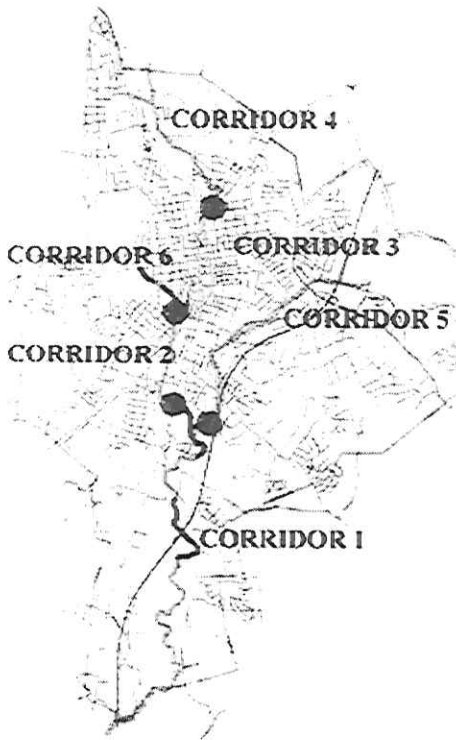


Inventory and Analysis

Introduction



The purpose of this study is to identify properties and land uses that pose a threat or complication to developing a greenway and those that present an opportunity or benefit. The result of the analysis will be to identify those specific opportunities and constraints and to suggest actions to be taken. Specific actions might be to acquire property, to negotiate permanent easements, to use an existing easement or to avoid a property or area all together. The information presented in this report is summarized in a series of corridor maps.

This information has been compiled to help greenway planners make informed decisions regarding general locations for greenway development. The analysis is not specific in nature and does not consider dimensional information in regards to exact locations of easements or property lines. As each corridor is planned for construction, a detailed survey of property lines and the like will need to be performed as well as a detailed physical survey.

For the purpose of this analysis, the Blacks Run Greenway Corridor has been divided into six distinct corridors. Corridor One starts at Interstate 81 and travels north past the City water and sewer complex through Purcell Park to Route 11. Corridor Two continues from Route 11, past Keister Elementary and ends at East Grace Street. Corridor Three continues from East Grace Street through town and ends on Route 11 near Blacks Run. Corridor Four continues from Route 11 to the Virginia Mennonite Retirement Community. Corridor Five travels from the East Grace Street area through Westover Park to Thomas Harrison Middle School. Corridor Six travels from Purcell Park through the JMU campus to Old Route 33.

Methodology

The analysis was accomplished using a combination of map overlays, site reconnaissance and interviews with City staff, County staff and Blacks Run Greenway Partnership members. Mapping overlays utilized several layers including sewer lines, water lines, gas lines, tax map parcels, land use, streets, creeks and rivers, and



Public Meeting #1

topography. Mapping was provided by the Harrisonburg Engineering Department.

Work sessions were held with City Engineering and planning staff and with members of the Blacks Run Greenway Partnership. The focus of the work session was to identify properties, plans and current development that would affect development of the greenway. Several new development projects were identified as well as some opportunities for redevelopment, which could be coordinated with the development of a greenway. Several issues were identified. These included steep topography, non-compatible land uses and restrictive ownership issues.

A public meeting was held at Harrison Middle School. The meeting was held to solicit comments from the general public in regards to each corridor. Corridor maps were made available for review and comments were documented. Some ownership and land use issues were discussed.

A second public meeting was held at Harrison Middle School. The meeting was held to discuss greenways and trails in terms of how they are built and what they look like and how they affect a community. The results of the corridor analysis were presented. Workshops were held for each corridor. The public made comments about specific trail alignments, opportunities and constraints. A questionnaire was distributed so that the public could make specific comments.

A third public meeting will be held to present the results of the Conceptual Master Plan to the public and City Council.

Land Ownership and Use

Land Uses within the City of Harrisonburg

There are many different types of land uses within the city limits. These are: Single Family, Two Family, Multi-Family, Group Housing, Mobile Home, Neighborhood Commercial, Mixed-Use / Commercial, Industrial, Parking, Office, Government, Institutional, Cultural, Recreation, Agricultural, Open Space and Vacant. Each of these land uses differs in compatibility with mixed-use trails.

There are pros and cons associated with having a trail run through certain properties, for both the property owner and the trail user. For example, residential property owners may enjoy access to the trail and trail destination from their home. On the other hand, some homeowners would not like the trails and users near their property. If the property is small, the trail may pass too close to the house or building complex. Ideally, the property would be large enough to allow a planted buffer between the private yard and trail. It will be important to assess the density of building on the site and note any privacy concerns of the residents.

The commercial land use can have compatible and incompatible issues as well. Commercial land uses include theaters, restaurants, and stores, for example. Some commercial businesses would welcome a trail and the prospective customers a trail can provide. However, if the commercial land has been fully developed, it may be difficult to find space for a trail that is separate from the business and associated parking lots.

Other land uses may have similar issues as well. When proposing a trail through an industrial property, there may be adequate space for the installation of a trail; however, the conditions of the property may not be ideal for trails. Some industrial areas are unsightly, or otherwise offensive to the senses. Additionally, some industrial areas could create potentially hazardous conditions if children were to wander from the trail. Designating the level of industry (heavy, medium, or light) may help to determine the routing of a trail.

Certain business and governmental offices may not desire the additional traffic and security concerns associated with the trail and its users. If space permits accommodating trails at a safe distance, the connection of these land uses to area parks through trails could be beneficial to the office workers. Land uses of cultural

significance could have similar issues in terms of security and the desire to be accessed by trail users.

Recreational spaces can be a compatible land use with trail systems. These include parks, ball fields, and golf courses. These areas usually offer public restrooms, water fountains, telephones, and parking, which could be useful to trail users. Certain hazards of mixing these uses could include the dangers of stray baseballs or golf balls.

Vacant properties and open spaces have potential to contribute to the entirety of a trail system project. These areas could be considered for additional park space, play space, trailheads and parking lots for trail access. The disadvantage of such spaces could be the difficulty in monitoring the safety of the trail.

These various land uses, and the advantages and disadvantages associated with each should be assessed when planning the route of a trail. The nature of the property and desires of the landowner should both be considered when addressing the actual usage of the property for trail implementation.

Environmental

Geology & Soils

The geology in this area is dominated by the underlying sedimentary shales, limestone and dolomite. Sinkholes are prevalent, and the flow in Blacks Run is known to come and go along its route, particularly in the upper part of the watershed. Soil types vary along the length of Blacks Run. Along the upper reaches of the watershed, the soil is characterized by a significant amount of exposed limestone bedrock. Soils are well drained, but runoff tends to be high due to the exposed rock. The soluble nature of limestone contributes to deep, irregular voids in the channel bottom, which then increases erosion of the channel banks. Location of any trails should consider this potential and be chosen to avoid future relocation due to channel erosion or undermining.

Downstream, additional soil types become evident, though the presence of shallow and exposed bedrock remains. Runoff remains rapid, and the potential for erosion is high due to the alluvial nature of the soils coupled with the presence of rock in the actual flow channel. Moving further downstream, past the downtown area, soils level out and deepen along the floodplain. Aquic (wetland-type) soils become predominant. These soils are poorly to moderately drained, and are high in clay content. Erosion potential remains high, though it is due more to the soil itself than the presence of rock in the channel.

Trail location in the southern part of the project should consider future problems with channel incision from erosion, particularly along the outside of turns where erosive energy is greatest. Where space is limited, bank stabilization may be necessary to protect the facilities.

Floodplain

The entire length of Blacks Run and its primary tributaries have 100-year floodplains, which are included in the Flood Insurance Rate Maps (FIRM) issued by FEMA. As such, the floodplain areas are regulated under the City's Floodplain Ordinance, which is based on the Model Federal Ordinance. Development in the floodplain is tightly controlled to prevent, or at least reduce, potential increases in

flood elevations and the introduction of new, flood-prone structures. Greenway development will be subject to the same requirements.

The floodplain is divided into two main components, being the floodway and the flood fringe. Development in the fringe areas can proceed provided that new structures are elevated (or flood proofed for commercial) above the established flood elevations. Work in the floodway, considered the primary flow area, is more restrictive. Essentially, no work can occur in these areas that has the potential to increase flood elevations. Development in the floodway usually requires associated work to offset the effect of the project on the flood depths.

In the case of the Greenway, the flood regulations may well require that the project focus on excavating to create flat areas for trails and other components of the project, rather than filling in the floodplain. Excavation work is not likely to increase flood elevations. Also, cut slopes are much less subject to erosion than are fill slopes. Use of retaining walls may become necessary in tight areas.

The City is in the process of reanalyzing the floodplains in the City in preparation for reprinting of the FIRM maps. This will be a long-term process and is not expected to have a significant effect on considerations for the Greenway. Greenway design should avoid flood impacts if at all possible. It is particularly important to avoid impacts that require revisions to the record flood maps. It is tedious, expensive and time-consuming to process a map revision through FEMA.

Wetlands

The U.S. Army Corps of Engineers regulates development in areas deemed to be wetlands. Disturbance of wetlands should be avoided, though minimal impacts are usually easy to get permitted. Unfortunately, the Federal Government revises the requirements every few years, usually with each new administration. It is therefore difficult to predict exactly what may or may not be allowable when time comes for construction in any given area. Fortunately, the National Wetland Inventory (NWI) map for this area shows very little established wetland. Though the map indicates that Blacks Run itself is considered a wetland, it is only within the limits of its banks. Stream relocation, if necessary, could become a wetland issue.

Outside of the channel itself, there may be isolated wetland areas potentially impacted by the project. Wetland designation requires

the presence of all three of the following: 1) wetland soils, 2) wetland hydrology, and 3) wetland vegetation. Detailed planning along any stretch of the Greenway should not overlook the possibility of wetland areas, particularly along the lower reaches of the Run. Suspect areas should be evaluated for the above three components by an experienced biologist or soil scientist. The Corps's field biologist is usually willing to assist in this, as well as determine any permitting needs. Impacts on wetlands should be avoided if at all possible, since significant impacts could require costly mitigation work.

Wildlife

Throughout most of the Blacks Run corridor within the City of Harrisonburg the animal population consists mostly of rodent type animals (muskrats, rats, possums, squirrels, etc.) However, even within some of the more populated areas there are populations of deer and fox. Most of the fish in these areas are scavengers such as suckers or small carp. However, as the stream flows south, the variety of fish increases to include bass and perch. There are also some ornamental goldfish, probably from the stocked ponds or JMU's lake. Ducks, geese and songbirds inhabit the entire length of the stream.

The Corps of Engineers, in association with the Virginia Department of Environmental Quality, is currently conducting a TMDL study on benthic (in-stream) life in Blacks Run. This study will go a long way in determining the health of the stream and its ability to support wildlife. Greenway planning should consider potential impacts to water quality of the stream, through materials selection, bioremediation, Best Management Practices (BMP's), etc.

Threatened and Endangered Species

There are 50 animals and 13 plants on the Threatened and Endangered Species list for the State of Virginia. The list of animals does not include any species suspected of living in or near Blacks Run. Plant species are listed below. It is unknown at this time whether any of these exist along the Greenway. It is recommended that, prior to finalizing designs in any given area, a botanist survey the project area to evaluate the incidence of threatened or endangered plant species.

<u>Status</u>	<u>Plant Listing</u>
T	Joint-vetch, sensitive (<i>Aeschynomene virginica</i>)
E	Rock-cress, shale barren (<i>Arabis serotina</i>)
T	Birch, Virginia round-leaf (<i>Betula uber</i>)
E	Bittercress, small-anthered (<i>Cardamine micranthera</i>)
E	Coneflower, smooth (<i>Echinacea laevigata</i>)
T	Sneezeweed, Virginia (<i>Helenium virginicum</i>)
T	Pink, swamp (<i>Helonias hullata</i>)
E	Mallow, Peter's Mountain (<i>Iliamna corei</i>)
T	Pogonia, small whorled (<i>Isotria medeoloides</i>)
T	Orchid, eastern prairie fringed (<i>Platanthera leucophaea</i>)
E	Sumac, Michaux's (<i>Rhus michauxii</i>)
E	Bulrush, Northeastern (<i>Scirpus ancistrochaetus</i>)
T	Spiraea, Virginia (<i>Spiraea virginiana</i>)

Pollution

Blacks Run does support limited benthic life, though it should not be considered a healthy stream at this time. In addition to the benthic TMDL study mentioned previously, the Corps and DEQ are in the process of conducting a fecal coliform TMDL study for Blacks Run. A TMDL (Total Maximum Daily Load) is intended to determine the maximum level of, in this case, fecal coliform bacteria the stream can absorb before being considered impaired. Sources of these bacteria have been identified to include cattle, waterfowl, poultry, human, rodent, and other. Concentration is highly dependent on rainfall intensity, as expected, since much of the bacteria enters the stream via storm water runoff. Presence of cows in the stream in the southern section of the Run has a substantial impact. Also, public sewer mains are predominant along the stream banks, and in some cases in the stream itself. Heavy runoff often leads to problems with sewer overflows into the stream. The City has a continual program to replace and rehabilitate aging sewers along Blacks Run.

Of particular importance to the Greenway is the concern for children stopping to play in the stream. It may be appropriate to discourage this by signage, education and/or warnings. This concern stems from both the possibility of drowning and the potential exposure to bacteria. The Blacks Run Cleanup Group has recommended that participating children stay out of the stream because of the coliform problem. It is anticipated that stream health will improve over time

through sewer rehabilitation, fencing for cows, runoff controls for industry, etc.

Possibilities

There are a number of ways in which the Greenway project can contribute to the environment. A sampling includes:

- ~~///~~ Stream bank stabilization by bioremediation.
- ~~///~~ Use of biofilters, grass swales or other methods to filter urban runoff prior to it entering the stream.
- ~~///~~ Avoidance of wetland areas.
- ~~///~~ Protection of endangered and native species.
- ~~///~~ Creation of riparian buffers.
- ~~///~~ Tree planting to provide shade.
- ~~///~~ Separation of livestock by fencing.

These measures are feasible, though cost may be an issue. It may be possible to seek out grant opportunities for such work in conjunction with the project. Additionally, some of these measures may become part of the remediation work associated with the TMDL studies. Greenway planners should keep in close contact with the DEQ to coordinate such efforts.

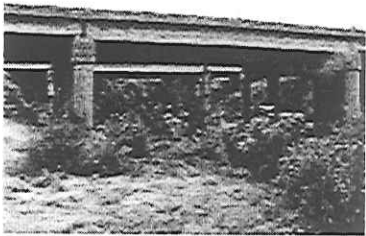
Physical Attributes

Corridor One – Interstate 81 to Route 11



Pleasant Valley Road Crossing

Generally this corridor is located on open, gentle sloping land adjacent to Blacks Run. Much of the land was farmland and is currently zoned for industrial use. The section between Interstate 81 and Pleasant Valley Road is generally free of obstructions. An opportunity exists here to enhance views and preserve the rural character of the corridor. Existing large trees and riparian vegetation should be preserved and enhanced where appropriate here.



Interstate 81 Underpass

Pleasant Valley road creates an obstruction that must be passed. Little room is available for a bridge underpass here. It will prove more feasible to cross this road with a well defined at grade crossing. Land continues to be appropriate for trail development past Pleasant Valley Road. However, the railroad creates several obstructions. The railroad pinches the trail in one location and requires an underpass at another. Locating the trail on the other side of Blacks Run can solve the pinch. The underpass will require some structural improvements and coordination with the railroad. An alternate route along Pleasant Valley road and Greendale road may be a more feasible option for the near future.

The corridor between the rail line and a second Interstate 81 underpass continues to be open and developable. Some steep slopes and forested areas exist here that will require careful routing of the trail and more grading than in other areas. The I-81 underpass offers a level wide area on both sides of Blacks Run. The east side offers the best option due to its width and adjacency to the park. The underpass will require some bank stabilization to protect the trail; railings may also be necessary here. This is typical of most bridge underpasses along the entire corridor.



Blacks Run Corridor

Beyond the interstate the corridor continues to be open and gentle with views of adjacent mowed fields and buildings and infrastructure of the City water and sewer facilities. The corridor is easily developable until it reaches industrial development off of Berry Road. At this point the corridor becomes pinched between the Skyline building, parking lot and Blacks Run. Fill and bank stabilization will probably be needed here as well as close coordination with property owners.



Stone Spring Road Underpass

The corridor continues past Valley Block where storage areas and fencing push the corridor close to Blacks Run. The topography is generally flat and easily developable here. Steep slopes may require that the corridor switch sides beyond this point. The trail will again be tight between a storage yard fence and Blacks Run.

Stone Spring Road Bridge creates an opportunity for an underpass. The three-box culvert style bridge provides ample headroom and space for a trail. Development of this underpass will require a raised shelf for the trail. Calculations may be needed to ensure that flood flow is not impeded. An at grade crossing is also possible. This will require grading of the embankments up to the road and a break in the guardrail. Significant markings and signage will be needed to ensure pedestrian safety.



Public access to Purcell Park

Berry Road provides an interim opportunity to bypass this situation. The corridor remains developable beyond this point with some pinches and obstructions. Several opportunities exist to bypass problem areas here. These include switching sides, use of existing bridges, use of utility easements and use of vestigial land between property and fence lines.

Purcell Park creates a tremendous opportunity for a trail connection. The land along Blacks Run is easily developable. An opportunity exists to improve some of the existing trails in the park for shared use with the Greenway.

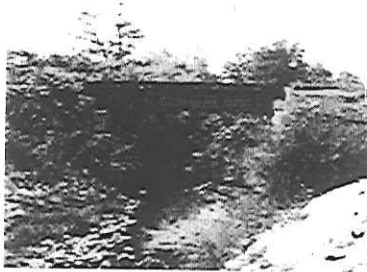
As the corridor continues it becomes sandwiched in-between residential lots and Blacks Run. Space exists and there are generally no obstructions besides right-of-way acquisition. An alternate route exists along Miller Circle. Existing Park parking offers a good trailhead opportunity.



Route 11 and Blacks Run

At this point, the corridor reaches a difficult constraint. Route 11 offers no opportunity for an underpass due to low clearance. The road will need to be crossed, at grade. This will require careful planning of location and markings to ensure pedestrian safety.

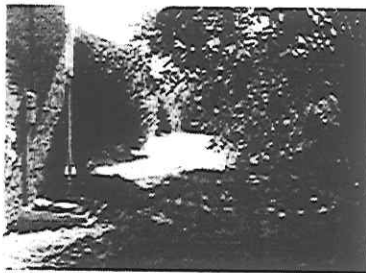
Corridor Two – Route 11 to East Grace Street



Rail road at Route 11

Generally this corridor is challenging for trail development. It is characterized by Commercial, Industrial and Residential development.

The railroad and commercial development create impassible barriers and very tight situations. The railroad would require an underpass. This would require excavation and engineered retaining walls and abutments in order to ensure continuous operation of the line. Topography is also very steep and little room is available. The closest existing at grade crossing of the rail line is the driveway to a JMU property. This would offer access to land adjacent to the rail right-of-way and to Blacks Run.



Corridor in Residential Area

Land beyond this point is generally open and developable on the south side of Blacks Run. This is the situation until the corridor reaches multi-family properties to the north. Very limited space is available here. Blacks Run is hemmed in between parking lots. An alternate exists to pass between multi-family units and residential lots off of Rockbridge Circle. However, space is also limited and the close proximity to the units may feel uncomfortable for residents. Another alternative would be to follow the Rail right-of-way to Maryland Avenue. The corridor becomes wide, open and generally flat as it passes Keister Elementary School. A large open space exists that presents an opportunity for a small park and trailhead. Maryland Avenue poses somewhat of a barrier. The bridge has ample vertical clearance but the width is narrow with steep embankments on both sides. An underpass would require considerable improvements. A raised shelf would be required where existing space is not available. The embankments of the road make an at grade crossing difficult as well.



Potential Park & Trailhead

Past Maryland Avenue, the corridor opens up on the east side of Blacks Run. The west side becomes constricted due to the location of buildings, parking lots and an electric substation close to the top of bank. A vacant property adjacent to the substation offers an opportunity to create a medium sized park. The park may be accessible to vehicles if an entrance was placed off of Maryland Avenue. A bridge or culvert would be needed over Blacks Run. The property would need to be leased or purchased.

The railroad creates a barrier again. An underpass is feasible but expensive. An at grade crossing will require considerable fill, will not be as safe and will require signals and barriers. The corridor

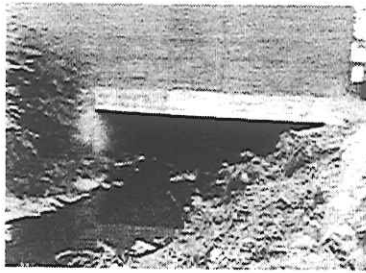


Blacks Run Near East Grace

continues between small residential lots on the west and industrial development on the east. In this area, space is limited for trail development.

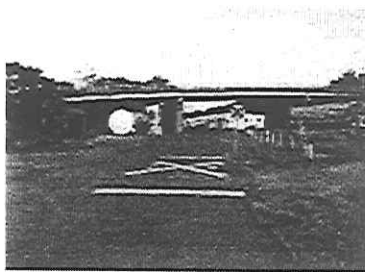
A sewer easement offers opportunity to access East Grace Street. The easement is very close to residential structures and in some cases structures are built on top of the easement. Chesapeake Avenue offers an opportunity to bypass this area

Corridor Three – East Grace Street to North Main Street



Channelization of Blacks Run

This corridor is characterized by its close proximity to Downtown Harrisonburg. In this area, Blacks Run is constricted heavily and in many cases is culvertized, channelized and completely enclosed. This situation has left little opportunity to develop a greenway through the downtown area. The street network that serves the downtown seems to offer one alternative to a traditional greenway. East Grace Street, South Main Street, South Liberty Street and North Main Street all offer access through the area. Liberty and South Main are heavily traveled with one-way traffic. The one-way traffic makes crossing the road more appealing. Improvements will need to be provided at all intersections to ensure pedestrian and bicycle safety. These may include heavy pavement markings, warning signs, warning lights and/or signal lights. The pavement section will need to be modified to allow for a bike lane on these streets. A widened sidewalk should accommodate pedestrians. The street sections will need to be examined closely to ensure that all improvements and facilities will fit. Reconfiguration of travel lanes, parking spaces and curbs may be necessary to make the needed room. The corridor would end near the intersection of North Main Street and East Johnson Street where a crossing would be necessary near The Little Grill.



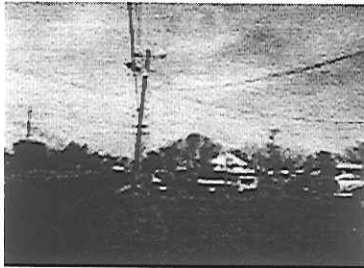
Chesapeake Avenue

A second alternative route exists through the center of town, between Elizabeth and Gay Streets. This route generally follows Blacks Run and is heavily impacted by development on all sides. It is preferred that the alignment follows this route if the proper coordination and support can be fostered with business and property owners in the area. This route would create many opportunities for redevelopment.

Another alternative route to the more heavily traveled streets would be Chesapeake Avenue. This road offers access under Cantrell Avenue and connects to West Bruce Street. This may be a good option to bypass downtown. This road travels through an industrial area that is not entirely appealing. Improvements could be made to

the street section to offset this. Also businesses that offer other goods and services attractive to greenway users may find an increase in patronage.

Corridor Four – North Main Street to The Virginia Mennonite Retirement Community



Residential Area

This corridor is characterized by small lot residential development in the southern end and wide-open spaces in the northern end. In many cases, residential development has been placed close to Blacks Run leaving little room to develop a trail. It is possible to follow Blacks Run here by utilizing utility easements, crossing the Run several times and acquisition of vacant and vestigial parcels of land. Many of the lots are located within the flood plain and would be good candidates for acquisition.

North Main Street and Monroe Street offer alternatives to following Blacks Run. Monroe Street ends just past Madison Street. The right-of-way continues through to North Liberty Street. This “paper street” could be use for the greenway. It would offer gentle open land and an opportunity to meander the trail and provide buffering from residential development.



Open Spaces, Industrial Zoning

The Monroe Street right-of-way leads to a group of vacant lots. Much of this land is located in the 100-year flood plain and is undevelopable. The land is generally open and slopes gently towards Blacks Run. This area presents a good opportunity to create a neighborhood park and possible trailhead with access off of Suter Street. North Liberty Street will require an at grade crossing due to the lack of a significant bridge structure.

The corridor becomes very open with gentle topography beyond North Liberty Street. The land here is zoned Industrial. Currently Southern States and Rockingham petroleum operate facilities here. Several fences run perpendicular to Blacks Run in this area. A sewer easement runs the length of Blacks Run almost to Mt. Clinton Pike. Generally this area is easily developable for a greenway. Most of the land adjacent to the run is within the 100-year floodplain.



“The Pike”

Mt. Clinton Pike presents a barrier to the greenway. No opportunity exists to pass under the road so an at grade crossing is necessary here. Grades approaching the road are gentle in places, making this a viable option.

The Corridor continues to pass through similar land past Mt. Clinton Pike. In this area, development begins to encroach more on Blacks Run. A feed mill is adjacent to the corridor here. New industrial developments will continue to develop around the corridor. The old quarry pond is located in this section and is currently not accessible to the public. Care should be taken not to design this section so that it "invites" users to access this property. Screening and fencing may be needed. The pond can become a liability if public access is allowed. A sewer easement runs the length of this property frontage.

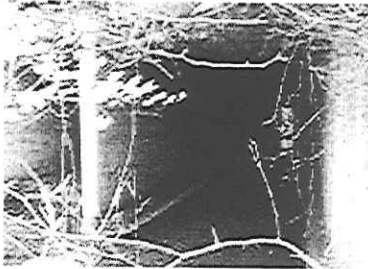
The railroad poses a barrier to the greenway here and effectively cuts off access to the VMRC parcel of land at the corner of Virginia and Acorn. No opportunity exists here for an at grade crossing or underpass.

Development also blocks access to Acorn Drive. Red Oak Street offers an opportunity for access. This Cul-de-sac's right-of-way provides ample room for a trail. The street also continues to the north and could be used for the future extension of the greenway. Acorn Drive provides an opportunity to access the Virginia Mennonite Retirement Community: An at grade crossing will be required at Virginia Avenue.

Corridor Five – East Grace Street to Thomas Harrison Middle School and Hillandale Park

This corridor is characterized by Harrisonburg High School, Westover Park, residential development and West Market Street (Route 33). The corridor would leave the main corridor along Blacks Run around East Grace Street. Access to and through Harrisonburg High School via open space corridors is limited. East Grace Street and South Willow Street offer an opportunity to access and circumvent the school property. These streets are both designated bike routes. Pedestrian improvements would also need to be made within the right-of-way. There is some space between the school parking lots and development off of South Willow Street that could be used for the greenway. Grading would be required to "bench" the trail into the embankment here. Vacant lots between South Willow Street and South Dogwood Drive create an opportunity to bypass the street network and to access Westover Park. At grade crossings would be required at both streets.

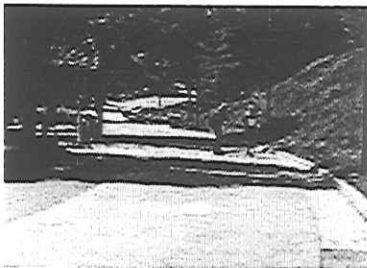
Westover Park includes a considerable amount of open space not dedicated to specific recreation. The land is generally open and has varied topography. The greenway could follow several alternative routes through the park.



Box Culvert at Port Republic



JMU Rail Road Corridor



Shared Use Opportunity

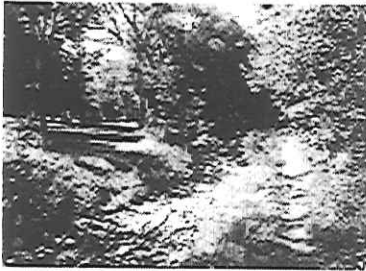
Land between Westover Park and Harrison Middle School is characterized by commercial development and the cut and fill slopes of West Market Street. Residential neighborhoods and a parcel of dense forest also characterize this area. The forested land would provide the best and “greenest” opportunity to access Thomas Harrison Middle school. Trail development here may be more difficult due to the topography and vegetation. A nature trail would work very well here. West Market Street provides a second option to provide access to the middle school. A wide sidewalk would need to be added to the south side of the road. This road is currently designated as a bike route. It is questionable if the “average” bicyclist would feel comfortable riding this road and others like it. If space allows a multi-use trail would be the best option along this road.

Corridor Six – Purcell Park to Lowes

The Seibert Creek, the JMU campus and residential development characterize this corridor.

As the Corridor travels through the northern portion of Purcell Park it approaches residential development and an abandoned parking area off of Butler Street. Generally, the land is suitable for greenway development. The fence around the parking lot and the Interstate-81 and Port Republic Road ramps create a tight area. The land on the west side of the creek is generally more suitable for development. A new interchange is planned. Flyovers would allow access to Port Republic Road. An underpass could utilize the existing box culverts under this road. However, the box culverts are narrow, long and do not have much extra vertical clearance. Substantial improvements would be needed to make this feasible. An at grade crossing of the road is also difficult given the topography approaching the road and the proximity to the center of major interchange traffic. Butler Street, Monument Avenue and Crawford Avenue offer an opportunity to access Port Republic Road. Port Republic will require a well defined at grade crossing.

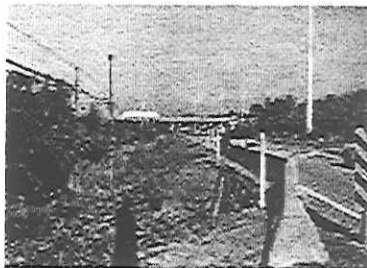
Once this road is crossed it will be possible to access the JMU campus. Existing paths and service lanes can be used and augmented to provide access for the greenway. Several alternatives exist here but the preferred option will be one that creates the least conflict between campus pedestrian traffic and greenway users. Existing service lanes on the west side of Newman Lake provide a good opportunity for the greenway. The railroad and JMU track and tennis



Existing Dog path and Easement



Country Club Court



Country Club Road

facilities are all close to Seibert Creek. The land in-between, including the creek, offers an open linear green space that could be used for the greenway. Some grading would be required to “bench” the trail into the slope and further stabilization of the creek channel may be required. The railroad and campus roads both create a barrier beyond this point. However, both currently offer crossing points for pedestrians. These crossings could be improved. The campus street system could also be used. The railroad corridor continues north past the tennis courts. This space could be used as well if topography and ownership issues can be addressed. Currently students use the space between the campus access road and the railroad to access parking areas. The Seibert Creek corridor provides the “greenest” alternative. The land along the corridor is generally open but it is often pinched between parking lots campus buildings and sports facilities. The practice field creates an obstacle because it is close to the creek and has been tightly benched into the slope behind it. Cantrell Avenue and the railroad continue to pinch the corridor beyond this point. Access across Paul Street is complicated by this close proximity. The alternative route on the east side of the rail line would offer access to Paul Street. At this point the corridor becomes very residential in nature. An existing sewer easement follows the creek and continues until Mountain View Drive. A “dog path” has been worn in this area due to students using the corridor to access the campus. The corridor continues to be open and developable to the power substation. Here space between the creek bank and fence is limited. Past this point access is feasible between the railroad and the creek. The land here is generally open and gentle and an existing sewer easement also travels this area.

The East Market Street (Rt. 33) Bridge is generally passable but very little room exists. This area will require improvements. The east side of the creek is the only option for an underpass here. The existing bridge embankment may need to be cut and retained here to allow passage. A small strip of land exists between the creek and Country Club Court. This land is generally open and drops quickly off to the creek bed. A small amount of room could be used for a trail. An at grade crossing of Country Club Drive would be required and use of the developments park land would also be required here.

The Interstate 81 Bridge is passable on the east side. Here a bench exists and the bridge abutment separates Country Club Road and the railroad from the corridor. Beyond this point Country Club Lane is very close to the creek and rail line. Considerable fill and retaining walls or gabions would be required on the east side. The corridor ends at Linda Lane and Lowes Home Improvement Center.

Access and Transportation

Streets

Streets within the City of Harrisonburg are planned, operated and maintained by the City, with the exception of Interstate 81. The state transportation department (VDOT) provides some maintenance funding to the City through yearly budget appropriations. Because of this, the City uses VDOT standards and specifications for the construction of streets. Adherence to VDOT standards also extends into planning and design for bicycle and pedestrian facilities located in street right-of-way.

VDOT is currently in the planning and preliminary design stages for the widening of I-81. The proposed Greenway route would have the trail(s) crossing the interstate right-of-way in several locations. City officials have met with VDOT to discuss the Greenway and requested that bridge and interchange design consider accommodating the bike and pedestrian trails. One area where this may be difficult is at the proposed interchange with Port Republic Road. Current planning will make it difficult for the Greenway to follow the Seibert's Creek tributary through the area. The trail may have to move through the adjacent residential area to get around the rather extensive interchange.

The City has stepped up its efforts in recent years to provide for pedestrian facilities, bicycle lanes and bike routes in conjunction with new and reconstructed street projects. This trend is expected to continue, and therefore the use of City streets for certain sections of the Greenway should be well received. Particularly in the downtown area, the bicycle portion of the Greenway will need to be located along existing streets. It is desired that bike lanes or wide curb lanes be created along these streets to provide for safe travel.

The City's Major Street Plan includes potential street projects forecast for the next 25 years. As these projects develop, the City considers the need for pedestrian and bicycle facilities on a case-by-case basis. This is often dependent on need as shown on the City's Bicycle Plan. A similar plan for pedestrians is being considered. It will be important for the Greenway planning to establish the locations where public streets or public rights-of-way will need to be utilized, and arrange for these sections to be included in the Bike Plan and the future pedestrian plan. This will encourage the inclusion of the Greenway in street planning efforts. Several projects

are in the design and planning stages in the City. These include the Stone Spring Road/ Erickson Avenue connector (bike lanes & sidewalk), widening of Cantrell Avenue (wide curb lanes), and the extension of Port Republic Road improvements (bike lanes and sidewalks). The first phase of the Port Road work is currently under construction. Many of these improvements will tie in nicely with linking to the Greenway, and possibly may serve the actual Greenway route.

Recently, the City has developed a traffic-calming program. This program is intended to serve residential streets where problems exist with speeding, cut-through traffic and safety. Several options for addressing these problems exist, and the program is designed to start with “soft” improvements, such as signage, before physical barriers are introduced. Again, coordination with the City’s traffic calming will be important in selecting routes for the Greenway, particularly where City streets will be utilized.

As the Greenway crosses public streets, safety will be an important consideration. Typically, mid-block pedestrian crossings are not acceptable. Routing of the Greenway bike and pedestrian trails needs to consider crossing streets at existing intersections where proper safety measures can be implemented. In some locations, this may require additional signage, marked crosswalks and traffic signal modifications. Close coordination with the City’s Public Works Department will be necessary to ensure street crossings are adequate.

Railway

Major Rail companies, including Norfolk Southern and Chesapeake & Western, operate and maintain rail lines that move through Harrisonburg. These rail lines create barriers to the Greenway at several locations. Final route selection must consider the physical, political, insurance and liability constraints posed by the rail lines and their owners. The City government has no imminent authority over the railroad companies. Therefore, negotiations for at grade trail crossings or crossings below RR bridges may be difficult if not impossible. It may be necessary to locate the Greenway facilities along existing streets to allow for safe crossing of the railroad tracks. This improves safety, but important to the rail companies, it does not create new crossings. Even at existing street crossings, improvements such as signage or signalization may be necessary to ensure pedestrian and bicycle safety.

Bicycle Plan

In February of 2000 the City of Harrisonburg adopted a Bicycle Plan. The plan's purpose is to improve bicycle transportation in the City. The City's goal is to "create and maintain, through this plan, a viable bicycle transportation network". The plan includes primary and secondary routes and includes many roads and streets that will intersect the proposed greenway corridors. In some cases the Greenway corridors overlap with the proposed bicycle network. Close coordination will be required when improvements to these roads are proposed so that both systems can be accommodated appropriately.

These roads include: South Liberty Street, South Main Street, North Main Street, West Grace Street, South Willow Street, West Market Street, Country Club Lane and Mount Clinton Pike.

In some cases the intersection of the Greenway and a bicycle route will require signage and markings designed to define the intersections and also to control and separate pedestrian and bicycle traffic. This should be done to reduce conflicts and to increase safety of the Greenway system.

Potential primary connection points between Greenway and bike routes include: Stone Spring Road, South Main Street, North Main Street, Port Republic Road and Mt. Clinton Pike.

Potential secondary connection points include: South Avenue, Maryland Avenue and South Willow.

Public Access

In the Blacks Run corridor public access generally fits into two categories: vehicular access (primary) and non-vehicular access (secondary). Non-vehicular access includes pedestrians and bicyclists. The terms "primary" and "secondary" relate to the level of development required to provide these access points, not their overall importance.

Trailheads

Vehicular access to the greenway will require developed parking areas in conjunction with trailheads. Access to parking areas should be well defined and easy to find. Generally, access should occur on secondary road systems where traffic is calmer. Major, heavily traveled roads, should be avoided due to conflicts of turning movements and the need for turning lanes. Quiet residential streets

should also be avoided where possible. The following streets offer good vehicular access to land deemed appropriate for vehicular trailhead development: Pleasant Valley Road at the Vo-Tech School, Ramblewood Road at Ramblewood Park, Miller Circle at Purcell Park, Maryland Avenue at the intersection of Central Avenue, North Liberty Street and North Jefferson Street and West Market Street at Westover Park.

Existing community facilities also offer opportunities to develop trailheads. Schools and parks that offer existing parking and the opportunity to develop new parking are good candidates for trailhead locations. If primary trailheads are not located at these facilities, secondary access is typically desired. Public properties appropriate for primary trailhead development include: The Vo-Tech School, Ramblewood Park, Purcell Park and Westover Park.

Secondary public access points might include: Pleasant Valley Elementary, Keister Elementary, Harrisonburg High School, Thomas Harrison Middle School, James Madison University, Spotswood Elementary School, Waterman Elementary School, Eastern Mennonite High School and Eastern Mennonite University.

Many tertiary opportunities exist for pedestrian access to the Greenway system. Typically these include use of existing sidewalks and paths along City streets. There are also many secondary pedestrian access point opportunities. These include pedestrian paths and proximity points that intersect the greenway in the JMU campus area and in the residential neighborhoods around the corridors. The more prominent of these should be marked with appropriate signage.

Public and Private Infrastructure

Utilities

Several different agencies are responsible for utilities in Harrisonburg. Much of the sewer, water and gas easements follow the existing road networks in and around the City. However, some of the easements cross what limited undeveloped land exists in the City.

Generally, the sewer easements along Blacks Run offer the best opportunity for Greenway development. These easements include underground utilities that are not volatile in nature, like natural gas

or electricity. They offer wide (8-15') swaths of linear open space and are typically located on gentle grades in the floodplain of Blacks Run and in the neighborhoods surrounding the Run. Manholes and similar structures create obstacles at some locations but generally can be avoided by adjusting the alignment of the trail within the easement. The use of these easements will create a benefit to the entity that is responsible for maintenance. Maintenance of the trail clear zones through mowing and debris removal will accomplish the same goals required for the maintenance of the easement.

Community Recreation

The following parks should provide connections to the Greenway system: Ramblewood Park, Purcell Park, Westover Park, Ralph Sampson Park and Hillandale Park. Parks that should include developed trailheads are listed above in the public access section of this analysis. Parks that do not include vehicular trailheads should include well-defined pedestrian and bicycle trailheads. These areas would include appropriate signage and trail information. In some cases, as with Hillandale Park, an on-street spur connection will be required.

Community Impact

Community Impact: Possibilities in Health, Education, and Economic Wellbeing

Discussed below are the expected effects of the Blacks Run Greenway upon two general levels of community:

1) The City and County, and 2) directly affected landowners and neighborhoods. Because the notion of community extends beyond municipalities and landowners, a second listing is offered as well—a listing of other types of communities, which will be affected by the Blacks Run Greenway. Much of the information included here was suggested to the Blacks Run Greenway Partnership in our public meetings.

Some Expected Effects upon the City of Harrisonburg and Rockingham County

- 1) **Monetary support:** Planning and organizational costs for the Blacks Run Greenway have so far been secured from public and private funding sources and grants—a “public-private” approach that will continue to be maintained after the Greenway is operating. It remains to be decided what entity will assume maintenance costs for the Blacks Run Greenway once it is operational.
- 2) **Recreation:** The experience of other communities shows that greenways are used by a broad spectrum of the public. The Blacks Run Greenway will freely serve all the community.
- 3) **Environment:** The Blacks Run Greenway will be good for both watershed (erosion and flood control, bank stabilization) and wildlife (creating and safeguarding habitat, improved opportunities for observing wildlife, enhancing Harrisonburg’s Bird Sanctuary status). By promoting alternative transportation and thus reducing the number of cars in use, and concurrently by encouraging planting of trees, the Blacks Run Greenway will also improve our air quality. Finally, it will also significantly improve Harrisonburg’s aesthetic appeal.
- 4) **Revenue:** Because greenways have been shown both to improve property values of adjacent lands and stimulate tourism, they are frequently cited as being good for local economies. Additionally, the Blacks Run Greenway will improve access to existing businesses and cultural sites, improve Harrisonburg’s overall image, and encourage the proliferation of so-called “niche” businesses in the downtown area and along its trails.
- 5) **Education:** The Blacks Run Greenway will serve as a living classroom for area schools and as an example of community development for area universities and colleges.
- 6) **Civic Pride:** Hundreds of City and County residents currently participate in Blacks Run beautification activities, enhancing the quality of life for all and creating a point of civic excellence. The Blacks Run Greenway will draw in thousands more residents and give the region a lasting landmark. Through service and recreation opportunities, the Blacks Run Greenway will bring people together, encouraging community building and melding of cultures and generations, and opportunities for City/County cooperation.

7) **Legal Liability:** If the Blacks Run Greenway is added to existing park properties, little change to liability coverage will be required, and it may provide statutory protections for which property owners are not currently eligible.

8) **Transportation:** In some areas, the Blacks Run Greenway will provide pedestrian and bike routes free from vehicular traffic; in other areas, the Greenway will provide lanes designated for bike and pedestrian use. The Blacks Run Greenway connects transportation modalities in ways that enhance the City's long-term transportation plans.

9) **Public Health:** The benefits of regular, moderate-intensity exercise are well documented, and the Blacks Run Greenway's multi-use trail will provide excellent and free opportunities for exercise. When people exercise, they are more productive, make fewer insurance claims, and generally enjoy better overall physical and mental health.

Some Expected Effects Upon Directly Affected Landowners and Neighborhoods

1) **Increased Property Values:** Data from other greenways indicates that landowners' property values typically increase. Blacks Run Greenway will be a marketable amenity for our realtors, developers, and economic development personnel (attracting new businesses).

2) **No Tax Liability:** Depending on the size of their property and how much of it is crossed by the Blacks Run Greenway, some landowners could receive modest tax benefits.

3) **No Reduction in Privacy:** Landowner privacy can be anticipated in the planning process. Experience from other greenways shows that when routes are cooperatively planned with landowners, privacy is not an issue.

4) **Liability:** There are legal mechanisms that can limit and indemnify liability of landowners when they grant easements for recreational uses to specific entities. Maintenance and liability concerns can reside with the holder of the easement.

5) **Transportation:** Children and residents within neighborhoods will be able to move about freely to different points on the Blacks Run Greenway.

6) Accessibility to the Greenway: Landowners will have direct access to the Blacks Run Greenway, and where the Greenway crosses public thoroughfares, the general public will have access.

7) Accessibility to Land: With proper route planning (cooperatively planned with landowners), the Blacks Run Greenway will create no more of an obstruction than the existing stream already represents.

8) No Cost to Landowners: Because the Blacks Run Greenway will be financed through a combination of public and private funds, there will be no cost to landowners. Landowners can expect to see their property values increase, and possibly see their property taxes decrease.

9) Building Families and Neighborhoods: The Blacks Run Greenway will provide highly accessible facilities and opportunities for people to gather and recreate together—an essential ingredient for maintaining strong ties in families and neighborhoods.

A Partial List of Self-Selected Communities Which Will Be Affected by the Greenway

The list below delineates groups and organizations which constitute different self-selected communities within Harrisonburg and Rockingham County, and which stand to be affected by the construction of the Blacks Run Greenway. This list is not comprehensive.

Arts and Cultural Community

Arts Council of the Valley*	Improved access to OASIS, Quilt Museum, Massanutten
Court Square	Theater Regional Library, Court Square Theater, and other
Franklin Street Gallery	galleries, museums and downtown cultural sites.
Massanutten Regional Library*	Venue for arts related events and programs.
Mitten Gallery	Venue for installation of public art.
OASIS Art Gallery	Opportunities for incorporating artists into structural
Quilt Museum of Virginia	planning in City and County.

Business Community

Convention and Visitors Bureau*	Improved access to businesses on/near Blacks Run.
Downtown Merchants Association*	Improved tourism profile.
Harrisonburg Farmer's Market*	Improved property values for adjacent lands.
H/R Chamber of Commerce*	Attractive to businesses looking to locate here.
PR Council of the Valley*	Attractive to development of "niche" businesses along the Greenway's corridors. Advertising possibilities via sponsorships of Greenway sections.

Civic Community

Boy Scouts of America	Fantastic opportunities for ongoing service projects and sponsorships.
Citizens for Downtown**	
Girl Scouts of America**	Increased recreational and service opportunities for City and County youth.

Education Community

Eastern Mennonite University**	Opportunities to enhance curricula in earth and social sciences.
Harrisonburg High School*	
James Madison University**	A ready-made tie-in to Keister's existing Nature Trail.
Keister Elementary PTA**	A safe route for pedestrian traffic to gain access to JMU, Rockingham and Harrisonburg Keister School, Harrisonburg High School, and other educationally significant points.
Youth Council*	Environmental Community
Greener Harrisonburg*	The Greenway would be an environmental achievement, with lessons to share with other communities.
Friends of the North River**	

Public Safety Community

Citizens for Pedestrian Safety* Safe, off-road pedestrian routes.
Transportation Safety Commission*

Recreational Community

<p>Shenandoah Valley Bicycle Club** Harrisonburg Skate Club</p>	<p>Multi-use trails can accommodate biking, jogging, hiking, skateboarding (illegal on City streets), rollerblading (illegal on City streets), and scooter riding (illegal on City streets).</p>
<p>Scenic 340*</p>	<p>Pocket parks offer a range of recreational activities, from picnicking and quiet reflecting to installation of playground or specialized equipment (e.g., climbing walls, skateboarding ramps).</p>

Retirement Community

<p>Avante Nursing Home</p>	<p>Blacks Run originates near the VMRC and flows through land recently acquired by the VMRC. Retirees would have direct access to the Greenway for exercise and recreation.</p>
<p>Virginia Mennonite Retirement Community (VMRC)**</p>	<p>The Greenway would be near Avante Nursing Home, providing easy access for exercise and recreation.</p>

NOTE. *Denotes that the BRGP has established contact with the identified group/organization. **Denotes that the identified group/organization is or has worked in a partnership capacity with the BRGP, or is the origination point for a member on the BRGP.

Socio-economic Impact

ECONOMIC DEVELOPMENT FACTORS

Travel at home is on the rise and a large population of retirees are increasingly looking for places to travel and recreate. Birding trails and historic theme related trails have become increasingly popular over past years. An increased interest in local history, flora and fauna

has created a market for related amenities and attractions. Those communities that provide such amenities and market them to visitors will find increased visitorship and revenues. The low cost of trail development can provide larger return benefits, such as increased sales revenue and property values.

An economic development study of the Miami Scenic Trail in Warren County Ohio (1999) showed that trail users spend an average of \$13.54 per person per visit. This money was spent on items such as food, lodging and retail items and generated more than \$2 million per year for local communities along the trail.

Talking with business people and community residents might help get a sense of how the Blacks Run Greenway might benefit the local economy. Typically greenways enhance the local economy through:

- ✎ Increased tourism. The popularity of multi-use trails has increased.
- ✎ Increased property values. Realtors and home construction companies have been marketing trails as amenities because it increases the value of the adjacent properties and helps attract businesses to the community.
- ✎ Increased business attraction. With the increased popularity of multi-use trails, adjoining neighborhoods have grown beyond the obvious recreation benefits once provided. Increased trail users spend more on durable goods (clothing, equipment, accessories, etc.) that are directly related to the existence of the trail.
- ✎ Reduced health care costs. Trails offer opportunities for moderate-intensity exercise to help improve physical health. As stated by the U.S. Center for Disease Control and the surgeon general, exercise reduces the risk for developing cancer, diabetes, and other diseases. Therefore, when people exercise they have fewer claims against their health insurance.