FURMAN

Trail Master Plan
For Furman University

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Executive Summary

Founded in 1826, Furman University is a leading liberal arts college located in Greenville, South Carolina. Furman features a beautiful campus of 800 acres thanks to the original design provided by New York landscape architect R.K. Webel. The campus hosts over 2,000 cultivated trees of 300 different varieties and a number of natural areas. The university also operates an 18-hole golf course that provides a large green space area connected to the more concentrated areas of development typical of college campuses.

Current trail on campus opportunities include a number of different types of trails ranging from highly developed hard surface (asphalt) greenway trails to natural surface woodland trails. Trails are used by a wide range of users, and there is also a range of different motivations for trail use by students, staff and visitors alike.

The university is determined to improve current trail conditions and look for opportunities to develop new campus trails. Furman President Dr. David Shi is leading this effort, and it is supported by many other departments, staff and faculty, and lastly students.

One exciting potential trail facility is the abandoned rail line that traverses campus and connects to downtown Greenville to the south and Traveler's Rest to the north. There is a grassroots movement to turn this rail corridor into trails and Furman is an important partner in this effort. There are also opportunities to plan, design and develop other trail facilities to better serve the needs of campus trail users.

Perhaps the trail type most lacking in the current campus inventory is sustainable natural surface trails. This type of trail experience would be a great addition to the system and would receive a high level of use if provided.

Furman University has a nationally recognized institutional commitment to sustainability and wellness. The trail system should reflect this commitment by providing for sustainable trail facilities which have little long term environmental impact and enhance the natural landscapes that they traverse. The trail system should also be inviting and easy to use, thus encouraging participation in the campus wide wellness program.

This document features recommendations to improve current trail conditions and guide the development of future trails added to the trail system. This plan will also serve as a tool to help secure funding of specific trail projects by providing needed information requested by grant administrators. Public grant funding and private corporate support expect good planning in making decisions to financially support trail projects.

This Trail Master Plan is a planning document that will discuss in a broad sense the trail system located on Furman University campus. Though some recommendations will be made in the context of this document, site specific trail designs and additional planning will be needed for any given trail project.

Document Includes:

-Trail assessment and evaluation of current trail conditions.
-Recommendations for relocations and improvements.
-Suggested guidelines/specifications for future trail development.

Furman University Trail Master Plan
Outline:

1. Trail motivations and current usage
   - -Transportation
   - -Exercise
   - -Recreation
   - -Stress reduction and campus escape
   - -Wildlife observation
   - -Connecting with the natural world
   - -Educational usage

2. Current conditions

3. Desired outcomes

4. Suggestions for current trail improvements
   - -Trail re-alignments
   - -Suggestions for trail structures in problem areas

5. Guidelines for new trail development

6. Potential on campus partners for trail projects

7. Potential off campus sponsors for trail projects

1. Trail motivations and current usage.

Understanding why people will use trails is essential for planning and designing desired outcome trail experiences. As is often the case in most public (or private) trail systems, trail users at Furman have a wide range of motivations for trail use.

The simplest motivation for trail use on campus is that of transportation; walking and bike riding from dorm to class and other on-campus attractions. Students and staff use a range of formal and informal trail facilities. Formal trail facilities include sidewalks, roadways, and short segments of formal trail. Informal trail facilities are found in the form of well worn paths developed by users traveling a consistent route that was not planned or intended in the original campus plan.

For safety reasons, efforts should be made to divide pedestrian uses from vehicular traffic on campus roadways. This can be achieved in a number of ways: better signage, providing alternative routes for pedestrians that are as direct and efficient but perhaps more appealing to foot traffic, and through a general education effort. When not feasible to divide pedestrians from vehicles, efforts should be made at calming vehicular traffic, and there are some good examples of this already in place around campus.

Where extreme impacts (compaction, displacement, erosion) are observed in social transportation pathways (informal trails), efforts should be made to harden these travel ways to protect mineral soils from continued degradation. These sections can be surfaced in stone or concrete pavers, compacted crushed stone, or wood chips.

Recreation and exercise are difficult to divide and as such we will treat them as one in the context of this trail plan. Combined they represent the second largest motivation for trail use on campus. Furman is a very active campus. There are organized forms of exercise ranging from team sports to PE classes to the resources available in the Lay Physical Activities Center. Trail use as exercise is very simple and can be undertaken by one individual, several friends or a larger group (such as a Cross-Country team or an ROTC training unit). Travel modalities observed on trails include: walking, jogging, running and biking.

Furman aggressively promotes exercise, wellness and active living. Kiosks located on the Lakeshore Trail feature a motivational message by President Dr. David Shi and free brochures entitled *Walking Trails at Furman*. The Health and Exercise Science Department sponsors a nationally recognized program titled the Furman Institute of Running and Scientific Training (FIRST). It seeks to promote running as a healthy physical activity and provides personal training programs based on scientific principles.

Furman's promotion for exercise and active living is working quite well. At any given time, many students and staff are engaged in outdoor recreation or exercise across the campus. The campus has sometimes been referred to as Furman State Park because of the open campus and the large number of people who come from surrounding communities to exercise on campus. The Lakeside Greenway trail is always full of walkers and joggers, and the natural surface trails also see steady exercise traffic.

Another motivation of trail use on campus is that of reflection, escape and stress reduction. College life can be busy and hectic for students and staff/faculty alike. The opportunity to escape the pressures of campus for brief periods of time can help to renew, refresh and regenerate one's emotional and spiritual energies. Whether it is a stroll around the lake, a peaceful "walk in the woods" or just quiet reflection in the Morgan Meditation Garden or Japanese Garden; any of these outings reduce the stress of individuals and community as a whole.

The landscape architecture of campus is stunning and the abundance of small and large flora entertains the senses. Efforts have been made to identify the variety of species of trees on campus with educational signage on trees.

Opportunities for wildlife observation and reconnecting with the natural world are abundant. Despite a high level of development on campus, there is still a rich variety of wildlife.

Perhaps the greatest example of wildlife is the waterfowl found on the lake and surrounding waterways: geese and ducks of different varieties, great blue heron, and other species can be observed. Other songbirds are present and abundant in and around campus. Small woodland mammals are also present, and chipmunks and squirrels are abundant. The stream riparian areas on campus provide for good edge habitat for a whole host of wildlife species, many of which go generally unnoted to the casual forest trail user.

There also exist a whole range of educational motivations for trail use on Furman campus. One example is the ROTC (Military Science) program which hosts events and challenges along one trail. These obstacle courses are used to build individual skills and confidence as well as team building exercises. The PEAK Performance Adventure Challenge Course sits just off the Lakeside Trail, and the tagline marketing for this program says it all: "Want to achieve top productivity and performance?"

Many other programs and departments either currently benefit or would benefit from improved trail conditions on campus by using trails, as an educational tool. A few examples include: Biology Department, Athletic Department, Earth and Environmental Sciences Department, and GIS studies. The college also offers a mountain bike program for children. During the summer this exciting program can teach many skills to kids ranging from balance and fitness to connecting with nature.

Other trail motivations could include a simple moonlit romantic walk or using a trail to find a place to take a nature nap in the woods while listening to the gurgle of moving water. Trails are important to humans for many intrinsic reasons, and all of these motivations should be celebrated and encouraged.

Great value must also be placed on a sustainable and functional trail system that meets the demands and desires of such a wide range of motivations for using trails. After all, trails add much to the quality of life for so many people using them. Good trail systems don't just happen. They are the result of good planning/design and good implementation (construction phase) and maintenance. Good trail systems involve a commitment in the form of sweat equity provided by those using and enjoying the trail system, a financial commitment to contract necessary work to achieve desired outcomes, or a combination of both.

Furman University has committed to improve its campus trails network. With better planning and design coupled with better construction, trail conditions on campus can be improved upon to enhance the user experience for all and entice others to take advantage of this special amenity.

2. Current Conditions

The inventory of trails located on Furman University offers a wide range of trail surfaces and different trail experiences for users. The most developed and therefore more formal trails come in the form of sidewalks and walkways concentrated in and around housing areas. Good examples can be found in the North Village Apartment complex. The extensive sidewalks located there connect all apartments, and central sidewalks connect the village with main campus via a flyover style bridge with Roe Ford Road underneath. These sidewalks have good landscape flow and are playful and curvilinear while still offering fairly direct and efficient routes.

South Housing complex is much more centrally located on campus and connects to the walkways and travel routes on main campus. The off campus housing areas for faculty and staff are concentrated across Duncan Chapel Road and offer no current formal trail or pedestrian routes and no safe road crossing to connect with campus.

The next category of trail facility can be described as a greenway style of trail that tend to be wide in footprint and hard surfaced with asphalt or pavement. Two grand examples are The Lake Shore Trail encircling Furman Lake and the cart path around the golf course. Both of these trails were obviously designed by landscape architects and have wonderful flow through their respective landscapes. The golf course represents the largest area of green space owned by Furman University.

The Lakeview Trail is aimed more at exercise and recreation as compared to transportation use, and therefore has a more playful feel in the design.

Furman University also has several woodland trails which are surfaced with woodchips or natural surfaced with the native soils. Most of these trails lack the thought and planning put into the hard surfaced trails on campus. Instead they tend to follow fence lines or utility corridors with little concern for sustainability or user experience. Natural surface trails following fence lines tend to travel up and down fall lines instead of following contours. Fortunately, the native soils of the area are predominantly clay based and therefore more durable and resistant to water-based erosion. These areas will, however, become more problematic over time with increased traffic and some trail relocations will be needed.

Another problem with natural surface trails occurs in floodplain areas. These flat areas located close to water course corridors received a fair bit of damage during the floods related to the tropical storms of fall 2004. These areas exhibit serious silt and some standing water sections with a tremendous amount of trail widening associated with trail users trying to avoid mucky trail conditions.

The campus has few trail structures on woodland style trails. The exception is several bridges gapping larger watercourse crossings. Bridges observed could be described as single span with utility poles as stringers and 2"x 6" treated plank decking. Handrails were present on most bridges. There was also one short bridge that was displaced during the floods. No other types of structures (steps, switchbacks or crib walls) were observed during site visits. All bridges tended to be solidly built but unsightly. One bridge in the waterline corridor trail has poor alignment and a relocation of this bridge could improve trail flow.

3. Desired Outcomes

Furman's inventory of hard surface trail opportunities seems sufficient for current need, and therefore little attention needs to be focused in this trail type. One exception would be trying to develop a braided trail network funneling from various apartment buildings and leading to a fly over bridge connecting the off campus housing across Roe Ford Road with main campus. This would help to encourage more pedestrian and bike transport from home to work on campus by providing a desirable and safe route.

The potential Rails to Trails conversion of the rail line dividing campus from the golf course presents another opportunity for providing an excellent addition to the trail inventory. This potential trail segment could be 13 miles long, connecting downtown Greenville with the hamlet town of Traveler's Rest with Furman sitting somewhere in the middle of this route. This would provide the first opportunity to connect Furman University with off-campus attractions via trail, and this connectivity makes for a very appealing project. This should be a priority project for Furman working with other interested parties, and Dr. Shi has already agreed to head up a committee to move this

project forward. It is unknown at this time whether this would be a hard surfaced (asphalt) or soft surface (compacted crushed stone) trail.

Perhaps the area of greatest need and therefore greatest potential growth would be more development and enhancement of natural surface and soft surface trails on campus. The ultimate goal would be a more extensive trail system that met the needs of users while simultaneously protecting the natural resources and landscapes that such trails would traverse.

Existing trails should be improved through relocations where needed. Some currently existing trails are salvageable in their current alignments but will need some drainage work and added structures to increase sustainability and enhance the user experience.

There are 3 focus areas that should be considered when improving current trails and designing/building new ones: sustainability, safety, and user satisfaction.

Sustainability: Trails should be developed using Best Management Practices to minimize the long term impact on the surrounding landscapes and natural resources. This may sound a bit odd given the context of a trail system located on a college campus that has such a heavily developed and altered landscape (from the native state of the land). It is, however, even more important to look at the sustainability issue as to protect the small pockets of natural landscape remaining and because there is so much impermeable surface areas that greatly effect storm water runoff erosion concerns on un-surfaced trails. Careful study of runoff patterns will need to be evaluated when calculating trail tread watersheds for any trail project.

Safety: The word risk has several meanings as it relates to trail management. The first meaning is in the relationship of the trail user to the risks involved (both perceived and real risk) of traveling in an uncontrolled environment. The second and perhaps more important meaning in trails management is the risks (incurred by land managers and private land owners) of providing access to recreational trails for a variety of uses.

Another important premise is that we cannot eliminate all risk (both definitions of the word) as it relates to trails; we can however identify them, reduce them (if desired) and create a management plan for dealing with them. A good risk management plan should be proactive instead of reactive.

User Experience: Trails should be interesting and fun to travel on and efforts should always be made to enhance the user experience. Trails should flow through their landscapes and mimic shapes found in nature. Design elements for new trails and enhancing current trails should focus on landscaping principles such as the use of anchors, gateways, and trail edge effect to enhance human interaction with the trail facility.

Almost all current natural surface trails located on campus need some level of attention to meet all three of the above objectives. There were no major safety issues observed during site visits but sustainability of most trails is lacking and aesthetics could be greatly improved.

Another desired outcome would be better marking, signage and informational kiosks for the trail system located on campus. This will serve a number of purposes including: provide better information for the current trail users, draw attention to the trail system therefore inviting more usage from folks who may not currently know about the trail facilities, and serve as a good risk management tool. Trail segments should be individually named and marked as such. This can help get better support for an "adopt a trail" type program and provide a better emergency response program by providing more detailed info and waypoints should an accident occur. Likewise, such a naming and marking system can help in a trail maintenance program by again providing more specific information about where the problem area is located.

4. Suggestions for current trail improvements
-Trail re-alignments
-Suggestions for trail structures in problem areas

Some of the natural surface trails currently in the trail system are salvageable and can be enhanced with little work. Water management prescriptions would include the use of knicks, grade dips and rolling grade dips to shed water off trail and therefore prevent future erosion. A few areas will need some form of surfacing to help reduce erosion and degradation and this prescription can be employed on an as needed basis. This technique can

be used on sections of trail that are a bit more aggressive than desired for true sustainability but not running the true fall line.

Preferred surface improvements would be a hardening technique using compacted crushed stone from a local quarry. Wood chips may also be used to protect the more erosion prone native soils and in some cases may be preferred for aesthetic reasons. Wood chips, however, can be slippery when wet, never provide as firm a surface as native soils or compacted stone, and require some maintenance in the form of the addition of more wood chips as the older material decomposes.

All trails that are located on fall lines will need to be relocated and placed more along contour. This will generally lengthen any given segment of trail. Fall line trails are very difficult to sustain due to being located in the natural water run off course and these trails erode over time with each rain. All trail relocations should follow the guidelines for new trail development presented in this master plan.

There are a number of trails on the "perimeter loop" that run along the chain link fence and therefore have a negative (prison like) feel. There are several suggestions for improving the user experience along these segments. Simply removing the fence (if determined that it is not needed) would dramatically improve aesthetics for these segments. Trail relocation would also be an option, pulling the trail away (and out of sight) from the fence line. Some of these segments would need relocation anyway, as the fence line tends to run on fall line sections of landscape. One last option would be to replace the chain link fence with a split rail or other more visually attractive fence. In many cases the fence line gives a false barrier of campus boundary lines. There is often more landscape available than the fence line indicates when looking at trail relocations or additional trail opportunities.

Adding new trail structures in many areas will help to increase the sustainability and can also enhance the user experience.
Specific suggestions include:

-Adding raised trail in the form of boardwalks and puncheons in the floodplain areas where the ROTC events are located. Wood structures raise the trail above the wet areas.

-Adding bridges to all water course crossings for ease of use and to protect the water resources.

-Using causeways, turnpikes and boardwalks on the trail located in the waterline corridor and running parallel to the main river course. An evaluation would be needed to determine the best solution along this lengthy section of trail; such an evaluation would consider cost and how well each structure would fit in the landscape. This entire length of trail lies in the floodplain and has a very wide corridor. Structures will help to define the trail within the corridor and therefore provide for a more positive experience by narrowing the trail tread to the minimum needed width. This will give a "single track" feeling despite such a wide corridor.

-On shorter sections of steep trail consider armoring the tread with stone or concrete block pavers. Another option would be surfacing with compacted crushed stone. This solution will only work on short sections of trail; longer sections of steep trail will need relocation.

-Steps are an option for dealing with short sections of steep trail and can take a number of different forms ranging from simple log riser steps to a more formal "porch like" step using dimensional lumber. Steps are not suitable for trails that include bikes as a user group; armoring would be preferred if bikes are in the trail use mix.

5. Guidelines for new trail development

There are a number of guidelines or Best Management Practices (BMP) to consider when planning, design and building new trails on Furman campus. Efforts should also be made to upgrade existing trails to better reflect these presented guidelines. The desired new trail should be rolling contour in nature and be bench cut into the side-hill. Additional guidelines include:

1. The ½ guideline. Trail grades should never exceed ½ of the prevailing sideslope in order to shed water off trail with maximum frequency. This is extremely important in gently sloping area which encompasses most of the landscape surrounding Furman.

2. Trails should have an overall average grade of 10%. This should be very easy to attain on campus as there are no significant elevations to gain or loose within the trail system. Using the 10% grade as a guideline allows for undulations in the trail tread (grade reversals) while minimizing user impacts. Clay based soils found on Furman campus are very durable and as such grades can be less conservative (as compared with sandy soils) but using the ½ and 10% average guidelines are always advised.

3. Outslope of 5-8%. Outslope is what allows for cross drainage carrying water from above the trail landscape (or rain that falls directly on the trail from the sky) to below the trail. Effective outslope will add significant durability to the trail tread by keeping water moving across the trail facility in sheet flow and never allowing water to focus.

4. Frequent grade reversals. Grade reversals are up and down undulations designed and built into the trail to shed water. Should a trail lose its outslope over time, grade reversals will shed water to the low side of the trail. In this way, grade reversals serve as trail sustainability insurance.

5. Corridor clearing limits. Generally, the corridor should be opened (cut back) to one and half or two times the width of the trail tread (6-8'). This will allow for better visibility to reduce surprise encounters from other trail users and prevent constant trimming back as vegetation grows. Frequent choke points are, however, recommended that are the exact width of the trail tread. Choke points or gateways are defined as two landscape objects that the trail passes through. These help to control mountain bike speed on shared use trails and provide for a more intimate trail experience. The trail ceiling height should generally be 10' but some vertical gateways of 8' could be incorporated and provide for a tunnel effect trail experience.

6. Tread width. Because of the expected high level of use and shared use nature of the trails on Furman campus, a suggested tread width of 36"-48" is recommended. The width of each trail can and should vary somewhat to give a more natural feel.

New trails can be machine cut or hand built following the above guidelines. One suggestion for greater efficiency while maintaining "buy in" from the local trail community is to consider hybrid contracting. Hybrid contracts generally utilize trail contractors for the design and skilled portions (such as bench cutting with trail machines) of any job while using volunteer labor for

aspects of the job that require less skill such as corridor clearing or finish landscaping work.

In addition to the above sustainability guidelines, design emphasis of new trails should include landscape features such as trail anchors and gateways to add interest to each new trail segment.

Trail anchors are defined as landscape objects located close to the trail tread that tend to focus the attention of the trail user. The more the feature attracts and holds one attention, the stronger it serves as an anchor.

Trail gateways are when 2 or more anchors form a passage way between the landscape objects. Gateways create a sense of passage, suggesting that the trail is unfolding itself for further exploration. Gateways are also important to serve as choke points or corral points that keep trail users located where trail designers intended and to help control speed on multi or shared use trails.

As is the case with recommendations for existing trails, new trails may also require some structures for sustainability, safety and to enhance the user experience. This will be especially true in flat areas where drainage will be a concern. It is always tempting (due to ease of construction) to route new trails through areas with little or no sideslope or elevation change. This is always a recipe for problems as these areas will not drain and as such will become problems in due time. It is far better to "do it right" during initial construction and build the structures needed to insure the longevity of the trail and make sure the trail facility is one that will be used and enjoyed.

7. Potential on campus partners for trail projects

Developing a sustainable and user friendly trail system requires a tremendous amount of work. Any given trail segment or individual project is certainly manageable, but a complete trail system with many trails and good trail structures is a formidable task. That is why it is important to always identify potential partners for such an undertaking.

Partners can come in a variety of forms and potential contributions. Financial support is always welcomed to help pay for materials or contract

labor. Opportunities for fund raising partners and programs are limited only by imagination of those departments and organizations on campus that would benefit from an improved trail system.

Perhaps a greater potential contribution for trail improvements coming from on campus would be in the form of sweat equity. There are certainly many departments, campus organizations and individuals who might provide an "army" of volunteers to get projects completed. Such a volunteer labor pool will of course need good design, direction and management, but such a program in trail building projects could also serve as a great team building exercise.

Academic departments at Furman should certainly be seen as potential partners for trail projects and the trail system can provide a great opportunity for learning and an effective outdoor classroom. Each and every department should be looked upon to find potential mutual benefit from an improved trail system and when matches are found these departments should be called upon for help and support.

A few obvious examples would include:

-Biology Department: Trails are routed through natural areas that are rich with biological diversity. Using trails as a means of transportation into the wooded areas on campus to study biological processes should be seen as a wonderful opportunity. The Biology Department (with students and staff alike) should also be tapped to help identify and mark flora and fauna located along woodland trails on campus. Such passive education of all trail users can serve as a vital link to creating conservation minded individuals.

-Earth and Environmental Sciences: Similar to the Biology Dept, this department should be seen as a strong partner in the development of a diverse and sustainable trail system. The GIS Studies group served as a valuable resource for producing maps and aerial photos going into this trail plan, and such efforts should continue by providing new and updated maps making it easier for trail users to understand the trail system as it changes and develops. Other Environmental Studies have an interest in the trail system to help teach and learn more about ecosystems and the relationship of humans to such natural processes. There are many opportunities for student projects related to the trail system.

-Military Sciences: The ROTC program at Furman has a strong interest in the trail system in that many skill and challenge events are located along the trail network. These events are aimed at building skills and increasing strength and fitness levels of participants and the trail network is important to connect these events. Additionally, the trails themselves serve as a good venue for building fitness and working as a team during platoon marches and runs. Likewise, building new trail and maintaining existing trail is great exercise and the profile of an ROTC student is perfect for trail volunteerism (fit, motivated and not afraid to get dirty).

-Health and Exercise Science Department: This department offers tests and training for students and staff/faculty in the form of exercise prescriptions and programs. It is well known that walking and running on natural surface trails is easier on one's body (joints, bones and muscles), and as such a diverse trail system should be seen by this department as an important facility to enhance their offerings. Specific research studies and tests could include trail usage as an important aspect. One example is a study from UNC in which the causes of obesity were examined and access to trails and safe places to exercise was the leading indicator.

There are also opportunities for involvement of campus social/service organizations and special interest clubs. These organizations can provide a great labor force for individual trail projects and some sort of a formal recognition program would ensure ongoing contributions.

These are only a few examples and this list could be developed with a much wider view point by someone who knows all the departments, tracts of curriculum and organizations located on campus. The primary point in the context of this document is open the train of thought that on campus partners exist and should be an important part of trail development/improvement and management program.

8. Potential off campus sponsors for trail projects

Looking off campus for support of trail development and improvement should also be important in that the trail system at Furman University is used and enjoyed by many coming from off campus with no affiliation to Furman. The Furman campus is looked at by many in the greater Greenville area as the closest large green space convenient for outdoor

recreation and exercise opportunities. Furman is being used as a state park-like facility.

Improvements to the trail system at Furman will have a positive and far reaching effect that will improve the quality of life of many, on and off campus alike. Because of this, seeking support from off campus only makes sense and there are great opportunities for such support.

Because of the open campus and extensive use by off-campus users, Furman can qualify for a number of grants administered by SC Parks, Recreation and Tourism (SC-PRT). Please use the following link for more info on grant opportunities: http://www.discoversouthcarolina.com/agency/grants.asp

Of particular interest are the Recreational Trails Program grants that are specifically for the development and improvement of public (and private) trail facilities. RTP is a federally funded grant program requiring a 20% local match (volunteer labor can used as a match) with a minimum amount of $10,000 and a maximum amount of $100,000 in any given grant cycle.

There are other foundation grants available that focus on environmental projects, wellness projects, or quality of life in the greater Greenville area.

In addition to public and private foundation grants, corporate sponsors should be sought for support of specific trail projects. There are many large corporations with offices or retail locations located in Greenville County and several of these are community minded and often looking for community projects to support. As such they should be viewed as targets for donations of money and volunteer labor for trail projects. Examples include: BMW, Michelin, BiLo Foods and Lowe's Home Improvement. There are also many smaller local businesses that could serve as sponsors for small projects, particularly those business that stand the greatest from significant trail improvements. Examples here would include local bike shops, outdoor shops and running shops. Specific targets to seek funding help from include: Sunshine Bike Shop, Sunrift Outfitters, Half Moon Outfitters, and Fleet Feet Sports.

Furman has some good experience in gaining support from local businesses and perhaps the greatest example observed would be the use of individual hole sponsors on the Furman Golf Course.

Furman University is also successful at raising money for different on campus capital needs though alumni sources. This potential source of funding should not be over looked and could prove to be very important and successful for small trail projects.

Conclusion

There exists a great opportunity to improve conditions and expand trail opportunities located on Furman University. This will require a coordinated effort with support (financial support and volunteer labor) coming from many different sources on and off campus alike. The benefits of such improvements are great and many people would enjoy and use such a diverse trail system.

This Trail Master Plan is intended to serve as a guide in this process of planning and developing new trails to add to the trail system and to solve problems on existing trails. It is also intended to serve as a tool to find support for trail improvements. It is not however a substitute for on site planning and design of any given trail segment. To the contrary, additional planning and design will be required before undertaking specific trail projects.

Though volunteers may be capable of providing a good work force for trail work, this should not been seen as a substitute for needed professional help in the design and planning stage for trail projects.

The size (acreage) and diversity of landscapes owned by Furman University could certainly support a wonderful natural surface trail system. A combination of new trail development, relocations of the most problematic sections of current trail, and good maintenance with some needed structures to sections that are salvageable should produce a desired outcome trail system.

The results of such effort will be a more extensive trail system (than currently exists) that has great diversity and is fun and exciting to use by a range of different users with a range of different motivations. Additionally, an emphasis on sustainability will ensure minimal long term impacts on the surrounding landscape and prevent the need for constant care and maintenance.

Acknowledgements

Many faculty and staff members were consulted during the research phase of this master plan. On each of these occasions, these folks were extremely helpful in giving good information and ideas but more importantly they were very excited about the possibility of an improved trail system at Furman University. This great energy and enthusiasm is a tremendous asset and these folks should certainly be seen as resources moving forward.

Certainly, at the top of this acknowledgement list would be Dr. David Shi. His vision and leadership will produce a groundswell of support for trail projects and he is as likely as anyone on campus to use the improved trail system but also roll up his shirtsleeves and get dirty working on trail projects. Thank you David!

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Judy Rogers from the President's office.
Judy was diligent at scheduling meetings and serving as a great liaison.

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Bill is an avid trail runner and as such very interested in any process that improves trail conditions.

Bill Price- ROTC Department
Bill sat in a meeting and was helpful by giving the ROTC perspective. The ROTC program on campus could serve as a great labor pool for volunteer trail work and Bill can certainly "rally the troops".

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Julian can certainly be a great asset and has done wonderful research in the area of outdoor recreation facilities.

Randy Eggenspiller- Director of Planning and Landscape Management
Despite being fairly new at Furman, Randy was great help and certainly is a wonderful resource for moving forward the ideas presented in this trail plan.

Suresh Muthukrishnan- GIS/Environmental Sciences Department
Suresh provided a great aerial photograph of campus and maps of the current trail system. These proved invaluable in learning campus and looking for new trail opportunities.

References and Resources

Trails Primer- A glossary of Trails, Greenways and Outdoor Recreation Terms Compiled by Jim Schmid -SC State Trails Program 2001

Trail Solutions- IMBA's Guide to Building Sweet Singletrack International Mountain Bicycling Association 2004

Natural Surface Trails by Design- Physical and Human Design Essentials of Sustainable, Enjoyable Trails Troy Scott Parker- Natureshape LLC 2004

Wetland Trail Design and Construction Robert Stienholz and Brian Vachowski – USFS 2001