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TRAIL OPERATIONS, MAINTENANCE, SAFETY AND SECURITY

OVERVIEW

The following guiding principles will help assure the operation of a first-class trail:

1. Good maintenance begins with sound planning and design.
2. Foremost protect life, human dignity, property, and the environment.
3. Promote and maintain a quality outdoor recreation and transportation experience for users of all abilities.
4. Maintain quality control and standards and conduct regular inspections.
5. Develop a management plan that is reviewed and updated annually with tasks, operational policies, standards, and routine and remedial maintenance goals.
6. Conduct regular inspections and keep complete records.
7. Maintain an effective, responsive public feedback system and promote public participation.
8. Respectful of boundaries to adjacent properties.
9. Operate a cost-effective program with sustainable funding sources.
10. Establish, adopt, and implement a uniform plan and level of quality amongst all of respective agencies and jurisdictions along the entire trail.

OPERATIONS AND MAINTENANCE AGREEMENTS

Trail segments or phases are typically not managed by one agency or organization. Often, trail segments are managed by multiple entities. This will mostly be the case with any of the alternatives selected, as the trail will be multi-jurisdictional, extending through unincorporated Lee County, the City of Bonita Springs, Collier County, and the Village of Estero. Wider coordination with the Lee and Collier

Metropolitan Planning Organization will also likely be necessary. It is possible that management of the trail could involve the Florida Greenways and Trails Foundation or other partners, and then is transferred over to the appropriate jurisdictions at the appropriate time, depending on what works best for implementation. It will be necessary to execute management agreements for each segment or phase of the future trail. An example Operations and Maintenance (O&M) Interagency Agreement is included in the Appendix of this report.

O&M STRATEGIES AND ACTIONS

An O&M Plan should be in place prior to trail construction to keep a well-maintained, safe, secure and pleasant-to-use trail that is inclusive to all. O&M plans describe tasks of work to be performed, along with policies and programs that will be undertaken by responsible partners to operate, manage, and maintain the trail. The term operations and maintenance refers to day-to-day tasks, long-term remedial tasks and programs performed to assure resources and facilities of the trail are kept in a usable condition. This begins with sound design, durable construction, and a comprehensive O&M Plan. Community groups, residents, business owners, developers, and other stakeholders will continue to be stakeholders in the long-term stewardship of the resources preserved and enhanced by the trail.

ROUTINE MAINTENANCE

Routine maintenance refers to the normal regime of trail sweeping, trash and debris removal, sign replacement, weed control, tree and shrub trimming, and other regularly scheduled activities. Routine maintenance also includes minor repairs and replacement such as fixing cracks and potholes or repairing broken furniture and furnishings.

REMEDIAL MAINTENANCE

Remedial maintenance refers to correcting significant defects as well as repairing, replacing, or restoring major components that have been destroyed, damaged, or significantly deteriorated during the life of the project. Some items (“minor repairs”) may occur on a five-to-ten-year cycle such as repainting, seal coating asphalt pavement, or replacing signage. Major reconstruction items will

occur over a longer period or after an event such as a significant storm event. Examples of major reconstruction remedial maintenance include: stabilization of a severely eroded hillside, repaving portions of the trail surface, repaving a street used for biking, or replacing a bicycle and pedestrian bridge. Remedial maintenance should be part of a long-term capital improvement plan.

SEASONAL MAINTENANCE

Seasonal maintenance is in addition to the routine and remedial categories and includes seasonal tasks

that should be performed on an as needed basis. Designated maintenance crews should remove leaf debris, sediment from flood events, etc. from all trail facilities as soon as possible. Leaf debris is hazardous when wet and special attention should be given to facilities with heavier usage.

Life Cycle of Built Facilities

Constructed trail facilities will have a limited life cycle, or useful life. The life cycle varies based on environmental impact, use, and care of the resource. The following chart offers a typical life cycle for major trail elements.

Table 10.1. Trail Component Life Cycle Replace Costs

Trail Component	Life Cycle (Years)	Cost
Trail Materials		
Asphalt Trails	10-15	\$1.5 million/mile
Concrete Trails	25-35	\$2 million/mile
Gravel Trails	5-7	\$500 K/mile
Wood Bark Trails	2-3	\$750 K/mile
Wood Boardwalk Trails	7-10	\$2 million/mile
Amenities and Supporting Infrastructure		
Greenway Signage	7-10	\$5 K/sign
Park Bench	7-10	\$4.5 K/bench
Trash Receptacles	7-10	\$2 K/trash can
Wood Bollards	5-7	\$750/bollard
Metal Bollards	15-20	\$2.5 K/bollard
Crosswalks	3-5	\$7.5 K/crosswalk
Asphalt Parking Lot	10-12	\$10 K/space
Street Bicycle and Pedestrian Bridge	15-20	\$75 K/foot

Source: Greenways Incorporated (2022)

Table 10.2. Trail Maintenance Annual Costs Per Mile

Components	Elements	Maintenance Task	Frequency	Annual Instances	Qty. Per Mile	Unit	Approximate Annual Cost Per Mile
Pavement	Asphalt	Sweep/Blow	Yearly	4	140		\$140.00
		Remove Large Debris	Every other year	0.5	140		\$280.00
	Pavement Markings	Repaint Markings	Every 5 Years	0.2	66	EA	\$16,500.00
		Crack Sealing and Repair	Annually	1			\$600.00
		Restripe Lines	Every 5 Years	0.2	5,280	LF	\$5,280.00
Vegetation	Turf	Mow/ per SY	Twice a month	24	1,760	SY	\$88.00
		Reseed/ per SY	Every other year	0.5	1,760	SY	\$440.00
	Plants	Weeding	Every other month	6	140		\$140.00
		Replacement	As needed	1			\$4,500.00
	Trees	Mulch	Twice a year	2	176	EA	\$2,112.00
		Prune	Every 5 years	0.2	100	EA	\$50,000.00
Site Furnishings	Pedestrian Level Lighting	Replace lights	Life cycle of bulbs	Varies, contingent on fixture			
	Signage	Straighten	Yearly	1	2	EA	\$400.00
Trash Clean-Up	Storm Damage	Debris removal and repair	As needed after storm event	2			\$400.00
	Litter Pick Up	Remove trash and debris	Twice a month	24			\$120.00
	Empty Trash Containers	Empty containers	4 times a month	52			\$40.00
Total							

SAFETY AND SECURITY ON TRAILS

There is little evidence that supports trails as unsafe, insecure spaces. In fact, some research has found that crime rates remain generally unchanged or decrease near trails after they open, as in the case with a study that focused on trails in Indianapolis, Indiana¹. However, there is no evidence to support that trails increase safety issues.

DEFINITION OF SAFETY AND SECURITY

Safety is the prevention of accidents and user conflicts by reducing the likelihood of danger or risk. This is typically addressed through design criteria to prevent accidents and user conflicts. For the purposes of this report, safety will focus on environmental conditions and perceived safety through Crime Prevention Through Environmental Design principles.

Security is the protection of property and people from intentional acts that could result in injury or harm. This includes crime prevention and law enforcement (See **Crime Prevention Through Environmental Design** Section).

PERCEIVED SAFETY AND SECURITY

Perceived safety and security are essential to an individual's perception of risk. It is important to understand the influence of risk perception on a user's decision to use the planned Lee County trail and while using the trail. When visitors of all ages, backgrounds, and abilities feel secure and welcome on the trail, it empowers the community to take pride and ownership of the space. Community ownership of space can help reduce perceived security concerns. Interpreting personal security in public space can be subjective; however, key physical attributes in the landscape can promote a greater sense of security and user confidence.

¹ Ottensmann, John. (2020). The Development of an Urban Greenway Trail System and Levels of Crime.

SAFETY AND SECURITY CONCERNS FOR LEE COUNTY TRAILS

Some members of the public express concerns regarding a multi-use trail in the rail corridor operating through the Vines, a gated community and golf course in Estero.

Specific concerns included:

- Creating a potential conflict point with at grade trail crossing at Vintage Tree Parkway when accessing club house and/or exiting and entering community
- Bringing many people walking through a gated community, viewed as detrimental to the essence of a gated community
- Irreversibly negatively altering the Vines Community, a community with more than 30 years of history
- Impacting trees and foliage planted after Hurricane Irma at significant expense
- Endangering trail users with flying golf balls and thereby creating liability issues
- Negatively affecting golf course users
- Increasing safety and security concerns; community was gated for security reasons
- Lowering home values and affecting saleability
- Creating potential conflict points with grade trail crossing at Vintage Tree Parkway

The concerns reflected by members of the Vines Community are common when communities initially are considering the opportunity to have improved access to a public amenity. Auspiciously, substantial design strategies have been developed to address similar concerns and can be applied to the Lee County Rail Trail.

The following sections seek to take the Vine Community's concerns into thoughtful consideration, while presenting mitigation efforts to ensure that the proposed trail is a beneficial asset to all of its stakeholders and neighbors.

The following sections discuss the following:

- Strategies that particularly respond to concerns about increased criminal activity
- Strategies that specifically address unique issues due to proximity to golf courses.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

Crime Prevention Through Environmental Design (CPTED) is a proactive technique in which the design and effective use of the built environment can lead to a reduction in the fear of and incidents of crime and asocial behavior. CPTED strategies rely upon the psychological design of space to influence user decisions that affect the built, social, and administrative environment rather than addressing crime concerns by implementing visually affronting security or target-hardening measures. CPTED promotes high quality and visually pleasing solutions as first responses that aim to enhance the legitimate use of space. CPTED interventions can be applied without interfering with the original design program of a space. It can be economical to implement, especially if it is done early at the planning and design stages of a project. The five principles of CPTED include:

- Natural Surveillance
- Natural Access Control
- Territorial Reinforcement

While CPTED originates as a community-driven application, it is subject to individual practitioner biases, especially in law enforcement. If applied improperly or in a vacuum, CPTED can rely too heavily on enforcement and may result in disproportionate policing of space and bias against specific groups of individuals, including people of color and youth. CPTED strategies are successful when multiple sectors of the community are involved and the project maintains the goal of providing public space that is safe, secure and welcome to all users.

NATURAL SURVEILLANCE

Natural surveillance helps reduce criminal activity by increasing the perception that people can be seen while using a trail. Natural surveillance occurs by designing the placement of physical features, activities, and people in such a way as to maximize visibility and foster positive social interaction among all users of public space. It is important that natural surveillance design does not support the

reinforcement of negative stereotypes among all users. Natural surveillance design features include:

- Use adjacent roadways and the passing vehicular traffic as a surveillance asset.
- Create landscape designs that provide surveillance, especially in proximity to designated points of entry and opportunistic points of entry.
- Use the shortest, least sight-limiting fence appropriate for the situation.
- When creating lighting design, avoid poorly placed lights that create blind-spots for potential observers and miss critical areas. Ensure potential problem areas are well-lit: pathways, stairs, entrances/exits, parking areas, children's play areas, recreation areas, storage areas, dumpster and recycling areas, etc.
- Avoid too-bright security lighting that creates blinding glare and/or deep shadows, hindering the view for potential observers. Eyes adapt to night lighting and have trouble adjusting to severe lighting disparities. Using lower intensity lights often require more fixtures, resulting in blinding glare and/or deep shadows, hindering the view for potential observers.
- Place adequate lighting along the trail and other pedestrian-use areas so that they are well-lit.
- Natural surveillance measures can be complemented by mechanical and organizational measures. For example, closed-circuit television (CCTV) cameras could be utilized.

NATURAL ACCESS CONTROL

Natural access control limits the opportunity for crime by taking steps to clearly differentiate between public space and private space. Natural access control occurs by selectively placing entrances and exits, fencing, lighting, and landscape to limit access or control flow.

- Use a single, clearly identifiable, point of entry.
- Use low, thorny bushes to keep people out of sensitive areas.
- Use waist-level, picket-type fencing to control access and encourage surveillance.
- Use natural access control to complement mechanical and operational access control measures, such as target hardening. Target hardening involves applying locks, physical barriers, security gates, etc.

NATURAL TERRITORIAL REINFORCEMENT

This is the process of establishing a sense of ownership, responsibility, and accountability for the public trail, and to impress upon visitors that a space is cherished by its neighbors. Territorial reinforcement measures, which may be physical or symbolic, tell people they are in a defined public space. Territorial reinforcement along trails can use color, texture, and hardscape variations to signify that the trail is public. Branding techniques used by the The Village of Estero, The City of Bonita Springs and Lee County are also successful strategies, such as signage and wayfinding systems. Public art on trails is also a positive method of territorial reinforcement, as it provides a message of public or civic space to users.

Natural territorial reinforcement occurs by using buildings, fences, pavement, signs, lighting and landscape to express ownership and define public, semi-public and private space. Additionally, these



*Bicycle Art on the MoPac Trail in Nebraska
Alta Planning + Design*

objectives can be achieved by assignment of space to designated users in previously unassigned locations.

- Maintain premises and landscaping such that it communicates an alert and active presence occupying the space.
- Provide trees in residential areas. Research indicates that, contrary to traditional views within the law enforcement community, outdoor residential spaces with more trees are seen as significantly more attractive, safer, and more likely to be used than similar spaces without trees.
- Restrict private activities to defined private areas.
- Scheduling activities in common areas increases proper use, attracts more people, and increases the perception that these areas are safe.

Specific Mitigation Strategies for Trail Impact on Neighboring Golf Courses and Gated Communities

Golf courses are developed and designed for a specific user group and activity (golfers and golf). Golf courses are not public areas like parks or open green space. Managers of private and public golf courses operate these facilities to make a profit, and are concerned with a golfer's appreciation and enjoyment of the course.

Golf course developers and operators plan, design, and operate their facilities assuming there will be no general public access. There typically are not corridors preserved for trails or bikeways, nor is there consideration given for allowing the general public to traverse the greens or tee areas. Any trail that is being considered for an area with an existing or proposed golf course should work very closely with the course managers and designers before basic feasibility can be determined.

Design Considerations

When considering any route that is close to a fairway or tee, or a route that bisects a golf course, it is important to consider direction of the tees, fairway, greens, and golf cart circulation. On tees, any trail located within a 180-degree arc of the tee orientation and within 200 yards or less in distance, will need to be buffered by berms, fencing and/or trees and shrubs. It is recommended that tees be oriented as far away from the trail as feasible. On fairways, any

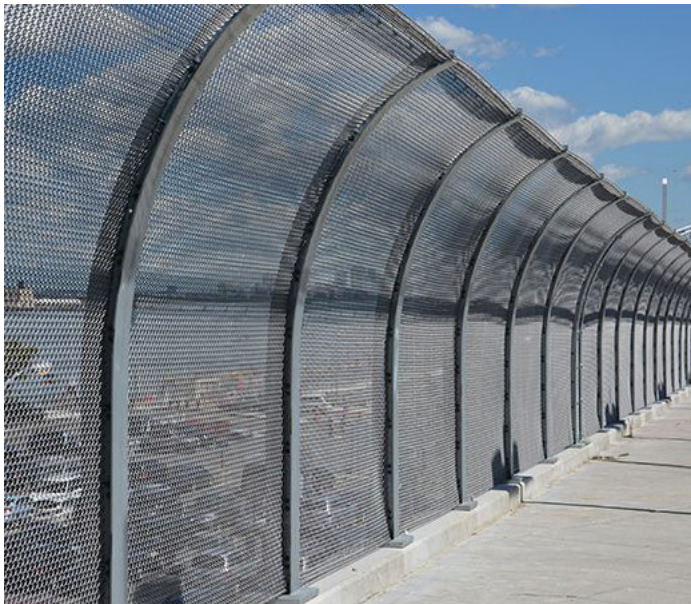
trail located within 50 feet of the fairway would also need to be buffered by berms, trees and/or shrubs, similar to a public roadway. Any trail located closer than 50 feet from the backside of a green would need similar protection.

There are various fencing and barrier types that can be used to create the buffer recommendations previously.

FENCING STRATEGIES:

Fencing Types – At some point given proximity to active course areas, fencing will be necessary to protect trail users from errant golf balls. Below is a compilation of fencing types.

High Curved Fences



Curved fencing near the Staten Island Ferry Eagle Fence

The high curved fences are typically a minimum of 12 feet in height and curved at the top. The photograph above shows an example where the fence is painted black to blend with the landscape. Below, is an example of utilizing trees as a form of visual as well as protective screening for trail users. In many cases no fencing is needed due to golf course configuration and thorough understanding of possible golf ball trajectories.

Vegetation



*Vegetation buffer along a paved trail
Alta Planning + Design*

Limited information from existing case studies indicates that safety, security, and liability have not been major problems on existing trails. If properly designed and managed, a trail would have roughly the same safety conditions as a home or public road located next to a golf course—both common conditions. The following sections outline how a trail can maximize safety and security along golf courses while minimizing liability.

The following pages provide examples of more extensive as well as costlier methods of protecting trail users. The cage fencing fully encloses trail users which would be appropriate for trail alignments that pass under driving ranges.

Cage



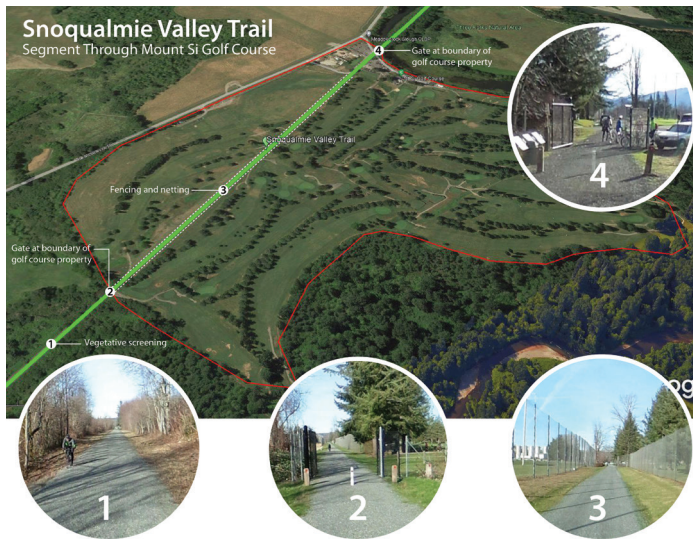
Chain link cage over trail
Presidio Custom Metalworks

SIGNAGE



No Trespassing signage
Viewpoint Vancouver

Netting



Netting and fencing between a golf course and Snoqualmie Valley Trail

Netting allows for intercepting higher flying golf balls and while the initial cost of materials is low compared to metal fencing, long-term maintenance and replacement should always be considered when choosing this material. The netting and fencing design implemented along the Snoqualmie Valley Trail in the image above can be replicated to enhance safety and security along the trail segment that passes through the Vines community.

When building a trail along a golf course, signage is necessary for delineating the point of entry to private golf course property. Trail users should be made aware of the Estero Golf Course hours of operation and given reminders on ways to ensure respectful conduct. Simple and legible signage with text printed against a contrasting background color is ideal.

Signage – Signs can help manage trail users in golf course areas. Some trails post a sign at the trail entry reading: “Active Golf Course. Stay on the trail surface, no stopping, and please be quiet. Flying golf balls may cross the trail: use at your own risk.”

TRAIL DESIGN

In order to maximize safety and function for users, and to minimize liability exposure for the project developer/operators, the trail design should meet all mandatory and advisory standards as identified by the local agency, FDOT, and other relevant agencies and documents. A Design Exception process should be completed with appropriate documentation on (a) the need for any non-standard design, (b) any remedial actions needed to address potential problems, and (c) an analysis on the potential for safety problems.

Maintenance Costs

1. Provide an adequate pavement structural section (3") to support maintenance vehicles
2. Minimize the extent of retaining walls and slope disruption
3. Provide adequate access to the path to prevent trespassing
4. Provide adequate fencing where needed

Properly designing and managing a trail should achieve a reasonable level of safety and security. Studies by the Rails-to-Trails Conservancy indicate that crime and other problems on bike paths generally is the same as the adjoining communities. These studies have also shown that the best and most effective method of enhancing safety and security is to design a functional facility that is well used by the general public. Bike paths in isolated locations exist around the country and have generally not experienced significant safety problems. The approach to safety and security outlined in this plan is to provide reasonable security features and be prepared to enhance those efforts in the future if safety and security prove to be problems.

Preventing Trespassing

In order to minimize the risk of trespassing across the golf course, a higher security type of fencing shall be installed. This may include hardened steel or wrought iron.

A summary of key security and safety measures is presented below.

1. The golf course will be posted "No Trespassing" to keep trail users out of restricted areas. Appropriate fencing that discourages scaling by potential trespassers will be provided as needed. No Trespassing signs will be posted with maximum fines supported by local ordinance.
2. The Trail Manager will provide local fire and police departments with a map of the system, along with access points and keys/combinations to gates/bollards.
3. The local agencies will enforce rules of the road and other standard recreational guidelines.

ADOPT-A-TRAIL

An Adopt-a-Trail program is one method for maintaining the environmental and aesthetic quality of the trail by generating a strong sense of ownership among citizens. Through the Adopt-a-Trail program, residents, businesses, trail users, and various community groups can have an active role in maintaining the lands and facilities of the trail. Volunteers work with local agency staff to participate in various projects, which may include:

- Litter pickup
- Leaf raking
- Graffiti removal
- Spreading of mulch, gravel
- Sweeping of paved trails
- Removal of exotic invasive plants
- Reporting of safety hazards, illegal dumping, injured or dead animals, storm damage, and other issues
- An example Adopt-a-Trail form is included in the Appendix of this report.

TRAIL AMBASSADOR PROGRAMS

Trail Ambassadors differ from those who participate in Adopt-a-Trail services. Ambassadors are an additional set of eyes and ears on the trail. They promote goodwill, help trail users with minor needs (such as directions) and promote safety and authorized use of the trail. Ambassadors often work in pairs and are usually given clothing to signify

their status. Ambassadors are typically volunteers who provide services to an entire trail corridor. Some communities may deputize Ambassadors and provide them with telecommunications equipment. Ambassadors are skilled in first aid, they are very knowledgeable about the trail and location of services and facilities, and they are also knowledgeable about natural and cultural resources. As with Adopt-a-Trail programs, Trail Ambassadors will undergo orientation and training. This training should include Diversity, Equity and Inclusion (DEI) training to prevent biases while volunteering. They are asked to work specific dates and times. Some local governments will ask that they sign waiver of liability forms. Often times, Ambassadors make use of a bike to complete their service. An example Trail Ambassador program is included in the Appendix of this report.

TRAIL WATCH PROGRAM

A Trail Watch program for the trail will help to promote safety and appropriate trail use by providing information and assistance to all trail users. Trail Watch Volunteers observe and document safety issues requiring attention, serve as a positive presence on the trail and would assist the local governments and law enforcement agencies with keeping the trail safe and well maintained.

FUNDING FOR O&M

Several types of funding sources can be identified and it is likely that a combination will offer the best solution. Following are potential funding sources:

- Budget Allocation Commitments
- Partnerships
- Dedicated Tax
- Creating an Endowment
- Earned Income and User Fees
- Outside Funding Sources
- In-Kind Services

BUDGET ALLOCATIONS

These funds come directly from annual budget allocations by the respective municipalities and regional partners. Typically, this is the most reliable revenue source for project management, operations,

and maintenance. This is the most common and likely source of O&M funding. Note that on most projects around the nation, private donors or other potential partners will want to see a strong long-term public commitment to management as a condition of awarding grants for capital trail improvements and management programs.

PARTNERSHIPS

Some the elements of the program serve multiple public and private benefits including access for floodway and stream bank upkeep, promotion of local businesses, utility access, school facilities, road maintenance, and enhancement of adjacent private properties. This may provide a number of opportunities for task sharing and cost sharing among the various beneficiaries. These options should be vigorously and creatively explored. In addition, area businesses may have a vested interest in sponsoring and participating in trail maintenance along segments of the corridor.

DEDICATED TAX

A number of communities have specific dedicated tax programs in place such as open space sales tax or special districts with property tax based funding. To implement such a program, it will be important to have a specific visionary plan in place and build broad-based public support and partnerships with park, recreation, and open space advocacy groups. Pursuing this process should begin with an examination of the potential property, sales, lodging, and other potential tax bases.

For example, Johnson County Park and Recreation District in Shawnee Mission, KS raises approximately \$1 million annually through a mill levy with 50% going to construction and maintenance of trail and open space facilities. Jefferson County, CO passed a ½ cent Open Space Tax in the late 1970's. This tax generates over \$14 Million annual for acquisition and maintenance of open spaces, trails, and local park facilities. Voters in the St. Louis area approved a bi-state regional park district effort. They created the multi-county Metropolitan Park and Recreation District on the Missouri side and the Metro East District on the Illinois side. With a 1/10-cent sales tax allocation the two districts raise approximately \$10 million annually (\$9 million on Missouri side and \$1.5

million on the Illinois side). A portion of the funds will go toward building and maintaining an extensive regional trail and greenway system.

CREATING AN ENDOWMENT

An endowment is a set-aside account held strictly to generate revenue from investment earnings. The endowment could be held by a non-profit, such as the Florida Greenway and Trails Foundation. Funding of the endowment could come from a percent of capital grants and from an endowment campaign. The endowment could also be funded by bequests and deferred giving such as donations of present or future interests in stock or real estate. To have an effective impact the endowment should have several million dollars in its "corpus" (asset holdings). This endowment could be built up gradually in tandem with project development. Some private organizations, such as the Yakima River trail system Foundation in Washington State, earn funds through bingo and special events.

EARNED INCOME AND USER FEES

This is a revenue stream created by the use of the amenities such as a user permit for trails and open space facilities. This might be an annual pass that can be purchased online or at grocery stores, community centers, etc. Cannon Falls, MN raises funds through a "Wheel Pass" program where users 18 and older must purchase a user permit providing funds for trails maintenance. Another community near Saratoga, NY, a \$35/year membership fee subsidizes trail maintenance. In an option would be leasing trail rights-of-way for fiber-optic and other utility corridors. The Niagara River Trail (Canadian side) and the W&OD Trail Corridor in Virginia (Northern Virginia Regional Park Authority) receive several hundred thousand dollars annually in lease revenue for telecommunications cable license fees.

In most cases, however, earned income revenue streams are not likely to fund more than a fraction of the total management costs, though the fraction could be substantial. Note that these programs have an administrative cost. Furthermore, it is also important to avoid compromising or commercializing the quality of the trail.

OUTSIDE FUNDING SOURCES

Outside contributions include outside public and private sector grants that can be applied toward management including routine and remedial maintenance. Presently the Federal ARRA "Stimulus" program has funded trail replacement projects in a number of locations, though availability of such programs in the future are hard to predict. Private contributors might help fund seasonal youth "trail ranger" programs or purchase equipment such as a sweeper. Creation of a trail advocacy/land conservancy non-profit might offer a way to raise money through "membership" donations. Note that, with the exception of remedial projects, generally, private donors are not interested in funding operations and maintenance. Many forms of outside funding may be unpredictable year after year and therefore is "uncontrollable income."

IN-KIND SERVICES

Management services might be supported and enhanced by available non-cash resources such as volunteers, youth, student labor, user groups (such as cyclist associations), correctional services, and seniors. In-kind support may also include donations of materials and equipment. Groups may be encouraged to "adopt" a park or a trail and hold annual fundraisers. The corridor might also be eligible for youth programs such as AmeriCorps.

Note, however, that volunteer and in-kind participation will likely meet only a fraction of the operations and maintenance needs and funding of these programs may be sporadic. The management program will still need a base of trained professionals and proper equipment. These programs require staff time to coordinate.

Volunteers offer a cost-effective method for maintaining certain aspects of the trail. For example, local Eagle Scouts can work with local government staff to build or repair bridges and help with other small construction projects. The Federal Volunteer Protection Act of 1997 protects the volunteer worker. This act protects volunteers of nonprofit organizations or governmental entities. The Act states that such volunteers are not liable for harm caused by their acts of commission or omission

provided the acts are in good faith.

TRAIL PROGRAMMING

A trail is an ideal landscape for programming and hosting of events. Some of these events can generate additional revenue for local governments to help offset the costs associated with operation, maintenance, and management of the trail. The trail can also serve as an outdoor classroom where the young and the elderly alike can learn about the wonders of nature and visit important cultural landscapes that are part of our community. Local governments can work with schools such as Bonita Springs Charter School, Estero High School, Island Park High School among others, colleges and universities such as, Florida Gulf Coast University, organizations, and groups on a case-by-case basis, to make the trail areas available for ecological and environmental study. Typically, a local government will review and approve curricula and programs that include access and use of trail to ensure that these programs are compatible with other non-programmed uses.

PERFORMANCE EVALUATION

Once the trail is opened for public use, the lead agency should work with local governments such as the Village of Estero and the City of Bonita Springs to evaluate its use and performance and safety. For example, if transportation funds were used, how effective is the trail segment at providing alternatives to the use of cars for a specific trip? If environmental education was a primary emphasis of a particular segment, how effective has the segment been in serving the educational needs of school groups? Evaluations can be completed starting within one year of the official public opening of a given segment.

LOCAL JURISDICTION INTERVIEWS

OVERVIEW

There are numerous governance structures often used for managing and maintaining multi-use paths across the United States. They include single governmental organizations such as state or local agencies, multi-agency collaborations such as

cooperative arrangements or commissions, or new entities such as joint powers authorities or special districts. In some cases, nonprofit organizations are responsible for path operations and maintenance.

The Lee County Rail Trail will exist within a multi-jurisdictional landscape, and will require a governance structure capable of coordinating among several stakeholders, including local governments, nonprofit organizations, and the public. Key to the smooth management of the Lee County Rail Trail is an understanding of the level of available resources and commitment of local governments to maintain and operate the trail as a public facility.

STAFF INTERVIEWS

Staff from Lee County, Village of Estero, and City of Bonita Springs were interviewed by the planning team to discuss existing maintenance and operation structures in their communities as well as future capacity to take on more inventory. Expectedly, the size of each municipality is contingent on the availability of resources. Some government agencies can contribute available staff resources to support maintenance; others provide monetary resources and contract the labor required to manage segments of trail within their respective jurisdictions. Topics of discussion included routine and remedial maintenance responsibilities for the trail; safety and emergency response, and patrolling.

A summary of discussion points is listed below:

Controlling Access

Once the rail corridor is acquired, either through purchase of an easement or through railbanking, it becomes public right-of-way. Roadway crossings at the former rail corridor are also public rights-of-way so it will be challenging to control or limit access along the adjacent properties at these areas, should control be desired. Fencing, grade-separated crossings, and vegetation were discussed as potential buffers or barriers where there are proximate single-family homes.

Public Safety

Lee County is the prevailing authority for public safety in the study area, and provides community policing for the local governments. The County Sheriff's office will be responsible for emergency and incident response. This structure will continue once

the trail is built.

Maintenance Expectations

Routine and remedial maintenance duties are understood by all those interviewed for the trail. There was some concern regarding areas adjacent to the trail easement or maintenance easement. Future maintenance agreements will need to be clarity on private/public boundaries and level of service since local governments do not have the resources or capacity to maintain areas adjacent to the trail, even those that have been improved as part of the trail project. Introducing a project of this scale would require Lee County to hire at least two additional maintenance staff. The expectation would be that in areas of Bonita Springs and Estero, those communities would provide cost contribution to offset maintenance demands. Mowing and other landscape maintenance would be contracted out to a private service.

Special Considerations

Other items to be considered during trail management include homeless encampments. While not pervasive along the corridor, it has been observed. Alligators during mating season can also be a safety issue along canals.