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**Definition of Terms**
**Conservation Easement**:  "A voluntary, legal agreement that permanently limits uses of the land in order to project its conservation values.[1]"
**Stratham Hill Park**: "those lands shown and described on Town of Stratham, Tax map 14, Lot 33, known and referred to as Stratham Hill aPark and Noyes property, and Tax Map 5, Lot 19, known and referred to as Gifford property.[2]"

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[1] National Conservation Easement Database definition.
https://www.conservationeasement.us/what-is-a-conservation-easement/
[2] Town of Stratham Ordinance Animal Control at Stratham Hill Park, Chapter 1-12, 1-12-02

# Executive Summary

The trail network within Stratham Hill Park is an incredible community resource - offering over a dozen miles of trails, varying habitat, safe places for families to recreate, dogs to roam, and scenic vistas to enjoy. This report of recommendations helps create a plan for the future of the trail network, and makes recommendations based on a significant amount of information gathered by the TMAC.  Within these recommendations are areas that need more information and this document acts as a working document, ever evolving as we gain more information.

The primary recommendations include:
- Trail maintenance and signage are the main focus areas to help manage user experience within the trail network.
- Protection of the trail network is of essence.
- As outdoor recreation increases, it is imperative that we know the use patterns within the trail network.  Finding a solution for collecting that information is critical to the future of the trails.

The recommendations include extensive public input and many hours of research and information gathering done by the TMAC.  It is clear that the trail network at Stratham Hill is a well-loved, highly treasured part of our community and this document addresses the major concerns and management of the trail network.
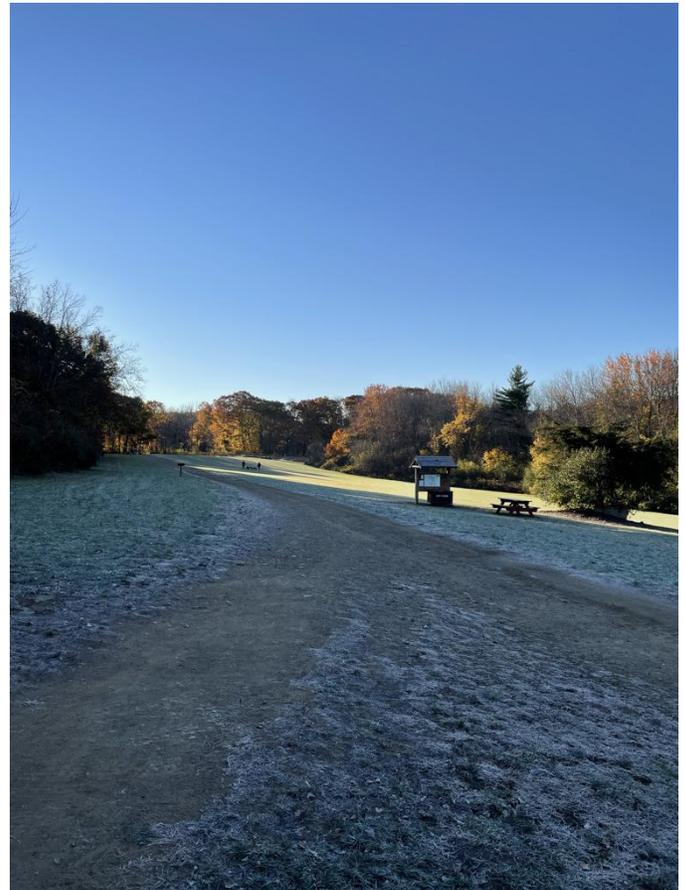
# Introduction
# Purpose of Plan

The Stratham Hill Park trail network encompasses a total of (589) acres, ~217 acres of which is town owned, and includes ~15 miles of trails. It lies nestled into the heart of Stratham, NH and acts as the core of the community, similar to an urban town's downtown.

The area is a living resource that is ever changing with the seasons and is the habitat for people, plants and wildlife. It sees daily use from people for a variety of reasons including: dog walking, hiking, walking, biking, organized sports and a variety of other activities.

The trail network known by many as "Stratham Hill Park'' is actually the areas of "those lands shown and described on Town of Stratham, Tax map 14, Lot 33, known and referred to as Stratham Hill Park and Noyes property, and Tax Map 5, Lot 19, known and referred to as Gifford property.[3]" The whole trail network spans both public lands and private lands that have been pieced together over many years for the benefit of the users. It is a privilege to be able to use the trails within private land. The trail network supports varying habitat, wetlands, a cedar swamp, uplands, field as well as pine and hardwood forests.

The Trail Management Advisory Committee (TMAC) was formed after a trail assessment report[4] was completed for the Stratham Hill Park Trail System in 2020 to evaluate the condition of the trails and to provide options regarding improvements and maintenance of the trail network. The TMAC was given a charge to review, and expand upon the recommendations in the original inventory report and present them to the Select Board in order to help inform future decision making around the management of the trail network.

As the TMAC embarked on this process of understanding the complexity of what the group was tasked with, it became fully apparent the importance of expanding our scope to include issues related use, maintenance, signage, rules and regulations.



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[3] Town of Stratham Ordinance Animal Control at Stratham Hill Park, Chapter 1-12, 1-12-02
[4] Refer to Town of Stratham, NH Trail Inventory Report, Appendix A

# Part 1
# Summary of Existing Conditions

**Overview**
The trail network at Stratham Hill is just one component of a much larger piece of the puzzle. The entire trail system spans approximately 589 acres of woodlands, wetlands and a few meadows and small ponds, surrounded by residential areas with connections to other green spaces.

Stratham Hill Park and the surrounding area has been host to bike races, running races, school and community events.

There is a pump track, fields that are mowed and maintained, winter trails that are machine groomed, the Story Walk, managed by the town library, offers a guided walk for children and agricultural land.

There are ball fields, ice skating rink, pavilion, playground and bathrooms.  There is also a firetower on top of Stratham Hill and other structures on the property that require upkeep, maintenance and security.

**Ownership**
There are nine different landowners within the Stratham Hill trail network.  Each of these different properties have varying rules and regulations. (See **Map 9** for more detail).

**Conservation**
Within the trail network, there are three conservation easements on private land.  A conservation easement is defined as: "A voluntary, legal agreement that permanently limits uses of the land in order to project its conservation values.[5]"  There are also five parcels (35 acres) that remain in private ownership without any sort of conservation easement on them at all.  These parcels encompass some highly notable trails and intersections that are important to the continuity

of the trail network.

**Signage**
The current signage includes kiosks at the main parking areas, with maps and the park rules. There are trail  maps at various intersections throughout the trail network as well as rescue zone signs for those needing assistance.

Additionally, there are trail name signs, and other forms of trail marking that are not consistent throughout the trail network and can often cause confusion.

**Current Management**
The Stratham Hill Park area is overseen by the Director of Parks and Recreation, with support staff of a full-time assistant, and one maintenance staff that works under the Public Works Department.

Additionally the Stratham Hill Park Association, whose purpose is to "improve and develop the grounds and facilities at Stratham Hill park in order that its usefulness and beauty may be enhanced," helps with funding and provides recommendations around improvements  of the Park.

The Conservation Commission advises on natural resource related questions.  Their mission is "to preserve local natural resources through land acquisition, stewardship and education.[6]"  The Conservation Commission approves trail work projects that need to be completed in sensitive areas.

There is also a Forest Management Plan for Stratham Hill Park and the Town Forest, completed in 2016, that provides important information about habitat and management concerns.

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[5] National Conservation Easement Database definition.
https://www.conservationeasement.us/what-is-a-conservation-easement/

[6] https://www.strathamnh.gov/conservation-commission

**Trail Conditions**

The Trail Report, completed in 2020 by SnowHawk LLC[7], presents a thorough assessment of the conditions of the trails at the end of that year.  It includes detailed maps and trail descriptions with suggestions for future maintenance.  The report suggests a few trails be permanently closed within the trail system.  (refer to **Map 7** for current trail conditions)

The report also makes recommendations on policies regarding the usage of the trails within the system. Some recommendations address new topics (e-bikes), while others revisit previously identified concerns (off leash dogs and leaf blowing of trails).

**Wildlife**

The Stratham Hill trail network is home to many species of mammals, reptiles and birds.  Bobcat, coyote, deer, porcupine, beaver, bear and fisher cat are a few examples of just some of the wildlife found within the trail network.  Owls, hawks and songbirds can be found in abundance in the forests, wetlands and fields.  Reptiles, amphibians and mammals live in the swamps and wetlands throughout the park. The resident beavers have a large dam within the wetlands in the center of the Stratham Hill trail network.  Occasionally this has an impact on the trails due to flooding, as well as trees being damaged as a result of the beaver population.  (refer to **Map 3** for more detail)

**Use**

Due to its expansive size, varied terrain type and topography as well as its undeniable natural beauty, it is no wonder that the trail system experiences a high volume of users engaged in a variety of activities.   Visitors come from the surrounding communities as well as Maine and Massachusetts.  From sunrise to sunset people come to hike, jog and walk their dogs.  They mountain bike, cross-country ski, bird watch, snowshoe and ride horses. Children walk to school through the park and the schools regularly take classes on nature walks along the trail system.

In addition to the thousands of annual visitors the trail system hosts typically, during the time of COVID the trail system has anecdotally seen a significant spike in usage, based on opinions of local residents and trail users. The actual numbers are impossible to ascertain as the park currently has no means to track the volume of users or activity type.

Over the years, the park has enjoyed a reputation for being a safe environment.  As can be expected however, any time high volumes of people enjoy a common resource, there are bound to be a certain number of conflicts.  This is especially true when not all users enjoy the park in the same manner and have different expectations on how the trails are to be enjoyed.  The question remains as to what constitutes a problematic situation that requires formal intervention.

Unfortunately, we currently have no data as to how many people visit the park, what times and days of the week they come, and what activities they partake in. It is hard to make data-driven recommendations regarding usage with only having anecdotal evidence with which to base it on.

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[7] Refer to Appendix A: Trail Inventory Report

# Part 2
# Public Input

Public input was critical in the TMAC process, and our recommendations have been informed from the Trail Inventory report as well as directly from Stratham residents. Involving the community in this process ensures we are all on the same page and being heard.

## Trail Management Advisory Committee

The TMAC team is composed of 7 Stratham residents, with varying skill sets but with one common theme - their dedication and passion for the Stratham Hill trail system.

The TMAC is responsible for developing recommendations to the Select Board related to the management of the trails, not necessarily other uses[8].

The TMAC spent the first phase gathering information about the trail system, including ownership, current on-the-ground trail conditions, signage and rules and regulations.

The next phase consisted of compiling and processing the information gathered from meetings with experts, site walks and public input in order to endorse and expand upon the recommendations made by the trail report.

## Survey

The TMAC held a preliminary survey[9] leading up to and following our first public forum that included 11 questions about current use patterns. The survey received 286 responses. This, combined with our other efforts to involve the community, included a broad sample of the community.

## Meetings

All the meetings held by the TMAC are open to the general public, and many of them have had residents attend, offer feedback and ask questions.

## Public Forums

The TMAC held 2 public forums; in August of and in December 2021. These public forums offered residents an opportunity to share their own personal experiences and allowed for more understanding around the complex nature of the management of the trail network.

The first public forum consisted of a presentation of the TMAC findings to date. The TMAC facilitated a discussion around opportunities and concerns, with breakout groups to discuss these opportunities and concerns in more concise ways, using the categories of maintenance, use and conservation.

The second public forum consisted of presenting a compilation of information and the introduction to some preliminary recommendations through a shared mapping exercise.

The public forums were successful in that they offered a great opportunity to have concise, organized and thoughtful conversation around the general management of the trail system.

## Trail Work Days

The TMAC, in conjunction with the Parks and Recreation department, hosted 2 trail work days. Both work days were well attended and the sense of community that formed during these work days was truly outstanding. The work days were another excellent measure of residents' passion for, and interest in, their local trail network.

## Town Management

The TMAC interfaced regularly with the Select Board and other municipal committees and employees in their process of developing the recommendations for the management of the trails. Regular reports to the Select Board[10] were provided and helped keep the TMAC informed on town-related issues in forming the final report of recommendations.

[8] Appendix B TMAC Charge
[9] Survey results can be found in Appendix C

[10] Reports to Select board can be found in Appendix D

The next section of this report goes into more detail on all the complex issues related to the trail system. The following information that was gathered was part of the TMAC process.

# Part 3
# Summary of Findings

## Ownership

The Stratham Hill trail network includes 19 separate parcels with 9 different landowners.

- 7 town-owned parcels
- 4 private/protected parcels
- 5 private/unprotected
- 1 private parcel with trail access
- 2 school district owned parcels

Of the 7 town-owned parcels, ~126 acres known as Gordon Barker Town Forest is managed by the conservation commission, ~86 acres is identified as the 'town park' and includes the fairgrounds, ball fields and ice skating rinks, managed by the Parks and Recreation Department. There are 3 conservation easements held by the Town and Southeast Land Trust (SELT), encompassing 117.5 acres.

The 109 acre lot held by the Crockett Farm Homeowner's Association allows for public access as a reserved right in the deed[11].

Approximately 30 acres are held by the school district.

Five parcels, ~35 acres, remain completely unprotected, but are embedded in the heart of the trail network. (Refer to *Map 1* for detailed ownership)

The rules and regulations across all these different parcels and ownership vary, and can make abiding by the 'park' rules challenging. Rules vary around leaf-blowing, leash requirements, as well as the nature of the protection; whether it be for wildlife, agriculture, natural habitat, recreational usage or forestry.

Due to the complicated nature of the varying ownership throughout the trail network, the TMAC signage recommendation focuses on addressing this issue.



Stratham Hill Park Ownership Map

## Geography & Ecological Significance

The Stratham Hill trail network has three main hills:

Jewell Hill is located in the southern part of the trail network on part of the Crockett Farm HOA property, and part on the Barker Conservation Easement.

Long Hill is in the eastern corner of the trail network, and falls partially within private land. Long Hill has steep slopes on both sides making it highly prone to erosion, and challenging terrain for trails.

Stratham Hill is located to the north and is the main "hill" destination of the trail network. There is a fire tower maintained by the Town of Stratham at the top, and visitors can climb to the top to get 360 views of Great Bay and the surrounding areas.

The area has a number of fields (approximately 24 acres) some of which are mowed at regular intervals throughout the growing season, and others that are mowed periodically throughout the growing season. These fields are a place where many visitors allow their dogs to run at large.

In the northeast and southeast corners of the trail network are two significant wetlands

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[11] Hills at Crockett Farm Deed Book 4091 Page 2566

encompassing approximately 60 acres and include significant ecological habitat and wildlife species. There is also a small pond and waterway off the northern wetland that has a beaver dam and has caused some flooding in the area. The waterways within the park feed many of the wells that serve as the community's drinking water.

Upland forest covers approximately 106 acres within the trail network, with an additional 16 acres of wetland forest[12]. The upland forest contains a variety of species, including red oak, red maple, white pine black birch, shagbark hickory and sugar maple. (see *Map 3* for habitat/wetlands)

Considering the habitat and ecological significance of the land that the trail network spans, the TMAC makes recommendations on trail maintenance that addresses this issue.

**Trails**

There are 15 miles of trails that make up the trail network of Stratham Hill Park. . There are ~7 miles of fireroad and doubletrack; the Tote Road is the main doubletrack that leads from Jack Rabbit parking area all the way to Stratham Memorial School off Gifford Farm Road. The other main doubletrack Barker Trail, goes from the agricultural fields behind Barker Farm off Portsmouth Ave, all the way to the Scamman Road access in the most southern part of the trail network. (see *Map 2* and **Map 7** for more detail)



Photo of the 'back field' doubletrack.

[12] See Stratham Hill Park and Town Forest Forest Management Plan, Appendix E

There is a relatively flat, wide trail that passes along the 'front' field and circumnavigates the 'back' field. This trail tends to attract many of the visitors walking their dogs.

Kitty Rock trail is a steep trail that summits Stratham Hill, and has rocky slopes that are prone to erosion. In 2021, the Parks and Recreation Department improved the lower half of Kitty Rock to prevent worsening erosion on that highly trafficked section of trail.

Eagle Trail leaves from the main Stratham Hill Park parking area and climbs up the base of Stratham Hill. This trail is steep and heavily eroded, and also prone to drainage issues from the hillside runoff.

There are ~8 miles of singletrack that are in varying condition and the Trail Inventory Report goes into detail on the conditions of these trails.



Photo of Short Trail bridge

The terrain the trail network spans is varying in both elevation and habitat. The TMAC recommendation on trail maintenance, partnerships and signage addresses the concerns related to trails.

**Maintenance**

The Stratham Hill trail network is managed by the Town of Stratham's Parks and Recreation Department. Trails are maintained currently on an as needed basis. In the past, the Director of Parks and Recreation worked in conjunction with

the Conservation Commission to address high priority projects. Funds for those projects were raised by the fees collected through the running and biking race series held at the park each summer by the Parks and Recreation Department. The TMAC makes recommendations around how to best manage trial maintenance in the next section.

**Collaborators**

The trails have always been maintained jointly by the Parks and Recreation department and a variety of volunteers; from local hikers, mountain bikers and scout groups to larger corporate groups like Timberland who have large scale volunteer days. The collaboration among partners and volunteers is a tremendous asset to the trail network and the TMAC recommends continuing these important collaborations.

**Signage**

There is a significant amount of signage throughout the Stratham Hill trail network. Off the main parking areas on Portsmouth Ave there are kiosks with maps and park rules. These kiosks were made by Town of Stratham staff in 2012 and are maintained by the Town of Stratham.


Photo of kiosk at the main entrance at 270 Portsmouth Ave.

The trails are marked in a variety of ways, but none of them are marked consistently or clearly, making trail navigation difficult. There are some trail name signs at entrances and exits. Some signs at intersections indicate directionals for navigation. Other trails have yellow trail blazes, but no one trail is marked in the same way.


Photo of Existing Trail Signage

There are 19 emergency location signs throughout latitude/longitude coordinates for those locations allowing emergency rescue vehicles to locate those that are in need of evacuation.
Additionally, there are smaller kiosks throughout the trail network with maps on them for navigational purposes.


Photo of small kiosks throughout the trail network.

The perimeter trail is shown mapped on the kiosks throughout the property, but is not well marked on the actual trails making it difficult to navigate. (See *Map 4* for the current trail map.)

The TMAC addresses the signage concern with a recommendation around signage.

**Rules and Regulations**

The Rules and Regulations found at the kiosk off the main parking area on Portsmouth Avenue differ from those found at the Jack Rabbit and other kiosks due to the differing ownership and management.   This is very confusing for the average visitor to the SHP area.

From the town park, or the main parking lot off Portsmouth Ave, visitors will find the following guidelines for use:

- Parking is for park users only.
- Overnight parking is not permitted.
- Dogs must be on a leash within the park at all times.
- Pavilion reservations are required for groups larger than 15 people.
- Hunting is not allowed in the park or adjacent town owned properties.
- Motorized vehicles to include: dirt bikes, atvs and snowmobiles are not permitted.
- Don't climb trees or pick the flowers, keep things nice for future park users.
- Stay on the designated trails.

If you enter the trail network from Jack Rabbit lot, you'll find the following guidelines:

- No hunting in Town Forest or Town Park.
- Respect the rights of private owners.
- Please stay on marked trails.
- Dogs must be under voice  control or leashed in town forest.
- Please clean up after your dog.
- Carry in, Carry out park.  Leave no trace.
- Please be courteous to residents near trail access  points:  park  within  designated areas.

Additionally, you may find a an interior yellow sign indicating the visitor is now entering private property, with these following guidelines:

- Please respect this land and the landowners.
- Stay on designated trails.
- All dogs must be leashed.
- No motorized vehicles
- Hunting by written permission only.

It can be tricky to determine what rules apply depending on where you are at the time.



Photo shows private ownership sign within trail network.

**Use**

A visitor to Stratham Hill Park trail network may find themselves encountering a variety of different uses. The primary user groups on the trail network are dog walkers and those seeking exercise in the form of hiking or brisk walking along the fire roads.

The town-owned land within the trail network prohibits commercial use[13] without explicit permission from the town.   Dog walking businesses, wilderness safety, fitness classes and all commercial related businesses are not permitted.

The mountain bikers also consider the trail network a destination as it has many miles of singletrack and a pump track targeted specifically for youth.

The trail network is extremely family friendly with many options for young and old alike.  Stratham Memorial School uses the trail network frequently for their Physical Education classes, nature study

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[13] Chapter 4-02a Facility Reservation and Use, page 3, #14
https://www.strathamnh.gov/sites/g/files/vyhlif5051/f/uploads/shpuse.pdf

as well as the Cross Country running program offered in the Fall.

Stratham Parks and Recreation offers many programs on the trail network, including youth and adult mountain bike races, running races, snowshoeing and hiking.

From our visitor survey and our public forums, much of the feedback we received were around the uses taking place on the whole trail system. It is typical for a high-traffic area like the Stratham Hill Trail Network to have some level of user conflicts.

By town ordinance,[14] hunting is prohibited on the town owned parcels within the trail network,  but the privately held parcels as shown on **_Map 5_** can be hunted during hunting season.  Also note, any private parcel that is not posted can be hunted.[15]

By town ordinance,[16] dogs are allowed off leash (under voice control) in the wooded areas of the official "town park" parcel, and the Gordon Barker Town Forest as shown on **Map 6**.

By a significant margin, the highest volume of feedback from both the resident survey and the public forums was from dog walkers imploring the town not to take away their ability to walk their dogs off-leash.

It is clear that more data is needed around the use of the park in order to quantify the impact that off leash dogs are having on the trails.

The TMAC recommendation found in Part 5, begins to address these concerns.

**Access and Parking**
There are a total of 12 access points into the trail network, and an abundance of parking for users driving to the trail network.

There are two main parking areas off Portsmouth Avenue, one holding up to 100 cars, and being closest to the pavilion and playing fields, the 2nd off Jack Rabbit Lane, which has 35 car capacity and is typically where mountain bikers and dog walkers park.  There is additional parking near the 4H Barn at the main park area. The trail network can be accessed from the Stratham Memorial School, but access is limited to  hours when school is not in session. There is another smaller lot owned and maintained by the Crockett Farm Homeowners Association that can hold 10 cars off Portsmouth Avenue.

The trail network can be accessed off the power lines off Gifford Farm Road.  At the top of Long Hill Road there is street parking for ~2 cars near the cell phone  tower.  On foot, you can also access the trails from Point of Rocks Terrace, Scamman Road, Crestview Terrace, and Crockett's Way via a private trail.  (See **_Map 1_** for reference.)

**Conservation**
The trail network spans 589 acres.  217 acres are town owned.  The remaining 372 acres are in private ownership, most of which are protected by conservation easement.  However, there is approximately 35 acres of unprotected land that is nestled deep in the heart of the trail network.  If those lots were ever developed, or access denied, the community and trail network would suffer a tremendous loss of trail continuity. See **Map 9** for more information.

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[14] Stratham, NH Ordinance Chapter 4-03
[15]https://www.wildlife.state.nh.us/pubs/documents/samples/land-use-issues-explained.pdf
[16] Stratham, NH Town Ordinance Chapter 1-12

# Part 4
# SnowHawk Trail Inventory Report Recommendations

**Summary**
As summarized in Part 3, the management of the Stratham Hill trail network is complex and challenging. The TMAC feels that it now has a comprehensive understanding of the trail network and based on that information, feels confident in making recommendations to the Select Board for their consideration. For reference, the following section is strictly the initial recommendations made by the SnowHawk Trail Inventory Report of 2020. The report has many excellent suggestions, and some that are not feasible for our community. The Trail Inventory Report also suggests a Five-Year Plan for Trail Improvements and Projects. The TMAC includes, and expands upon these recommendations in Part 5.

The report proposes the following recommendations:
**Summary of Recommendations:**
**Access**
- 12 Access Points (see **Map 1**)
- Consider kiosks at each entry point to post maps/rules and regs
- Neighborhood & rogue trails - monitor

**New Trails**
- Do not build more trails at this time
- Reroutes encouraged/suggested
- Educate users about rogue trail building

**Trail Maintenance:**
- Monitor trail use
  - Trail cameras/counters
- Develop volunteer trail steward program
- Regular maintenance of trails
- Reroute problem area
- Create a trail log detailing problem areas
- Annually update trail log and use it to formulate a work plan

**Leaf Blowing**
- Keep leaves on the trail bed

- Only handraking allowed in areas of build up to be completed by Town Staff
- Trail closures if unsafe due to leaf debris (maybe seasonal warnings?)

**Trail Structures (bridges, water bars...)**
- Use of sustainable measures prior to boardwalk installation, such as drainage solutions and using stone and gravel for trail hardening
- Structures should be built to accommodate hikers, bikers and equestrian use. (ADA compliance is not feasible at this time)
- Pressure treated, locust, white oak or similar for rot resistance or other materials that have been used successfully for structures
- Maintain structures and rebuild as needed
- Annual monitoring of structure
- Water bars should be angled and extend beyond the edge of the trail
- Drainage structures should be cleaned of debris at least in spring and fall
- Consider one-way trails where erosion control is a problem (ie- lincoln trail)

**Improvements to Signage and Trail Markers**
- Mark trails more frequently along routes
- GPS emergency response is a good system
- Removal of event related signs should be completed within 24 hours of the event's conclusion.
- Increased trail signs at entrances and intersections are recommended

**Winter Use of Trails**
- Winter use can create icy conditions. In late winter this can cause some erosion issues with water running down the sides of compacted snow.
- Monitor for issues

**Impacts on Wildlife Habitat**

- Use of "Trails for People and Wildlife" tool (see **Map 8** )
- Impact on wildlife should be measured by amount of traffic and type of traffic (user counting device)
- Trails closest to parking areas are also close to sensitive habitat (wetlands) - consider leashing dogs in these areas.
- Mountain biking, snowshoeing and skiing on trails do not create more impact on wildlife.
- Bushwhacking, off trail travel and hunting can disturb wildlife.
- Seasonal closures could be considered an option if there are concerns about wildlife during mating seasons or in harsh winter months.
- Early morning and evening are also active times for animals and may be factored into closures.
- Consider limitations on chainsaws, leaf blowers and other power tools.
- Trails at this point do not seem to be impacting wildlife but should be monitored.

**Use of E-Bikes**
- Monitor dialogue on this topic.

**User Conflicts**
- Right of way - signage
  - Hikers going uphill have the right of way
- Announce if you are passing another hiker.
- Education through signage on trail etiquette.
- Dogs should be leashed in posted areas, and always under voice control.

**Dogs and Trails**
- Suggested that all dogs should be on trails for wildlife.
- Designate certain trails for dog walking while restricting others (Tote Road/meadows).
- Considerations
  - All animals must be on a standard or retractable leash not greater than 6' in length
  - Animal owners must clean up any dog waste
    - Animals must not be left unattended

**Events and Group Size**
- Large groups/events can cause extensive damage to trails.
- Consider limiting activity to some of the larger trails with adequate drainage.
- Consider cancellation of events in inclement weather
- Define limits based on precipitation and trail conditions.

**Accessible Trails**
- Consider this option in the future to provide more accessibility to a more diverse user group (Tote Road to Power Lines).

**Closure and Decommissioning of Trails**
- Decisions made by Parks and Recreation and Conservation Commission.
- Educate the public on trail closures.
- Consider closing the following:
  - Ruptured Lung
  - Father and Son Ext.
  - Old Ski Slope
  - Side trails between ponds from the Tote Road to Fire Tower
  - Easternmost cross trail from variation by Stratham Hill Pond (redundant)
  - Southernmost cross trail from Barker and Field (redundant/poor condition)
  - Easternmost connector trail between Long Hill and Fire Pit Connector (steep/eroded)
  - Lower Barker to Fire Pit connector (redundant)

**Cost of Trail Construction and/or Decommissioning**
- Careful consideration around trail construction and maintenance should be made around whether it can be done by town and volunteers or if it needs to be contracted out.

**Partners and Volunteers**
- Continue to create and maintain relationships with partners (mountain bikers, Scout groups and school teams, etc).

- Recruit and train volunteers.
- Communicate with volunteers.

**Town Property and Private Landowners**
- Planning should be in conjunction with private landowners.
- Clear lines of communications should be set.
- Cost should be determined in advance as to who is responsible.

# Part 5
# TMAC Recommendations

Using the recommendations made in the Trail Inventory Report, and the information gathered by the TMAC, the following section is the proposed recommendations.

**Recommendation:**
Use a phased approach to implement the recommendations of the TMAC.

**Phase One**
Phase One takes place over a 3 year period, and focuses on managing the user experience through signage, improving trail conditions and trail navigation signs. It also includes creating a structure for future monitoring and maintenance for the SHP trail network by a continuance of the TMAC. The committee should be 5-8 people and should be an official committee to the town that meets on a monthly basis.
**Recommendations for Phase 1:**
**Signage**
- Develop comprehensive signage throughout the trail network (refer to **Appendix F** for comprehensive list).
- Identify who is in charge of executing the signage plan.
- Develop a plan for best practices of signage installation.
  - Who installs
  - Where are they installed
  - With what hardware, etc.
  - On what surface - trees or other?
- Create new trail map
  - QR Code to website with information around use, (See **Appendix G** for suggested content)
  - Include GPS evacuation sites
  - Consider link to other trail maps (Trail Forks, All Trails, etc)
  - Include trail names
- Use Authority of the Resource (ART[17]) when developing signage.

- Suggest posting no hunting around school property/other private property.

**Rules and Regulations**
- Update and define clear Rules and Regulations **(Appendix H)** that incorporate all allowed uses, including leash regulations, e-bikes and leaf blowing.
- Continue to solicit public input.

**Trail Maintenance**
- Develop Trail log (**Appendix I**) to catalog trails and conditions, structures and known maintenance. (recommended GIS based trail log in addition to spreadsheet).
- Use Trail Log to determine scope of projects: volunteer based, contract work or other. (see **Appendix J** for current trail conditions table and map)
- Annual/semi-annual photos
- Develop a volunteer steward program to help support ongoing trail maintenance
  - Supported by the continuing TMAC group and/or Parks and Rec
- Consider *See Click Fix*[18] (budget item - $40-$100/month) (or other)
- Follow trail maintenance guidelines provided by the SnowHawk report.
- Follow leaf-blowing guidelines offered by the SnowHawk Report.
- Consider the closure of some of the trails in the SnowHawk report.

**Use**
- Monitor neighborhood & rogue trail access for issues
- Monitor impact of signage on use patterns: surveys, qualitative
- Purchase and install one user counting device to begin measuring foot traffic and use patterns.
- Continue to allow dogs off leash in field areas but reinforce leashing dogs in parking areas and sensitive areas.
- Update policy to reflect leashing of dogs within and around parking areas.

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[17]
https://winapps.umt.edu/winapps/media2/wilderness/toolboxes/documents/education/Authority_of_the%20_Resource.pdf

[18] https://seeclickfix.com

- Monitor user conflicts and mitigate using the ART technique mentioned in the previous section.
- Monitor commercial trail use; address as needed.

**Education and Collaboration**
- Explore opportunities for education of the general public - schools, etc.
- Develop strong partnerships with municipal groups - conservation commission, parks association, etc.
- Continue to create and maintain relationships with partners (mountain bikers, Scout groups and school teams, etc).
- Recruit and train volunteers.
- Communicate with volunteers.

**Conservation**
- Develop an action plan for the conservation of the unprotected parcels within the Stratham Hill trail network.

**Phase Two**
Phase two spans another 3 year period and focuses on monitoring and observation around the user experience through data collection and analysis, and more intense trail work/rerouting. Phase two also includes implementing more stringent recommendations if Phase One's approach to managing the user experience does not have the expected outcome.

**Recommendations for Phase 2**:
**Signage**
- Monitor, improve, repair & track as needed
**Trail Maintenance**
- Continue using Trail Log to track changes and develop annual work plans

- Use contract services for major trail overhauls

**Rules and Regulations**
- Consider updating ordinances related to off leash dogs. Animal Control at SHP.

**Use**
- Implement survey to help understand effectiveness of signage
- Add 2-3 user counting devices
- Analyze data collected using eco-counter
- Monitor off-leash dogs and conflicts using surveys, and eco-counters.
- If signage & monitoring does not appear effective in managing expectations and limiting conflict consider the following:
    - Limit off leash area to just back field
    - Possible permit parking at Jack Rabbit
    - Hiring PT/FT park ranger
    - Consider single use trail(s)
- Relieving pressure of SHP by creating new areas to recreate.
- Develop a single layer of enforcement for the rules and regulations within the trail network to provide consistency to the user groups.

**Phase Three**
Phase three should focus on continued monitoring, data collection and maintenance over a three year period. During this time, the process over the last two phases will be reviewed and updated as needed for another 10 year plan moving out of Phase 3. Additional levels of recommendations to be reviewed in the following pages may be suggested during Phase three.

# Appendix A: Trail Inventory Report 2020

https://www.strathamnh.gov/sites/g/files/vyhlif5051/f/uploads/trail_inventory_and_assessment_2020.pdf

# Town of Stratham, NH

**Trail Inventory and Assessment**

**For**

**Stratham Hill Park, Gordon Barker Town Forest, and adjacent properties**

# Contents

## Introduction

In the spring of 2020 SnowHawk LLC was hired by the town of Stratham, NH to do an inventory and assessment of the extensive trail network in Stratham Hill Park, the Gordon Barker Town Forest, and abutting properties that are located in an area northeast of the town's center. The actual location is between Portsmouth Ave. to the north and west, Gifford Farm and Lovell Road to the east, with Crockett's Way, Scamman Road to the south. The Stratham Memorial School is located on the eastern edge of the trail network. The trail network area is surrounded by residential neighborhoods and nearby farms. The total area is comprised of a little over 200 acres of woodlands, wetlands, and a few open meadows and small ponds that are surrounded by residential areas with connections to other green spaces. The language for the easement properties state that their purpose is for land protection, recreation, wildlife habitat, and forestry.

The Parks and Recreation Department, Stratham Conservation Commission, and Stratham Park Association manage the trails with oversight and guidance from the Stratham Select Board and the Southeast Land Trust (SELT) as two abutting properties have conservation easements held by SELT. This trail network is well covered by the number of trails currently in use and they serve a wide variety of user types. Hiking, dog walking, and mountain biking appear to be the biggest draw with winter activities such as snowshoeing, cross-country skiing, and fat-biking.

The Town of Stratham and all who use the trails have much to consider for the future of these properties and the impact of the trail network. Several of the users have taken greatest interest in the trails and how they are maintained but it is apparent that it takes more than what the town and volunteers can provide to keep up with all that is needed. The general consensus is that with a few exceptions, the trails are in relatively good condition. The trails have seen some maintenance over time but not all have received the attention they require. This was an excellent time to have an assessment done before the trails are "loved to death".

There has been a growing concern for how the number of trails and amount of use affects the landscape. This is especially true with the increased interest in outdoor recreation. Abutting landowners with easements and SELT have shared some concerns with the number and quality of trails and how it might be affecting the intent of the easements. The Stratham Select Board and Town Planner also expressed an interest in assessing this growth in use. The increased pressures are being felt in most every town and while it is wonderful to see the public enjoying what these special places have to offer, the importance of long-term management and maintenance has become more apparent.

A total of four reconnaissance trips were made to assess and inventory the trails. The first of these involved a day of travel through the forest mostly by mountain bike. Seth Hickey, Parks and Recreation Director was the main contact for this assessment and he provided invaluable guidance and direction during the first tour of the trails. Further reconnaissance trips were done on foot and bike again to explore the remaining trails. In total it took nearly twenty miles of riding and another eight or so of walking to gather and analyze the information included in this document. There were portions of unlisted trails and shortcuts that may not have been discovered and were not reviewed. Those trails should be considered when evaluating any impacts on the properties but it will take someone with a better sense of where those are to do so. The field work was performed during an unusually dry period so some observations may not reflect conditions normally found.

The possibilities and potential for these trails are seemingly endless on a property of this size but this analysis aims to be a reasonable assessment of the current network with an eye towards meeting the goals and intent of the easements, best management practices, long term maintenance, and benefits to the flora and fauna as well as the recreational users.

This report will look at the number of trails, trail conditions, potential of recreation types, access points and parking, potential impacts on wildlife habitat, as well as safety and sustainability. This document will briefly assess the condition of each individual trail along with a separate map for each one. Field mapping was done using an Apple iPhone and Gaia GPS. Maps available from the Town of Stratham as well as other online resources from TrailForks.com were used to identify and confirm trail locations and support the findings reported here. Trails for People and Wildlife, a book and mapping tool created by NH Fish and Game, was also used to identify potentially sensitive wildlife habitat.

Maps created with Gaia were used in the field for each trail that was assessed. These maps demonstrate an overview of the landscape in a variety of map types including topographic, aerial and satellite imagery, as well as wildlife habitat sensitivity.

## Trail Maps

The work of mapping trails is best done by creating tracks for each separate trail. For this project, the map provided by the Parks and Rec. Dept. was used for locating each trail. This saved time and effort in the field and certainly made it easier to locate and follow the trails throughout the forest. With the myriad of trails here, producing the maps was more difficult when highlighting individual tracks or trail segments as desired for this report. Therefore, some of the individual trail maps used here are from other sources such as Trailforks.com. Some of the more finished maps were generated using the GIS program ESRI ArcMap 10.6.

Thirty-two individual trail maps have been created for use to highlight each one individually as well as how they relate to the myriad of other trails. Many of these are connected to create one continuous trail or access another trail. A few new or additional trails may not appear on every map or are shown on only one of these formats depending on whether it was from the field data or using an online source as well when it was produced. Every effort was made to point out these variations.

The trail maps in this report are available with waypoints and photographs for users of Gaia GPS but are not being shared publicly on the Gaia site. Numerous waypoints and photographs were taken of each stream crossing, wetland, or other areas of concern. This information can be made available to other users of Gaia or shown in a presentation. Photographs will be available and saved on a flash drive that will accompany this report.

The Stratham Hill trail map that is currently used by the town is shown on page 4.

The following pages (5-8) contain the Gaia GPS maps that were produced from the field data that was collected during the site visits in the spring and early summer (2020).

- Page 5: Gaia Satellite view with labels
- Page 6: Gaia USGS topo
- Page 7: Gaia Outdoor

- Page 8: Gaia Satellite with waypoints (each point marks a feature or photograph showing a feature, area of concern, or a trail structure)

Maps on pages 9-12 were produced by Rick Brackett, GIS Specialist using ESRI ArcMap 10.6 and the field data provided by SnowHawk LLC.

- Page 9: USGS Topo overview
- Page 10: LIDAR (with trail overlay and emergency points)
- Page 11: LIDAR overview (includes boundaries of town properties and easements)
- Page 12: LIDAR overview (with boundaries and NH Fish and Game wildlife impact)

For a closer perspective, the maps on pages 14-38 show an expanded view of each trail and how they are displayed on Trailforks.com. This website allows the user to highlight individual trails and many are known by the names used on the site. The ability to highlight each trail individually makes this an effective method to display the individual trails.

The Gaia GPS maps on pages 39-45 are used to show trails that are not shown on Trailforks.com.  For the purposes of this document, many of the trail names are commonly used while others were assigned names based on their location or relationship to adjacent trails.

Some maps use numbers that correlate with the trail names (see list on pg. 13) as it would be difficult to place names in the limited spaces available. An effort was made to simplify the labeling but with the number of variations to the trails, roads, intersections, etc. it may be helpful to refer back to the larger overview maps when reviewing individual trails.

Boundaries for Stratham Hill Park (SHP), and Gordon Barker Town Forest are shown as well as the boundaries for the Barker easement and the Short easement. Unless otherwise noted in each individual trail description, the trail is on town owned property and therefore is managed by the Stratham Conservation Commission.

Stratham Hill Park
Stratham Town Forest
Trail Entrance
Rescue Point
Parking Area
Kiosk Location
Fire Tower
Hill top
Perimeter Trail (4.6 mi.)
Roads
Contour Elevation
Easement Property
(dogs must be on leash)
Private Property
Open Field
Wetlands
Pond/River

Feet
0   300   600   900   1200

May 2016
Map: www.mirtoart.com
Source: Town of Stratham, NH

## Welcome to the Stratham Hill Park

- No Hunting in Town Forest or the Town Park.
- Respect the rights of private owners.
- Please stay on marked trails.
- Dogs must be under voice control or leashed in Town Forest.
- Please clean up after your dog.
- Carry in, carry out park. Leave no trace.

*Stratham Trails Map*

6

*Gaia -Satellite with labels*

*Gaia - USGS topo map*

8

*Gaia Outdoors*

*Gaia Satellite with waypoints*

## Stratham Hill Trails - USGS overview

Map created by Rick Brackett 8/20/2020

1:12,000

| | Stratham Hill Trails | | Fee Ownership | | Deed Restriction | | Flowage Rights |
| Easement Boundary | | Conservation Easement | | Historic Preservation | | Right of Way |
| Private Boundary | | Scenic Easement | | Longterm Lease | | Set Aside |
| Parcels - polygons | | Protective Easement | | Reverter | | Agricultural |

*USGS Overview*

11

**Stratham Hill Trails - LiDAR overview**

Stratham Hill Trails
Easement Boundary
Private Boundary
Parcels - polygons

1:12,000

0    0.25    0.5    Miles

Map created by Rick
Brackett 8/20/2020

*Lidar with trail overlay*

Stratham Hill Trails - LiDAR overview

*Lidar with easements and trails*

13

Stratham Hill Trails - NH Fish and Game Trail Impact to Wildlife Model

*NH F&G Trail Impacts to Wildlife Model*

# Trail Identification Chart

**Trail Identification**

## Trail Descriptions



1. **Barker Trail (1 mile)**

- One of the main trails that traverses from the southernmost point of the network (Rescue Point 4A) to where it intersects with Crockett Trail near the western edge of the network, nearly all of it on the easement properties.

- As an old road it combines single and double track trail.

- Good condition overall for the amount of use it receives. Some minor erosion on corners. And some minor rutting. Continue to monitor and mitigate erosion as needed.

- Bridges are in good working condition with a few needing improvements on ramping to the deck.

- Much of the southern end of the trail is on the Short easement held by SELT. A larger portion to the north is almost entirely is on the Barker easement (also SELT).

- Used by hikers and bikers.

## 2. **Barker Connector** (460')

- Connector trail between high point of Barker (and jct. to Fire Pit access) and upper USA Today trails.
- Moderate grades with some signs of erosion especially where trail meets Barker and the intersection is widening.
- Monitor and mitigate erosion as needed.
- Most of this trail is on the Barker easement held by SELT.
- Used by hikers and bikers.

### 3. Crockett Farm (5256')

- Trail begins at E12 with parking area then follows flat terrain at edge of farm fields.

- As it enters the forest it begins to climb at moderate grades with some bridges/boardwalks in good condition.

- Trail grade steepens as it approaches the loop over Jewell Hill with signs of serious erosion. Visible roots and widening of trail. Needs work and/or rerouting if possible.

- Intersects with USA Today and Ruptured Lung at top of Jewell Hill. Northern side of loop is working but could use some benching to improve tread and minor erosion control.

- Higher priority project due to amount of use.

- Upper portion to Jewell Hill is part of the Perimeter Trail.

- Used by hikers and bikers.

### 4. <u>Dead Fish</u> (2688')

- Trail between Tote Road and Long Hill Trail designed to follow easier grades by traversing back and forth across terrain with climbing turns.

- A bit rocky, especially near the lower section.

- Continue to improve benching with removal of rocks as needed.

- Used by hikers and bikers.

### 5. __Eagle__ (1776')

- Departs from main parking area and joins Lincoln Trail on east side of the fire tower.
- Trail splits in two at one point with visible erosion on both sides. One short steep section that exceeds ideal grade.
- Wider trail with heavy use due to proximity to road and parking.
- Includes exercise stations.
- Monitor erosion and repair obvious sections needing work.
- Part of the Perimeter Trail.
- Used by hikers and bikers.

### 6. Lower Father and Son

- This is the lower portion of a loop trail (shown at center in green) near the southernmost portion of the trail network that is that is bisected by old road/trail.
- This section is flatter than Upper Father and Son and skirts a significant wetland. A short trail enters and exits from a point where it turns away from the wetland (see Father and Son Extension).
- Needs minor work on a few wet areas and more significant bridge/boardwalk repair.
- A portion of the trail is on the Short easement held by SELT.
- Used by hikers and bikers.

### 7. Upper Father and Son

- This is the upper portion of a loop trail (shown at center in yellow) near the southernmost portion of the trail network that is that is bisected by old road/trail.

- This is more of a rolling section than Lower Father and Son with some grade changes.

- Needs minor work on a few wet areas and bridge/boardwalk repair.

- A portion of the trail is on the Short easement held by SELT and a small section is on the Barker easement.

- Used by hikers and bikers.

## 8. (Unnamed Trail/access road) (1017')

- This access road leads to a junction of several trails (Father and Son, Long Hill, etc.) at emergency point 6B from what has been entrance E10.
- It is flat to rolling and in very good condition with one stream crossing over a suitable bridge in good condition.
- No maintenance needed at this time.
- A portion of the trail is on the Short easement held by SELT.
- Part of the Perimeter Trail.
- Used by hikers and bikers, dog walkers.

## 9. Firepit (4078')

- A twisty single-track trail with appropriate grades primarily for biking that runs between Tote Road and the junction of Long Hill/Father and Son.

- Good tread with few obstructions and few erosion concerns.

- A few small bridges that are appropriate and only require a bit of maintenance.

- Monitor and address erosion as needed.

- Most of this trail is on the Barker easement held by SELT.

- Used by hikers and bikers.

## 10. __Fire Tower Road__ (1667')

- This road is used as access to the fire tower area from the main area of the park and doubles as motorized access as well.

- In excellent condition as it is regularly maintained.

- Used by work vehicles, hikers, and bikers.

## 11. Gilford Land West Run (1896')

- Single-track trail that follows the edge of a good-sized field.

- Well-built with no work needed at this time

- Good for hikers and bikers though more appropriate for biking given the indirect route from point-to-point.

- Needs work in a few locations as noted and bike group is aware of this. Popular route that deserves to be used but if there are concerns of impacting habitat considering closing only a portion could be considered.

- A small portion is part of the Perimeter Trail.

- Used by hikers and bikers.

### 12. Jewell Hill Connector (906')

- A connector trail between Barker and Crockett Farm Trails.

- Flat to mildly rolling terrain that is in good condition. Crosses through two stonewalls

- Passes the low end of Ruptured Lung and a closed trail that is still shown on the current town map.

- Monitor and address concerns as needed.

- Part of the Perimeter Trail.

- Most of this trail is on the Barker easement held by SELT.

- Used by hikers and bikers.

### 13. __Kitty Rock__ (2025')

- Runs between Tote Road and the intersection of the Lincoln Trail and Fire Tower Road.

- Flat to moderate grades. Some areas with exposed roots and rocks make for difficult travel for foot and bike traffic.

- A parallel trail avoids some of the rough sections but has its own rough spots. Consider whether both are necessary and whether it makes sense to close one or divide foot and bike traffic.

- Work on this could include some reshaping and removing/resetting rocks as needed. Old rebar that sticks up where they held old wooden water bars should be removed.

- Part of the Perimeter Trail.

- Used by hikers and bikers.

### 14. Lincoln Trail (1523')

- This trail climbs at a very steep grade to the fire tower.

- Gravel and maintained but with great potential for erosion. Rubber strip water bars have been used to alleviate some of this but they don't appear to always be effective. If they will continue to be used, they need to extend well beyond the edge of the trail. At this pitch, grade dips would probably not work in heavy rains. Any effective methods would probably not be wheel friendly and bikes would need to use another route. Several would be needed to work properly. Good crowning of the road would help.

- Used by hikers and bikers, but not best suited for biking due to steep grade and skidding tires. Uphill would test the best of riders.

### 15. Long Hill (3669')

- Extends from emergency point 6B to the intersection with Tote Road. The portion along the ridge is another old road now used as a trail.

- From emergency point 6C going down to 6B it is a single-track trail with a few steep pitches and turns as it reaches another old road at the bottom.

- A rougher, wet section on the low section could be improved with turnpiking (elevated trail tread technique) and fill. A reroute was done to avoid this when necessary (see Long Hill Single Side).

- Would benefit from some benching to improve the sidehill portion of the single-track. Some minor rutting especially at corners of the same section, probably from bike traffic. Monitor and improve rutting and erosion areas as needed.

- Part of the Perimeter Trail.

- A short section of this trail is on the Barker easement held by SELT.

- Used by hikers and bikers.

### 16. Long Hill Single Side (814')

- This was cut a single track reroute above a wet and rough section of Long Hill Trail.

- An effective option to the wetter road section of Long Hill Trail that could use minor adjustments if it will continue to be used.

- Mostly used by mountain bikes.

### 17. <u>Lovell Road</u> (4146')

- A wider corridor single-track trail that is in the northeast corner of the network. Intersects with Kitty Rock in a logged area and the intersection of Eagle and Lincoln Trails. Also intersects with a steeper trail that is recommended for closure (see Old Ski Slope, pg. 42)

- In relatively good shape with a few wet areas on the low side that could be hardened with turnpiking and/or fill. Some trail braiding that could be minimized and a shortcut that could be kept for an optional short route.

- Boardwalk and some rock features are located near the Eagle/Lincoln junction. The boardwalk needs replacement due to poor construction and use of Trex (slippery when wet).

- Approaches a home near the far eastern end.

- Part of the Perimeter Trail.

- Used by hikers and bikers.

## 18. Rivendell (2389')

- A newer single-track trail that was likely cut for mountain biking.

- Bridge/boardwalk structures and stonewall crossing in good shape.

- In very good shape as it is newer and used less.

- Used by hikers and bikers.

### 19. Ruptured Lung (1227')

- Connector trail between the top of Jewell Hill (emergency point 3D) and the intersection of with Barker Connector.

- After leaving the top of the hill it follows a very steep grade that is well beyond sustainable trail standards. Gravel covered and eroding with no reasonable way to address erosion. Safety concerns for biking downhill and likely beyond most or all biker's ability to ascend. Steep for walking as well.

- Rerouting might be possible but if monitoring shows increased erosion closing this trail is recommended. Another nearby trail was also closed so it also opens a good portion of forest for wildlife habitat.

- Most of this trail is on the Barker easement held by SELT.

- Used by hikers and bikers.

## 20. Short Tail (704')

- A short and meandering optional route to the west of USA Today near the end of Scamman Road.

- In good shape with one boardwalk that is also in good condition.

- Close to adjacent neighborhood and also the upper section of Crockett Trail.

- Used by hikers and bikers.

### 21. Soggy Dollar (3655')

- Twisty single-track trail to the west of the Fire Pit Trail that begins and ends on the trail near emergency point 1C and the corner of the field near 3C.
- Relatively good condition with no serious maintenance needs other than a few bridge/boardwalks that are also in good condition.
- Skirts some small wetland areas.
- A portion of this trail is on the Barker easement held by SELT.
- Used by hikers and more likely bikers.

## 22. Top of the News (761')

- A short and meandering optional route to the east of USA Today near the end of Scamman Road and just below Short Tail.

- In relatively good shape. Monitor for erosion and mitigate as needed

- Close to adjacent neighborhood.

- Used by hikers and bikers.

### 23. Tote Road (1 mile)

- Old road that is one of the most heavily used trails. It extends from the main area of the park to Gifford Farm Road near Stratham Memorial School. A portion of the eastern end also follows a power line.

- Flat, wide and user friendly with some sections of single and double-track on the eastern half with some gentle rolling terrain.

- No serious needs for maintenance at this time. Root section by Jack Rabbit Lane needs attention

- Used by hikers, bikers and very popular with dog walkers. Also used by school groups to access the park and town forest.

## 24. Tuck

- A short and fairly steep hiking trail between Eagle Trail and part way up the Lincoln Trail.
- As a hiking trail it doesn't need much work but monitor for erosion and address any concerns with simple grade dips and check dams.
- Used by hikers, not likely to be used by bikers.

### 25. USA Today (3322')

- One of the main trails in the southern section that runs between the intersection of Barker/Father and Son to the top of Jewell Hill.

- It follows varied grades and does exceed ideal grades on a corner where the slope is steeper. This spot needs some work for both ease of travel and erosion control.

- Trail comes to within a few feet of some backyards in an adjacent neighborhood. Features an old USA Today newspaper box near the point where it crosses a driveway to a private property.

- Much of the lower half of the trail is on the Short easement held by SELT.

- Heavily used and showing some roots and rocks where soil has eroded and/or compacted.

- Would benefit from defining a narrower corridor and trying to restore the landscape in eroded areas. Address erosion problems and bench cut areas with excessive side slope.

- Part of the Perimeter Trail.

- Used by hikers, bikers.

### 26. Yellow Jacket (1545')

- A single-track option that goes from emergency point 4B to where it intersects with a connector from USA Today to Barker. It travels on a course on the eastern side of the nearby house that is mostly surrounded by the Short easement.

- Relatively good condition with a few wet areas that use bridge/boardwalks for crossing. These could be lengthened to avoid more of the wet ground. Grades are mild to moderate with a couple of short steeper sections but suitable and using the terrain as it should.

- Monitor for erosion and rutting and repair as needed.

- Most of the trail is on the Short easement held by SELT.

- Used by hikers and bikers.

### 27. Father and Son Extension (384') (shown in red on lower middle of page)

- Built primarily with mountain biking in mind but it serves hikers and bikers and creates a spur off from lower Father and Son and farther towards the wetland.

- The necessity is debatable and closure is recommended due to the short and seemingly unnecessary loop as well as the relatively poor condition and proximity to the wetlands.

### 28. Long Hill Trail to Entrance E9 (.15 miles)

- Connector from access point E9 to Long Hill Trail that is an old road that departs from a neighborhood cul-de-sac and bypasses close to a few homes.

- Well-traveled with rocks and roots showing.

- Could use fill material to cover some of the roots/rocks but otherwise is in good condition. Monitor and mitigate erosion as needed.

- Used by hikers and bikers.

### 29. Old Ski Slope

- Used as shortcut to lower end of Rivendell (shown in red) and as a sledding hill in winter.
- Likely used for downhill only due to grade.
- Steep grade and signs of erosion.
- Closed to all hiking and biking. Recommend to maintain closure or take steps to control erosion.

### 30. Tote Road to Fire Tower Road and variation by Stratham Hill Pond

- Gentle grade trail (shown at center in lime green) that crosses stream with a bridge near the pond.

- Well used and has educational value with proximity to pond.

- Side trail used as a variation (shown at center in red) is pleasant but shows signs of erosion on narrow banks adjacent to pond/wetland. Small bridge crosses to the Tote Road. Not foot friendly for all users due to uneven terrain. Monitor for further erosion and consider mitigation or closure if conditions worsen.

- Used by hikers and bikers.

- Consider closure as it is in a sensitive wildlife area.

### 31. Cross trails between Barker Trail and field

- Three trails that cross between Barker Trail (yellow) and the adjacent field.

- Each one passes through low lying wet areas. Two (shown at center in purple) have bog bridges. The third and easternmost trail does not.

- Consider closure or addition of bog bridge to the easternmost trail (shown at center in red). Closure seems appropriate while it is not truly necessary with the other options available.

- Most of these trails are on the Barker easement held by SELT.

- Used by hikers and bikers.

- Consider closure as it serves little purpose.

### 32. Long Hill Connector 1 & 2

- These two trails connect the ridge portion of Long Hill Trail to the lower end at the junction of several other trails near Rescue Point 6B.

- One is more of an old road (shown at center in light blue) that climbs gradually to the ridge. There is one wet section that is being bypassed by a section of narrower single track that could be improved. This trail is still worthwhile.

- The second trail (shown at center in red) climbs/descends sharply and is prone to erosion and should be discontinued as the other options are more suitable.

- Used by hikers and bikers.

- Consider closure of the second trail (shown in red) as it serves little purpose.

### 33. Barker Trail to Firepit Connector

- This trail (shown at center in red) connects Barker Trail (running north-south and shown in gold) to the Firepit Trail (purple) a little below where another shorter connector just north and uphill of this location.

- Terrain is rougher, with overgrown vegetation and needs improvements to the trail tread.

- Consider closure as it appears to be used very little and is unnecessary and would open up a small portion of forest habitat.

# Recommendations and Planning

## Access

There is a sufficient number of locations used for public access to the trail system. Access is marked E1-E12 on the town's Stratham Trail map. These twelve access points are found all around the trail network. One, E10 is being closed due to concerns by abutting neighbors about parking but it will not affect the parking needs for the users.  This makes sense as parking has been limited to the nearby street and trails are accessed via a right-of-way from that location. The primary access to the trail system is found on Portsmouth Ave. at Stratham Hill Park with ample parking for several cars in two separate locations. Another access point (E12) that includes good parking is found at the western edge of the network on Portsmouth Ave where the Crockett Farm Trail is located. The Stratham Memorial School is at the eastern edge and is another point that with good parking. A few access points are located in residential neighborhoods with close proximity to homes though in most cases they are at the end of a dead-end street or a cul-de-sac. Gates are used to prevent unwanted access by motorized vehicles and there was no evidence of motorized traffic.

The following provides estimates on the number of parking spaces available at each site:

100 - Stratham Middle School (note about this being a school, lot closed during normal school hours)
 10 - Crockett Way (Portsmouth Ave)
 90 - Stratham Hill Park main lot
 30 - Stratham Hill Park 4H Barn area
 20 - Jack Rabbit
  4 - Powerline on Gifford Farm Road
  6 - Long Hill
  2 - Crockett Way (neighborhood)


Kiosks are placed in strategic locations and are used for posting information as well as the current town map. This map does not show every available trail that has been created since it was last printed. If possible, I suggest considering kiosks at each entry point to post maps and rules for use of the trails. Educating users is critical so good signage at access points will be helpful.

Several "bootleg trails" that have been cut from nearby homes for quick access to the main trails. Many of these have been used for some time and ending their use may not always be necessary. That said, they certainly should not be encouraged and ideally, they would be closed, especially if they create problems of any kind (erosion, motorized access, etc.). This will require communication and agreements with user groups and the adjacent property owners. Details on how this is managed will be site dependent.

## New trails

With the number of trails already available it makes sense to not construct any additional trails. The area is well served with the trails in place and maintenance of existing trails is more important than building new. That said, some sections of the existing trails may benefit from short reroutes to avoid sensitive areas, maintain proper grades, or to better align the current route.  None of these are lengthy.

If any decisions are made for closing a portion of trails, there may be a need for reconnecting sections to remain in use.

Educating the trails users about not building new trails will be an important piece of preventing new construction. This includes short feeder trails that connect to nearby residences. Posting information at trail heads and kiosks as well as on the town website is recommended. If these "bootleg" trails are found they can be disguised and closed using a method that employs the planting of rocks and tree snags along with scattering debris. Official signs can also be posted stating that the trail is closed per order of the Stratham Conservation Commission.

## Trail maintenance recommendations

Monitoring trail use would be helpful. Use of trail cameras or counters can aid in assessing the amount and type of traffic on the trails. Using an adopt-a-trail volunteer system helps to monitor impact and determine where work is needed. For example, Southeast Land Trust uses volunteers to perform trail maintenance tasks and sometimes larger projects on some of their properties.

Continue to maintain existing trails and reroute problem areas. As noted in the individual descriptions, some trails do not always meet recognized standards and best management practices. Most only require short sections of regrading or fill. Some of the bigger concerns will require more erosion control and/or rerouting to lesser grades. These can be detailed in a trail log with precise locations and needs. Creating a detailed inventory of these work items is recommended as the next step in improving the quality of the trails.

Establish the use of a trail log that is updated annually around the same time of year or based on the time when any trail work was performed. Use of photos will also help to track any changes and damage to the trails in need of repair.

## Leaf Blowing on trails

Removal of leaves on trails, usually with leaf blowers, is an ongoing concern with trail maintenance especially when trails are used by so many different user-types. Typically, it is the mountain bike community that prefers to remove leaves from trails but hikers and others also have similar opinions. While there has been a fair amount of debate on the subject there are no clear answers as to what is correct. Some will argue that leaves are slippery when wet and prevent good traction for wheeled traffic. Some will say that it is hard to follow a trail when covered with leafy debris. Still others will point out the benefits of erosion control by keeping leaves in place. All of these may be true.

The concern for long-term trail quality is how the removal of leaves affects erosion. Leaves do offer some protection to the trail tread in the same way that shingles protect a roof. It's referred to as "splatter erosion" by some. On the opposing side of the debate is that leaves left over time are organic matter that turns to mud. Each has merit for consideration. There is also the noise factor of leaf blowers and the impact on abutting landowners and more importantly how it affects wildlife. This needs to be included in the conversation since the conservation of wildlife habitat is also a factor.

A good solution that has worked well at other locations is to keep the leaves and only hand rake areas that accumulate enough to create problems where they won't disappear over time. It's surprising to see how many will dry up and disappear on their own. If they do deposit into a pile that stays it is best to remove them before they turn to an organic mulch thereby creating mud and preventing the water from

exiting the trail. Too much organic build-up in drains or dips will defeat the purpose of how they help with erosion control. This can be part of the maintenance that should be done in spring and fall at a minimum.

Trail closure is an option if a trail is deemed unsafe due to the presence of leaves. Presently there does not seem to be a need for any rerouting of trails due to leaf build-up but the leaf issue is one that can continue to be tracked as part of semi-annual inspections.

## Trail structures

As noted, there are several structures such as bridges and boardwalks. Only a few are in need of repair or replacement. Most are smaller bridges for small stream crossings with a few longer boardwalks crossing wet sections of trail. Whenever possible, considerations should be given to using sustainable measures starting with proper drainage and using stone and gravel for trail hardening before building wooden boardwalks or bridges that can be costly and require maintenance over time. Granted, wooden structures are often the only solution. These should be built to accommodate all user types and be constructed in such a way that they don't affect adjacent streams or wetlands. All materials should be pressure-treated lumber, white oak, black locust, or similar for rot resistance and longevity. In situations where longer spans (typically referred to as over 16') are required it may be necessary to have engineered plans for safety and liability reasons. Often these longer structures may require professional assistance or at least knowledgeable builders. The State of NH recognizes the International Building Code for construction projects. Individual towns may have additional codes related to structures. Wetland permits will also apply when the structure does not go from bank-to-bank and involves excavation in the stream bank or construction in a stream bed.

Maintain structures and rebuild them as needed. Any existing structures should be monitored on an annual basis for quality and safety reasons. Bridges and structures used to cross wet areas are probably the most critical structures requiring constant maintenance. Bridge designs vary but when using decking, it is best placed so that it is perpendicular to the trail tread. This is a more foot and wheel friendly design that is safer for traveling on. Railings should be used when the bridge is more than 30" off the ground.

Erosion control structures should be limited to grade dips and tread shaping to allow water to flow off the trail at appropriate locations. The rubber water bars in use on some trails seem to work in most cases but they should be angled and extend well beyond the edge of the trail to be most effective. All drainage structures should be cleaned of debris periodically and at least once in the spring and fall. All structures need to be "wheel friendly" to allow for the safe passage of bikes and other permitted wheeled vehicles. Often good design measures using the terrain and grade are the best solutions of all.

Some of the erosion issues could be managed and/or corrected by limiting some trails to one-way traffic. The Lincoln Trail is an example of this. Mountain bikes especially can cause problems from spinning wheels on steep uphill climbs or from locking brakes going downhill.

## Improvements to signage and trail markers

With such a maze of trails that are in such a limited amount of space, it is wise to mark them well. During the assessment and mapping it was sometimes confusing where some of the trails were. The trail name signs at the entrances were helpful where there were any and the emergency points also helped to confirm locations along the trails as they often marked key intersections. There were some intersections that were not as clear, especially where there were shortcuts made or where an

intersection had been heavily impacted in open areas. Shortcuts and trails cut without permission only add to the confusion if one isn't familiar with the trails.

It would be helpful to all users if the trails were marked more frequently along the routes they follow. This does not mean every tree needs marking and good judgement should be used for how they are placed so as not to impact the experience visually. This could be done with painted blazes that are color coded or with small signs that are colored and/or use actual trail names. Each have their advantages and disadvantages. Blazing is cheap and nails are not placed in trees. This does require periodic maintenance. Signs can be stolen or removed for whatever reason. Both require a tree that is large enough for the blaze to be applied so they are most effective in forested areas. Posts with signs or blazing can be used where trees are not available.

The emergency response using GPS coordinates and waypoints seems to be a solid system that can be altered as needed. Work with the local EMS to continually train staff and test the system.

Signs associated with specific events should be removed quickly after the conclusion of the event.

## Winter Use of trails

Winter use of trails has an impact when the snow compacts and becomes icy later in the winter. This surface then melts last and is often in place when spring rains begin. The result is that the water runs down the sides of the compacted snow and creates erosion problems that go beyond the summer concerns. Although it's not usually more of a problem with snowmobile trails, it's worth watching for this where trails are used for winter fat-biking, skiing, and snowshoeing.

## Impacts on wildlife habitat

One of the main reasons for this assessment was to determine the impact on wildlife habitat in the forest. According to the NH Fish and Game "Trails for People and Wildlife" tool used, there are areas of the forest considered to be high impact, primarily in and around the wetlands and the adjacent forested areas, as well as some of the field edges. Some of the older, original trails/roads are in areas considered as high impact.  This appears to be less of a concern with the newer trails.

The impact on wildlife should also be measured by the amount of traffic and the type of use an area receives. The heaviest traffic tends to be closest to Stratham Hill Park and the trails in that area.  This is also where travel occurs on the older, original trails that tend to circumnavigate or skirt the edges of the ponds and wetlands. These are the same trails that often see the most dog walking activity and dogs can certainly create disturbance to wildlife, especially when they are not leashed.

Mountain biking, snowshoeing, skiing, etc. do not necessarily create any more impact on wildlife than everyday foot traffic. Bushwhacking, off-trail travel and hunting can also disturb wildlife but typically there are fewer people doing this. Hunting is permitted with written landowner permission on private properties, but not on property owned by the Town of Stratham. Seasonal closures are an option if there are specific concerns about wildlife during mating season or in the harsh winter months. Early morning and evening are often active times for many species so the time of use can also factor into the concerns. Fortunately, mechanized traffic for recreation is not allowed as that does have a larger impact. Limitations on chainsaws, leaf blowers, and other power tools might also be a part of the solution to preventing excessive noise.

Unless there are rare or threatened species, it is our opinion that it is unlikely that wildlife would be drastically affected by the trails in their current state or as they are used at this time but it is an important item to monitor and address as needed. It is important to remember the importance of the wildlife corridors between nearby forest lands and how they relate to these properties.

## Use of E-bikes

E-Bikes, bikes that use electric motors to assist the rider, are becoming increasingly popular but come with a good deal of controversy with landowners and trail users. Opinions on the bikes themselves are not nearly as important as the implications they may have to trails and the surrounding environment. A common concern is that eBikes will hasten the degradation of trail networks with their power and their ability to allow riders to cover more trails in less time than if done by pedal power. More importantly, given the speed at which they can travel, safety should be an important consideration for the others using the trails.

There are a few different classifications of e-Bikes:

* Class 1: eBikes that are pedal-assist only, with no throttle, and have a maximum assisted speed of 20 mph.

* Class 2: eBikes that also have a maximum speed of 20 mph, but are throttle-assisted.

* Class 3: eBikes that are pedal-assist only, with no throttle, and a maximum assisted speed of 28 mph.

A few trail networks that have begun to allow these bikes generally limit the use to Class 1 eBikes. The New England Mountain Bike Association (NEMBA) is monitoring the use and reviewing their support of eBikes. IMBA is considering their support and has been softening their views. The verdict is still out on what the final decisions might be. The National Park Service and U.S. Forest Service are considering allowing them. There may be a place for them on trails that are designed with these eBikes in mind or on roads that will support them. Green Woodlands in Dorchester, NH is one area that has begun to allow them on a trial basis. Given the fact that this is still a relatively new aspect of biking, it would be best to refrain from allowing them on Stratham trails until more is learned about the impact on trails and the safety of users (both the riders and other users on the trails). Continue to monitor the potential use of these bikes and any specific needs for their use.

## User Conflicts

User conflicts may exist whenever trails are used for a variety of activities. It is obvious that the trails here may face this problem as many are currently shared by walkers, bikers, and dogs all at the same time. A common rule of trail courtesy involves right-of-way. It seems that many hikers—even experienced ones—may not know or always remember this, but hikers going uphill have the right of way. This is because in general hikers heading up an incline have a smaller field of vision and may also be in that "hiking rhythm" zone and not in the mood to break their pace. Often an uphill hiker may let others come downhill while they take a breather, but remember that's the uphill hiker's call.

If you're about to pass another hiker from behind, a simple "hello" is often the best way to announce your presence. Remember, many of us can zone out on those long, steep inclines! When passing, always stay on the trail to reduce erosion.

Since mountain bikes are considered more maneuverable than hikers' legs, bikers are generally expected to yield to hikers on the trail. However, because those mountain bikes are often moving considerably faster than said legs, it's usually easier for hikers to yield the right of way—especially if a mountain biker is huffing and puffing up a tough incline. A biker should never expect a hiker to yield, though.

Because mountain bikers move faster, hikers should also be aware of their surroundings on shared trails. Conscientious mountain bikers will call out as they come down steep slopes or blind switchbacks, and they should also let you know if there are other bikers following them.

Educating the public on trail etiquette is recommended. Posting information on appropriate websites and at trail heads and in kiosks would help achieve this goal.

## Dogs and trails

The trails are very popular for dog walking and rightfully so. However, there have been concerns expressed about the number of dogs and more importantly the safety of others when dogs are on the trails. Several other parks and trails have guidelines and restrictions for when, where and how dogs may be included with the other users on trails. These concerns are related to all pets (or farm animals) and not just dogs.

For safety reasons and for the protection of wildlife (megafauna to the tiniest amphibians) it is suggested that all dogs be leashed when on the trails. This allows everyone to use the trails at the same time without accidents with bikers and close encounters with people. This is especially true when several dogs are walking in a group or when they meet on the trail and must pass at a close distance to other dogs or people on the trail. Even with leashes, dogs should be kept in control and brought to the side of the trail when there are others passing by.

One other solution is to designate certain trails for dog walking while restricting others. Some of the wider trails or those with good visibility over a distance are more conducive to the spatial needs of sharing the trail corridor. Trails such as Tote Road and the trails around the meadows are good examples.

Here are a few ideas to consider as part of animals sharing the trails:

All animals must be on a standard or retractable leash not greater than six feet in length.

Animal owners must clean up any waste eliminated by their animals and dispose of it in provided containers or remove it off-site.

Animals must not be left unattended at any time, including in vehicles.

Any Stratham Town Ordinances will also apply here.

## Events and group size

The impact of large groups using the trails in a short period of time such as a race or similar event can have negative effects on trails. This is especially true if conditions are wet or muddy. Entire trail systems have been damaged and required substantial maintenance in situations like this. Good judgment should be used if conditions were less-than-ideal during a scheduled event. Realizing this is always tough to manage with prior planning, it would be wise to limit activities to some of the larger trails with adequate

drainage and rerouting or closing sections that might be impacted. The Parks and Recreation Department currently has systems in place to properly manage the events they sponsor using cancellations or postponing events when necessary. This is currently managed by the Parks and Recreation Director. The Town also provides a summary of planned events to the Edith C. Barker Revocable Trust (Barker Family) at the beginning of every year.

## Accessible trails

Accessible trails are designed for use by those with physical or mobility limitations. They are typically hard-surfaced trails that are on low angle grades. There are strict standards set by the American Disability Act (ADA) and the Architectural Barriers Act (ABA) for how these are constructed. Though the park and some of the town forest areas may be the most appropriate and cost-effective locations for trails such as this, there are none that meets these standards beyond the paved areas. Consideration should be given to adding more of these opportunities over time. Portions of the Tote Road or trails along the field edges would be good choices for this. These trails would allow for the enjoyment of diverse environments by those with physical limitations and they meet the grade requirements and are already for surfacing.

There is a demand for more of these trails as they serve so many users. They are often multi-use trails but can also be restricted to certain users (example: wheelchairs but not bikes). Nearby examples of similar trails can be found at Mt. Agamenticus in York, ME and some excellent examples at Crotched Mt. Rehabilitation Center in Greenfield, NH.

## Closure and decommissioning of trails

The decision to close and decommission trails is one that will fall to the Parks and Recreation Dept. and/or the Stratham Conservation Commission while considering input from this report and the community. Future needs and plans for logging or other work in the farm or forest areas may dictate temporary or permanent trail closures. As discussed, wildlife concerns may be better left to advice from experts with more knowledge on the impact for these parcels. There are trails, or sections of trails, that were never placed in appropriate locations to be sustainable and low maintenance. Others may be shortcuts or duplicates of nearby trails and are either unnecessary or creating more damage to the landscape. These could be removed without significant changes to the current recreational uses of the property. It's wise to inform and educate the public on any changes and closures with the trail system. Include any and all online resources that are known to be used for trail information as this is where many people are finding recreational areas now.

## Trails to consider for closure include:

- Ruptured Lung (#19, pg. 32) – Steep grades and erosion concerns. Monitor for continued erosion and close if it cannot be managed.
- Father and Son Extension (#27, pg. 40) – Proximity to wetlands and poor condition.
- Old Ski Slope (#29, pg. 42) – Steep and safety concerns.
- Side trails between ponds from the Tote Road to Fire Tower Road (#30, pg. 43) – proximity to wetlands and wildlife sensitive areas.
- Easternmost cross trail from variation by Stratham Hill Pond (Barker Trail to field) (#30, pg. 43) – unnecessary with other nearby connectors and in a wet area.

- Southernmost cross trail between Barker and the adjacent field (#31, pg. 44) – poor conditions and a duplicate of other nearby trails.
- Easternmost connector trail between Long Hill and Fire Pit Connector (#32, pg. 45) – steep and erosion concerns.
- Lower Barker to Fire Pit Connector (#33, pg. 46) – duplicate of other nearby trails and in poor condition.

These choices for closures will still allow access for hikers and bikers to other existing trails. The remaining trails are well positioned for connecting with other nearby trails. The benefit of providing more open space for wildlife habitat is also increased to meet the goals of conservation.

## Costs of trail construction and/or decommissioning

Ask any professional trail contractor about the cost of trail work and you'll get a wide range of numbers. There are so many site-specific variables that include such things as length/width, soils, access, vegetation removal, season, machine vs. hand-built, contractor overhead, volunteers or not…the list goes on.

When the time comes to build or maintain trails and trail structures, or decommission others, it will be necessary to decide on whether the work can be done by town employees, volunteers, or if it will require a professional trail contractor. Using contractor bids will provide a better sense of the actual costs. Contracts and agreements can be based on the information gained through the bids and interviews. This requires a complete and thorough trail log/survey to present for the bidding. This assessment was not intended to serve that purpose but hopefully using this information as a foundation for that work will help with that process. On-site inspections with a focus on designs and related costs are best for getting fair and equal estimates. There are several reputable contractors based in the Northeast with a wide variety of experience, skills, and areas of expertise. A list of these can be made available if requested.

It is important to note that Stratham has the good fortune of having town employees with a good knowledge of trail construction and most likely a group of volunteers that are dedicated to doing good trail work as has already been demonstrated. They should continue to be part of any plans for future maintenance or trail closures.

Careful consideration should be given to the long-range view and future maintenance of any trails. Without maintenance, trails can quickly fall into disrepair and understanding the amount of work that goes into good maintenance is easily forgotten. Current volunteer work groups may not always be interested or available and though they provide excellent service, trail contractors can be expensive. As a cost savings measure it would also be possible to hire a contractor that is willing to lead groups of volunteers for routine maintenance.

## Partners and volunteers

Continuing to maintain and develop partnerships with users and volunteers will be a key to the long-term success of managing the trail network. It will take many hands to do the work needed. Partners (such as the mountain bike community, Scout groups and school teams, etc.) will be key to accomplishing the goals. Building a base of volunteers who are ready to help will be important. Training volunteers about best management practices for conservation as well as trail construction and

maintenance are an important piece of this process. Some professional trail contractors are willing to train and/or work with volunteers on trail projects.

Communicating updates and changes with user groups on a regular basis is also important as is providing time for regular meetings with Parks and Recreation staff, at least on a seasonal basis.

## Town property and private landowners

The Stratham Conservation Commission manages the Gordon Barker Town Forest and the Stratham Select Board manages the area of Stratham Hill Park. But last and certainly not least, private landowners may have opinions or preferences on how the trails are or are not used. Planning and decisions should be made with respect for their wishes and the generosity of allowing use of their land.



## Trail Improvements and Projects – Five-Year Plan

2021

- Trail assessment with recommendations, photo documentation, annual use log.
- Formation of Trails Committee, ad hoc advisory
- Discuss potential options and solutions with town officials and include general public feedback session(s).
- Make decisions on any immediate concerns, limited uses, dogs, leaf blowing, closures, etc.

2022

- Trail assessment with recommendations, photo documentation, annual use log.
- Update Stratham Trail Map with changes based on additional and closed trails.
- Create a detailed trail survey log for areas needing maintenance, reconstruction, rerouting, and/or decommissioning with a timeline for completion.
- Address any immediate trail safety concerns or prioritized maintenance needs based on the trail survey.
- Improve trail marker / signage system where needed.
- Host a trail maintenance workshop to teach volunteers and build the volunteer base.
- Improve trails using reconstruction and/or rerouting as prioritized. Utilize volunteers to tackle smaller projects.

2023

- Trail assessment with recommendations, photo documentation, annual use log.
- Improve trails using reconstruction and/or rerouting as prioritized taking next steps on larger projects and to improve overall network. Use volunteers whenever possible and contractors if necessary.
- Close and decommission any trails as needed.

2024

- Trail assessment with recommendations, photo documentation, annual use log.
- Improve trails using reconstruction and/or rerouting as prioritized taking next steps on additional projects and to improve overall network. Use volunteers whenever possible and contractors if necessary.
- Close and decommission any trails as needed.

2025

- Trail assessment with recommendations, photo documentation, annual use log.
- Complete any remaining areas of significance needing work.
- Close and decommission any trails as needed.
- Update trail map and general information based on changes to date.
- Review progress to date, discuss future needs.

## Conclusion

The combined properties of Stratham Hill Park, Gordon Barker Town Forest, the Barker and Short easements have much to consider for the future when it comes to managing the increased demands of recreation while considering the potential impacts on habitat for flora and fauna, farming, future logging, and more. It has a wide variety of features including farmland, mixed forest types, as well as streams and wetlands that provide habitat for wildlife. The 200 or so acres are an island surrounded by residential and commercial areas as well as farming and are connected to other green spaces by thin threads of forest. These properties are an excellent example of farm and forest land that interfaces well with the pressures of the surrounding landscape with residential and commercial activity as well as the

needs of the town. The mix of trails offer users many types of outdoor recreation opportunities in every season. With good planning and a long-term view of management and maintenance the area will provide opportunities for many over the years ahead while meeting the goals of the town and the mission of conservation.

It has been a pleasure to get to know these trails while realizing that there is so much more to experience and see. It is my hope that this report will help to meet the needs of all who use it and appreciate it. I am available to continue the conversation, answer questions, and offer opinions on maintaining the trails in the forest if there is ever a need.

Lew Shelley

SnowHawk LLC

# Appendix B: TMAC Charge

Charge for Town of Stratham **Stratham Hill Park Trails Advisory Committee 2021**

**Overall Goal:**

The purpose of this Advisory Committee is to review the recommendations and areas of concern raised in the  Trail Assessment & Inventory Report written by Snowhawk, LLC in 2020 for the trails within the Stratham Hill  Trail network. This Committee will make policy recommendations, develop strategies for necessary  improvements outlined in the report, and submit recommendations to the Select Board. The Committee will  also serve as a public forum for obtaining input about the Stratham Hill Park Trail System, including the Report  and other input relevant to the Committee's charge.

**Charge:**

1. Make general recommendations for following-up on the Report, its recommendations and issues raised  within it.
2. The report suggests a few trails be permanently closed within the trail system. The Committee will  review these recommendations and report to the Select Board their findings.
3. Several sections of Trail are in need of improvement. The Committee will develop a plan on how to best  address these sections and report their plan to the Conservation Commission and the Park Association.  4. The report makes recommendations on policies regarding the usage of the trails within the system.  Some recommendations address new topics (e-bikes), while others revisit emerging concerns (off leash  dogs and leaf blowing of trails). The Committee should make recommendations concerning any changes  to relevant policies or ordinances.

**Structure & Timeline:**

The SHP Trails Advisory Committee will be an ad hoc committee. It will consist of 7 members appointed by the  Select Board. The Board will appoint a chairperson, who will be responsible for conducting the meetings ensuring compliance with the New Hampshire public meetings laws including meeting postings and record  keeping requirements as well as adhering to the Committee's charge and timelines. One committee member  will serve as secretary. The Parks and Recreation Director will be the staff liaison to the committee.

The Committee shall provide an interim report to the Select Board three (3) months following the date of  appointment; and recommend a timeline for the remaining work of the Committee to be completed.

**Membership:**

Membership on the committee will be open to Stratham residents. The Select Board will appoint one member  each from the Conservation Commission, Park Association, and the Stratham Pedestrian & Cyclist Advisory  Committee. Remaining seats to be filled by residents interested in participating in the process and committed to  attending the meetings. The staff liaison shall be a non-voting member. Applications will be accepted through  the Town Administrator's office.

**Monthly Meetings:**

A regular monthly meeting will be held on the third Wednesday of each month at 6 p.m. at the Stratham  Municipal Center. Other meetings and workshops can be scheduled as necessary.

# Appendix C: Survey Results

https://drive.google.com/file/d/1goSCudLCJeWeCtEt27zGUd4opkmJoMCv/view?usp=sharing

# TMAC Public Input Survey (Summer 2021)

## Q1 Where do you currently reside?

Answered: 276    Skipped: 3



Legend: ● Stratham  ● Greater Str...  ● New Hamp...  ● New England

|  | STRATHAM | GREATER STRATHAM AREA (EXETER, GREENLAND, NORTH HAMPTON, NEWFIELDS, NEWMARKET) | NEW HAMPSHIRE | NEW ENGLAND | TOTAL |
|---|---|---|---|---|---|
| Q5: Hiking | 87.88% 58 | 7.58% 5 | 4.55% 3 | 0.00% 0 | 23.91% 66 |
| Q5: Biking | 60.42% 29 | 27.08% 13 | 8.33% 4 | 4.17% 2 | 17.39% 48 |
| Q5: Trail Running | 64.71% 11 | 17.65% 3 | 11.76% 2 | 5.88% 1 | 6.16% 17 |
| Q5: Winter Sports | 100.00% 3 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 1.09% 3 |
| Q5: Nature/wildlife observation | 100.00% 4 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 1.45% 4 |
| Q5: Sports | 66.67% 2 | 33.33% 1 | 0.00% 0 | 0.00% 0 | 1.09% 3 |
| Q5: Dog Walking | 65.93% 89 | 25.19% 34 | 8.15% 11 | 0.74% 1 | 48.91% 135 |
| Q5: Hunting | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 |
| Total Respondents | 196 | 56 | 20 | 4 | 276 |

|  | OTHER (PLEASE SPECIFY) | TOTAL |
|---|---|---|
| Q5: Hiking | 0 | 0 |
| Q5: Biking | 0 | 0 |
| Q5: Trail Running | 0 | 0 |
| Q5: Winter Sports | 0 | 0 |
| Q5: Nature/wildlife observation | 0 | 0 |
| Q5: Sports | 0 | 0 |
| Q5: Dog Walking | 0 | 0 |
| Q5: Hunting | 0 | 0 |

| # | Q5: HIKING | DATE |
|---|---|---|
| 1 | Stratham | 9/3/2021 7:42 PM |

| 2 | Stratham | 9/3/2021 4:02 PM |
| 3 | Stratham | 9/1/2021 12:23 PM |
| 4 | Durham | 8/21/2021 12:52 PM |
| 5 | Michigan | 8/11/2021 8:36 AM |
| **#** | **Q5: BIKING** | **DATE** |
| 1 | North Hampton | 9/2/2021 4:42 AM |
| 2 | Stratham | 8/29/2021 7:57 AM |
| 3 | Stratham | 8/27/2021 12:39 PM |
| 4 | Stratham | 8/16/2021 9:32 PM |
| 5 | Kittery | 8/15/2021 3:01 PM |
| 6 | Kittery | 8/13/2021 12:03 PM |
| 7 | Eliot, Maine | 7/29/2021 10:07 AM |
| **#** | **Q5: TRAIL RUNNING** | **DATE** |
| 1 | Portsmouth | 8/31/2021 6:40 PM |
| 2 | Greenland | 8/30/2021 11:51 AM |
| 3 | Raymond | 7/27/2021 10:04 AM |
| **#** | **Q5: WINTER SPORTS** | **DATE** |
| | There are no responses. | |
| **#** | **Q5: NATURE/WILDLIFE OBSERVATION** | **DATE** |
| | There are no responses. | |
| **#** | **Q5: SPORTS** | **DATE** |
| | There are no responses. | |
| **#** | **Q5: DOG WALKING** | **DATE** |
| 1 | STRATHAM | 9/3/2021 4:31 PM |
| 2 | North Hampton | 8/26/2021 8:54 PM |
| 3 | Newmarket | 8/22/2021 9:40 AM |
| 4 | Stratham | 8/21/2021 7:01 AM |
| 5 | NEWMARKET | 8/17/2021 9:18 AM |
| 6 | STRATHAM | 8/16/2021 8:27 AM |
| 7 | Newmarket | 8/9/2021 6:46 PM |
| **#** | **Q5: HUNTING** | **DATE** |
| | There are no responses. | |

## Q2 How often do you visit Stratham Hill Park?

Answered: 278   Skipped: 1



|  | EVERY DAY | A FEW TIMES A WEEK | ABOUT ONCE A WEEK | A FEW TIMES A MONTH | ONCE A MONTH | LESS THAN ONCE A MONTH | TOTAL |
|---|---|---|---|---|---|---|---|
| Q5: Hiking | 8.96%<br>6 | 31.34%<br>21 | 8.96%<br>6 | 26.87%<br>18 | 7.46%<br>5 | 16.42%<br>11 | 24.10%<br>67 |
| Q5: Biking | 4.00%<br>2 | 42.00%<br>21 | 26.00%<br>13 | 24.00%<br>12 | 0.00%<br>0 | 4.00%<br>2 | 17.99%<br>50 |
| Q5: Trail Running | 5.88%<br>1 | 58.82%<br>10 | 17.65%<br>3 | 0.00%<br>0 | 17.65%<br>3 | 0.00%<br>0 | 6.12%<br>17 |
| Q5: Winter Sports | 0.00%<br>0 | 33.33%<br>1 | 33.33%<br>1 | 0.00%<br>0 | 33.33%<br>1 | 0.00%<br>0 | 1.08%<br>3 |
| Q5: Nature/wildlife observation | 0.00%<br>0 | 0.00%<br>0 | 50.00%<br>2 | 25.00%<br>1 | 25.00%<br>1 | 0.00%<br>0 | 1.44%<br>4 |
| Q5: Sports | 0.00%<br>0 | 0.00%<br>0 | 33.33%<br>1 | 0.00%<br>0 | 33.33%<br>1 | 33.33%<br>1 | 1.08%<br>3 |
| Q5: Dog Walking | 29.10%<br>39 | 46.27%<br>62 | 12.69%<br>17 | 8.21%<br>11 | 1.49%<br>2 | 2.24%<br>3 | 48.20%<br>134 |
| Q5: Hunting | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 |
| Total Respondents | 48 | 115 | 43 | 42 | 13 | 17 | 278 |

## Q3 What time of day do you typically visit?

Answered: 270   Skipped: 9



Legend: Weekday M..., Weekday A..., Weekday E..., Weekend M..., Weekend A..., Weekend E...

| | WEEKDAY MORNINGS | WEEKDAY AFTERNOONS | WEEKDAY EVENINGS | WEEKEND MORNINGS | WEEKEND AFTERNOONS | WEEKEND EVENINGS | TOTAL |
|---|---|---|---|---|---|---|---|
| Q5: Hiking | 46.97% 31 | 33.33% 22 | 21.21% 14 | 33.33% 22 | 34.85% 23 | 6.06% 4 | 42.96% 116 |
| Q5: Biking | 33.33% 16 | 45.83% 22 | 39.58% 19 | 62.50% 30 | 39.58% 19 | 14.58% 7 | 41.85% 113 |
| Q5: Trail Running | 56.25% 9 | 12.50% 2 | 37.50% 6 | 56.25% 9 | 31.25% 5 | 6.25% 1 | 11.85% 32 |
| Q5: Winter Sports | 100.00% 2 | 0.00% 0 | 50.00% 1 | 50.00% 1 | 0.00% 0 | 0.00% 0 | 1.48% 4 |
| Q5: Nature/wildlife observation | 33.33% 1 | 66.67% 2 | 0.00% 0 | 0.00% 0 | 66.67% 2 | 33.33% 1 | 2.22% 6 |
| Q5: Sports | 0.00% 0 | 50.00% 1 | 50.00% 1 | 50.00% 1 | 50.00% 1 | 50.00% 1 | 1.85% 5 |
| Q5: Dog Walking | 65.41% 87 | 31.58% 42 | 21.05% 28 | 40.60% 54 | 32.33% 43 | 11.28% 15 | 99.63% 269 |
| Q5: Hunting | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 |
| Total Respondents | 146 | 91 | 69 | 117 | 93 | 29 | 270 |

| | OTHER (PLEASE SPECIFY) | TOTAL |
|---|---|---|
| Q5: Hiking | 0 | 0 |
| Q5: Biking | 0 | 0 |
| Q5: Trail Running | 0 | 0 |
| Q5: Winter Sports | 0 | 0 |
| Q5: Nature/wildlife observation | 0 | 0 |
| Q5: Sports | 0 | 0 |
| Q5: Dog Walking | 0 | 0 |
| Q5: Hunting | 0 | 0 |

| # | Q5: HIKING | DATE |
|---|---|---|
| 1 | Any time | 8/13/2021 5:00 PM |

| # | Q5: BIKING | DATE |
|---|---|---|
| 1 | It varies. | 8/13/2021 4:11 PM |
| 2 | No specific time | 8/13/2021 12:03 PM |
| # | Q5: TRAIL RUNNING | DATE |
| 1 | All different times | 8/14/2021 11:20 AM |
| # | Q5: WINTER SPORTS | DATE |
| 1 | Timing varies | 8/13/2021 4:31 PM |
| # | Q5: NATURE/WILDLIFE OBSERVATION | DATE |
| | There are no responses. | |
| # | Q5: SPORTS | DATE |
| 1 | Mornings or afternoons | 8/12/2021 9:56 AM |
| # | Q5: DOG WALKING | DATE |
| 1 | various times throughout the month based on schedules | 8/15/2021 10:27 AM |
| 2 | * only go to playground now not trails bc of unruly dogs. | 8/14/2021 9:25 AM |
| 3 | Every morning | 7/27/2021 7:57 AM |
| # | Q5: HUNTING | DATE |
| | There are no responses. | |

## Q4 How long is your typical visit?

Legend: Less than 3... | About an h... | More than ...

| | LESS THAN 30 MINUTES | ABOUT AN HOUR | MORE THAN AN HOUR | TOTAL |
|---|---|---|---|---|
| Q5: Hiking | 0.00%<br>0 | 49.25%<br>33 | 50.75%<br>34 | 24.01%<br>67 |
| Q5: Biking | 0.00%<br>0 | 36.00%<br>18 | 64.00%<br>32 | 17.92%<br>50 |
| Q5: Trail Running | 0.00%<br>0 | 76.47%<br>13 | 23.53%<br>4 | 6.09%<br>17 |
| Q5: Winter Sports | 0.00%<br>0 | 100.00%<br>3 | 0.00%<br>0 | 1.08%<br>3 |
| Q5: Nature/wildlife observation | 0.00%<br>0 | 50.00%<br>2 | 50.00%<br>2 | 1.43%<br>4 |
| Q5: Sports | 0.00%<br>0 | 66.67%<br>2 | 33.33%<br>1 | 1.08%<br>3 |
| Q5: Dog Walking | 8.15%<br>11 | 69.63%<br>94 | 22.22%<br>30 | 48.39%<br>135 |
| Q5: Hunting | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 |
| Total Respondents | 11 | 165 | 103 | 279 |

## Q5 What is your primary reason for visiting the park?

Answered: 279    Skipped: 0



Legend: Hiking, Biking, Trail Running, Winter Spo..., Nature/wil..., Sports, Dog Walking, Hunting

| | HIKING | BIKING | TRAIL RUNNING | WINTER SPORTS | NATURE/WILDLIFE OBSERVATION | SPORTS | DOG WALKING | HUNTING | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Q5: Hiking | 100.00% 67 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 24.01% 67 |
| Q5: Biking | 0.00% 0 | 100.00% 50 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 17.92% 50 |
| Q5: Trail Running | 0.00% 0 | 0.00% 0 | 100.00% 17 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 6.09% 17 |
| Q5: Winter Sports | 0.00% 0 | 0.00% 0 | 0.00% 0 | 100.00% 3 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 1.08% 3 |
| Q5: Nature/wildlife observation | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 100.00% 4 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 1.43% 4 |
| Q5: Sports | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 100.00% 3 | 0.00% 0 | 0.00% 0 | 1.08% 3 |
| Q5: Dog Walking | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 100.00% 135 | 0.00% 0 | 48.39% 135 |
| Q5: Hunting | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 | 0.00% 0 |
| Total Respondents | 67 | 50 | 17 | 3 | 4 | 3 | 135 | 0 | 279 |

| | OTHER (PLEASE SPECIFY) | TOTAL |
|---|---|---|
| Q5: Hiking | 0 | 0 |
| Q5: Biking | 0 | 0 |
| Q5: Trail Running | 0 | 0 |
| Q5: Winter Sports | 0 | 0 |
| Q5: Nature/wildlife observation | 0 | 0 |
| Q5: Sports | 0 | 0 |
| Q5: Dog Walking | 0 | 0 |
| Q5: Hunting | 0 | 0 |

| # | Q5: HIKING | DATE |
|---|---|---|
| 1 | birding | 8/28/2021 12:11 PM |

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| 2 | Hiking with dog | 8/28/2021 11:19 AM |
|---|---|---|
| 3 | Climbing the fire tower | 8/22/2021 11:49 AM |
| 4 | Playground | 8/18/2021 2:23 PM |
| 5 | Biking and dog walking | 8/16/2021 10:23 AM |
| 6 | I live on Lovell Road so it my back yard and my son & wife walk off and on daily | 8/3/2021 10:47 AM |
| 7 | Playground, story walk, picnics | 7/28/2021 2:07 PM |
| 8 | Child led activities | 7/28/2021 9:58 AM |
| **#** | **Q5: BIKING** | **DATE** |
| 1 | Biking, hiking, dog walking, and winter trail use | 8/23/2021 1:33 PM |
| 2 | Also do a lot of dog walking | 8/21/2021 7:35 PM |
| 3 | Biking and dog walking | 8/14/2021 9:28 AM |
| 4 | and hiking and winter sports and stuff with family - and scouts | 8/5/2021 4:09 PM |
| 5 | also Trail running and Dog Walking | 8/4/2021 6:30 PM |
| **#** | **Q5: TRAIL RUNNING** | **DATE** |
| 1 | Run with dogs | 7/28/2021 11:57 AM |
| **#** | **Q5: WINTER SPORTS** | **DATE** |
| 1 | Hiking and winter sports some running | 8/13/2021 4:31 PM |
| **#** | **Q5: NATURE/WILDLIFE OBSERVATION** | **DATE** |
| | There are no responses. | |
| **#** | **Q5: SPORTS** | **DATE** |
| | There are no responses. | |
| **#** | **Q5: DOG WALKING** | **DATE** |
| 1 | * note: no longer walk the dog there or baby... too many uncontrolled dogs off leash! I only stay on the front part of the park where playgrounds are sadly without the dog. | 8/14/2021 9:25 AM |
| 2 | Long hikes with my dogs | 7/26/2021 7:57 PM |
| 3 | Besides dog walking I also like to hike the trails and observe nature | 7/26/2021 3:35 PM |
| **#** | **Q5: HUNTING** | **DATE** |
| | There are no responses. | |

3

6

# Q7 Do you have any recommendations/comments or suggestions?

Answered: 150    Skipped: 129

| | DO YOU HAVE ANY RECOMMENDATIONS/COMMENTS OR SUGGESTIONS? | | TOTAL |
|---|---|---|---|
| Q5: Hiking | | 100.00%<br>37 | 24.67%<br>37 |
| Q5: Biking | | 100.00%<br>30 | 20.00%<br>30 |
| Q5: Trail Running | | 100.00%<br>10 | 6.67%<br>10 |
| Q5: Winter Sports | | 100.00%<br>2 | 1.33%<br>2 |
| Q5: Nature/wildlife observation | | 100.00%<br>2 | 1.33%<br>2 |
| Q5: Sports | | 100.00%<br>2 | 1.33%<br>2 |
| Q5: Dog Walking | | 100.00%<br>67 | 44.67%<br>67 |
| Q5: Hunting | | 0.00%<br>0 | 0.00%<br>0 |
| Total Respondents | 150 | | 150 |

| # | Q5: HIKING | DATE |
|---|---|---|
| 1 | Would like to see better enforcement of dogs on leash | 9/3/2021 7:42 PM |
| 2 | don't allow dogs on hiking trails | 8/30/2021 10:55 AM |
| 3 | Please make a rule that bikers are to yield to pedestrians. | 8/29/2021 7:50 PM |
| 4 | The trails are clearly marked in some areas but not in others which can make it confusing if you are hiking in the park. | 8/28/2021 12:11 PM |
| 5 | We're noticing a lot more broken glass on the trails again recently. Not sure what can be done about it, but maybe some sort of sign at trail entrances could deter a bit. The same sign could include info about trail etiquette (bikers announcing themselves, slowing for hikers etc. Hikers stepping aside for trail runners or bikes. You may see hunters, etc. Regarding-volunteering question below. I'm not sure. It would depend on what that would entail. I already spend time clearing branches off trail every time I go out, so possibly. | 8/27/2021 6:48 PM |
| 6 | it is a beautiful park would love to see better trail markings and directions | 8/27/2021 3:55 PM |
| 7 | Offer trail races (running) in addition to bike races | 8/22/2021 11:49 AM |
| 8 | Make all dogs be on leashes or have an area for dogs only I love dogs but get very upset when they run up and jump on me or when dog walkers bring several dogs and unleash them and many really don't control them. It is a serious problem and want to prevent people and children from getting hurt, or bit. | 8/20/2021 11:11 AM |
| 9 | Nice park. I'm in the, the mountain bikes are the problem camp. Trails are widened and filled with mud because of them. Nearly been hit many times. A lot of great riders out there but the careless ones really ruin the experience. I wish the mountain bikers stayed on the trails and respect the "leave no trace" philosophy. None the less, it's a great park and I'm glad so many people use it. I just wish it was more respected and let to be a little more natural. | 8/20/2021 11:05 AM |
| 10 | Better marked trail signs. We did the yellow but got lost a few times. We had a map from 2016 that did not have the little trails on it. I had to use my AllTrails app on my phone to make sure we were going in the right direction. | 8/18/2021 8:16 PM |
| 11 | The trail network is very confusing. The emergency beacons help, but trying to stay on the perimeter trail is a challenge. Some parts are well blazed, others it's a guessing game. I had a print out of the map with me and still got lost multiple times. | 8/18/2021 2:23 PM |
| 12 | Reinforcement of leash law | 8/17/2021 10:07 AM |
| 13 | 2 trees down on Dead Fish trail Suggestions to people for trail etiquette | 8/16/2021 10:23 AM |
| 14 | Trails are not clearly marked. New worn trails are being created by bikes causing confusion. | 8/15/2021 1:22 PM |
| 15 | Great park, well cared for. Recently trail bikers seem less considerate of hikers. In another region this was successfully remedied by small trail signs indicating for bikes to give way to walkers, and recommending use of bells on the bikes. | 8/15/2021 11:26 AM |
| 16 | More trash cans so I don't come across so many abandoned poop bags | 8/14/2021 12:30 PM |
| 17 | My experiences with people along the trails ( including dogs and bikes) and with the quality of the trail conditions have been 100% positive. Thank you | 8/14/2021 7:34 AM |
| 18 | We are interested in working with the TMAC to collaborate on efforts to integrate trails, land, and agriculture use on the Short property. We have not been able to attend any of your meetings yet but have met with the trail consultant and follow your meeting minutes. | 8/14/2021 5:53 AM |
| 19 | I suggest we think about the park as two very different places. The remarks and concerns I heard at the meeting | 8/13/2021 5:00 PM |

were not relevant to the big, back part I frequent I suggest we clarify designated parking.

| 20 | Live in Michigan visit once a year hike every day while we're here | 8/11/2021 8:36 AM |
|----|----|----|
| 21 | Require dogs to be leashed so that everyone can enjoy the park. Unleashes dogs are unpredictable and pose a safety threat to people (and children) and other dogs. Very concerning to many. Also the issue of dog waste and trail erosion. Lastly, overall use of the park has increased significantly and am concerned without action the park itself will suffer as well as the wildlife that inhabits it. | 8/5/2021 7:58 AM |
| 22 | Trail bridge needs to be Fixed. I would get 2 old telephone poles to fix possibly ones just recently removed if too short and/or get from town and work from there rebuilding. Additionally, to help with erosion and keep people in trails vice make new ones. Trails need to be improved so as to keep trails from being muddy. This helps also with safety for bikers. As well as covering roots with a better rocky substrate. With CV-19 the amount of usage has greatly increased and the wear and tare has also increased and exposing more roots of trees making biking on rails even more dangerous. I don't know if you guys have one, but an ATV with a dump cart would be easy way to maintain trails. | 8/3/2021 10:47 AM |
| 23 | We so love the trail system for hiking and biking. Thanks for your work in keeping it maintained and having trails labeled. | 7/30/2021 10:57 PM |
| 24 | Something has to be done about holding people accountable for controlling their dogs! Dog park section perhaps? | 7/29/2021 3:49 AM |
| 25 | Better trail signage of trails | 7/28/2021 5:33 PM |
| 26 | A once a week concert/music series in the park during the summer | 7/28/2021 2:07 PM |
| 27 | Taking the grandchildren for a walk/hike down the paths is very enjoyable until someone on a bike going very fast comes up behind us unexpectedly and we have to quickly dash to the side. This can be an issue for older folks and young kids. | 7/28/2021 11:46 AM |
| 28 | Limit the number of dogs one person is allowed to walk. Two or three dogs max. Dog walkers that have 5 or more dogs, several off leash, cannot sufficiently control them. I don't mind dogs off leash, but I do mind three dogs at once bounding up to me with a pack mentality. | 7/28/2021 11:38 AM |
| 29 | Love all this park and appreciative of all the work that goes in to keeping it a fun, local adventure for families | 7/28/2021 9:58 AM |
| 30 | The erosion needs to be addressed. I have nothing against mountain biking, but having lived next to the trails for 25 years I have watched the trails deteriorate with the growing popularity of biking in the park. I am in the park daily hiking anywhere between 3-8 miles. | 7/28/2021 9:37 AM |
| 31 | No more trail expansion and dogs on leashes throughout the Park. | 7/28/2021 9:33 AM |
| 32 | I would like to lend my support to having all dogs leashed, throughout the entire park. | 7/27/2021 7:21 PM |
| 33 | I often walk my dog there. I support dogs being leashed at all times in all areas of the park. | 7/27/2021 11:53 AM |
| 34 | SO many dogs are out of control and NOT under their owners voice control. I have had my 6 year old chased, jumped on, and bothered by numerous dogs. Owners don't seem to care. PLEASE try to come up with a solution, so that ALL people can enjoy the trails and not be bothered by off leash dogs. So many people are allergic, scared, etc of dogs and allowing irresponsible owners to let their dogs do whatever they want only further subjects people to unnecessary trauma. Its just not fair to let them run the park. | 7/27/2021 7:16 AM |
| 35 | if possible, more signage about Bicycle/ Dog / sharing trail Etiquette (where dogs need to be on leash, having dogs under control/ voice command at all times), trail names, and, maps…. thank you! | 7/27/2021 7:11 AM |
| 36 | Please require dogs to be on leash at all times on all paths. It is dangerous for people and wildlife to have dogs running wild | 7/26/2021 5:35 PM |
| 37 | Please institute a park wide leash law for all dogs - having had a variety of unleashed dog experiences, requiring that all animals be on a leash is the safest for everyone - people and dogs | 7/26/2021 3:10 PM |
| # | **Q5: BIKING** | **DATE** |
| 1 | Continue to expand trails | 8/30/2021 7:06 PM |
| 2 | Better signage More advanced pump track … tabletops and jumps | 8/30/2021 12:16 PM |
| 3 | No | 8/29/2021 4:04 PM |
| 4 | I have lived in the area for the past 20 years and stratham has done a great job maintaining and adding to the trail system not only for biking but for hiking as well | 8/29/2021 10:19 AM |
| 5 | I love this park. I can't think of any suggestions. It is friendly and very well laid out. | 8/29/2021 7:57 AM |
| 6 | very busy place now. lots of dogs off leash | 8/28/2021 5:58 AM |
| 7 | Make the pump track larger! | 8/27/2021 8:11 PM |
| 8 | We need to maintain the dog-friendly aspect of.our great park. It is a gem in our area that would be a shame to lose. Also, I think we should add in some groomed trails for biking. We don't have any smooth flow trails or any real jump lines. We have plenty of room and could put up signs to prevent uphill travel. Also the pump track needs a redo. It is great to have, but it doesn't work like a pump track. I'd be happy to be involved in the planning/construction of these things too. | 8/27/2021 12:39 PM |
| 9 | More NEMBA trails please. | 8/23/2021 7:04 PM |
| 10 | Please do not improve any more trails by removing rocks or roots. | 8/23/2021 6:14 PM |
| 11 | Park appears to suffer from over use in certain areas. Don't have any suggestions other than management, education, and possibly adding additional trail access points? A fenced dog park might be a good idea. | 8/23/2021 1:33 PM |
| 12 | This is the best park around!! We are just discovering all that it has to offer. We are just in Durham and hear almost nothing of what is available here. Additional marketing would be helpful - like the QR codes for this survey, clear signs of what Facebook groups to follow or how to stay informed would be great. | 8/18/2021 12:38 PM |

| 13 | Great improvements over the years. I enjoy the trails. | 8/16/2021 9:32 PM |
| 14 | Once in the woods, almost everyone lets their dog off the leash. This is fine for well behaved dogs that heed their owner's instructions. However, the majority of dogs do not. They are frequently intrigued by mountain bikers and approach closely. Many growl and bark and I have been nipped at by 2-3 dogs within the last year. Usually, they are "harmless" breeds, and this is a minor annoyance. That said, I have observed more dangerous dogs off leash and this is a concern. | 8/16/2021 4:02 PM |
| 15 | Really like the park for quick after work rides | 8/15/2021 3:01 PM |
| 16 | I think Stratham hill is really well taken care of | 8/13/2021 6:21 PM |
| 17 | Some of the trails for mountain bikes could have some tree stumps and rocks removed. Maybe add some difficulty signs in the trails to | 8/13/2021 12:03 PM |
| 18 | Yes - clearly define the rules of the park Figure out the dog leash/no leash thing so it works for all Encourage courtesy for all users Repair trails maybe a user group | 8/5/2021 4:09 PM |
| 19 | Abandon old, braided trails, and more new trails | 8/4/2021 6:30 PM |
| 20 | As an avid mountain biker and user of the SHP trail system, I cannot share enough thanks to the stewards, volunteers, and town of stratham for creating such a special place. My children have grown up learning to ride and appreciate the woods at SHP, which is unfortunately an exceedingly rare and special place in the Seacoast. My only comments are ones of thanks and an ask that we continue to develop the trail system in a way that supports all uses in a sustainable fashion and with respect to the adjacent landowners so that we may continue to use the gift they've given us. The locations available to mountain bike are limited in the Seacoast and so would also like to add that the care and investment in the trails is needed to preserve them for future generations, which is worth it from an economic perspective, let alone continuing to enhance quality of life in the Seacoast and supporting a growing, positive, and health-focused sport. | 8/2/2021 10:17 PM |
| 21 | Improved pump track, machine built trails in high traffic areas and new trail to the fire tower. More sustainable trail building so they are impacted less by increase in traffic since COVID. | 7/30/2021 10:05 AM |
| 22 | More bike trails and pump track improvements! | 7/29/2021 4:29 PM |
| 23 | I would visit more often if it had a leash law. Dogs constantly out if control of owners. I refer to this place as the dog park, not a recreation park, as do many others. I only ride here if all else fails. | 7/29/2021 3:55 PM |
| 24 | Would love to see an update to the pump track and also some "machine built" trails in the park or at least some updates to some of the others that have seen lots of traffic. | 7/29/2021 10:07 AM |
| 25 | More technical trail are always welcome. What about a disc golf course!!!! | 7/28/2021 6:26 AM |
| 26 | How can I help? I would like to participate. | 7/27/2021 8:34 PM |
| 27 | None really, very nice job with the park. | 7/27/2021 10:35 AM |
| 28 | More trails for young riders | 7/26/2021 9:05 PM |
| 29 | -Make the pump track larger -Consider a fenced off-leash dog area -Skate park! -expand the trail network to neighboring parcels | 7/26/2021 7:51 PM |
| 30 | Love the trails and mountain bike race series. Would be good to continue to have a strong trail management plan. | 7/26/2021 2:59 PM |
| # | **Q5: TRAIL RUNNING** | DATE |
| 1 | Some sort of enforcement of dog leash rules. I have been lunged at by dogs far too many times to count. Most owners don't even give a verbal command to stay back. | 8/31/2021 6:40 PM |
| 2 | I feel very fortunate to have this park to run and walk with my dog off leash which I've done for 10 years. The park and its usage have changed considerable over that time, and I appreciate the people behind the scenes who have made it work for all! I find most people to be very respectful to each other in their individual activity they are participating in. For example, I run and walk with my dog. I pick up after my dog (thank you for providing bags and trash cans) and I find mountain bikers are respectful and slow down when we share the trail. I on the other hand, will stop and pull myself and my dog off the trial and let the mountain biker pass. Occasionally a biker will fly by and not slow down, but this is not the norm. I also enjoy the fair and climbing the fire tower. Again, we are very blessed to have this park so thank you to all who make it possible! | 8/30/2021 11:51 AM |
| 3 | Better enforcement of dogs! There are too many dogs off leash that are not able to be controlled by their owners. It can be scary and dangerous! | 8/28/2021 7:13 AM |
| 4 | Signage on the primary yellow route can be tough to follow. | 8/27/2021 8:00 AM |
| 5 | Some of the best trail running around. Keep up the great work! | 8/23/2021 11:14 PM |
| 6 | It's a beautiful park and thank you for maintaining it! Maybe on some trails there could be a little more pruning of stray branches and thorns. | 8/17/2021 10:09 AM |
| 7 | Dogs should be leashed Dogs should be leashed Dogs should be leashed | 8/14/2021 11:20 AM |
| 8 | I have enjoyed being able to use the trails during the period of time in which dogs are required to be leashed. In the past, there are countless times I have been rapidly approached by a dog, often with a comment such as "Oh, he's friendly" by the owner. I like dogs, but not when they are running at me and/or jumping up on me, regardless of whether they are "friendly." Dogs who do not appear friendly have also been on the trails, and I have been approached with some aggression by some. I urge consideration of dog leashing especially during peak times of trail usage. If it is not a blanket "dogs must be leashed," then I would prefer something like "dogs must be leashed except for specific days/times." I know this is a delicate issue with many dog owners. But there are many times I, and I suspect other runners and walkers simply avoid the trails because of unleashed dogs. Thank you. | 8/13/2021 5:38 PM |
| 9 | Keep up the great work. LOVE the running and biking races! | 7/28/2021 11:57 AM |
| 10 | I haven't come across many issues at the park. Occasionally people think it's funny when their dogs chase me while I'm running (rather than at least trying to call their dog off). | 7/26/2021 7:35 PM |

| # | Q5: WINTER SPORTS | DATE |
|---|---|---|
| 1 | I am concerned about biker and hiker interactions. I am not a biker and have been surprised by bikers who don't announce themselves. I wonder if there is some code of conduct for places where these 2 groups use the same trails? | 8/13/2021 4:31 PM |
| 2 | 1. Limit mountain bike flow. They actively ruin the experience for everyone else using the trails and park. 2. Charge non stratham residents for parking/trail access. Funds can then be utilized for trail maintenance or stratham rec purposes. | 8/12/2021 6:37 PM |

| # | Q5: NATURE/WILDLIFE OBSERVATION | DATE |
|---|---|---|
| 1 | Be transparent. Work with landowners and abutters. | 8/29/2021 6:20 PM |
| 2 | The Park and outlying trails are a wonderful resource that are endangered by overuse. I am glad that you all are working to address some of the challenges and opportunities at the park and environs. The dog situation is completely out of control. I am tired of being jumped on by unleashed dogs, dog litter, and abandoned dog refuse bags. It's gotten so bad that I avoid the park on weekends and holidays when it is most apt to be especially busy. My only other suggestion for improvement would be better trail signage. The maintained trails would benefit from signs that demark the trail name, and also ideally its length and destination. This would make the trail network easier and safer to explore. | 7/31/2021 12:43 PM |

| # | Q5: SPORTS | DATE |
|---|---|---|
| 1 | dog owners should not be on bikes whilst dogs are unleashed. | 8/23/2021 9:22 AM |
| 2 | N/a | 8/2/2021 10:51 PM |

| # | Q5: DOG WALKING | DATE |
|---|---|---|
| 1 | On private driveways and resident roads that lead up to the park, maybe put up signs that there is public parking and walking access to the trails elsewhere besides residential driveways and parking on streets that are not for the town park, but for the residents of that road or driveway | 9/4/2021 8:29 AM |
| 2 | Yes, please keep dogs off leash | 9/3/2021 5:26 PM |
| 3 | It's really important for my dog to walk off leash and I appreciate the ability to do that a Stratham Hill Park so much! Please continue to leave at least part of the park off leash!I would volunteer if my dogs could come with me. | 9/2/2021 6:48 PM |
| 4 | Please keep back trails off leash | 8/30/2021 6:24 PM |
| 5 | I live right the street and this is a very well maintained park with lots of options. Thank you! | 8/30/2021 12:47 PM |
| 6 | Absolutely beautiful park, thank you!! My only comment is the number of adult bicyclists who insist on speeding by very closely to us dog walkers. | 8/28/2021 11:25 AM |
| 7 | Off leash walking is vital for animal health. | 8/27/2021 9:48 PM |
| 8 | No lease requirements. | 8/27/2021 9:45 PM |
| 9 | Thank you for providing this survey. Stratham Hill is an incredible treasure particularly because it is the only local place we can walk our dog off leash. We are so grateful for our time there. | 8/27/2021 9:40 PM |
| 10 | We love the dog-friendliness of SHP. People go there knowing their dogs can run free if they're well-behaved. There are countless places in the area where people who want a dogless or dog-on-leash experience can go. It's nice to have one for dog lovers. Thank you for providing this for so many! | 8/27/2021 8:41 AM |
| 11 | Please provide more & better park maps and better labeling of Town vs Private Property boundaries. | 8/26/2021 8:54 PM |
| 12 | Thank you to all who keep the park so nice. We've been hiking/walking with our dog for a year now and have had nothing but lovely and courteous encounters with other dog owners, cyclists, and walkers. We have experienced a wonderful sense of community there. People come from around the area to enjoy the space, and we are so grateful to live nearby. | 8/23/2021 7:20 PM |
| 13 | Feel very fortunate to have this beautiful resource in our area. Appreciate being able to walk my dog and let her run in the open fields and trails. Grounds are very well maintained. Appreciate natural /original plants like milkweed that encourage the local wildlife— healthy ecology of our local habitat is important. Thank you for all of your work to maintain the beauty of SHP / Gordon Barker Town Forest. | 8/22/2021 9:40 AM |
| 14 | The dogs off leash are a definite problem. Have been confronted a number of times by aggressive unfriendly dogs off leash with owns who care less about others trying to enjoy the park. I do not go on trails anymore because these encounters are Not safe for me or my dogs. | 8/21/2021 1:49 PM |
| 15 | Expand trail network with more single track | 8/21/2021 7:01 AM |
| 16 | Maintain Jack Rabbit rd side of park for off leash activities. Main park can be on leash. | 8/20/2021 11:30 AM |
| 17 | On leash park side/off leash trail side. I am very respectful of people who have their dog on leash.. My dog needs to run and play and be off leash. He has many friends that he sees here and it is his and my happy place. He runs with his friends around the fields and then we walk the trails for me.. please do not ever turn this into on leash only! I live across from the park in Greenland and this is where we walk. I appreciate the care and constant improvements that go into this park! | 8/20/2021 11:29 AM |
| 18 | For me the Park is perfect as is! Hikers, bikers and dog walkers seem to all get along. Never utilize the sport / picnic facilities. | 8/19/2021 5:57 PM |
| 19 | Please please continue to allow off-leash dogs at the park. A healthy well socialized dog is one who can run free along side its person. | 8/18/2021 7:40 AM |
| 20 | No | 8/18/2021 5:50 AM |
| 21 | I think some sort of public drinking water would be a great addition. I am relatively new to the area so I may not be aware of current amenities. | 8/17/2021 2:30 PM |
| 22 | Education could be provided to the general public about not creating ride/walk arounds on difficult sections of trails | 8/17/2021 9:18 AM |

| | to prevent trail widening and erosion. | |
|---|---|---|
| 23 | SHP has been such a blessing to our home and family. Our property abuts the park and we have instant access. Our family uses the park mainly for walking our dog off leash who has a solid recall on command. We use the trails as well for biking as a family. The nature walks are another added blessing. SHP is a huge part of our home. We've had a couple encounters with some out of town folks who may not be aware that the park is an off leash dog park. Perhaps signs at all trail entrances to make people aware of the off leash park, would better prepare bikers, runners and others who are afraid of dogs, to reconsider a park that is leashed to better suit their needs and interest. I hope that everyone who utilizes the park can allow a little grace for all to continue to enjoy the beauty and nature of what our town offers to the local residents and extending community. | 8/16/2021 9:46 AM |
| 24 | The trail maps aren't 100% accurate- there seem to be more trails than are shown on the map. I can get disoriented a little easily. | 8/16/2021 8:47 AM |
| 25 | LOVE the park including the pickup bags and barrels | 8/16/2021 8:27 AM |
| 26 | the park is well managed, well loved, and heavily traveled. Widespread mountain biking and dog walking are the predominant activities and they work well together. Conflicts are very very infrequent. Often from people who arent regulars. No need to change anything. Everybody always has something to complain about. Dog walkers complain about bikers, scared people complain about dog walkers, bikers complain about scared people, old people complain about the kids and the noise. Just except there will be conflicts with a heavily traveled park and address issues as they come. The park is well managed and the overwhelming majority of people are very happy with it and dont want use restrictions. | 8/14/2021 8:45 PM |
| 27 | Please keep the off leash part off leash!!! | 8/14/2021 6:44 PM |
| 28 | The park is a tremendous amenity to Stratham. The ability to work my dog off leash on the trails is fantastic and something I thoroughly enjoy. | 8/14/2021 10:47 AM |
| 29 | somehow to keep dogs either on leash or within control when other dogs/people are around...and to PICK UP YOUR DOG POOP. We have lived here for almost years and in the past year feel we cannot safely walk the dog there even on leash as other dogs come up to her and are not controlled... especially on trails that are narrow. I believe most of the issues are from people who do not live in Stratham and come with multiple dogs per dog walker... perhaps you can address the number of dogs within one person's control if they are not on leash. | 8/14/2021 9:25 AM |
| 30 | Keep it dog friendly | 8/14/2021 8:56 AM |
| 31 | My dog and I love this park! Thank you for all that you do! | 8/13/2021 5:24 PM |
| 32 | Park and trails are well maintained | 8/13/2021 8:51 AM |
| 33 | I would like to see biking etiquette and dog behavior tops posted | 8/10/2021 6:17 PM |
| 34 | Please preserve the Milkweeds in the fields if you can to support Monarchs. And some trees are getting choked by invasives. Volunteers could help set some invasive vines back. | 8/9/2021 6:46 PM |
| 35 | A few areas could use side trails so we can get out of the way of bikes quicker | 8/9/2021 4:07 PM |
| 36 | Yes - I would like to not have any exclusions for e-bikes on the bicycle trails. As an older person, I've owned an e-bike for 4 years now and ride extensively on rail trails and prefer off-road riding. I think there is nothing wrong with allowing ebikes and it actually could be considered age bias. Most of the people I meet on a trail have no idea that I have an e-bike. If you want to know more about them, please feel free to contact me. Maybe you'd like to try one out and see how great they are. I hope to continue to be able to ride in the park. | 8/1/2021 9:52 PM |
| 37 | Share the park. Hikers and dog walkers were here far before the bikers. Share the trail. Bikers need to loudly announce they are coming. Let walkers know how many in biking party. I think we can all enjoy together. Dogs should be able to be unleashed if friendly, obedient. Bikers with dogs should not be aloud. They can't control their dogs. E collars work great. Respect for one another. | 7/31/2021 7:10 PM |
| 38 | Please make sure all dogs remain on leash whenever they are on the park property. | 7/30/2021 5:58 PM |
| 39 | Stronger enforcement of dog leash rules in the park. | 7/30/2021 4:20 PM |
| 40 | I love to be able to walk my well behaved and obedient dog off leash. | 7/30/2021 4:03 PM |
| 41 | Hello. Every weekend, rain or shine (or snow), we take our dog to the park to run and burn energy on the trails. She's a great motivator for us to also get some exercise and walk all the beautiful trails. In all our years of going, we have never seen a negative encounter, although, we have noticed a huge increase in Out-of-State cars in the parking lot (mostly with mountain bikes). It would be a huge hit to this community to not allow our dogs to run free in the fields and on the trails. Owners know their dogs better than anyone and several do keep their dogs leashed because they may run away or not interact well with others. Please do not let 1 or 2 loud, outspoken residents with dubious claims ruin it for everyone else in the community. Thank you! | 7/30/2021 9:21 AM |
| 42 | There are many roots that are hard to see. I and at least one friend have fallen pretty hard from tripping. Many could be trimmed off, some could be mulched? It's a great park. Lots of shade when you want it, some wading for my hot dog....happy to see that there is very little litter! | 7/30/2021 6:32 AM |
| 43 | Limiting times mountain bikes allowed on trails. Dangeyitti hikers in trails in the woods, increasing trail erosion | 7/30/2021 12:36 AM |
| 44 | Walking my dog on the trail is the best part of my day. She loves to run freely and sniff around. I really hope this privilege is not going to be taken away. Thanks | 7/29/2021 6:42 PM |
| 45 | We have been walking in Stratham Hill park since we moved here 7 years ago. We frequently walk with our dog who is not leashed UNLESS we see a biker. We stop and hold our dog to the side to be respectful. We can maintain and off-leash dog community and safe baking trails for all by being aware of each other and respectful. We love our park and all of the activities from Pizza night, the Stratham fair and walks with our kid and dog! | 7/29/2021 5:37 PM |
| 46 | Please please let the doggies run free. | 7/29/2021 6:02 AM |
| 47 | I wish they would create "bike only" paths. Bikers go so fast and so many are not considerate of walkers/ runners. | 7/28/2021 5:35 PM |
| 48 | Please require dogs to be leashed for everyone's protection | 7/28/2021 4:11 PM |

| 49 | Keep SHP an "off-leash" park for dogs. | 7/28/2021 10:29 AM |
|---|---|---|
| 50 | I support shared use of the trails (hike, bike, run, ski, snowshoe, dog walk) although some trails could be single use. I support designing and maintaining the trails for low impact to the soil and trees as well as training and utilizing volunteers for the maintenance. I think we need to be careful about how many high impact events such as foot/bike races we allow and which trails we allow them on. | 7/28/2021 10:17 AM |
| 51 | Balancing the rules and regulations for the park to remain multi purpose should be a priority for the town. | 7/28/2021 9:09 AM |
| 52 | Lucky to have this wonderful park next door | 7/27/2021 2:16 PM |
| 53 | Continue to allow both off-leash dog walking along with biking. Possibly more public education by postings, encouraging both groups to accommodate each other. I enjoy both uses and understand the conflicts. A few courtesies go a long way and have reduced my negative encounters that other experience. | 7/27/2021 11:41 AM |
| 54 | Being able to walk our registered dogs off leash gives us a chance to really enjoy all the trails and gives us a great sense of community. 😄 | 7/27/2021 9:46 AM |
| 55 | Please keep leash restrictions away from this park- it's so lovely to have a place to bring our pups without a leash rules! | 7/27/2021 9:00 AM |
| 56 | I noticed that many trails are damaged / modified by excessive biking or bikers creating new paths. Those shortcuts or new paths are not created by runners or dog walkers. I truly appreciate the park and the woods are for everyone and shared by everyone. The fact that I can walk my dog off leash in the back and in the woods is priceless and the major advantage of this place. I would agree to be charged for a yearly pass to help on the maintenance costs. | 7/27/2021 8:17 AM |
| 57 | Excessive biking on trails is damaging trails. Many bikers ride in a manner that puts walkers in danger, high speed, coming too close, no warnings when passing, etc. | 7/27/2021 8:06 AM |
| 58 | Designated bike trails only | 7/27/2021 8:05 AM |
| 59 | Please continue to allow off-leash dog walking! Whether it be certain trails or hours of the day. There is a considerable community that enjoys leash-free walks, and letting our doggos interact. Thank you! | 7/27/2021 7:14 AM |
| 60 | Please keep trails open to digs walking off leash. We have never had a bad experience. | 7/26/2021 10:50 PM |
| 61 | Please don't institute leash rules for the dogs! I see so many happy dog owners with really well behaved dogs who love to sniff and explore on my visits here | 7/26/2021 8:29 PM |
| 62 | I love Stratham Hill Park. I visit several days during the week at very low use times and so appreciate being able to trail run and hike with my dogs off leash. Please please I beg you do not take this amazing privilege away. I am 67 years old and it is my joy to run with my dogs in the woods. There are very few places left where one can do this. | 7/26/2021 7:57 PM |
| 63 | I'm there very early in the morning. Please don't make it on-leash for dogs - there are so few places that they can run. I have never had an issue with other dogs, and bikers frequently comment on how good my pup is when they go by. | 7/26/2021 5:36 PM |
| 64 | All dogs should be leashed for their protection and for the protection of people. Voice command is not reliable. | 7/26/2021 5:13 PM |
| 65 | Please have the entire park 'dogs on leases only'. Too many dog owners have no voice control and/or dogs out of control running all over! Giving it a break due to this issue.. not a great place for Stratham residents to dog walk any more.. | 7/26/2021 4:43 PM |
| 66 | Please allow dogs to be off leash. The park is such a happy place to talk with fellow dog owners. | 7/26/2021 3:17 PM |
| 67 | I just really feel like there is a solution here for everyone. I see all sides of the park "debate", but one isn't any more right or wrong than the other, regardless if you live next to the park or in the next town. We all have our own stories, whether good or bad, regarding dogs, bikers, etc. Some creative thinking should be able to make most people happy…nothing will ever make everyone happy. And | 7/26/2021 2:40 PM |
| **#** | **Q5: HUNTING** | **DATE** |
| | There are no responses. | |

## Q8 Are you interested in volunteering?

Answered: 232    Skipped: 47



| | YES | NO | TOTAL |
|---|---|---|---|
| Q5: Hiking | 32.14%<br>18 | 67.86%<br>38 | 24.14%<br>56 |
| Q5: Biking | 52.63%<br>20 | 47.37%<br>18 | 16.38%<br>38 |
| Q5: Trail Running | 64.29%<br>9 | 35.71%<br>5 | 6.03%<br>14 |
| Q5: Winter Sports | 66.67%<br>2 | 33.33%<br>1 | 1.29%<br>3 |
| Q5: Nature/wildlife observation | 0.00%<br>0 | 100.00%<br>4 | 1.72%<br>4 |
| Q5: Sports | 0.00%<br>0 | 100.00%<br>3 | 1.29%<br>3 |
| Q5: Dog Walking | 44.74%<br>51 | 55.26%<br>63 | 49.14%<br>114 |
| Q5: Hunting | 0.00%<br>0 | 0.00%<br>0 | 0.00%<br>0 |
| Total Respondents | 100 | 132 | 232 |

# Appendix D: Reports to Select Board

https://www.strathamnh.gov/sites/g/files/vyhlif5051/f/uploads/tmac_progress_report.pdf

# TMAC Progress Report

June 21, 2021

# Purpose

## Stratham Hill Park

Rare & valued resource. Backbone of the community.

**+**

## Management Plan

The group is charged with providing concrete feedback and a work plan structure for SHP to ensure it is protected in perpetuity.

**→**

## Community Support & Enjoyment

Including the public in the management of this kind of resource is challenging but necessary for getting community buy-in. With multiple user groups (sometimes conflicting) it becomes imperative that we include as many stakeholders in the process as possible.

# Progress

| Trail Maintenance | Rules & Regulations | Conservation |
|---|---|---|

Meeting with Lew Shelley to review the Trail Inventory Report.
Site walk at SHP to observe trail conditions and examples of those mentioned in report for more comprehensive understanding.

Complete review of the rules and regulations for all ownership/parcels within the Stratham Hill Park area. As noted, the ownership and varying rules/regs are complex and take time to understand.

The group has thoroughly reviewed the various parcels and ownership within the greater SHP area and have identified areas for further protection.

Maps to assist in understanding management complexities

# Timeline

| Apr-June '21 | June '21 | August '21 | October '21 | December '21 |
|---|---|---|---|---|
| **Information Gathering** | **Status Update to Select Board** | **Public Forum** | **Proposed Rules and Regulations** | **Final Public Forum and presentation** |
| Understanding the complexities of properties/ownership & rules and regulations. Understanding condition of existing trails. | Provide update/timeline to Select Board based on committee's efforts to date. | Structured information gathering session with the public. Limited speaking time per each suggested topic.\n\nData collection on demographics. | Target of October Take a Kid MTB'ing Day as sharing information on proposed rules/regs.\n\nData collection on demographics. | Provided information gathering goes well, suggested timeline for a final public forum and presentation. |

# Appendix E: Forest Management Plan

https://www.strathamnh.gov/sites/g/files/vyhlif5051/f/uploads/forest_management_plan_-_stratham_hill_park_town_forest_june_2016.pdf

# FOREST MANAGEMENT PLAN

*for the Town of Stratham's*

# Stratham Hill Park and Town Forest

## Stratham, New Hampshire
### 217.3± acres



Commissioned by:
The Stratham Forestry Committee and
The Town of Stratham

Prepared by:
**Charles Moreno, LPF**
**Moreno Forestry Associates**
PO Box 60, Center Strafford, NH 03815
(603) 335-1961
June 10, 2016

Charles Moreno, NH LPF #115
Consulting Forester
Report Copy # _____

# FOREST MANAGEMENT PLAN

*for the Town of Stratham's*

## Stratham Hill Park and Town Forest

### Stratham, New Hampshire

### 217.3± acres



Stratham Hill Park recreation area.

Front cover photo: View of Great Bay from the Stratham Hill summit.

**June 10, 2016**

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The author of this forest management plan, Charles A. Moreno, certifies that the contents of the plan, except where footnoted, but including all written material, maps (base information referenced), plan format and organization, are original to the author.

The purpose of this plan is to provide natural resources information and forest and wildlife management recommendations to the Stratham Forestry Committee, citizens of Stratham, and others interested in the management of the Stratham Hill Park and Town Forest in Stratham, New Hampshire. This document is a work for hire done by Moreno Forestry Associates for the Town of Stratham, New Hampshire, and may be used by the Town of Stratham, New Hampshire for any purpose. Copying of this plan by any other individual or organization, including all written material, plan content and format, requires appropriate citation and/or the written permission of Charles A. Moreno, Consulting Forester.

Charles Moreno, Consulting Forester
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Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

# MAPS

MAP SCALE:

1 inch = 2000± feet

Locus Map *of the Town of Stratham's*
## Stratham Hill Park and Town Forest
### Stratham, New Hampshire
### 217.3± Acres

Tidal Flats

Tidal Flats

BM 48

Brackett Bk

Brackett Bk

Cem

BM 30

Stratham Sta

127

Bayside

BM 53

BM 17

ROAD

DEPOT

Stratham Hill

Lookout Tower

GREAT BAY

GREAT BAY RD

BAYSIDE

101

101-1

101

LOVELL

ROAD

Foss

PORTSM

WILLOWBROOK AVE

93

Hill Brook

Brook

Greenwood Cem

×26

108

×290
Jewell Hill

×186

Long

HILL

×214

Thom

Stratham

STRATHAM

Cem

Cem

×186

Cem

HIGH

STREET

Barkers Hill

Winniconic

Winniconic

STRATHAM

Winnicut

84

Brook

ROAD

Marsh

Memorial

m Ch

USGS Topographic Map, "Newmarket" and "Portsmouth" Quadrangles

# Map of the
# STRATHAM HILL PARK & TOWN FOREST

Stratham, New Hampshire
217.3± acres

## Showing Physical & Natural Features

LOVELL ROAD

PORTSMOUTH AVENUE

NH ROUTE 33

JACK RABBIT LANE

ATLANTIC WHITE CEDAR SWAMP

SUMMIT FIELD

TOWER

RAGE AREA

PARKING

"OUT"

UPPER FIELD

POND

Front Field

FRONT FIELD

BACK FIELD

POWER LINE

MAP SCALE:

1 inch = 600± feet

## Map Legend

| | |
|---|---|
| ——— | Property Line |
| ⚬⚬⚬⚬ | Stonewall |
| ■ | Building |
| | Paved Road |
| ···· | Gravel Road |
| - - - | Trail |
| ········ | Footpath |
| ✕ | Bridge |
| ∿∿∿ | Tree Line |
| | Forested Wetland |
| ⚘ | Ponded/ Shrub Swamp |

# Map of the
# STRATHAM HILL PARK & TOWN FOREST

Stratham, New Hampshire
217.3± acres

## Showing Forest Types

MAP SCALE:

1 inch = 600± feet

Map references:

Town of Stratham Tax Maps
Stratham Recreation Department/Stratham Hill Park Association Maps
Google Earth (1993, 1998, 2013, & 2015 images)
Field Examination: (C. Moreno, 2015-2016)

*This map is not intended as a legal description or for legal purposes.*
*Property lines, acreages, and interior details are approximate.*

## Map Legend

| | |
|---|---|
| —— | Property Line |
| ■ | Building |
| | Paved Road |
| - - - - | Gravel Road |
| – – – | Trail |
| )( | Bridge |
| ∿∿∿ | Tree Line |
| –··– | Forest Type Change |
| ⚹ | Forested Wetland |
| ✴ | Ponded/ Shrub Swamp |

## Forest Type Key

| | Acres |
|---|---|
| A. White Pine | 6.7± |
| B. White Pine/Hardwood | 34.6± |
| C. Upland Hardwood | 53.7± |
| D. Mixed Hardwood | 11.3± |
| **Total Upland Forest:** | **106.3±** |

| | |
|---|---|
| Wetlands | 59.9± |
| Fields | 24.3± |
| Recreational Area (Park) | 21.2± |
| Early-successional Areas | 3.5± |
| House Site | 2.1± |
| **Property Total:** | **217.3±** |

*Map of the*

# STRATHAM HILL PARK & TOWN FOREST

Stratham, New Hampshire

217.3± acres

*Showing Management Recommendations*

## Map Legend

— Property Line
■ Building
Paved Road
Gravel Road
Trail
Footpath
)( Bridge
Tree Line
Forested Wetland
Ponded/ Shrub Swamp

Map researched and drawn by:
Charlie Moreno, Consulting Forester
Moreno Forestry Associates
Center Strafford, NH
(603) 335-1961   June 2016

Map references:
Town of Stratham Tax Maps
Stratham Recreation Department/Stratham Hill Park Association Maps
Google Earth (1993, 1998, 2013, & 2015 images)
Field Examination: (C. Moreno, 2015-2016)

*This map is not intended as a legal description or for legal purposes. Property lines, acreages, and interior details are approximate.*

## Management Areas

Clear Viewshed
Early-successional Management
Hazard Tree Removal
Recreation and Field Management Areas
Primary Silvicultural Management Areas
Secondary Silvicultural Management Areas
Reserve

## Recommendations Key

1 Property Line – Blaze & Paint
2 Improve Cross-Trail Drainage
3 High Density Trail Area
⊗ Landing Site
⋌⋌ Invasive Plant Concentration

MAP SCALE:
1 inch = 600± feet

LOVELL ROAD
PORTSMOUTH AVENUE
NH ROUTE 33
JACK RABBIT LANE

ATLANTIC WHITE CEDAR SWAMP
POSSIBLE LOCATION FOR CEDAR SWAMP BOARDWALK
STRATHAM MEMORIAL SCHOOL PARKING
POND & SHRUB WETLAND
POND
FRONT FIELD
BACK FIELD
MANAGEMENT FOR WILDLIFE AND POLLINATORS
POWERLINE
SUMMIT FIELD
TOWER
WSN RSE
RECREATION AREA
PARKING
1 AC FIELD

Soil Map—Rockingham County, New Hampshire
(Stratham Hill Park, Stratham, New Hampshire)

Map Scale: 1:10,000 if printed on A landscape (11" x 8.5") sheet.

Meters
0    100   200        400        600

Feet
0   450   900        1800        2700

Map projection: Web Mercator   Corner coordinates: WGS84   Edge tics: UTM Zone 19N WGS84

Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

4/12/2016
Page 1 of 3

# INTRODUCTION

# Stratham Hill Park and Town Forest
## Stratham, New Hampshire

## INTRODUCTION

The community of Stratham, New Hampshire is owner of two premier properties, Stratham Hill Park and the Stratham Town Forest, which lie adjacent to one another and collectively cover 217.3± acres. The variety of recreational activities hosted at the park are unparalleled, from ice skating to ballgames, and concerts to an annual agricultural fair. Additionally, scenic views of the Seacoast area are attained from the field and fire tower atop Stratham Hill. The Town Forest contains outstanding forest, field, and wetland environments, including a unique Atlantic white cedar swamp. An extensive trail network that weaves through the properties provides a popular destination for recreationists.

With increasing recreational use and evolving forest conditions, the community, through its Forestry Committee, has identified a series of management needs and concerns. Based on a detailed study of the property and its forest, this plan provides recommendations and an action plan to address these concerns.

## PROPERTY INFORMATION

### LOCATION and GEOGRAPHY

The Stratham Hill Park and Town Forest property is located along Portsmouth Avenue (aka NH Route 33) between Jack Rabbit Lane and Lovell Road, northeast of the town center.

The property is located in the Gulf of Maine Coastal Lowland ecoregion subsection[1]. Near Great Bay and approximately 7 miles from the Atlantic Ocean, the sea moderates the area's climate. Though near the northerly extent of the Appalachian oak-pine forest[2], the property hosts a number of southerly species including pignut hickory and swamp white oak.

Soils on the property are formed from marine clays and glacial tills with near-surface compaction. Stratham Hill is a steep-sided, glacially-formed drumlin on the property. Topography ranges from level in the extensive wetlands, fields, and recreational areas, to steeply sloping on the sides of Stratham Hill. Elevations range from 280± feet above sea level at the hilltop to about 140± feet in the park's recreational area. Seasonal streams flow towards the Squamscott or Winnicut Rivers.

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[1] Keys, J.E. and C.A. Carpenter. 1995. Ecological Units of the Eastern United States: First Approximation. U.S. Department of Agriculture, Forest Service.
[2] Sperduto, D. D. and W.F. Nichols. 2004. Natural Communities of New Hampshire. New Hampshire Natural Heritage Bureau and The Nature Conservancy.

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## REFERENCE INFORMATION

**Surveys:** Not available

**Aerial Photos:** Google Earth images 1993, 1998, 2013, and 2015.

**Tax Maps:** Stratham Tax **Map 22**, **Lots 83** (86.15 acres), **85** (125.15 acres), and **79** (5.2 acres).

**Acreage: TOTAL – 217.3± Acres**

| | |
|---|---|
| **Recreational Area (park)** | – **21.2± acres** |
| **House site** | -- **2.1± acres** |
| **Wetlands** | -- **59.9± acres** |
| Ponds (11.9 ac) | |
| Cedar Swamp (32.0 ac) | |
| Forested Wetlands (16.0 ac) | |
| **Fields** | -- **24.3± acres** |
| **Early-successional Areas** | -- **3.5± acres** |
| Powerlines (2.5 ac) | |
| Hilltop young growth (1 ac) | |
| **Upland Forest** | --**106.3± acres** |

## PROMINENT PROPERTY FEATURES

- Stratham Hill Park, a 21± acre recreation area offering a great variety of activities and events including playgrounds, ball fields, basketball court, soccer field, ice skating area, animal barns, picnic pavilion, concession stands, and concert stage.

- The location of the annual Stratham Agricultural Fair.



- Stratham Hill, elev. 280± feet. A field and fire tower atop this steep-sided, glacially-created drumlin provides scenic views of the seacoast area.

- 106± acres of well-established upland forest.

- An extensive Atlantic white cedar-yellow birch-pepperbush swamp, a rare natural community in New Hampshire.

- Nearly 4 miles of recreational trails and roads, including BMX riding mounds.

- Extensive fields with management opportunities for field-using birds.

- Two ponds which provide fine wildlife habitat.

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# MANAGEMENT CONCERNS & RECOMMENDATIONS

# MANAGEMENT CONCERNS
## with Summary Discussion and Recommendations

The Forestry Committee identified the following challenges and concerns in the management of Stratham Hill Park and the Town Forest.  The Committee gathered ideas and feedback from the community, user groups, and other town stakeholders.  In concert with the Forester's property study, recommendations were vetted via Forestry Committee meetings and field walks.

**VIEWSHEDS:  Craft long-term plan to retain scenic views from Stratham Hill's summit.**

**Background:**  A century ago, Stratham Hill was mostly pastured with unimpeded 360° views from the summit.  A compass rose structure was installed in 1881 to celebrate this panoramic view, with lines pointing to major landmarks in all directions, including Mt. Washington.  Through the 20<sup>th</sup> century, tall forest returned to the slopes, with only a small field area retained at the top.  While occasional clearing has occurred over the years, view corridors are now significantly reduced.



View of Great Bay and Mt. Washington from the Stratham Hill summit.

**Concerns:**  Efforts to regain/retain views from the hilltop will incur ongoing expense.  Furthermore, there is concern that over-removal of the hillside forest will increase noise and visibility from Route 33, potentially cause erosion, and look poorly.   Finally, the logistics of tree removal is challenging due to steep slopes and limited equipment accessibility.

**Recommendations:**  Forestry Committee consensus is that view clearings should be limited to three viewsheds, with the forest retained in all other directions.  These are:

- **North towards Great Bay –** Retention of panoramic Great Bay views (and northern mountains) is paramount.  Due to the hill's steep northern downslope, this view can be maintained relatively easily, especially from the fire tower, by retaining the strip of low vegetation ("early-successional" growth including sumac and aspen).  *Clear this strip once every 10± years, not allowing vegetation to exceed 25 feet in height.*  The early-successional (e-s) strip also provides excellent bird habitat.

    Eventual removal of the tier of tall trees behind the early-successional strip may also be necessary, however, this might be timed for when the strip has densely grown back to screen this hillside tree removal.

    Great Bay views may also be expanded to the northwest by removing a group of tall pines and hardwoods next to the small utility building near the top of the slope. The powerline corridor down the slope may also need minor widening, though widening should be minimized close to Route 33.

- **West southwest (WSW) towards Newfields and Pawtuckaway –** This viewshed has also been maintained in the past.  It requires relatively minimal tree removal on the steep hillside slope, including mostly small diameter hardwoods that will soon overtake the view.  Two larger oaks and one pine near the hill crest may also be removed to

provide a full vista. A patch of early-successional (e-s) vegetation on the edge of the hilltop field provides some screening for tree removal activity below.

Long-term, clearing of additional trees should be re-visited every 10± years, in conjunction with e-s re-clearing for the north view. A 3-year maintenance cycle for e-s vegetation in the WSW viewshed using a bushhog is suggested after initial clearing.

- **East southeast (ESE) towards the ocean** – This viewshed does not presently exist. It would be created due to the improved performance needs of emergency communications equipment that is mounted on the hilltop fire tower, with transmission aimed in this particular direction. A 50± foot wide corridor would be cleared starting near the junction of the fire road and the hilltop field. Due to the mild gradient in this direction, the corridor must extend 1200+ feet downslope to provide sufficient tree clearance for communications, and to create a view towards the ocean.

  Long-term maintenance for this corridor requires 10-year re-clearing for the top 250± feet, and less frequent re-clearings further downslope.

**Logistics:**

1) If a 10-year cutting cycle is used, early-successional areas (totaling 1± acre) likely need re-clearing with a Brontosaurus or similar sapling-mulching equipment. Presently, the estimated total cost is $1500±. Alternately, maintenance can be done in-house using a tractor and bushhog (the areas are not steeply sloped), but on a more frequent mowing basis, not exceeding 3± years.

2) Removal of larger trees in the north viewshed should be done in concert with the creation of the ESE corridor, using biomass harvesting equipment. This work should occur on frozen ground or very dry conditions to avoid overly disturbing the hilltop field. As long as there is a substantial enough project to stage a biomass operation, this tree removal will not incur expense, but rather, likely generate modest income.

3) The harvest of polewood (trees 4 to 10 inches diameter) in the WSW viewshed can be done in-house, with trained personnel felling the trees and neatly lopping brush to ground level. Since there are relatively few tree to harvest, they should be left on the ground, and not removed, as this action may unnecessarily disturb the steep ground and initiate erosion. The few large trees for removal can either be cut, lopped and left (with firewood perhaps carried out and salvaged), or removed in conjunction with the biomass operation.

**Schedule/Finances:**

| Project/Viewshed | When | Method/Equipment | Projected Cost |
|---|---|---|---|
| E-s vegetation removal (N & WSW) | 2016 | Brontosaurus | $1500± |
| WSW polewood harvest | 2016 | In-house, chainsaw | n/a |
| ESE corridor clearing & larger tree removal in N | 2017 or 2018 | Biomass harvest | Modest income |
| E-s maintenance (3-year) | 2019 | In-house, tractor & bushhog | n/a |

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

**FOREST RECREATION: Manage the changing and increasing nature of forest recreation.**

**Background:** The vastly increased use of Stratham Hill Park and Town Forest over the last 25 years has been a challenge for the town to manage. During certain events and seasons, the park may host over 1200 cars in its parking areas. The park's recreation area offers a diverse set of activities in a concentrated space, which the town manages exceptionally well with talented staffing and adequate funding. Over the past quarter century, use of the forest and field acreage has greatly increased and evolved. There is a considerably expanded trail network that is now heavily used for dog walking and mountain-biking. Town recreation personnel has engaged in comprehensive mapping, signage installation, and trail marking. Planning is needed to adequately handle increased trail-based usage, forestall conflicts, and minimize adverse environmental consequences.



Footbridge fords a wetland on a Stratham Town Forest trail.

**Concerns:** Though nearly 4 miles of roads and trails now cover the town lands, the use capacity of these trails may eventually be reached. Use dispersal is dependent on trails with significant networking on adjacent private properties. Biker-walker trail conflicts sometimes arise. Environmental degradation including trail erosion, wetland impacts, and wildlife disruption may occur due to over-usage. Long-term trail maintenance requires ongoing expense.

**Recommendations:** The current road and trail network is very well maintained, needing little upgrading. Significant expansion of the network *is not recommended* due to maintenance costs and the increased potential for environmental impacts. Minor expansion is underway with the layout of single-track side trails for bikers to avoid conflicts with walkers on heavily used trail segments. These side trails should remain relatively close to existing trails to avoid trail "sprawl"—the situation where few extensive *trail-less* areas are left for wildlife.

Good communications, partnering, and maintenance assistance with/for the adjacent landowners who share the trail network is important, as modification or loss of these trails will likely displace and concentrate usage onto the town's properties.

*Suggested trail improvements/modifications:* A) Improve drainage into a culvert on the trail which traverses between the fire road (to hill summit) and the footbridge. Re-establish a dry trail surface. B) Eliminate, if possible, the new trail(s) that cross through the middle of the back field, allowing improved conditions for wildlife.

Park staff should conduct periodic trail usage inventories (number and type of users), while monitoring and recording corresponding trail conditions. Devise a set of condition parameters that can be tracked in order to maintain consistent inventorying. Tracking usage and condition over time will help planning and budgeting for maintenance needs, and will provide a firm basis for limiting usage, when needed, if over-use eventually occurs.

**Logistics:** All new trails, including single-track side trails, should be approved, and preferably, laid-out by the park recreation director or other personnel. Dissuade rogue trail building. Color coding, perhaps with a stenciled bike symbol on trees, can be used to designate single-track trails intended for mountain biking.

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Single-track side trails can be laid-out and designated at no cost besides town personnel time, unless there is a wetland crossing involved. Wetland and stream crossing should be avoided.

In addition to usual town staffing and budgeting to cover the cost of grading, water diversion, erosion control, and signage/marking on existing roads and trails, town personnel can help organize volunteer trail maintenance efforts for targeted projects such as installing waterbars in steep trail sections. Mountain bike groups, Scouts, and community helpers are potential sources of volunteer work.

**Schedule/Finances:**

| Project | When | Method/Equipment | Projected Cost |
|---|---|---|---|
| Trail culvert installation | 2016 | In-house, backhoe | $500± |
| Complete single-track side trails | 2016 | In-house and supervised volunteer | $ 0 |
| Road/trail maintenance | Ongoing | In-house, town equipment | n/a |
| Periodic use inventory | Annual? | Park staff | n/a |
| Adjacent landowner contact | Annual? | Park director | n/a |
| Volunteer projects | Occasional | Supervised by park staff | n/a |

**INVASIVE PLANTS: Exotic, invasive plants threaten forest degradation.**

**Background:** Several species of non-native, invasive plants are present in Stratham Hill Park and the Town Forest. These include: multiflora rose, Japanese barberry, European barberry, Oriental bittersweet, glossy buckthorn, Norway maple, autumn olive, and Japanese knotweed. Most are concentrated or in relatively low numbers, though rapid spread is readily possible likely with glossy buckthorn and Norway maple.



Exotic invasives cover the interface of fields and forested wetlands.

The most severely infested sites include the recreation area and the homestead, as well as field edges, the powerline, and forested wetlands in the Town Forest's southerly area. While there is incipient infestation of upland forest areas, much of the forest remains invasive-free. In 2015, park staff and volunteers initiated a concerted effort to control invasives around the recreation area and at the top of Stratham Hill.

**Concerns:** Severe invasive plant infestations alter microenvironments, as well as the forest as a whole. Biodiversity is diminished, wildlife habitat affected, and perhaps most alarming of all, the forest's ability to successfully regenerate is compromised.

The task of controlling and possibly eliminating invasive plants from Stratham Hill Park and the Town Forest is formidable, possibly cost-intensive, and ongoing. However, *inaction leads to ever-increasing numbers of exotic plants*, posing a real threat to this forest's long-term integrity and existence.

**Recommendations:** Immediately fund and implement an organized strategy to treat all areas where invasive plants are present. Plan annual follow-up treatments, including the areas covered in 2015. Practice continuous, long-term monitoring for invasive plant presence, and immediate control response. Strive to maintain the entire property free of invasive plants.

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

Work to educate the public about the major environmental threat posed by alien invasive plants, and the need and methodology to control them as a community-wide effort. Every year of inaction escalates control costs and exacerbates the problem.

**Logistics:** Divide the property into management *sectors* (2 to 20± acres in size). For example, the recreation area and its edges can be a sector, the homestead site another. Areas contained within a field edge, a trail, and/or a stream, for example can be designated as sectors. Sectors should be readily defined by surrounding physical features. Once sectors are defined and mapped, determine the location of invasive plants within the sector, and a treatment strategy. The following control strategies are available:

- In field-forest edges, or forest areas where favorable young growth is not intermixed with invasives—apply mechanical mowing and uprooting method. *Do not use this method if Japanese knotweed is present.*
- If favorable native shrubs or young growth is intermixed, or in forested wetlands where equipment travel is limited—use a trained rotary-brushsaw crew to find and cut invasives, then wait for the growth of low re-sprout and herbicide treat the re-sprout.
- For Japanese knotweed or Oriental bittersweet, use herbicide treatment, foliar and stem application, respectively. These must be applied by a licensed applicator, possibly in-house, who is experienced with invasive plant control.
- Volunteer teams work well, after brief training, in pockets of seedling-sized invasives using hand pulling. Sapling or shrub-sized invasives, if not overwhelming in number, can be uprooted using a weed wrench.

**Schedule/Finances:**

| Project | When | Method/Equipment | Projected Cost |
|---|---|---|---|
| Develop sector map | Aug 2016 | Park director | n/a |
| Fall invasive control effort: follow-up treatment of 2015 areas, and begin treatment of back field edges. | Sept 2016 | In-house and supervised volunteers | n/a |
| Ascertain the presence of invasives in each sector. Develop a treatment strategy. | Oct-Nov 2016 | Forester | $500-1000± |
| Contract treatment of severe areas under powerlines and in forested wetlands. | Mar-Sept 2017 | Contractor—brush remover equipment. Possible trim and follow-up herbicide. | $8,000± |
| Fall invasive control effort: follow-up treatment of all 2016 areas, while adding any remaining areas. | Aug-Sept 2017 | In-house and supervised volunteers | n/a |
| Ongoing treatment—all sectors | Annual | In-house, contractor, and supervised volunteers | n/a |

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

## PONDS:  Is maintenance necessary?

**Background:** The Town Forest contains two substantial ponds, 4.1± acres and 7.7± acres respectively, with interconnecting smaller impoundments.  In the past, these readily-accessible ponds contained open water, but dense shrub vegetation has filled most of the larger pond.  The vegetation is primarily winterberry holly, but includes buttonbush.  Swamp white oaks are found on the edges.

**Concerns:**  Removing the vegetation from the larger pond is desired by some community members.  This will allow attendant recreational uses, including small craft boating and fishing.  Other community members prefer allowing the pond to evolve naturally, primarily for the beneficial wildlife habitat it provides.  Should something be done?



Beaver lodge in front of dense shrub growth in the larger pond.

**Recommendations:**      Pond  vegetation  removal  is unfeasible from both permitting and cost standpoints.  NHDES is not likely to allow this project: detrimental impacts outweigh perceived benefits.  Moreover, the cost of permitting and site work is prohibitive.  In addition to vegetation removal, dredging is needed to insure that the vegetation does not return.

The existing shallow shrub swamp conditions provides habitat to amphibians, turtles, birds (yellowthroat, yellow warbler, wood duck), and mammals (beaver, raccoon, mink).  It is recommended that no intervention be made.  Furthermore, to protect habitat, a loop trail surrounding the ponds *is not recommended*.

## FIELDS:  How to manage?

**Background:** In addition to the recreation area, the town properties contain four fields totaling 24.3± acres, or over 10% of the area.  A 1± acre field near the homestead is regularly mowed.  The 4.1± acre field at the summit of Stratham Hill is regularly mowed and considered essential to the park's scenic beauty and accessing the hill's panoramic views.  In the Town Forest, the 6.7± acre "front" field, is periodically mowed, formerly for hay.  It provides scenic beauty, hayfield habitat, and overflow parking for certain recreational events such as the Great Bay 5K road race.  The recreation department established a "pump" track, or BMX course, on the eastern end of the field.  The 12.4± acre "back" field was recently abandoned for hay production, but now has good potential to be managed for tall grass or wildflower field habitat.



This pump track course is located in the eastern end of the "front" field, and is used by bikers of all ages.

**Concerns:**  There are no pressing concerns with the fields, other than the cost of maintaining them open.  Recommendations will address potential uses and management options.

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**Recommendations:**

- **The 1± acre field** – continue light use for picnicking or lounging. It may also be used for events (and possibly as rented event space). It may also provide an easily accessible site for a community garden, with nearby water (the pond). A small orchard may also be considered. Exotic, invasive plants along this field's perimeter need to be eliminated.
- **The 4.1± acre summit field** is a signature feature of the park. Continued meticulous maintenance is planned. In 2015, a volunteer group was organized to remove patches of autumn olive and other invasives along the field edges. This work must continue annually to insure the elimination of the noxious shrubs. Additionally, periodic cutting of early-successional growth—sumac, aspen, gray birch, and brambles—along this field's edges is needed to maintain viewsheds and for habitat management.
- **The 6.7± acre Town Forest "front" field** should remain as a rough hayfield, even if mowing occurs at town expense (formerly maintained by a local farmer). Hay should be removed if possible to prevent the formation of a deep thatch layer. This field has become essential to recreational uses of the park.
- **The 12.4± acre Town Forest "back" field** is no longer maintained by a local farmer. Due to its extensive size, the back field could be managed for grassland birds by practicing late-season mowing (after mid-August, with the crop of mulch hay removed). Birds which may nest in the field under undisturbed conditions include savannah sparrow and bobolink. The latter species has sharply reduced numbers and is now imperiled in New Hampshire. Nesting is unlikely unless recreational use of the field is carefully managed, with dog walking confined to one field edge, or the forest beyond. Nesting boxes for eastern bluebird, tree swallows, and possibly American kestrel, can also be established. A bat box on the south facing edge of the field may also be utilized. Finally, field edges can be managed for pollinators. The



The "back" field has good habitat management potential. Remove this central trail, however, to improve habitat.

remaining abandoned hay bales may provide a haven for bees and other insect pollinators. Wildflower patches can be established and managed.

**Logistics:** Management of the four fields requires maintenance scheduling for a wide variety of uses, and adequate budgeting to cover the cost of field maintenance. Grant funding for the maintenance of the "back" field for wildlife purposes may be available through NH Fish & Game.

**Schedule/Summary:**

| Field | Mowing Frequency | Present or Potential Uses |
|---|---|---|
| 1-acre field | Weekly | Possibly a community garden. |
| 4.1 acre summit field | Weekly | Aesthetics, summit access. |
| 6.7 acre "front" field | 2 to 5 times a summer, prior to large events | Recreation, scenery, event parking. |
| 12.4 acre "back" field | Once per year, late summer only | Wildlife habitat, scenery. |

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

## FOREST:  Should it be managed?  Are there priority projects?

**Background:**  Upland forest covers 106± acres, with an additional 16± acres of wetland forest. The base age (the oldest set of trees) in much of the forest interior is mid-aged, ranging from 80 to 100± years of age.  A variety of species are common including red oak, red maple, white pine, black birch, shagbark hickory, and sugar maple.  Overstory trees generally range from 6 to 22 inches in diameter.

As the interior forest matures, beech and hemlock will increasingly dominate the understory to the exclusion of other tree species.  Silvicultural management of established forest areas can attenuate the trend towards shade-tolerant species exclusivity.  In addition to providing growing space for healthy trees and enhancing habitat, judicious forest harvesting allows sunlight to penetrate to the forest floor.  This encourages new generations of diverse tree species.

The following table summarizes the prevalence of various pathogens and insects affecting local forests, and Stratham Hill Park/Town Forest's susceptibility.  Over time, silvicultural management may improve the forest's resilience to pathogens, insects, storm events, and climate change.

| Pathogen or Insect | Species *Most* Affected | Prevalence | Vulnerability |
|---|---|---|---|
| Beech bark disease | Beech | Moderate | High |
| Nectria canker | Black birch, yellow birch | Moderate | Moderate |
| Strumella canker | Red oak | Low | Low |
| Pine blister rust | White pine | Low | Moderate |
| Hemlock wooly adelgid | Hemlock | Moderate | Moderate |
| Gypsy moth | Oaks, birches, hemlock | None | Moderate |
| Emerald ash borer | White ash, black ash | None | Low |
| Red pine scale | Red pine | None | Low |

Young forest is found in a 15± acre area on the westerly slopes of Stratham Hill where a 1991 thunderstorm microburst levelled an old pine grove.  Incipient, early-successional forest covers about 4½ acres including a powerline corridor in the Town Forest and two young patches along the Stratham Hill summit field.  Though the early-successional areas are periodically cleared for maintenance reasons, clearing also serves to perpetuate this important young habitat type.

Other than the microburst and a gypsy moth outbreak in 1980-82, extensive natural or human-caused disturbances have not occurred in the Stratham forest since it grew up from pasture.

**Concerns:**  As the forest matures, species diversity will decrease unless some form of acute disturbance occurs.  Natural disturbances include storms, fire, flooding, and insect or disease infestations.  Silvicultural management (employing carefully planned logging) can be used as a natural disturbance substitute.

The altered visual condition of the forest, post-harvest, is often perceived as a great drawback of silvicultural management when logging is involved.  While important forest health and habitat benefits result from a thoughtfully planned harvest, forest appearance is changed, especially in the first few years.  This will be noticeable from the extensive trails that traverse the forest.

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While it is recognized that forest harvesting may be controversial, there are at least two urgent upcoming projects. The first is the need to remove hazard trees along trails, especially the perimeter trail north of the hill. Second is the pending project to clear a corridor for emergency communications. Methods to mitigate the aesthetic impact of these projects are discussed under logistics below.

**Recommendations:** While the forest may benefit from silvicultural management, there are few pressing concerns involving forest health. Therefore, management should *at first* occur only in conjunction with the urgent projects—hazard tree removal and communications corridor—previously described. Light thinning may be planned in the forest surrounding the corridor and to remove larger trees in the summit viewsheds. Economy of scale comes into play: If the project is too small, it will be a cost operation. A larger project, covering 20 or more acres, will be breakeven or provide positive cashflow.

Over time, if the projects are reasonably well-received and/or the habitat and tree growth benefits are recognized, silvicultural management may be initiated in additional forest areas. Specifications for this work are presented in the *Forest Types* section.

Salvage and restoration harvesting may be needed in the future in response to an unpredicted large-scale natural disturbance.

Management of early-successional areas should continue as specified in the viewshed management section.



Brambles and staghorn sumac are found in the summit field early-successional area.

**Logistics:** There are techniques to mitigate scenic impacts, including thorough preparation (tree marking and logging trail layout), the use of top contractors, application of Best Management Practices (BMP's), avoiding sensitive areas, and working during favorable conditions (dry summer or frozen ground). To ensure that silviculture is applied for any harvest, the exact set of trees to be harvested should be selected and marked by a professional forester, after review of the management plan.

A staging area for the corridor harvest and thinning is needed. This can be either at the northeast corner of the back field, or possibly, the summit field. While the latter option provides close access, the summit field is an especially sensitive site and the fire road leading to the field is steep. For these reasons, the back field area may be best alternative.

Removal of hazard trees in the pine stand along the perimeter trail north of the hill is challenging with logging equipment due to steep grades and tall trees. Tree removal will be highly noticeable from the trail. Employment of a tree service to remove the trees is an expensive option, but will have more favorable scenic results.

## OTHER MANAGEMENT CONSIDERATIONS

**Property Lines:** Property lines along adjacent private parcels should be located, followed by straight-line layout. Long-lasting demarcation is done by axe-blazing boundary line trees (according to surveying protocol) and then brush painting the blazes with surveying paint. Follow-up maintenance painting of the blazes should occur every 10 years.

**Historic Features:** A thorough survey of the property's historic features is beyond the scope of this report. Old cellar holes, dug wells, farm dumps, and primitive cemeteries, for example, were not observed. A series of more or less parallel interior stonewalls was noted on the east side of Stratham Hill. Stonewalls are also found along the edges of the fields. The compass rose at the top of Stratham Hill is a unique historic feature.



Compass rose atop Stratham Hill.

**Educational Opportunities:**

- Interpretive signs can be located along trails with information about the natural environment or management activities.
- Educational tours of the forest can be staged, perhaps in conjunction with UNH Cooperative Extension.
- Stratham Memorial Elementary School lies adjacent to the Town Forest, east of the Atlantic white cedar swamp. Programs to connect students with the park's natural environment may be explored. If permitting allows, the construction of a boardwalk through a small portion of the swamp may provide educational access to the school community.

| Summary Recommendations – Priority Level | | | |
|---|---|---|---|
| **High** | **Medium** | **Low** | **Not Recommended** |
| Management of Stratham Hill's viewsheds. | Early-successional habitat management. | Recreational trail network expansion. | Pond maintenance |
| Recreational trail maintenance and modifications. | Back field management for wildlife. | Silvicultural management for forest health, species diversity, and habitat enhancement. | |
| Invasive plant control. | Property line maintenance. | | |
| Hazard tree removal. | Communications corridor clearing. | | |
| Ongoing field maintenance. | | | |

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

# FOREST TYPES

# A.   White Pine – 6.7± acres

***Description*** – White pine dominates (>75%) the canopy of this forest type, which is found in two small pockets on the north side of Stratham Hill, as well as along the park's Route 33 road frontage. The main stand (variant A1, described below) is about 100 years of age and is the remaining portion of the pine stand that once covered a considerable area of Stratham Hill.  In 1991, a severe thunderstorm microburst levelled most of the stand.  After the storm, thousands of pine seedlings were planted on the hill's northeast slope; this area, 25 years hence, now constitutes a new pine stand, variant A2, where pine dominates but is only 25 to 30± years of age.



Northface Trail through older (A1) white pine stand.



A2 white pine stand, planted after 1991 storm.

| Species Composition | |
|---|---|
| Primary[1] | White pine. |
| Secondary[2] | Black birch, sugar maple, white ash, shagbark hickory. |
| Tertiary[3] | |
| Regeneration (saplings) | White ash, shagbark hickory, black birch, sugar maple. |

| Forest Structure | Description of Older White Pine Stand (A1 variant) | | |
|---|---|---|---|
| **Composition** | | | |
| Stand Structure | Two-aged | | |
| Successional Stage | Late-intermediate | | |
| Stand Age | 50±//80-100± years | | |
| **Tree Size** | | | |
| DBH range | 6 – 24± inches | | |
| Mean DBH | 14± inches | | |
| Avg. Max. Height | 90± feet (white pine) | | |
| **Stand Density** | | | |
| Relative Stocking | Considerable | **Trees/Acre** | 170± trees |
| Basal Area/Acre | 180± sq. ft./acre | **Canopy Closure** | 90± % |

[1] Dominant tree species in main canopy layer.
[2] Fairly common to less common tree species.
[3] Less common, or a unique tree species with only one or a few specimens in the forest type.

| Wildlife/Ecological | |
| --- | --- |
| **Habitat Features** | Large diameter cavity trees, snags, and dead stubs. Older white pine provide potential nest sites to hawks and ravens. Substantial forest floor woody debris. |
| **Canopy Stratification** |  **Canopy Presence**<br>Full / Substantial / Light<br>US1  US2  MS1  MS2  MS3  OS  SC |
| **Woody Deadfall** | Substantial accumulation, including large trunks. |
| **Invasive Plants** | Moderate to severe, especially Oriental bittersweet. |

# Management Recommendations
## *White Pine Forest Type*

## Considerations/Discussion

***Stand A1*** -- An important concern is the immediate need to remove the growing invasion of exotic plants. Hazard trees are another concern. A major trail, connecting the pavilion area to the top of Stratham Hill, traverses through Stand A1. A number of large pines are unstable and may fall across the trail. Large scale removal of potential hazard trees, however, may expose the remaining trees to wind damage. Hazard tree removal must be light, staged over time, and meticulously done to minimize the visual impact. A tree service approach is perhaps best, providing scenic results but at relatively high cost. Felling *and leaving* the hazard trees lying in the forest is an option to minimize cost. A second option for minimizing cost involves prolonged closing of the trail while logging and project mitigation is applied.

***Stand A2*** is densely stocked with young pine. Ideally, thinning (hand felling) would be applied to improve tree growth. A 100± foot wide band of un-thinned growth would be left at the base of the hill adjacent to the recreation area as a shaded barrier that prevents the spread of invasive plants into the forest.

## Recommendations:

**Stand A1** – 1) Remove all exotic invasive plants.
2) Fell, and possibly remove, hazard trees along trail. Explore both tree service and logging options.

**Stand A2** – 1) Thin young pine, retaining the healthiest, best-formed pines.
2) Retain a 100' undisturbed buffer along the recreation area edge. Remove invasive plants from this edge.

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## B.  White Pine/Hardwood – 34.6± acres

*Description* – This forest type is characterized by mixed hardwoods with substantial presence of white pine.  Pines are found scattered or in small pockets referred to as "inclusions".  The forest type is found in several areas ("stands"), and is generally well-established.  Natural regeneration under the fairly full canopy is not abundant.



Cavity trees valuable to wildlife are abundant in the white pine/hardwood forest type.



A white pine inclusion is visible in the background, with mixed hardwoods in the foreground.

| Species Composition | |
|---|---|
| Primary | White pine, red oak, red maple, black birch. |
| Secondary | Sugar maple, white ash, white oak, shagbark hickory |
| Tertiary | Black cherry, beech, pignut hickory, black oak, white birch, hemlock. |
| Regeneration (saplings) | Black birch, white ash, beech, white pine. |

| Forest Structure | |
|---|---|
| **Composition** | |
| Stand Structure | Three-aged with white pine inclusions |
| Successional Stage | Late-intermediate |
| Stand Age | 50±//80 to 100+ years |
| **Tree Size** | |
| DBH range | 4 – 24± inches |
| Mean DBH | 12± inches |
| Avg. Max. Height | 90± feet |
| **Stand Density** | |
| Relative Stocking | Dense |
| Basal Area/Acre | 185± sq. ft./acre |
| Trees/Acre | 225± trees |
| Canopy Closure | 90-100± % |

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| Wildlife/Ecological | |
|---|---|
| **Habitat Features** | Oak and hickory mast sources.  Substantial cavity trees and snags. |
| **Canopy Stratification** | **Canopy Presence**<br><br>Full<br>Substantial<br>Light<br><br>US1   US2   MS1   MS2   MS3   OS   SC |
| **Woody Deadfall** | Good accumulation, including large trunks. |
| **Invasive Plants** | Incipient presence. |

# Management Recommendations
## White Pine/Hardwood Forest Type

## Considerations/Discussion

### Management Option 1:  Minimal intervention

This forest type may be largely left to the course of nature, with the exception of continued monitoring and removal of exotic invasive plants, including a patch of highly invasive Norway maple. A benefit of non-intervention in the management of the forest is the day-by-day unaltered appearance of the forest to recreational users.  However, inevitably, an acute natural disturbance such as a damaging windstorm or hurricane will occur.  At that time, a well-planned response may include salvage removal of uprooted or damaged trees.  In the aftermath, reforestation should largely occur through natural regeneration.

A potential long-term disadvantage with non-intervention is the forest's natural trend towards shade tolerant species, especially beech and hemlock.  In the absence of a large natural disturbance, the forest's species diversity will likely diminish.

### Management Option 2:  Silvicultural management

Light harvesting may be applied for two major purposes: 1) Thinning to improve the growth of a diverse species mix of healthy trees; and 2) Selection, using micro canopy gaps, to create small forest openings for young growth.

The advantages of this approach are improved forest health and growth, and the continued natural regeneration of the forest.  Wildlife habitat also benefits.  A mixed age forest develops over time.

The disadvantage of silvicultural management is largely aesthetic.  Harvests alter the forest's appearance, no matter how carefully planned and implemented.

## Recommendations:

1) Remove all exotic invasive plants, especially Norway maple.
2) If non-intervention approach is taken, do nothing further except maintain trails.  If a large natural disturbance occurs in the future, consider a salvage operation.
3) If silvicultural management is selected, carefully plan, prepare and implement harvests. Post-harvest, apply visual mitigation.  Over time, work to release natural regeneration from shade.

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## C.　　Upland Hardwood – 53.7± acres

*Description* – Generally dominated by red oak, this forest type covers several areas, including an outstanding hardwood stand in the northeast section of the property. White pine and hemlock (softwoods) are noticeably sparse or absent in the overstory of the upland hardwood stands. Variant C1 is widespread; it is characterized as mostly even-aged with a consistent overstory canopy. A second variant, C2, is found on the west side of Stratham Hill. This stand is distinctly two-aged, with residual large hardwoods that survived the 1991 microburst and surrounding, dense 25-year hardwood growth. This stand contains some of the oldest trees on the property.



A diversity of healthy hardwoods are found in Forest Type C. Variant C1 is mostly even-aged.



A large white oak, survivor of the 1991 storm, is surrounded by young trees that grew in the aftermath.

| Species Composition | Describing Variant C1 |
|---|---|
| Primary | Red oak, red maple. |
| Secondary | Black oak, black birch, shagbark hickory, pignut hickory. |
| Tertiary | White oak, beech. |
| Regeneration (saplings) | White pine, beech. |

| Forest Structure | Variant C1 | Variant C2 |
|---|---|---|
| **Composition** | | |
| Stand Structure | Even-aged with older residuals or two-aged | Two-aged |
| Successional Stage | Late-intermediate | Regenerating//Mature |
| Stand Age | 40-50//75-95± years | 25-30//100 to 120+ |
| **Tree Size** | | |
| DBH range | 6 – 20± inches | 1 to 4"//12 to 30" |
| Mean DBH | 14± inches | n/a |
| Avg. Max. Height | 75± feet | 70± feet |
| **Stand Density** | | |
| Relative Stocking | Dense | Young growth—Dense |
| Basal Area/Acre | 150± sq. ft./acre | Young growth – 1000± saplings/acre |
| Trees/Acre | 130± trees | Old residuals – 6 to 10±/acre |
| Canopy Closure | 100± % | Large-crowned older trees provide 50% cover |

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| Wildlife/Ecological | Describing Variant C1 | | | | | | |
|---|---|---|---|---|---|---|---|
| Habitat Features | Abundant and diverse mast sources:  oak, hickory, beech. | | | | | | |
| Canopy Stratification | **Canopy Presence** <br><br> Full <br> Substantial <br> Light <br><br> US1   US2   MS1   MS2   MS3   OS   SC | | | | | | |
| Woody Deadfall | Good accumulation, including large trunks on the ground. | | | | | | |
| Invasive Plants | None observed. | | | | | | |

# Management Recommendations
## Upland Hardwood Forest Type

## Considerations/Discussion

### Management Option 1:  Minimal intervention

This forest type may be largely left to the course of nature, with the exception of continued monitoring and removal of exotic invasive plants.

A benefit of non-intervention is the day-by-day unaltered appearance of the forest to recreational users. However, inevitably, an acute natural disturbance such as a damaging windstorm or hurricane will occur.  At that time, a well-planned reaction may include salvage removal of uprooted or damaged trees.  In the aftermath, reforestation should occur largely through natural regeneration.

A potential long-term disadvantage with non-intervention is the forest's natural trend towards shade tolerant species, especially beech and hemlock.  In the absence of a large natural disturbance, the forest's species diversity will likely diminish.

### Management Option 2:  Silvicultural management

The removal of a long forest strip (1200 to 1500± feet) is under consideration to allow the improved performance of emergency communications equipment atop Stratham Hill.   Silvicultural management of the surrounding upland hardwood stand may be done in conjunction with the strip clearing.

Light harvesting may be applied for two major purposes: 1) Thinning to improve the growth of a diverse species mix of healthy trees; and 2) Selection, with micro canopy gaps (<2500 sq. ft.) to create small openings for new forest growth.

The advantages of this approach are improved forest health and growth, and the continued natural regeneration of the forest.  Wildlife habitat also benefits.  A mixed age forest develops over time.

The disadvantage of silvicultural management is largely aesthetic.   Harvests alter the forest's appearance, no matter how carefully planned and implemented.

## Recommendations:

1) Monitor for, and (immediately) remove all exotic invasive plants.
2) If non-intervention approach is taken, do nothing further except maintain trails.  If a large natural disturbance occurs in the future, consider a salvage operation.
3) If the communications tower strip is to be cleared, consider silvicultural management of adjacent stands.  Carefully plan, prepare and implement harvest.  Post-harvest, apply visual mitigation.  Over time, work to release natural regeneration from shade.

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## D.      Mixed Hardwood – 11.3± acres

*Description* – This forest type is distinguished by its broad diversity of hardwoods. Unlike the upland hardwood forest type which tends to occupy somewhat drier sites, this forest type is not dominated by a single species. While red oak is common, sugar maple and black birch are also abundant. A substantial area of this forest type occupies the site of the 1991 blowdown on Stratham Hill.

Three variants of the mixed hardwood forest type are described: D1, found mostly on Stratham Hill, contains a predominance of older hardwoods; D2, also on Stratham Hill, includes areas severely affected by the 1991 storm that now contain a predominance of 25 to 30 year old hardwoods with scattered older residual trees; and, D3, which describes small pockets of mixed hardwoods on the edges of forested wetlands in the southerly sections of the property.



A variety of hardwoods are found on this site D1 site on Stratham Hill.



Young birch and maple intermix with large black birch that survived the 1991 microburst.

| Species Composition | |
|---|---|
| Primary | Sugar maple, black birch, red maple. |
| Secondary | Shagbark hickory, white birch. |
| Tertiary | White ash. |
| Regeneration (saplings) | Black birch, red maple, red oak, white pine, sugar maple. |

| Forest Structure | |
|---|---|
| **Composition** | |
| Stand Structure | 3-aged w/ scattered residuals |
| Successional Stage | Mid-intermediate |
| Stand Age | 25-30±//50±//80-100± years |
| **Tree Size** | |
| DBH range | 3 – 20± inches |
| Mean DBH | (D1) 11± inches; (D2) 7± inches |
| Avg. Max. Height | 60± feet |
| **Stand Density** | |
| Relative Stocking | Considerable to dense |
| Basal Area/Acre | 140± sq. ft./acre (variable) |
| Trees/Acre | 150 to 480± trees (variable) |
| Canopy Closure | 100± % |

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| Wildlife/Ecological | |
|---|---|
| **Habitat Features** | Mixed species stands provide diverse food (seed, fruit) sources. |
| **Canopy Stratification** |  |
| **Woody Deadfall** | Substantial accumulation of forest floor woody material. |
| **Invasive Plants** | Moderate—Multiflora rose, Japanese barberry, European barberry noted. |

# Management Recommendations
## *Mixed Hardwood Forest Type*

### Considerations/Discussion

An important concern is immediate removal of scattered exotic plants. As with stands in Forest Types B and C, a continued approach of no intervention can be taken, except in response to natural disturbances. Silvicultural management of the stands, has several benefits: 1) improved growth; 2) the retention of mixed species composition; 3) the development of a mixed-aged forest; and 4) improved wildlife habitat. However, there will likely be a degree of objection to the altered forest scenery. D3 stands which are near forested wetlands and are difficult to access should generally left unmanaged.

### Recommendations:

1) Remove all exotic invasive plants.
2) If non-intervention approach is taken, do nothing further except maintain trails. If a large natural disturbance occurs in the future, consider a salvage operation.
3) If silvicultural approach is taken, apply low-impact harvesting and take post-harvest measures to mitigate visual impact.

Charles Moreno, Consulting Forester
Strafford, New Hampshire, (603) 335-1961

# APPENDICES

## Map Unit Legend

| Rockingham County, New Hampshire (NH015) | | | |
|---|---|---|---|
| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
| 43B | Canton gravelly fine sandy loam, 3 to 8 percent slopes, very stony | 14.7 | 6.8% |
| 43C | Canton gravelly fine sandy loam, 8 to 15 percent slopes, very stony | 14.6 | 6.7% |
| 67D | Paxton fine sandy loam, 15 to 25 percent slopes, very stony | 28.3 | 13.0% |
| 67E | Paxton fine sandy loam, 25 to 35 percent slopes, very stony | 21.2 | 9.7% |
| 97 | Greenwood and Ossipee soils, ponded | 5.0 | 2.3% |
| 125 | Scarboro muck, very stony | 3.0 | 1.4% |
| 295 | Freetown mucky peat, 0 to 2 percent slopes | 29.4 | 13.5% |
| 299 | Udorthents, smoothed | 3.2 | 1.5% |
| 446A | Scituate-Newfields complex, 0 to 3 percent slopes | 5.8 | 2.7% |
| 447B | Scituate-Newfields complex, 3 to 8 percent slopes, very stony | 8.1 | 3.7% |
| 510A | Hoosic gravelly fine sandy loam, 0 to 3 percent slopes | 18.5 | 8.5% |
| 510B | Hoosic gravelly fine sandy loam, 3 to 8 percent slopes | 44.1 | 20.3% |
| 547A | Walpole very fine sandy loam, 0 to 3 percent slopes, very stony | 15.3 | 7.0% |
| W | Water | 6.5 | 3.0% |
| **Totals for Area of Interest** | | **217.6** | **100.0%** |

USDA  **Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

4/12/2016
Page 3 of 3

# CHARLES MORENO, LPF
## Consulting Forester, Forest Ecologist

**New Hampshire Licensed Professional Forester #115**
**Maine Forester License #2000**

## *EDUCATION*

B.S. FORESTRY – University of New Hampshire, Magna Cum Laude, May 1980
SAF Study Tour of France – Three-week study of French silvicultural methods, September 1983

## *PROFESSIONAL SERVICE and AFFILIATIONS*

Forest Stewards Guild – Board of Directors (1999-2005), Chair (2005)
Society of American Foresters (SAF) – NH Chairman (1996)
New Hampshire Tree Farm Program – Executive Committee (1984-87)
Society for the Protection of New Hampshire Forests

## *WORK EXPERIENCE*

| | |
|---|---|
| 1980 - Present | FORESTRY CONSULTANT, founder and proprietor of Moreno Forestry Associates. Thirty-six years experience managing private and public forests in New Hampshire. Projects include forest and wildlife management planning and implementation, ecological assessments, forest inventory and appraisals, timber sales, mapping, forest taxation and litigation, forest improvement and habitat enhancement, and conservation plans for towns, corporations, and private landowners. 30,000+ acres under management. |
| 1984- Present | TOWN FOREST MANAGER for the Towns of Exeter, Londonderry, Candia, Plaistow, Brentwood, East Kingston, Deerfield, Epping, Brentwood, Sandown, Rye, Pittsfield, Derry, Dover, Madbury, Strafford, and Rochester developing/implementing multiple-use plans for publicly owned forests. |
| 1985- 1992 | ALTON TOWN FORESTER.   Consultant to the Town on Current Use Assessment and NH Timber Tax matters. |
| 1980- 1988 | K-F TREE FARM, Forest Manager.  Experience in all areas of woodland and wildlife management in this intensively managed, 700-acre property in Alton, New Hampshire. Selected as 1988 Belknap County Tree Farm of the Year. |

## *PROFESSIONAL RECOGNITION*

New Hampshire Outstanding Forester Award (Society of American Foresters) -- 2001
National Outstanding Tree Farm Inspector Award -- 1999
Austin Cary Practicing Professional Award – (New England SAF, 1998)
NH Wildlife Stewardship Award – 1995
Outstanding New Hampshire Tree Farm Award 1987, 1992, 2002, & 2006
NH Tree Farm Inspector of the Year – 1985, 1990, 1992, 1993, 1998
Xi Sigma Pi (Forestry Honor Society, 1978)
Eagle Scout (1976)

Charles Moreno, Consulting Forester
Center Strafford, New Hampshire
(603) 335-1961

# Appendix F: Signage Plan

| Type of Sign | Location | Style | Cost/sign | # |
|---|---|---|---|---|
| Trail Names | At trail entrances/intersections | Custom wood | | |
| Permitted Use | At kiosks, entrances and major intersections | Basic hard plastic | | |
| Trail markers | For loop trails | stencil/paint | | |
| Private land markers | At landowner boundaries | Small square signage, consistent throughout park | $2.03 | |
| Allowed uses | At locations where uses change (dogs on/off leash, hunting, etc) | Letter sized - indicating change in allowed uses - might coincide with ownership signs | $2.28 | |
| Trail Closures | At locations where trails should be closed, in conjunction with habitat signs | | $2.06 | |
| Sensitive habitat signs | At locations where trails are closed, or close to wetlands | | $2.06 | |
| Dog signage | At locations where use changes, where there is high dog use traffic | | | |
| Shared use signage | At kiosks, perhaps on the map | | | |
| Maps | At kiosks, and other locations where maps are located | | | |
| Kiosk signage | At kiosks, with information about the property, allowed uses and trail loops | | | |
| Directional Junctions | At main trail junctions | Similar to trail names | | |
| Seasonal: wet trails, leafy trails | As needed | | | |
| Seasonal: trail closure | As needed | Wet/sensitive habitat | | |
| ART Dog Waste | Main dog walking areas | | | |
| Small Kiosks | Point of rocks, Power Lines, SMS, Crockett Way | | | |

# Appendix G: Website Content

Updated Rules and Regulations
Recommended permitted dog walking rules
Trail Map
Property description
Ordinances
Photos
Links to trailforks/all trails/strava
Donation option
Photos
Possible message board/reporting tool
Submit comments
Anonymous reporting of violations/incidents

Kiosks should include the following information:
Updated Rules/Regulations - Permitted uses?
Map
Information about the trail network & private ownership
QR code to home page

# Appendix H: Proposed Rules and Regulations

Include language around the nature of the trail network on all kiosks:

"Stratham Hill trail network spans a total of 589 acres made up of town owned and privately owned land. 217 acres are town owned, leaving the rest as private land - please be respectful as you utilize this wonderful resource."

- Please stay on marked trails; creating new trails have a negative impact on wildlife.
- No motorized vehicles of any kind are allowed within the trail network.
- Leave no trace - please do not harm flora and fauna and always carry out what you carry in.
- Always be respectful of other trail users, and use caution and courtesy when passing one another.
- Be respectful of the private land and the landowners who grant trail access. This is a privilege.
- Hunting is not allowed in the town-owned portions of the trail network as shown on the map.  Be aware that there may be active hunters on the private parcels during hunting season. Please plan accordingly.
- Leaf blowing is prohibited.
- Parking areas are closed after dark.

**Rules Related to Dogs**

- Dogs must be leashed when coming and going from any and all parking areas. (Ordinance change)
- Dogs are prohibited from the athletic fields of the Town Park as shown on the map.[19]
- Dogs must be on-leash and confined to the paved walkways while traveling through the Town Park until reaching the woods, at which time dogs must always be under owners' strict voice control .
- Dogs must be on leash when on private land within the trail network as posted.
- Owners must clean up after their dogs.  Fines of $25 and up will be issued for those not complying[20].
- Dog pack size limited to 4 dogs. (Ordinance change)

**Trail Etiquette**

# Appendix I: Trail Log

Trail Maintenance Log

| Mantinence Activity | Optimal Frequency | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Weekly | Monthly | Quarterly | Semi-annually | Annually | Spring/Fall | After Storm | Other |
| **General** | | | | | | | | |
| 1 Remove yellow medallions from trees | | | | | | | | once |
| 2 Trail Monitoring | | x | | | | | | |
| 3 Photos of trail conditions | | | | | x | | | |
| 4 Monitor Eco Counters | x | | | | | | | |
| 5 Trash cleanup | | x | | | | | | |
| 6 | | | | | | | | |
| **Signage** | | | | | | | | |
| 1 Monitor signage for damage | | | | | | | | |
| 2 Check kiosks for maps | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| **General Maintenance** | | | | | | | | |
| 1 Check structures for leaf debris | | | | | | | | |
| 2 Monitor structures for damage | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| **Use** | | | | | | | | |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |

# Appendix J: Trail Maintenance Plan

| Trail/Location | Type of Work | Trail Issue | Timeline |
|---|---|---|---|
| Kitty Rock | Water bars/drainage/fill/boardwalk | large wet area on lower Kitty Rock causing widening, water bars failing. Close side trail in wetland | Spring 2022 - trail work Fall 2021 - trail closure |
| Barker | drainage /fill/trail reroute | Wet area after jump line descent causing widening, wet at bridge, reroute trail above. | 2022 (requires SELT approval) |
| Field Connectors | Boardwalk extension - redo larger bridge ramp, replace lower boardwalk | Wetlands larger than boardwalk and causing damage to wetlands | Spring 2022 |
| Field (near Barker side) | Closure of corner trail near wetland where wetland extends into field. Create a primary entrance into Soggy Dollar near power lines. | The field extends into a wetland where the trail crosses into lower Soggy Dollar. | Spring 2022 |
| Lovell Road Trail | Reroute trail at the top of Lovell Road Trail, close side trail, reroute trail around wetland at bottom of trail | Boardwalk is unsafe and difficult to use. Wet area causing side trails | Fall 2022? |
| USA Today | repair/reroute eroded area | Top of USA today has a significant amount of erosion. | Contract out? |
| Crockett Ridge Trail | repair/reroute eroded hill/Extend bridges to avoid wetland | The climb up Jewell Hill is extremely eroded and there is extensive trail widening. Boardwalk is not long enough to pass over wet areas. | Contract out? |
| Tote Road/Entrance to SMS | Add fill to improve walking surface and address wet areas. | There is a large wet area right at the entrance to SMS off Tote Road and is causing widening and is inconvenient for those walking to school via SHP or the XC team. | Fall 2021 |
| Lincoln Trail | Erosion control | Steep, eroded sections causing trail widening | |
| Tote Road | drainage/fill | Repair sections of trail with large root exposure | Fall 2021 |
| Dead Fish | rework | Drainage, widening, erosion | Contract out? |
| Father & Son Loop | Rework lower | Very wet, boardwalks in poor condition | Waiting on landowner (Fall 2022) |

| Eagle Trail | drainage/fill | Drainage from the hill running off onto the trail and causing erosion. Very steep and widening. | |
|---|---|---|---|
| Rivendell | Wet sections | Add material to prevent widening and erosion | ongoing |
| Firepit | maintenance | Add material in wet spots, maintain to prevent widening | |
| Soggy Dollar | | | |

# Map 1: Access



Stratham Hill Trail Network Access: Map 1

Legend
- Trails
- Town Park
- Town Forest
- Town Owned
- Private/Trail Easement
- Private/Protected
- School District
- Private/Unprotected

Locus Map

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS

Access off Lovell Rd.

Access off Crestview Terrace

SMS closed to use during school hours

Access powerlines off Gifford Farm Rd.

Private access off Crockett's Way

Access off Point of Rocks

Access off Long Hill Rd.

Access Easement off Scamman Rd.

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

0   0.075  0.15        0.3         0.45        0.6
                                                    Miles

# Map 2: Trail Network

**Stratham Hill Trail Network: Map 2**



Legend

**trail_type**
- - - - doubletrack
━ ━ ━ fireroad
- - - - singletrack

Town Park
Town Forest
Town Owned
Private/Trail Easement

Private/Protected
School District
Private/Unprotected

# Map 3: Habitat

**Legend**

**Wetlands**
- Freshwater Pond
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland

Trails
- Town Park
- Town Forest
- Town Owned
- Private/Trail Easement
- Private/Protected
- School District
- Private/Unprotected

**Stratham Hill Trail Network: Habitat: Map 3**



Locus Map

0  0.075 0.15    0.3     0.45    0.6
Miles

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri; HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# Map 4: Current Trail Map

# Map 5: Use: Hunting



**Stratham Hill Trail Network: Use: Hunting Map 5 (parcels outlined in red do not prohibit hunting)**

Legend
- Trails
- Town Park
- Town Forest
- Town Owned
- Private/Trail Easement
- Private/Protected
- School District
- Private/Unprotected

# Map 6: Use: Dogs

Legend
- Trails
- Town Park
- Town Forest
- Town Owned
- Private/Trail Easement
- Private/Protected
- School District
- Private/Unprotected

## Stratham Hill Trail Network: Use: Off Leash Areas: Map 6
## (parcels outlined in red allow dogs off leash)



Locus Map

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong).

0    0.075  0.15        0.3        0.45        0.6
Miles

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# Map 7: Trail Conditions

**Stratham Hill Trail Network: Trail Condition: Map 7**

Legend

**Trails**
- moderate
- closure
- poor
- good
- unknown

Town Park
Town Forest
Town Owned
Private/Trail Easement

Private/Protected
School District
Private/Unprotected

Locus Map

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong).

0   0.075  0.15      0.3        0.45       0.6
Miles

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

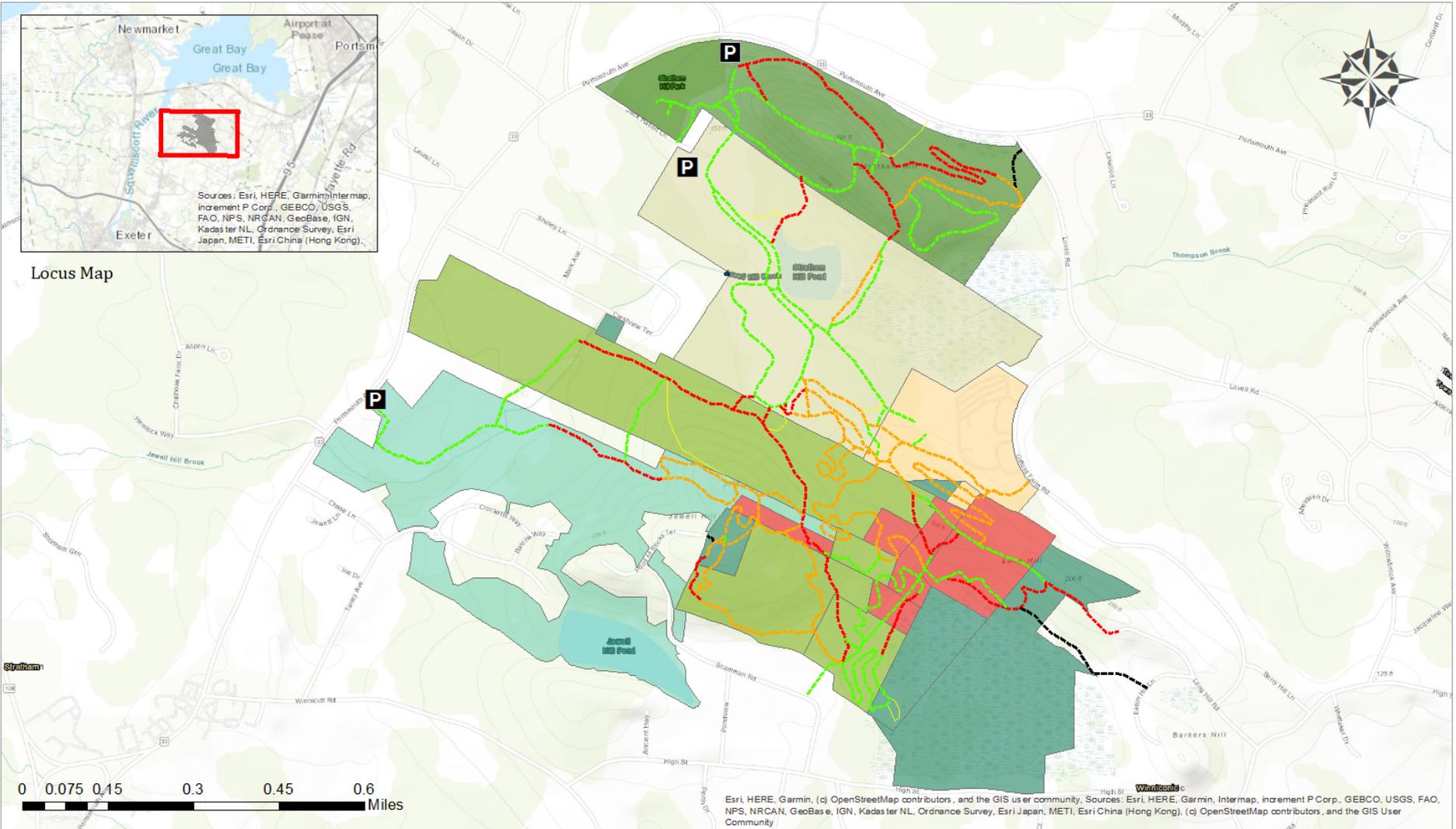# Map 8: Trails for People and Wildlife[21]



Stratham Hill Trail Network : Map 8: Trail Impact on Wildlife

Impact on Wildlife data from the NH Fish and Game statewide assessment tool that highlights areas particulary important for wildlife and areas that would be more suitable for trail development.

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[21] https://wildlife.state.nh.us/trails/documents/trails-for-people-wildlife.pdf

# Map 9: Ownership

## Stratham Hill Trail Network Ownership: Map 9

**Legend**
- Trails
- Town Park
- Town Forest
- Town Owned
- Private/Trail Easement
- Private/Protected
- School District
- Private/Unprotected



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS

Locus Map

Town Park

Town Forest

Private/ Protected (CE)

School District

Private/Unprotected

Private/unprotected

Private/unprotected

Private/Deed Reserved Right

Private/ Protected (CE)

Town owned

Private/ Protected (CE)

Private/unprotected

Town owned

Private/Unprotected

Town owned

Private/ Protected (CE)

Town owned

0   0.075  0.15      0.3          0.45         0.6
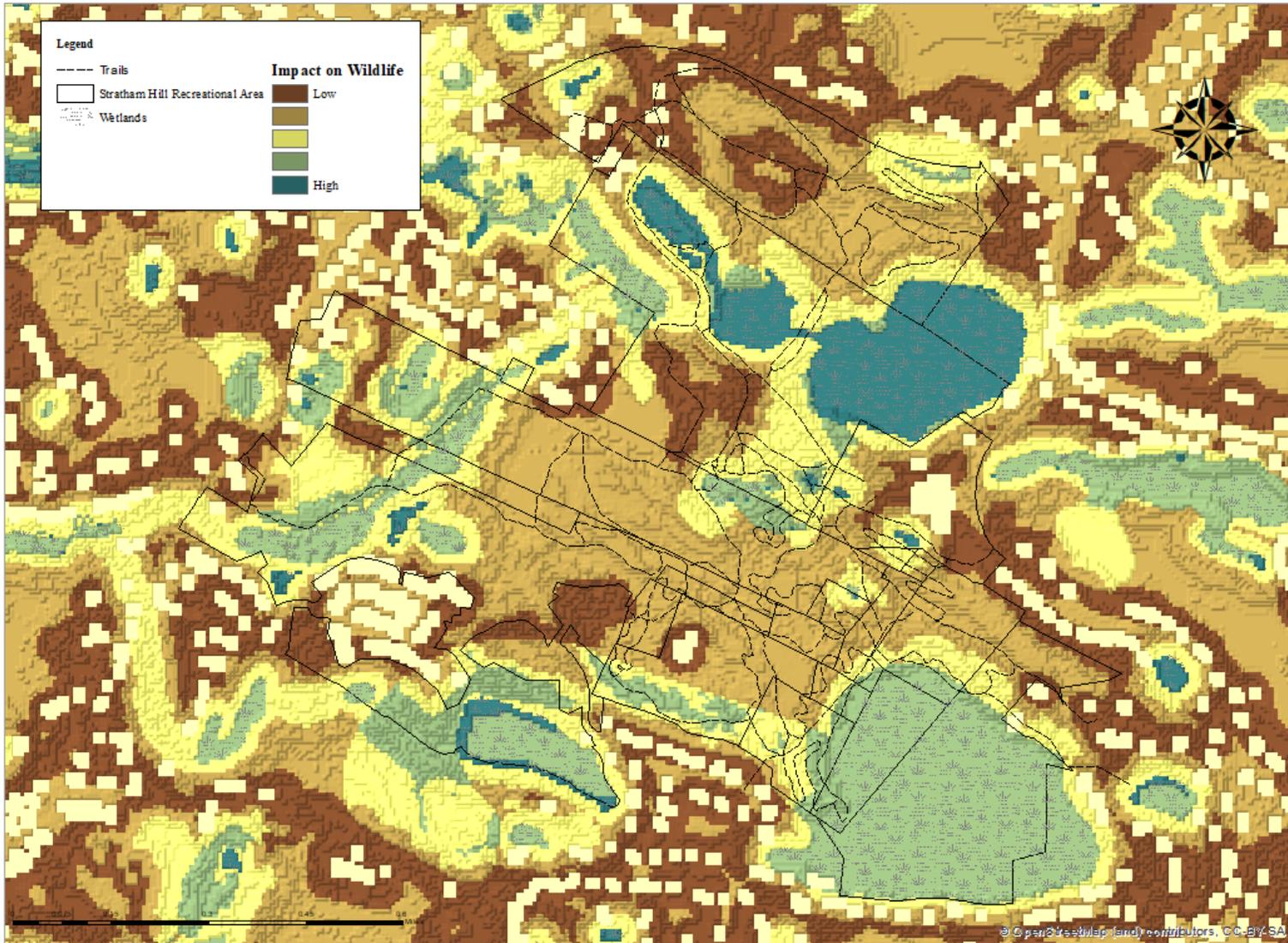                                              Miles

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community