

SHAKER SWAMP TRAIL FEASIBILITY STUDY

Prepared for:
Shaker Swamp Conservancy
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I. INTRODUCTION AND EXISTING CONDITIONS

Shaker Swamp is a 495-acre New York State regulated freshwater wetland (CA-4) located at the base of the Taconic Mountain range in New Lebanon, New York. The swamp has significant and profound ecological and historical value as a medicinal wetland used in partnership by the indigenous Native American tribe and the Shaker community and eventually Tilden & Co. Medicinal Extracts. The natural history and human history of the Shaker Swamp are intricately woven together, with artifacts, historic sites and buildings still evident in the present day. Notably, the Darrow School, now located at the site of the original Shaker community, is a National Historic Landmark containing 36 buildings listed on the National Register of Historic Places and includes a portion of the Shaker Swamp.

The Shaker Swamp Conservancy, charged with the stewardship of this medicinal wetland, has envisioned an interpretive nature trail connecting the intersection of two major Native trail ways (Routes 22 and 20) with the historic Shaker Village (the Darrow School and Shaker Museum). The Conservancy has received a grant from the Hudson Valley Greenway to conduct a feasibility study to understand the cost and permitting requirements of building a trail for public access through the swamp with the goals of connecting surrounding community resources, educating the public and maintaining environmental sensitivity while balancing the costs of materials and permitting. This feasibility study will provide a preliminary conceptual scheme and path forward to help the Conservancy leverage funding to design and build the future trail.

A. Existing Conditions

The Shaker Swamp is a NYS-designated freshwater wetland and includes over 500 acres in the Town of New Lebanon, located in northeastern Columbia County (**Map 1, DEC Wetland Map**). 276 acres of this wetland complex is concentrated primarily south of Route 20/Columbia Pike and east of Route 22 in the New Lebanon hamlet. Portions also extend to the north of Route 20 to Cemetery Road, and west, straddling the Route 20 corridor. Within this area, the Shaker Swamp Conservancy owns 39 acres with the remaining lands in private ownership. This report focuses on approximately 500 acres of land in various ownership, located between Route 22, Route 20 and Darrow Road (**Map 2, Habitat; Map 3, Ownership**) which contains the heart of the Shaker Swamp and represents the trail feasibility study area (“the Swamp”).

→ *Ecology*

The ecology of Shaker Swamp was studied and detailed in a May 2012 report compiled by the Hawthorne Valley Farmscape Ecology Program entitled “Shaker Swamp: A Preliminary Ecological Description” (“Farmscape Ecology Report”). It forms the basis of the ecological mapping in this report. The Ecological Description in the report found a “variety of wild medicinal plants growing in and near the Swamp” as well as “A number of rare and uncommon native plant and animal species... [and] several areas of particular ecological interest, including a rocky forested stream, potentially ancient swamp and upland forest remnants, and calcareous cliffs/boulders.” These observations and analyses are the source of **Map 2, Habitat Map**.

The study area shown on **Map 2** contains an array of habitat types, mostly dominated by hardwood swamp, upland hardwood forest, upland meadow, marsh and upland mixed forest, as identified by the Farmscape Ecology Report (**Table 1**). A number of sensitive species and areas of ecological interest were also identified

within these habitats in the Farmscape Ecology Report. When locating the ultimate path of the trails, a detailed biological assessment will be required to ensure that sensitive species are properly protected.

TABLE 1: HABITAT TYPES WITHIN THE STUDY AREA	
Habitat	Acreage Sum
Hardwood Swamp	150.00
Upland Hardwood Forest	101.73
Upland Meadow	79.33
Marsh	66.87
Upland Mixed Forest	58.86
Lawn/Garden	52.02
Dense Development	17.42
Upland Conifer Forest	16.28
Water	12.43
Wet Meadow	11.30
Mixed Swamp	9.38
Caliciferous Cliff	1.75
Total	577.36

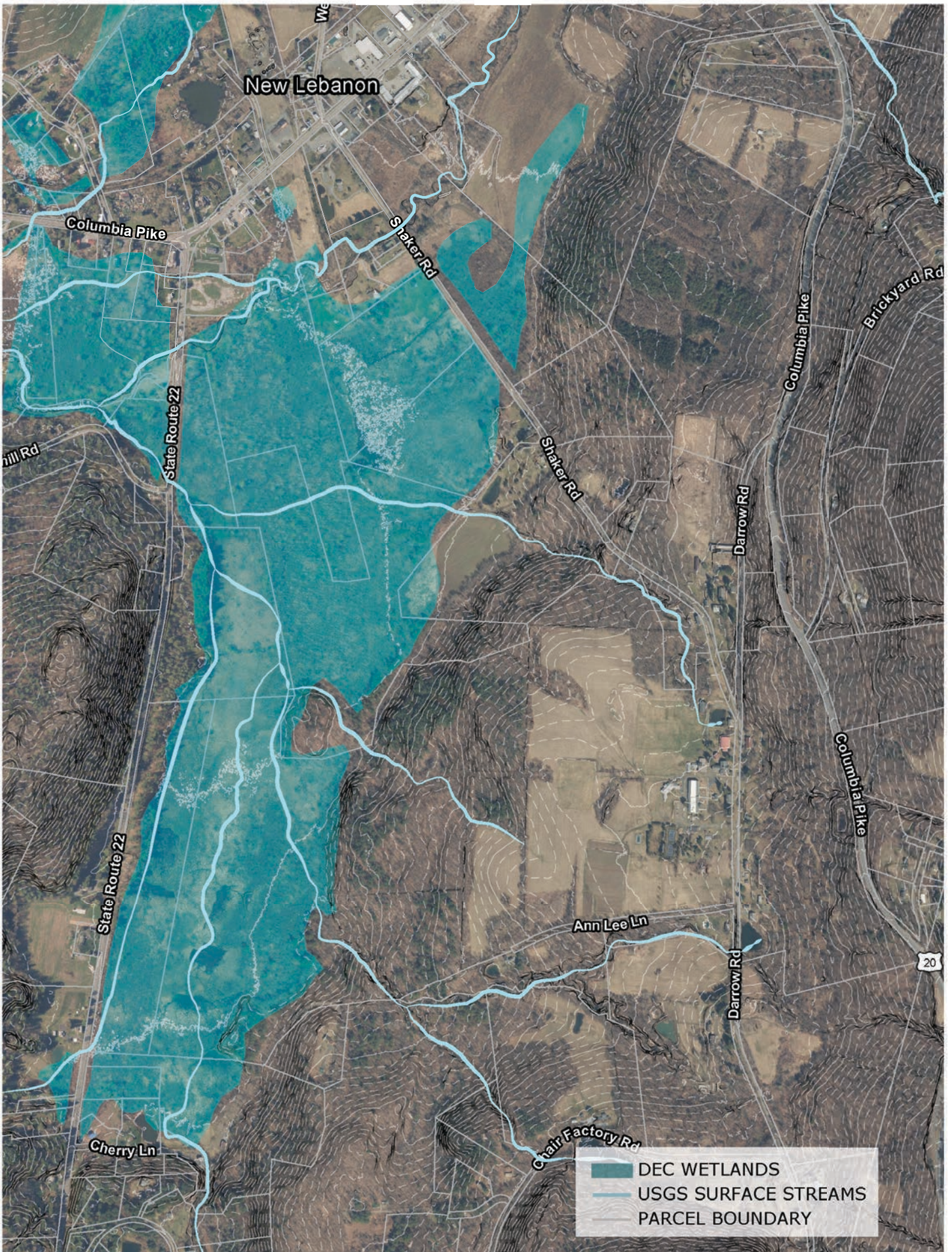
→ **Land Use and Policies**

The portion of the Swamp examined in this Study is bordered by NYS Route 20 (also known as Columbia Pike) to the north, County Route 22 to the west and Shaker Road/Darrow Road to the east. The Swamp itself extends across these general boundaries, flowing through culverts and under bridges along Routes 22 and 20. Route 20 is a major east-west corridor connecting Pittsfield, Massachusetts, and the Berkshire Mountains to New Lebanon in northern Columbia County and on to Albany. Route 22 runs north-south, west of the Taconic Ridge almost the entire length of New York State to Hoosic Falls. These roadways are the main arterials providing access into and out of Town.

Land uses along Route 22 traveling south from Route 20 are rural, wooded and residential, owing largely to the presence of Shaker Swamp to its east. Parcels along this corridor are zoned Residential Agricultural (one- or two-acre minimum lot size). Route 20 is the Town’s primary commercial corridor, zoned General Commercial, and contains small businesses, including a number of restaurants, cafes and the Roaring 20’s Brewery, the Town Library, food and retail stores. Just west of the Route 20/22 intersection is “The Theater Barn,” a performing arts center. Businesses on the south side of Route 20 between Route 22 and Shaker Road are bordered by the Swamp to the south (**Map 3, Ownership**). Several of these businesses and/or property owners have been identified as potential partners through the Shaker Swamp Trail Study. Less than a mile east of the Route 20/22 intersection, the Junior/Senior High School, Town Court and Shatford Memorial Park are situated along Route 20, creating a community center with civic uses and businesses in the Lebanon Springs hamlet.

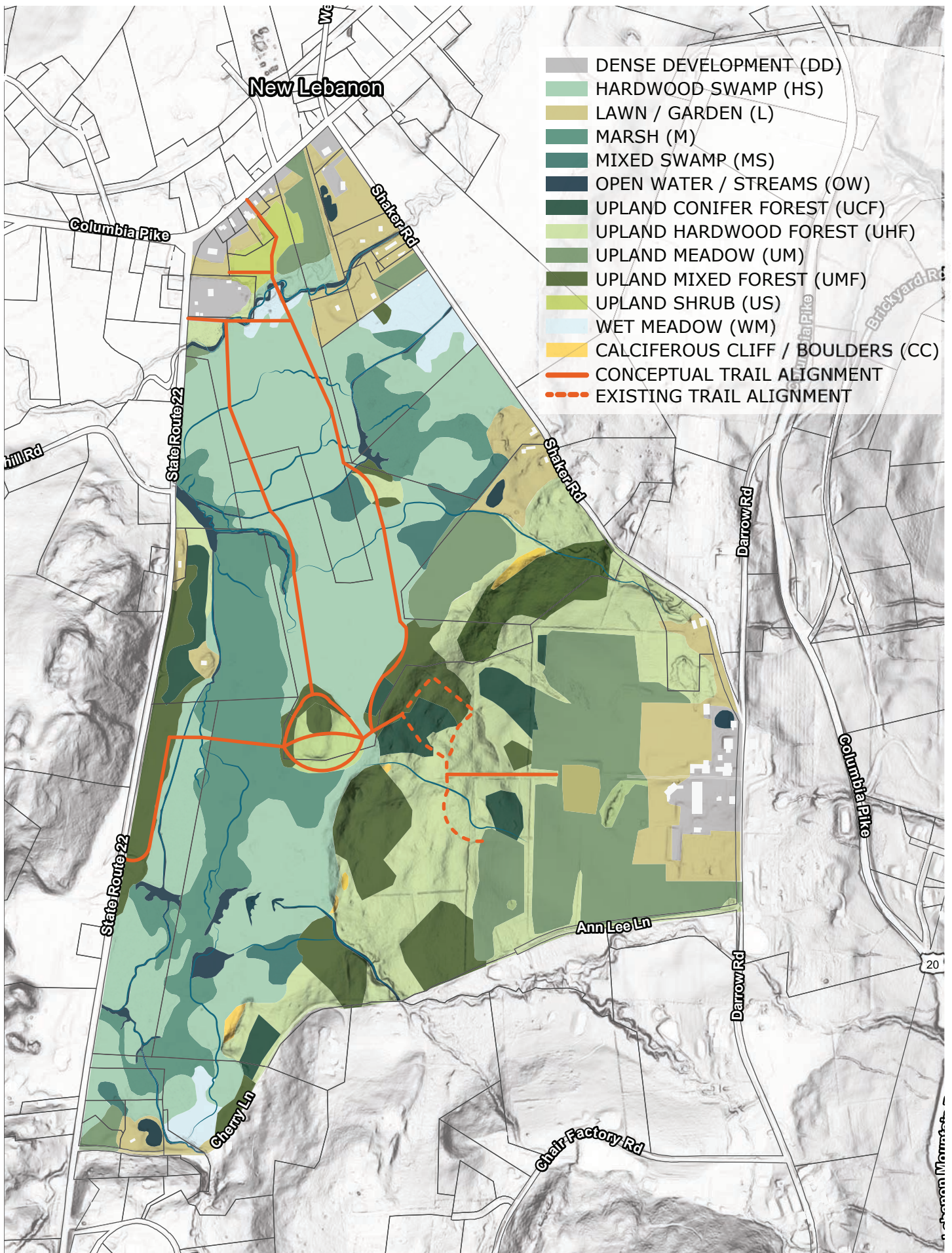
Shaker Swamp Road forms the eastern boundary of the Shaker Swamp and is a rural local Town road. This leads to the Shaker Museum and The Darrow School, a private boarding school that stewards a significant portion of forested lands and the Swamp (**Map 3, Ownership**).

The Town of New Lebanon adopted its Comprehensive Plan Update in 2021 which includes the goal to “Increase the utilization of local businesses, historical, cultural, entertainment and recreational resources, programs and events through an increase in awareness of them.” Sub-goals include “leverage[ing] the Town’s proximity to world-class cultural and recreational resources in the surrounding area in its information campaigns” and to “create a distinctive, positive identity for the Town.” The creation of a trail through the Shaker Swamp would elevate this world-class cultural and environmental resource by physically tying the history of the community to the landscape of the Swamp. The potential also exists for the trail to draw residents and visitors to the area not only for recreational use of the trail, but for interpretive programming and workshops in partnership with the many knowledgeable groups in the area.



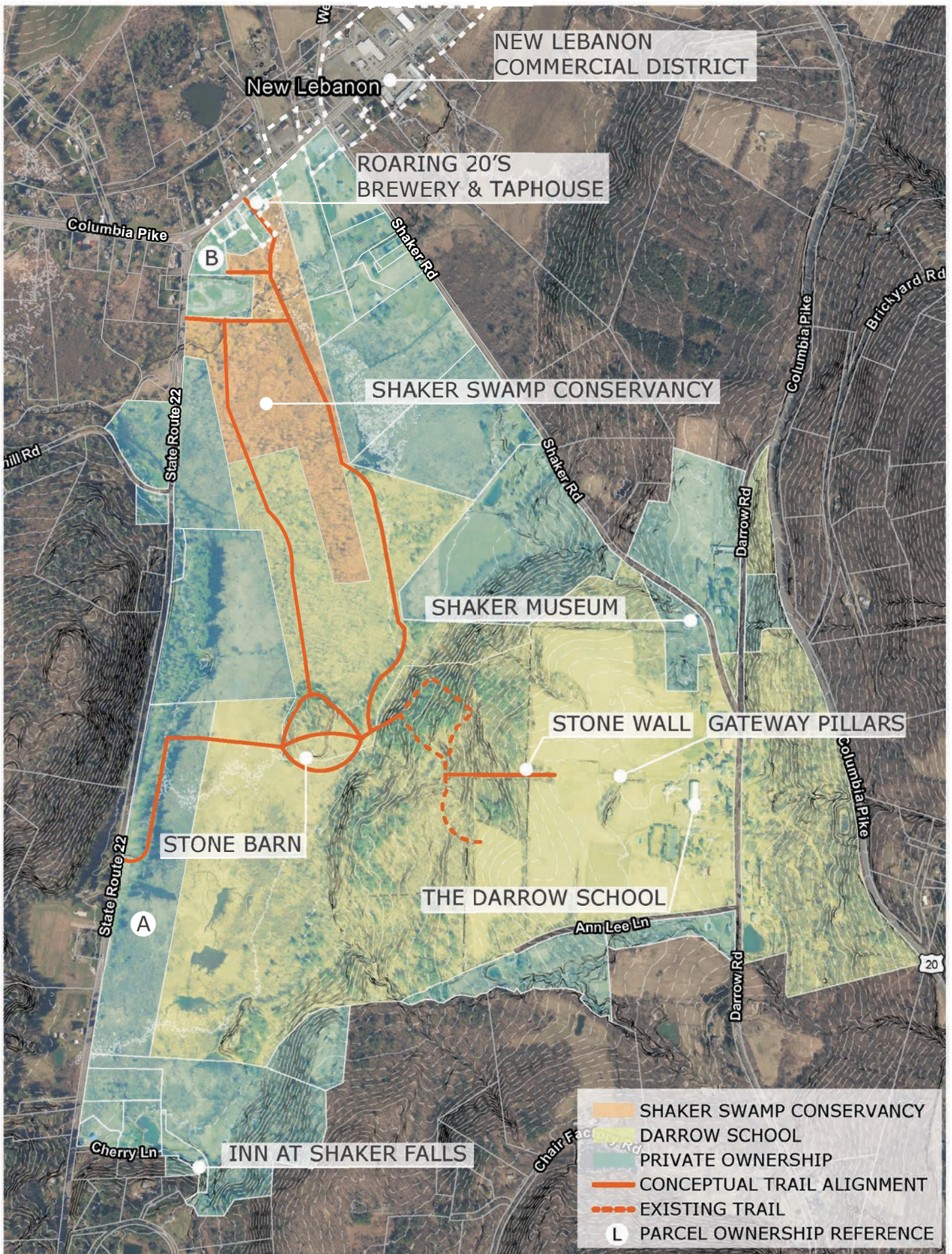
1 DEC WETLAND MAP
 Scale: 1 inch equals 1,000 feet





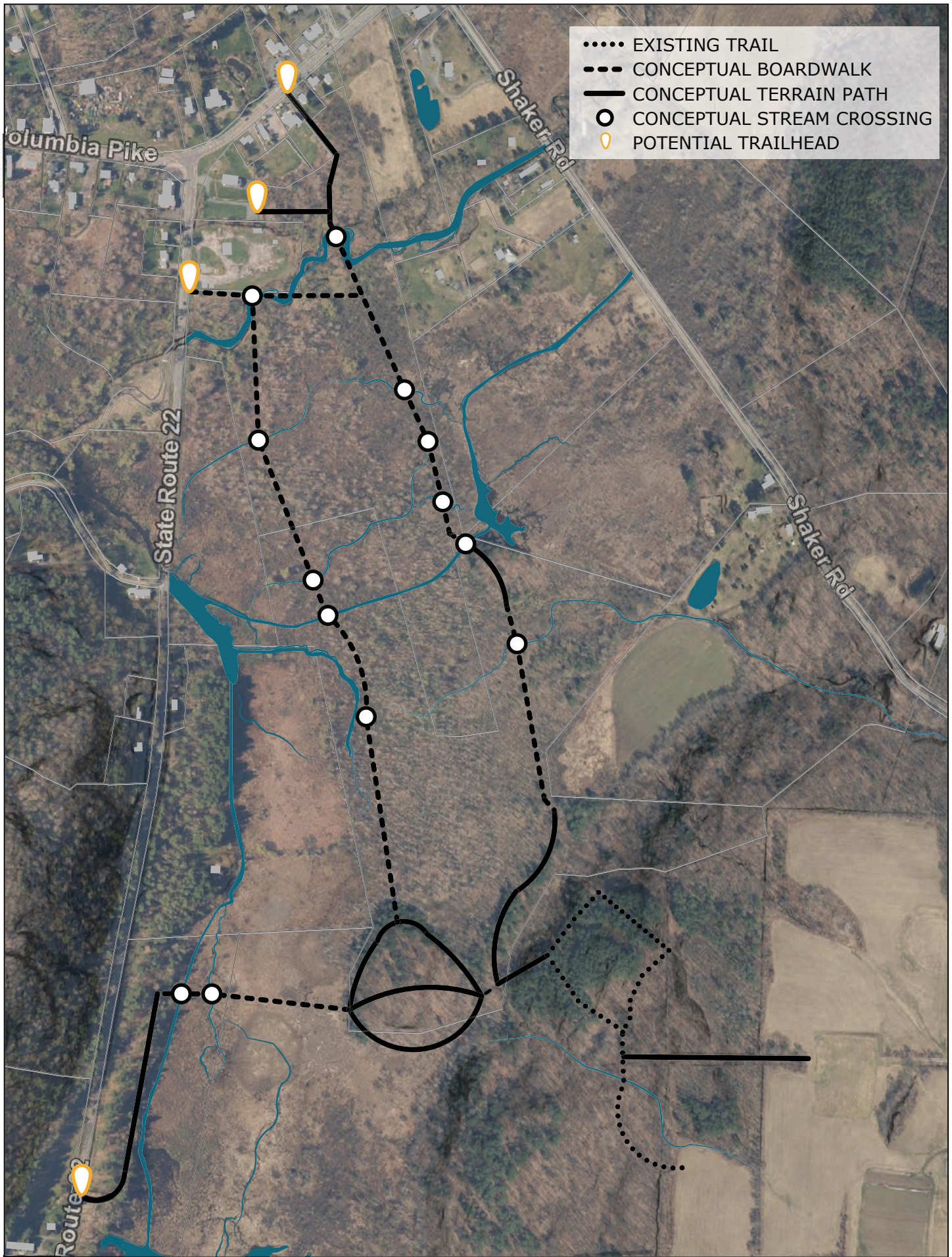
2 HABITAT MAP
 Scale: 1 inch equals 1,000 feet





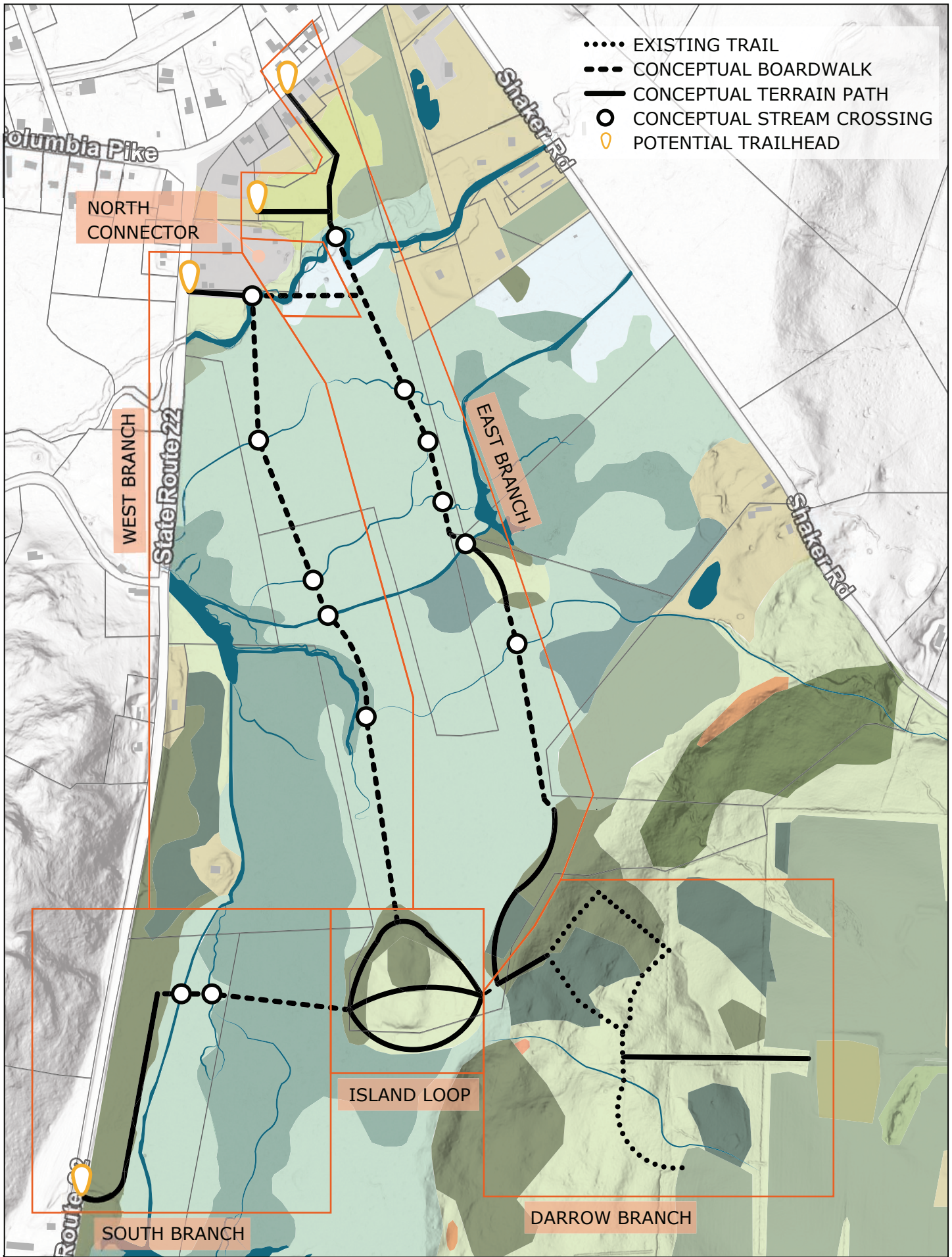
3 OWNERSHIP AND LANDMARKS
 Scale: 1 inch equals 1,000 feet





4 CONCEPTUAL TRAIL ALIGNMENT
 Scale: 1 inch equals 600 feet





5 CONCEPTUAL TRAIL ALIGNMENT HABITAT MAP
 Scale: 1 inch equals 600 feet



II. TRAIL CONCEPTS

A. Introduction & Methodology

→ *Methodology*

The Conceptual Trail depicted in **Map 4** was created with the following goals of the Shaker Swamp Conservancy in mind:

1. Showcase the Swamp, its ecological and historic significance;
2. Facilitate community connections to the Swamp through strategically located trailheads;
3. Minimize environmental impacts to the Swamp and environs;
4. Utilize existing assets and leverage existing partnerships; and
5. Minimize cost.

On July 27, 2022, NPV conducted a site visit of the Shaker Swamp with members of the Shaker Swamp Conservancy. NPV ran a GPS unit and gathered data on significant points encountered along the way ranging from historic landscape elements to environmental considerations such as the presence of rare plants, drainage patterns and instances of inundation. The GPS coordinates for these points were loaded into a Geospatial Information System (GIS) program and overlaid on existing GIS data for the study area including 2-foot topographic contours, aerial imagery, land cover imagery, NYS DEC stream data, parcel ownership data and the ecological community data generated by Farmscape Ecology. Combined with images and data from the site visit, this desktop analysis allowed NPV to approximate the best location for a trail and the associated materials required to complete the trail segment including gravel trail, boardwalk trail and locations that may require bridging. **Map 4, Conceptual Trail Alignment, and Map 5, Conceptual Trail Key,** show the conceptual trail segments over aerial imagery as well as over habitat types. **Map 5** calls out individual trail segments and their materials, which will be discussed in greater detail in Section B., Conceptual Trail Segments.

These trail segments should be viewed as a “menu” from which the Conservancy can adapt for its chosen trail, or trail system. The location of the final trail will be contingent upon the leveraging of landowner partnerships, conducting biological assessments in the field, detailed permitting requirements, and the availability of funding.

Materials costs for each segment were conservatively estimated based on a 6-foot-wide trail. Upland gravel trails are proposed to be recycled concrete aggregate in a 2-inch-thick bed gravel (\$5/square foot). Trails traversing known swamp habitat and therefore requiring a boardwalk design, are proposed to be ThruFlow decking. The cost for decking materials and construction of support and footings is conservatively estimated to be approximately \$70/square foot. ThruFlow decking is designed to allow light to filter below the boardwalk, closer mimicking the natural conditions in a wetland, a requirement for permitting through NYS DEC.



Figure 1: ThruFlo Boardwalk

Bridges required to traverse any known areas of open water are included in the overall materials cost at \$25,000/bridge, regardless of the length of the span. This represents a conservative estimate, as the span of the bridge will vary with the stream crossing and whether a culvert is necessary. A simple wood design is envisioned for these crossings.

TABLE 2: TRAIL OVERVIEW*		
	Length (Linear Feet)	Materials Cost
Darrow School	1,240	\$74,316
Island Loop	2,519	\$75,581
East Branch	4,666	\$1,308,614
West Branch	3,396	\$1,434,125
North Connector	522	\$550,649
South Branch	2,042	\$219,093
GRAND TOTAL	9,720	\$ 3,662,377

**Length is total linear length and does not break out gravel or boardwalk trail. See Maps 4, 5 for materials on which cost is based. Detailed tables for each segment are provided in Section II.B of this report.*

→ **Conceptual Trail Segment Overview**

The Darrow School maintains existing trails through the upland forest habitats on the school grounds and owns the land on which the Island and many archeological artifacts are evident. The Conservancy could consider a trailhead at the school which descends through school property to the Island. A trailhead at the school would require an access easement through school property, which is in active use by the school and its students. The cost and length of trail improvements shown in Table 2 includes 1,145 linear feet of improved gravel trail descending through the uplands and a 95 linear foot boardwalk segment crossing a seasonal wetland area to the Island. If trails were improved by the Conservancy from a trailhead through the Darrow School uplands, it would be necessary to also improve trails to the Island to meet the Conservancy’s goals of showcasing the Swamp’s ecological significance.

The Island Trail contains archeological artifacts and provides somewhat limited views into the Shaker Swamp. As one circles the Island, the various habitat ecologies of the Swamp are evident. The Island itself may be a “potentially ancient hardwood forest” and offers the user an opportunity for quiet reflection and learning about the Swamp and its history. This report presents the Island as a separate segment, however, it does not contain a trail head and would need to be accessed from one of the other four trail segments presented. Improvements to this trail would be limited to 2,519 linear feet of gravel trail, which can be shortened to only circle the Island as opposed to crossing the highest point of the Island.

The East Branch trail achieves access from Conservancy owned property south of Route 22, which could be expanded through other landowner partnerships. This trail crosses a number of swamp and upland habitats through the use of 2,611 linear feet of boardwalk, 1,054 linear feet of gravel trail and approximately 6 bridges. While this trail showcases the swamp and maximizes the Conservancy’s existing assets, building the full length of the trail from a highly visible public trailhead could be quite environmentally impactful without extremely careful biological study and engineering. The Conservancy may find that an out and back boardwalk from this trailhead is less impactful, less expensive, and better meets the stated goals of the organization.

The West Branch trail is very similar in its layout and environmental considerations to the East Branch trail; however, it represents the only trailhead that would need to be cleared and graded for a new parking area. The conceptual trail head would be located off Route 20 on Conservancy property, and the trail would be almost completely constructed of boardwalk over the swamp (3,095 linear feet). This represents potential environmental impacts that would need to be diligently assessed prior to construction, and therefore relates to a notably higher cost. We present a connection between the west and east branch via boardwalk on Conservancy land, that we recommend is only considered if shared parking options along Route 22 are not possible.

Finally, the South Branch trail would be accessed from a private property south on Route 20 and would traverse upland habitat for approximately 915 linear feet before crossing the Swamp to the Island, requiring 1,126 linear feet of boardwalk, 2 bridges. This trail offers beautiful almost panoramic views of the Swamp to the North and South, with the Island and Berkshire Mountains to the east. No part of this trail concept occurs on Conservancy land; however, a review of the potential environmental impacts may be less intensive given the shorter route of the trail, and the Conservancy may feel the archeological artifacts on the Island, the ecological considerations from this trailhead and the overall cost effectively meets the trail goals.

Table 3 summarizes the degree to which trail segments support the Conservancy's goals, supported by the discussions outlined in Section B and C of this report. A segment that may "support" a goal if it furthers the goal with minimal challenges; it may "moderately support" the goal, if there are certain pros or cons to be considered; or "does not support" the goal if the goal is clearly not met. It should be noted that the entire trail segment as presented below in section B is assessed, though the Conservancy may find that a slightly amended trail segment (such as an out and back trail) effectively does meet all the trail goals.

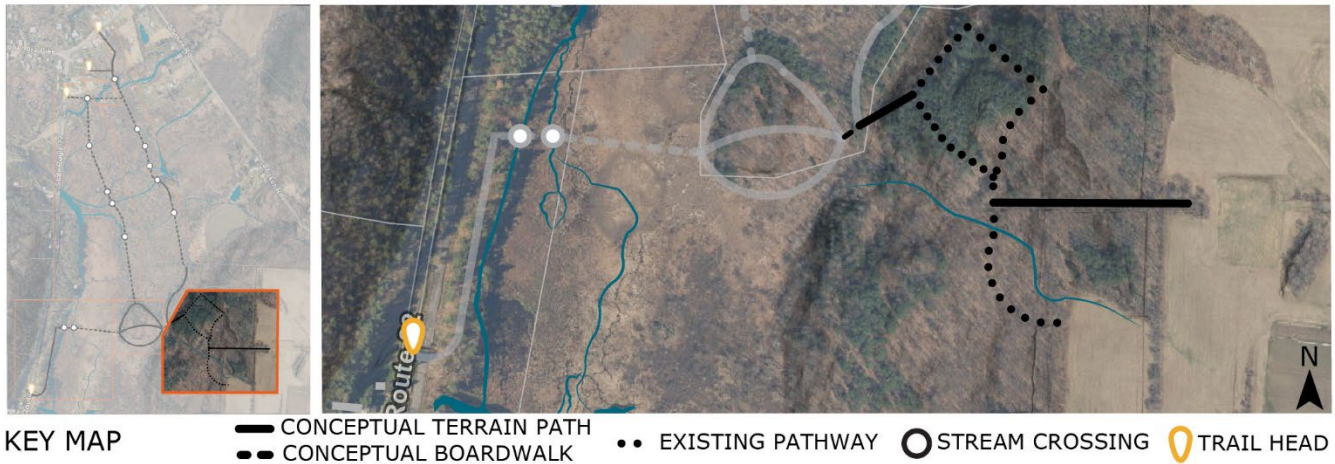
**TABLE 3:
CONSERVANCY GOALS MATRIX**

Goal	1 Darrow	2 Island*	3 East Branch	4 West Branch	5 South Branch
Showcase the Swamp, its ecological and historic significance	Supports Historic	Supports Historic, Ecological	Supports Ecological	Supports Ecological	Supports Historic, Ecological
Facilitate community connections to the Swamp through strategically located trailheads	Moderately Supports	N/A	Supports	Supports	Supports
Minimize environmental impacts to the Swamp and environs;	Supports	Supports	Moderately Supports	Moderately Supports	Moderately Supports
Utilize existing assets;	Does Not Support	Does Not Support	Supports	Supports	Does Not Support
Leverage existing partnerships	Supports	Supports	Supports	Supports	Does Not Support
Minimize cost	Strongly Supports	Supports	Does Not Support	Does Not Support	Supports

** The above assessment was made considering the trail on the Island as an isolated segment which is unlikely, as this trail would be a destination from another trail segment/trailhead.*

B. Conceptual Trail Segments

→ *Darrow School*



Darrow School Trail Segment

Description



Figure 2: Stone wayfinding pillar with rock foundation covered in undergrowth.

The Darrow School is located upland from Shaker Swamp and contains an existing trail network through the uplands adjacent to the Swamp. The site of the school campus was once the heart of the Shaker Community in New Lebanon and contains a number of buildings listed on the National Register of Historic Places. The nearby Shaker Museum and Library shares a northern parcel boundary with the Darrow School and contains over 18,000 artifacts relating to the Shaker Village and hosts exhibitions, tours and other community workshops and activities (**Map 3, Ownership**).

Maps 4 and 5 show the conceptual trail path from the Darrow School to the Island consisting of a system of proposed and existing trails. A proposed trail would begin near the athletic fields of the Darrow School, where two large stone pillars may have been used to mark the entrance to the Swamp. It crosses an open field in use for athletics by the school and enters the upland forest where one passes a number of impressive wayfinding pillars and stone building foundations (**Figure 2**). As the trail descends steeply towards the

lowlands, two large, parallel rock walls appear running up and down the hillside. Historians believe these may have been used to corral herds of cattle between grazing pastures in the swamp and upland (**Figure 3**). This first segment of trail is quite steep, and a switchback or other meandering path may be appropriate, however, the high concentration of artifacts in this area truly highlight the post-colonial story of Shaker Swamp.



Figure 3: Massive stone walls, possibly used to guide cattle to and from the Swamp.

The proposed trail then joins with existing Darrow School trails through mixed upland and conifer forest and continues north and west towards the Island, over hardwood swamp habitat (**Maps 2 and 4**). This stark ecosystem shift is clearly observable from the trail as evidenced in **Figure 4**.



Figure 4: The upland mixed forest in the foreground gives way to lush understory of hardwood swamp habitat in the background.

It is at this point in the trail segment that existing trails (or trails which would be easy to clear) would connect with a new conceptual trail starting with a boardwalk crossing a seasonal stream bed, connecting to “The Island” (see below). It should be noted that portions of the conceptual trail leading to the Swamp are quite steep. This would likely limit the users of this trail segment.

Strengths and Challenges

The Darrow School trail is low-cost way to anchor the story of the Shaker Swamp to the history already embedded in the landscape. With the School and Museum as stakeholders and partners, community educational opportunities abound. A partnership between the Conservancy and Darrow School is paramount to the creation of this trail, as the school would need to accommodate public parking and a trail right-of-way or easement on its grounds. As the grounds are in active use by students throughout the year, public access through the grounds for the use of the trail must be discussed and may be a challenge to navigate.

STRENGTHS

- Concentration of historic points of interest for education
- Existing trail system, limited woody understory to be cleared
- Proximity to Shaker Museum and Darrow School creates potential for expanded partnerships
- Sufficient land for parking
- Low Cost

CHALLENGES

- Requires an easement from Darrow School for trail and parking, additional challenges for trails crossing properties in active use.
- Trailhead “off the beaten path”
- Challenging terrain, steep trail not ADA accessible.

SUPPORT OF CONSERVANCY GOALS	
<i>Strong Historic; Weak Ecological</i>	Showcase the Swamp, its ecological and historic significance <i>Showcases the historic significance of the Swamp but requires trail connections to the Island to get near the Swamp. The trail to the Swamp will likely be steep and may limit usership.</i>
<i>Moderate Support</i>	Facilitate community connections to the Swamp through strategically located trailheads <i>A trailhead at Darrow School would facilitate connections between the School, Conservancy and Shaker Museum. An access agreement to locate a public trailhead and access through the school may be a challenge.</i>
<i>Supports</i>	Minimize environmental impacts to the Swamp and environs <i>Minimal land clearing would be required for this trail likely minimizing environmental impacts.</i>
<i>Does Not Support</i>	Utilize existing assets <i>This trail is not located on Conservancy Land,</i>
<i>Support</i>	Leverage existing partnerships <i>A partnership already exists between Darrow School and the Conservancy.</i>
<i>Strongly Supports</i>	Minimize cost <i>This trail represents the least costly conceptual trail segment in terms of materials.</i>

Materials Cost

Table 4 shows the cost estimate for the Darrow School trails. This trail is already existing or within forest lacking significant shrubby understory which would require clearing (except for the beginning portion entering the forest which is overgrown edge habitat and would require clearing). Most of the trail is anticipated to be gravel, with a short boardwalk segment connecting to the Island trail.

TABLE 4: DARROW SCHOOL TO THE ISLAND COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	1,145	6,871	\$ 5.00	\$ 34,357
Boardwalk	95	571	\$ 70.00	\$ 39,959
Darrow School to The Island TOTAL				\$ 74,316

Cost is approximate. Actual trail locations will depend on site-specific analyses discussed in Section C below.



KEY MAP — CONCEPTUAL TERRAIN PATH - - - CONCEPTUAL BOARDWALK ○ STREAM CROSSING ○ TRAIL HEAD

The Island Loop Trail Segment

→ **The Island Loop**

Description

The Island is so named because it is an isolated area of upland forest surrounded by marsh, hardwood swamp and mixed swamp land. This conceptual trail segment represents the central “destination” of each trail segment and provides a unique vantage point from which to observe upwards of five different ecological communities (upland hardwood, mixed and conifer forest, hardwood swamp, mixed swamp and marsh). The Farmscape Ecology Report identifies the Island ecological community of “particular ecological interest” due to the age of the hardwood trees present. Swamp forest north of the Island is identified as potentially ancient and rare as well. The conceptual trail brings the user up and over the hill, as well as around the Island, allowing the user to observe the transition from upland to swamp and marsh habitat at different locations (Figure 5).

The Island contains the stone foundation of a barn constructed by the Shakers, which sat on piles to avoid the seasonal flooding (Figure 6). It is envisioned that “The Island Loop” is an opportunity for the user to sit and contemplate the sights and sounds of the swamp, to learn about the ecology of and surrounding the Island and the history and importance of the landscape to the many communities that used the Swamp.



Figure 5: Above- Northwestern edge of the Island looking toward hardwood swamp. Below- Southwestern edge of the Island looking toward open marshland.



Figure 6: The remains of a Shaker barn.

Strengths and Challenges

The Island trail is a central destination that offers the user a perspective of both the unique ecology of the Swamp and the unique human history it fostered. The trail can be accessed by one or more of the conceptual trailheads presented in this study, but access would still require an easement from Darrow School. Given the remote location, maintenance and sensitivity of the ecosystem to trail users must be considered in the design of this trail.

STRENGTHS

- A number of opportunities for environmental and historic education.
- Simple, low-cost trail materials and configuration.
- Represents a “destination” for an out and back or a loop hike.
- Can be accessed from a number of trailhead options.
- Darrow School easement on an unused portion of the grounds - less impact to school use.

CHALLENGES

- Remote destination, sensitive resources may require regular maintenance and oversight.
- Protection of rare species if users go off trail.
- Requires an easement from Darrow School.

SUPPORT OF CONSERVANCY GOALS	
	Showcase the Swamp, its ecological and historic significance
<i>Supports</i>	<i>Showcases the historic significance of the Swamp and provides views of the Swamp from the upland trails. Views may be overgrown, and specific vantage points may need to be cleared to truly appreciate the Swamp ecology.</i>
	Facilitate community connections to the Swamp through strategically located trailheads
<i>N/A</i>	<i>N/A- The Island trail could be accessed from a number of trailheads.</i>
	Minimize environmental impacts to the Swamp and environs
<i>Supports</i>	<i>Minimal land clearing would be required for this trail likely minimizing environmental impacts, however; The Island may represent rare forest habitat and the maintenance of this area will be of utmost importance to ensure trails and surrounding habitat is respected.</i>
<i>Does Not Support</i>	Utilize existing assets; <i>This trail is not located on Conservancy Land.</i>
	Leverage existing partnerships
<i>Supports</i>	<i>A partnership which already exists between Darrow School and the Conservancy could be leveraged.</i>
	Minimize cost
<i>Supports</i>	<i>This trail represents a low material cost conceptual trail segment.</i>

Materials Cost

Table 5 shows the cost of the Island Loop trail. For this trail segment, a trail boundary marker such as a raised wooden curb or rope may be required to keep users on the designated trail should sensitive vegetation be encountered. The trail may be shortened to circulate the Island and accommodate added cost.

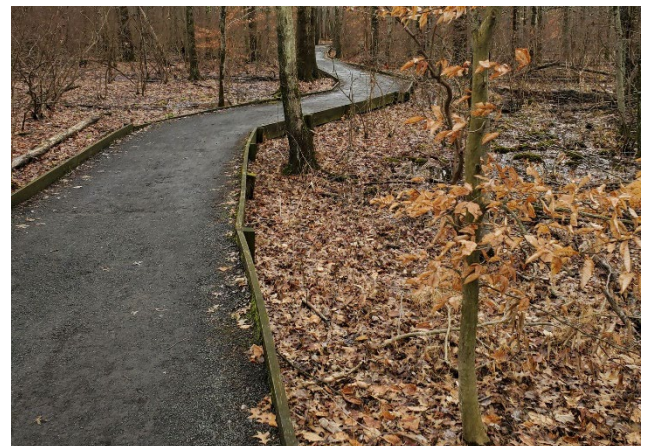
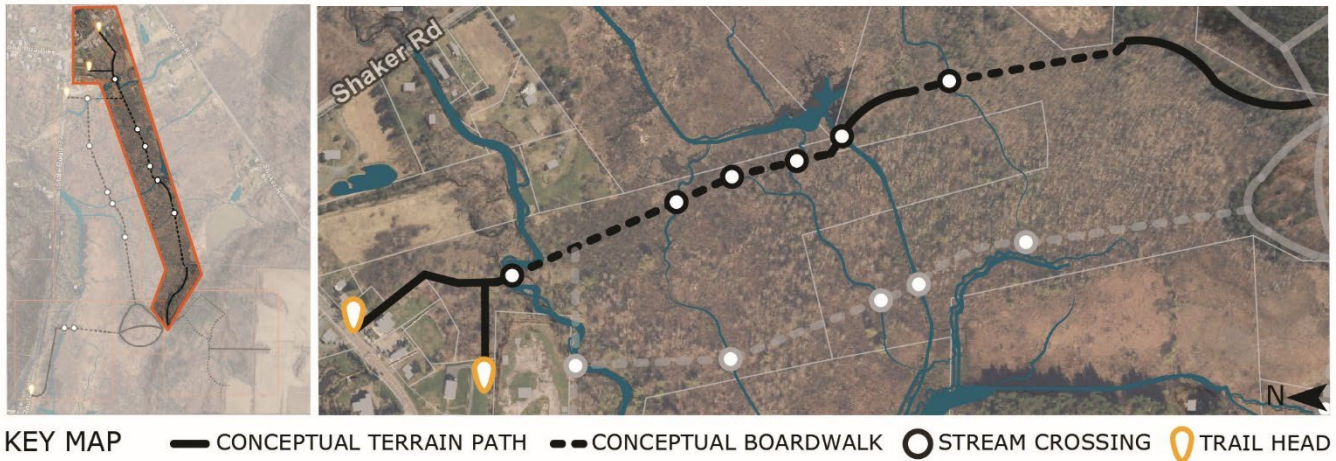


Figure 7: A defined trail at Great Swamp, NJ. Source: AllTrails

TABLE 5: ISLAND LOOP COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	2,519	15,116	\$ 5.00	\$ 75,581
Island Loop TOTAL				\$75,581

Cost is approximate. Actual trail locations will depend on site-specific analyses and permitting requirements discussed in Section C below.

→ **East Branch Trail**



East Branch trail segment with two possible trailheads.

Description

The East Branch conceptual trail segment utilizes an existing right-of-way that appears to be part of a “flag” to the larger parcel which is owned by the Conservancy.¹ This right-of-way runs to the north of Roaring 20’s Brewery, a business located in an old schoolhouse that is listed on the State and National Register of Historic Places. A trailhead at this location would be highly visible to the public and would quickly provide access to connect the activity along Route 20 to the Shaker Swamp. A high volume of users is likely at this trailhead due to its location behind the Brewery and adjacent to the New Lebanon commercial district. This could mean



Figure 8: Roaring 20's Brewery and the Conservancy access to the left of the building.

increased opportunities for the Conservancy to educate and inform the public about the unique resource in their backyards.

¹ A property border survey should be conducted to confirm the exact width and conditions of this right-of-way.

The trail would start to the rear of the Roaring 20's Brewery as an improved gravel trail through upland shrub habitat and would quickly transition to a boardwalk where the ecosystem transitions to hardwood swamp and wet meadow. This trail would immerse the user in a diversity of habitat types including upland shrub habitat, hardwood swamp, marsh, open water, wet meadow, upland mixed and upland hardwood forest. Up to six stream crossings may be experienced on this trail segment. Clearing within the shrub habitat would likely be necessary as would clearing within the hardwood swamp to make space for the boardwalk.

This trail segment could be designed as an out and back or connect to the Island Loop depending on funding and NYS DEC input in response to habitat sensitivity and permitting (discussed in Section C below).



Figure 9: Hardwood swamp and a potential stream crossing near the East Branch trail.

An alternative or secondary parking area may be possible east and south of the Brewery on parcel "B" shown in the Ownership Map (**Map 3**). The former Unity Lodge of Freemasons property is now owned by a private trust and is identified as a "miscellaneous service" use that is reportedly rarely used. This parcel contains an existing building, and the property is cleared with a large parking area that abuts the Swamp. Not only does this property offer ample parking, but because of the space, the trailhead at this location could include more extensive interpretive signage, benches and trailhead amenities. A partnership with the landowner could allow the Conservancy to host events and educational activities from this trailhead and the building itself.

Strengths and Challenges

While notably more costly, the East Branch Trail represents an opportunity to connect the Shaker Swamp to the commercial "downtown" of New Lebanon at a visible location and allows the public to view a great diversity of habitats contained within the Swamp. The Conservancy owns the rights to one entry point at the Roaring 20's Brewery, and additional parking may be accommodated elsewhere within walking distance. While the trail is shown ending at the Island for a loop trail, it can also be adapted to a shorter out and back boardwalk trail depending on cost and permitting needs, particularly given the known sensitivity to the Swamp habitat. Refuse and trail maintenance will need to be enforced at this prominent location. The alternate trailhead on Route 20 may offer parking option that is still convenient from the commercial center, but not as visible to the general public.

- Easily accessible and visible to the general public, a desirable urban nature destination.
- Most diversity in habitat crossings.
- Furthers a number of Comprehensive Plan Goals.
- Boardwalk could facilitate ADA accessibility.
- Length can be adapted to cost and permitting needs

- Limited parking at Roaring 20's Brewery.
- A parking sharing agreement may be required between businesses along Route 20, or with the owners of parcel "B."
- High usership/visibility and sensitive resources will require regular maintenance and oversight.
- Boardwalk trail incurs expense.

SUPPORT OF CONSERVANCY GOALS

<i>Supports Ecological</i>	Showcase the Swamp, its ecological and historic significance <i>Very much showcases the ecological significance of the Swamp with opportunities for trailhead signage to educate with regard to the history.</i>
<i>Supports</i>	Facilitate community connections to the Swamp through strategically located trailheads <i>Community connections from a prominent commercial strip in New Lebanon at a visible location to visitors. Additional trailhead option is convenient but not as visible to the general public.</i>
<i>Moderately Supports</i>	Minimize environmental impacts to the Swamp and environs <i>This trail would be more impactful than upland or existing trails given the extensive disturbances to shrub and swamp habitat.</i>
<i>Supports</i>	Utilize existing assets <i>This trailhead and a portion of the trail is located on Conservancy Land.</i>
<i>Supports</i>	Utilize existing assets; leverage existing partnerships <i>Parking would require partnerships with Roaring 20's Brewery. New partnerships with private landowners may also be required. The trail as shown extends to Darrow School property.</i>
<i>Does Not Support</i>	Minimize cost <i>This trail as conceptualized would require a high material cost, though the segment length could be shortened to save.</i>

Materials Cost

Table 6 shows the cost estimate for the East Branch trail. The East Branch trail would require almost a mile of trail improvement with a little over half of that length requiring boardwalk. The location of bridges is estimated based on the mapped location of water courses, aerial images and topography.

TABLE 6: EAST BRANCH COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	2,054	12,324	\$ 5.00	\$61,624
Boardwalk	2,611	15,671	\$ 70.00	\$1,096,990

Stream Crossing Materials	Quantity	Price/ Structure	Total
Bridge	6	\$ 25,000.00	\$ 150,000.00

East Branch TOTAL	\$ 1,308,614
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Cost is approximate. Actual trail locations will depend on site-specific analyses and permitting requirements discussed in Section C below.

→ **West Branch Trail**



KEY MAP — CONCEPTUAL TERRAIN PATH - - - CONCEPTUAL BOARDWALK ○ STREAM CROSSING 📍 TRAIL HEAD

West Branch trail and potential connection to East Branch.

Description

The West Branch of the trail could offer the opportunity for a loop trail through the Swamp, connecting the West Branch, East Branch and the Island Loop trails via a short segment of boardwalk running east to west. This segment may be viewed as an alternative to the East Branch trail, though the environmental impacts of both trails may be too large- this will depend on discussions with NYS DEC and a field visit by a certified wildlife biologist.



Figure 10: Hardwood swamp and a stream crossing in the vicinity of the West Branch trail.

The Conservancy owns land just north of Wyamanock Creek which is densely vegetated with shrubby, invasive growth and could likely be cleared and graded for a small parking area. The Wyamanock Creek is classified as a Class C (TS) stream, meaning the water quality could support fisheries and non-contact activities, and also supports trout spawning (TS). Streams designated (TS) are considered protected streams and are subject to the NYS Protection of Waters Program (see “permitting considerations” below).

This trail would be similar to the East Branch trail in that it would start in the upland hardwood forest and would immediately cross the Wyamanock, continuing through hardwood swamp and marsh habitats. This branch would involve approximately five (5) stream

crossings and would otherwise be entirely constructed as a boardwalk.

In addition to the length of trail connecting to the Island, a short span of additional boardwalk (“north connector”) could connect to the East Branch trail. This may be considered if parking needs to be spread across trailheads, or if both the East and West branch trails are pursued, to create a true loop trail.

Strengths and Challenges

The entire West Branch trail may not be a realistic trail segment to pursue *in addition* to the East Branch segment given the environmental sensitivities, permitting and overall materials cost associated with both segments looping out to the Island. The West Branch trailhead is the only trailhead location discussed that would require grading and clearing to accommodate parking. This may be a permitting challenge (discussed in Section C below) but is likely not as significant as permitting boardwalk trail through the Swamp itself. If the Conservancy needs parking to be accommodated on land they control, portions of this trail segment may be pursued (perhaps looping back to a smaller trailhead on Route 22 via the North Connector trail.)

STRENGTHS

- Boardwalk could be ADA accessible.
- Access already owned by the Conservancy
- Length can be extended based on funding: an out and back or loop trail to the Island.
- Potential to connect to East Branch and Island for a loop trail.
- Large number of stream crossings create unique nature experience.

CHALLENGES

- Limited parking capacity at trailhead.
- Parking area requires land clearing and likely grading - more rigorous permitting likely for wetlands and floodplain disturbances.
- Trailhead less visible/connected to Route 20 commercial corridor.
- Boardwalk trail incurs expense.

SUPPORT OF CONSERVANCY GOALS

<i>Supports Ecological</i>	Showcase the Swamp, its ecological and historic significance <i>Showcases the ecological significance of the Swamp with opportunities for trailhead signage to educate with regard to the history.</i>
<i>Strongly Supports</i>	Facilitate community connections to the Swamp through strategically located trailheads <i>Trailhead is convenient to Route 20 commercial uses, but not directly adjacent to same.</i>
<i>Moderately Supports</i>	Minimize environmental impacts to the Swamp and environs <i>This trail would on its face be more impactful than upland or existing trails given the required disturbances to shrub and swamp habitat. The trailhead would require clearing and grading.</i>
<i>Supports</i>	Utilize existing assets <i>This trailhead is on Conservancy land and the trail spans Conservancy and Darrow School property.</i>
<i>Supports</i>	Utilize existing assets; leverage existing partnerships <i>This trailhead is on Conservancy land and the trail spans Conservancy and Darrow School property.</i>
<i>Does Not Support</i>	Minimize cost <i>This trail as conceptualized would require a high material cost, though the segment length could be shortened to save.</i>

Materials Cost

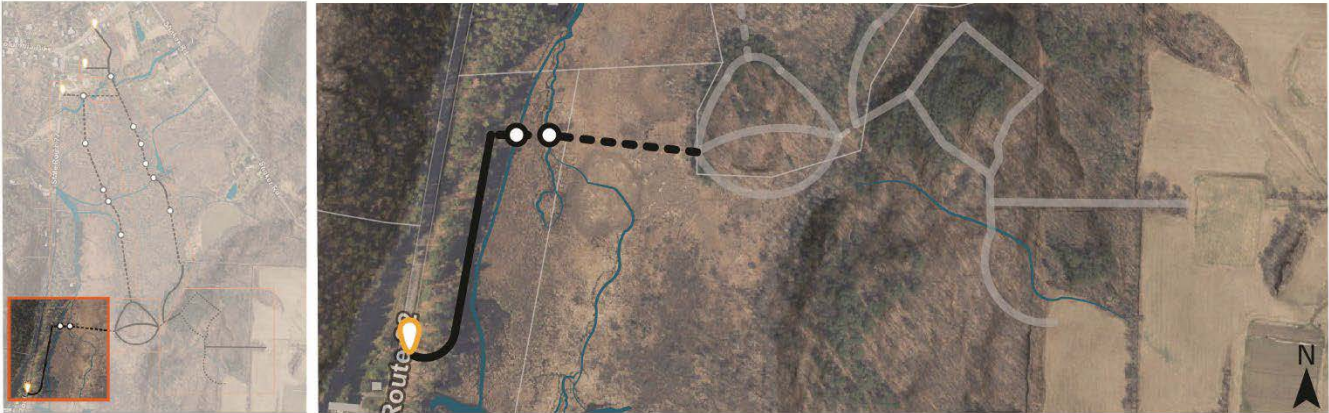
Table 7 shows the cost estimate for the West Branch segment from the trailhead to the Island, and for the North Connector as a separate line item. The West Branch would require over 3,000 linear feet of boardwalk to reach the Island and would include approximately five (5) bridges. The location of bridges is estimated based on the mapped location of water courses, aerial images and topography.

The North Connector, which could connect to the East Branch trail, represents over 500 feet of additional boardwalk trail.

TABLE 7: WEST BRANCH COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	301.2	1,807.2	\$ 5.00	\$ 9,036
Boardwalk	3,095.45	18,572.7	\$ 70.00	\$ 1,300,089
Stream Crossing Materials	Quantity	Price/ Structure	Total	
Bridge	5	\$ 25,000.00	\$ 125,000.00	
North Connector				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Boardwalk	521.65	3,129.9	\$ 70.00	\$ 219,093
TOTAL West Branch Alone		\$ 1,434,125		
TOTAL West Branch + North Connector		\$ 1,653,218		

Cost is approximate. Actual trail locations will depend on site-specific analyses and permitting requirements discussed in Section C below.

→ **South Branch Trail**



KEY MAP — CONCEPTUAL TERRAIN PATH - - CONCEPTUAL BOARDWALK ○ STREAM CROSSING 📍 TRAIL HEAD

South Branch Trail Segment

Description

The South Branch Trail proposes access via parcel “A” shown on **Map 3**. This property is owned by a private landowner believed to be connected to the Inn at Shaker Falls, an organization that has expressed interest in a potential partnership with the Shaker Swamp Conservancy. The potential trailhead is located proximate to an area that appears to have been cleared and filled already. From this point, the trail would travel north through mixed upland forest, providing a clear view of different ecosystems: where ferns and coniferous trees characterize the landscape to the west and an open view of hardwood swamp, marshland and the Island is visible to the east. Farther east, the Taconic Mountain range visible in the background. Beaver activity is evident in the immediate upland and swamp habitat here as well (Figures 11, 12).



Figure 11: Potential Trail looking north/east.



Figure 12: View toward the Island across the Swamp from the South Branch trail.

Heading north through the upland allows the trail to be low cost/low maintenance gravel to the point at which it is directly across the Swamp from The Island, where a loop trail may be located. It is likely that much of this stretch of trail connecting the upland forest to The Island would be inundated year-round and would require a boardwalk trail. This swamp crossing would be located on Darrow School property.

This trail would offer expansive views and the ability to experience three clearly differing ecosystems: Upland Mixed Forest, Hardwood Swamp and Marsh.

Strengths and Challenges

The South Branch Trail proposes access from and through land that is not owned by the Conservancy, and which is south on Route 22 in a rural area that is less visible to visitors than other trailheads. The trail would offer unique views of the mountains and swamp ecosystems and is almost half the length of other boardwalk trail segments, leading to a lower cost and potentially less ecological impacts, depending on the results of field surveys.

STRENGTHS

- Likely ample space for parking.
- Comparatively low cost to access the Island.
- Three distinct ecosystems offer opportunity for education.
- Extensive views of the Swamp in all directions.

CHALLENGES

- Not located on Conservancy property, easements would be required from two private owners.
- Trailhead “off the beaten path.”

CONSERVANCY GOALS

Showcase the Swamp, its ecological and historic significance

Supports *Showcases the ecological significance of the Swamp and connects to the historic artifacts on the Island.*

Facilitate community connections to the Swamp through strategically located trailheads

Supports *Trailhead is more removed, may offer connections to limited hospitality uses in the area (bed and breakfasts and Inn at Shaker Falls).*

Minimize environmental impacts to the Swamp and environs

Moderately Supports *Shorter trail through the swamp minimizes potential impacts while providing Swamp experience.*

Utilize existing assets

Does Not Support *No portion of this conceptual trail segment is located on Conservancy Land.*

Leverage existing partnerships

Moderately Supports *The trailhead and upland trail segment would be located on private property, the trail would then cross to Darrow School property.*

Minimize cost

Supports *This trail would require a moderate material cost, in addition to the Island trail’s material costs.*

Materials Cost

Table 8 shows the cost estimate for the conceptual South Branch trail from the trailhead to the Island. While materials and ecology are similar to the East and West Branch trails, this trail is half the length with fewer bridges. The location of bridges is estimated based on the mapped location of water courses, aerial images and topography.

TABLE 8: SOUTH BRANCH COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	915	5,492	\$ 5.00	\$ 27,460
Boardwalk	1,126	6,759	\$ 70.00	\$ 473,189
Stream Crossing Materials	Quantity	Price/ Structure	Total	
Bridge	2	\$ 25,000	\$50,000	
South Branch TOTAL	\$ 550,649			

Cost is approximate. Actual trail locations and material cost will depend on site-specific analyses and permitting requirements discussed in Section C below.

C. Permits, Approvals and Permissions

A number of permits will be required to construct trails through Shaker Swamp. This section will review the types of permits that may be required, confirmed in a Pre-Application with the NYS DEC on December 2, 2022. To begin the environmental impact and permitting review, a “Joint Application” will be submitted along with required supplemental materials such as a wetland delineation, parcel survey, engineered plans for trails and parking areas, environmental review forms required under the State Environmental Quality Review Act, and any other studies required for the permitting process.

A full understanding of the exact permitting and approvals, and the level of detail required to secure same will involve consultation with local and state agencies once the Conceptual Master Plan is finalized. **Table 9** provides a summary of the permits and approvals that may be required for each trail segment. NYS agency correspondences are attached as Appendix A.

**TABLE 9:
PERMITS AND APPROVALS**

Trail Segment Name	SEQRA	NYS /ACOE Wetland Dist. Permit	Protection of Waters Permit	Protected Species	Historic & Archeological Resource Review	Local Site Plan Review	Floodplain Dev. Permit	Easements
Darrow School	✓				✓	✓		✓
The Island	✓	✓		✓	✓			✓
East Branch	✓	✓	✓	✓		✓		✓
West Branch	✓	✓	✓	✓			✓	✓
South Branch	✓	✓	✓	✓	✓			✓

→ *Permits and Approvals*

State and Federal Permits/Approvals

State Environmental Quality Review Act (SEQRA)

In the State of New York, no organization, agency or individual may undertake, fund or approve a physical construction activity that may affect the environment without undergoing review under SEQRA as set implemented in 6 NYCRR Part 617 of New York State Environmental Conservation Law. This review is performed by a “Lead Agency” which is the Agency principally responsible for undertaking, funding or approving the project. Where local site plan or subdivision review is required, the Lead Agency is often the Planning Board or other Board authorized to approve site plans and subdivisions. However, in the case where the use is permitted by right and does not require local discretionary approvals (see below), the NYS DEC might assume the role of Lead Agency.

SEORA would therefore be the overarching review process for the issuance of permits and approvals related to the Shaker Swamp Trail System. For this review, the Conservancy must submit a Part 1 Environmental Assessment Form (EAF) and a narrative discussing environmental impacts associated with the “whole action,” or the master concept plan. This plan may be constructed in phases, but all impacts associated with the project must be identified early, through SEQR. Disturbances of over 10 acres are considered a Type I action under SEQR, which may require the preparation of an Environmental Impact Statement. For disturbances under 10 acres, the action will be classified as “Unlisted”, and an Environmental Assessment and associated analyses may be all that is required.

The Conservancy should reach out to the NYS DEC, US ACOE and SHPO for a consultation on the project as soon as a Conceptual Trail Plan is finalized.

Wetland Delineation and Disturbance Permits

As set forth in Article 24 of the Environmental Conservation Law (ECL) and implemented under 6 NYCRR Parts 663, 664 and 665, the Freshwater Wetlands Act is intended to prevent despoliation and destruction of NYS DEC-designated freshwater wetlands. These wetlands are mapped and must be 12.4 acres or larger for protection under this Act. Under the Act, NYS DEC regulates activities in freshwater wetlands and in their adjacent (100-foot buffer) areas. Almost any activity which may adversely impact the natural values of the wetlands of their adjacent areas is regulated.

This permit will be required for any and all trail building occurring within or within the 100-foot regulated adjacent area to Shaker Swamp, which is a NYS DEC regulated wetland. Importantly, the NYS DEC will require that the wetland be delineated by a wetland specialist to confirm the jurisdictional boundaries are accurate. All trail segments with the exception of the upland Darrow School trails will require the wetland boundary be delineated. The NYS DEC should be consulted early in the trail planning process to confirm level of detail required for a wetland delineation. The delineation will then be verified by NYS DEC and US ACOE. The DEC will also advise on the level of engineering detail needed to secure wetland disturbance permits required to locate boardwalks and bridges.

In addition to a NYS DEC Wetland Permit, a permit will also be required from the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. Typically, disturbance permits are filed jointly with the NYS DEC and USACE.

Protection of Waters Permits

As set forth in Article 15 of the ECL and implemented under Title 6 NYCRR Part 608, a Protection of Waters Permit is required from the NYS DEC for disturbing the bed or banks of a stream with a classification of AA, A or B, or with a classification of C with a standard of (T) or (TS) (disturbance may be either temporary or permanent in nature).²

The South Branch of the Wyomanock Creek runs through the Study Area. This creek and some of its tributaries are considered class C(T) or C(TS). NYS DEC should be contacted regarding the need for and requirements of securing a Protection of Waters Permit for bridge or boardwalk crossings proposed for the East Branch, West Branch and South Branch conceptual trails. In addition, accurate mapping of the West Branch Trailhead will be

² <https://www.dec.ny.gov/permits/6335.html>

needed to determine if disturbances will come within 50 feet of the bed or banks of the Wyomanock Creek in that location.

A Water Quality Certification may be required by USACE under Section 401 of the Clean Water Act for any activity that may result in discharge into waters of the United States. NYS DEC may advise as to whether this will be required as engineered plans are prepared.

Protected Species/Incidental Takings Permit

New York State maintains a list of endangered and threatened species and species of special concern, which are protected under ENV Section 11-0535. NYS DEC, in partnership with the NY Natural Heritage Program (NHP) reviews projects that may impact listed species and recommends or requires mitigations to avoid impact. However, when a project proponent cannot fully avoid adverse impacts to listed species, the regulations regarding issuing an “incidental takings” permit come into play. An Incidental taking is an unavoidable adverse impact to a NYS Protected species.

Similarly, the US Fish and Wildlife Service is responsible for enforcement of the US Endangered Species Act, which establishes protections for fish, wildlife, and plants that are listed as threatened or endangered. Efforts to protect these species are coordinated between USFWS and NYS DEC as well.

Per a letter received from the NYS DEC Natural Heritage Program dated December 13, 2022, (Appendix A) agency records show that the Northern Long-eared Bat may occur on site. Potential impacts can typically be impacted by restricting tree clearing during the months that bats are in hibernation or limiting the clearing of trees that could be potential roost sites. The letter states that “depending on the nature of the project and the conditions at the project site, further information... may be required...”

The Farmscape Ecology Report documents several NYS Endangered, Threatened and Species of Special Concern that could be encountered within the Swamp. A field investigation should be performed in the vicinity of the trail routes to determine whether regulated species are present. This will be shared with NYS DEC as part of the permitting process, and the agency will inform the Conservancy whether the project poses potential environmental impacts to listed species. Due to the nature of this project, the need for an incidental takings permit should be expressly avoided and is not anticipated to be necessary. It is assumed that the Conservancy will favor a trail planning approach that limits impacts to not only state listed species but also to those of local, medicinal or historic importance.

Historic and Archeological Resources

The NYS Historic Preservation Office (SHPO) administers programs authorized by both the National Historic Preservation Act of 1966 and the New York State Historic Preservation Act of 1980. Under Section 106 of the National Historic Preservation Act and Section 14.09 of the New York State Historic Preservation Act, the SHPO's role in the review process is to ensure that impacts on eligible or listed properties, or to potential archeological sites or artifacts, are considered, and avoided or mitigated during the project planning process.

Because of the Shaker Swamp’s ties to physical sites listed on the State Register of Historic Places, and due to the well documented occurrence of historic artifacts within the swamp (stone wayfinding pillars, rock walls, stone foundations etc.), SHPO will likely require that the potential presence of buried archeological resources be investigated (see Figures 13 and 14). A typical investigation might require a Phase 1A Literature Review and, if

warranted, a Phase 1B Field Investigation. The Phase 1B involves test holes that are dug at regular intervals within the proposed areas of disturbance. Findings from these test holes will determine whether a complete investigation and recovery operation will be required for areas of disturbance. It should be made clear to SHPO the degree to which land disturbance will take place as this influences the degree to which buried artifacts could be impacted.

In addition, the SHPO may provide recommendations regarding whether the proposed trail will adversely affect historic resources. Because these resources are under private ownership, these comments will likely be considered advisory.

The Conservancy should reach out to SHPO early in the planning process to understand what may be required as the application is advanced through the SEQR review and permitting process. The Conservancy can open a query using the Cultural Resource Information System (CRIS).³ From the “Submit” page, choose “Consultation” to complete a project submission form.

³ <https://cris.parks.ny.gov/>

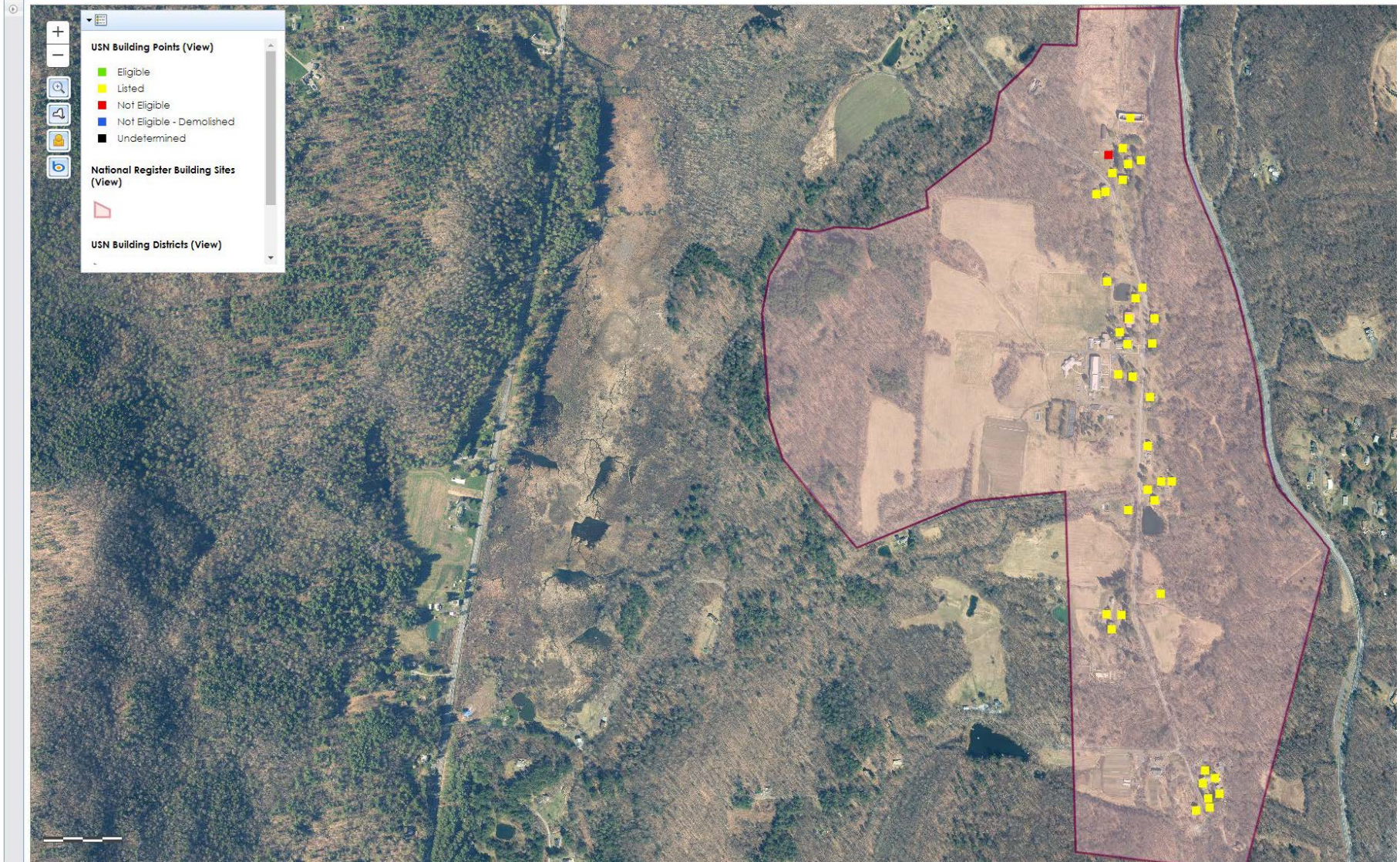


Figure 13: The Cultural Resource Inventory System shows the Historical Significance of the Darrow School property and buildings. The property is on the National Register.

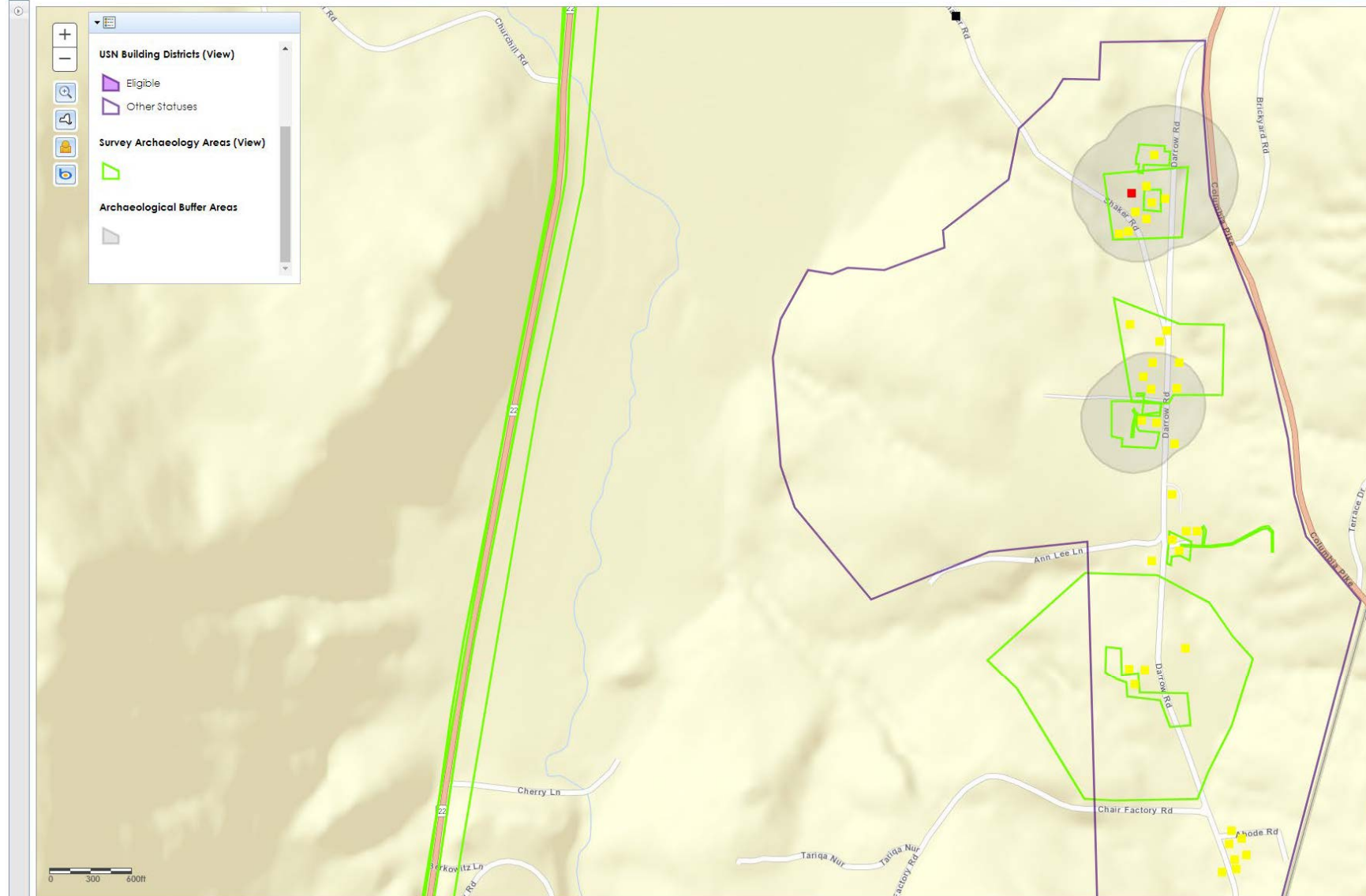


Figure 14: The Cultural Resource Inventory shows the Archeological significance of the Darrow School property and buildings. Areas where an archeological survey has been performed are shown in green, areas where artifacts may still be found based on prior studies are shown in grey.

Local Permits and Approvals

Chapter 206, Zoning, of the Town of New Lebanon Code, regulates land use throughout the Town. Attachment 2, Zoning Law Use Table, lists all of the uses allowed in the Town and whether they require review and approval by the Town Board, Planning Board or whether they are permitted by right with a zoning permit. Shaker Swamp Trail System would likely fall under a “public park, forest or recreational area” use which is permitted by right in the Residential Agricultural and General Commercial districts, which is where the Study Area lies. A zoning permit through the Building Department will be required.

Should additional improvements be required for parking at a new trailhead or at an existing business, such as the Roaring 20’s Brewery, and Darrow School, a site plan or site plan amendment may be required. The Town Building Department should be consulted on this matter.

In addition, a Floodplain Development Permit may be required if structural improvements are proposed within the FEMA designated 100-year floodplain. It is not likely a permit will be required for the development of at-grade trails unless there is significant fill activities proposed. The Administrator will need to be consulted for confirmation.

→ **Landowner Permissions**

Of the roughly 280 acres of Swamp in the Study Area, the Shaker Swamp Conservancy owns 39 acres with two points of access to a road. A majority of the Swamp is owned by the Darrow School with other various private landowners making up the remaining acreage (**Map 3, Ownership**).

The development of a Shaker Swamp trail system that meets the goals of the Conservancy will require one or more partnerships with private landowners and the creation of legal agreements or “easements” for the use of private land for a public purpose. Every conceptual trail segment shown in this feasibility study would require at least one easement agreement with one or more private landowners, which are outlined in Section D. Here, we describe some considerations that should be incorporated into discussions with partners regarding the terms of an easement. A land use attorney should be engaged to facilitate the execution of these agreements.

Trail and Parking Easements

- The exact area of land to be dedicated to the trail and parking must be denoted on a surveyed map. For the trail, this is called the “right of way.”
- Conditions attached to the parking lot and the right of way should be discussed. This includes times of day that the trail is open to the public and the maximum capacity of the parking area.
- The need for lighting, security, access and site control must be determined.
- The parties responsible for the upkeep and maintenance of the trail and parking areas must be established.
- Consider whether future improvements would be permitted within the easement areas- for example new signage, benches, portable toilets etc.
- An upkeep and maintenance plan should be considered including how often the trail is surveyed and maintained and what routine maintenance entails (e.g.-provision or emptying trash receptacles).
- Insurance, liability, and emergency response must be considered.

In addition to easements, the East Branch trailhead located adjacent to Roaring 20’s Brewery would require shared parking between the trailhead and the Brewery, on Brewery property. The Conservancy should inquire

whether the Brewery was approved with excess parking, and where any additional parking might be accommodated within the requirements of the New Lebanon Zoning Code.

D. Feasibility Summary and Recommendations

→ Summary

Trail segments proposed in this report sought to meet the five goals set forth by the Conservancy: showcase the Swamp, its ecological and historic significance; facilitate community connections to the Swamp through strategically located trailheads; minimize environmental impacts to the Swamp and environs; utilize existing assets and leverage existing partnerships; and minimize cost. The Shaker Swamp Conservancy owns 39 acres of the Shaker Swamp which is almost entirely hardwood swamp or open water habitat. The parcel boundaries front to Routes 22 and Route 20/Columbia Pike, adjacent to a number of community connections. Access to the Swamp is also shared by the Darrow School and other private landowners.

While access to the Swamp from Conservancy property maximizes the existing assets and community connections, and clearly showcases the Swamp ecology, connecting these trails almost a mile south to the Island represents significant cost and potential environmental impacts. The Darrow School and the Island are rich with archeological artifacts and historic resources, and this southern, upland trail represent some of the least costly and environmentally impactful trail improvements, though the Swamp ecology is less prominent, and the land is not owned by the Conservancy.

Each conceptual trail segment presented considers the most cost-effective route given the points of access. The intent of this segmented presentation is to allow the Conservancy to consider the strengths and challenges of each segment either independently or as part of a larger trail system to leverage potential partnerships and funding as it becomes available.

Table 10 outlines the estimated cost of materials to build each segment based on a 6-foot-wide trail as detailed in Section B, and the materials/infrastructure identified in **Maps 4** and **5**.

TABLE 10: TRAIL COST ESTIMATE TOTAL	
Darrow School	\$ 34,357
Island Loop	\$ 115,540
East Branch	\$ 1,308,614
West Branch	\$ 1,434,125
North Connector	\$ 219,093
South Branch	\$ 550,649
GRAND TOTAL	\$ 3,662,377

Table 11 summarizes the major takeaways for each trail segment based on the discussions in Section B and C including cost, community connections, parking capacity and trailhead engineering. Trail segments estimated to cost less than \$100K in materials is considered “low” cost. Trail segments estimated to cost between \$100K and \$1M are considered “moderate” and trail segments over \$1M are considered “high” cost.

Community connections are based on the number of business or educational resources adjacent to the associated trail’s trailhead- higher connection potential correlates with a higher density of business, cultural or educational resources.

For parking, it is anticipated that no more than 10 spaces will be required for a trail head if the entire trail system were built out. Based on that estimate, a trailhead that could handle more than 10 passenger cars (assumes 10 x 20 parking space as assessed from aerial images) is considered “high” capacity, a trailhead that can likely accommodate at least 10 cars is considered “moderate” and a trailhead that can accommodate less than 10 passenger cars is considered “low” capacity.

Constructing any portion of the trail will require engineering and permitting. In the absence of detailed plans, the costs can only be approximated. Based on our understanding of the conditions, a “high input” trail is one that requires a number of permits, involves extensive sensitive ecosystems and is larger in size. For example, while East Branch and South Branch both span a number of ecosystem types requiring similar permits, East Branch is significantly longer than South Branch.

We further identify trailhead input for added context, where a low-input trailhead requires little to no design (parking already accommodated) and a high input trailhead requires clearing, grading and parking surface improvements.

**TABLE 11:
TRAIL SUMMARY MATRIX**

Trail Segment Name	Easements Required	Cost Estimate	Community Connections	Parking/ Trailhead Capacity	Permits & Engineering
Darrow School	Yes, Entire Trail: - Darrow School, entire Trail and potential shared parking agreement	Low	Moderate	High	Low
The Island	Yes, Partial: - Darrow School, entire trail	Moderate	N/A	N/A	Moderate
East Branch	Yes, Partial: - Darrow School - Potential shared parking with Roaring 20’s Brewery; - Potential Parcel “B” trailhead	High	High	Roaring 20’s- Low Parcel B- High	Trail-High Trailhead- Moderate
West Branch	Yes, Partial: - Darrow School	High	High	Moderate	Trail-High Trailhead- Moderate/High
South Branch	Yes, Entire Trail: - Parcel “A” trailhead, trail use; - Darrow School trail use	Moderate	Low	Moderate	Trail-Moderate Trailhead-Moderate

→ **Potential Grant Opportunities**

The Conservancy may seek grant funding for the planning, preparation, permitting and construction of the trail. Below is a summary of grant opportunities that may be appropriate.

Environmental Protection Fund Grant Program for Parks, Preservation and Heritage

Administered by the Office of Parks, Recreation and Historic Preservation (OPRHP), opportunities for funding are available by applying through the Consolidated Funding Application (CFA). The grant program offers “matching grants for the acquisition, planning, development, and improvement of parks, historic properties... and heritage areas.” Funds are available to municipalities and not-for profits with an ownership interest. The maximum award in 2022 was \$500,000. Guidelines and forms may be revised for 2023, and additional information can be found at: <https://parks.ny.gov/grants/grant-programs.aspx>

Recreational Trails Grant Program

The RTP program is funded by the US Federal Highway Administration and administered by the Office of Parks, Recreation and Historic Preservation. The program provides funds to the State to develop and maintain recreational trails and related facilities. The Conservancy should be aware that the complexity of paperwork involved in this grant application may add cost to the project. More information can be found at:

<https://parks.ny.gov/grants/recreational-trails/default.aspx>

Park and Trail Partnership Grants

“Park and Trail Partnership Grants—administered by Parks & Trails New York in partnership with the NY Office of Parks, Recreation and Historic Preservation (OPRHP) and funded through the Environmental Protection Fund—support a wide array of partner efforts, from raising private funds for capital projects and performing maintenance and beautification tasks, to providing innovative educational programming and hosting special events.” These grants may help to support the hiring of consultants required for the planning and preparation of the trail system.

More information can be found here: <https://www.ptnyfriends.org/park-and-trail-partnership-grants>

Regional Council Capital Fund Program

Funds are available through the State’s Regional Economic Development Council Initiative, which helps drive regional and local economic development across New York State. While this fund is typically used for business related costs, a tourism related grant may be available. More information can be found here:

<https://esd.ny.gov/regional-council-capital-fund-program>

Hudson River Valley Greenway Grants

The Shaker Swamp Conservancy may qualify for Conservancy Trail Grants offered by the Hudson River Greenway Grant Program. This program is dedicated to funding recreational trail projects, especially if they seek to implement the goals of the Greenway Trail Program. Eligible projects include trail construction, planning and design. Applications are due February, May, September and November in 2023. More information can be found here: <https://hudsongreenway.ny.gov/grants-fundinghttps://hudsongreenway.ny.gov/grants-funding>

Other Organizations

Additional opportunities or guidance for identifying funding sources may be available through:

- Columbia County Block Grant
- The Open Space Institute
- Rails to Trails Conservancy
- Cornell Cooperative Extension
- Columbia Land Conservancy
- Trout Unlimited
- Ducks Unlimited
- Berkshire Taconic Community Foundation

→ **Recommendations and Next Steps**

Selection of a route for a trail through the Shaker Swamp, which meets the Conservancy's goals, will likely be an iterative process, involving stakeholder support and close discussion with NYS DEC regarding permitting and engineering requirements.

While the East and West Branch conceptual trails are on Conservancy Property and are most connected to the heart of New Lebanon's commercial district, the nearly mile of boardwalk required to construct trails out to the Island is likely cost prohibitive (for materials and permitting), and environmentally invasive from both a construction and maintenance perspective. If ownership and control of a prominent community trailhead is a priority for the Conservancy, an out an back boardwalk trail or short loop within the 39 acres owned by the Conservancy may be a more viable trail option that should be explored.

In contrast, the Darrow School and the South Branch Trail are lower cost, lower impact alternatives with trailheads slightly off the beaten path. They showcase both the history and ecology of the Swamp, but are not located on land owned or controlled by the Conservancy and therefore require significant private partnerships and negotiations. The Island and Darrow School trails truly showcase Shaker history interwoven into the Swamp given the number of historic and archaeological artifacts proximate to the trail. This trail must also be carefully designed to fit within the school program.

Next Steps

Using the information provided in this Study, the following steps will be required to begin planning for a Shaker Swamp trail system:

1. **Stakeholder Support - Property Owners:** The Conservancy should begin to reach out to landowners including the Darrow School, the owners of Parcels A and B (**Map 3**) and Roaring 20's Brewery to assess the potential for locating trailhead parking and trail rights of way through necessary properties. The Conservancy can then narrow down the trail segments that will or will not be feasible based on those partnerships.
2. **Stakeholder Engagement:** The Conservancy should reach out to stakeholder organizations in the community including Town of New Lebanon officials, Boards and Committees to seek endorsement of the project and pursue funding for more detailed site analysis including engineering at trailheads and biological study along the proposed trail route.
3. **NYS DEC and SHPO Guidance:** With a preferred conceptual trail route mapped, the Conservancy should engage with NYS DEC and SHPO to seek guidance on the level of detailed information that will be required for review and approval of the project.
4. **Detailed Planning:** Once the trail route has been identified, detailed mapping and planning should begin including:
 - a. Wetland and stream delineations, under the guidance of NYS DEC and a licensed professional;
 - b. Biological survey of conditions along the proposed trail route with recommendations to keep sensitive resources safe;
 - c. Property boundary surveys, particularly between landowners entering into any easement agreements;
 - d. Engineered drawings of proposed trail conditions.

APPENDIX A
AGENCY CORRESPONDENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 4
1130 North Westcott Road, Schenectady, NY 12306-2014
P: (518) 357-2069 | F: (518) 357-2460
www.dec.ny.gov

December 27, 2022

Adriana Beltrani, AICP
Senior Environmental Planner
Nelson Pope Voorhis
156 Route 59 Suite C6
Suffern NY 10901
abeltrani@nelsonpope.com

**Re: Jurisdictional Inquiry Response
Trail Feasibility Study**
Tax ID #'s: 19.4-1-35.110 , 19-1-38 , 29.-1-17 ,
29.-1-28
Town of New Lebanon, Columbia County

Dear Adriana Beltrani,

Thank you for contacting the New York State Department of Environmental Conservation (DEC) regarding your proposal to Study Trail Feasibility at the property located at the Shaker Swamp Conservancy. Based on the project information which you provided, and the resources identified, the following information provides a preliminary summary of permits that may be required from the DEC for your project.

Freshwater Wetlands:

The parcels are located near or in Freshwater Wetland CA-4, a Class 1 wetland. An Article 24 Freshwater Wetlands Permit is required for physical disturbance within the wetland or within the 100-foot adjacent area surrounding the wetland. Since wetland boundaries are subject to change over time, we would recommend a consultant be hired to perform a wetland delineation. General information on wetlands and the permitting process can be located on our website at <http://www.dec.ny.gov/permits/6058.html>.

Protection of Waters:

An unnamed Class C stream is located on the subject parcel. An Article 15 Protection of Waters Permit, pursuant to 6 NYCRR Part 608 is required for any disturbance to the bed and banks of a protected stream or for a project involving excavation or fill below the mean high water level in a Class C stream, which is considered navigable. General information on streams and the permitting process can be located on our website at www.dec.ny.gov/permits/6042.html

**Stormwater State Pollutant Discharge Eliminations System (SPDES) Permit
For Construction Activities:**

Any project which results in a disturbance of one acre or more of land, must be in compliance with the State Pollutant Discharge Elimination System (SPDES) Phase II regulations for Stormwater Discharges Associated with Construction Activities. Information regarding the SPDES General Permit for Stormwater Discharges can be found on the DEC's website at <http://www.dec.ny.gov/chemical/8468.html>.

Threatened or Endangered Species and/or Habitats:

According to available information in the New York Natural Heritage Program database, your project/site appears to be located within an area that has known occurrences of rare or state-listed animals and plants, significant communities and other significant habitats. Please contact the New York Natural Heritage Program at (518) 402-8935 for more information. Additional information on protected species and habitats can be found on our website at <http://www.dec.ny.gov/animals/29338.html>.

As per our conference call on December 2, 2022, the Department recommends a delineation of the wetland located on the property. Once a delineation occurs, the Department is available to discuss the delineated wetland boundaries. When considering project design, the Department recommends a boardwalk with flowthrough and spacing in order to promote the growth of vegetation. The Department also recommends little to no tree clearing, as possible, due to protected bat species in the project's vicinity, as discussed during our call.

Please feel free to contact me by telephone at (607) 652-2564 or by e-mail at angelika.stewart@dec.ny.gov if you have any questions.

Sincerely,



Angelika Stewart
Environmental Analyst 2

Encl.: Resource Map
Ecc: Rusty Schmidt, Nelson Pope
Brant Reiner, Nelson Pope
Will Buetow, NYSDEC BEH
Rachel Bakerian, NYSDEC Wildlife
Michael Clark, NYSDEC Wildlife



PROJECT LOCATION NYS RESOURCES MAP

Shaker Swamp Conservatory
Tax ID # 19.4-1-35.110 , 19.-1-38,
29.-1-17 , 29.-1-28
Town of New Lebanon
Columbia County

0 1,000 2,000 3,000 4,000 Feet
1 inch equals 2,000 feet

October 21, 2022

Legend

Regulated Freshwater Wetlands

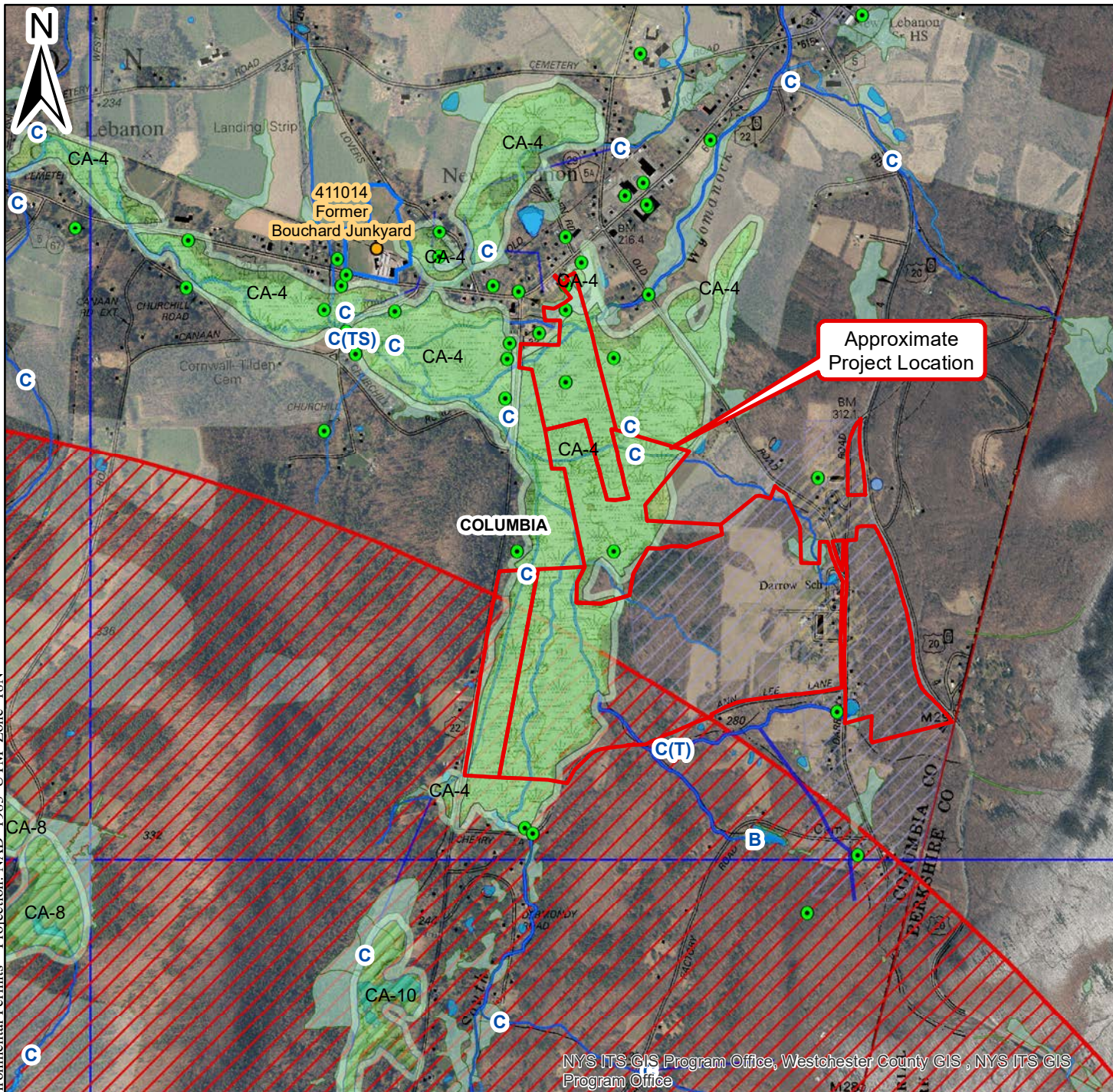
- Freshwater Wetland Class 1
- Freshwater Wetland Class 2
- Freshwater Wetland Class 3
- Freshwater Wetland Class 4

Water Quality Classifications

- Unprotected Streams
- Protected Streams

NWI Wetlands

- Emergent & Forested/Shrub Wetland
- Riverine, Lake & Pond
- Archeological Sensitivity
- National/State Historic Register Site
- Potential EJ Area
- Agricultural Districts
- All E&T species, except fish
- Critical Environmental Areas
- DART Facilities



NYS ITS GIS Program Office, Westchester County GIS , NYS ITS GIS Program Office

Disclaimer: This map was prepared by Region 4 NYSDEC Division of Environmental Permits using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data. This map may contain information that is considered sensitive and therefore the distribution of this map is strictly prohibited. Additional resources may be present but not depicted on this map.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

December 13, 2022

Ashley Marciszyn
Nelson, Pope & Voorhis, LLC
70 Maxess Road
Melville, NY 11747

Re: Shaker Swamp Trail Feasibility Study
County: Columbia Town/City: New Lebanon

Dear Ashley Marciszyn:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 4 Office, Division of Environmental Permits, at dep.r4@dec.ny.gov.

Sincerely,



Heidi Kraehling
Environmental Review Specialist
New York Natural Heritage Program



The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed.

For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 4 Office at dep.r4@dec.ny.gov, 518-357-2449.

The following species has been documented within 5 miles of the project site. Individual animals may travel 5 miles from documented locations. The main impact of concern is the cutting or removal of potential roost trees.

<i>COMMON NAME</i>	<i>SCIENTIFIC NAME</i>	<i>NY STATE LISTING</i>	<i>FEDERAL LISTING</i>	
Mammals				
Northern Long-eared Bat <i>Hibernaculum</i>	<i>Myotis septentrionalis</i>	Threatened	Threatened	14214

This report only includes records from the NY Natural Heritage database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage’s Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.



The following rare plants, rare animals, and significant natural communities have been documented at your project site, or in its vicinity.

We recommend that potential impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQ. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following significant natural communities are considered significant from a statewide perspective by the NY Natural Heritage Program. They are either occurrences of a community type that is rare in the state, or a high quality example of a more common community type. By meeting specific, documented criteria, the NY Natural Heritage Program considers these community occurrences to have high ecological and conservation value.

COMMON NAME

HERITAGE CONSERVATION STATUS

Upland/Terrestrial Communities

Beech-Maple Mesic Forest

High Quality Occurrence of Uncommon Community Type

[Redacted] This is a moderate-sized occurrence that is in moderate to good condition in a good landscape setting. 3775

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage’s Conservation Guides at www.guides.nynhp.org.

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage’s Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to www.nynhp.org/ecological-communities/ for Ecological Communities of New York State.

APPENDIX B
DARROW SCHOOL & ISLAND LOOP
PHASE 1 DISCUSSION

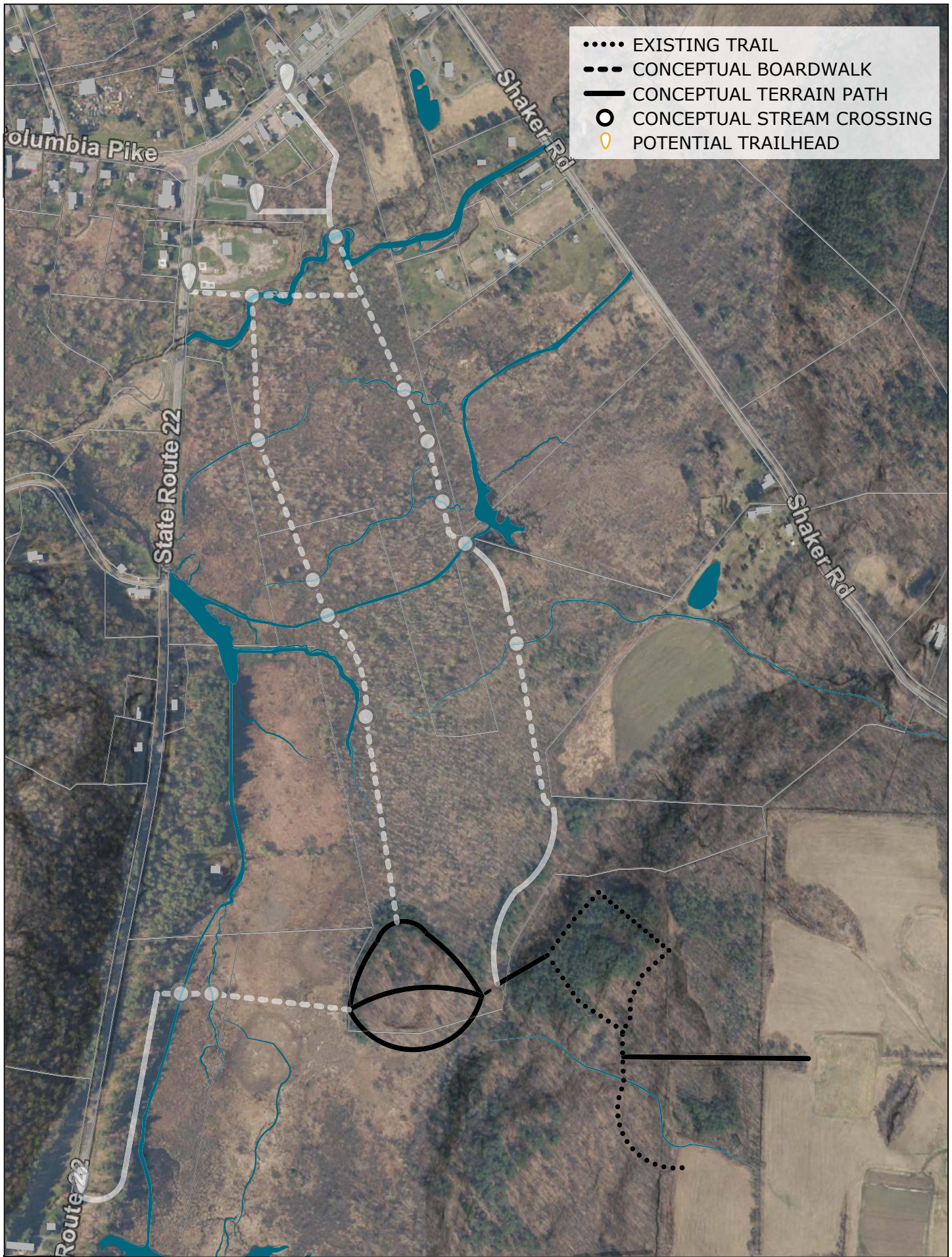
INTRODUCTION

Subsequent to submission of the Draft Trail Feasibility Study, the Conservancy began seeking a partnership with the Darrow School to construct the proposed trail segments identified as the “Darrow School” trail segment to the “Island Loop” trail segment. The following information provides a summary of the benefits and challenges specific to these trail segments, which are expressed in the body text of this Study.

LOCATION & COST

Map A shows the location of the potential trail. Much of the upland trail is already maintained by the school, with portions of the northern existing trail being extremely steep. Care should be given when breaking trail between the extensive rock walls (described in Section B) that sensitive vegetation is protected. Meandering switchbacks may also be appropriate given the steep terrain in this location; this may add cost if an improved gravel trail is envisioned. Table B.1 shows the total cost for both trail segments as presented in the body of the Study.

TABLE B.1 DARROW SCHOOL & ISLAND LOOP COST ESTIMATE				
Trail Materials	Linear Feet	Square Feet (6' width)	Price / SF	Total
Gravel Trail	3,665	21,988	\$ 5.00	\$ 109,938
Boardwalk	95	571	\$ 70.00	\$ 39,959
TOTAL				\$ 149, 897



A DARROW SCHOOL TO THE ISLAND CONCEPTUAL TRAIL
 Scale: 1 inch equals 600 feet



PERMITS & CONSIDERATIONS

A wetland delineation will need to be performed for the area surrounding the Island and between the Island and the eastern uplands. A small extent of boardwalk is likely necessary to span the seasonal stream that gives the Island its name, likely requiring a wetland disturbance permit (Table B.2). A species survey should be completed along the trail length to ensure sensitive habitats and species are protected.

In addition, an easement will need to be granted to the Shaker Swamp Conservancy by Darrow School for the use and maintenance of the trail system as discussed in the body of this report.

A query should be made to the State Historic Preservation Office CRIS system to understand whether additional review by that office will be required.

A discussion with the NYS DEC regarding the Conservancy's approach should be scheduled as an immediate next step once the partnership with the Darrow school is confirmed.

**TABLE B.2:
 PERMITS AND APPROVALS**

Trail Segment Name	SEQRA	NYS /ACOE Wetland Dist. Permit	Protection of Waters Permit	Protected Species	Historic & Archeological Resource Review	Local Site Plan Review	Floodplain Dev. Permit	Easements
Darrow School	✓				✓	✓		✓
The Island	✓	✓		✓	✓			✓

