Knox/Blount Regional Greenway Master Plan for Maryville, Alcoa, and Blount County, Phase One

BWSC Barge Waggoner Sumner & Cannon, Inc.

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Knox / Blount Regional Greenway Master Plan
For Maryville, Alcoa, and Blount County – Phase One

Introduction

Blount County and the Cities of Alcoa and Maryville have been leaders in greenway and trail development, not only in Tennessee, but in the United States. Before the term "greenway" was ever coined, leaders in Blount County dreamed of a continuous trail for pedestrians and bicyclists along the floodplains of Pistol Creek which would physically and symbolically link the cities of Alcoa and Maryville. Today, Alcoa and Maryville have extensive greenway networks in place that connect and greatly enhance the character of their communities.

In July of 2009, Barge Waggoner, Sumner and Cannon, Inc. (BWSC) was retained to prepare a Greenway Master Plan for a specific area of Blount County and the Cities of Alcoa and Maryville to further expand this existing greenway system. The purpose of this report is to document the process that was used to provide a proposed greenway network that will connect the Knox County greenway to the extensive greenway networks in Alcoa and Maryville, as well as the Heritage High School area. The Knox County greenway system is not complete, however the southern terminus of the greenway has been constructed across the Knox / Blount County line, along and underneath the bridge crossing the Little River, thus providing a point of connection. This proposed greenway system is a major component of the ultimate plan to provide a pedestrian connection from Knoxville to Alcoa\Maryville to Townsend and eventually to the Great Smoky Mountains National Park. This study is limited to a specific area of Blount County, and is not considered to be comprehensive from a County or regional perspective.

For the purpose of this plan, greenways are defined as linear corridors of land along waterways, ridgelines and railroad, road or utility corridors used for or converted to recreation and active transportation purposes. These greenways usually contain hard surfaced (paved) trails that serve multiple users: walkers; runners; bicyclists; skaters, hikers; and horse riders, depending on the use regulations of the managing agency.

Benefits and Opportunities of Greenways

There are many benefits of greenways; this section provides a brief summary of some of them.

Connections

Greenway systems are typically designed to provide linear connections to important nodes. Neighborhood to neighborhood, neighborhood to park, park to park, park to school, etc. These connections allow for increased interaction among community residents and provide safe ways for children and adults to access community assets.

Improved health of our citizens

The federal Centers for Disease Control has reported that the majority of Tennesseeans are overweight and almost 1/3 engage in no physical activity. Simply walking on a greenway can begin to alter these statistics. The availability of close to home greenway connections will encourage more Blount Countians to get outdoors and get engaged in physical activity.

Economic growth

National studies have shown that communities with extensive greenway and trail networks provide a more attractive place for existing businesses to make new investments. Quality of life is one of the major site selection decision criteria for new businesses to locate in a community. Greenways provide an enhancement of quality of life that makes a community more attractive to business and industry.

Enhanced property values

Study after study across the United States has shown that residential properties in particular realize positive gains in property values when they are along or are in close proximity to a greenway. Newly developed residential communities which have access to greenways tend to sell more quickly and at higher prices than those which are not.

Environmental conservation

Greenways preserve linear corridors of space, many times along streams. These corridors filter runoff, preserve vegetation and provide for wildlife habitat and corridors for their movement.

Safe recreation

Crime statistics across the country evidence the fact that the incidence of crime on greenways is most often less than that in surrounding neighborhoods. As greenway use increases, the safety of the trail increases.

Alternative forms of transportation

Greenways provide opportunities for alternative modes of transportation from home to school, work and public facilities. This reduces traffic congestion and pollution.

Master Planning Process

The planning process consisted of four basic components:

1. An inventory and analysis of the existing natural and cultural features of the area
2. Preparation of alternative concept plans
3. Public meetings to obtain community input
4. Preparation of a final greenway master plan, to include:
    a. Documentation of the master planning process
    b. A description of the master plan
    c. A rough order of magnitude cost estimate
    d. A set of standard greenway construction details and standards in order to meet grant funding agency requirements.

Inventory and Analysis of Existing Natural and Cultural Features

The physical boundaries of the study area consist of S.R. 115/US 129 (Alcoa Highway) to the west, the Little River to the east, and Lamar Alexander Parkway to the South. The northern boundary is the terminus of the Knox County greenway, which is located at the Knox / Blount County boundary. The trail extends across the Little River, and then eastward under the S.R. 115/US 129 (Alcoa Highway) bridge.

The first step in the inventory phase was to obtain maps and aerial photos of the project area as well as previous planning studies conducted by local agencies. A field survey was then conducted. The field survey entailed reviewing the potential routes of the trail in the field by vehicle and/or where possible on foot to determine the conceptual feasibility of a potential trail route. Due to private property ownership issues, a complete field review of each entire route was not possible; however adequate information was obtained to perform the inventory.

After field information was obtained, a top level analysis of natural and cultural features, transportation resources, and existing and future connection points was performed. This analysis determined which areas of features could provide opportunities or constraints to development of a greenway system and amenities. Identification of these opportunities and constraints guides the design of the greenway master plan by acknowledging those

elements that could influence, either positively or negatively, the routing and design of the system in its preliminary stages.

- Opportunities
    1. Available public land
       Properties that are owned by governments, public utilities, etc., are often desirable, especially if their location is in close proximity to a greenway system. Schools, parks and existing greenways provide highly desirable destinations for future greenways, and, along with other public areas such as utility rights of way and other government facilities, normally do not require acquisition negotiation or access easements. Examples of public lands providing opportunities for greenway development include:
        a. TVA properties
        b. Maryville's Wastewater Treatment Plant
        c. UT agriculture research facility
        d. Clayton Greenway
        e. Pellissippi Place
        f. Alcoa Elementary School
        g. Springbrook Park
        h. Greenbelt Park
        i. Rockford Elementary School
        j. New Eagleton Elementary School
        k. Heritage High School

    2. Pellissippi Parkway, Lamar Alexander Parkway and Proposed S.R. 115/US 129 Bypass (Alcoa Highway Relocation)
       Although vehicular corridors are not the first choice for pedestrian or bicycle use, those with adequate right of way width can provide opportunities for pedestrian and bike circulation when other physical constraints prohibit consideration of other, possibly more desirable locations from a user experience perspective. Though technically not a greenway, if adequate road shoulder width is present, a pedestrian path can be located inside the right of way of these parkways in a safe and aesthetic manner that can provide an important link in the greenway system. Also considered a constraint, Proposed S.R. 115/US129 Bypass (Alcoa Highway Relocation) can become an opportunity to greenway development if future TDOT planning for this road provides for parallel bike \ pedestrian facilities inside the right of way. The same can be said for the future extension of Pellissippi Parkway. Also, S.R. 115/US 129 (Alcoa Highway), while currently considered a constraint, can become suitable for greenway development as this corridor is redeveloped with limited curb cuts and expanded bike \ pedestrian facilities. This could provide key connections to existing and future adjacent recreational trails.

3. Little River Corridor
   The Little River serves as the eastern boundary of the study area and provides an excellent opportunity for greenway development. This slow flowing river has many banks that are gentle enough to allow for the greenway to be located along the river. Tree cover is present along most of the river providing shade and visual buffers. A greenway along the Little River would provide excellent opportunities for environmental education, for conservation of the environment and would provide an excellent user experience. With little public land available along most of the river, the acquisition of easements from private landowners would be necessary.

- Constraints
  1. S.R. 115/US 129 (Alcoa Highway), CSX Railroad, and Proposed S.R. 115/US 129 Bypass (Alcoa Highway Relocation)
     These man-made constraints may prohibit the development of a trail system due to their strict access requirements for pedestrians as well as vehicles. Further, crossing them can be dangerous, and very cost prohibitive, often times requiring overpasses or underpasses.

  2. Steep topography and rock outcroppings
     Steep grades can sometimes constrain design and construction of trails to the point where rerouting is more prudent than expending funds on large volumes of earthwork and/or construction of expensive retaining walls. For the same reason, rock outcroppings should be avoided, however they can be a visual amenity to a greenway when located in close proximity.

  3. Floodplain and wetlands
     Although developing a greenway along a water body such as a river or creek is most often highly desirable, the design approach can be significantly constrained by accompanying floodplain issues. Designers must take into account the hydraulics of the water body, and what impact the greenway may have on stream flow and upstream flooding. Also crossing water bodies can be expensive and also contribute to flow \ flooding problems. Wetlands should be avoided altogether, if possible. However, they can also be considered a visual amenity, as well as an educational opportunity with proper trail location and informative signage.

Determination of Potential Greenway Corridors

Upon completion of the area inventory and analysis, the following three potential corridors were determined suitable to be studied in greater detail (see figure 1.0). All three routes begin at the southern terminus of the Knox County Greenway, proceed briefly inside the right of way of S.R. 115/US 129 (Alcoa Highway), then along the western bank of the Little River to a point near the Clayton Greenway at Williams Mill. At this location, the three Alternate routes proceed in different directions before they arrive at the Heritage High School.

- Route A connects to Clayton Greenway and to Pellissippi Place. It then extends over to Alcoa Elementary School and Springbrook Park, which is a part of the Alcoa greenway network. It then travels Maryville's "Greenbelt Park" via the Alcoa and Maryville connection. Then from "Greenbelt Park', the trail makes its way along Lamar Alexander Parkway to the Heritage High School.

- Route B extends through Pellissippi Place, and proceeds along the future extension of Pellissippi Parkway to Lamar Alexander Parkway, where it would turn and proceed eastward to Heritage High School.

- Route C continues generally along the western bank of the Little River to a point where it leaves the river and extends southward to Heritage High School.

Public Input (Public Meeting and Internet Survey)

The preparation of the Master Plan utilized an open planning process to gain public input and consensus on the results. A public participation meeting was held on October 8, 2009 to present the master planning process, benefits and opportunities of greenways, the site inventory and analysis, and to obtain input from the public on the three potential greenway routes. A copy of the Powerpoint presentation made at the meeting can be found in Appendix A. The meeting was very well attended by approximately 35 persons. The audience was very engaged and enthusiastic in providing their input concerning the expansion of the greenways system.

In general, the following feedback was provided during the meeting:

- Route A was preferred by most responders because it would create an immediate, direct connection between Alcoa\Maryville and Knoxville. It would also be the best option for the area economically, and would cost less to construct because much of the network is already in place.

Knox/Blount Regional Greenway Master Plan
(Alcoa / Maryville / Blount County)
Phase I
Alternate Routes Plan

End of Knox County Greenway Trail

UT RESEARCH

GOLF COURSE

PELLISSIPPI PARKWAY

AIRPORT HIGHWAY

RAILROAD

BY PASS

129

PROPOSED

Clayton Greenway at Williams Mill

Pellissippi Place

LITTLE RIVER

FUTURE PELLISSIPPI PARKWAY EXTENSION

Heritage Schools & Future Greenway Connection to GSMNP

ROCKY BLUFF

LAMAR ALEXANDER PARKWAY

Rockford Elementary School

New Eagleton Elementary School

Eagleton Middle School

Eagleton Park

Springbrook Park

Alcoa High School

Alcoa Elementary School

Springbrook Pool & Duck Pond

Alcoa Middle School

Martin Luther King Jr. Community Center/Hall Park

Everett Alternative School

Everett Park

Oldfield Mini Park

Bassell Courts

John Sevier Elementary School

John Sevier Park

Seventh Day Adventist

Amerine Park

Heritage High School

Heritage Middle School

REGAL DR

CUSICK RD

WILLIAMS MILL RD

PELLISSIPPI PKWY

E HUNT RD

OLD NOYES LN

MILLS ST

MCARTHUR RD

BROADWAY AV

E BESSEMER ST

W BESSEMER ST

N WRIGHT RD

E LINCOLN RD

E BROADWAY AV

BROWN SCHOOL RD

DAVIS FORD RD

COULTER RD

SEVIERVILLE RD

EVERETT AV (PROPOSED)

S DOGWOOD DR

CHEROKEE ST

N HALL RD

ALUMINUM AV

S CALDERWOOD ST

COMMON AV

HOME AV

FOCH ST

W BROADWAY AV

ST 129 BYPASS

Greenway Study Area
Greenway Active
Greenway Proposed
Maryville College Property
Tennessee Valley Authority Property
United States of America Property
University of Tennessee
Alcoa City Property
Blount County Property
Maryville City Property
Parks
Schools
Govt Facility
Major Roads
BlountCenterline
Streams
Lakes & Ponds
parcels
Alcoa City Limits
Maryville City Limits
Rockford City Limits
Blount County
Railroad
Existing Connection Point
Airport
Route A
Route B
Route C

Scale: NTS

N W E S

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- Route C, although the most expensive and ambitious from an easement acquisition standpoint, has the potential to bring national prominence to the area.

- Route B was generally the least desirable route, due to its location along a four lane parkway with high traffic volumes.

- Pellissippi Place was considered an asset to the area, and could serve as a hub for future pedestrian circulation in the area.

- Many participants were concerned about the possibility of crime on greenways, although studies suggest that this in fact should not be a concern.

- Preservation of farmland, and the rural character of the area was emphasized.

- Some participants expressed concerns about land acquisition\condemnation procedures for trail segments that cross private land.

In general, the majority of participants in the public meeting were very supportive of the idea of a greenway system for Blount County that would provide a link in the network that could ultimately connect Knoxville, Alcoa, and Maryville with the GSMNP, and further expand the existing systems of Alcoa and Maryville.

A survey link was posted on Blount County's website seeking additional comments from meeting participants and from citizens who could not attend. The results, which confirmed the general consensus of the meeting participants, are provided in Appendix B.

Final Conceptual Route

Based on the site analysis and input from the public meeting, a modified version of Route A was selected as the preferred route (see figure 2.0). The modification entailed extending the route further down the Little River to take advantage of accessible public lands with river frontage.

Another option that that was strongly supported at the public meeting and by the internet survey respondents was Route C. This route certainly warrants further consideration for long term planning efforts in the area as it would differ from Route A in terms of its function and user demographic. Route A would provide the most direct option for providing a trail connection from Knox County to Alcoa, Maryville, and Heritage High School, and would be considered more of an urban route. Route C, on the other hand, would be considered much more of a scenic route, and an actual destination in its own right. It would provide a true natural corridor along the Little River to Heritage High School and

Knox/Blount Regional Greenway Master Plan
(Alcoa / Maryville / Blount County)
Phase I
Final Concept Plan

End of Knox County Greenway Trail
UT RESEARCH
GOLF COURSE
Rockford Elementary School
PELLISSIPPI PARKWAY
AIRPORT HIGHWAY
PROPOSED BY PASS
129
CUSICK RD
REGAL DR
RAILROAD
WILLIAM MILL RD
Clayton Greenway at Williams Mill
Pellissippi Place
LITTLE RIVER
New Eagleton Elementary School
Porter Elementary School
Eagleton Middle School
Eagleton Park
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Alcoa High School
Alcoa Elementary School
Springbrook Pool & Duck Pond
Alcoa Middle School
Martin Luther King Jr. Community Center/Hall Park
Heritage Schools & Future Greenway Connection to GSMNP
Seventh Day Adventist
DAVIS FORD RD
ROCKY BLUFF
John Sevier Elementary School
John Sevier Park
Everett Alternative School
Everett Park
Oldfield Mini Park
Bassell Courts
Pellissippi State Community College
Heritage High School
Heritage Middle School
Amerine Park
LAMAR ALEXANDER PARKWAY
College Hill Park

Greenway Study Area
Greenway Existing
Greenway Proposed By Others
Maryville College Property
Tennessee Valley Authority Property
United States of America Property
University of Tennessee
Alcoa City Property
Blount County Property
Maryville City Property
Parks
Schools
Govt Facility
Major Roads
BlountCenterline
Streams
Lakes & Ponds
parcels
Alcoa City Limits
Maryville City Limits
Rockford City Limits
Blount County
Railroad
Existing Connection Point
Airport
Preferred Greenway Route

Scale: NTS

N W E S

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eventually to the GSMNP at build-out. Route C would begin where Route A turns south from the River towards Pellissippi Place. It would proceed, for the most part along the southern bank of the Little River for a distance of approximately nine additional miles. One main constraint to development of this corridor is the considerable number of private properties located along the river that will require easement acquisitions.

Other Stakeholders

An important aspect of the master planning process is encouraging other area communities to participate and become components of the future network. The Town of Rockford is strategically located along the Little River and within the limits of the study area, and should be included as future planning moves forward. Also, a future connection to the Town of Louisville should be provided as the greenway system extends outside of the current study area.

Rough Order of Magnitude Cost Estimate

A component of this Master Plan is a preliminary cost estimate for greenway construction. Due to the conceptual level of detail this plan provides, these cost estimates should be used for budgeting and long term planning purposes only. The costs are based on the average of recent greenway construction costs from local projects. This estimate assumes a 10′ wide asphalt trail, and does not include costs for items such as lighting, retaining walls, site furnishings, signage, landscaping, or survey\design fees. It is assumed there will be places along the proposed trail where a concrete surface will be preferred over asphalt, due to aesthetics or functional needs. However, for the purposes of this master plan, the estimate will include costs for an asphalt surface only. Recommendations for areas requiring a concrete surface should be made on a more site specific basis.

For planning purposes, the preferred trail route will require approximately 16.6 miles of new construction to connect the Knox County Greenway with the existing greenway network, and Heritage High School. Following is a rough order magnitude cost estimate of the preferred trail layout, broken down by trail segments (see figure 3). All quantities shown are approximate and are for planning purposes only. Lights are excluded from this estimate, and bridge costs assume a 10′ x 60′ prefabricated steel bridge with a lightweight concrete deck, installed on concrete abutments. Additional costs for the Route C extension are included as well.

SEG.	DESCRIPTION	QUAN	UNIT	COST	TOTAL	COMMENTS
1	**Knox County Line to Island Home Road**					
	10' Wide Asphalt Trail	5300	LF	$150.00	$795,000.00	
	Pedestrian Bridge	1	Ea	$60,000.00	$60,000.00	
	Railroad Debris Shield	1	Ea.	$10,000.00	$10,000.00	
	TOTAL SEGMENT 1				**$865,000.00**	
2	**Island Home Road to RR Crossing**					Requires trail to pass under RR track
	10' Wide Asphalt Trail	5,650	LF	$150.00	$847,500.00	
	Pedestrian Bridge	1	Ea	$60,000.00	$60,000.00	
	Railroad Debris Shield	1	Ea	$10,000.00	$10,000.00	
	TOTAL SEGMENT 2				**$917,500.00**	
3	**Railroad Crossing to Rockford Elementary**					
	10' Wide Asphalt Trail	10,600	LF	$150.00	$1,590,000.00	
	Pedestrian Bridge	2	Ea	$60,000.00	$120,000.00	
	TOTAL SEGMENT 3				**$1,710,000.00**	
4	**Rockford Elementary to Clayton Greenway**					Requires 2 road crossings
	10' Wide Asphalt Trail	20,350	LF	$150.00	$3,052,500.00	
	Pedestrian Bridge	3	Ea	$60,000.00	$180,000.00	
	TOTAL SEGMENT 4				**$3,232,500.00**	
5	**Pellissippi Place to Alcoa Elementary**					Requires 2 road crossings and 1 RR crossing
	10' Wide Asphalt Trail	14,120	LF	$150.00	$2,118,000.00	
	Pedestrian Bridge	4	Ea	$60,000.00	$240,000.00	

	TOTAL SEGMENT 5				**$2,358,000.00**	
6	**Sevierville Rd to Amerine Park**					Requires 3 road crossings and 1 RR crossing
	10' Wide Asphalt Trail	12,400	LF	$150.00	$1,860,000.00	
	TOTAL SEGMENT 6				**$1,860,000.00**	
7	**Amerine Park to Heritage High School**					
	10' Wide Asphalt Trail	19,400	LF	$150.00	$2,910,000.00	
	TOTAL SEGMENT 7				**$2,910,000.00**	
	SUBTOTAL ALL SEGMENTS	**87,820**	**LF**		**$13,853,000.00**	
	10% Contingency				**$1,385,300.00**	
	TOTAL ROUTE A				**$15,238,300.00**	
	ROUTE C ADDITION					
	10' Wide Asphalt Trail	48,000	LF	$150.00	$7,200,000.00	
	Pedestrian Bridge	6	Ea	$60,000.00	$360,000.00	
	TOTAL ROUTE C				**$7,560,000.00**	
	TOTAL ROUTES A AND C	**135,820**	**LF**		**$22,798,300.00**	

Lighting

If lighting is desired along the trail, they can be installed by the Alcoa Electric Department at an approximate cost of $23.00 per linear foot of trail. Costs for trail lighting vary and are influenced by hardware and installation choices. This cost assumes the lighting hardware and installation matches the existing trail lights in the area, and that lights are located approximately 70′ on center.

Phasing

Determining how to implement a phasing plan is an important step in obtaining the desired goals of the Master Plan. The phased development should occur in logical steps with long term results in mind (see figure 3). Issues such as available funding, construction costs, special community needs, and other future development plans in the area should be considered. Following is an attempt at a phasing schedule considering the seven segments in the above cost estimate :

Phase One

Segment 5: This first phase will connect Springbrook Elementary School to Pellissippi Place, extending Alcoa's greenway network into the center of the study area.

Phase Two

Segment 4: This link will further extend the greenway network by connecting Pellissippi Place with the Little River corridor.

Phase Three

Segments 1 and 2: This phase will begin the extension of the Knox County Greenway into Blount County and will provide a connection to the UT research facility along the Little River.

Phase Four

Segment 3: This phase will be a key link in the Master Plan as it will connect the UT research facility with Segment 4, at Rockford Elementary School. When this phase is complete, pedestrians will have an unobstructed path between Knox County and downtown Alcoa and Maryville.

Phases Five and Six

Segments 6 and 7:

This phase extends out Lamar Alexander Parkway from Maryville to Heritage High School, and will complete the Master Plan. It will also provide the foundation for the next greenway link to the Great Smoky Mountains National Park.

Greenway Design Standards

Following are general standards and recommendations for construction of greenways. It should be noted these standards are, in many cases, desirable but not mandatory.

- Trail Width

  According to AASHTO (American Association of State Highway and Transportation Officials) standards, under most conditions, the recommended paved width for a two direction shared use path is 10 feet. Under certain conditions, a width of 8' is acceptable. In addition to the trail itself, a 2 foot wide shoulder with a maximum 1:6 slope should be maintained adjacent to both sides

Knox/Blount Regional Greenway Master Plan
(Alcoa / Maryville / Blount County)
Phase I

Segment / Phasing Plan

End of Knox County Greenway Trail

UT RESEARCH

PELLISSIPPI PARKWAY

RAILROAD

GOLF COURSE

BY PASS

129

PRO POSED

AIRPORT HIGHWAY

Clayton Greenway at Williams Mill

LITTLE RIVER

Pellissippi Place

FUTURE PELLISSIPPI PARKWAY EXTENSION

Heritage Schools & Future Greenway Connection to GSMNP

ROCKY BLUFF

LAMAR ALEXANDER PARKWAY

1 2 3 3 4 5 6

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- Greenway Study Area
- Greenway Existing
- Greenway Proposed By Others
- Maryville College Property
- Tennessee Valley Authority Property
- United States of America Property
- University of Tennessee
- Alcoa City Property
- Blount County Property
- Maryville City Property
- Parks
- Schools
- Govt Facility
- Major Roads
- BlountCenterline
- Streams
- Lakes & Ponds
- parcels
- Alcoa City Limits
- Maryville City Limits
- Rockford City Limits
- Blount County
- Railroad
- Existing Connection Point
- Airport
- Segment 1
- Segment 2
- Segment 3
- Segment 4
- Segment 5
- Segment 6
- Segment 7
- 1 Construction Phase

N W E S

Scale: NTS

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of the trail. Where the trail is adjacent to water bodies, ditches or side slopes steeper than 3:1, a wider separation should be considered. In this case, a 5 foot shoulder is desirable, and a physical barrier such as a rail or fence may be necessary, depending on the height of the adjacent embankment.

- Vertical Clearance

  The vertical clearance to obstructions should be a minimum of 8 feet. However, this may need to be increased to permit passage of maintenance and emergency vehicles. In underpasses and tunnels, 10 feet of clearance should be maintained.

- Grades

  When possible, the grades, or slopes, of trails should maintain a maximum longitudinal slope of 5%. When steeper slopes are necessary, they should be kept to a minimum and perhaps should contain landings at certain intervals (see ADA Accessibility below).

  The maximum cross slope is 2%. Trails should not be crowned, but pitched in one direction to ensure positive drainage.

- Surface Materials

  Asphalt is the most common paving material for hard surface trails, although trails can also be constructed of concrete or crushed material. When using asphalt, a 2 inch thickness of asphalt over a 6 inch crushed stone base is required. In all cases, a well compacted subgrade is necessary.

  Concrete should be used in locations where the trail is frequently inundated with water, as in a floodplain. Reinforced concrete should be used in areas where the subgrade is unstable and prone to subsidence.

  Packed crushed stone, gravel fines compacted with a roller, packed soil and other natural materials bonded with synthetic materials can provide the degree of material stability and firmness that is required for ADA accessibility.

- ADA Accessibility

  All pedestrian trail projects are required to be planned and designed to comply with the "American Standard Specifications for making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped." In October of 2009, the United States Access Board published "Draft Final Accessibility Guidelines For Outdoor Developed Areas". These regulations cover campgrounds, trails,

etc. located on federal outdoor sites, but will likely eventually regulate local and state government facilities as well.

To summarize, these regulations state that no more than 30% of the total length of a trail shall have a running slope steeper than 1:12 (8%). The running slope of any segment of a trail shall not be steeper than 1:8 (12%). Where the running slope of a trail is steeper than 1:20 (5%), the maximum length of the segment shall be:

200 feet for slopes between 1:20 and 1:12;
30 feet for slopes between 1:12 and 1:10;
10 feet for slopes between 1:10 and 1:8

At the end of each segment, a resting interval shall be placed, that is a minimum of 5′ long, with a maximum slope of 1:40 if concrete, asphalt, or boards, and 1:20 if another surface.

For more information on these draft requirements, and to submit comments, go to the internet website at www.access-board.gov/outdoor/.

- Bridges

There are several factors to be considered when determining the best option when a bridge crossing is required. Functional, aesthetic, and cost considerations are among these factors. Bridges can either be built of wood, or can be pre-fabricated structures made of steel or concrete.

The aesthetic quality of bridges should be considered during the design process. Pedestrian and bicycle-traffic bridges can become a focal point to the user. The style choices include covered bridges, rustic, or any number of variations of contemporary styles.

1. The bridge should be located in a straight section instead of a bend or curve, preferably at a narrow point, to reduce cost.
2. Locate the bridge above the 100 year floodplain.
3. The interior clear span width of the bridge should be at least as wide as the approaching trail.
4. The minimum handrail height is 4.5 feet, in accordance with AASHTO standards. The top rails should be designed to discourage sitting, and a rub rail height of 3.5 feet is recommended.

- Railroad Crossings

  Railroad crossings should be planned at existing street crossings. Railroad permits for new crossings are difficult and costly to obtain. Following are basic guidelines for rail crossings.

  1. Use existing crossings where practical.
  2. Always cross at right angles to the tracks, and mark the crossing with highly visible paint or thermoplastic material.
  3. Allow a clear zone of 15 feet or more on each side of the track. Install an advance warning on the trail 250 feet prior to the crossing.
  4. Use tactile warning surfaces for the visually impaired.

  Railroad companies may have specific construction detail requirements. Check with the appropriate company early in the planning process.

- Road Crossings

  Road crossings must be carefully planned and designed, as they present the most potentially hazardous part of the trail system. There are specific requirements for signage, sight distance, pavement markings, special surface treatments, and access control that could differ for each individual crossing, depending upon the type of road to be crossed.

- Graphics and Signage

  A comprehensive signage system that utilizes universal symbols is a necessity for a greenway system. A symbol or logo should be incorporated into the signage and should convey the atmosphere of the community. The logo can be used to help expand the user population and to gain public support and community identity.

- Regulatory and Warning Signs

  The Manual on Uniform Traffic Control Devices (MUTCD), latest edition, covers most of the applications in which regulatory signs are required for greenways. In most instances, regulatory signs are used to inform the trail user of laws and regulations and to indicate the applicability of legal requirements not otherwise apparent. Additionally, regulatory signs indicate where something is mandated or where a prohibition begins or applies.

  Warning signs are used to alert trail users of potentially hazardous conditions within or adjacent to the corridor. All regulatory and warning signs should

meet the specifications of MUTCD. MUTDC does, however provide for smaller than standard highway signs when used on trails.

- Guidance and Directional Signage

  Information for trail users regarding location, orientation, location, and distance should be provided along trails. MUTCD provides guidelines for these types of signs, although customized signs can add character and continuity to the trail.

  Information signs can address specific route identification, overall trail network, and directional changes in the trail. These sign can also be used for environmental education opportunities. Mile marker designations are also helpful to the user. These types of signs can also provide recognition of local jurisdiction participation and/or corporate/private sponsorships.

  For more information on the MUTCD, and how signage applies to greenway networks, log on to their website at http://mutcd.fhwa.dot.gov.

- Landscape Design

  When selecting plant materials for use along the greenway corridor, care should be taken to select trees and shrubs that are not heavily root invasive. Plant materials should be native or naturalized, require little maintenance, and be drought tolerant. Plant selection should be dependant upon the miroclimate of the area in which it is planted. Plants that are within low-lying areas or drainage areas should be suited to wet conditions. An arborist or landscape architect should be consulted prior to selecting new plant material for the proposed trail corridor. Plant material, when properly selected and located, can have a variety of functional and aesthetic uses, as described below:

  1. Plants can block undesirable views or can be used as a sound barrier.
  2. Plants can create physical barriers.
  3. Plants blend with the natural environment.

- Tree Roots

  Existing tree roots can cause damage to trail surfaces. The root zones of significant trees should be protected during construction. In some cases, the trail may need to be field adjusted when conflict with trees occur, or a specimen tree may need to be moved or replaced. In situations where new trees are desired, they should be planted no closer than 4 feet from the trail edge.

Conclusion

This report has documented the process that was used to provide a proposed greenway network that will connect the terminus of the Knox County greenway to the greenway networks in Alcoa and Maryville, as well as Heritage High School. This plan represents the first phase of a proposed greenway system which is intended to provide a pedestrian connection from Knoxville to Alcoa\Maryville to Townsend and eventually to the Great Smoky Mountains National Park. The mission of this plan, and the process leading up to it, is to provide long term guidance to Blount County, and the cities of Alcoa and Maryville for greenway construction as funding becomes available to these communities.

As noted earlier, this study covered only a specific area of the County. Other important greenway links requiring study within the County are Heritage High School to Townsend, and the existing greenway network to the McGee Tyson Airport and Louisville.

In order for this Master Plan to be effective in the future, it must be considered by TDOT during their roadway planning and construction operations. Formal approvals from the appropriate governing bodies such as planning commissions or parks and recreation boards should occur. Which bodies formally approve the plan should be coordinated by Blount County and the Cities of Maryville and Alcoa.

APPENDIX A

Blount County Greenways Master Plan
Public Input Meeting – October 8, 2009

BWSC Barge Waggoner Sumner & Cannon, Inc.

Image Courtesy of Google Earth

Presentation Outline

- Introductions
- Master Planning Process
- Benefits and Opportunities of Greenways
- Background
- Site Inventory and Analysis
- Discussion of Potential Routes
- Public Input on Potential Routes

BWSC

Master Planning Process

- Inventory and Analysis
- Public Input
- Alternative Concept Plans
- Final Master Plan

BWSC

Public Input Process

- Inventory and Analysis/Public Input: Tonight
- Final Master Plan Presentation: December 2009

BWSC

Greenways

- **Greenways**, for the purpose of this plan, are linear corridors of land along waterways, ridgelines and railroad, road or utility corridors used for or converted to recreation purposes. These greenways usually contain hard surfaced (paved) trails that serve multiple users: walkers; runners; bicyclists; skaters; and hikers.

BWSC

Benefits and Opportunities of Greenways

- Improved Health of our Citizens
- Economic Growth
- Conservation
- Historic Preservation
- Safe Recreation
- Connections
- Alternative Transportation

BWSC

Examples of Economic Benefits

- **Salem, OR:** Land adjacent to a greenbelt was found to be worth about $1,200 an acre more than land only 1,000 feet away
- **Oakland, CA:** A three-mile greenbelt around Lake Merritt, near the city center, was found to add $41 million to surrounding property values
- **Front Royal, VA:** A developer who donated a 50-foot-wide, seven-mile-long easement along a popular trail sold all 50 parcels bordering the trail in only four months

BWSC

Examples of Economic Benefits

- **Seattle, WA:** Homes bordering the 12-mile Burke Gilman trail sold for 6 percent more than other houses of comparable size
- **Denver, CO:** Between 1980 and 1990, the percentage of Denver residents who said they would pay more to live near a greenbelt or park rose from 16 percent to 48 percent
- **Denver, CO:** Property values along a greenway increased enough to generate $500,000 in additional property taxes, paying for the greenway in 3 years

BWSC

Chattanooga

"We certainly have had a revival, and the city takes pride in the fact that we have received a lot of attention for this turnaround. There is a feeling not that we've arrived, but that we are on the right path — and 'path' is a good word for it since our progress is closely linked to paths. People may point to some rightly celebrated projects, like the aquarium or the IMAX theater, but making the city more pedestrian-friendly is really what's bringing it back to life."

-- David Crockett, Former Chattanooga City Council Chair

BWSC

Background

- Before the term “greenway” was ever coined, leaders in Blount County dreamed of a continuous trail for pedestrians and bicyclists along the floodplains of Pistol Creek which would physically and symbolically link the cities of Alcoa and Maryville
- Townsend trail was built in the 1970s, the first municipal bike trail in the State
- The Maryville greenways system began in 1985, well before trails were popular across the State

BWSC

Background

- Maryville's and Alcoa's linked greenway system was recognized in the November 2002 publication of the *National Transportation Enhancements Clearinghouse, A Guide to Transportation Enhancements, Enhancing America's Communities*
- Thus, Blount County has been a leader in greenway and trail development, not only in Tennessee, but in the U.S.

BWSC

Background

- Great Smoky Mountains Regional Greenways Council (GSMRG) organization established in 1994
- Original primary goal of the GSMRG: connect Knoxville to the Great Smoky Mountains National Park
- GSMRG initiated a grant application for this study and contributed $2,000 towards the local match
- Maryville, Alcoa, and Blount County contributed $1,000 each towards the match
- A Recreation Trails Program grant from TDEC was awarded to fund this study

BWSC

Background

- Knoxville and Knox County are in the process of designing and building a trail to connect Neyland Greenway along the Tennessee River and Alcoa Highway to Blount County
- Trail and underpass for the Little River crossing on Alcoa Highway built when the bridge was replaced
- This study looks at potential routes from the Knox County line to Heritage High School with connections to the Maryville/Alcoa system
- Future phase will examine a route to connect to the Townsend trail, completing the connection from Knoxville to the Smokies

BWSC

Inventory and Analysis

- Opportunities
  - Public Land (City/County, TVA, UT Property)
  - Pellissippi Parkway, Lamar Alexander Parkway
  - Little River Corridor
- Constraints
  - Railroad and Proposed Hwy. 129 Bypass
  - Steep Topography/Rock Outcroppings
  - Floodplain/Wetlands

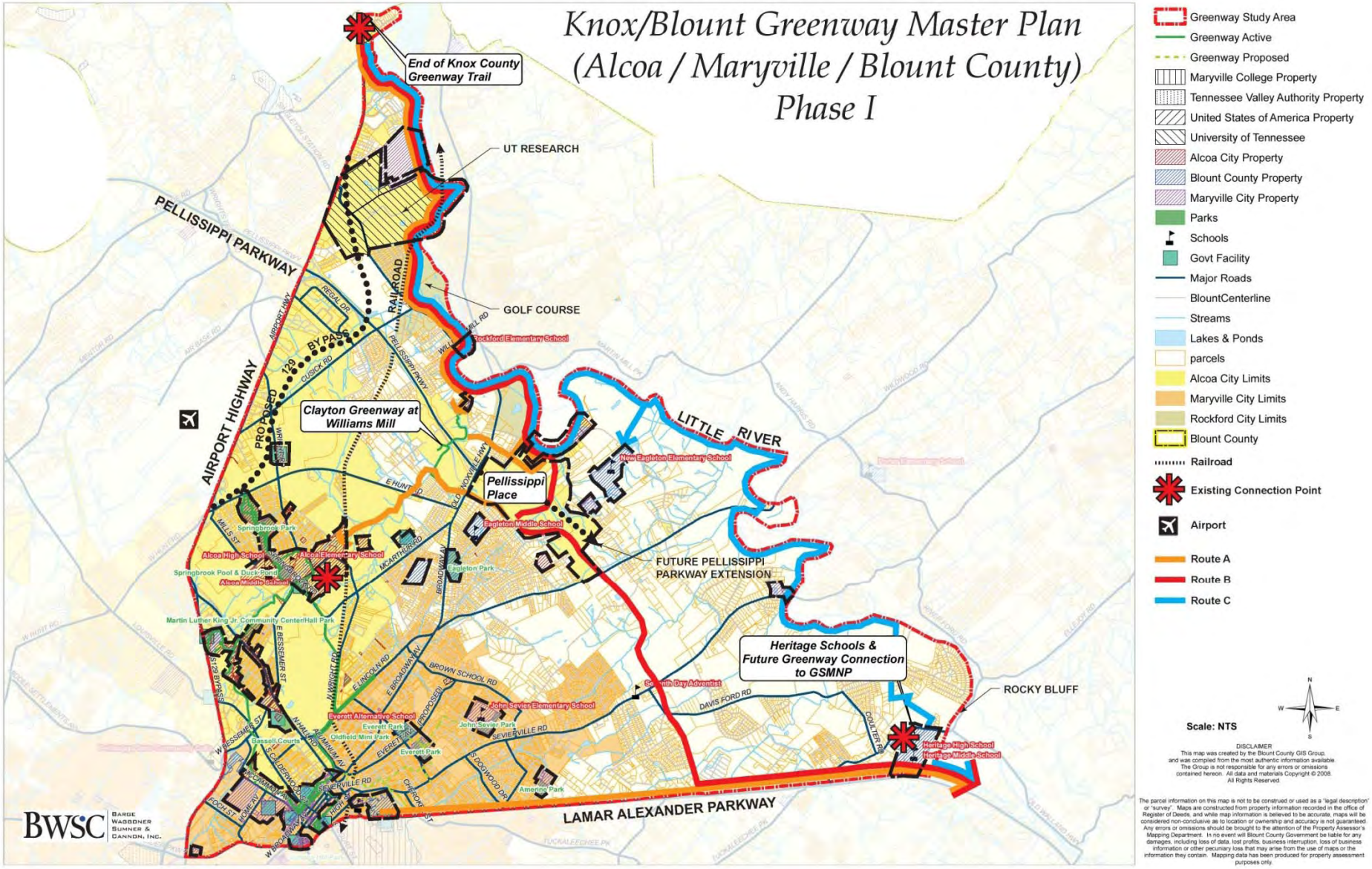
BWSC

Potential Corridors

- **Route A:** Knox County to existing City greenway network to Lamar Alexander Parkway to Heritage HS
- **Route B:** Knox County to Pellissippi Place, along Pellissippi Parkway extension, to Lamar Alexander Parkway to Heritage HS
- **Route C:** Knox County along the Little River Corridor to Heritage HS

BWSC

Knox/Blount Greenway Master Plan (Alcoa / Maryville / Blount County) Phase I



BWSC

Routes on Private Property

- Each potential route would cross parcels of private property
- An easement would have to be acquired for this to occur
- No discussions have been held with any property owner; this is a strictly a concept plan at this point
- Acquisition of easements would have to follow the Federal Uniform Relocation Act

BWSC

We Need Your Input

- 4 boards with the potential routes and connections are around the room
- Go to one and provide your comments or draw on the maps
- Comment sheets are available for those who wish to provide written comments

BWSC

We Need Your Input

- You may review this presentation, fill out a survey and provide additional comments at:
  www.blounttn.org/planning/

  or Google: Blount County TN Planning Department
- *Please tell your friends!*

BWSC

APPENDIX B

BLOUNT COUNTY GREENWAYS

Which of the three potential routes for the greenway do you prefer?

	Response Percent	Response Count
Route A (Connection to the existing Maryville/Alcoa greenway system to Lamar Alexander Parkway to Heritage High School)	**52.4%**	**11**
Route B (Connection to Pellissippi Place then southeast to Lamar Alexander to Heritage High School)	14.3%	3
Route C (Along the Little River Corridor to Heritage High School)	38.1%	8
None of the above	0.0%	0
	answered question	**21**
	skipped question	**0**

BLOUNT COUNTY GREENWAYS

Why do you prefer the route you selected in Question 1?

	Response Count
	20
answered question	**20**
skipped question	**1**

	Response Text	
1	Like the idea of using existing Greenway	Oct 8, 2009 7:03 PM
2	It is in a natural corridor and would provide for an outstanding user experience. In addition, it could provide the opportunity to really showcase the values of a greenway by preserving habitat, providing a buffer zone along the river, etc.	Oct 8, 2009 8:08 PM
3	When I bike or run I prefer to be away from the big roads like Lamar Alexander as much as possible to improve the experience	Oct 9, 2009 1:12 AM
4	Most scenic route; should also be easiest to build. Follows natural feature. Would maintain a natural floodplain.	Oct 9, 2009 1:40 PM
5	greatest population served; great for restaurants, shops, etc.; least amount of upheavel	Oct 9, 2009 7:03 PM
6	I think the best thing to do would be to focus on connecting Maryville and Pellissippi Place with Knoxville. There are many senic areas to ride and the route along the river would be expensive, longterm, and kind of go no where. However, I think the route that goes along 321 would be challenging for the leisure rider.	Oct 10, 2009 1:15 PM
7	I like that it comes to downtown Maryville. I think this could help boost downtown business. It also provides great access to the trail. Plus it could save money using existing greenway system.	Oct 11, 2009 2:04 AM
8	It provides more connections to shops, jobs, recreation etc....allows people to bike for utility rather than just recreation.	Oct 12, 2009 12:26 PM
9	For its connection to Knox County	Oct 12, 2009 3:07 PM
10	More scenic	Oct 12, 2009 5:59 PM
11	avoids high traffic roads	Oct 12, 2009 9:39 PM
12	This option offers the greatest change	Oct 13, 2009 1:03 AM
13	access to knoxville and mountains from downtown maryville	Oct 13, 2009 3:14 AM
14	Scenic and Recreational	Oct 15, 2009 11:25 AM
15	I think it will be the most scenic	Oct 16, 2009 10:36 AM
16	It would appear to be easiest to build and be most benefical, in my opinion.	Oct 16, 2009 10:37 AM
17	It will go right past where I live & seems a little safer than the others (except see #3 below)	Oct 20, 2009 4:55 PM
18	like the route through town to increase access to shopping, culture, etc. More utility for bikers.	Oct 22, 2009 3:44 PM
19	Convenient access from Maryville, already easy to run on road along river without a greenway there	Oct 24, 2009 9:09 PM
20	Gets traffic off highway shoulders - more scenic - greater potential tourist draw	Oct 26, 2009 11:31 AM

BLOUNT COUNTY GREENWAYS

Is there some other route or a modification to, or any combination of, the potential routes that you would like to suggest?

	Response Count
	12
answered question	**12**
skipped question	**9**

	Response Text	
1	No	Oct 8, 2009 8:08 PM
2	Not at this time	Oct 9, 2009 1:12 AM
3	I would recommend a combination of routes A and C. This would give users option of going into Maryville/Alcoa or taking route to Heritage and on to Townsend.	Oct 9, 2009 1:40 PM
4	See above	Oct 10, 2009 1:15 PM
5	It would be nice if there could be a way to connect route A to the little river. I think this would add a lot of nice scenery.	Oct 11, 2009 2:04 AM
6	no	Oct 12, 2009 12:26 PM
7	spur from Heritage to present Maryville-Alcoa Greenway for routes B or C	Oct 13, 2009 3:14 AM
8	Connector route(s) C and A for easy access to and from all points (Cuts down congestion)	Oct 15, 2009 11:25 AM
9	no	Oct 16, 2009 10:37 AM
10	Make sure on Route A to stay on the opposite side of 321 from the Shamrock Motel...would not be safe on the same side of the motel!!! (rumor of sex offenders stay there)	Oct 20, 2009 4:55 PM
11	If you somehow connect the existing greenways to a greenway along the river, that would be nice	Oct 24, 2009 9:09 PM
12	Something built into the Pellissippi right-of-way (fenced, away from roadway)	Oct 26, 2009 11:31 AM

BLOUNT COUNTY GREENWAYS

Are there other places, points or features in Blount County that you think should be linked to the greenways system? If so, please identify them.

	Response Count
	12
answered question	**12**
skipped question	**9**

	Response Text	
1	No suggestions.	Oct 8, 2009 8:08 PM
2	I would like to connect Denso to the system. Many more people would commute there if they felt safer	Oct 9, 2009 1:12 AM
3	Continuation of the existing greenway from Montgomery Lane southwest to Carpenter's middle and elementary schools.	Oct 9, 2009 1:40 PM
4	Focus more on connecting safe routes to schools and places to shop.	Oct 10, 2009 1:15 PM
5	It would be great if the system linked to the other schools.	Oct 12, 2009 12:26 PM
6	East Maryville has little or no access to the greenway system. Should look at tying in Sevierville Rd area.	Oct 12, 2009 5:59 PM
7	I would like someway to to ride safely from Pellissippi to downtown Maryville, so I could ride to work.	Oct 13, 2009 1:03 AM
8	I think it should run west to Friendsville and east to Townsend so that all residents of Blount County can enjoy the greenway.	Oct 16, 2009 10:36 AM
9	It would not be cost effective to link all of the points of intrest in Maryville and Alcoa to the Knoxville trails.	Oct 16, 2009 10:37 AM
10	downtown, schools	Oct 22, 2009 3:44 PM
11	How about linking WIlliam Bount High School to the main greenway system? No safe way to walk/run/bike down Morganton	Oct 24, 2009 9:09 PM
12	Maryville Little League, Everett Park, Rockford Park, Foothills Pkwy	Oct 26, 2009 11:31 AM

BLOUNT COUNTY GREENWAYS

Please indicate your personal level of support for the extension of the Knox-Blount Greenway through Blount County to Heritage High School and eventually to the Great Smoky Mountains National Park.

	Response Percent	Response Count
Highly support	**85.7%**	**18**
Support	14.3%	3
Do Not Support	0.0%	0
	answered question	**21**
	skipped question	**0**

BLOUNT COUNTY GREENWAYS

Please provide any other comments of any nature or about any topic you may have concerning the extension of the Knox-Blount Greenway through Blount County.

	Response Count
	13
answered question	13
skipped question	8

	Response Text	
1	This project, when extended to the Smokies would provide a major economic and recreational asset for Blount County and the region. Create a plan and set a goal to have the whole thing built to the Park within 5-7 years.	Oct 8, 2009 8:08 PM
2	The current Maryville & Alcoa greenways are very well maintained. I worry that BC will not be able to meet the same standards	Oct 9, 2009 1:12 AM
3	Greenway extension would be a positive enhancement to our community providing an alternative transportation and recreational resource.	Oct 9, 2009 1:40 PM
4	Do it!	Oct 9, 2009 7:03 PM
5	Thanks for all the hard work.	Oct 10, 2009 1:15 PM
6	Ignore the King group who refuse to consider the next generation re/tax spending. They are hypocrits.	Oct 12, 2009 5:59 PM
7	The public, riders and non-riders alike must be educated on safety and trail etiquette.	Oct 13, 2009 1:03 AM
8	I will stay tuned for any employment and / or volunteer opportunities toward construction of greenway	Oct 15, 2009 11:25 AM
9	If people that live in West Blount want to use the greenway, the closest point for them to use is at Foothills Elementary School. I know that west Blount is not the wealthiest part of the county, but they pay taxes to the county too, and should be entitled to use the greenway like the residents of the middle of Maryville. Please extend it WEST!	Oct 16, 2009 10:36 AM
10	Aside from the obivious benefit of providing more walking trail for more people, what is the realpurpose for wanting to connect the two counties trails? Other than maybe spending money.	Oct 16, 2009 10:37 AM
11	I would love the extension! When I lived in Townsend, I used the trail daily if possible.	Oct 20, 2009 4:55 PM
12	The greenways are my favorite thing about living here. I fully support their extention, and would love to see water fountains and restrooms along the extensions as well.	Oct 24, 2009 9:09 PM
13	Go for it!	Oct 26, 2009 11:31 AM