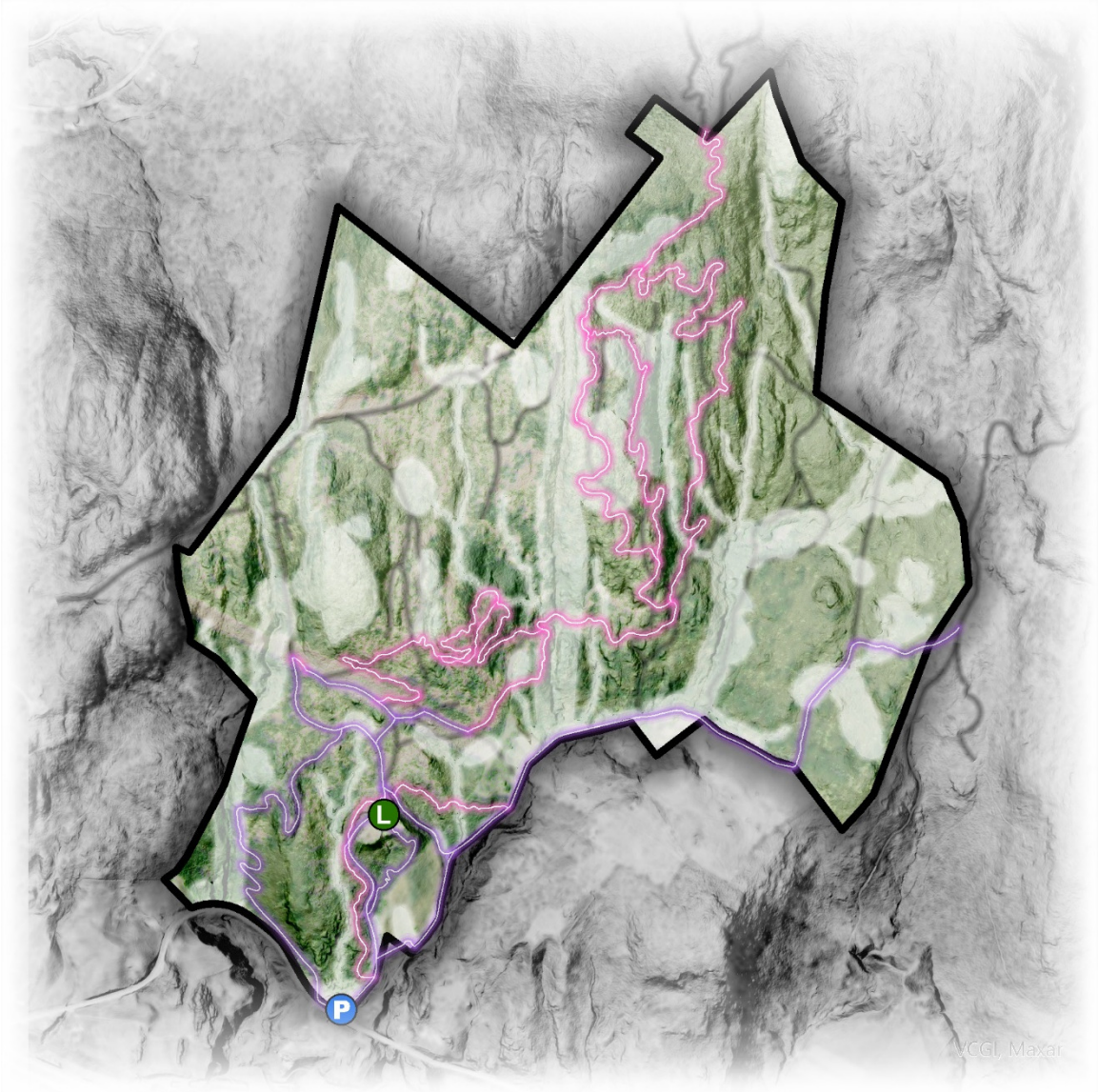
Andrews Community Forest

Ecological Trail Planning Project

Expanded Additional Responses to ACF Committee



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Project documents, maps, & data available at https://arrowwoodvt.com/ACF

Expanded Questions

Please refer to recording of Presentation of ACF Ecological Trail Design and original ACF Ecological Trail Design Report for additional and background information.

Question 1: If we wanted to reduce trail mileage/number in the northeast quadrant for the benefit of wildlife and other ecological values, how would you recommend we do so? What are the pros and cons of doing so, from both the ecological perspective and the trail use perspective?

Response: In order to reduce mileage in the northeast quadrant of the property, there must be a shift to a more defined ranking of priorities, with a de-valuation of some current priorities. As requested, the current mixture of designed trails provides:

- **Sustainable connectivity for pedestrians and bikers** to the Sip of Sunshine trails, taking into account all the necessary variables for this, in addition to **trail user safety and mitigating user conflict.**

- **Ecological considerations equally weighed** with recreational considerations, with **impacts mitigated** to the greatest degree possible while still meeting the desired goals of the trail design, to the best degree possible.

Trail Use Perspective

While a goal was to design multi-use trails where possible, this was not possible in parts of the northeast portion of the project due to the general steepness of the terrain, and the differing needs of pedestrians and bikers in dealing with this steeper terrain (with numerous large rock outcrops and steep banked streams). In order to provide access to the connectivity in this area, bike and hike trail users were separated for both safety and sustainability. Additionally, trail directionality had to be added to get bikers safely and sustainably through the challenging terrain that climbs to the last pitch/spur connecting to the Sip of Sunshine. Thereby, each trail segment accommodates safety and sustainability for the trail user groups to provide equal access to this area (and the connectivity) it provides.

East Climb- (Average 6% grade) Bikers need a gentler grade for climbing than an average hiker. In order to create this, trails on steeper slopes must traverse as much as possible, climbing in between turns to link the traverses. The tightness of the turns is necessary for the stacked nature of some of these traverses in order to reduce stream crossings. Tight turns for downhill bike traffic lead to user created erosion from heavy braking, therefore, what makes it suitable for uphill travel up a steep slope, does not support sustainability for downhill travel. Additionally, these long traverses are less enjoyable for pedestrian traffic and can lead to user created erosion from “cutting switchbacks” by humans and their dogs. While it is technically suitable for pedestrian traffic, this unavoidable factor makes it less ideal for this user group.

Hemlock Valley- This trail utilizes an existing forest road as much as possible to limit new trail construction and pass quickly through the hemlock deer wintering area without lengthening the route more than necessary. In areas where this existing route is not sustainable for trail use (poor drainage, steep grades), the trail diverts off the skid road with relatively tight switch-backed turns. These turns are designed to be efficient for pedestrian traffic, and while they are bikeable, they are not designed to hold up to downhill bike traffic from every visitor to the network (which could lead to increased user created erosion). The steady 8% grade is also steeper than ideal for uphill bike traffic.

Ridgetop Trail- This more ledgey and lightly technical trail is the most sustainable route downhill for bikers because of the stable rocky slope it traverses. The layout will provide a sustainable way down, without inviting excessive speeds or heavy braking (a source of user created erosion). However, it is not advisable to route all of the pedestrian travel on this trail to reduce the likelihood of user conflict.

To reduce mileage by eliminating one of these trails, project priorities would need to be changed or re-prioritized. As a whole these trails provide for the most sustainable and safest recreational experience for all the target user groups, while maintaining the smallest ecological footprint possible to meet these project priorities. If any of the trails were to be eliminated, some of these original project priorities would not be met to the optimal degree and would essentially be de-prioritized compared to the other priorities/goals.

Options for de-prioritization could include: (but **ARE NOT proposed or recommended**)

- Connectivity to Sip of Sunshine for hikers. Potential action: Removal of the Hemlock Valley Trail
- Connectivity to Sip of Sunshine for bikers. Potential action: Removal of Ridgetop and East Climb
- Biker access to this zone. Potential action: Removal of Ridgetop and East Climb
- Hiker access to this zone. Potential action: Removal of the Hemlock Valley Trail
- Trail sustainability*. Potential action: Removal of any of the trail sections
- Safety and user conflict*. Potential action: Removal of the Hemlock Valley Trail
  *NEVER recommended for exclusion or de-prioritization

As the ACF Committee noted during the field visit, at that time they did not have interest in designating trails for specific uses, therefore this recommendation was not given in the final report. However, as discussed above, the challenges of the steep terrain overlaid with the other site-specific considerations lead to a trail design that necessarily diverged by user group in this area of the project. For long term sustainability, sharing trail use recommendations with trail users would support the overall intentions of this sustainable/ecological trail design. As we all know, all of these considerations are important to take in the design phase, as recreational trail use will likely only continue to grow in the region.

Ecological Perspective

While impossible to conclusively quantify with the limitations of seasonality and duration inherent in the original project scope, it is assumed that the north-south stream corridor and its function as a probable wildlife corridor is the most sensitive ecological feature in the northeast quadrant. There are small areas of confirmed deer winter habitat, notably at the Hemlock Valley Trail, however the biological function of deer winter habitat is limited to the coldest and snowiest portions of the winter season when trail-user traffic is expected to be significantly reduced.

With well-designed and constructed trails that appropriately consider site-specific constraints such as slope, soil stability, stream crossings, wetland avoidance, etc. ecological considerations turn to influences on general and species-dependent habitat, wildlife movement patterns, and landscape connectivity. All trails, as well as dispersed human recreation for that matter, can be expected to have impact on ecological features and wildlife behavior. In discrete areas such as the northeast quadrant in question, the level of impact is typically more a function of the density of users than the density of trails or trail miles. In other words, the same user volume per day on fewer trails will likely have similar overall impacts on wide ranging wildlife and general habitat quality as spreading these users out over more trails in close proximity. In addition, trails that require more geographic area to safely and sustainably support the designed user base due to factors such as slope stability will have a greater impact on localized wildlife such as nesting birds, reptiles, and amphibians than a straight-line trail would.

Trails that provide the greatest distance from the stream/wildlife corridor will offer that feature the greatest level of protection, and this is worthy mitigation from an ecological perspective. However, twice as much traffic, noise, and activity on a trail a short distance further away will, in all likelihood, still result in some level of wildlife behavioral responses at the corridor. Fewer, and straighter, trails will impact less of the natural environment, but such limits are not practical in all situations.

If re-wilding of the northeast quadrant is the primary goal, consideration of no-trail options in this region would offer the highest amount of protection. If human recreation remains a component of the management goals in this area, the desired use-types will necessarily inform the trail requirements. Fewer trails may create less overall area of disturbance, but sustainable design requirements cannot be ignored without causing significant unintended consequences to other resources such as water quality and natural community protection.

Question 2: Can you comment on the departure of the trail design from the Concept Map that was developed by the Interim Planning Committee and the planning firm SE Group in 2019? This is a concern expressed by several residents, particularly regarding the change of routing from the northwest quadrant to the northeast quadrant. We simply request your ecological/design justification for this departure.

The original conceptual design provided at the outset of the project did not take into account the challenging ground conditions. This property is rife with un-mapped micro- features such as smaller streams, bedrock cliff zones, and fresh skid roads, which created a baseline of constraints for viable sustainable trail location. (p.7, ACF Ecological Trail Design Report)

Response: On-the-ground natural resource evaluation focused on trail-compatibility was **not** conducted in support of the Concept Map trail design. Large scale natural resource features were identified by various parties including the VLT ecologists and UVM students, however many notable features- especially wetlands and streams- were left unidentified and unmapped.

In addition to smaller trail constraints, our site investigation identified the central north-south stream valley as a potentially significant wildlife corridor. In light of this finding, it was determined that crossing this feature should be limited to as few areas as possible. We further sought to reduce trail impacts to both sides of the stream valley, leaving an undisturbed area to facilitate wildlife movement.

Upon initial exploration, it became very clear that the conceptual design, was (as we were notified to expect in our kick-off meeting) strictly conceptual. Some trails were routed up cliffs, along un-mapped stream beds, through heavily logged and impacted areas, and generally did not take into account the challenging reality of the ground conditions for trails on this property. There are numerous unmapped steep banked streams, bedrock outcrops, very steep terrain, areas with surface ground water routes still shifting post timber harvest, and many other seepy, poorly draining areas unsuitable for sustainable, primarily natural surfaced trails on this property. None of these considerations (aside from maybe general slope) seem to have been taken into account in the conceptual design that was given to our team as a starting point.

The first iteration of the more gradual climbing trail to access Sip of Sunshine was routed on the western side of the property, as suggested by the conceptual design. However, this route was abandoned in order to provide a larger buffer around the vernal pool and avoid crossing the large ravine near the top of the property. Whole regions that were slated for greater trail density (lower on the property and on the western side) proved to barely be suitable for the minimum length of trail needed for connectivity and did not prove to be good places to site trails in general.

In addition, the desire to connect both pedestrians and bikers to the Sip of Sunshine trail made passing through the middle of the property necessary, which was done in the most efficient way possible. These combined factors, along with the goals outlined in our response to Question 1, led to greater trail density in the middle and upper portion of the property.

Question 3: We acknowledge that the timeframe we allowed for the ecological assessment did not encompass all seasons, nor did it span multiple years. As such, some ecological values (e.g., rare species, ephemeral species) may not have been captured by the assessment. As we build trails this upcoming summer what would you advise we do to address these potential "misses"?

Response 3: As detailed in our report and in our presentations to the Committee and public, a comprehensive natural resources inventory including a rare, threatened, and endangered plant species survey was not conducted due to seasonal limitations. This project provided a direction for trail routes, but avoidable small, localized elements are likely present and could be identified by a qualified ecologist as the specific trail footprint is determined in the field. Examples of some of the micro-features that may be present and identified during the spring/summer seasons include small seepages, micro-habitats, visual and auditory barriers, preferred stream-crossing locations, sensitive or uncommon plant populations, wildlife food resources, denning and nesting sites.

It is additionally best practice to see trail design regions in various seasons, most notably spring and fall.