

## **APPENDICES**

### **Appendix A – Photos of Existing Conditions in Trail Corridor**

**Photos of existing conditions – Main trail corridor - February 2009**

**Photos of existing conditions – south bank Morgan Creek - October 2009**

**Photos of existing conditions – High School Spur Trail corridor – December 2009**

### **Appendix B – Design Guidelines**

**Trail Design Standards**

**Trail Construction Standards**

**Trailhead Facilities**

**Public Art**



**Appendix A**  
**Existing Conditions Main Trail Corridor – February 2009**

Existing sidewalks and bike lanes on Berryhill Drive.



Steep rocky drainage way from UNC Park and Ride lot.



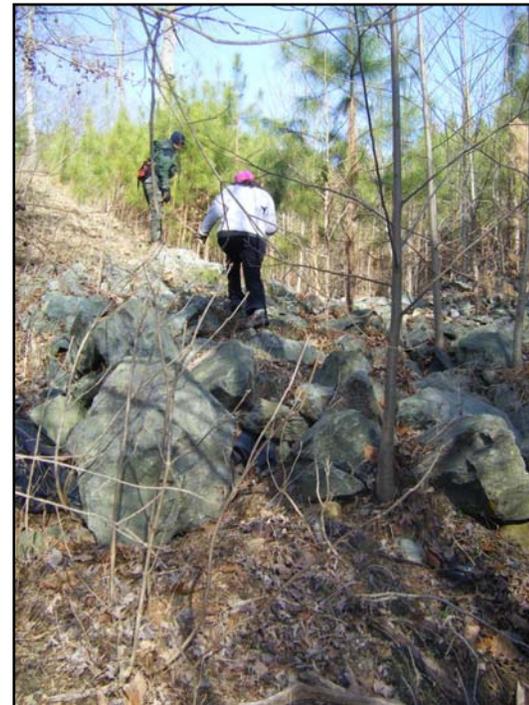
## *MORGAN CREEK GREENWAY Final Report*



There is space along Berryhill Drive to expand the existing walkway to create a 10' wide trail profile. There is space behind the Rosewalk townhouse development for a trail to be installed, but the terrain is generally steeper than would accommodate an accessible route, and there is a jurisdictional stream there so stream buffers would need to be respected.



Existing stream channel behind the RoseWalk Development on Berryhill Drive.



The very steep and rocky slope approaching the Park and Ride site



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Slope from the north end of the Rosewalk townhome site to the existing gravel trail.



Existing gravel trail at the south end of the Rosewalk townhome development.



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Existing 10' wide gravel trail along the west and south edges of the Rosewalk townhome development.



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A typical section of Tom's Creek dividing the Rosewalk townhome community and the Chapel Hill Tennis Club properties.



Intersection of Morgan Creek where Tom's Creek flows into it. The slopes are flat enough that any crossing at this point would be a very long bridge. Also there is a sewer line crossing the creek here and other debris type obstacles in Morgan Creek. The stream banks are not stable, which presents problems for stability of bridge abutments.



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Looking east along the south end of the Chapel Hill Tennis Club property. There is a sanitary sewer main along the left side of the clearing. The left side of this area is an existing greenway easement.



There are already informal footpaths from the proposed trail area and creek to the Tennis Club facilities.



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Chapel Hill Tennis Club property behind the Weatherhill Pointe homes.



Forested greenway easement area on the tennis club property between Weatherhill Pointe and Morgan Creek.





Looking across Morgan Creek from Weatherhill Pointe to the Berryhill community. Across the creek to the left is the southern edge of the property owned by the Town of Carrboro. Homeowners have encroached slightly into Town owned property.



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An informal connection between the homes at Weatherhill Pointe and Morgan Creek.



A Piedmont Electric service line running parallel to Morgan Creek between Weatherhill Point and the creek. Piedmont Electric has indicated they would allow a paved trail under this service line.





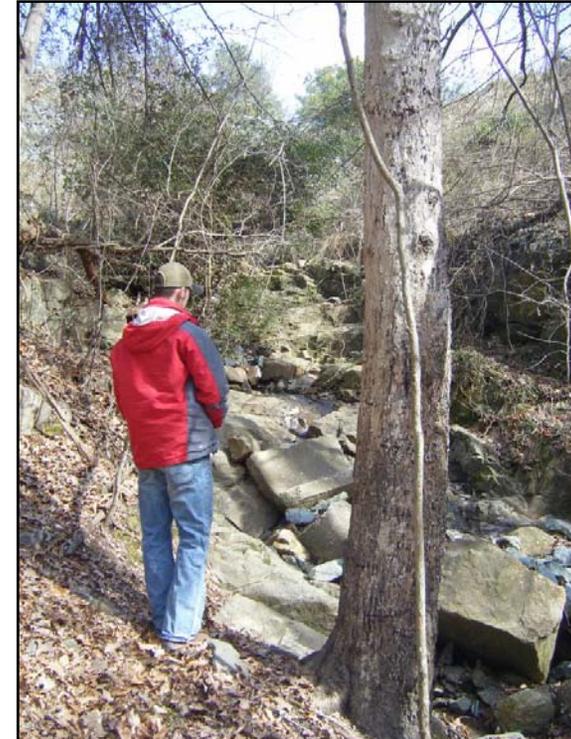
Drainage way between Westbrook Drive and Morgan Creek. Slopes here are moderately steep. The drainageway is not in the floodplain.



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Morgan Creek looking east at the base of the steep slope from Hwy 54 on the PEP Holding properties. At the west edge of the steep slope area there is a small “shelf” adjacent to the creek. It is in the FEMA mapped floodway. Slopes are extremely steep.



There is a lot of construction debris on the slope from Hwy 54. This area of debris is in a drainageway from the highway and concrete waste has been used with the rip rap for bank stabilization.





Construction debris from past highway widening on the steep slopes below Hwy 54. This is the north streambank of Morgan Creek.



Rip-rap storm drainageways from Hwy 54 (guardrail on the highway is visible at the top of the photo).



***MORGAN CREEK GREENWAY  
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View of the Town-owned land on the south side of Morgan Creek across from the PEP Holding steep slope areas.



Informal footpaths through the Town-owned land on the south side of Morgan Creek north of the Berryhill community.



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Canterbury Townhouse Property, north side of the creek.



Existing OWASA sanitary line crossing Morgan Creek at the south end of the Canterbury Townhouse community. OWASA has added fencing to each side of the line to discourage pedestrian crossing.



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Driveway access to the Town property and drainageway in front of the Town of Carrboro Public Works site near the Smith Level Road bridge.



View from the Carrboro Public Works facility toward Smith Level Road on the north side of Morgan Creek. The proposed Town of Chapel Hill trail is planned to end on the other side of the bridge, on the north side of the creek.





**Existing Conditions – South Bank Morgan Creek – October 2009**

Steep slope between the south bank of Morgan Creek and the end of Tar Hill Road.



Understory and ferns in wooded area on the south bank of Morgan Creek near Tom's Creek.





Bench at top of bank on south side of Morgan Creek east of Tom's Creek.



Western edge of Triangle Land Conservancy property.



The terrain is getting steeper and more rocky.



By the east end of the Triangle Land Conservance property, there is almost no bench at the top of bank and the terrain becomes steeper. Streambanks in this area are somewhat unstable from erosion.



There are homes at the top of bank in the Berryhill neighborhood.

**Existing Conditions – Spur Trail area – December 2009**



Drainage way and OWASA easement south of Morgan Creek and east of Tar Hill Drive.



The same drainage way at the approach to BPW Club Road.



OWASA easement on north side of BPW Club Road.



Gentle slopes from OWASA easement to Villages of Chapel Hill apartment complex.



Wooded gentle slopes between the OWASA easement and the BPW Club on BPW Club property.



Steep stretch of OWASA easement approaching Villages of Chapel Hill driveway.



Steep slopes between Villages of Chapel Hill and Rock Creek Apartments.



Access possibilities on Rock Creek Apartment property.



Parking lot at Rock Creek Apartments approaching Rock Haven Road.



Flat area around Carrboro High School building.



Steep slopes on high school parcel northwest of school building along stream.

## **Appendix B – Operations and Maintenance**

The trail is a public facility and the main trail corridor should be maintained by the Town to keep the trail a safe and valued facility. At the trailheads there should be signage indicating the rules of trail use. Such rules would include hours of operation, acceptable uses (non-motorized vehicles), directional instructions (keep right, pass on the left, don't stop bikes in the middle of the trail, etc), dog leash and clean up requirements, and prohibitions (no litter, fires, or alcohol use). Trailhead signage should also include the trail name and section so that if a user needs to call for emergency aid they can indicate their location.

The local police should be informed when the trail construction starts and as trail paving progresses so they are aware of the new facility and can monitor the corridor use appropriately. Long term maintenance of the trail should include conversations with the police department to find out about illicit activity and safety hazards along the trail and take steps if necessary to implement design or operational measures to reduce it.

Though the trail would be mostly off-road, there needs to be a balance between a route “through the woods” and the elimination of overgrowth and large/thick understory near the trail itself. The edges of the trail should be maintained for safety reasons. Generally a 5'-10' wide space next to the paved surface should be mowed to keep up visibility and eliminate natural hazards. Additionally keeping a wider clear corridor will increase assure long sight lines keeping visibility to a level that users can see who is ahead or behind them. Invasive species in this zone should be removed to reduce their spread. Litter, debris, and graffiti should be removed immediately to discourage further personal property vandalism. In the case of litter and graffiti, the presence of those items make it appear that the trail is not being maintained and will encourage more similar activity. It may be possible to establish some “adopt-a-trail” sections near neighborhoods to keep litter and graffiti cleared and to notify Town personnel of any maintenance needs.

The trail should be traversed by Town employees on a schedule so that problems can be identified and fixed. Trail surfaces should be maintained and any repairs completed in a timely manner to keep the surface safe to use and to attend to problems before their repair becomes more costly. Rough edges, major cracked or uneven pavement, missing sections of paving or boardwalk should be repaired immediately.



Trailheads

Provide safe paved lighted parking areas.

Provide signage indicating location, trail name, rules of trail use.

Provide a trash can to reduce litter and to provide a receptacle for litter deposit for users.

Provide contact information so users can contact Town employees to report trail problems.

Routine Maintenance

Weekly traverse of the trail

Immediate removal of trash and graffiti and debris

Install trash cans only where Town staff can easily and routinely empty them

Immediate repair/replacement of vandalized or missing signs

Periodic surface cleaning and removal of sediment

Periodic mowing of edges – bi-weekly or monthly during spring, summer and fall months

Vegetation debris may be left off the edge of trail to decompose

Annual inspection of edge vegetation and removal of overhanging/dangerous limbs

Annual clearing of drainage channels

Traverse of the trail after storm events to determine required debris removal or trail repairs



## **Appendix C – Design Guidelines**

### **Trail Design Standards**

From the DOT NC Bike Facilities Planning and Design manual, standards call for a 2% slope for sustained grades, and a maximum acceptable slope of 5% for trails. A length of trail up to 500 LF may be more than 5% slope if it is a wider trail.

Less restrictive are AASHTO standards for trails which call for a slope of less than 5% for a shared use path. There are cases where steeper slopes are unavoidable without great expense in rerouting the trail or trail construction. AASHTO standards recommend for steeper slopes a maximum acceptable length depending on the grade, as follows:

% slope	Maximum Acceptable Length
5-6%	800'
7%	400'
8%	300'
9%	200'
10%	100'
11%	50'

### **Trail Construction Standards**

As a condition of receiving NC DOT funding the trail must be accessible. Therefore the surface of new trail construction will need to be a hard surface such as asphalt or concrete. In general concrete is preferred when the trail will be located in floodway or floodplain because the concrete construction can withstand flooding better than asphalt. Pervious paving works best when the subgrade drains well and as there is poor drainage here due to the proximity to the creek and the location in floodway and floodplain, the extra cost of pervious paving would not be a good use of funding resources. Any wetland areas should be crossed with boardwalk to minimize permanent disturbance. Boardwalk should also be used periodically along flat stretches of trail to allow upland drainage sheetflow overland through to the creek.

AASHTO standards indicate a 10' width for shared use paths with additional 2'-4' width for stretches that are steeper. The cost estimates are based on a 10' standard width.



Any trail built in floodway or floodplain should be built so that the final grades are the same as current grades. This will eliminate fill in the floodplain except for the bridge abutment locations. In this corridor, the majority of the trail will be built in the floodway.

The trail should be marked with distances ( $\frac{1}{4}$  mile,  $\frac{1}{2}$  mile,  $\frac{3}{4}$  mile, even mile) for recreational users and also for aid in locating site needing maintenance or emergency access.

### **Trailhead Facilities**

There is existing parking at the west end at the Jones Ferry Park-and-Ride lot. There should be signage at this point to indicate the start of the Morgan Creek Trail.

The existing parking lot at the Public Works facility on Smith Level Road already has parking, though it is fenced. The fencing and edge of parking could be reconfigured to accommodate 10 cars so those spaces would be available at any time, even if the Public Works facility were closed. There should be signage at this trailhead also.

### **Public Art**

Public art may range from ornamental (sculpture) to practical (benches or signs). The cost of public art has not been calculated into the budget. Placement of public art will be important – it cannot be placed in the floodway if it will create a “fill” situation, and choice and installation of public art should include consideration that the area is prone to frequent flooding.

