# BRUSH MOUNTAIN PROPERTIES CONCEPT PLAN

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EXECUTIVE SUMMARY

In 2019, the New River Land Trust (NRLT) received a $1.2 million grant award from the Virginia Outdoors Foundation’s Forest CORE Fund (Fund) -- a fund established for the purpose of mitigating forest fragmentation resulting from the clearing activities along the Mountain Valley Pipeline’s right-of-way through Virginia. These grant funds were used to purchase two, largely undeveloped properties, comprising 552 acres, on the south face of Brush Mountain. (See Figure 1.) The NRLT will transfer the Brush Mountain Properties to the Town of Blacksburg (Town) in 2020. These two properties are located north of Meadowbrook Road and are contiguous with the Jefferson National Forest.

Figure 1. – Brush Mountain Properties Vicinity Map. Location of Brush Mountain Property 1 (BMP1) and Brush Mountain Property 2 (BMP2) in relationship to the George Washington & Jefferson National Forest, the Poverty Creek Trail System and the Huckleberry Trail.

With the addition of these two properties, the Town has an opportunity to develop and manage a unique, non-motorized trail system for the benefit of its residents and those living nearby or visiting
from outside of the region. The multi-use trail system will offer diverse recreational opportunities close to where people live and without having to leave town. Convenieント trailheads along Meadowbrook Road will lead visitors to high-quality, purpose-built, natural surface trails as well as create connections to adjacent and extensive trail networks offered by the Huckleberry Trail, the Jefferson National Forest Pandapas Pond Day Use Area (Pandapas), and the Poverty Creek Trail System.

The justification, planning, and design recommendations outlined in this Trails Concept Plan (Concept Plan or Plan) provides a wide range of hiking, running, biking, and horseback riding options for those who frequent the multi-use trail system. This Plan recommends the construction a number and length of multi-use trails that can be logistically developed within the boundaries of the two Brush Mountain Properties. Using a variety of trail specifications, trail types, and sustainable construction methods, the multi-use trails will be developed around exciting areas of interest. These trails promise to satisfy an array of user groups and interests, while also providing trails and features that hold the attention of users at every age group.

The implementation of a stacked-loop trail system consisting of multi-use trails will be designed to lead users to terrain compatible with their desired experience and mitigate potential user conflict. Trail users will have opportunities to experience the types and intensity of recreation they seek without having a significant adverse impact on other users’ experiences. Few locations in the New River Valley, if any, have a wide-range of optimized amenities and trail types; therefore, reserving a space for purpose-driven activity will be an asset for the Blacksburg community. Any of the proposed trail corridors and amenities can be crafted in a phased approach, thus updated or repurposed to meet the needs of future recreational users as the demand (and funding) grows.
1.0 INTRODUCTION

Project Background

The Town of Blacksburg (Town) is a municipality with an increasing number of residents and a growing population of students at Virginia Tech. People choose to live in or around Blacksburg, decide to come to school here, or visit the area for a variety of reasons – but one of the primary reasons is the Town’s close proximity to public lands. Combined with the ever-increasing popularity of trail running, mountain biking, and horseback riding, people who enjoy the outdoors have found that Blacksburg’s surroundings offer a multitude of outdoor recreational opportunities.

The popular Poverty Creek Trail System lies between the ridgelines of Brush Mountain and Gap Mountain within the Eastern Divide Ranger District of the George Washington & Jefferson National Forest (GWJNF) and is the Town’s closest trail network used for outdoor recreation. (See Figure 1.) As the region’s population grows and the number of visitors to the region increases, the Poverty Creek Trail System will continue to experience heavy use by hikers, runners, mountain bikers, and horseback riders.

In 2019, the New River Land Trust (NRLT), in partnership with the Poverty Creek Trails Coalition (PCTC,) purchased 552 acres of intact, undeveloped forestland located mostly on the south face of Brush Mountain in an effort to conserve these forestlands and “accommodate a growing community that desires outdoor recreation and educational amenities.” The NRLT stated the goals of this land acquisition include:

- Preservation of scenic and forest values; preservation and enhancement of the existing, natural vegetation; and, prevention or minimizing changes that would have broad negative ecological impacts.
- Increasing public access to the forest environment on Brush Mountain and building an outdoor recreation and nature-based educational asset base.

The 552 acres consist of two properties referred to in this document as Brush Mountain Property 1 (BMP1) and Brush Mountain Property 2 (BMP2). BMP1 contains 334 acres, and BMP2 contains 218 acres. Both properties extend north from Meadowbrook Road to a boundary with the GWJNF. (See Figure 2.)

The NRLT plans to transfer 97 acres of BMP1 located north of the ridgeline road to the U.S. Forest Service resulting in a boundary adjustment for the GWJNF. Following the boundary adjustment, the NRLT plans to transfer the remaining 238 acres of BMP1 to the Town. The NRLT plans to transfer all 218 acres of BMP2 to the Town.
Per the conditions of the agreements and in conjunction with the Virginia Outdoors Foundation (VOF), the BMP1 and BMP2 are to remain under conservation easements and will be subject to deed restrictions, which will prohibit division of the properties, protect natural heritage resources, minimize future expansion of impervious surfaces, require buffers for drainages and karst features, and stipulate that management of the forest be according to what is outlined in NRLT’s Forest Management Provisions.

![Figure 2. – Brush Mountain Properties Map. Proposed multi-use trails on Brush Mountain Property 1 and Brush Mountain Property 2.](image)

The Town of Blacksburg recognizes that preserving and expanding trail access throughout the Town and up to the border with the GWJNF is critical to creating and enhancing quality of life attributes for the surrounding community. The Concept Plan, along with the associated maps, contains proposed trail systems for BMP1 and BMP2, which will become part of the region’s interconnected trail network. This Concept Plan provides guidance to Town staff and PCTC for future trail-related priorities and decisions.
Further, this Plan is intended to promote the development of a meaningful, well-conceived trail network to preserve and enhance a community amenity for both residents and visitors. The Plan also recognizes that a balance must be achieved between growth and development and the preserving a healthy quality of life, and that development should provide a means for conserving and improving an interconnected recreational trail network. Finally, the creation of additional outdoor recreation space is complementary to Virginia’s newly initiated Office of Outdoor Recreation.

How this Plan Was Developed

The Concept Plan was developed by the combined volunteer efforts of the members of the Brush Mountain Stakeholder Group organized by the NRLT and the Town. The stakeholder group includes representatives from:

- Town of Blacksburg
- New River Land Trust (NRLT)
- Virginia Outdoors Foundation (VOF)
- Poverty Creek Trail Coalition (PCTC)
- New River Valley Bicycle Association (NRVBA)
- East Coasters Bike Shop
- Eastern Divide Back Country Horsemen
- Blue Ridge Off-Road Cyclists
- Blue Ridge Gravity
- Blacksburg Striders

Plan Philosophy and Core Values

Sustainability is the main guiding philosophy of the Town with respect to the Concept Plan. A trail or a trail system is considered sustainable “when it allows users to enjoy an area with minimal impact to natural and cultural resources and requires only modest maintenance. When a trail fails to provide desired outcomes, the resulting impacts can be crowding, conflict, and the creation of unauthorized trails, so a truly sustainable trail must also align with desired user experiences.”

Beginning with purpose-built, quality, and well-designed and constructed trails that are erosion-resistant, there should be a monitoring and evaluation aspect to the trails program to ensure that trails are not being created where they could have negative environmental or social impacts and that poorly aligned existing trails are correctly rerouted or decommissioned. Overall, the trails system needs to be maintained and developed in a cost-effective manner, through the pursuit of grant opportunities, joint
trails projects with other agencies or entities, and the institution of impact fees to event promoters that utilize Town trails.

The Core Values, which are the principles that have guided the creation of this Plan and will guide the implementation of the Brush Mountain trails development, include:

- Engage partners and the public meaningfully and transparently to foster collaboration around common goals.
- Work to develop a range of recreational and nature-based opportunities for a diverse and active user community.
- Be responsive to the priorities of various user groups and skill-advancement opportunities within those user groups.
- Seek ways to minimize user conflicts through design elements and community building efforts across user groups.
- Prioritize options during design and plan development that can be sustained long-term in terms of anticipated funding and human effort required.
- Seek to complement recreational opportunities in the region.
- Consider other community and regional assets and work to connect and create a continuum of structured recreational space with increasingly less structured recreational spaces.

**Plan Goals and Objectives**

This Concept Plan attempts to provide a coherent and well thought-out framework for the future of the forestland trails on BMP1 and BMP2. More specifically, this document is intended to:

- Describe two trail systems (one for each property) for multiple uses including hiking, running, mountain biking, and horseback riding.
- Create property-specific trail systems: One trail system will consist of similarly constructed, multi-use trails that prioritize foot/hoof travel with relatively few technical aspects; the other will consist of trails with a diverse and wider-range of challenges and terrain features optimized for wheeled-travel.
- Outline functioning access to the trail systems that connects efficiently with other pre-existing trails systems and transportation corridors.
- Identify important trailhead and access locations, amenities, and signage to facilitate recreational uses.
- Offer trail opportunities to locals and visitors at all ability levels, from novices through more advanced trails users.
- Use a phased-approach to implement and construct the trails systems.
• Offer recommendations to accomplish the specific trail and access projects outlined within the Plan.

Plan Prioritization

Implementation of the BMP1 and BMP2 trails program will follow the priorities listed below:

1) Improve and maintain existing core trails/roadbeds or “hubs” on each property, as these will be critical to the construction and access of system trails.
2) When it comes to new trail construction, focus on new loop trails and connector trails emanating from a core hub. By developing trails along these lines, locals and visitors alike can access a linked trail system that will lead them away from the hub.
3) Construct or enhance trails on the more remote portions of the Brush Mountain Properties and enhance connectivity to existing Poverty Creek Trail System trails, specifically the Gateway Trail.
4) Construct new trails and enhance existing trails within the Poverty Creek Trail System in cooperation with the U.S. Forest Service to ultimately improve the community-wide trail network.
5) Develop new access points along Meadowbrook Road that connect to the Huckleberry Trail system.
6) Work cooperatively with area private landowners to secure additional properties or ROW/easements to accomplish the vision set forth in this Plan.
7) Update and amend the Plan in the event additional key properties or ROW located on Brush Mountain are acquired.

Role of the Plan

The purpose of this Plan is to propose a comprehensive trail network design and implementation plan that serves multiple users. The planning area is focused on the Brush Mountain Properties, but does consider improved connections to the existing Poverty Creek Trail System. This Plan is a volunteer-generated document with buy-in from various volunteers representing several potential user groups.

Plan Assumptions

This Plan is a master plan for the design and construction of idealized multi-use trail systems on two separate properties that are themselves contiguous to the public lands managed by the U.S. Forest Service and to privately owned lands. Though the proposed trail systems can exist independently (i.e., they can be used individually and without leaving the respective property boundaries), overall connectivity to the greater Poverty Creek trail network is an objective.

The Plan recognizes that the NRLT and Town will need to work closely with these adjacent property owners and managers.
Many of the trails identified in this Plan connect to the Poverty Creek Trail System managed by the U.S. Forest Service (USFS). The Plan recognizes that Town staff will need to collaborate with the USFS on how to complete the proposed trail systems and to provide a framework for regional trail network connectivity.

Additionally, the adjacent, privately owned properties have unmarked boundaries that are not readily discernible from BMP1 and BMP2. To ensure private property rights are respected and recognized by future trail users, BMP1 and BMP2 will be developed in ways that clearly delineate boundaries and/or include areas of buffer. Achieving the vision set forth in this Plan will require collaboration with a few private landowners. The Town has a long history of successful collaborations with private property owners where municipal parks and trails run adjacent to private lands and will work in good faith with these owners to minimize anticipated impacts and address challenges or concerns that arise over time.

This Plan further assumes that a parking area will be constructed by the Town at the entrance to BMP1 near the intersection of Meadowbrook Road and Glade Road. This Plan also assumes that BMP2 will be served by a connection to the Heritage Park trail and the lower Heritage Park parking area.

Plan Organization

This Plan offers a template for the creation of two, distinct trails systems on two, separate properties. The trail system concepts for each of the two Brush Mountain Properties are intended to be independent of each other and offer users a choice in the fundamental experience or goal they are trying to achieve. The trail systems are organized and described for BMP1 and BMP2.

Plan Implementation

The recommendations outlined in this Plan are intended to provide guidance for future trail design, construction, operation and maintenance, and funding opportunities.
2.0 CONCEPT PLAN ELEMENTS

Recreational Experiences

This Concept Plan explores the idea of creating a unique recreation experience as compared to what is currently available within the Poverty Creek Trail System located within the GWJNF. Generally speaking, this trail system contains the following challenges/limitations as identified by the Stakeholder group:

- Trails within the Poverty Creek Trail System can be accessed from many variable locations; however, there are few established parking lots close to the trails; resulting in overuse in some areas (e.g. the first mile or two of the Poverty Creek Trails) and underuse in others (e.g. Indian Pipe).
- Trails are adopted from old trails, historical corridors, or roadbeds (i.e., old logging roads) or user-built (rather than sustainably designed with users in mind and proper permissions secured).
- Many trails are steep, eroded, fall-line trails that are perceived as difficult to both use and maintain.
- Wayfinding is sometimes perceived as difficult due to varying access points, start/ends, and intersections.
- Congestion occurs on easier and more accessible trails (i.e., Poverty Creek Trail) due to multiple user groups (hikers, runners, dog walkers, mountain bikers, horseback riders).
- User conflict between user groups occurs on congested trails and trails with potential for high speeds.
- Trails require significant maintenance or re-routing (many are seriously degraded).
- The overall trail system mileage has not been allowed to grow with evolving user preferences; or along with the growth of the surrounding population.

This Concept Plan aims to provide a basis to develop BMP1 and BMP2 in ways to avoid the challenges identified within the Poverty Creek Trail System by creating thoughtfully designed trail networks specific to each property with respect to quality, sustainability, and users. The following design criteria have been incorporated into the proposed trails:

- Appropriate to the particular setting.
- Environmentally and socially sustainable.
- Economically responsible, taking into account long-term costs associated with maintenance and administration.
- Outcome-focused, able to provide the targeted experience and benefits for the identified user groups and skill levels within user groups, with an eye toward offering opportunities for skill progression.
User Conflict Mitigation

User conflict is defined as “goal interference due to another user’s behavior.” The design concepts are intended to mitigate user conflict by:

1. Using stacked-loop trail system design to mitigate congestion on any one trail; with the limitation being the entrance portion to each property since both properties are limited to existing roadbeds for access. Stacked loops enable users to share many different levels of trail where the closest loops to the trailhead are the easiest and most beginner friendly; thereby allowing users of all levels to enjoy the natural world offered by the park. Bi-directional loops offer trails that can be used in either direction, thereby essentially doubling the trail options and allowing users to complete a loop rather than an out-and-back.

2. Allowing users to choose between two different and separate trail systems (i.e., BMP1 or BMP2) with trail treads designed for differing intended uses or user experiences that are communicated to users by signage.

3. Designing and constructing trail tread that prioritizes foot and horse travel on BMP1; optimize the trail tread design for BMP2 for wheeled-travel.

4. Where appropriate, implementing traffic-flow strategies such as suggested single-direction where user experience or safety could be compromised.

5. Promoting trail advocacy campaigns and programs to educate the public about user conflict avoidance and safety.

User Experience

This Concept Plan intends is to provide a quality user experience to all users of the Brush Mountain Properties. To do so, this Plan proposes to design the trail systems for each of the Brush Mountain Properties separately with the user experience in mind.

In general, the experience sought by the intended trail users of the Brush Mountain properties can be defined as:

- Hikers: More focused on setting and destination rather than the trail itself, most mobile users, capable of cross-country travel.
- Trail Runners: More focused on goals and exercise, though the trail itself is an important factor; For valued experience, connectivity to additional trail networks for longer distances.
- Equestrians: Prefer loops. Not affected by trail conditions but do require the largest corridor. May require longer distances for valued experience. Do not benefit from trails with excessive twists, turns, or features. Destination and setting are important.
• Mountain Bikers: Wide range of desired experiences and outcomes; however, the trail itself is generally the primary attraction, rather than the setting or destination. Mountain bikers may often choose to repeat trails multiple times since the trail itself is important.

Factors that are central to all trail users include natural setting, singletrack, exercise, loops, connectivity, and variety. Factors that are more specific to mountain bikers include play, technical challenges, skills progression, and rhythm.

The trails on BMP1 have been designed for all trail users by incorporating natural settings, exercise, loops, connectivity and variety into the system. Specifically, the tread of the trail on BMP1 has a consistent design across the system, with regard to distance, elevation, and destinations. BMP1 trails will contain good sight lines to further aid in user conflict mitigation. The stacked-loop system on BMP1 will allow users to select from an array of distances and elevation changes to accommodate users’ abilities and timeframes.

To create something unique to the New River Valley that complements mountain biking, this Plan proposes to construct a trail network on BMP2 with certain trails optimized for mountain biking. This does not mean that hikers, runners, or horseback riders are restricted from using BMP2 trails; however, specific zones of BMP2 would contain bike-optimized trails designed to move through the terrain in a way as to provide challenges and skills progression utilizing the natural features provided by the terrain. Features particularly preferred by mountain bikers include twists and turns, banked or bermed turns, obstacles such as rock gardens or boulders, logs, or short section of steep inclines and declines; and flow trails.

The intent of differentiating some of the user experience between BMP1 and BMP2 is to increase the quality of the experience of all users by providing means to obtain each users’ desired outcomes while also mitigating user conflict by attracting different users to different properties. This aspect of the Brush Mountain Properties trails systems differentiates it from the Poverty Creek Trail System to provide a more targeted user experience.

**Concept Design Trail Design for Brush Mountain Properties**

Natural-surface trails constructed on the Brush Mountain Properties are expected to be used for foot travel, mountain biking, and horseback riding; with preferences or limitations specific to each property. Motorized vehicle use and hunting will not be permitted on either property.

This Concept Plan proposes two trail systems – one specific to each of the Brush Mountain Properties:
**Brush Mountain Property 1:** A multi-use, stacked-loop, trail network with relatively homogenous trail tread construction with an overall trail grade below 10%.

- The intended use of this trail system is for bi-directional foot travel (e.g., hiking and running), mountain biking, and horseback riding on all trails. A kiosk at the entrance of this trail system will describe this intended usage.
- Except for existing roadbeds, new trail tread design will prioritize foot/hoof travel and will be a typical “full bench cut,” singletrack tread approximately 36 inches in width or narrower, that is consistently graded given the terrain and slopes. These trails will not have excessive twists and turns or obstacles and are not intended to be particularly challenging to any single user group; and,
- These trails will be more focused on setting and destination to accommodate and be attractive to the widest range of abilities capable of cross-country travel.

**Brush Mountain Property 2:** A multi-use, singletrack trail network with varied tread construction that includes intentional grade changes, features, challenges, and obstacles (e.g. rocks, boulders, logs, inclines/declines, etc).

- Intended as a multi-use trail system with trail tread optimized for mountain biking. A kiosk at the entrance of this trail system will describe each trail and its intended usage.
- Singletrack tread could be limited to 24 inches wide or narrower and may be rough or technical in many sections.
- The intent of this trail system is to have many twists and turns, grade reversals, and other natural or man-made features that make the trails intentionally playful and challenging.
- The intended user experience will focus on the trail itself is the primary factor for usage, rather than connectivity or setting.

**Trail Kiosks, Identifiers/Signage, and Boundaries**

An important purpose of the Brush Mountain Properties is to educate the public about safety and ethical recreational use of Town-owned public lands. As a multiple-use recreation area, visitors will also need to be educated about sharing the area and respecting the area boundaries. To meet this goal, the trail entrances will feature trail signs and information kiosks to convey these messages.

**Trail Kiosks**

Trail kiosks are proposed at the entrance of each property, near Meadowbrook Road. Trail kiosks will provide visitor and users with information on the overall trail networks, user etiquette and advise users to protect natural, cultural and historic resources in the area. The Recreation Area’s natural
resources, history, management, and design features can be interpreted to convey messages and interesting information.

Trail kiosks will also communicate to trail users which trails may present challenging terrain, identify which trails may have preferred single-direction travel, and to address user conflict by advocating user conflict mitigation by communicating to users:

- Catchy phrases like “10 seconds of kindness” and “Be Nice, Say Hi,” which encourages users to slow down, recognize that others are on the same trails, and simply be courteous to them.
- Be aware of basic rules of the trail that hikers/runners yield to horses, and mountain bikers yield to everyone.
- “Be Alert” awareness campaign on trails with potential speed differentials.

Trail kiosks will also describe the property, its history and its ownership. Trails kiosks will have a map of trails, trail lengths, elevation change, user difficulty rating, and optimized use, if any. Trail kiosks should also recommend users observe and photograph as part of “Leave No Trace” behavior and inform the user to stay on trails and illustrate any sensitive species.

**Trail Identifiers/Signage**

As signs are the most important communication tool between land managers and trail users, the development of any new trail system requires a system of signage and trail markers. A well-made and maintained signage system has the potential to enhance a user’s experience while they navigate through the trail system. Signage also plays a critical role in managing risk and effective response and deployment of emergency services.

Trail identifiers within the Poverty Creek Trail System consist of plastic/aluminum diamonds of various colors (e.g., gold, blue, red, etc) that identify individual trail marked on maps at trail kiosks. To differentiate Brush Mountain Property Trails from Poverty Creek Trail System trails, the stakeholders recommend the trail identifiers be 4-inch in diameter, circular markers of varying color. Trail names will be identified at a later time.

**Property Boundary Demarcation**

The borders of both Brush Mountain properties are difficult to discern as there are no natural or man-made features that identify the boundaries of the properties; therefore, it is important to identify the boundaries to ensure trail users do not inadvertently leave the properties and trespass on surrounding private property. Conversely, the property boundary should be obvious to surrounding private
landowners/users to ensure they do not enter the property for illegal purposes such as hunting or motorized vehicle usage.

The Plan recommends trees along the boundaries of the Brush Mountain Properties be emblazoned with a 3” x 5” vertical “Blacksburg Blue” painted rectangle approximately every 25 linear feet along the boundary. In addition, the Plan recommends “No Hunting and No Motorized Use” signage be installed at regular intervals and/or near private property trails/roadbeds that encroach on the Brush Mountain Properties.
3.0 PROJECT AREA AND EXISTING CONDITIONS

Resource Locations and Existing Conditions

The south face of Brush Mountain is generally a rough and steep forested landscape with numerous steep drainages a few intermittent or ephemeral streams. Historic mining and logging activities in the lower-elevation areas of Brush Mountain have led to some changes in the landscape including roadbeds, former mine entrances or prospecting excavations, and a few small tailings and/or overburden areas. While these activities have modified the terrain in some areas, the south face of Brush Mountain remains primarily a natural, forested landscape.

The elevation differential between Meadowbrook Drive and the apex of Brush Mountain is approximately 800-900 feet; the horizontal distance from Meadowbrook Road to the apex of Brush Mountain is approximately 5,000 feet. Therefore, the average gradient from the bottom of the mountain to the top of the mountain is roughly 16%. Clearly, any trail system established on the south face of Brush Mountain will have to overcome challenges presented by steep slopes, but can do so by implementing sustainable trail design.

The entrances to BMP1 and BMP2 are located along Meadowbrook Road. The two properties are approximately one-quarter–mile apart and are separated by private property.

Brush Mountain Property 1

BMP1 is a long, rectangular-shaped property running north-south that is characterized by steep slopes and drainages. It consists of three parcels totaling approximately 334 acres. With the exception of four acres within the Town of Blacksburg, BMP1 is located in Montgomery County. BMP1 is bounded by private property to the east and to the west. BMP1 is directly accessed from Meadowbrook Road; however, it can also be accessed from Glade Road and via the GWJNF. BMP1 is approximately ½ a mile from the Town’s Heritage Park and Natural Area (Heritage Park) which is the terminus for the popular Huckleberry Trail greenway that runs between the towns of Blacksburg and Christiansburg. BMP1 extends beyond the apex of Brush Mountain and contains significant acreage on the north face or Brush Mountain.

The Town recently purchased a parcel (approximately one acre) at the intersection of Meadowbrook Road and Glade Road. The Town plans to develop this parcel as a gravel parking lot for users to have direct access to the proposed BMP1 trailhead.

BMP1 is completely forested and contains one, natural-surface roadbed approximately 10 feet wide that climbs from Meadowbrook Road to the apex of Brush Mountain. The roadbed is 1.7 miles long and is located near the eastern property boundary. A portion of roadbed approximately 0.2 miles long
also connects to Glade Road. The roadbed is easily traveled by foot, mountain bike, on horseback, or if need be, by 4WD vehicle. BMP1 extends beyond the apex of Brush Mountain approximately 0.4 miles north and contains a significant amount of existing trail locally known as “Beauty” and “Holiday” which run from the top of Brush Mountain to Poverty Creek.

**Brush Mountain Property 2**

BMP2 is an irregular-shaped property BMP2 consists of 218 acres and is located entirely within the Town of Blacksburg. BMP2 is directly accessed from Meadowbrook Road approximately ½ mile west of the lower Heritage Park parking area; however it can also be accessed from the National Forest along its northern and eastern boundaries.

BMP2 is almost completely forested excluding approximately one or two acres of cleared land. BMP2 has one, natural-surface roadbed (~0.4 miles long) that steeply climbs from Meadowbrook Road approximately one-quarter up Brush Mountain. The roadbed terminates at a clearing. There are several old paths and trails that exist on BMP2, some of which cross property boundaries into the National Forest. Further north on the property is an area of outcropped rocks and boulders that are considered an asset from the perspective of building interesting and challenging trails.
4.0 TRAIL SYSTEM DESIGN

If the guiding philosophy of this Concept Plan is sustainability, then the doctrine for the design and construction of trails within the Brush Mountain properties is “Get the Water Off the Trail.” Staying true to this doctrine will ensure the creation and longevity of natural-surface trails that are erosion resistant. The International Mountain Biking Association’s (IMBA) Five Essential Elements of Sustainable Trails are:

1) The Half-Rule: a trail’s grade should not exceed half the grade of the hillside or sideslope the trail traverses.
2) 10% Average Guideline: an average grade of 10% or less is the most sustainable.
3) Maximum Sustainable Grades: for steeper sections of trail to be sustainable, consider the following: soil type, rock, grade reversals, types of users, difficulty level, and enhanced drainage features.
4) Grade reversals: no matter how shallow the grade, incorporate grade reversals to promote water to drain off of the trail as soon as possible.
5) Outslope: trail tread should be outsloped as often as possible to promote the drainage of water off of the trail surface.

Proposed Trail Alignment Descriptions

The Brush Mountain properties are separated by private property; therefore, there is no direct connectivity proposed between the two properties at this time. Any connection between the two properties will be limited to Meadowbrook Road (or future Huckleberry Trail) and connections made on existing or future trails located within the adjoining National Forest and Poverty Creek Trail System. As such, proposed trail networks and alignments will be described for each property.

Brush Mountain Property 1

BMP1 contains an existing trail (i.e., the existing roadbed) and four new proposed trails. Colors associated with each new trail reference the color of the flagging used to mark the proposed alignments. Each trail is described as follows:

- **Trail 1**: This existing roadbed is the hub trail of BMP1. It begins at the entrance to the property at Meadowbrook Road and, after a ¼-mile flat section, climbs Brush Mountain to its apex where it intersects the existing Brush Mountain roadbed that traverses the ridgeline. Trail 1 is approximately 1.7 miles long, 10 feet wide, and has a relatively smooth surface that can be traveled easily. It has occasional sections that exceed 10% grade that will require maintenance to prevent erosion. Trail 1 provides users access to Trails 2, 3, and 4.
- **Trail 2 (Blue Trail)**: Trail 2 is a horeshoe-shaped loop trail accessed from Trail 1 almost immediately after entering BMP1 from Meadowbrook Road. Trail 2 places users upon the 12-acre tract portion of BMP1 and meanders through gently-sloped terrain for approximately 0.5 miles before returning to Trail 1 further up from the start of Trail 2. The alignment of Trail 2 is constrained by property boundaries and historical, man-made changes to the land. Trail 2 is the most accessible trail from Trail 1 and is also the shortest and requires the least amount of effort.

- **Trail 3 (Red Trail)**: Trail 3 is accessed from Trail 1 halfway between the end of Trail 2 and the switchback of Trail 1. Trail 3 climbs a short, steep section of Brush Mountain where it crosses the roadbed where it meanders and switchbacks up Brush Mountain for approximately 0.5 miles at a gentle grade to an intersection with a short connector that allows users to return to Trail 1 or to begin Trail 4.

- **Trail 4 (Orange Trail)**: Trail 4 begins near the end of Trail 3 just below the old cabin and begins to traverse steeper slopes of Brush Mountain. Trail 4 is approximately 0.7 miles long and is only slightly more challenging than Trail 3. Trail 4 ends at an intersection with Trail 5 and a ~500-foot connector trail that returns users to Trail 1 approximately halfway up the mountain. This connector trail offers views to the south and to the northwest.

- **Trail 5 (Green Trail)**: Trail 5 begins at the intersection of Trail 4 and the connector trails to Trail 1. It is approximately 1.2 miles long. Trail 5 traverses steep slopes and rugged terrain until it just below the ridge of Brush Mountain at the top of Trail 1. Overall, Trail 5 is the steepest trail on BMP1 but maintains an overall grade of less than 10%. Trail 5 feels quite remote in several areas and offers users several interesting views and perspectives.

<table>
<thead>
<tr>
<th>Trail ID</th>
<th>Flag Color</th>
<th>Length (mi.)</th>
<th>Tread Width (feet)</th>
<th>Construction Complexity Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trail 1</td>
<td>None</td>
<td>1.7</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>(Existing Roadbed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trail 2</td>
<td>Blue</td>
<td>0.5</td>
<td>3 to 4</td>
<td>1</td>
</tr>
<tr>
<td>Trail 3</td>
<td>Red</td>
<td>0.7</td>
<td>3 to 4</td>
<td>1</td>
</tr>
<tr>
<td>Trail 4</td>
<td>Orange</td>
<td>0.6</td>
<td>2 to 3</td>
<td>2</td>
</tr>
<tr>
<td>Trail 5</td>
<td>Green</td>
<td>1.1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Notes**: Construction Complexity Factor refers to the difficulty to construct the trail. The greater the number, the more difficult to construct the trail. Difficulty increases with distance from trailhead and hub trails; and increases with the steepness of the terrain. In this case, both distance and steepness are related.
Though Trails 3, 4, and 5 are described as separate trails, the three trails can be connected by users to create a continuous, top-to-bottom, singletrack experience approximately 2.5 miles long.

![Figure 3. – Brush Mountain Property 1 Proposed Trail Alignments](image-url)
Brush Mountain Property 2

BMP2 contains an existing roadbed and proposes 11 new multi-use, singletrack trails. The trails will be constructed with varied tread construction that includes intentional grade changes, features, challenges, and obstacles (e.g. rocks, boulders, logs, inclines/declines, etc).

Each of the trails is described as follows:

- **Trail 1**: Multi-Use Trail to the eastern middle mountain saddle (4’ trend)
- **Trail 2**: Lower Bike Flow Trail (still multi use lots of dirt features) (4’ – 8’ trail trend)
- **Trail 3**: Upper Bike Flow Trail (still multi use lots of dirt features)
- **Trail 4**: Existing Trail on eastern middle mountain saddle
- **Trail 5**: Multi-use trail contouring across the property
- **Trail 6**: Multi-use trail contouring across the property
- **Trail 7**: Bike gravity-oriented trail (still multi-use)
- **Trail 8**: Bike gravity-oriented trail (still multi-use)
- **Trail 9**: Rocky technical trail
- **Trail 10**: Middle mountain trail contouring through GWJNF to Gateway Trail
- **Trail 11**: Lower Mountain trail contouring through GWJNF to Gateway Trail
- **Trail 12**: Existing Roadbed along creek starting from Meadowbrook up to trails

<table>
<thead>
<tr>
<th>Trail ID</th>
<th>Length (miles)</th>
<th>Tread Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.9</td>
<td>4’</td>
</tr>
<tr>
<td>2</td>
<td>0.5</td>
<td>4’ – 8’</td>
</tr>
<tr>
<td>3</td>
<td>0.4</td>
<td>4’ – 8’</td>
</tr>
<tr>
<td>4</td>
<td>0.2</td>
<td>3’</td>
</tr>
<tr>
<td>5</td>
<td>0.7</td>
<td>3’ – 4’</td>
</tr>
<tr>
<td>6</td>
<td>0.8</td>
<td>3’ – 4’</td>
</tr>
<tr>
<td>7</td>
<td>1.0</td>
<td>3’ – 5’</td>
</tr>
<tr>
<td>8</td>
<td>0.7</td>
<td>3’ – 8’</td>
</tr>
<tr>
<td>9</td>
<td>0.2</td>
<td>1’ – 3’</td>
</tr>
<tr>
<td>10</td>
<td>0.5</td>
<td>3’ – 4’</td>
</tr>
<tr>
<td>11</td>
<td>1.0</td>
<td>3’ – 4’</td>
</tr>
<tr>
<td>12 (existing roadbed)</td>
<td>0.2</td>
<td>10’</td>
</tr>
</tbody>
</table>

Table 2. – Summary of Brush Mountain Property 2 Proposed Trails
Figure 4. – Brush Mountain Property 2 Proposed Trail Alignments
5.0 PROJECT IMPLEMENTATION

Site Reconnaissance

Conceptual trail alignments have been and continue to be flagged, field-verified, and surveyed by PCTC volunteers for feasibility. The surveying of new trails will be performed in accordance with this Plan. Once trails have been flagged, distances will be measured using GPS. These design measurements will be used for purposes of permitting, cost estimates, and construction/bid documents.

Permitting

New trail construction meets the definition of a Regulated Land Disturbing Activity by the Virginia Department of Environmental Quality (DEQ); therefore, it is subject to §62.1-44.15:51 et seq. and 9VAC25-840 et seq. of the Code of Virginia and the Virginia Administrative Code.

The maintenance of existing trails and roadbeds are not considered new construction or land-disturbance. Therefore, these areas are not subject to the aforementioned erosion and sediment control or stormwater regulations, so long as the maintenance activities of these existing trails and roadbeds are completed within the strict definition of the exemption. For instance, on BMP1, a roadbed exists from Meadowbrook Road to the top of Brush Mountain where it intersects another existing roadbed. The roadbed may be maintained to improve drainage and “spot-treated” with gravel to improve the surface of portions of the roadbed; however, the roadbed itself cannot be enlarged, re-routed, or significantly altered. Similarly, BMP2 contains an existing roadbed from Meadowbrook Road to approximately one-quarter of the way up Brush Mountain and can be maintained per the exemption.

For purposes of new trail construction, regulated land disturbance permitting will be required only on portions of new trail where topsoil removal is required to create trail tread as part of “full-bench” trail construction. In contrast, portions of new trail aligned with shallow-grade slopes or existing roadbeds will not require the removal of topsoil to create a trail corridor and therefore will not be included as part of the land disturbance permitting calculation.

Construction

The NRLT and Town of Blacksburg will work with volunteer organizations for the purposes of fundraising, implementing the Concept Plan and constructing trails. Both contract labor and trail building equipment and volunteer labor will be used to construct the trails.
6.0 Brush General Recommendations

The following general recommendations can be considered as part of additional planning, design, development, implementation and management of the Brush Mountain properties.

- As the recipient to these properties, the Town should make a strong commitment to allocating funds to the project.
- Gain diverse support and funding to improve eligibility for grants.
- Work with organized volunteer groups such as the Poverty Creek Trails Coalition (PCTC) to implement design and construction of trails as soon as possible.
- Communicate a culture of sharing and cooperation.
- Provide new experiences over time – keep it interesting.
- Create a parking area at the Town-owned property at the intersection of Meadowbrook Drive and Glade Road.
- Focus on quality trails and facilities.
- BMP1: Emphasis on family and beginner experiences. BMP1 is not large enough to be a destination based just on the miles of trails. Providing unique facilities and experiences will create interest.
- BMP2: Opportunities for challenges, interesting and variable terrain, and skills practice; focus on the trail not just the setting.
- Identify long-term solutions for management and maintenance.
- Create a strong education and information program to manage expectations and prevent issues.
- Provide high quality maps to promote and inform (print, smart digital).
- Create a web page and on line map to promote and provide information.
- Spearhead connectivity issues with the National Forest and address any outstanding private property issues.
- Phased implementation – spread cost, learn lessons and build flexibility into solutions.
7.0 References