



# Executive Summary

## The Bolin Creek Greenway Conceptual Master Plan - 2009

The Town of Carrboro initiated the Bolin Creek Greenway project for the purposes of alternative transportation, recreation, and environmental protection and restoration through the Bolin and Jones Creek corridors. This conceptual plan is the first comprehensive guidance document for the construction of the greenway. It was funded by federal transportation funds administered by the North Carolina Department of Transportation (NCDOT) along with local matching funds. Through a summary of local plans dating from 1994-2008, it was determined that the Bolin Creek Greenway corridor was a highly desired off-road bicycle facility that would provide valuable connections in Carrboro and to Chapel Hill.



The Carrboro Planning Department and the Carrboro Greenways Commission collaborated to undertake the planning and design for the Bolin Creek Greenway. The mission of the Greenways Commission is to recommend to the Carrboro Board of Aldermen policies, programs, and actions that may assist the town in safeguarding the water quality, environment, and livability of the community by establishing greenways. Public input was obtained through two open house workshops, online and hard copy comment forms, meetings with project stakeholders and landowners, and field investigations throughout the planning process.



The established goals of the Bolin Creek Greenway Conceptual Master Plan are as follows:

- 1) *Protect and improve water quality along Bolin and Jones Creek*
- 2) *Protect, conserve, and preserve wildlife habitat*
- 3) *Connect surrounding land use in Carrboro by providing a non-motorized mode of transportation*
- 4) *Provide safe access to Bolin and Jones Creek*
- 5) *Enhance quality of life by providing a recreational facility for all citizens of Carrboro to enjoy*



This plan outlines existing corridor conditions, identifies opportunities and constraints for trail development along Bolin and Jones Creek, makes specific recommendations for trail design and planning, incorporates a phasing plan for implementation, and outlines specific guidelines for trail construction.

## Benefits of Greenways in Carrboro

Trails and greenways provide a variety of benefits that ultimately affect the sustainability of economic, environmental, and social health. These benefits include:

- Creating Value and Generating Economic Activity
- Transportation Benefits
- Improving Health through Active Living
- Clear Skies, Clean Rivers, and Protected Wildlife
- Protecting People and Property from Flood Damage

## Existing Conditions Analysis

The project consultant team conducted multiple field investigations along the corridor to determine green infrastructural elements such as existing vegetation, signs of wildlife, surrounding topography, significant natural features, and adjacent or intersecting streams. Man-made elements, such as existing buildings, structures, utilities, roadways, and railroads, were observed and documented. Destinations, connections, accessibility, and circulation were surveyed and a photo-inventory was developed of corridor impacts such as erosion and trail braiding.



## Opportunities and Constraints

Opportunities and constraints along the corridor were determined through fieldwork and Geographic Informational Systems (GIS) mapping. These opportunities and constraints were mapped and later used to inform many of the gateway recommendations.

### *Summary of Corridor Opportunities*

- Existing disturbed corridors such as trails and utility easements
- Connections to a multitude of destinations such as schools, parks, neighborhoods
- Environmental restoration
- Education and community enhancements
- Large amount of surrounding open space

### *Summary of Corridor Constraints*

- Existing steep topography
- Proposed creek crossings
- Private property
- User conflict
- Difficulty in engineering for some areas
- Roadway, railroad, and utility Intersections

## Public Input

Public input was solicited via two public workshops and paper and online comment forms. Approximately 100 people provided input at the two workshops through direct conversation with the consultant and Town staff, the Greenways Commission, map markups, and comment forms. The first workshop presented three separate greenway alignments - the Bolin Connector, the Creekside Trail, and the Upland Forest Trail. Comment forms and comment cards were provided for participants to communicate their preference. The second workshop presented a preferred draft alignment where participants were invited to make comments on maps as well as on comment forms with specific questions about the preferred draft alignment. The comment forms contained questions about existing Carrboro trails, destinations, preferred facilities for trail development, as well as open-ended questions for further comment.



**Creekside Trail**

PLEASE CIRCLE YOUR PREFERENCE FOR THIS ALIGNMENT:

1 2 3 4 5 6 7 8 9 10

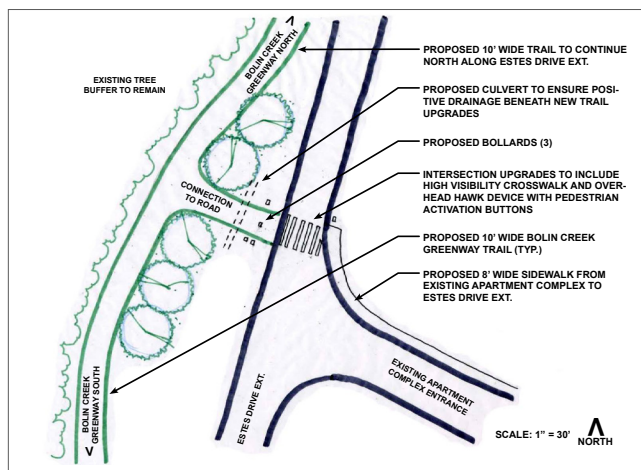
DON'T PREFER PREFER






COMMENTS: Appealing in that it would be the most "beautiful" probably and would provide an opportunity to fix up the very abused land along the creek.

		Response Percent	Response Count
Exercise/Fitness	<div><div></div></div>	73.7%	14
Getting to and from destinations	<div><div></div></div>	21.1%	4
Socializing		0.0%	0
Walking the dog		0.0%	0
Environmental Education		0.0%	0
Meditation/Respite	<div><div></div></div>	5.3%	1
Other (please specify)			0



## Proposed Design

This Plan makes recommendations for 4.8 miles of trail near Bolin and Jones Creek, which extends from Wilson Park to Homestead Rd., and from Lake Hogan Farms to Buckhorn Branch. Trail “connectors” are included, linking users to Tripp Farm Rd. and ten surrounding neighborhoods, five schools, three parks, and Seawell School Rd. If constructed, Carrboro’s Bolin Creek Greenway has the potential to link to Chapel Hill’s Bolin Creek Greenway network (both existing and future phases) and future planned developments such as Carolina North and Carolina Commons. Greenway planning objectives were defined for each segment of trail with details on materials and finishes, proposed crossings, land acquisition, and other important factors for consideration.





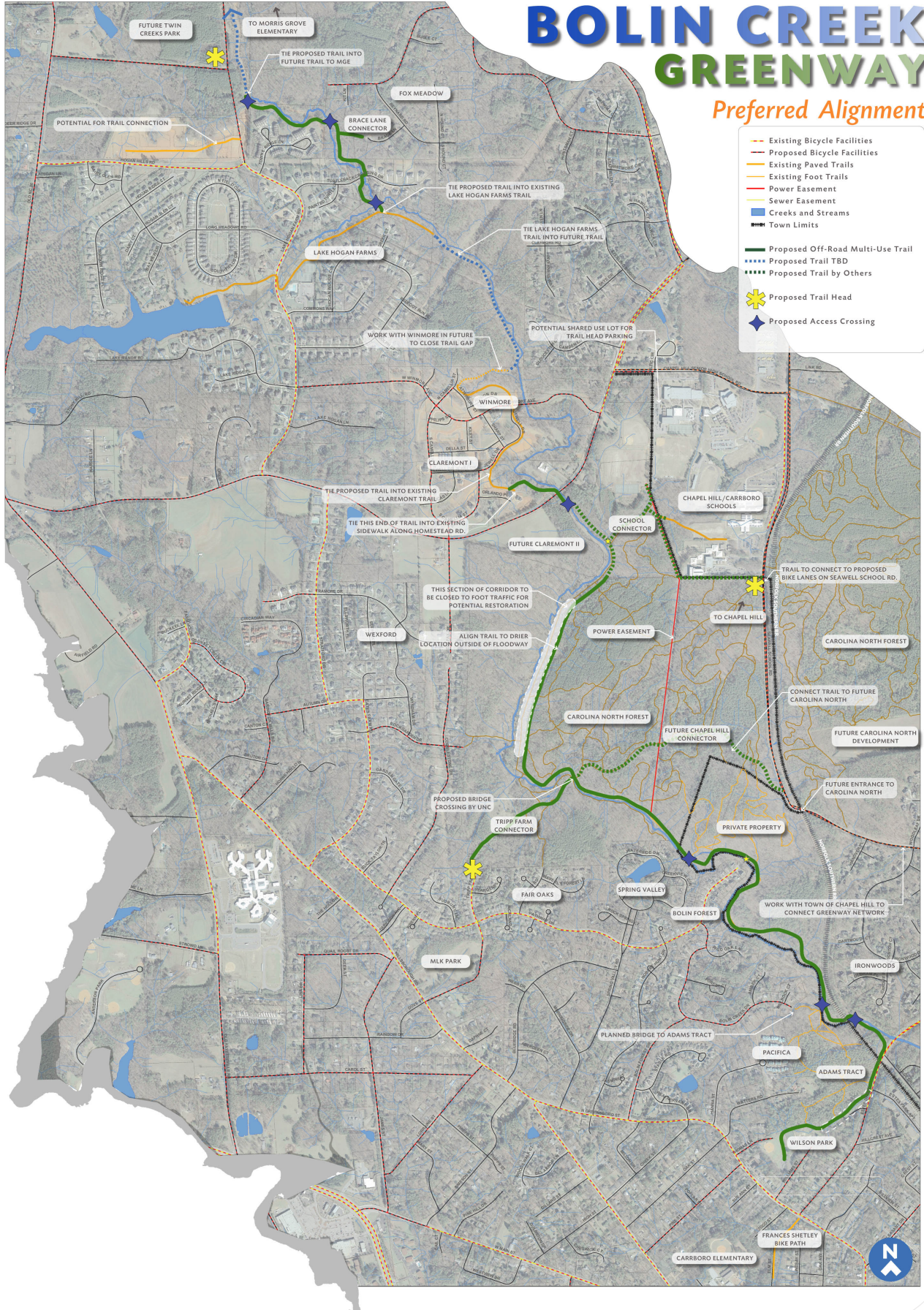
-  Existing Bicycle Facilities
-  Proposed Bicycle Facilities
-  Existing Paved Trails
-  Existing Foot Trails
-  Power Easement
-  Sewer Easement
-  Creeks and Streams
-  Town Limits

-  Proposed Off-Road Multi-Use Trail
-  Proposed Trail TBD
-  Proposed Trail by Others

-  Proposed Trail Head
-  Proposed Access Crossing



## Implementation

The implementation strategy provides a guide for the Town of Carrboro to realize a greenway facility. It is important for positive, successful action to take place in order to build momentum and support throughout the Town of Carrboro. A dedicated effort towards implementation will be necessary to create the envisioned corridor along Bolin and Jones Creeks. The implementation recommendations include action steps, project prioritization and phasing, and opportunities and constraints associated with each phase. In addition, detailed budget estimates are provided for each segment of trail.

### Action Steps:

- 1) Adopt the Bolin Creek Greenway Master Plan
- 2) Create the Necessary Governance and Administrative Capability to Oversee Plan Implementation and Prioritize Next Steps
- 3) Seek Multiple Funding Sources
- 4) Coordinate with Stakeholders, Including Neighboring Jurisdictions and Utilities
- 5) Begin Top Priority Project Design
- 6) Begin the Easements/Land Acquisition Process
- 7) Begin Top Priority Project Construction
- 8) Begin Construction Administration
- 9) Program Trails
- 10) Create a Signage System
- 11) Conduct Operations and Maintenance

#### Bolin Creek Greenway - Phase 1A

Probable Estimate of Construction Costs, 2009  
2088.48 linear feet (0.40 miles)

Demolition	Quantity	Cost	Unit	Subtotal
Clearing and grubbing understory (20' wide)	18,000	\$0.25	sf	\$4,500.00
Dumping Fees @ 6% of Demolition total			6%	\$270.00
			Subtotal	<b>\$4,770.00</b>
Trail Development	Quantity	Cost	Unit	Subtotal
Construction Entrance	2	\$1,900.00	ea	\$3,800.00
Temporary Rock Silt Check Type A	6	\$425.00	ea	\$2,550.00
Stabilization (Seeding: Temporary and Permanent)	20,885	\$0.25	sf	\$5,221.25
Straw with netting	500	\$4.50	lf	\$2,250.00
Temporary tree protection fence	3,050	\$4.00	lf	\$12,200.00
Temporary silt fence	2,350	\$5.00	lf	\$11,750.00
Temporary Diversion Ditch	300	\$3.00	lf	\$900.00
Temporary pipe inlet protection	1	\$900.00	ea	\$900.00
Trail initial grading (0-5 cu ft/lf)	525	\$3.30	lf	\$1,732.50
Trail fine grading (pavement)	2,088	\$3.30	lf	\$6,890.40
Trail fine grading (shoulders and ditch)	1,900	\$3.30	lf	\$6,270.00
10' wide multi-use asphalt trail	2,088	\$35.00	lf	\$73,080.00
2' wide gravel shoulder (both sides)	2,088	\$6.60	lf	\$13,780.80
Class B Rip Rap with filter fabric	15	\$42.00	ton	\$630.00
RCP Drainage Pipes	105	\$35.00	lf	\$3,675.00
Seeding or mulching trail edges (5' both sides)	20,880	\$0.13	sf	\$2,714.40
Estes Drive Intersection Signalization	1	\$25,000.00	ls	\$25,000.00
Concrete Curb and Gutter along Estes Drive	400	\$25.00	lf	\$10,000.00
* Street Trees along Estes Drive	19	\$750.00	ea	\$14,250.00
Boardwalk bridges for neighborhood access	12	\$75.00	lf	\$900.00
Signage				
* Mile Markers	2	\$400.00	ea	\$800.00
Trail and street regulatory/warning signs	11	\$220.00	ea	\$2,420.00
Directional signs	3	\$220.00	ea	\$660.00
* Educational signs	2	\$400.00	ea	\$800.00
Site Amenities				
* Benches (2 per mile recommended)	3	\$900.00	ea	\$2,700.00
* Bicycle rack (at Wilson Park trailhead)	1	\$800.00	ea	\$800.00
* Drinking fountains, with pet fountain (1 per mile)	1	\$2,000.00	ea	\$2,000.00
* Picnic tables/ tables (at trailheads)	1	\$550.00	ea	\$550.00
Trash receptacles (32-gallon, steel-at trailheads)	3	\$300.00	ea	\$900.00
Bollards (3 per trail/road intersection)	9	\$600.00	ea	\$5,400.00
			Subtotal	<b>\$215,524.35</b>
Design	Quantity	Cost	Unit	Subtotal
Wetlands and Stream Delineation (\$3,500/mile avg.)	0.13	\$3,500.00	mi	\$455.00
Surveying (\$10,000/mile avg.)	0.40	\$10,000.00	mi	\$4,000.00
Construction Documents @ 12 % of Dev. Cost			12%	\$25,862.92
			Subtotal	<b>\$30,317.92</b>
<b>Subtotals</b>				
<b>Demolition</b>				<b>\$4,770.00</b>
<b>Trail Development</b>				<b>\$215,524.35</b>
<b>Design</b>				<b>\$30,317.92</b>
<b>SUBTOTAL (Demolition, Trail Development, Design)</b>				<b>\$250,612.27</b>
<b>Contingency (15% of total)</b>			15%	<b>\$37,591.84</b>
<b>TOTAL</b>				<b>\$288,204.11**</b>

Note: Does not include the following: land acquisition, potential rock and unsuitable soils excavation, permitting fees, mobilization, utility coordination, and taxes.

\* Items not included in Total price shown (Additional cost for these items is \$21,900.00)

\*\* Total price is sum of all costs and contingencies - \$21,900.00

### Phasing Plan

Input from the public, availability of funding, existing land ownership, permitting issues, engineering constraints, destination points and existing improvements projects were considered in the development of the phasing plan. The phasing breakdown includes:

PHASE 1A: Wilson Park to Railroad - \$266,304

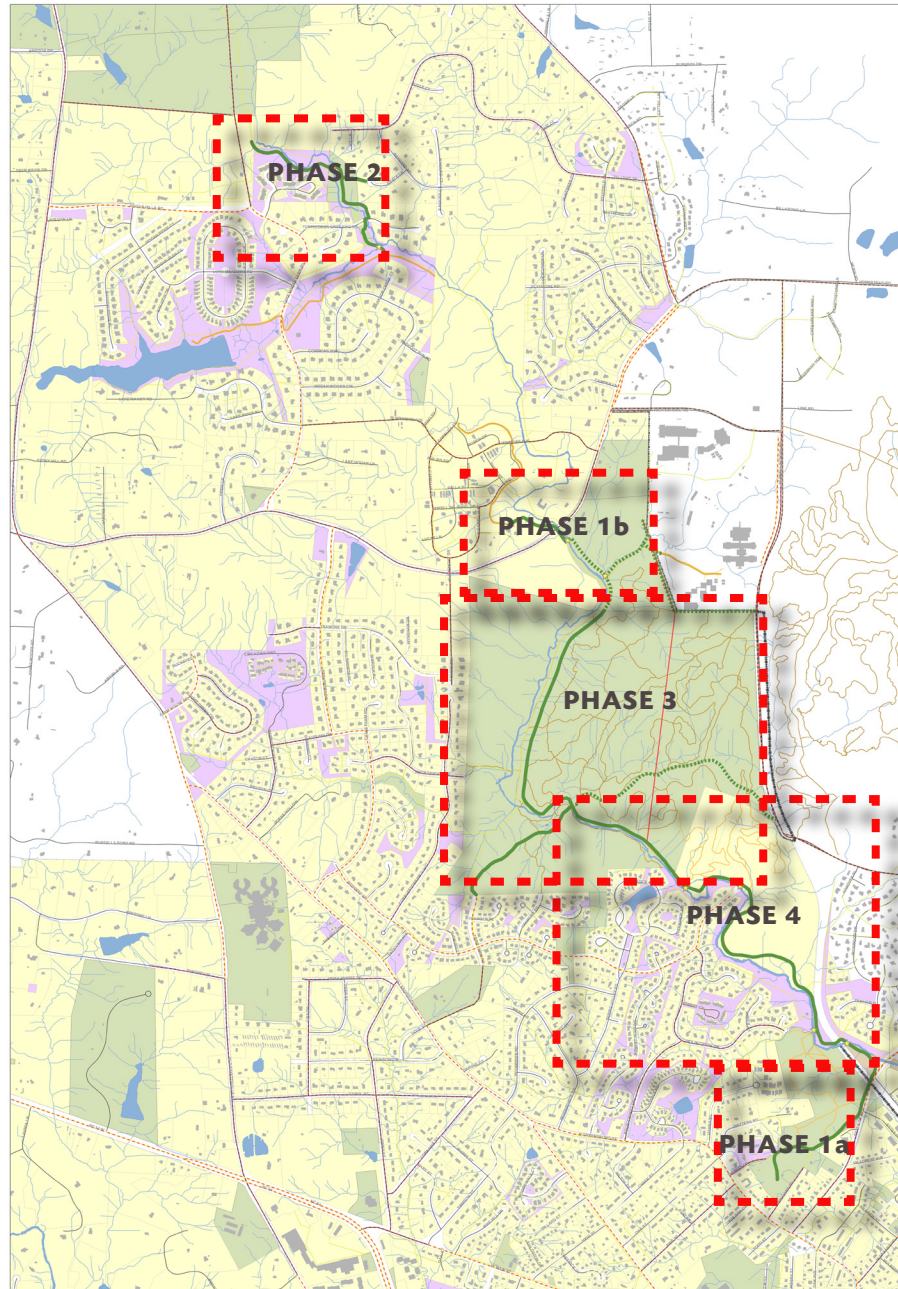
PHASE 1B: CNF to Claremont - \$770,277

PHASE 2: Jones Creek - \$672,451

PHASE 3: Carolina North Forest - \$1,211,590

PHASE 4: Railroad to PH Craig Tract - \$1,086,724

### *Phasing Map for the Proposed Alignment*



### **Operations and Maintenance**

The Bolin Creek greenway should be regarded and maintained as a public resource. This begins with sound design, durable components, and a comprehensive management plan. A management plan should be embraced by the entities responsible for maintaining the greenway and trail network, at the beginning of the implementation process. In addition, community groups, residents, business owners, developers and other stakeholders should be engaged in the long term stewardship of the resources preserved and enhanced by this plan.

Operations management tools:

- Resource stewardship and enhancement
- Greenway facility safety and security
- Risk management and liability

- Hours of operation
- Trail user rules and regulations
- Police patrol/Emergency response system

Long and short-term maintenance guideline tables are included in the plan providing routine and remedial maintenance, frequency, and other specifications.

## Funding and Land Acquisition

### *Funding*

Implementing the recommendations of this plan will require a strong level of local support and commitment through a variety of local funding and easement/land acquisition mechanisms. Alternative transportation improvements are a high priority and can be supported through portions of the funding currently used for public safety, streets, parks and recreation, planning, community development, travel and tourism, downtown, and local bonds. Local bonds will be used to pay the local share of the Surface Transportation Program - Direct Attributable (STP-DA) funded portion of the proposed trail for Phase 1A. The Town should also seek a combination of funding sources that include local, state, federal, and private monies.

### *Land Acquisition*

There are multiple methods for the Town of Carrboro to secure trail right-of-way for the Bolin Creek Greenway. The recommended trail alignment traverses public land (easements, parks, and Town-owned parcels) wherever possible; however a majority of the corridor will require working closely with land owners to secure easements. Land acquisition and resource protection methods should be strategic, efficient, and respectful. The Town of Carrboro should work with non-profit land protection agencies, land trusts, or environmental organizations when attempting to acquire or manage property. These entities often have a great deal of experience promoting the greenway benefits of conservation. Many options are available to obtain different degrees of control and ownership relationships to regulate resource use.

## Design Guidelines

Guidelines for trail design were provided based on the best practices in use throughout the United States, as well as accepted national standards for greenway facilities. When designing and constructing the recommended facilities, ADA accessibility, low impact solutions, and sustainable materials should always be considered. For conceptual planning purposes, budget estimates prepared for this plan assumed a primary trail surface of concrete in creekside/flood prone areas and asphalt for hillslopes and upland areas. The final trail surface design will need to be completed as part of construction document preparation, and the following design guidelines be adhered to:

- 1) That no material that is prone to washing and high maintenance be used in flood prone areas. This includes organic and inorganic aggregates.
- 2) That AASHTO guidelines be followed for a multi-use trail surface.

