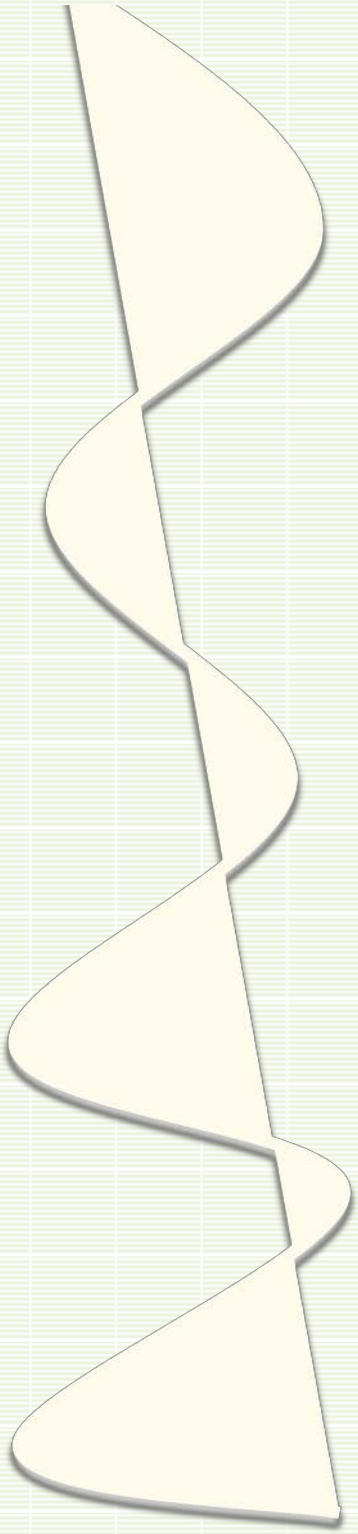
Trail Asset Management Plan

LIVINGSTON
Montana
GO BEYOND YELLOWSTONE



INTRODUCTION

The City of Livingston has successfully implemented over 8 ½ miles of trail in the last 25 years. With this construction and continued demand for even more trails, there is growing concern over how the trails will be maintained, which departments are responsible for maintenance, and how it will be funded. Many potential funding sources for trail construction have become available in recent years. In fact, many trails in Livingston have been constructed using grant funds made available through the State of Montana and the National Forest Service and other similar programs. Unfortunately, as funding opportunities have developed for trail construction, comparable funding options have not necessarily been available for trail maintenance. The City of Livingston is therefore left with the task of addressing maintenance concerns and identifying a viable funding source to maintain the trail system and make repairs and replacements as the system ages.

This Trail Asset Management Plan has been developed for use by the Public Works Department to help address future costs related to trail maintenance and development in the City of Livingston's future Capital Improvement Plan. Determining exactly what work will be needed to keep our trail system safe and appealing is a goal that the Public Works Department and the City Manager's Office take very seriously.

In every walk with nature one receives far more than he seeks. -John Muir

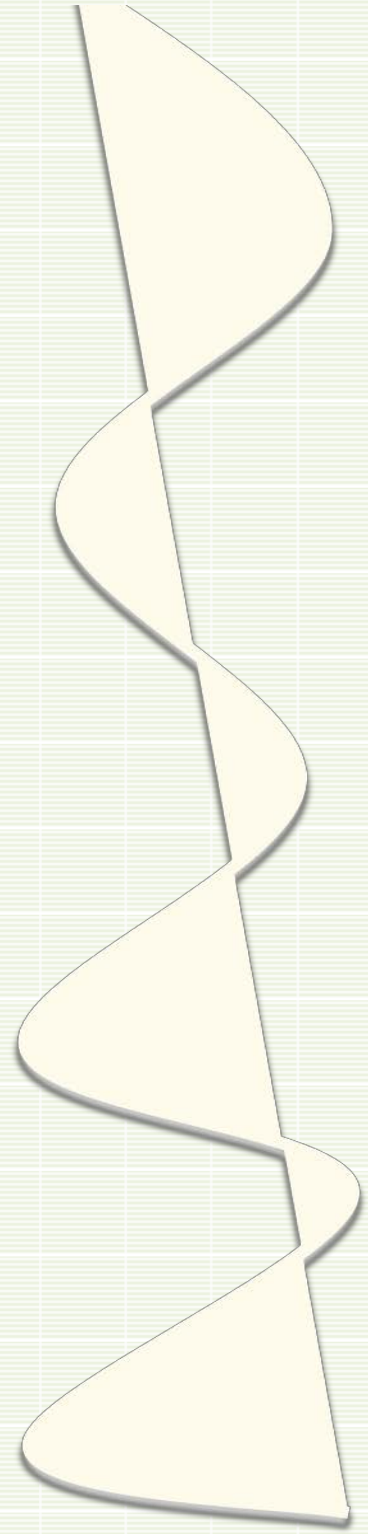
PLAN DEVELOPMENT PROCESS

In addition to the recreational, alternative transportation and aesthetic value, a newly designed trail can provide to a community, it can also supply positive economic value through trail related spending. Findings that are incorporated into this maintenance plan include Inventory of Existing Conditions, Maintenance Item Checklist and Task Budgeting, all of these documents will help clearly represent to the public how important budgetary support is to a well maintained trail system. The benefits of trails hinge on continued community support of funding allocations. One factor that can greatly influence the public's support of trail funding is the visual condition of trails from regular maintenance and up-keep. Therefore, the maintenance plan becomes a critical component in the quest to gain public approval and support of trails moving forward.

As documented in several different sources, the first step in development and implementation of a trail maintenance plan is proper coordination and management. The three steps proposed for development of a trail plan are creating the plan, addressing the trail issues, and developing a plan for action. A trail maintenance plan is mentioned in the second step as an important issue since trail funding is often secured at the beginning of the project. Governing agencies are more likely to support a trail project if current and future maintenance funds are allocated at the start of the venture.

The task of developing a maintenance plan for the design life of a trail can be challenging with respect to determining an appropriate schedule. Proper coordination of responsibilities and maintenance schedules will help to ensure a complete and workable maintenance plan budget. The process of developing a trail maintenance plan can help ensure maintenance procedures are coordinated and continue to stay on schedule as new trails are constructed. When creating maintenance procedures for existing trails it is imperative to begin by creating an inventory of existing trails and current conditions.

I have a room all to myself; it is Nature. -Henry David Thoreau



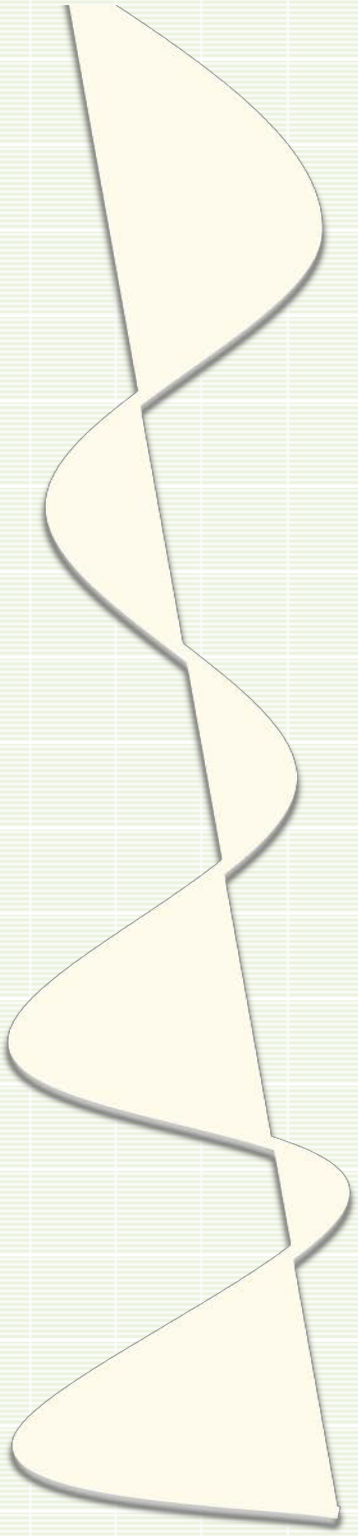
INVENTORY OF EXISTING CONDITIONS

An inventory of existing trail routes is often maintained to ensure proposed trails are connected with existing trail systems to provide connectivity. Trail inventories are also used to chart maintenance work and classify budgetary needs. A trail inventory should include location, class of trail, size, surface, culvert information, location and type of signs, location of other amenities (e.g., benches, trailheads, restroom availability and kiosks), and entry location for maintenance and emergency operations. In addition, the guide includes a maintenance management system which is a database of all maintenance records and recorded work hours. This system allows the users to better schedule and track maintenance work hours for future planning. Using a GIS based maintenance map together with a trail inventory and maintenance management system to visually illustrate their trail network. Maintenance maps can be used for planning purposes as well as targeting maintenance activities. Incorporating proposed trails into mapping aids planners in selecting the best trail route for future proposals.

An inventory of existing trails can provide information about current maintenance needs and locations, as well as help to identify recommendations for future requirements. Once a corresponding list of needs has been generated, a checklist for maintenance operations can be developed.

MAINTENANCE ITEM CHECKLIST

In general, maintenance items are grouped into two separate categories: Routine (or scheduled) tasks and Non-routine (or as-needed) tasks. The routine tasks are scheduled tasks that can be developed from an existing maintenance management system. Routine tasks will help extend the life of the trail, provide a high-quality trail system and improve safety. Non-routine tasks are unscheduled tasks that may be the result of routine tasks (i.e., inspection). Non-routine tasks include both major redesign and construction components, as well as minor tasks that are not regularly scheduled. The frequency of scheduled tasks will vary depending on location and the surface of the trail.



TASK BUDGETING

Although on a portion of maintenance tasks need to be routinely scheduled, the entire budget for both routine and non-routine tasks needs to be developed at the beginning of the project. Developing a cost per mile in regards to either paved or un-paved paths would assist in future budget planning. Costs for scheduled tasks such as trail inspection, trail sweeping, trash removal, tree/shrub pruning, mowing of vegetation, signage updates, trash removal/litter clean-up, flood damage repair and scheduling of maintenance tasks.

ADDITIONAL ITEMS

To help ease the budgeting burden on the City of Livingston the idea of adopting a user-based funding strategy might work to help lower maintenance costs. Programs such as “Adopt-a-Trail” or “Adopt-a-Spot”, where users and volunteers agree to pick up trash and litter and report any obvious problems with the trail would help cut down on daily maintenance tasks.

INVENTORY OF EXISTING TRAILS

For the purposes of the trail asset management plan, the Livingston area trails have been separated into hard surface multi-use trails and soft-surface trails. The following paragraphs describe each type of trail.

Hard Surface Multi-Use Trail

Hard surface multi-use trails are generally 8-10 feet wide with an asphalt surface, which provide opportunities for multiple uses (bikes, pedestrians, roller blades, strollers, etc.) and are generally considered to be ADA accessible. These include trails located within City parkland and along roadways within City rights-of-way.

Take only memories leave only footprints- Chief Seattle

INVENTORY OF EXISTING TRAILS

Soft Surface Trails

The large majority of trails in Livingston are soft-surface trails. Soft-surface trails are generally constructed with gravel, fines, wood chips, or compacted native soils.

TRAIL INSPECTION

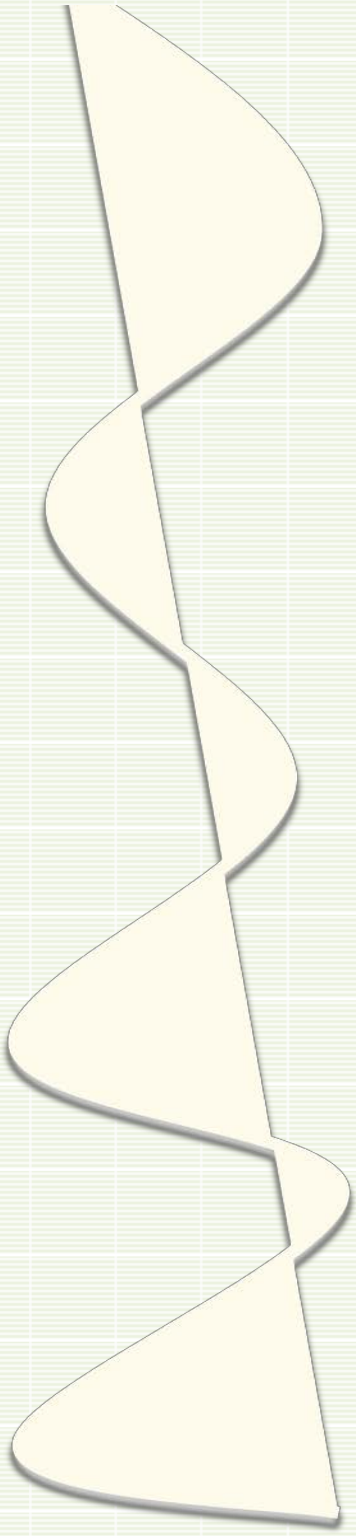
As a basis for analysis, a comprehensive inventory of existing trails was conducted as part of the development of this plan. It was completed by the City of Livingston Roaming Crew Department. The Department completed a checklist of each trail segment's condition. The checklist that was used, along with a summary of the inspection results, is provided in Appendix B.

EXISTING MAINTENANCE ACTIVITIES

The City of Livingston Roaming Crew Department currently maintains all of the trails located within City parkland. Common tasks that they complete include snow removal, weed control, graffiti removal, sweeping, trash removal and mowing. Funded through the City General Fund, the Roaming Crew Department is responsible for the maintenance of all parks and trails. This Department's budget is vulnerable and in the past has not been able to keep up with the growing demand. In addition, as the City continues to grow, the number of parks and trails may increase with each new subdivision. There is a considerable amount of man hours, paperwork and equipment and material costs that must be considered when requesting to add a new trail.

RECOMMENDED MAINTENANCE ACTIVITIES

The following paragraphs address recommended maintenance activities. Recommendations are primarily for the soft surface trails, because the City of Livingston currently only has one hard surface trail.



ROUTINE MAINTENANCE ACTIVITIES

TRAIL INSPECTION

Trail inspection is an integral task to all trail maintenance operations, especially as they relate to ensuring user safety. Inspections should occur on at least once a month, with the overall frequency depending on location, type and age of the trail. City staff currently performs trail inspections in conjunction with other routine maintenance activities. They may also be conducted in response to user complaints. Trail inspections should also include seasonally checking for tree hazards such as low hanging branches and diseased or dead trees.

All trail inspections and complaints regarding the physical appearance of the trails should be documented. Routine inspections and documentation can remain relatively simple and should include inspection of bridges, tunnels, railing, and surfaces. When repair work or other maintenance is performed the employee will document this through the Public Utilities work order system. Keeping track of time spent and equipment or materials used will help determine how much to set aside in future budgets for trail maintenance

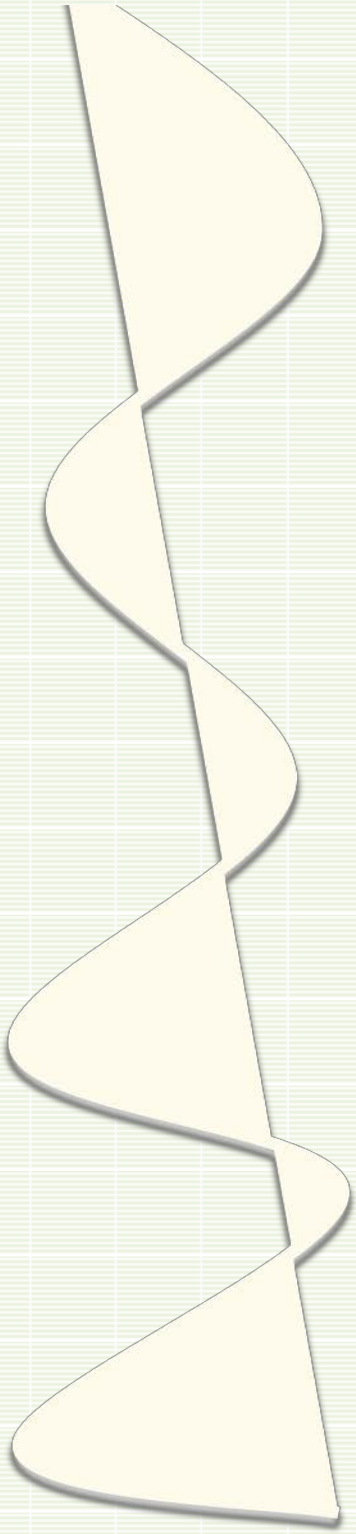
Trail Sweeping

Trail sweeping is an important aspect of trail maintenance that helps to ensure trail user safety. The type and frequency of sweeping required will depend on trail design and location. Trail sweeping should be done on an as needed basis and may tend to be limited to localized sections that tend to attract more debris. Trails that require sweeping of the whole trail should be swept by machine, but trails that only require spot sweeping can be swept by hand or with blowers.

Snow Removal

Snow removal on hard-surface trails should occur as soon as possible after a snowfall. Unless it is determined that within a short period of time the weather will warm up and correct the situation.

You are a perishable item, live accordingly - Unknown



ROUTINE MAINTENANCE ACTIVITIES

Mowing

Vegetation management along trails through natural areas should consist of mowing at least once per growing season. Typically a strip 2 to 5 feet wide is mowed along the edges of the trail. This should be done to prevent weed encroachment onto the trail surface, improve sight distance and provide a clear run out zone.

Trash Removal

Trash removal from trail corridors is important from both a safety and an aesthetic viewpoint. It includes removing ground debris and emptying trash containers. Trash removal should take place on a regularly scheduled basis, the frequency of which may depend on trail use and location. Because litter is a year-round problem, trash containers should be located near street crossings or parking areas where they are easily accessible by maintenance vehicles. Pet litter bag dispensers and signage should also be located near trash containers. The ongoing maintenance costs associated with pet litter stations (including the cost of refill bags) should eventually be included in the annual budget for all trails.

Irrigation

Due to the fact that Livingston lies in the semiarid west, it is important to plant vegetation along the trails that can endure fairly extreme environmental conditions. Native landscaping should be used when possible. Where supplemental watering may be needed, provisions must be made during trail construction for the use of a drip or spray irrigation system. The associated budget amount should be incorporated in the trail development plan.

Tree and Shrub Management

Trees and shrubs along the trails should be managed to keep them from interfering with trail use, eliminate hazards and prevent trail damage.

ROUTINE MAINTENANCE ACTIVITIES

Weed Management

Weed control along trails should be performed to target problematic vegetation in addition to the species that are identified as noxious weeds. Weed management requires a continuous effort because noxious weed species are hardy plants that are often times difficult to eradicate. Newly constructed trails require heavier treatments for the first two to three years until new vegetation is established. All new trail projects should provide a vegetation/weed management plan, along with maintenance and associated funding plans, to effectively address the future maintenance of these systems. The City of Livingston will work in conjunction with Park County to manage weeds along our trails.

NON-ROUTINE MAINTENANCE ACTIVITIES

Graffiti Removal

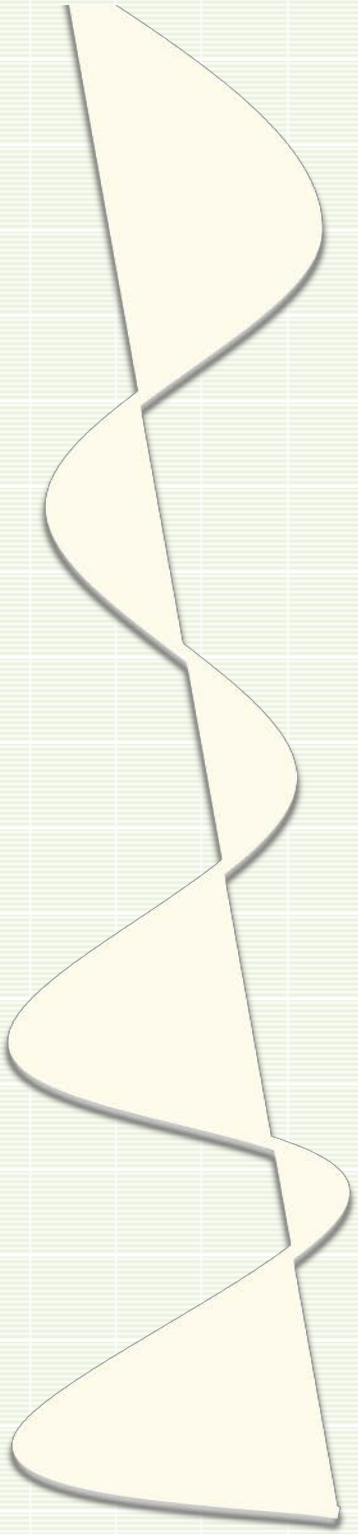
Graffiti is an unfortunate and costly occurrence in parks and public lands, and trails and their associated amenities are not exception. The key to graffiti control is constant observation and prompt removal.

Trail Signage Repair/Replacement

Trail signage includes direction, location and other important information. Signs should be repaired or replaced as soon as possible. Future signs should all be consistent in appearance. As budget allows sign consistency should be updated through all trails. Please see attachment Appendix D.

Trailheads

As the trail system expands, there will be more need to identify new trailhead locations serving as access points to the trail system and to improve existing trailheads. These trailheads should include amenities such as parking, public restrooms, and kiosks with trail maps, location and emergency information. As these facilities are installed, consideration should be given to material types, durability and location for ease of maintenance and repair. Standardization of these facilities is important to reduce required maintenance operations and costs.



NON-ROUTINE MAINTENANCE ACTIVITES

Trail Amenity Repair/Replacement

Various other amenities have been constructed along the trail system, many of which were provided and constructed by volunteer organizations, such as The Artemis Institute. These amenities include, benches, kiosks, picnic shelters and artistic structures and land features. These structures along with the trailhead amenities noted above need continuous inspection to make sure they are in good repair and safe for use. Consideration should be given to material types, durability and location for ease of use, maintenance and repair.

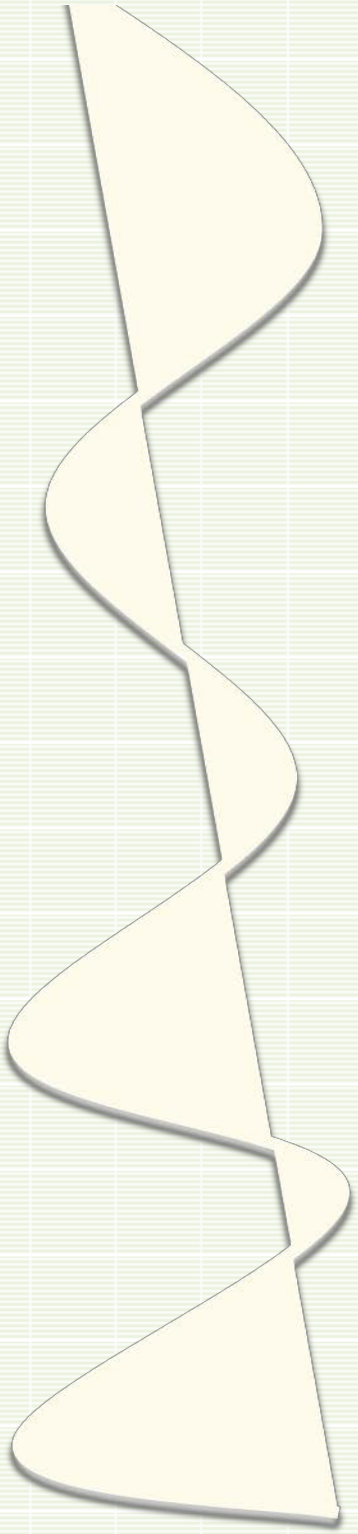
Trail Surface Repair/Replacement

Prioritization of trail surface repairs should be a component of the trail inspection process. The time between observation and repair of a trail should depend on whether the needed repair is deemed a hazard and to what degree the needed repair affects the safety of trail users. Another important consideration will be whether the needed repair can be performed by the responsible maintenance crew or if it should be contracted out to another agency or a qualified contractor. All repairs should have any associated utility locates made well in advance of any work.

COST SUMMARY AND BUDGET RECOMMENDATIONS

Routine Maintenance Costs

Routine maintenance activities are performed on a continuous, scheduled basis. Therefore, the cost of such tasks can be determined using the number of hours the Public Works crews are currently spending on the various maintenance tasks for each particular trail corridor. The number of hours per year can be multiplied by the hourly maintenance crew rate to determine the approximate cost per year for routine maintenance activities. The table in Appendix B presents a summary of these calculations for three different trail types in Livingston. The crew hours and rates used in these calculations are based on information provided by the P.W. Department.



COST SUMMARY AND BUDGET RECOMMENDATIONS

Routine Maintenance Costs cont'd.

- **Park/Corridor Trails**. These are approximately 12 foot wide trail corridors that run through developed and undeveloped parklands. Maintenance costs per mile averages $2,242.00 Maintenance funding for these trail segments comes from the City's General Fund.
- **Asphalt Park/Roadway Trails**. These trails run either alongside roads within the street right of way or through developed and undeveloped parklands. These trail segments are asphalt paved and might have drip system irrigation for landscaping features such as native grasses, trees and shrubs. The cost per mile averages $1047.12. Maintenance funding for these trail segments comes from the City's General Fund.

Results of these calculations show that the City of Livingston currently spends approximately $13680 per year on routine maintenance activities, which is equivalent to approximately $1710 per mile of trail. These figures should be used by the City to determine a reasonable budget for maintenance activities on an annual basis. These calculations should be continuously updated based on actual hours spent maintaining each trail and to account for new trails that are constructed each year. To begin with, the average cost per mile can be used for budgeting purposes for new trails with minor adjustments made for anticipated site specific conditions. Actual budget numbers for each new trail can then be determined within one year after construction is complete using the same method described above.

Non-Routine Maintenance Costs

Non-routine maintenance activities are performed on an as-needed basis in response to a particular problem that needs repair or replacement. These activities will often arise through the result of periodic trail inspections and/or comments received from trail users. Because these tasks are completed on an irregular basis, the cost of such activities cannot be calculated in the same manner as routine maintenance activities.

COST SUMMARY AND BUDGET RECOMMENDATIONS

Recreational Trails Program

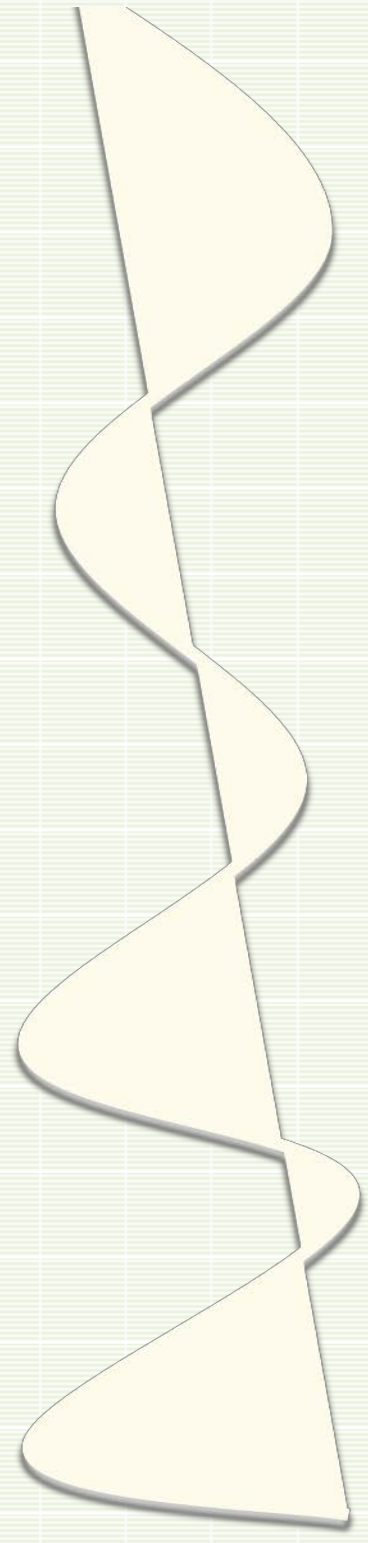
A grant application for Recreational Trails Program funding can be submitted for trail maintenance. This is a reimbursement program so the money would need to be expended first.

Gas Tax

Gas Tax revenues are generated through State gasoline taxes. These funds can be used for construction, reconstruction, repair and maintenance of streets. Half of the City's allocation is based on population, while the other half is based on miles of streets and alleys located within the City. Gas taxes have traditionally been used primarily for roadway maintenance within the City of Livingston. However, state code also allows gas taxes to be used for trail maintenance within public rights-of-way.

Utility Bill Donations

City residences and businesses receiving water and sewer services are invoiced monthly. The invoice could include a voluntary option for the customer to donate money for the development and maintenance of the trail network. The money received from this program would be transferred to an account established for these purposes. In addition to trail development and maintenance, the money could also be used to match grant funds.



IMPLEMENTATION STRATEGIES

Require a Maintenance Plan for All New Trails

In order to ensure that each new trail is evaluated for future maintenance needs, it is recommended that a new policy be established in the City of Livingston that requires preparation of a maintenance plan for each new trail that is developed. The plan should include all standard trail characteristics (surface type, width, location and length) and identify which agency will be responsible for maintenance. The plan should also include cost information that can be incorporated into the annual budgeting process. An example worksheet that could be used for this process is included in Appendix A. Maintenance plans should be completed during the design process for new trails to ensure that responsibility and necessary funding for trail maintenance has been addressed before the trail is ever constructed.

Implement a Maintenance Management System

It is recommended that the City of Livingston eventually implement a trail maintenance management system. The system can provide an inventory of existing trail conditions and amenities, as well as provide a central location for tracking all maintenance records and recorded work hours. As this data base is continuously updated, it can be used for determining required budget adjustments on an annual basis. It is recommended that the system be integrated into the City GIS system, so trail maintenance maps can easily be developed for planning purposes.

Further Define Agency Roles and Responsibilities

As the trail system in Livingston and Park County expands it will become critical that the roles and responsibilities of each agency be clearly defined. A specific agency agreement should be developed. This provides for a cost effective use of available resources. Consideration should be given to the type of equipment and staff available to each agency. Inter-local agreements should be written to clearly define the funding, staffing and equipment.

Trail Information

Bozeman Trail Connector: 1 mile
The Bozeman Trail is a 1 mile gravel walking path funded by in-kind work from the City of Livingston and grant funding from Montana Fish, Wildlife & Parks Recreational Trails Program. The trail was completed in 2008. A convenient and scenic connecting route from Livingston's Northern Lights Subdivision to Fleshman Creek Road, the Bozeman Trail is one of Livingston's most popular destinations for walkers, bikers and runners. In addition to bordering Fleshman Creek, the Bozeman Trail contains several notable features including a lake and marsh habitat at the half mile mark, as well as another small lake at the trail's end. The Bozeman Trail head is located only a half mile via City streets from the Northside Park and Soccer Fields and the Bitterroot Trail, facilitating easy connection to more of Livingston's recreational features.

Bitterroot Trail: ½ mile
The Bitterroot Trail is a ½ mile gravel walking path funded by in-kind work from the City of Livingston and grant funding from Montana Fish, Wildlife & Parks Recreational Trails Program. The trail was completed in 2013 and is lined trees and landscaping generously donated by Northwestern Energy. Constructed to accompany the Summit Trail, located only a quarter mile from Summit Street, the Bitterroot Trail is part of a network designed to connect the Northside Park and Soccer Fields to adjoining residential neighborhoods, providing a convenient and safe route to and from one of Livingston's most frequently used recreational complexes.

Summit Trail: ½ mile
The Summit Trail is a ½ mile gravel walking path funded by the City of Livingston. The trail was completed in 2014 and was constructed to accompany the Bitterroot Trail, located only a quarter mile from Summit Street. The Summit Trail is part of a network designed to connect the Northside Park and Soccer Fields to adjoining residential neighborhoods, providing a convenient and safe route to and from one of Livingston's most frequently used recreational complexes. This trail has a significant uphill grade with two access points on Montana Street and one on W Summit Street, on top of the hill.

Myers' River View Trail: 1 mile
The Myers' River View Trail is a 1 mile gravel walking path funded by in-kind work from the City of Livingston and grant funding from Montana Fish, Wildlife & Parks Recreational Trails Program. The trail was completed in 2012. A donation from the Kodak Foundation purchased detailed nature signs featuring native wildlife photographs and information. The Artemis Institute constructed a trail head and hidden trail features that blend in with the natural surroundings. Some of the features include wind pipe whistles, natural benches and a lookout over the river. Myers' River View Trail borders the Yellowstone River. With stunning views of the Yellowstone, Myers' River View Trail is a perfect destination for a scenic stroll, a family picnic or an afternoon run.

Yellowstone River Levy Trail: ¾ mile
The Yellowstone River Levy is a ¾ mile dirt walking path constructed by the City of Livingston with the help and direction of the Army of Corps of Engineers. This levy borders the Yellowstone River, offering breathtaking views of the last free-flowing river in the lower 48 states as well as direct access to Sacajawea Park, the Band Shell and the Miles Park Baseball Complex.

Hwy 89 South Walking and Bike Path: 4 ½ miles
The Hwy 89 South Bike Path is a 4 ½ mile paved trail funded by the City of Livingston and Park County. Starting near downtown Livingston on North 5th Street and following Park Street until it becomes Hwy 89 South and intersects with East River Road at the head of Paradise Valley. This path is the best option for a longer run or bike ride with plenty of beautiful and varied scenery.

APPENDIX

A

TRAIL INSPECTION FORM

CITY OF LIVINGSTON TRAIL MAINTENANCE PLAN

GO BEYOND YELLOWSTONE

TRAIL SEGMENT:_____FROM:_____TO:_____

SURFACE TYPE: 0 ASPHALT 0 SOFT SURFACE

APPROXIMATE LENGTH:_____APPROXIMATE WIDTH:_____

LANDSCAPE TYPE: 0 TURF 0 NATIVE GRASSES 0 TREES/SHRUBS 0 OTHER

ARE CRACKS OR SIGNIFICANT DETERIORATION PRESENT IN THE TRAIL SURFACE? 0 YES 0 NO

IF SO, PLEASE NOTE APPROXIMATE LOCATIONS AND/OR NUMBER OF CRACKS_____

_____

_____

_____

ARE ANY OF THE CRACKS SEVERE ENOUGH THAT THEY HAVE RESULTED IN VERTICAL DISPLACEMENT OF THE TRAIL SURFACE?

0 YES 0 NO

IF SO, PLEASE NOTE APPROXIMATE LOCATIONS_____

_____

_____

_____

IS THE TRAIL & ADJACENT LANDSCAPE AREA RELATIVELY CLEAR OF LITTER & DEBRIS? 0 YES 0 NO

IF NOT, PLEASE NOTE AREAS THAT NEED ATTENTION_____

_____

_____

_____

WAS ANY GRAFFITI OBSERVED ALONG THE TRAIL? 0 YES 0 NO

IF SO, WHERE?_____

_____

_____

_____

DO BENCHES, SHELTERS, & OTHER AMENITIES APPEAR TO BE IN GOOD CONDITION? 0 YES 0 NO

PLEASE NOTE ANY DEFICIENCIES_____

_____

_____

_____

DOES THE LANDSCAPING APPEAR TO BE ADEQUATELY MAINTAINED? 0 YES 0 NO

PLEASE NOTE ANY DEFICIENCIES

DOES THE TRAIL SIGNAGE APPEAR TO BE IN GOOD WORKING ORDER?

0 YES 0 NO

PLEASE NOTE ANY DEFICIENCIES

ANY OBVIOUS DRAINAGE PROBLEMS? PONDING OR EVIDENCE OF PONDING ON TRAIL?

0 YES 0 NO

PLEASE NOTE ANY DEFICIENCES

ADDITIONAL COMMENTS? (please use additional sheets and/or attach photographs as needed)

APPENDIX

B

APPENDIX

C