hazards to curious public users.

Currently there is no designated off street parking area to access the Leary Parcel from the Vine Street entrance. Users arriving by car now park by simply pulling off the side of Vine Street. This is less than ideal since it is in a residential area located on a narrow winding road. Given the Leary Parcel's short strip of frontage on Vine Street and the rockiness of the soil in this part of the property, we recommend exploring a cooperative design with developers of the adjacent affordable housing site which incorporates 3 to 5 parking spaces dedicated for visitors to the conservation land. These designated parking spaces could still be located within the bounds of the Leary Parcel, but simply accessed via the housing entrance, so the affordable housing site does not sacrifice square feet for conservation land parking.

If this proposal proves infeasible, or if parking is needed before the affordable housing site is constructed, a small nose-in parking area can be created at the entrance to the Leary Parcel. We estimate that two cars could be accommodated without requiring much soil movement. If this solution is pursued, we also recommend posting a sign identifying alternative parking locations at Dunham Street, Webb Street, East Emerson Road, and Fairfield Drive (Figure 8 and Photo 6). We believe posting alternative parking locations could help minimize the tendency to park on the street if the lot is full.

The development of an alternative parking area on Town-owned land at the intersection of Hayes Lane and Grant Street could also be considered. Space would be available there for several cars. Trail access is available from Hayes Lane along an existing trail crossing private property via an easement with the property owner. A small bike rack should also be incorporated in the designated parking area for bicyclists.

The current entry sign is parallel to the road on Vine Street (Photo 7). To maximize visibility, we recommend repositioning the sign perpendicular to the road with lettering on both sides of the sign.

This will maximize visibility of the conservation area to public users as they are walking or driving by the conservation area.

Schedule of Maintenance Activity

Yearly Ongoing Activities

	Winter	Spring	Summer	Fall
	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
Permitting for Planned Projects	x			
Monthly Property Visits	x	x	x	x
Annual Work Plan with Staff and Stewards		x		x
Safety Meeting with Staff, Stewards, Police and Fire Dept.		x		
Trail Walk/Clean Up (downed limbs, draining issues, signage needs)		x		
Repair Plow Damage		x		
Building Projects (kiosks, sign posts, etc.)		x		x
Invasive Plant Management			x	x
Mowing for Wild Flower Meadows				x
Boundary Walk (monitoring for encroachments, signage, etc)				x

Short Term Projects

- Creating a new trail on the northeastern side of the parcel would take approximately 1- 2 years with permitting, trail route approval and boardwalk construction. Once construction is complete, maintenance of the boardwalk will become a short term project. Annual monitoring should be conducted to look for small damage due to downed trees or replacing individual boards: major repairs are likely to be needed every ten years.
- Invasive plant management of buckthorn, multiflora rose, and bittersweet at the Vine Street entrance field would take 3 years or less to complete. The first year would be most intensive with herbicide applicators and volunteers followed by supplementary treatment in the second and third year.
- Rotating the entrance sign should be completed in one season. If possible it should be positioned strategically so it is viewable from the road and located where it will not interfere with the parking area. Annual monitoring should be conducted to replace posts, remove graffiti, etc. as needed.
- If possible, the parking area should be constructed in collaboration with the affordable housing site. If a joint parking area is not desired a small nose in parking area should be constructed at the entrance to the parcel. It is anticipated the parking area would be completed within a year once the project begins and would include a bicycle rack.

Long Term Projects

- Treating the Japanese knotweed on the northwestern side of the parcel will take approximately 3-5 years. It would require working with landowners and getting approval to use herbicide on their lands. The first year would be most intensive, with follow-up treatments the subsequent years. Since Japanese knotweed is such a prolific species and can regrow from plant fragments, we recommend restoration of the site with native species including wetland shrubs such as dogwoods and wet meadow wildflowers such as joe-pye weed. A native seed mix can be planted after the first year of treatment while any shrubs should be planted when only spot treatment of herbicide is needed to manage the knotweed infestation. This will most likely be the 3rd year of treatment.
- We encourage stewards and volunteers to continue annual surveys for spring migrant birds in the Leary parcel and abutting Lower Vine Brook Conservation Area lands and to add annual breeding bird inventories in June. These long-running datasets will track changes in the land and wildlife over the years and volunteer efforts create a sense of connectedness and investment in the conservation parcels.

Priority and Cost Estimates for Recommended Projects

Recommendation	Priority Level	Cost Estimate	Variables
Create 1000ft of boardwalk	High	\$20-\$40k	Volunteers, contractor, or staff, materials used
Control of field invasives	High	\$5-\$10k over three years	Volunteers, contractor, or staff and extent of follow up treatments needed
Control of Japanese knotweed	High	\$10-\$20k over three to five years	number of herbicide treatments needed and whether seeds, plugs or shrubs are used for replanting
Rotation of entrance sign	Medium	<\$500	staff and volunteers, costs of new sign materials if needed
Construction of Parking Area	High	\$5-\$10K	Location of parking lot, among of soil and grading needed to be conducted
Annual bird surveys	Medium	\$0	Staff and volunteers

Conclusion

The Leary parcel is an integral part of the Lower Vine Brook Conservation Area and a vital connection to the *ACROSS* Lexington Trails system. Access enhancements should include three to five parking spaces within the new housing development on the adjacent town-owned parcel and signage to indicate approved uses and trail connections. Habitat management focused on invasive plant control projects will benefit the native species and prevent further spread of invasives. A new trail across the north side of the parcel will enhance what the passive recreationist can experience on the property.

Figures

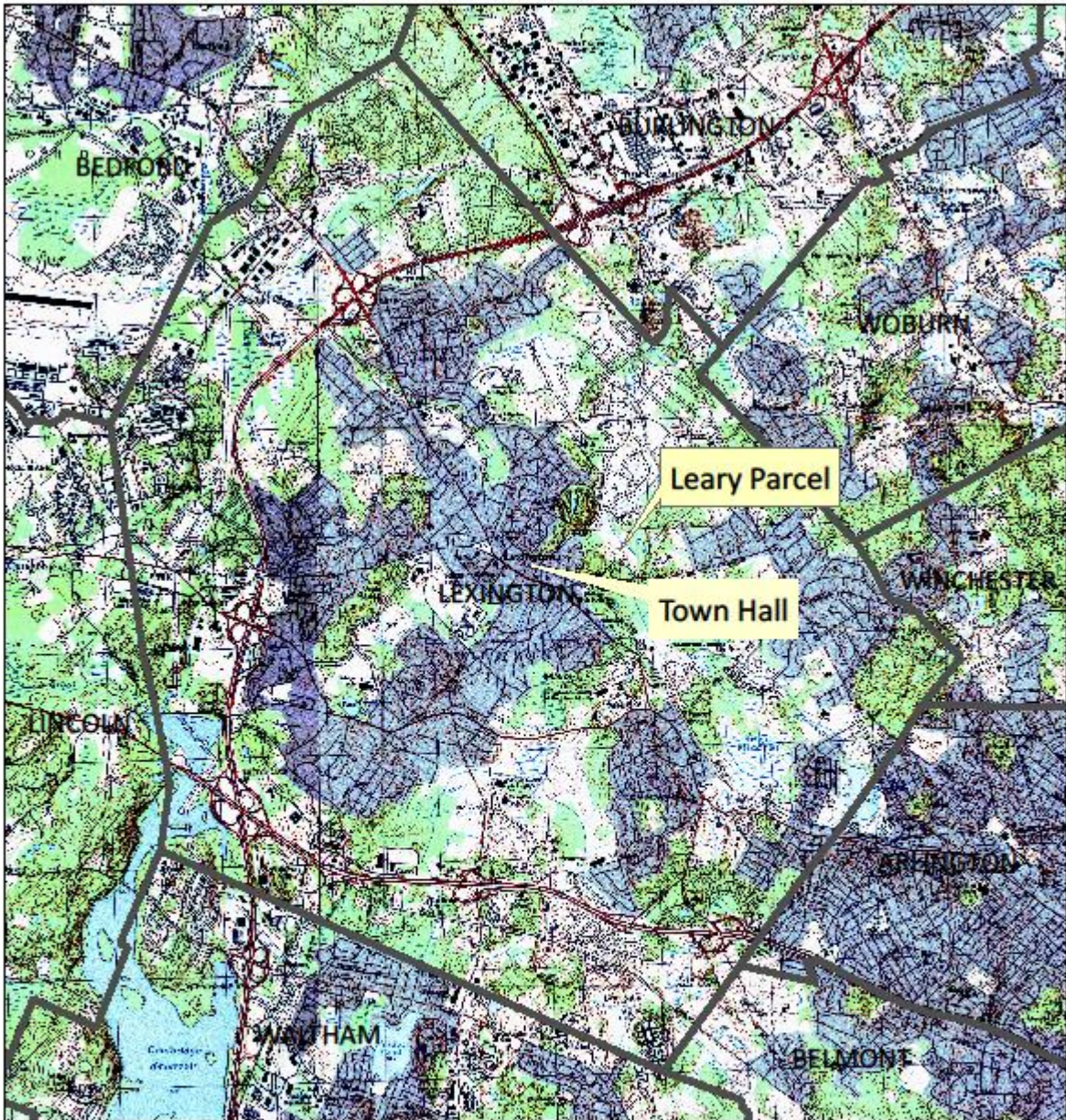


Figure 1. Leary Parcel Locus Map






**Figure 2. Leary Parcel Aerial Base Map
with contours and open space**

-  Leary Parcel
-  Topographic Contours
-  Lexington Open Space





Figure 3. Leary Parcel Topography

 Leary Parcel



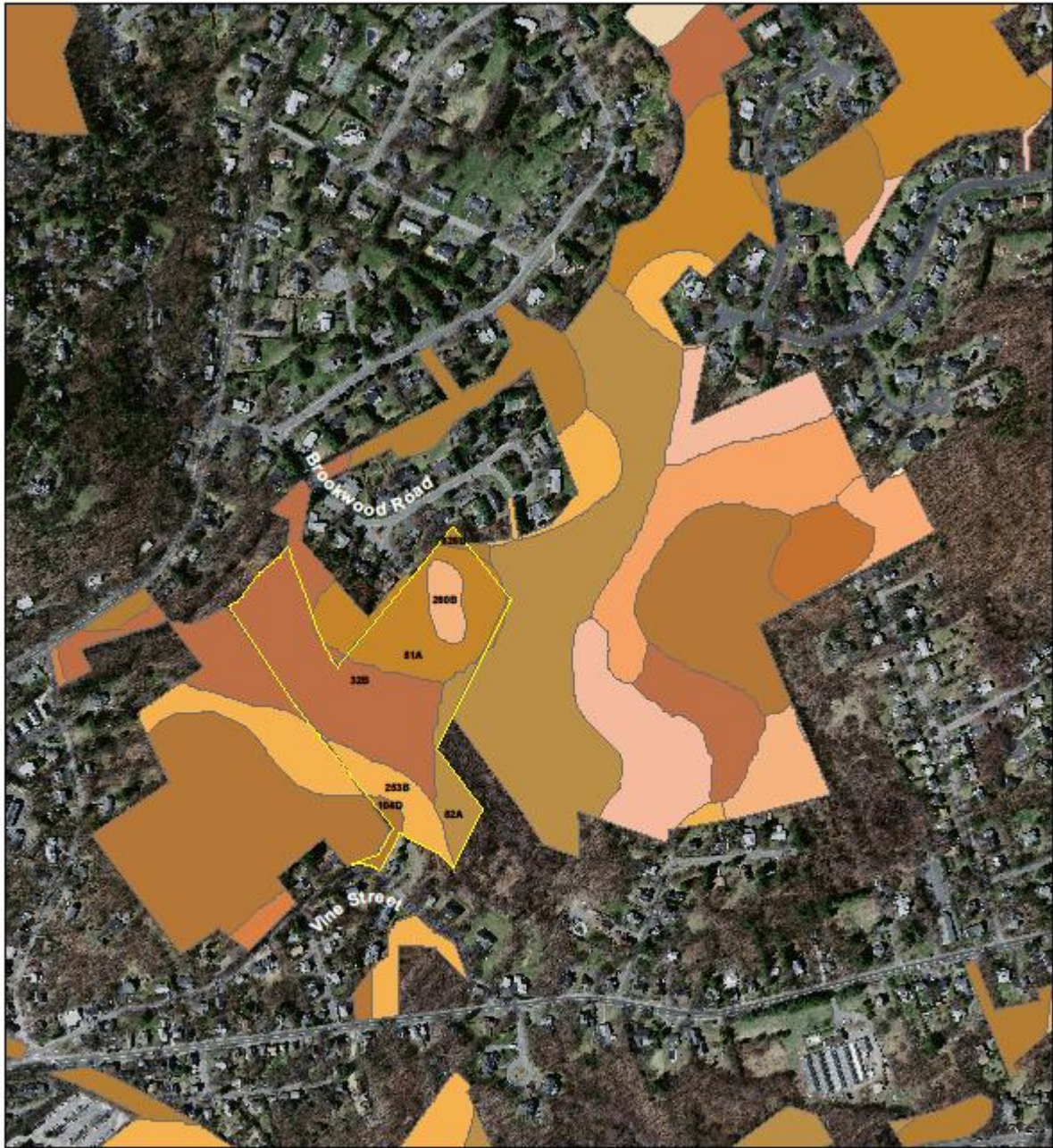


Figure 4. Leary Parcel Soils

- Leary Parcel
- 104D; HOLLIS-ROCK OUTCROP-CHARLTON COMPLEX, 15 TO 35 PERCENT SLOPES
- 253B; HINCKLEY LOAMY SAND, 3 TO 8 PERCENT SLOPES
- 260B; SUDBURY FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES
- 32B; WAREHAM LOAMY SAND, 3 TO 8 PERCENT SLOPES
- 51A; SWANSEA MUCK, 0 TO 1 PERCENT SLOPES
- 52A; FREETOWN MUCK, 0 TO 1 PERCENT SLOPES
- 62B; MERRIMAC-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES



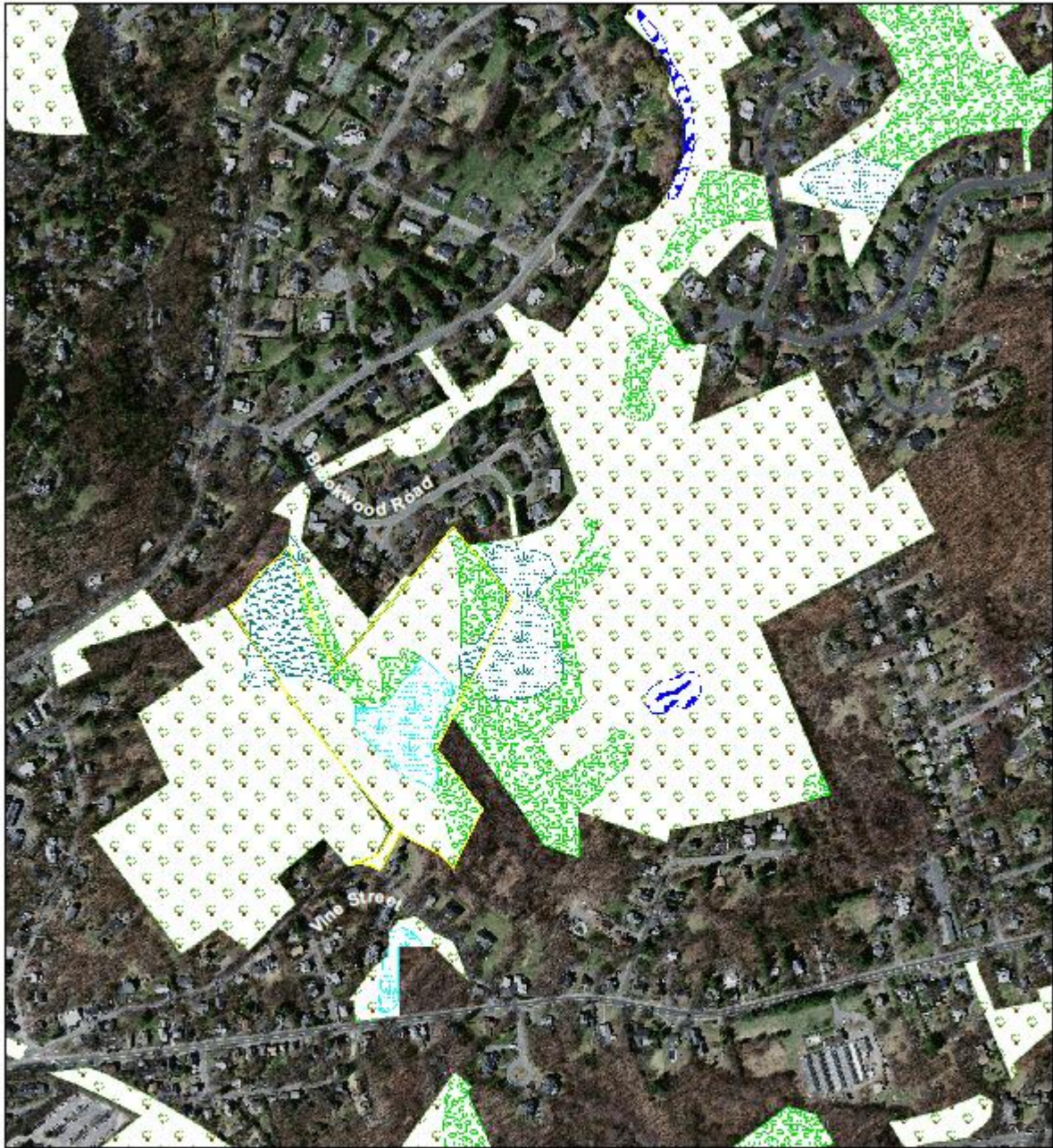


Figure 5. Leary Parcel Natural Communities

-  Leary Parcel
-  BOG
-  DEEP MARSH
-  OPEN WATER
-  SHALLOW MARSH MEADOW OR FEN
-  SHRUB SWAMP
-  UPLAND
-  WOODED SWAMP DECIDUOUS
-  WOODED SWAMP MIXED TREES





Figure 6. Leary Parcel Japanese knotweed

-  Leary Parcel
-  Existing Trail Network
-  Japanese knotweed
-  Lexington Open Space





Figure 7. Leary Parcel Proposed Trail

-  Leary Parcel
-  Lexington Open Space
-  Existing Trail Network
-  Proposed Trail
-  Boardwalk





Figure 8. Leary Parcel Parking

- Leary Parcel
- Affordable Housing Site
- Lexington Open Space
- Parking Options
- Existing Trail Network



Photos



Photo 1. Sewer alongside trail. Mowed access should be maintained.



Photo 2. Decrepit shed on south side of the property is a safety hazard and should be removed.



Photo 3. Japanese knotweed infestation on both sides of Across Lexington Trail A.



Photo 4. Japanese knotweed infestation's proximity to Vine Brook.



Photo 5. Field near the entrance on Vine Street. Treatment of invasive shrubs in adjacent field to north will expand quality open habitat available to wildlife species.



Photo 6. If joint parking area with abutting affordable housing site is not possible, two nose-in parking spots should be made available at the Vine Street entrance.



Photo 7. Existing sign on Vine Street. Rotating sign so that it is perpendicular to the road will increase visibility of the property and enhance visitation.

Appendix –General Descriptions of Soil Types

104-D Hollis-Rock Outcrop Charlton Complex

The map unit consists of exposed bedrock and excessively drained Hollis soils on the crest of ridges often intermingle with stones and boulders. Agronomic capability class is not rated due to difficulty of maneuvering farm equipment along rocky terrain. Depth to bedrock for Hollis is 10-20 inches and over 60 inches for Charlton. Depth to water table is more than 6 feet.

253B – Hinkley loamy sand, 3 to 8 percent slopes

The map unit is excessively drained. Permeability is rapid in the surface layer and subsoil; the substratum has a very rapid permeability making the available water capacity low. Agronomic capability class is 3S. Depth to bedrock is greater than 60 inches. Depth to water table is more than 6 feet.

260B – Sudbury fine sandy loam, 3 to 8 percent slopes

The map unit is moderately well drained. Agronomic capability class is 2E. Depth to bedrock is greater than 60 inches. A seasonal high water table is normally between 1.5 and 3 feet below the surface from December through April.

32B – Wareham loamy fine sand, 0 to 5 percent slopes

The map unit is poorly drained. Agronomic capability class is 4W. Depth to bedrock is greater than 60 inches. A seasonal high water table is normally between 0.5 and 1.5 feet below the surface from September through June.

51A – Swansea muck, 0 to 1 percent slopes

The map unit is very poorly drained and nearly level. Agronomic capability class is 7W. Depth to bedrock is greater than 60 inches. A seasonal high water table is between 0 and 0.5 feet from January through December.

52A – Freetown muck, 0 to 1 percent slopes

The map unit is very deep, nearly level and poorly drained. Agronomic capability class is 7W. Depth to bedrock is greater than 60 inches. A seasonal high water table is normally between 0 and 0.5 feet from January- December.

626B – Merrimac-Urban land complex, 0 to 8 percent slopes

The map unit is very deep and excessively drained. Agronomic capability class is 2S. Depth to bedrock is greater than 60 inches. Depth to water table is more than 6 feet.